Supplemental RCRA Facility Investigation (RFI) Report No. 1

Pontiac North Campus

General Motors Corporation
Pontiac, Michigan

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Acronyms

AOI	Area of interest
AST	Aboveground storage tank
BCa	Bias Corrected and accelerated
Bgs	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and xylene
CCR	Current Conditions Report
CMP	Corrective Measures Proposal
COC	Constituents of Concern
CPC	Chevrolet-Pontiac-Canada Group
DA	Demolition Area
DNAPL	Dense non-aqueous phase liquid
DO	Dissolved Oxygen
DUSR	Data Usability Summary Reports
EEC	Encore Environmental Consortium, LLC
EI	Environmental indicator
ELPO	Electrodeposition
ENCORE	Environmental Corporate Remediation Co. Inc.
FSP	Field Sampling Plan
GM	General Motors Corporation
HI	Hazard Index
HQ	Hazard Quotient
IDC	Industrial Direct Contact Criteria
IDWC	Industrial Drinking Water Criteria
IPSIC	Industrial Particulate Soil Inhalation Criteria
LNAPL	Light non-aqueous phase liquid
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MFD	Metal Fabrication Division
NAPL	Non-aqueous phase liquid
NFA	No Further Action
NRC	National Response Center
NREPA	Natural Resources and Environmental Protection Act
NTU	Nepholometric units
ORP	Oxygen Reduction Potential
OSWER	Office of Solid Waste and Emergency Response
PA/VSI	Preliminary Assessment/Visual Site Inspection
PCB	Polychlorinated biphenyl
PID	Photoionization detector
PNC	Pontiac North Campus
PRC	PRC Environmental Management, Inc.
PRG	Preliminary Remediation Goal
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RDC	Residential Direct Contact Criteria
RDWC	Residential Drinking Water Criteria
RFI	RCRA Facility Investigation

SPO	Service Parts Operations
SQL	Sample Quantitation Limit
SVOC	Semi-volatile organic compounds
SWDF	Storm Water Detention Facility
SWHI	Site-Wide Hydrogeologic Investigation
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TCDD	2,3,7,8-Tetrachlorodibenzo-p-dioxin
TCL	Target Compound List
TEQ	Toxicity Equivalent
TSDF	Treatment, Storage, and Disposal Facilities
UCL	Upper Confidence Limit on the Mean
U.S. EPA	United States Environmental Protection Agency
UST	Underground storage tank
VSI	Visual Site Inspection
VOC	Volatile organic compounds
WWTP	Wastewater treatment plant

1. Introduction

1.1 General

On October 10, 2000, the United States Environmental Protection Agency (U.S. EPA) and General Motors Corporation (GM) entered into a Performance Based Corrective Action Agreement (The Agreement) for the Pontiac North Campus (PNC) located in Pontiac, Michigan (Site). The Agreement calls for GM to work independently and voluntarily to investigate and, as necessary, stabilize and remediate releases of hazardous waste or hazardous constituents at or from the Site in accordance with the Resource Conservation and Recovery Act (RCRA) and relevant U.S. EPA corrective action guidance. The RCRA Facilities Investigation (RFI) Report (Environmental Corporate Remediation Co. Inc. (ENCORE), 2002b) for the Site was prepared by Encore Environmental Consortium, L.L.C. (EEC) for ENCORE; a wholly owned subsidiary of GM, and submitted to the U.S. EPA in April 2002.

This Supplemental RFI Report No. 1 (Report) presents the results of additional RFI activities that were conducted at the Site following the preparation of the RFI Report (ENCORE, 2002b). In general, this Report presents the results of investigations completed pursuant to RFI Work Plan Addenda Nos. 4, 5, 6, 7, 8, 8A, and 9 (ENCORE, 2003a-g) plus other activities at the Site to address U.S. EPA comments on the RFI Report (ENCORE, 2002b) or provisions in The Agreement documents. These activities include additional groundwater sampling, pit and sump investigations, the investigation of three newly identified Areas of Interest (AOIs), additional investigations to address U.S. EPA comments on the CA750/CA725 determination, and free product delineation activities.

The Site encompasses approximately 595 acres in the northwest quadrant of the City of Pontiac, Michigan (Figure 1-1). The Site consists of four facilities (Figure 1-2), including:

- Chevrolet-Pontiac-Canada Group (CPC) Pontiac Fiero Assembly Plant (formerly GM Fisher Body Division); GMNA Property Management Fiero Facility; Baldwin Ave; Pontiac, Michigan 48340; (U.S. EPA ID No. MID 005356910);
- GM Central Foundry Division - Pontiac Plant; One Pontiac Plaza; Pontiac, Michigan 48340 (U.S. EPA ID No. MID 085470102);
- CPC – Pontiac; GM Metal Fabricating Division Pontiac; 220 E. Columbia Ave; Pontiac, Michigan 48340 (U.S. EPA ID No. MID 005356886); and
- GM Warehousing and Distribution Division; Service Parts Operations (SPO); 9251 Joslyn Rd; Pontiac, Michigan 48340 (U.S. EPA ID No. MID 076331289).

Because Site operations have changed significantly over time, the RFI grouped operations according to current activities. Figure 1-3 shows each of the Site operational areas while Figure 1-4 shows an overlay of the operational areas and the facility boundaries. The operational areas at the Site include:

- Fiero;
- Demolition Area (DA);
- Metal Fabrication Division (MFD);
- Powertrain; and
- Service Parts Operation (SPO).

A total of 64 AOIs were identified as part of the Current Conditions Report (CCR (ENCORE, 2001a)) of those 64 AOIs, 35 AOIs were determined to warrant investigation and were investigated during the initial RFI activities. The results of those investigations are summarized in the RFI Report (ENCORE, 2002b). Since the RFI Report (ENCORE, 2002b) was completed, three additional AOIs and one additional area (Storm Water Detention Facility (SWDF)) have been identified at the Site. Sixteen AOIs previously discussed in the RFI Report (ENCORE, 2002b), three recently identified AOIs, and the SWDF are discussed in this Report. Summaries of the investigative activities completed at each AOI are presented in Table 1-1. Figure 1-5 presents the location of all AOIs, while Figure 1-6 presents the location of the AOIs and other areas discussed in this Report.

1.2 Purpose

GM performed the RFI pursuant to The Agreement to determine whether the AOIs identified in the CCR (ENCORE, 2001a) as warranting Further Action have released hazardous waste or hazardous constituents that may pose an unacceptable risk to human health and the environment. The CCR (ENCORE, 2001a) and CCR Addendum No. 1 (ENCORE, 2002a) were prepared in part to provide details of historical and current operations at the Site, previous investigations and remedial activities, RCRA regulatory history, historical and current waste management practices, and specific areas targeted for investigation.

The RFI field investigations were conducted in accordance with an RFI Work Plan (ENCORE, 2001b) and RFI Work Plan Addenda Nos. 1-9 (ENCORE, 2001c-d, 2002c, 2003a – g). The RFI Report (ENCORE, 2002b) presented the results of the field investigations conducted between June 2001 and February 2002 according to the RFI Work Plan (ENCORE, 2001b), and Work Plan Addenda Nos. 1-3 (ENCORE, 2001c-d, 2002c).

The information in this Report describes the procedures, methods, and results of the field investigations conducted following preparation of the RFI Report (ENCORE, 2002b). The information includes a comparison of the analytical data with Michigan Part 201 generic cleanup criteria

(screening criteria) (Michigan Department of Environmental Quality (MDEQ), 2002) to identify whether a potential release of hazardous waste or hazardous constituents has occurred from each AOI where supplemental RFI field work was conducted. Where a potential release is identified, the nature and extent of hazardous constituents in the environmental media characterized during the supplemental RFI activities are discussed. A human health risk evaluation is included in this Report to provide a basis for evaluating whether the presence of these hazardous constituents pose an unacceptable risk to human health.

1.3 Supplemental RFI Objectives

The objectives of supplemental RFI activities were to complete investigations necessary to:

- Determine hydrogeologic conditions, as necessary, to properly investigate releases from the new AOIs;
- Characterize the nature and extent of potential releases of hazardous waste and/or hazardous constituents in environmental media at the new AOIs;
- Assess potential risk to human health and the environment associated with potential releases of hazardous waste and/or hazardous constituents at the new AOIs;
- Provide sufficient data to support the RCRA corrective action environmental indicators (EI) determination for the new AOIs;
- Determine whether interim corrective measures are necessary to control current unacceptable risks, if any, to human health at the new AOIs;
- Determine whether corrective measures are necessary to mitigate current and future unacceptable risks, if any, to human health and the environment for the new AOIs;
- Determine the impact, if any, from discharges from the new AOIs to off-Site areas;
- Determine the impact, if any, below several on-Site sumps and pits;
- Fulfill provisions for a second round of groundwater sampling, as described in the RFI Work Plan (ENCORE, 2001b);
- Provide further characterization of groundwater quality at existing AOIs based on U.S. EPA comments on the CA750/CA725 determination;
- Monitor Site-wide groundwater conditions by completing two semi-annual sampling events (November 2002 and May 2003); and
- Delineate free product plumes.

1.4 Report Organization

This Report is organized as follows:

- Section 2 provides an overview of the supplemental RFI activities conducted since preparation of the RFI Report (ENCORE, 2002b); including a summary of the various investigations;
- Section 3 provides an update to the geology, hydrogeology, and investigation procedures presented in the RFI Report (ENCORE, 2002b) and the RFI Work Plan (ENCORE, 2001b);
- Section 4 presents a summary and discussion of the supplemental RFI results for each of the AOIs and other areas investigated. The discussion for each area investigated includes a summary of the scope of the field investigation, a summary and evaluation of the supplemental RFI data, and a discussion of whether a potentially significant release above screening criteria has been identified;
- Section 5 presents a human health risk evaluation that evaluates the potential releases at areas identified in Section 4 to determine whether interim measures or corrective measures are warranted;
- Section 6 provides the summary and conclusions of this Report;
- Section 7 provides a list of references cited in this Report;
- Tables;
- Figures;
- Appendix A contains the complete analytical compound lists;
- Appendix B provides the soil boring logs and monitoring well construction diagrams;
- Appendix C contains the analytical data summaries;
- Appendix D contains the Data Usability Summary Reports (DUSR);
- Appendix E provides the LNAPL fingerprinting reports; and
- Appendix F presents the supporting risk calculations.

2. Supplemental Field Investigation Overview

The RFI Report (ENCORE, 2002b) presented the results of the RFI investigations conducted at the Site between June 2001 and February 2002. Supplemental RFI activities were conducted at existing and recently discovered AOIs between February 2002 and October 2003. This Section provides an overview of the investigations, summarizes the operational areas investigated and introduces three new light non-aqueous phase liquid (LNAPL) areas identified during the supplemental RFI activities performed between February 2002 and November 2003.

2.1 Investigation Overview

The supplemental RFI field investigations and results summarized in this Report include:

- Second round groundwater sampling;
- Pit and sump investigative activities;
- Soil sampling in a void below the floor in the Electrodeposition (ELPO) building;
- Investigation of the SWDF;
- Semi-annual groundwater sampling;
- Investigation of three newly identified AOIs associated with Former Plant 18 (RFI Work Plan Addenda Nos. 5, 6, and 7 (ENCORE, 2003b-d));
- Additional characterization activities to address the U.S. EPA comments related to the CA750/CA725 EI determination (RFI Work Plan Addendum No. 8 (ENCORE, 2003e));
- LNAPL delineation activities (RFI Work Plan Addenda Nos. 4, 8A, and 9 (ENCORE, 2003a,g,f));
- Delineation of potential subsurface impacts (RFI Work Plan Addendum No. 9 (ENCORE, 2003f)); and
- Data collection to support the evaluation of corrective measures options.

A summary of the field investigations performed and the associated AOI is provided in Table 1-1.

2.1.1 Second Round Groundwater Sampling

The RFI Work Plan (ENCORE, 2001b) provided for the collection of two rounds of groundwater samples from each monitoring well installed as part of the RFI. At the time the RFI Report (ENCORE, 2002b) was prepared, the second round of groundwater samples for some monitoring wells had not been completed. This Report presents the second round groundwater sampling results for these monitoring wells.

2.1.2 Pit and Sump Investigations

Comments received from the U.S. EPA recommended that GM repair/rehabilitate as necessary sumps or pits that would remain active at the Site and properly abandon sumps or pits that will no longer be active. Several sumps and pits were investigated as part of the RFI. Before any of these pits or sumps were abandoned, a soil sample was collected from immediately beneath the pit or sump (after any tanks or machinery was removed) to support decommissioning of the pit or sump. The results of the soil samples collected from under the pits and sumps at AOIs M-9 and F-8 are summarized in this Report.

2.1.3 Soil Sample from Below ELPO Plant Floor

A 4-inch diameter hole in the concrete floor in the ELPO building was created when a concrete protective post was removed from the floor. A visual inspection of the subsurface conditions beneath the floor and the results of the soil sample are discussed in this Report.

2.1.4 Storm Water Detention Facility (SWDF)

During a routine cleaning and inspection of the SWDF completed during September and October 2002, cracks in the concrete floor were observed as well as missing or degraded Sections of rubber seals between the concrete slabs. On the basis of these observations, a subsurface investigation was completed to determine if any potentially impacted storm water from the storm water basin had infiltrated into the subsurface, and if so, the possible impacts to soil and/or groundwater.

2.1.5 Semi-Annual Groundwater Sampling

The RFI Report (ENCORE, 2002b), included a groundwater monitoring plan that provided for semi-annual sampling of certain monitoring wells. Since the RFI Report (ENCORE, 2002b) was prepared, two semi-annual sampling events have been conducted at the Site, November 2002 and May 2003. The analytical results for these sampling events are summarized in the November 2002 Semi-Annual Groundwater Monitoring Event Summary Report (ENCORE, 2003h) and the May 2003 Semi-Annual Groundwater Monitoring Event Summary Report (ENCORE, 2003i). The Risk Evaluation presented in this Report will evaluate the analytical data results from these sampling events. Table 2-1 lists the monitoring wells sampled during the two semi-annual sampling events.

2.1.6 New AOIs

Three AOIs were identified after preparation of the RFI Report (ENCORE, 2002b) in the vicinity of Former Plant 18. Field investigations were completed at each AOI to determine if a significant release exceeding applicable Part 201 criteria has occurred for each AOI. Soil was investigated at each AOI, while groundwater was encountered at only two of the three new AOIs.

The initial investigation approach for each AOI is described in the following work plans:

- RFI Work Plan Addendum No. 5, Pipeline Release Investigation – AOI P-9 (ENCORE, 2003b);
- RFI Work Plan Addendum No. 6, Former Plant 18 Investigation – AOI P-10 (ENCORE, 2003c); and
- RFI Work Plan Addendum No. 7, Trestle Pipeline Release Investigation – AOI P-11 (ENCORE, 2003d).

Additional investigative activities were completed at AOI P-9 that were not in provided for RFI Work Plan Addendum No. 5 (ENCORE, 2003b). These activities are discussed in Section 4.4.2.

2.1.7 Environmental Indicators (EIs) CA750/CA725 Determination

The EI Report (ENVIRON, 2002) addressed the following EI determinations:

- CA725: Current Human Exposures Under Control; and
- CA750: Migration of Contaminated Groundwater Under Control.

During implementation of the RFI field investigation, groundwater samples collected at several AOIs had concentrations that were higher than the conservative screening criteria used for identifying "contaminated" groundwater used in the RFI Report (ENCORE, 2002b). Risk-based evaluations of the groundwater quality data collected during the RFI using realistic scenarios of potential non-potable exposures to groundwater determined that there are no unacceptable exposures to groundwater at and around the Site. The U.S. EPA concurred with the determination that no significant exposures to groundwater exist at and around the Site, but requested additional groundwater characterization around select AOIs to provide a more precise boundary of areas where groundwater quality may be affected by a release (U.S. EPA, 2002b).

A meeting was held on February 26, 2003 between the U.S. EPA, ENCORE, and EEC. In this meeting, ENCORE agreed to evaluate and perform additional characterization of groundwater quality at the following AOIs to meet the intent of the CA750 EI determination:

- F-7 – Wastewater Collection Sumps at Fiero Powerhouse;
- M-1 – Wastewater Treatment Plant (WWTP);
- M-4 – Plant 25 Former Gasoline underground storage tank (UST) and Current Gasoline above-ground storage tank (AST);
- M-5 – Former A-2 Fill Area;
- M-16 – Plant 25 Basement Sump Area;
- M-25 – Plant 33 Basement Sump Area; and
- P-6 – Emissions Control Building Former UST Farm and Former Stoddard Solvent AST.

In addition, ENCORE agreed to complete additional soil delineation at AOI F-15 to support the CA725 EI soil determination. RFI Work Plan Addendum No. 8 (ENCORE, 2003e) was prepared to address the additional characterization to meet the intent of the CA750/CA725 determination.

2.1.8 LNAPL Delineation Activities

Three new LNAPL areas (LNAPL Areas Nos. 4, 5, and 6) were identified and investigated during the supplemental RFI activities.

During the collection of groundwater levels at the Site in August 2002, LNAPL was detected in two monitoring wells at AOI M-2. RFI Work Plan Addendum No. 4 (ENCORE, 2003a) was prepared to direct the additional subsurface investigation to delineate the LNAPL. This LNAPL area is identified as LNAPL Area No. 4.

During installation of monitoring wells at AOI M-4 and AOI M-16, LNAPL was also encountered. RFI Work Plan Addendum No. 8A (ENCORE, 2003g) describes the initial delineation activities. This LNAPL area is identified as LNAPL Area No. 5.

During follow up activities to a geotechnical borehole investigation in the DA, which was completed as part of an industrial redevelopment proposal, stained soils and potential free product was observed in the soil. RFI Work Plan Addendum No. 9 (ENCORE, 2003f) describes the initial investigation to determine if LNAPL exists. This LNAPL area is identified as LNAPL Area No. 6.

2.1.9 Subsurface Impact Delineation

Potential subsurface impacts were observed during the implementation of a geotechnical borehole investigation, which was completed as part of an industrial redevelopment proposal that was prepared by GM. The geotechnical investigation consisted of the completion of 36 soil borings that were located within the vicinity of the footprint of the proposed industrial redevelopment area.

During the geotechnical investigation, odors, stained soil, and/or elevated photoionization detector (PID) readings were observed in 16 of the 36 soil borings. RFI Work Plan Addendum No. 9 (ENCORE, 2003f) was prepared to further investigate these 16 soil borings.

2.1.10 Remedial Options Evaluation

Additional wells (monitoring and recovery) and soil borings were installed in LNAPL Area No. 3 to evaluate groundwater and LNAPL levels and properties for evaluating and determining corrective measures. Proposed corrective measures are presented in the Corrective Measures Proposal (CMP) (ENCORE, 2003j). Any samples (soil or groundwater) collected during or following the installation of these new wells are discussed in Section 4.2.2 of this Report.

Groundwater samples were collected at AOI M-4 and AOI P-6 to evaluate groundwater treatment techniques at each of these areas. The groundwater analytical results from these AOIs are discussed in Section 4.3.3 and 4.4.1 of this Report. The remedial options are presented in the CMP (ENCORE, 2003j).

2.2 Operational Areas

Supplemental RFI activities were completed at four of the five operational areas at the Site. Further Action AOIs in the SPO operational area were not identified in the CCR (ENCORE, 2001a) or the RFI Report (ENCORE, 2002b), therefore the SPO operational area will not be discussed further in this Report. The SWDF is also discussed in this Report but does not fall within any of the Site operational areas. The following subsections present a brief summary of the four operational areas and the AOIs within each operational area investigated during supplemental RFI activities.

2.2.1 Fiero

The Fiero operational area consists of approximately 81 acres located at the southwestern portion of the Site (Figure 1-3) and includes Plant 17. Currently, this area is used for prototyping, storage, and other non-production purposes. Current and historical wastes generated from car assembly operations at Fiero may have included scrap metal and metalworking fluids and oils (petroleum-based, oil-water emulsions, or synthetic emulsions), paints, paint solvents, and plasticizers. A WWTP was in operation at Fiero from 1973 to 1983 and managed wastewater, wastewater treatment sludge, paint sludge, and bonderite sludge. This WWTP operated until 1983. The area was paved over as a driveway.

The Fiero AOIs investigated during the supplemental RFI activities include:

- AOI F-7: Wastewater Collection Sumps
  - CA750 determination - RFI Work Plan Addendum No. 8 (ENCORE, 2003e)
  - Pit and sump investigation

- AOI F-8: Paint Sludge Storage Area Form
  - Pit and sump investigation

- AOI F-15: Oil/Solvent Catch Basin
  - CA725 determination - RFI Work Plan Addendum No. 8 (ENCORE, 2003e)

2.2.2 Demolition Area (DA)

The DA consists of approximately 48 acres of the south-central portion of the Site. There are currently no buildings or operations within the DA portion of the Site. A large portion of the DA is involved in an industrial redevelopment proposal. Since 1996, the DA has been the subject of ongoing soil and groundwater investigations. The former Plant locations are shown on Figure 1-3.

The DA AOIs investigated during the supplemental RFI activities include:

- AOI W-1: West Yard
  - Second round groundwater sampling
  - Subsurface impact delineation - RFI Work Plan Addendum No. 9 (ENCORE, 2003f)

- AOI W-8: Former Plant 9 Basement AST Area
  - Second round groundwater sampling
  - Remedial options evaluation
  - Subsurface impact delineation - RFI Work Plan Addendum No. 9 (ENCORE, 2003f)

- AOI W-9: Former Central Foundry (Plant 6) Resin Spill and UST
  - Subsurface impact delineation - RFI Work Plan Addendum No. 9 (ENCORE, 2003f)

- AOI W-10: Railroad Marshalling Area Drainage System
  - Second round groundwater sampling

2.2.3 Metal Fabrication Division (MFD)

The MFD area consists of approximately 236 acres in the central portion of the Site (Figure 1-3), and contains the only current active manufacturing operations at the Site. Plants currently located in the MFD area include Plants 5, 11, 12, 14, 15, 23, 25, 33, 49, 56, and ELPO. Also present in the MFD area is a WWTP, which is located directly west of Plants 5 and 23. The locations of each of these Plants and the WWTP are shown on Figure 1-3.

The MFD AOIs investigated during the supplemental RFI activities include:

- AOI M-1: WWTP
  - CA750 determination - RFI Work Plan Addendum No. 8 (ENCORE, 2003e)

- AOI M-2: Former Plating Operations Area
  - Second round groundwater sampling
  - LNAPL delineation activities - RFI Work Plan Addendum No. 4 (ENCORE, 2003a)

- AOI M-4: Plant 25 Former Gasoline UST and Current Gasoline UST Location
  - Second round groundwater sampling
  - Remedial options evaluation
  - CA750 determination - RFI Work Plan Addendum No. 8 (ENCORE, 2003e)
  - LNAPL delineation activities - RFI Work Plan Addendum No. 8A (ENCORE, 2003g)
  - Remedial Options Evaluation

- AOI M-5: Former A-2 Fill Area
  - CA750 determination - RFI Work Plan Addendum No. 8 (ENCORE, 2003e)

- AOI M-7: ELPO Building
  - Soil sample below Plant floor

- AOI M-9: Heat Treat Oil Storage Area
  - Pit and sump investigation
  - Second round groundwater sampling

- AOI M-16: Plant 25 Basement Sump Area
  - Second round groundwater sampling
  - CA750 determination - RFI Work Plan Addendum No. 8 (ENCORE, 2003e)
  - LNAPL delineation activities - RFI Work Plan Addendum No. 8A (ENCORE, 2003g)

- AOI M-25: Plant 33 Basement Sump Area
  - CA750 determination - RFI Work Plan Addendum No. 8 (ENCORE, 2003e)

2.2.4 Powertrain

The Powertrain area consists of approximately 150 acres located along the eastern portion of the Site (Figure 1-3). The area primarily consists of office space contained within the Powertrain Headquarters Building and the Powertrain Engineering Building. A gasoline UST farm and fueling station occupy the southwest corner of the Powertrain Headquarters Building. Test laboratories and office space are located in the Emissions Control Building. Paved parking areas and roadways occupy much of the land. Glenwood Avenue was recently extended north of Montcalm Avenue, and runs through the western portion of the Powertrain operational area.

The Powertrain AOIs investigated during the supplemental RFI activities include:

- AOI P-6: Former UST Farm and Stoddard Solvent AST
  - Second round groundwater sampling
  - Remedial options evaluation

- AOI P-9: Pipeline Release;
  - New AOI investigation - RFI Work Plan Addendum No. 5 (ENCORE, 2003b)

- AOI P-10: Former Plant 18
  - New AOI investigation - RFI Work Plan Addendum No. 6 (ENCORE, 2003c)

- AOI P-11: Trestle Pipeline Release
  - New AOI investigation - RFI Work Plan Addendum No. 7 (ENCORE, 2003d)

2.2.5 Storm Water Detention Facility (SWDF)

The SWDF for the Site is located on the south side of Montcalm Avenue. The SWDF became operational in May 1982, intercepting and treating the Site storm water prior to being discharged to Outfall 001.

The SWDF is composed of two elements: a storm water treatment facility, and a 2,000,000-gallon storm water detention basin. The SWDF was originally designed to eliminate free oil and reduce the amount of solids present in the effluent originating from dry weather flow, and to minimize free oils and solids concentrations in the effluents originating from wet weather flow. In June 1999, the

SWDF was retrofitted with granular activated carbon units to include a treatment process for polychlorinated biphenyl (PCB) removal.

2.3 New LNAPL Areas

2.3.1 LNAPL Area No. 4

LNAPL Area No. 4 is located within AOI M-2. LNAPL was originally observed in two monitoring wells located within AOI M-2 (MWM2-04 and MWM2-06) during groundwater monitoring activities. The area of AOI M-2 where the LNAPL is located is directly beneath an active production area. The storm sewer line, located in the vicinity of AOI M-2, is oriented north to south and is located immediately east of monitoring wells MWM2-06 and MWM2-07. Figure 2-1 presents the horizontal extent of the current LNAPL Area No. 4 plume. This LNAPL Area is further discussed in Section 4.6.3.

2.3.2 LNAPL Area No. 5

LNAPL Area No. 5 is located within AOI M-16 and just downgradient of AOI M-4. During implementation of RFI Work Plan Addendum No. 8 (ENCORE, 2003e) activities, LNAPL was observed in two monitoring wells located in the basement of Plant 25. Approximately 0.5 feet of LNAPL was measured in MWM4-06 and indications of LNAPL (globules on the water level probe) have been observed at MWM16-03. Delineation activities have not been completed and are currently ongoing. This LNAPL Area is further discussed in Section 4.6.4.

2.3.3 LNAPL Area No. 6

LNAPL Area No. 6 is located along the storm sewer line in AOI W-9. The possible presence of LNAPL was detected during a geotechnical investigation completed as part of an industrial redevelopment proposal for the DA. RFI Work Plan Addendum No. 9 (ENCORE, 2003f) was prepared and implemented to investigate the potential presence of LNAPL in the area. A sheen (less than 0.1 feet) of LNAPL was observed in MWW9-02 for several weeks following installation. During groundwater level monitoring along the sewer line through the DA in October 2003, 0.25 feet of LNAPL was detected in MWW9-02. Delineation has been completed at this LNAPL Area. Figure 2-2 presents the horizontal extent of the current LNAPL Area No. 6 plume. This LNAPL Area is further discussed in Section 4.6.5.

2.4 Investigation Procedures

The RFI Report (ENCORE, 2002b) presented a detailed discussion of field and laboratory procedures of the RFI investigations conducted at the Site between June 2001 and February 2002. This Section summarizes and documents any changes to the field or laboratory procedures during the supplemental RFI activities.

All RFI sampling methodologies and analytical procedures were conducted in accordance with those presented in the RFI Work Plan (ENCORE, 2001b), including the Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP), except as noted in Sections 2.4.1 and 2.4.2 and the individual AOI investigation discussions. Samples were submitted for an AOI specific list of analytes and may have included analysis for target compound list (TCL) volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs), target analyte list (TAL) inorganics, PCBs, total cyanide (cyanide), and dioxins. The AOI specific constituent list was developed based on historical knowledge of the activities at each of the AOIs. Complete compound lists for TCL VOCs, TCL SVOCs, TAL inorganics (here after referred to as VOCs, SVOCs, and inorganics, respectively), PCBs, and dioxins are provided in Appendix A.

2.4.1 Field Procedures

Consistent with soil sampling procedures presented in the FSP (ENCORE, 2001b), soil samples were collected at the 0 to 2 foot below ground surface (bgs), 8 to 10 foot bgs and the two-foot interval directly above the water table for AOIs P-9, P-10, and P-11.

Soil samples from other AOIs investigated during the supplemental RFI activities were generally not collected unless specified in the RFI Work Plan Addenda. These work plan addenda specified that soil samples would be collected if soil delineation was specific to that RFI work plan addendum or the soil exhibited staining, odors or elevated PID readings.

Two monitoring wells installed in the basement of Plant 25 were installed using a Geoprobe® due to access issues.

Groundwater samples were collected using low-flow purge and sample approach in accordance to the guidelines presented in the FSP (ENCORE, 2001b). As groundwater was purged from each of the monitoring wells, field parameters (temperature, specific conductivity, dissolved oxygen (DO), oxygen reduction potential (ORP) and pH) were recorded. Sampling was initiated when all parameters stabilized and the turbidity stabilized below 5 nepholometric turbidity units (NTUs). A summary of groundwater sampling field parameters is provided in Table 2-2.

The RFI Work Plan (ENCORE, 2001b) states that filtered and unfiltered groundwater samples will be collected for inorganic analysis. Following the initial sampling completed at the Site, filtering (i.e. dissolved) of inorganic samples was discontinued as the results between the filtered and unfiltered samples did not differ significantly.

Groundwater was collected through temporary well points from boreholes installed through the bottom of the detention basin at the SWDF. The temporary well points consisted of a slotted section of Geoprobe® rod. Tubing was lowered into the rod and a peristaltic pump was used to collect the groundwater samples from the rod. After the groundwater sample was collected from the temporary well point, the well was pulled and the boring was backfilled with bentonite pellets.

Six monitoring wells at the Site have been abandoned since the submittal of the RFI Report (ENCORE, 2002b). Monitoring wells MWP6-05 and MWP6-08 were removed because a new structure is currently being constructed at AOI P-6, and these monitoring wells would likely be damaged during construction. Two historical wells, installed by others prior to RFI activities, identified during the construction activities at AOI P-6 were also abandoned. Monitoring wells MWM5 and MWM9 were abandoned prior to the extension of Glenwood Avenue north through the Site. These wells were located within the right of way to be deeded to the City and would have been damaged during construction. Monitoring wells were abandoned by overdrilling with 4.25-inch augers (i.e., drilling to a point lower in elevation than the monitoring well was set), and backfilling with bentonite chips (hydrated).

2.4.2 Laboratory Procedures

The analytical parameters for all samples that were submitted to the laboratory were specific to each AOI and are summarized in Table 1-1. All methods and procedures for the analysis are presented in the QAPP (ENCORE, 2001b) and summarized in Table 2-2 of the RFI Report (ENCORE, 2002b).

The only variation to the methods presented in the QAPP (ENCORE, 2001b) was for the analysis of thallium in groundwater samples. The method was modified during the RFI sampling activities from Method SW846-6010B to Method SW846-6020 to lower the detection and the reporting limits.

2.4.3 Data Validation

A data validation assessment was completed on all final laboratory analytical data. Several analytical results reviewed during data validation were rejected. A DUSR was prepared for each AOI or other area, summarizing the data validation assessment. All DUSRs are provided in Appendix D.

3. Environmental Setting

The RFI Report (ENCORE, 2002b) presented a detailed discussion of regional and Site-specific geology and hydrogeology. The subsurface information obtained during the supplemental RFI activities was reviewed to determine if the new information was consistent with the current understanding of the Site-specific geology and hydrogeology. This Section provides summaries of the understanding of the Site-specific geology and hydrogeology based on additional subsurface information collected during the supplemental RFI activities.

3.1 Site Geology/Hydrogeology

Soil boring logs that were prepared and groundwater elevations collected during supplemental RFI activities were reviewed to determine if new data were consistent with the Site-specific geology and hydrogeology discussions presented in the RFI Report (ENCORE, 2002b). The following subsections discuss the results.

3.1.1 Site Geology

The subsurface data collected during the supplemental RFI investigation is consistent with and supports the information presented in the RFI Report (ENCORE, 2002b). For additional Site-specific geological information, refer to Section 3.8 of the RFI Report (ENCORE, 2002b). Soil boring logs for recently completed soil borings are presented in Appendix B of this Report. Subsurface stratigraphic data collected from the supplemental RFI activities is summarized in Table 3-1.

3.1.2 Site Hydrogeologic Setting

A complete round of groundwater levels from all monitoring wells was collected prior to each semi-annual groundwater sampling event. Groundwater contour maps prepared from data collected in November 2002 and May 2003 show general groundwater flow patterns that are consistent with those presented in the RFI Report (ENCORE, 2002b). Figures 3-1 and 3-2 present the November 2002 and May 2003 groundwater flow contour maps.

A complete list of groundwater levels for November 2002 and May 2003, is included in the November 2002 Semi-Annual Groundwater Monitoring Event Summary Report (ENCORE, 2003h) and the May 2003 Semi-Annual Groundwater Monitoring Event Summary Report, (ENCORE, 2003i), respectively.

The Site-wide groundwater flow maps indicate that several localized anomalies exist in the groundwater flow patterns. Groundwater flow at AOIs W-8, W-9, and M-2 are influenced by the presence of storm sewers within those AOIs. Localized groundwater flow maps for these AOIs are presented on Figure 3-3 (AOI W-8), Figure 3-4 (AOI W-9), and Figure 3-5 (AOI M-2). Table 3-2 presents the groundwater levels used to prepare Figures 3-3, 3-4, and 3-5.

4. Supplemental Investigation Results and Discussion

The results of the field investigations completed during the supplemental RFI activities are discussed in this Section. The discussion is divided into subsections corresponding to the AOIs that were investigated. Each subsection includes a description of the areas investigated, the scope of the field investigations, a summary of the results, and discussion of the results with respect to whether a potentially significant release of hazardous constituents has been identified and if so, the nature and extent of the release. The identification of a potentially significant release at an area is based on screening of the characterization data collected during the RFI with generic screening criteria (i.e. Natural Resources and Environmental Protection Act (NREPA), Michigan Act 451, Part 201 Generic Cleanup Criteria). The approach for evaluating the soil, groundwater, sediment, and surface water data is discussed below.

Soil

The specific Michigan Part 201 generic industrial cleanup criteria was used as screening criteria for identifying potential soil impacts are direct contact, inhalation of soil vapor and particulate in ambient air, and inhalation of soil vapor in indoor air (MDEQ, 2002). These criteria are appropriate based on current and reasonably expected future land use at the Site, as discussed in the RFI Report (ENCORE, 2002b). Both the industrial and residential Part 201 criteria were derived by the MDEQ based on a cancer risk of 10^{-5} and a hazard quotient (HQ) of 1. They are also derived from exposure factors that reflect conservative assumptions about the magnitude, frequency, and duration of exposures, which in combination are intended to provide estimates of exposures that are higher than actual exposures to a large portion (90% to 99%) of the population.

A potentially significant release is identified at an area where the highest concentrations of the constituents detected in soil at the area are higher than these screening criteria. It should be noted that an area with constituents at concentrations in soil that are higher than these screening criteria does not mean that it necessarily poses an unacceptable risk; it only means that the potential for the area to pose an unacceptable risk should be evaluated considering Site-specific factors. The Site-specific evaluation of potential risks posed by constituents in an area where a potentially significant release is identified is addressed by further risk-based evaluations that are discussed in Section 5.

Site-specific background soil concentrations for metals were calculated and presented in the RFI Report (Section 3.9, ENCORE, 2002b). As discussed in Section 3.9 of the RFI Report (ENCORE, 2002b), a concentration of a metal lower than or equal to its upper prediction limit is considered to be within background levels; a concentration higher than its upper prediction limit is

considered to be higher than background levels. Table 3-4 of the RFI Report (ENCORE, 2002b) summarizes the calculated background metal concentrations including statistical prediction limits.

Section 4 Tables and Figures evaluate metals data in soil collected at the Site against the industrial screening criteria adjusted to reflect the Site-specific background metals concentrations. The text presented in Section 4 evaluates the metals data against generic industrial screening criteria that does not account for the background metals adjustment.

Groundwater

In a manner similar to that discussed above for screening soil characterization data, the groundwater monitoring data collected during the RFI are compared with generic screening criteria to identify whether a potentially significant release from an area to groundwater has occurred. The groundwater monitoring data are compared with screening criteria based on the Part 201 Generic Residential and Industrial Drinking Water Criteria (IDWC), although none of these saturated zones serve as a drinking water supply for the Site or the surrounding areas. In addition, the Part 201 criteria based on inhalation of groundwater vapor to indoor air and direct contact by workers conducting excavations (MDEQ, 2002) are also used to identify potential impacts in the shallow saturated zone, which is within approximately 10 ft of the ground surface at some parts of the Site.

It should be noted that the groundwater screening criteria described above include criteria that are designed to be protective of potential exposures via drinking water use and represent highly conservative screening criteria for evaluating groundwater that is not a current or reasonably expected future drinking water supply. Therefore, the presence of groundwater with constituent concentrations higher than these generic screening criteria does not mean that the groundwater necessarily poses an unacceptable risk; it only means that the potential for the groundwater to pose an unacceptable risk should be evaluated considering Site-specific factors. The Site-specific evaluation of potential risks posed by constituents in groundwater where a potentially significant release is identified is addressed by further risk-based evaluations that are discussed in Section 5.

Discussion of the supplemental RFI field investigations in the following subsections begins with data collected at the AOIs located at the Fiero Plant, followed by discussion of the data collected at the DA, MFD, Powertrain, SWDF, and LNAPL areas. Each subsection includes Tables comparing the RFI characterization data for an area with the screening criteria discussed above. In addition, the tables also compare the RFI data with more conservative screening criteria based on the Part 201 criteria for residential soil. These additional comparisons are provided as another point of reference only, and are not used as the basis for identifying the presence of a potentially significant release because these criteria are unnecessarily conservative for this Site, as discussed above. Each subsection also includes Figures that show the spatial distribution of the RFI data for constituents

having at least one concentration higher than the most conservative screening criteria in any media at any AOI. These constituents are the constituents of concern (COC) for the Site.

Since the issuance of the RFI Report (ENCORE, 2002b), the Part 201 criteria have been amended (December 21, 2002). Table 4-1 presents a listing of the Part 201 amended 2002 criteria for the Site-specific COCs. All data collected following the preparation of the RFI Report (ENCORE, 2002b) presented in this Report is evaluated against the amended 2002 screening criteria.

Figures 4-1 through 4-5 provide a summary of all sample locations within each operational area.

4.1 Fiero

This Section summarizes the investigations and results completed at three Fiero AOIs during the supplemental RFI activities.

4.1.1 Wastewater Collection Sumps (AOI F-7)

AOI F-7 consists of a series of six wastewater collection sumps located in the Powerhouse, south of Plant 17 (Figure 1-5). These sumps were identified as Solid Waste Management Unit (SWMU) 7 in the Fiero Preliminary Assessment / Visual Site Inspection (PA/VSI) Report (PRC Environmental Management (PRC), 1992); therefore, the sumps are considered an AOI.

There have been no known releases from the wastewater collection sumps. The Fiero PA/VSI Report (PRC, 1992) stated that during the VSI the condition of the sumps was good. However, during the walkthrough completed as part of the preparation of the CCR (ENCORE, 2001a), these sumps were noted to be full of liquids and could not be inspected.

As part of the RFI activities the sumps were cleaned and inspected in June 2001. of the six sumps, two were associated with alkali-oily activities. Upon inspection, both of these sumps were observed to have cracked and broken sections of concrete. The remaining four sumps are associated with lime, fly-ash, and neutralization processes and therefore were not considered for subsequent investigation. These sumps were inspected and showed signs of pitting. Two monitoring wells were installed from which soil and groundwater samples were collected during the initial RFI activities. Soil and groundwater samples were submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics.

The Site personnel determined that the two sumps associated with the alkali-oily activities will be repaired and will remain in active use. As discussed in Section 2.1.2, the U.S. EPA requested that

sumps that will remain active be repaired/rehabilitated. Repairs to the sumps were completed on August 22, 2002, and included pressure washing the sump and coating the sides with polyurethane.

4.1.1.1 Scope and Results

The scope of the supplemental field investigations at AOI F-7 involved cleaning and repairing the two alkali-oily sumps and collection of soil and groundwater samples to support the CA750 determination (RFI Work Plan Addendum No. 8 (ENCORE, 2003e)).

The following is a summary of the supplemental sampling activities conducted for each medium at AOI F-7. Samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

Soil Samples

One soil boring associated with the installation of a monitoring well (MWF7-03) proposed in the RFI Work Plan Addendum No. 8 (ENCORE, 2003e) was completed at AOI F-7. Soil samples were collected from the 7 to 9 feet and 11 to 13 feet bgs intervals due to elevated PID readings. The samples were submitted for analysis of VOCs, SVOCs, PCBs and inorganics. Soil boring and monitoring well locations are shown on Figure 4-6. Soil boring logs and well construction diagrams are provided in Appendix B.

Groundwater Samples

One round of groundwater samples was collected from three monitoring wells (MWF7-01 through MWF7-03) at AOI F-7. Monitoring well MWF7-03 was installed upgradient from MWF7-02 as proposed in the RFI Work Plan Addendum No. 8 (ENCORE, 2003e). Monitoring well locations are shown on Figure 4-7. The samples were submitted for laboratory analysis for 1,1-dichloroethene and tetrachloroethene.

The number of locations from which supplemental RFI samples were collected for each medium and the number of samples analyzed for each analyte group are as follows:

Medium	Locations	VOCs	SVOCs	PCBs	Inorganics
Soil	1	2	2	2	2
Groundwater	3	3*	0	0	0

*1,1-Dichloroethene and tetrachloroethene only

Summaries of the analytical data for all AOI F-7 soil and groundwater samples collected during the RFI are shown in Tables 4-2 and 4-3, respectively. The analytical data for the supplemental RFI samples are provided in Appendix C. Complete documentation of the data review and validation of the supplemental RFI samples are provided in Appendix D.

4.1.1.2 Discussion of Results

The concentrations of constituents detected in soil and groundwater were compared with the screening criteria as discussed in Section 4.0.

Soil Samples

The concentrations of constituents detected in the soil boring samples collected from AOI F-7 during the supplemental RFI activities do not exceed the soil screening criteria. Figure 4-6 provides a summary of sample locations and analytical results for soil. As discussed in the RFI Report (ENCORE, 2002b), the chromium (total) concentration from a sample at 8 to 10 feet bgs was the only concentration that exceeds the soil screening criteria at this AOI.

Groundwater Samples

The concentrations of 1,1-dichloroethene and tetrachloroethene in groundwater samples collected from AOI F-7 during the supplemental RFI activities exceed the groundwater screening criteria.

The concentration of 1,1-dichloroethene at MWF7-02 (0.013 mg/L) exceeds the IDWC and Residential Drinking Water Criteria (RDWC) of 0.007 mg/L and the tetrachloroethene concentration at MWF7-02 (0.0062 mg/L) exceeds the IDWC and RDWC of 0.005 mg/L. Previous RFI monitoring data also showed that these two constituents have concentrations that are higher than the screening criteria (ENCORE, 2002b).

Monitoring well MWF7-03 was installed to provide an appropriate upgradient well to bound the contaminant plume at AOI F-7 to support the CA750 determination. Since no constituents were detected in groundwater at concentrations higher than the screening criteria, monitoring well MWF7-03 serves as an appropriate upgradient groundwater boundary for AOI F-7.

Figure 4-7 provides a summary of sample locations and analytical results for groundwater.

4.1.1.3 Conclusions

Cleaning and repairs to the alkali-oily sumps were completed in August 2002. The activities associated with the sump repairs included pressure-washing the sump and coating the sides with polyurethane.

The supplemental RFI soil data from AOI F-7 did not identify conditions that are materially different from those described in the RFI Report (ENCORE, 2002b).

The supplemental RFI groundwater data from AOI F-7 indicates that a release has occurred to groundwater at AOI F-7. Consistent with the findings reported in the RFI Report (ENCORE, 2002b), 1,1-dichloroethene and tetrachloroethene concentrations were found to exceed the IDWC and RDWC. Based on the groundwater results, AOI F-7 is further discussed in the Risk Evaluation presented in Section 5. Groundwater analytical results for MWM7-03 provide an appropriate upgradient boundary for 1,1-dichloroethene and tetrachloroethene concentrations in groundwater at AOI F-7 to support the CA750 determination.

Table 1-1 presents a summary of the data, conclusions, and proposed activity for this AOI.

4.1.2 Former Paint Sludge Storage Area (AOI F-8)

AOI F-8 consists of a former paint sludge and storage area located north of the paint and mixing building (Figure 1-5). The area previously managed solid wastes and was also identified as SWMU 8 in the Fiero PA/VSI Report (PRC, 1992); therefore, the area is considered an AOI.

As part of the RFI activities, the former paint sludge storage area, currently used as a salt pad for storing road salt, was cleaned and inspected in July 2001. The salt pad appeared to be intact with some minor cracking. The salt pad is surrounded by a concrete trench system that leads to a sump, which is located on the south side of the pad. The sump was black-stained at the bottom and had a 4-inch pipe on the south side. The concrete sump did not appear to have been a solid pour, thus resulting in poor contact between pours. Several cracks were observed in the concrete pad, some of which had openings of up to two millimeters. One monitoring well was installed, from which soil samples and groundwater samples were collected during the original RFI. Soil and groundwater samples were submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics.

4.1.2.1 Scope and Results

The scope of the supplemental field investigations at AOI F-8 involved collection of a soil sample from beneath the sump to support decommissioning the sump as discussed in Section 2.1.2.

The following is a summary of the supplemental RFI soil sampling activities conducted at AOI F-8. Samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

Soil Sample

The subsurface investigation in AOI F-8 included collecting a soil sample (SF8-01) from directly below the middle of the sump. Approximately three inches of concrete was cored and the soil sample was collected from the two-foot interval directly below the concrete using a hand auger. The location of the soil boring is shown on Figure 4-6. The sample was submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics.

The number of locations from which supplemental RFI soil samples were collected and the number of samples analyzed for each analyte group is as follows:

Medium	Locations	VOCs	SVOCs	PCBs	Inorganics
Soil	1	1	1	1	1

A summary of the analytical data for all AOI F-8 soil samples collected during the RFI is shown in Table 4-4. The analytical data for the supplemental RFI samples is provided in Appendix C. Complete documentation of the data review and validation of the supplemental RFI samples area provided in Appendix D.

4.1.2.2 Discussion of Results

The concentration of constituents detected in the soil sample was compared with the screening criteria as discussed in Section 4.0.

Soil Sample

The concentrations of constituents detected in the soil sample collected from under the sump at AOI F-8 during the supplemental RFI activities did not exceed the screening criteria. Figure 4-6 provides a summary of the sample location and analytical results. Also, no concentration in any of the soil samples collected during previous RFI activities is higher than screening criteria (ENCORE, 2002b).

4.1.2.3 Conclusions

The supplemental RFI soil data from AOI F-8 does not indicate that a release has occurred at AOI F-8, confirming the conclusions of the RFI Report (ENCORE, 2002b). Concentrations detected in soil do not exceed screening criteria. No further action (NFA) or investigation is warranted for this area.

Table 1-1 presents a summary of the data and conclusions for this AOI.

4.1.3 Oil/Solvent Catch Basin (AOI F-15)

AOI F-15 is a catch basin that is located in the south loading dock at Fiero Plant 17 (Figure 1-5). Petroleum-like odors were reported emanating from the catch basin. The oil/solvent catch basin was cleaned and inspected during the original RFI activities. Materials within the catch basin included oil and sludge that contained chlorinated solvents. The catch basin showed evidence of pitting and cracking and was stained throughout. Two soil borings and one monitoring well were installed, from which soil samples and groundwater samples were collected during the original RFI. Soil and groundwater samples were submitted for laboratory analysis for select analytes, which included VOCs, SVOCs, PCBs, and inorganics.

4.1.3.1 Scope and Results

The scope of the supplemental field investigations at AOI F-15 involved collection of soil samples to determine if VOCs from the oil/solvent catch basin impacted soils to the north, east, and west of the catch basin as requested by the U.S. EPA as part of the CA725 determination (RFI Work Plan Addendum No. 8 (ENCORE, 2003e)).

The following is a summary of the supplemental RFI soil sampling activities completed at AOI F-15. Samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

Soil Samples

Three soil borings (BF15-03 through BF15-05) were completed at AOI F-15 as proposed in RFI Work Plan Addendum No. 8 (ENCORE, 2003e). Soil boring locations are shown on Figure 4-6. An additional sample was collected due to an elevated PID reading from BF15-05 (12 to 13 feet bgs). The samples were submitted for laboratory analysis for VOCs. Soil boring logs are provided in Appendix B.

The number of locations from which supplemental RFI soil samples were collected and the number of samples analyzed for each analyte group is as follows:

Medium	Locations	VOCs
Soil	3	10

Summaries of the analytical data for all AOI F-15 soil samples collected during the RFI are shown in Table 4-5. The analytical data for the supplemental RFI samples are provided in Appendix C. Complete documentation of the data review and validation of the supplemental RFI samples are provided in Appendix D.

4.1.3.2 Discussion of Results

The concentrations of constituents detected in the soil boring samples were compared with the screening criteria as discussed in Section 4.0.

Soil Samples

The concentrations of constituents detected in the soil boring samples collected from AOI F-15 during the supplemental RFI activities do not exceed the screening criteria. Figure 4-6 provides a summary of sample locations and analytical results for soil. As discussed in the RFI Report (ENCORE, 2002b), tetrachloroethene and 1,1-dichloroethene were detected at concentrations in soil exceeding screening criteria.

4.1.3.3 Conclusions

The supplemental RFI soil data from AOI F-15 confirm that the soil samples collected during the original RFI activities have adequately characterized the extent of affected soil at AOI F-15. The additional soil borings delineate VOC impacted soils at AOI F-15 to the north, east and west of the catch basin, satisfying the intent of the CA725 determination. Based on the RFI soil results, AOI F-15 is further discussed in the Risk Evaluation presented in Section 5.

Table 1-1 presents a summary of the data and conclusions for this AOI.

4.2 Demolition Area (DA)

This Section summarizes the investigations and results completed at four DA AOIs during the supplemental RFI activities.

4.2.1 West Yard (AOI W-1)

AOI W-1 consists of the West Yard, an area of approximately 20 acres located in the southwest corner of the DA (Figure 1-5). LNAPL Area No. 1 is located in AOI W-1. During the original RFI investigation activities, 11 soil borings were completed and 11 monitoring wells were installed. Soil, groundwater, and LNAPL samples were submitted for laboratory analysis for select analytes, which included VOCs, SVOCs, PCBs, inorganics, hexavalent chromium and/or dioxins.

Potential impacts, in the vicinity of AOI W-1, were observed during the implementation of a geotechnical borehole investigation conducted by McDowell & Associates. The geotechnical investigation consisted of the completion of 36 soil borings located within the vicinity of the footprint of the proposed industrial redevelopment area. This footprint includes areas within AOIs W-1, W-8, and W-9. During this geotechnical investigation odors, stained soil, and/or elevated PID readings were observed in 16 of the 36 soil borings. The additional investigations (RFI (Work Plan Addendum No. 9 (ENCORE, 2003f)) related to the area of industrial redevelopment to further assess the geotechnical observations for AOI W-8 and W-9 are discussed in Sections 4.2.2 and 4.2.3, respectively.

4.2.1.1 Scope and Results

The scope of the supplemental field investigations at AOI W-1 involved the collection of second round groundwater samples to fulfill the groundwater sampling requirements discussed in Section 2.1.1, and soil samples to investigate conditions observed during the geotechnical investigation (as described in RFI Work Plan Addendum No. 9 (ENCORE, 2003f)).

The following is a summary of the supplemental RFI sampling activities completed for each medium at AOI W-1. Samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

Soil Samples

One soil boring was completed during the installation of monitoring well MWW1-06 on the southwest corner of Montcalm Avenue and Saginaw Street to provide a downgradient groundwater monitoring location to MWW1-04. Two soil samples were collected and submitted for laboratory analysis for VOCs, SVOCs, PCBs and inorganics.

As proposed in RFI Work Plan Addendum No. 9 (ENCORE, 2003f), one soil boring (BW1-11a) was completed in the vicinity of geotechnical soil boring location B-28 where odors and staining was observed. The samples were submitted for analysis for VOCs, SVOCs, PCBs, and inorganics. The well and boring locations are shown on Figures 4-8a and 4-8b. The soil boring logs for MWW1-06 and BW1-11a are provided in Appendix B.

Groundwater Samples

Groundwater samples were collected from three monitoring wells (DWD13, MWW1-04 and MWW1-05) to fulfill groundwater sampling requirements as discussed in Section 2.1.1. Monitoring well locations are shown on Figure 4-9. Monitoring well MWW1-05 was sampled for the first time in August 2002 to delineate PCB impacts from LNAPL Area No. 1. The sample collected from DWD13 was submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics. The sampled collected from MWW1-04 was sampled only for PCBs.

Groundwater samples were collected from well MWW1-06 during the two semi-annual groundwater monitoring events and the results were discussed in the associated summary reports.

A groundwater sample was collected from MWW1-04, in November 2003 to verify groundwater quality with respect to methylene chloride detected during the May 2003 semi-annual groundwater sampling event. The November 2003 sample was analyzed for methylene chloride only.

The number of locations from which supplemental RFI samples were collected for each medium and the number of samples analyzed for each analyte group are as follows:

Medium	Locations	VOCs	SVOCs	PCBs	Inorganics
Soil	2	4	4	4	4
Shallow Groundwater	2	1*	0	2	0
Deep Groundwater	1	1	1	1	1

*Methylene chloride only.

Summaries of the analytical data for all AOI W-1 soil and groundwater (shallow and deep) samples collected during the RFI are shown in Tables 4-6, 4-7a and 4-7b, respectively. The analytical data for the supplemental RFI samples are provided in Appendix C. Complete documentation of the data review and validation of the supplemental RFI samples are provided in Appendix D.

4.2.1.2 Discussion of Results

The concentrations of constituents detected in soil were compared with the screening criteria as discussed in Section 4.0.

Soil Boring Samples

The concentrations of constituents detected in the soil boring BW1-11a samples collected from AOI W-1 exceed the screening criteria for total chromium and manganese. The concentrations of constituents detected in MWW1-06 do not exceed the industrial screening criteria, although arsenic was detected at concentration above the Residential Direct Contact Criteria (RDC).

Total chromium exceeds the Industrial Particulate Soil Inhalation Criteria (IPSIC) of 240 mg/kg for hexavalent chromium with a concentration of 340 mg/kg in the 6 to 8foot interval. Manganese exceeds the IPSIC of 1,500 mg/kg in the 6 to 8 foot interval (7,260 mg/kg) and the 0 to 2 foot interval (1,750 mg/kg). The residential screening criteria are relevant at MWW1-06 as the well is located in an area off-Site. Although the arsenic concentrations detected in the 0 to 2 (9 mg/kg) and 2 to 4 (8.2 mg/kg) foot intervals exceed the RDC, both concentrations are below the Site-specific

background concentration for arsenic in soils (13.2 mg/kg). As discussed in the RFI Report (ENCORE, 2002b), several other constituents have concentrations in soil that are higher than the screening criteria.

Figures 4-8a and 4-8b provide a summary of the sample location and analytical results for soil.

Groundwater Samples

The concentrations of constituents detected in the groundwater samples collected from AOI W-1 exceed the screening criteria for PCBs and methylene chloride. Total PCBs concentration at MWW1-04 was detected at a concentration of 0.00051 mg/L, which marginally exceeds the IDWC and RDWC of 0.0005 mg/L. Downgradient monitoring well MWW1-06 delineates the PCB impacts in groundwater, as PCBs have not been detected at concentrations exceeding screening criteria at this well.

As presented in the May 2003 Semi-Annual Groundwater Monitoring Event Summary Report (ENCORE, 2003i) methylene chloride was detected in monitoring well MWW1-04. The concentration of methylene chloride was detected at 0.007 mg/L, which exceeds the IDWC and RDWC of 0.005 mg/L. Monitoring well MWW1-04 has been sampled three times for VOCs (including methylene chloride). Methylene chloride has not been detected above reporting limits (0.001 mg/L) in the two previous sampling rounds. Methylene chloride is a common laboratory contaminant, and a small amount of methylene chloride was detected in the laboratory blank associated with the May 2003 sample from MWW1-04. The methylene chloride concentration from the confirmation sample collected in November 2003 from MWW1-04 was non-detect.

Figure 4-9 provides a summary of sample locations and analytical results for groundwater.

4.2.1.3 Conclusions

The supplemental RFI soil and groundwater data from AOI W-1 confirm similar impacts discussed in the RFI Report (ENCORE, 2002b). Concentrations of manganese and total chromium in soil samples exceed the IPSIC and PCBs in groundwater exceed the IDWC and RDWC. Concentrations of arsenic in soil exceed the RDC but are below the Site-specific background concentration at a location just southwest of the Site. Based on these results, AOI W-1 is further discussed in the Risk Evaluation presented in Section 5.

Table 1-1 presents a summary of the data, conclusions, and proposed activity for this AOI.

4.2.2 Former Plant 9 Basement (AOI W-8)

AOI W-8 consists of 12 ASTs formerly located in the Plant 9 basement (Figure 1-5). Kerosene, coolants, and other unknown materials were historically stored in the ASTs. All tanks have been removed and Plant 9 has been decommissioned and demolished. No documentation on the closure of the ASTs is available. Kerosene-like odors have historically been reported in the storm sewers in this area. AOI W-8 is also part of the existing investigation at LNAPL Area No. 3.

During the original RFI investigation activities at AOI W-8 12 monitoring wells and two soil borings were completed, 12 monitoring wells were installed, and one LNAPL sample and eight surface soil samples were collected. Soil, groundwater and LNAPL samples were submitted for laboratory analysis for select analytes, which included VOCs, SVOCs, PCBs, inorganics, hexavalent chromium, and/or dioxins.

4.2.2.1 Scope and Results

The scope of the supplemental field investigations at AOI W-8 involved collection of second round groundwater samples to fulfill groundwater sampling requirements discussed in Section 2.1.1 and soil samples to investigate field observations made during completion of geotechnical soil borings (RFI Work Plan Addendum No. 9 (ENCORE, 2003f)) including an LNAPL investigation. Additional monitoring and recovery wells and a soil boring were installed to further evaluate conditions at LNAPL Area No. 3.

The following is a summary of the supplemental RFI sampling activities completed for each medium at AOI W-8. Samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

Soil Samples

A soil boring associated with the installation of monitoring well MWW8-13, was completed adjacent to a geotechnical soil boring location where the potential presence of LNAPL was observed during drilling activities as proposed in RFI Work Plan Addendum No. 9 (ENCORE, 2003f). The location of MWW8-13 is adjacent to a storm sewer line. Four additional soil borings (BW8-03 through BW8-06) were completed and samples were collected to further investigate the odor, staining, and/or elevated PID readings observed during the geotechnical investigation as proposed in RFI Work Plan Addendum No. 9 (ENCORE, 2003f). Additional samples were collected from BW8-03 (3 to 5 feet bgs interval) and BW8-06 (2 to 4 feet bgs interval) due to staining and elevated PID readings, respectively. The samples were submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics.

Four additional soil borings (BW8-07 through BW8-10) were completed along the storm sewers, which pass through AOI W-8 to evaluate the condition of the soil and the extent presence of LNAPL using an ultraviolet light. Samples were not collected for laboratory analysis from these borings consistent with the RFI Work Plan Addendum No. 9 (ENCORE, 2003f).

Seven soil borings (SBRWW8-01, RWW8-01, RWW8-02, MWW8-14 through MWW8-16, and SBMWW8-17) associated with the installation of two 6-inch recovery wells and three monitoring wells were completed within AOI W-8 to evaluate LNAPL conditions and collect additional information for the determination of corrective measures at LNAPL Area No. 3. Samples were not collected for laboratory analysis from these borings.

Figure 4-10 presents the locations of soil borings and recovery wells in AOI W-8. Soil boring logs and well construction diagrams are provided in Appendix B.

Groundwater Samples

One groundwater sample was collected from monitoring well (MWW8-13) where the presence of LNAPL was suspected during the geotechnical drilling activities as proposed in RFI Work Plan Addendum No. 9 (ENCORE, 2003f). The location of the well is shown on Figure 4-11. The sample was submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics.

Groundwater samples were collected from four additional monitoring wells (MWW8-08, MWW8-10, MWW8-11, and MWW8-12), to fulfill the groundwater sampling requirement as discussed in Section 2.1.1. The samples were submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics.

The number of locations from which supplemental RFI samples were collected for each medium and the number of samples analyzed for each analyte group are as follows:

Medium	Locations	VOCs	SVOCs	PCBs	Inorganics
Soil	5	13	13	13	13
Groundwater	5	5	5	5	5

Summaries of the analytical data for all AOI W-8 soil and groundwater samples collected during the RFI are shown in Tables 4-8 and 4-9, respectively. The analytical data for the supplemental RFI samples are provided in Appendix C. Complete documentation of the data review and validation of the supplemental RFI samples are provided in Appendix D.

4.2.2.2 Discussion of Results

The concentrations of constituents detected in soil and groundwater were compared with the screening criteria as discussed in Section 4.0.

Soil Samples

The concentration of constituents detected in soil boring samples collected from AOI W-8 exceed screening criteria for arsenic, manganese, total chromium, and lead. Arsenic was detected in the 6 to 8 foot interval from BW8-06 at a concentration (54 mg/kg), which exceed the Industrial Direct Contact Criteria (IDC) of 37 m/kg. Manganese was detected at concentrations exceeding the IPSIC (1,500 mg/kg) in the 0 to 2 feet bgs interval from BW8-03 and BW8-06 (1,660 and 1,990 mg/kg, respectively) and the 6 to 8 foot interval at BW8-06 (1,600 mg/kg). Total chromium was detected at concentrations exceeding the IPSIC for hexavalent chromium (240 mg/kg) at BW8-06 in the 0 to 2 foot (726 mg/kg) and the 2 to 4foot (363 mg/kg) intervals. Lead was detected at BW8-06 (2 to 4 and 6 to 8 foot intervals) at concentrations (2,820 and 8,440 mg/kg, respectively), which exceed the IDC of 900 mg/kg. Figure 4-10 provides a summary of sample locations and analytical results for soil. Chromium (total) and manganese also have concentrations in samples collected at this AOI during the original RFI activities that are higher than the screening criteria.

LNAPL was not observed in soil samples screened using an ultraviolet light.

Groundwater Samples

The concentrations of constituents detected in the groundwater samples collected from AOI W-8 exceed the screening criteria for nine inorganics and two SVOCs.

Manganese was detected in two samples from MWW8-08 and MWW8-11 (5.41 and 3.57 mg/L, respectively) exceeding the IDWC and RDWC (2.5 and 0.86 mg/L). Vanadium was detected in two samples (MWW8-08 and MWW8-12) at concentrations (0.239 and 0.0119 mg/L, respectively) exceeding RDWC of 0.0045 mg/L for both samples and IDWC of 0.062 mg/L for the MWW8-08 sample. Seven additional inorganics were detected at MWW8-08 that exceed screening criteria: arsenic (0.0849 mg/L) exceeds the IDWC and RDWC of 0.05 mg/L; beryllium (0.0054 mg/L) exceeds the IDWC and RDWC of 0.004 mg/L; lead (0.122 mg/L) exceeds the IDWC and RDWC of 0.004 mg/L; total chromium (0.295 mg/L) exceeds the IDWC and RDWC of 0.1 mg/L; cobalt (0.0879 mg/L) exceeds the RDWC of 0.04 mg/L; nickel (0.307 mg/L) exceeds the IDWC and RDWC of 0.1 mg/L; and thallium (0.003 mg/L) exceeds the IDWC and RDWC of 0.002 mg/L. Antimony was also detected at concentrations higher than the screening criteria at this AOI during the original RFI activities.

The groundwater sample collected from MWW8-13 had two SVOC concentrations that exceed screening criteria. 2,4-Dimethylphenol (2.5 mg/L), and total methylphenols (4.6 mg/L) exceed the

IDWC and RDWC of 1.0 and 0.37 mg/L, respectively. LNAPL was not observed in MWW8-13. PCBs and dioxins were also detected at concentrations higher than the screening criteria during the original RFI activities.

Figure 4-11 provides a summary of sample locations and analytical results for groundwater.

4.2.2.3 Conclusions

The supplemental RFI soil and groundwater data from AOI W-8 indicate that a release has occurred to soil and groundwater at AOI W-8. Concentrations of arsenic, manganese, chromium (total) and lead in soil samples exceed screening criteria. Groundwater concentrations of inorganics and SVOCs exceed IDWC and RDWC. Based on these results, AOI W-8 is further discussed in the Risk Evaluation presented in Section 5.

LNAPL was not observed in MWW8-13 or in soil samples screened for using an ultraviolet light completed as part of RFI Work Plan Addendum No. 9 (ENCORE, 2003f).

Table 1-1 presents a summary of the data, conclusions, and proposed activity for this AOI.

4.2.3 Former Central Foundry (AOI W-9)

AOI W-9 consists of the Former Central Foundry (Plant 6) located in the southeast corner of the DA (Figure 1-5). Historically, PCBs were utilized in hydraulic and transformer fluids at the Foundry. A former 20,000 - gallon UST containing gasoline was also located at the Foundry. The Former Central Foundry (Plant 6) has been decommissioned and demolished. Previous remedial activities addressed the former resin spill and the presence of PCBs. However, documentation does not exist for closure of the 20,000 - gallon UST.

During the original RFI investigation activities, two soil borings were completed, five monitoring wells were installed, and surface soil samples were collected from 13 locations in AOI W-9. Soil samples were submitted for laboratory analysis of select analytes, which included VOCs, SVOCs, PCBs, inorganics, cyanide, hexavalent chromium and/or dioxins.

4.2.3.1 Scope and Results

The scope of the supplemental field investigation at AOI W-9 involved collection of soil and groundwater to investigate the soil impacts observed during a recent geotechnical investigation and to delineate the LNAPL observed at AOI W-9 (RFI Work Plan Addendum No. 9 (ENCORE, 2003f)).

The following is a summary of the supplemental RFI sampling activities completed for each medium at AOI W-9. Samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

Soil Samples

A total of eighteen soil borings, seven associated with installations of monitoring wells, were completed in AOI W-9 as proposed in RFI Work Plan Addendum No. 9 (ENCORE, 2003f). Boring and well locations are shown on Figure 4-12. Soil boring logs and well construction diagrams are provided in Appendix B.

Seven of the soil borings (BW9-03 through BW9-06, BW9-11, BW9-12, and BW9-16) were completed to further investigate the general Site conditions at the geotechnical soil boring locations where odors, stained soils, and/or elevated PID readings were observed. An additional sample was collected from BW9-03 (3 to 5 feet bgs interval) due to staining. These samples were submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics.

Two monitoring wells (MWW9-01 and MWW9-02) were installed, and four soil borings (BW9-07 through BW9-10) were completed to determine if LNAPL was present near the storm sewer. Soil samples were collected during the installation of MWW9-01 and MWW9-02 and submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics. The four soil borings (BW9-07 through BW9-10) installed were not sampled for laboratory analysis but were screened for LNAPL using an ultraviolet light. LNAPL was visually observed in the soil boring and a sheen was observed in MWW9-02. To delineate LNAPL impacts in this area four additional monitoring wells (MWW9-03, and MWW9-05 through MWW9-07), and one temporary well (TWW9-01) were installed, and two soil borings (BW9-14 and BW9-15) were completed. No soil samples were collected from these wells or borings.

Groundwater Samples

Groundwater samples were collected from four monitoring wells (MWW9-01, MWW9-03, MWW9-06, and TWW9-01) installed during work proposed in RFI Work Plan Addendum No. 9 (ENCORE, 2003f). Well locations are shown on Figure 4-11. A groundwater sample was not collected from MWW9-02 due the presence of an LNAPL sheen, or from MWW9-05 and MWW9-07 because natural recharge at these wells did not occur. The samples were submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics.

A groundwater sample was collected from DWD12, located within AOI W-9, in October 2003 to verify groundwater quality with respect to methylene chloride detected during the May 2003 semi-annual groundwater sampling event. The October sample was analyzed for methylene chloride only.

LNAPL Sample

An LNAPL sheen was observed in MWW9-02. A sample was collected in November 2003 for fingerprint and chemical (VOCs, SVOC, PCBs, and inorganics) analysis. Additional wells were installed to delineate the presence of LNAPL (MWW9-03 and MWW9-05 through MWW9-07).

The number of locations from which supplemental RFI samples were collected for each medium and the number of samples analyzed for each analyte group are as follows:

Medium	Locations	VOCs	SVOCs	PCBs	Inorganics
Soil	9	23	23	23	23
Shallow Groundwater	4	4	4	4	4
Deep Groundwater	1	1*	0	0	0
LNAPL	1	1	1	1	1

*Methylene chloride only.

Summaries of the analytical data for all AOI W-9 soil and groundwater (shallow and deep) samples collected during the RFI are shown in Tables 4-10, 4-11a, and 4-11b, respectively. The analytical data for the supplemental RFI samples are provided in Appendix C. Complete documentation of the data review and validation of the supplemental RFI samples are provided in Appendix D.

4.2.3.2 Discussion of Results

The concentrations of constituents detected in soil were compared with the screening criteria as discussed in Section 4.0.

Soil Samples

The concentrations of constituents detected in the soil boring samples collected from AOI W-9 exceed the screening criteria for manganese. Soil boring samples collected from BW9-03 (3,680 mg/kg, 0 to 2-foot interval) and BW9-11 (1,690 mg/kg, 5 to 7-foot interval) exceed the IPSIC of 1,500 mg/kg. Figure 4-12 provides a summary of sample locations and analytical results for soil. Benzo(a)pyrene, PCBs, chromium also had concentrations in samples collected during the original RFI activities that are higher than the screening criteria.

Groundwater Samples

The concentrations of constituents detected in the groundwater samples collected from AOI W-9 exceed the screening criteria for lead. Lead was detected at a concentration of 0.0391 mg/L at MWW9-01, which exceeds the IDWC and RDWC of 0.004 mg/L. Figure 4-11 provides a summary of sample locations and analytical results for groundwater.

As presented in the May 2003 Semi-Annual Groundwater Monitoring Event Summary Report (ENCORE, 2003i) methylene chloride was detected in deep monitoring well DWD12. The concentration of methylene chloride was detected at 0.018 mg/L, which exceeds the IDWC and RDWC of 0.005 mg/L. Monitoring well DWD12 has been sampled five times since it was installed. Methylene chloride has not been detected above reporting limits (0.001 mg/L) in the three previous sampling rounds. Methylene chloride is a common laboratory contaminant, and a small amount of methylene chloride was detected in the laboratory blank associated with the May 2003 sample from DWD12. The methylene chloride concentration from the confirmation sample collected in October 2003 from DWD12 was non-detect.

LNAPL Sample

During a groundwater level monitoring event conducted in October 2003 to evaluate groundwater flow conditions along the storm sewer that runs north/south through the DA, 0.25 feet of LNAPL was detected in MWW9-02. This area is now identified as LNAPL Area No. 6 and is delineated by existing AOI W-9 wells. The analytical results, from the LNAPL sample collected from MWW9-02 in November 2003 were not available at the time this Report was published. When these data become available, they will be evaluated and provided to the U.S. EPA under separate cover.

4.2.3.3 Conclusions

The supplemental RFI soil data from AOI W-9 indicate similar impacts as those presented for AOI W-9 in the RFI Report (ENCORE, 2002b). Concentrations of manganese in soil exceed the screening criteria for IPSIC. The supplemental RFI groundwater data indicates lead impacts to groundwater, not observed during the original RFI activities. Concentrations of lead in groundwater samples exceed screening criteria for IDWC and RDWC. Based on these results, AOI W-9 is further discussed in the Risk Evaluation presented in Section 5. LNAPL also has been identified to be present at AOI W-9.

Table 1-1 presents a summary of the data, conclusions, and proposed activity for the AOI.

4.2.4 Railroad Marshalling Area Drainage System (AOI W-10)

AOI W-10 consists of a Railroad Marshalling Area that extends the entire length of the western boundary of the West Yard (Figure 1-5). Historical operations at the Railroad Marshalling Area included the temporary storage of railcars loaded with scrap metal and grinding waste to be shipped off-Site. Waste oil from the waste metal chips drained out of the railcars and into the railway ballast/soil immediately beneath the tracks. As a result of the oily discharge, the Railroad Marshalling

Area Drainage System was installed in November 1972. The drainage system was designed to collect and covey the oily discharge from the railcars to the WWTP. The Railroad Marshalling Area Drainage System remains at the Site.

Twelve catch basins and a pit/tunnel structure in the Railroad Marshalling Area were cleaned and inspected. A black sludge and/or oily sheen were noted in most of the catch basins. Deterioration ranged from none observed to heavily deteriorated concrete and pipes. During the original RFI investigation activities, nine soil borings and six monitoring wells were completed. Soil, groundwater and LNAPL samples were submitted for laboratory analysis of select analytes, which included VOCs, SVOCs, PCBs, inorganics, and/or dioxins. LNAPL was observed in two wells installed during the RFI. This LNAPL area is identified as LNAPL Area No. 2.

4.2.4.1 Scope and Results

The scope of the supplemental field investigation at AOIW-10 involved collection of second round groundwater samples, to fulfill the groundwater sampling requirements discussed in Section 2.1.1.

The following is a summary of the supplemental RFI groundwater sampling activities conducted for groundwater at AOIW-10. The samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

Groundwater Samples

Groundwater samples were collected from four monitoring wells (MWW10-02 through MWW10-04 and MWW10-06). Groundwater samples were not collected from MWW10-01 and MWW10-05 due to the presence of LNAPL. Well locations are shown on Figure 4-9. The samples were submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics.

The number of locations from which supplemental RFI groundwater samples were collected and the number of samples analyzed for each analyte group is as follows:

Medium	Locations	VOCs	SVOCs	PCBs	Inorganics
Groundwater	4	4	4	4	4

Summaries of the analytical data for all AOIW-10 groundwater samples collected during the RFI are shown in Tables 4-12. The analytical data for the supplemental RFI samples are provided in Appendix C. Complete documentation of the data review and validation of the supplemental RFI samples are provided in Appendix D.

4.2.4.2 Discussion of Results

The concentrations of constituents detected in groundwater were compared with the screening criteria as discussed in Section 4.0.

Groundwater Samples

The concentrations of constituents detected in the groundwater samples collected during the supplemental RFI activities at AOI W-10 do not exceed the screening criteria. Figure 4-9 provides a summary of sample locations and analytical results for groundwater. These data show that bis(2-ethylhexyl)phthalate and PCBs, which had concentrations that were higher than the screening criteria at MW10-02 and MW10-04, respectively, no longer exceed the screening criteria.

4.2.4.3 Conclusions

The supplemental RFI groundwater data from AOI W-10 do not indicate the presence of any concentrations higher than the screening criteria, however, LNAPL is present at this AOI. As discussed in the RFI Report (ENCORE, 2002b), NFA or investigation for soil or groundwater is warranted for this area. The LNAPL will be addressed in the CMP.

Table 1-1 presents a summary of the data, conclusions, and proposed activity for the AOI.

4.2.5 Area of Industrial Redevelopment

GM has prepared an industrial redevelopment proposal for a large portion of the DA. This potential redevelopment area includes portions of AOIs W-1, W-8 and W-9. Table 4-13 provides a list of AOI W-1, W-8, and W-9 sampling locations within the planned extent of the proposed industrial redevelopment area. To evaluate potential exposures to workers by constituents in soil under this redevelopment scenario, the soil results from locations listed in Table 4-13 were grouped and evaluated as a single area identified as the Area of Industrial Redevelopment.

The analytical results for all of these locations have been discussed in the associated AOI Sections in this Report and the RFI Report (ENCORE, 2002b), therefore they will not be presented in this Section. Table 4-14 provides a summary of the soil analytical data from the locations listed in Table 4-13 compared against screening criteria. Groundwater results are evaluated in each AOI. As shown on Table 4-14, certain locations in the Area of Industrial Redevelopment have potentially significant releases to soil.

4.2.5.3 Conclusions

The RFI soil and groundwater data from the potential redevelopment area indicated constituents exist at concentrations exceeding screening criteria. LNAPL is also present in this area. Based on these results, the Area of Industrial Redevelopment is further discussed in the Risk Evaluation presented in Section 5.

Table 1-1 presents a summary of the data, conclusions, and proposed activity for the redevelopment area.

4.3 Metal Fabrication Division (MFD)

This Section summarizes the investigations and results completed at eight MFD AOIs during the supplemental RFI activities.

4.3.1 Wastewater Treatment Plant (WWTP) (AOI M-1)

AOI M-1 consists of the WWTP located west of Plants 5, 14, 23, and 56 (Figure 1-5). Historically, the WWTP has utilized up to 55 ASTs, which were related to the industrial wastewater treatment process (including system influent, system effluent, and materials used during treatment). The WWTP and two waste piles located within the WWTP area were identified as SWMUs by GM in the Certification of Potential Releases from Solid Waste Management Units (GM, 1986). This area is considered an AOI because of the type of materials stored and treated (industrial wastes), a history of documented releases, and its previous identification as a SWMU.

During the original RFI investigation activities, 11 soil borings were completed, three monitoring wells were installed and twelve surface soil samples were collected. Soil and groundwater samples were submitted for laboratory analysis of select analytes, which included VOCs, SVOCs, PCBs, inorganics, cyanide, and/or hexavalent chromium.

4.3.1.1 Scope and Results

The scope of the supplemental field investigations at AOI M-1 involved the collection of groundwater samples to support CA750 determinations (RFI Work Plan Addendum No. 8 (ENCORE, 2003e)).

The following is a summary of the supplemental RFI groundwater sampling activities completed at AOI M-1. Samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

Groundwater Samples

Groundwater samples were collected from five monitoring wells (MWM1-02 through MWM1-06) as proposed in the RFI Work Plan Addendum No. 8 (ENCORE, 2003e). Monitoring wells MWM1-04 and MWM1-06 were installed in locations side-gradient from existing monitoring well MWM1-03. Monitoring well MWM1-05 was installed as a downgradient well to MWM1-03. Well locations are shown on Figure 4-13. The samples were submitted for laboratory analysis for cyanide. Monitoring well MWM1-01 was dry during the sampling event; therefore, a groundwater sample could not be collected. Soil boring logs and monitoring wells construction diagrams are provided in Appendix B.

The number of locations from which supplemental RFI groundwater samples were collected and the number of samples analyzed for each analyte group is as follows:

Medium	Locations	Cyanide
Groundwater	5	5

Summaries of the analytical data for all AOI M-1 groundwater samples collected during the RFI are shown in Table 4-15. The analytical data for the supplemental RFI samples are provided in Appendix C. Complete documentation of the data review and validation of the supplemental RFI samples are provided in Appendix D.

4.3.1.2 Discussion of Results

The concentrations of constituents detected in groundwater were compared with the screening criteria as discussed in Section 4.0.

Groundwater Samples

The concentrations of constituents detected in the groundwater samples collected from AOI M-1 exceed the screening criteria for cyanide. Cyanide was detected in MWM1-03 and MWM1-06 (1.3 and 0.489 mg/L, respectively), which exceeds the IDWC and RDWC of 0.2 mg/L. Three new monitoring wells (MWM1-04 through MWM1-06) were installed at AOI M-1 to provide downgradient and side-gradient wells to bound the contaminant plume at AOI M-1 to support the CA750 determination. Based on these results, side-gradient to the south-west and downgradient have been bound since cyanide concentrations in the new wells did not exceed screening criteria. Although newly installed monitoring well MWM1-06 does not bound the contaminant plume in the north-east direction (side-gradient), MWM2-02 is located side-gradient from MWW1-06 and does not exhibit any exceedances of the screening criteria for cyanide. Therefore, MWM2-02 provides the remaining appropriate well to bound the contaminant plume to support the CA750 determination. Figure 4-13 provides a summary of sample locations and analytical results for groundwater.

4.3.1.3 Conclusions

The supplemental RFI groundwater data from AOI M-1 indicate that a release of cyanide has occurred to groundwater at AOI M-1. Concentrations of cyanide in supplemental RFI groundwater samples exceed screening criteria for IDWC and RDWC. Based on these results, AOI M-1 is further discussed in the Risk Evaluation presented in Section 5.

Groundwater analytical results for MWM1-04, MWM1-05 (supplemental RFI activities) and MWM2-02 (initial RFI activities, RFI Report, ENCORE, 2002b) provide appropriate downgradient and side-gradient boundaries for cyanide concentrations in groundwater at AOI M-1

Table 1-1 presents a summary of the data, conclusions, and proposed activity for this AOI.

4.3.2 Former Plating Operations Area (AOI M-2)

AOI M-2 consists of a Former Plating Operations Area located in the western portion of Plant 56 (old Plant 2), near Dock 34 (Figure 1-5). This area is considered an AOI because of the type of materials historically used in plating operations (metals, solvents, and acids). In addition, the plating pits showed evidence of corrosion (ENCORE, 2002b). This area also has six metal-lined mix tanks located below the concrete floor east of the plating pits.

During the original RFI investigation activities, 18 soil borings were completed and ten monitoring wells were installed at AOI M-2. Soil samples were submitted for laboratory analysis for select analytes, which included VOCs, SVOCs, PCBs, inorganics, cyanide and/or hexavalent chromium.

On August 28 and 29, 2002, groundwater levels and LNAPL measurements were recorded from all on-Site monitoring wells that were installed as part of the RFI. LNAPL was observed in two of the monitoring wells located within AOI M-2 (MWM2-04 and MWM2-06). The area of AOI M-2 where the LNAPL is located is directly beneath an active production area. The source of the LNAPL is currently not known, however, the migration of the LNAPL (and groundwater) appears to be at least partially influenced by the presence of a storm sewer located near the eastern edge of AOI M-2. A groundwater flow map is presented as Figure 3-5.

The investigation (RFI Work Plan Addendum No. 4 (ENCORE, 2003a)) was completed to delineate the LNAPL. The investigation focused on the storm sewer line to determine if the storm sewer is influencing the groundwater flow. Due to elevated levels of dissolved chlorinated organic compounds observed in monitoring wells MWM2-04, MWM2-06 and MWM2-07, additional monitoring wells were

installed in the shallow water bearing unit as part of the RFI Work Plan Addendum No. 4 (ENCORE, 2003a).

4.3.2.1 Scope and Results

The scope of the supplemental field investigations at AOI M-2 involved collection of soil and groundwater samples to assess potential LNAPL source areas (RFI Work Plan Addendum No. 4 (ENCORE, 2003a)), investigate elevated chlorinated organic compounds in groundwater (RFI Work Plan Addendum No. 4 (ENCORE, 2003a)), and fulfill the second round groundwater sampling requirements, as discussed in Section 2.1.1.

The following is a summary of the supplemental RFI sampling activities conducted for each medium at AOI M-2. Samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

LNAPL Samples

A LNAPL sample was collected from MWM2-06 and submitted for fingerprint and chemical (VOCs, SVOCs, PCBs, and inorganics) analysis.

Soil Samples

RFI Work Plan Addendum No. 4 (ENCORE, 2003a) proposed the installation of 18 additional monitoring wells to delineate LNAPL observed at AOI M-2 and investigate the potential for dense non-aqueous phase liquid (DNAPL) due to elevated chlorinated organics in groundwater samples previously collected from AOI M-2. Only nine of the proposed 18 monitoring wells were installed in a phased approach (Figure 4-14). The monitoring wells were completed initially in areas where LNAPL was detected and then proceeded upgradient, side-gradient, and downgradient (with respect to groundwater flow or sewer flow direction) until LNAPL was no longer observed.

Of the nine monitoring wells installed, three were set to straddle the water table (water table well) and six were set at the base of the first water-bearing unit (shallow well). Three nested pairs (water table and shallow wells) were installed and three individual wells were installed at locations where the saturated zone was less than 8 feet thick (MWM2-15, MWM2-16, MWM2-19).

Soil samples were only collected from one of each nested monitoring well pair. Samples were collected from MWM2-15 through MWM2-17, MWM2-19, and MWM2-22. Sampling locations are shown on Figure 4-14. Samples were submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics. Soil boring logs and well construction diagrams are provided in Appendix B.

Groundwater Samples

Groundwater samples were collected from fifteen monitoring wells (MWM2-01 through MWM2-05, MWM2-07, MWM2-15 through MWM2-20, and MWM2-22 through MWM2-24) to evaluate the groundwater quality, to verify whether DNAPL was present, and to delineate the extent of LNAPL. Nine of the fifteen monitoring wells sampled were installed per the RFI Work Plan Addendum No. 4 (ENCORE, 2003a), the remaining were installed during the initial RFI activities. Monitoring well locations are shown on Figure 4-13. Samples were submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics.

The second round of groundwater samples were collected from seven AOI M-2 monitoring wells (MWM2-01 through MWM2-05, MWM2-07 and MWM2-08) during the supplemental field investigation activities, per the RFI Work Plan (ENCORE, 2001b). The samples were submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics.

The number of locations from which supplemental RFI samples were collected from each medium and the number of samples analyzed for each analyte group are as follows:

Medium	Locations	VOCs	SVOCs	PCBs	Inorganics
Soil	5	15	15	15	15
Groundwater	15	22	22	22	22
LNAPL	1	1	1	1	1

Summaries of the analytical data for all AOI M-2 soil, groundwater, and LNAPL samples collected during the RFI are shown in Tables 4-16, 4-17, and 4-18, respectively. The analytical data for the supplemental RFI samples are provided in Appendix C. Complete documentation of the data review and validation of the supplemental RFI samples are provided in Appendix D.

4.3.2.2 Discussion of Results

The concentrations of constituents detected in soil and groundwater were compared with the screening criteria as discussed in Section 4.0.

LNAPL Samples

Screening criteria (i.e., Part 201) are not available for LNAPL, therefore, constituents concentrations detected in LNAPL are discussed below without a comparison against screening criteria.

Thirteen VOCs were detected in the AOI M-2 LNAPL sample (1,1,1-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethene, 4-methyl-2-pentanone, chloroform, ethylbenzene, isopropylbenzene, methyl cyclohexane, methylene chloride, tetrachloroethene, toluene,

trichloroethene, and xylenes). Six SVOCs were detected in the AOI M-2 LNAPL sample (2-methylnaphthalene, anthracene, fluoranthene, fluorene, phenanthrene, and pyrene). Ten inorganics were detected in the AOI M-2 LNAPL sample (antimony, arsenic, chromium, cobalt, copper, cyanide, lead, nickel, silver, and zinc). PCBS were also detected in the LNAPL sample.

Further LNAPL discussion including fingerprint analysis and delineation is presented in Section 4.6.3.

Soil Samples

The concentrations of constituents detected in the soil boring samples collected from AOI M-2 during the supplemental RFI activities do not exceed the screening criteria. Figure 4-14 provides a summary of sample locations and analytical results for soil. Concentrations of 1,1-dichloroethene and manganese in samples collected during the original RFI activities that were higher than the screening criteria.

Groundwater Samples

Seven VOCs were detected at concentrations that exceed screening criteria. 1,1,1-Trichloroethane detected at MWM2-04 and MWM2-20 (0.6 and 0.24 mg/L, respectively) exceeds the IDWC, and RDWC of 0.2 mg/L. 1,1,2-Trichloroethane detected at MWM2-04 (0.02 mg/L) exceeds the IDWC and RDWC of 0.005 mg/L. 1,1-Dichloroethane detected at MWM2-04 (1.5 mg/L) exceeds the RDWC of 0.88 mg/L. 1,1-Dichloroethene detected at MWM2-04 and MWM2-20 (0.087 and 0.029 mg/L, respectively) exceeds the IDWC and RDWC of 0.007 mg/L. Tetrachloroethene detected at MWM2-20 (0.0075 mg/L) exceeds the IDWC and RDWC of 0.005 mg/L. Trichloroethene detected at MWM2-18, MWM2-22, and MWM2-24 (0.0055, 0.056, and 0.011 mg/L, respectively) exceeds the IDWC and RDWC of 0.005 mg/L. Vinyl chloride detected at MWM2-07, MWM2-18, and MWM2-23 (0.0035, 0.0034, and 0.0023 mg/L, respectively) exceeds the IDWC and RDWC of 0.002 mg/L.

The concentration of nickel in six of the monitoring wells (MWM2-07, MWM2-18, MWM2-19, and MWM2-22 to MWM2-24), ranges from 1.06 to 5.04 mg/L, which exceeds the IDWC and RDWC of 0.1 mg/L. Vanadium detected at MWM2-03 (0.0053 mg/L) exceeds the RDWC of 0.0045 mg/L.

The concentrations of constituents detected as part of the second round of groundwater sampling in AOI M-2 exceed the screening criteria for IDWC and RDWC. Bis(2-ethylhexyl)phthalate detected at MWM2-03 (0.024 mg/L) exceeds the IDWC and RDWC of 0.006 mg/L. 1,1,1-Trichloroethane detected at MWM2-04 (0.550 mg/L) exceeds the IDWC and RDWC of 0.2 mg/L. 1,1-Dichloroethane detected at MWM2-04 (1.9 mg/L) exceeds the RDWC of 0.88 mg/L. 1,1-Dichloroethene detected at MWM2-04 and MWM2-08 (0.091 and 0.0081 mg/L) exceeds the IDWC and RDWC of 0.007 mg/L. cis-1,2-Dichloroethene detected at MWM2-07 (0.09 mg/L) exceeds the IDWC and RDWC of 0.07 mg/L. Methylene chloride detected at MWM2-04 (0.024 mg/L) and MWM2-08 (0.0076 mg/L) exceeds the IDWC and RDWC of 0.005 mg/L. Vinyl chloride detected at MWM2-07 (0.027 mg/L)

exceeds the IDWC and RDWC of 0.002 mg/L. Vanadium detected at MWM2-03 (0.0054 mg/L) exceeds the RDWC of 0.0045 mg/L. Nickel detected at MWM2-04 and MWM2-07 (0.180 and 10.4 mg/L, respectively) exceeds the IDWC and RDWC of 0.1 mg/L. Cyanide detected at MWM2-05 (0.55 mg/L) exceeds the IDWC and RDWC of 0.2 mg/L.

Figure 4-13 provides a summary of sample locations and analytical results for groundwater.

4.3.2.3 Conclusions

The supplemental RFI soil data for AOI M-2 confirms that the soil samples collected during the original RFI activities adequately characterized the soil conditions at this AOI, and that no further soil investigation is necessary. The supplemental RFI groundwater data from AOI M-2 confirm that a release has occurred to groundwater at AOI M-2. Concentrations of VOCs and inorganics in groundwater samples exceed screening criteria for IDWC and RDWC. Based on the soil and groundwater results and the presence of LNAPL, AOI M-2 is further discussed in the Risk Evaluation presented in Section 5.

Table 1-1 presents a summary of the data, conclusions, and proposed activity for the AOI.

4.3.3 Plant 25 Former Gasoline UST and Current Gasoline Above Ground Storage Tank (AST) Location (AOI M-4)

AOI M-4 consists of two tanks (one former UST and one existing AST) adjacent to Plant 25 (formerly Plant 51) located in the northwest corner of the MFD portion of the Site (Figure 1-5). This area is considered an AOI because of a prior documented release from the former UST. There have been no documented releases from the existing AST, which is located within a secondary containment system. Remediation of the gasoline spill from the former UST was terminated in August 1987. Analytical data for groundwater indicate that concentrations of benzene and ethylbenzene are higher than screening criteria.

During the original RFI investigation activities one soil boring was completed and five monitoring wells were installed at AOI M-4. Soil and groundwater samples were submitted for laboratory analysis for VOCs and lead.

4.3.3.1 Scope and Results

The scope of the supplemental field investigations at AOI M-4 involved the collection of groundwater samples and to fulfill the second round groundwater sampling requirements as discussed in

Section 2.1.1, collect groundwater data for remedial design purposes, and to support the CA750 determination for benzene and ethylbenzene (RFI Work Plan Addenda Nos. 8 and 8A (ENCORE, 2003e,f).

The following is a summary of the supplemental RFI sampling activities completed for each medium at AOI M-4. Samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

Soil Samples

A soil boring was completed during the installation of MWM4-06 in the basement of Plant 25 as proposed in RFI Work Plan Addendum No. 8 (ENCORE, 2003e). Soil samples were not collected due to a shallow water table and the lack of staining, odors or elevated PID readings. Following installation, LNAPL was observed in this well, therefore this well could not be used as an appropriate downgradient monitoring point for the AOI M-4 contaminant plume to support the CA750 determination.

To provide an appropriate downgradient monitoring point for AOI M-4, RFI Work Plan Addendum No. 8A (ENCORE, 2003g) proposed the installation of MWM4-07, upgradient to MWM4-06 and downgradient MWM4-04. During the installation of monitoring well MWM4-07 a soil sample was submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics due the presence of faint petroleum like odors. The well location is within AOI M-16 therefore any soil impacts observed will be addressed and used to delineate AOI M-16, which is still under investigation (Figure 4-15). The soil boring logs and monitoring well construction diagrams are provided in Appendix B.

Groundwater Samples

A round of groundwater samples was collected during the supplemental field investigation activities for remedial design purposes, and to fulfill groundwater sampling requirements as discussed in Section 2.1.1. Samples were collected from five monitoring wells (MWM4-01 through MWM4-05). The samples were submitted for laboratory analysis for VOCs.

RFI Work Plan Addenda No. 8 (ENCORE, 2003e) proposed the installation of a downgradient monitoring well at AOI M-4 to support the CA750 determination. Following the installation of monitoring well MWM4-06, LNAPL was observed in the well, therefore no groundwater sample was collected. Monitoring well MWM4-06 is within the limits of AOI M-16. Due to the additional evidence of LNAPL observed during AOI M-16 investigations, monitoring well MWM4-06 will be further discussed in association with AOI M-16.

RFI Work Plan Addenda No. 8A (ENCORE, 2003g) proposed the installation of monitoring well MWM4-07 as a downgradient well for AOI M-4. Groundwater samples were collected from

six monitoring wells (MWM4-01 through MWM4-05, and MWM4-07) to evaluate groundwater quality downgradient from AOI M-4 to support the CA750 determination. The samples were submitted for laboratory analysis for benzene, toluene, ethylbenzene, and xylene (BTEX). Well locations are shown on Figure 4-16.

The number of locations from which supplemental RFI samples were collected from each medium during the supplemental RFI activities and the number of samples analyzed for each analyte group are as follows:

Medium	Locations	VOCs	SVOCs	PCBs	Inorganics
Soil	1	1	1	1	1
Groundwater	6	11*	0	0	0

*Six samples were for BTEX only.

Summaries of the validated analytical data for all AOI M-4 groundwater samples are shown in Table 4-19. The analytical data for the supplemental RFI samples are provided in Appendix C. Complete documentation of the data review and validation of the supplemental RFI samples are provided in Appendix D.

4.3.3.2 Discussion of Results

The concentrations of constituents detected in soil and groundwater were compared with the screening criteria as discussed in Section 4.0.

Soil Samples

The results from the soil sample collected during the installation of MWM4-07 were not validated in time for inclusion in this Report. Due to the location of MWM4-07, the soil samples will be associated with soil samples collected during the AOI M-16 delineation. AOI M-16 remains under investigation.

Groundwater Samples

The concentrations of constituents detected in the groundwater samples collected from AOI M-4 exceed the screening criteria for two VOCs at MWM4-04. The groundwater sample collected from MWM4-04 during the second round sampling event exceeds the IDWC and RDWC for benzene (of 0.005 mg/L) at a concentration of 0.62 mg/L. Benzene and ethylbenzene concentrations (0.98 and 1.5 mg/L, respectively) detected at MWM4-04 during the most recent sampling event (September 2003) exceed the IDWC and RDWC of 0.005 and 0.7 mg/L, respectively.

Monitoring well MWM4-07 was installed to provide an appropriate upgradient well to bound the contaminant plume at AOI M-4 to support the CA750 determination. This well did not exhibit

groundwater concentrations exceeding screening criteria, therefore it serves as an upgradient well for this AOI supporting the CA750 determination.

Figure 4-16 provides a summary of sample locations and analytical results for groundwater.

4.3.3.3 Conclusions

The supplemental RFI groundwater data from AOI M-4 indicate that a release has occurred to groundwater at AOI M-4. Concentrations of benzene and ethylbenzene in groundwater exceed screening criteria for IDWC and RDWC. The groundwater impacts have been bound and the CA750 determination requirements have been fulfilled. Based on these groundwater results, AOI M-4 is further discussed in the Risk Evaluation presented in Section 5.

Table 1-1 presents a summary of the data, conclusions, and proposed activity for the AOI.

4.3.4 Former A-2 Fill Area (AOI M-5)

AOI M-5 consists of the former A-2 fill area, which covers approximately 10 acres under Plants 25 and 33 (previously Plants 51 and 55), the east parking lot area in the MFD area, and under the SPO building (Plant 75) (Figure 1-5). The former landfill was identified as a SWMU by GM in the Certification of Potential Releases from Solid Waste Management Units (GM, 1986). This area is considered an AOI because of previous landfilling activities.

During the original RFI investigation activities, two soil borings were completed and one replacement monitoring well was installed. Soil and groundwater samples were submitted for laboratory analysis of select analytes, which included VOCs, PCBs, inorganics, and/or dioxins.

4.3.4.1 Scope and Results

The scope of the supplemental field investigations at AOI M-5 involved collection of groundwater samples to support the CA750 determination at AOI M-5 (RFI Work Plan Addendum No. 8 (ENCORE, 2003e)).

The following is a summary of the supplemental RFI groundwater sampling activities completed at AOI M-5. Samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed in presented in Table 1-1.

Groundwater Samples

Three additional monitoring wells were installed at AOI M-5 consistent with the RFI Work Plan Addendum No. 8 (ENCORE, 2003e). Groundwater samples were collected from five monitoring wells (MW-2-99, MWM5-01 through MWM5-04). The three new wells (MWM5-02 through MWM5-04) were installed side-gradient and downgradient from existing monitoring wells MW2-99 and MWM5-01. Monitoring well locations are shown on Figure 4-16. The samples were submitted for laboratory analysis for PCBs, barium and manganese. Soil boring logs and well construction diagrams are provided in Appendix B.

The number of locations from which supplemental RFI groundwater samples were collected and the number of samples analyzed for each analyte group are as follows:

Medium	Locations	PCBs	Barium	Manganese
Groundwater	5	5	5	5

Summaries of the analytical data for all AOI M-5 groundwater samples collected during the RFI are shown in Table 4-20. The analytical data for the supplemental RFI samples are provided in Appendix C. Complete documentation of the data review and validation of the supplemental RFI samples are provided in Appendix D.

4.3.4.2 Discussion of Results

The concentrations of constituents detected in groundwater were compared with the screening criteria as discussed in Section 4.0.

Groundwater Samples

The concentrations of constituents detected in the groundwater samples collected from AOI M-5 exceed the screening criteria for barium, manganese, and PCBs. Barium was detected at MWM5-01 with a concentration of 2.2 mg/L, which exceeds the IDWC and RDWC of 2.0 mg/L. Manganese was detected at MW-2-99 with a concentration of 1.16 mg/L, which exceeds RDWC of 0.86 mg/L. Total PCBs detected at MWM5-03 (0.00059 mg/L) exceeds the IDWC and RDWC of 0.0005 mg/L.

Monitoring wells MWM5-02 through MWM5-04 were installed to provide appropriate boundaries for the impacted groundwater to support the CA750 determination at this AOI. Monitoring wells MWM2-02 and MWM2-04 serve this purpose, since no groundwater screening criteria were exceeded at these wells. The PCB screening criteria at MWM5-03 was marginally exceeded. A second round of groundwater samples will be collected from AOI M-5 per RFI Work Plan Addendum No. 8 (ENCORE, 2003e). The groundwater concentrations will be monitored and will be reevaluated

following the next sampling round. Figure 4-16 provides a summary of sample locations and analytical results for groundwater.

4.3.4.3 Conclusions

The supplemental RFI groundwater data from AOI M-5 indicates the same constituents exceeding screening criteria as were reported in the RFI Report (ENCORE, 2002b). Inorganic constituents (barium and manganese) and PCBs have been found to exceed the IDWC and RDWC. Based on these results, AOI M-5 is further discussed evaluated in the Risk Evaluation presented in Section 5.

Groundwater analytical results for MWM5-02 and MWM5-04 provide side-gradient and downgradient boundaries to support the CA750 determination. Exceedances of the screening criteria at MWM5-03, installed as a second downgradient boundary well, do not currently provide a boundary for impacted groundwater at AOI M-5. Additional groundwater monitoring will be continued per the RFI Work Plan Addendum No. 8 (ENCORE, 2003e).

Table 1-1 presents a summary of the data, conclusions, and proposed activity for the AOI.

4.3.5 ELPO Building (AOI M-7)

AOI M-7 consists of the ELPO Building located east of Plants 5 and 8 and southwest of Plant 18 (Figure 1-5). The ELPO Building is considered an AOI because of poor sump integrity. In addition, numerous spills in the interior of the ELPO process area are evident and staining was observed on the outside wall of the ELPO Building.

During the original RFI investigation activities, three soil borings were completed and three monitoring wells were installed at AOI M-7. Soil and groundwater samples were collected and submitted for laboratory analysis of VOCs, SVOCs, PCBs, and inorganics.

4.3.5.1 Scope and Results

The scope of the supplemental field investigations at AOI M-7 involved collection of a soil sample to investigate soil below a four-inch diameter hole that was identified by Site personnel in the concrete floor in the ELPO Building.

An investigation was conducted on March 28, 2003, that consisted of a visual inspection of the subsurface conditions beneath the concrete floor at the hole location and collection of a soil sample beneath the hole.

Soil Sample

A soil sample was collected at BM7-04 immediately beneath the 4-inch diameter hole using a hand auger. The soil sample was collected from 0 to 1 foot into the soil surface (20 to 32 inches below the concrete floor). The boring location is shown on Figure 4-17. The sample was submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics.

The soil boring log is provided in Appendix B.

The following is a summary of the supplemental RFI soil sampling activities completed at AOI M-7. Samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

The number of locations from which supplemental RFI samples were collected from each medium and the number of samples analyzed for each analyte group are as follows:

Medium	Locations	VOCs	SVOCs	PCBs	Inorganics
Soil	1	1	1	1	1

A summary of the analytical data for all AOI M-7 soil samples is shown in Table 4-21. The analytical data for the supplemental RFI sample is provided in Appendix C. Complete documentation of the data review and validation of the supplemental RFI samples are provided in Appendix D.

4.3.5.2 Discussion of Results

The concentrations of constituents detected in the soil were compared with the MDEQ screening criteria as discussed in Section 4.0.

Soil Samples

The concentrations of constituents detected in the soil boring sample collected from AOI M-7 during the supplemental RFI activities do not exceed the screening criteria. Figure 4-17 provides a summary of sample locations and analytical results for soil. Also, no concentrations detected in the soil samples collected during the original RFI activities were higher than the screening criteria.

The visual inspection of the subsurface conditions beneath the hole indicated that a void space was present immediately beneath the concrete floor. Soil was present at approximately 20 inches beneath the concrete floor. The concrete floor is six inches thick. Using a hand held mirror to inspect the areal extent of the void space revealed that the void space extended in every direction until a concrete wall was visible. The concrete walls were observed five feet to the east of the hole, 10 feet to the west,

25 feet to the north, and 50 feet to the south (distances are approximate based on visual observation). The soil surface remained approximately 20 to 24 inches beneath the concrete floor in every direction. Wood debris and a 4-inch diameter pipe were observed in the void space between the concrete floor and the soil surface. The 4-inch diameter pipe appeared to be in good condition. It is not known if the pipe is active.

The concrete walls enclosed the void space completely in every direction, except along the west wall near the southwest corner of the void area. Along the west wall, the soil surface fell to a depth of approximately 30 inches below the concrete floor, and the concrete wall extended from the concrete floor to a depth of approximately 24 inches below the concrete floor, resulting in approximately 6 inches of void space. Nothing could be observed on the western side of this wall.

4.3.5.3 Conclusions

The supplemental RFI soil data from AOI M-7 confirms the findings of the RFI Report (ENCORE, 2002b) that indicate a release has not occurred at AOI M-7. Concentrations detected in soil do not exceed screening criteria. NFA or investigation is warranted for this area.

Table 1-1 presents a summary of the data and conclusions for this AOI.

4.3.6 Plant 11 Heat Treat Oil Storage Area (AOI M-9)

AOI M-9 consists of a four former ASTs located near the eastern wall of Plant 11, which are contained inside a floor pit with a sump that discharges to the WWTP (Figure 1-5). The area is considered an AOI because of the type and quantity of oils and coolant materials historically stored in the ASTs.

GM removed the ASTs from this AOI in August, 2002 as part of abandonment activities. The sump is scheduled to be abandoned and the area converted to a non-hazardous storage area. Seven pits were discovered beneath the ASTs after they were removed. These pits were inspected on September 6, 2002. The inspection revealed that all the pits were lined with a rubber coating and showed no signs of being compromised. During the RFI investigation activities, one soil boring was completed and two monitoring wells were installed at AOI M-9. Soil and groundwater samples were collected and submitted for laboratory analysis of VOCs, SVOCs, PCBs, and inorganics.

4.3.6.1 Scope and Results

The scope of the supplemental field investigations at AOI M-9 involved collection of soil samples from beneath the sump to support decommissioning activities as discussed in Section 2.1.2 and

groundwater samples to fulfill the second round groundwater sampling requirements as presented in Section 2.1.1.

The following is a summary of the soil sampling activities completed at AOI M-9. The sample was collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

Soil Samples

One surficial soil sample (0 to 2 foot interval) was collected from the south end of the sump (SM9-01). The location of the sample is shown on Figure 4-17. The sample was submitted for laboratory analysis for VOCs, SVOCs PCBs, and inorganics.

Groundwater Samples

One groundwater sample was collected from MWM9-02 to fulfill the groundwater sampling requirement as discussed in Section 2.1.1. The well location is shown on Figure 4-18. The sample was submitted for laboratory analysis for VOCs, SVOC, PCBs, and inorganics.

The number of locations from which supplemental RFI soil and groundwater samples were collected for each medium and the number of samples analyzed for each analyte group are as follows:

Medium	Locations	VOCs	SVOCs	PCBs	Inorganics
Soil	1	1	1	1	1
Groundwater	1	1	1	1	1

A summary of the analytical data for all AOI M-9 soil and groundwater samples collected during the RFI is shown in Tables 4-22 and 4-23, respectively. The analytical data for the supplemental RFI samples is provided in Appendix C. Complete documentation of the data review and validation of the supplemental RFI samples are provided in Appendix D.

4.3.6.2 Discussion of Results

The concentrations of constituents detected in the soil and groundwater were compared with the screening criteria as discussed in Section 4.0.

Soil Samples

The concentrations of constituents detected in the soil sample collected from AOI M-9 do not exceed the screening criteria. Figure 4-17 provides a summary of sample locations and analytical results for soil. Also, concentrations from soil samples collected during the initial RFI activities do not exceed the screening criteria.

Groundwater Samples

The concentration of constituents detected the groundwater sample collected from AOI M-9 do not exceed the screening criteria. Figure 4-18 provides a summary of sample locations and analytical results for groundwater. Also, concentrations from the groundwater sample collected during the initial RFI activities do not exceed the screening criteria.

4.3.6.3 Conclusions

The supplemental RFI soil and groundwater data from AOI M-9 confirm the findings of the RFI Report (ENCORE, 2002b) that indicate a release has not occurred at AOI M-9. Concentrations detected in soil and groundwater do not exceed screening criteria. NFA or investigation is warranted for this area.

Table 1-1 presents a summary of the data, and conclusions for this AOI.

4.3.7 Plant 25 Basement Sump Area (AOI M-16)

AOI M-16 consists of the basement area of Plant 25, which contains a sludge tank, pumping system, and several floor sumps (Figure 1-5). This area is considered an AOI because oily liquid was observed in several of the floor sumps. Most of the basement sumps have been filled with grout. The two remaining floor sumps were cleaned and inspected as part of the RFI activities (ENCORE, 2002b). Both sumps contained black oily sludge, topped with alkali-oily liquids. The concrete was intact in both sump pits, although one pit exhibited minor pitting while heavy black staining was observed on the other. Two monitoring wells were completed during the original RFI investigation activities at AOI M-16. Soil and groundwater samples were submitted for laboratory analysis of VOCs, SVOCs, PCBs, and inorganics.

Large metal cutting machinery used to be located in this area of Plant 25. Metal cuttings and oils would be collected beneath the equipment by sluiceways and transported to the Plant 25 basement. The area is currently used for storage or is vacant.

4.3.7.1 Scope and Results

The scope of the supplemental field investigations at AOI M-16 involved the collection of groundwater samples to support the CA750 determination (RFI Work Plan Addendum No. 8 (ENCORE, 2003e)) and fulfill second round groundwater sampling requirements as discussed in Section 2.1.1. Following the discovery of LNAPL, additional activities were initiated to delineate the presence of LNAPL (RFI Work Plan Addendum No. 8A (ENCORE, 2003g)).

The following is a summary of the supplemental RFI sampling activities completed at AOI M-16. The samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

LNAPL Sample

Following the installation of MWM4-06 and MWM16-03, installed to support the CA750 determination (RFI Work Plan Addendum No. 8 (ENCORE, 2003e)), LNAPL was observed in both wells. Monitoring well MWM4-06 is within the limits of AOI M-16. Due to the additional evidence of LNAPL observed during AOI M-16 investigations, monitoring well MWM4-06 will be associated with AOI M-16.

A sample of the LNAPL was collected from MWM4-06 and submitted for chemical (VOCs, SVOCs, PCBs, and inorganics) and fingerprint analysis. This LNAPL area is identified as LNAPL Area No. 5.

Soil Samples

Soil borings associated with the installation of two additional downgradient AOI M-16 wells (MWM16-04 and MWM16-05) were completed as proposed in RFI Work Plan Addendum No. 8 (ENCORE, 2003e). Soil samples were not collected from these wells since odors, staining or elevated PID readings were not encountered.

Following the discovery of LNAPL in the Plant 25 basement monitoring wells, three additional side-gradient and downgradient wells were installed (MWM16-07 through MWM16-09) west of Plant 25 (RFI Work Plan Addendum No. 8A (ENCORE, 2003g)). A soil sample was collected at MWM16-07 from the 0 to 2-foot interval due to odors. The sample was submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics. During the installation of MWM16-06 (RFI Work Plan Addendum No. 8A (ENCORE, 2002g)) LNAPL was observed, therefore, a monitoring well was not installed and a LNAPL delineation program was initiated.

During the LNAPL delineation program, 18 soil borings were completed. Soil samples were collected from four borings due to staining, odor, and elevated PID readings. The results from these soil samples were not validated in time for inclusion in this Report; therefore they will not be discussed in this Report.

The locations of the soil borings are presented on Figure 4-15. Soil boring logs and well construction diagrams are provided in Appendix B.

Groundwater Samples

One groundwater sample was collected from monitoring well MWM16-02 as part of the scheduled second round sampling activities, as discussed in Section 2.1.1. The sample was submitted for laboratory analysis of VOCs, SVOCs, PCBs, and inorganics.

Groundwater samples were collected from three monitoring wells (MWM16-01, MWM16-02, MWM16-04) following the installation of wells to support the CA750 determination. Well locations are shown on Figure 4-16. The samples were submitted for laboratory analysis for vinyl chloride. Five monitoring wells were not sampled; LNAPL is present in MWM16-03, natural recharge did not occur at MWM16-05, and MWM16-07 through MWM16-09 will be sampled following installation of additional LNAPL delineation wells.

The number of locations from which supplemental RFI samples were collected from each medium and the number of samples analyzed for each analyte group are as follows:

Medium	Locations	VOCs	SVOCs	PCBs	Inorganics
LNAPL	1	1	1	1	1
Soil	5	10	10	10	10
Groundwater	4	4*	1	1	1

*Three for vinyl chloride only.

Summaries of the validated analytical data for all AOI M-16 soil, groundwater, and LNAPL samples are shown in Tables 4-24, 4-25, and 4-26, respectively. The analytical data for the supplemental RFI samples are provided in Appendix C. Complete documentation of the data review and validation of the supplemental RFI samples are provided in Appendix D.

4.3.7.2 Discussion of Results

The concentrations of constituents detected in soil and groundwater were compared with the screening criteria as discussed in Section 4.0.

LNAPL Samples

Screening criteria (i.e. Part 201) are not available for LNAPL, so the constituents detected in the LNAPL are discussed below without a comparison against screening criteria.

Eleven VOCs were detected in the AOI M-16 LNAPL sample (benzene, cis-1,2-dichloroethene, cyclohexane, ethylbenzene, isopropylbenzene, methyl acetate, methyl cyclohexane, tetrachloroethene, toluene, trichloroethene, and xylenes). Four SVOCs were detected in the AOI M-16 LNAPL sample (bis(2-ethylhexyl)phthalate, butyl benzylphthalate, fluorene, and

phenanthrene). Ten inorganics were detected in the AOI M-16 LNAPL sample (antimony, arsenic, cadmium, chromium, cobalt, copper, lead, nickel, vanadium, and zinc). PCBs were also detected in the LNAPL sample.

Further LNAPL discussion including fingerprint analysis and delineation is presented in Section 4.6.4.

Soil Boring Samples

The concentration of constituents detected in the soil boring sample collected from MWM16-07 (0 to 2 foot interval) do not exceed the screening criteria. Figure 4-15 provides a summary of the sample location and analytical results for soil.

The results from the soil samples collected during the LNAPL delineation program for AOI M-16 were not validated in time to be included in this Report. The results will be presented and discussed under separate cover following the delineation of LNAPL Area No. 5. This AOI remains under investigation.

Groundwater Samples

The concentrations of constituents detected in the groundwater samples collected from AOI M-16 exceed the screening criteria for vinyl chloride. Vinyl chloride was detected in the groundwater at MWM16-01 with a concentration of 0.014 mg/L, which exceeds the IDWC and RDWC of 0.002 mg/L. Monitoring wells MWM16-03 through MWM16-05 were installed to provide appropriate upgradient, downgradient, and side-gradient wells to bound the contaminant plume to support the CA750 determination. Groundwater samples were not collected from monitoring wells MWM16-03 due to the presence of LNAPL and MWM16-05 because natural recharge did not occur. The analytical results for vinyl chloride from MWM16-02, MWM16-04, and MWM25-02 (installed just east of MWM16-01) were rejected during data validation. Based on the August 2003 results for these wells, no new boundaries have been established. Only an existing downgradient boundary has been established (MWM16-02) based on past sampling data (January and November 2002). Figure 4-16 provides a summary of sample locations and analytical results for groundwater. Monitoring well MWM16-02 has been sampled three times. The vinyl chloride results from the first two analyses were not detected above the reporting limit of 0.001 mg/L, therefore providing a down gradient boundary.

Therefore, the vinyl chloride impacted groundwater observed at MW M16-01, has been bound to the southwest (downgradient, MWM16-02) only. The investigation at AOI M-16 is ongoing. Additional LNAPL and groundwater investigative activities will be conducted to provide appropriate data to delineate the extent of LNAPL and support the CA750 determination.

4.3.7.3 Conclusions

The RFI groundwater data from AOI M-16 indicate that a release has occurred to groundwater at AOI M-16. Vinyl chloride was found to exceed IDWC and RDWC at MWM16-01. Based on these results and the presence of LNAPL, AOI M-16 is further discussed evaluated in the Risk Evaluation presented in Section 5.

Groundwater analytical results for MWM16-02, MWM16-04 and MWM25-02 were rejected during data validation. It should be noted that LNAPL delineation activities are ongoing at this AOI, and additional groundwater monitoring events will be conducted to support the CA750 determination.

Table 1-1 presents a summary of the data, conclusions, and proposed activity for the AOI.

4.3.8 Plant 33 Basement Sump Area (AOI M-25)

AOI M-25 consists of the basement area of Plant 33, which contains several floor sumps and process pits (Figure 1-5). This area is considered an AOI because the condition of the floor pits could not be evaluated due to the pits having recently been filled with flowable fill (grout). One sump was inspected in the Plant 33 basement. Black oily sludge with a strong petroleum odor was present at the bottom of the sump. As part of original RFI activities, the sump was cleaned and inspected. The concrete walls and floor of the sump appeared to be smooth and no substantial pitting observed. One monitoring well, where natural recharge did not occur, was installed during the original RFI activities. Soil samples were submitted for laboratory analysis of VOCs, SVOCs, inorganics and PCBs.

4.3.8.1 Scope and Results

The scope of the supplemental field investigations at AOI M-25 involved collection of a groundwater sample to support the CA750 determination for AOI M-25 (RFI Work Plan Addendum No. 8 (ENCORE, 2003e)).

The following is a summary of the supplemental RFI sampling activities conducted for groundwater at AOI M-25. The sample was collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

Groundwater Samples

A second well (MWM25-02) was installed at AOI M-25 as proposed in RFI Work Plan Addendum No. 8 (ENCORE, 2003e). Natural recharge never occurred at the existing AOI M-25 monitoring well MWM25-01. The soil boring log and well construction diagram is provided in Appendix B.

A groundwater sample was collected from one monitoring well (MWM25-02) to obtain additional information regarding the groundwater quality downgradient from AOI M-25 and side-gradient from AOI M-16. The well location is shown on Figure 4-16. The sample was submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics.

The number of locations from which supplemental RFI groundwater samples were collected and the number of samples analyzed for each analyte group are as follows:

Medium	Locations	VOCs	SVOCs	PCBs	Inorganics
Groundwater	1	1	1	1	1

Summaries of the analytical data for all AOI M-25 groundwater samples are shown in Table 4-27. The analytical data for the supplemental RFI samples are provided in Appendix C. Complete documentation of the data review and validation of the supplemental RFI samples are provided in Appendix D.

4.3.8.2 Discussion of Results

The concentrations of constituents detected in groundwater were compared with the screening criteria as discussed in Section 4.0.

Groundwater Samples

Monitoring well MWM25-02 was installed to provide a monitoring point to determine if groundwater is impacted at AOI M-25 to support the CA750 determination for AOI M-25. The concentration of constituents detected in the groundwater sample collected from AOI M-25 does not exceed the screening criteria. Figure 4-16 provides a summary of sample locations and analytical results for groundwater.

4.3.8.3 Conclusions

The RFI groundwater data from AOI M-25 does not indicate that a release has occurred at AOI M-25. Concentrations detected in groundwater do not exceed screening criteria, supporting the CA750 determination at AOI M-25. NFA or investigation is warranted for this area.

Table 1-1 presents a summary of the data and conclusions for this AOI.

4.4 Powertrain

This Section summarizes the investigations and results completed at four Powertrain AOIs during the supplemental RFI activities.

4.4.1 Emissions Control Building Former UST Farm and Former Stoddard Solvent Above Storage Tank (AST) (AOI P-6)

AOI P-6 consists of a former UST tank farm and former Stoddard solvent AST located west of the northwest corner of the Emissions Control Building (Figure 1-5). A release from one or more of the USTs was discovered in June 1984 and more recently in January 2001. A concrete paved parking lot and a new building are currently at the location of the former UST tank farm and former AST. The former UST tank farm contained seven USTs that were installed in the early- to mid-1970s. The USTs stored several types of materials, including unleaded gasoline, Indolene I clear gas, GM calibration solvent, and water. The USTs were taken out of service in November 1986 and removed in July 1987.

The 950-gallon AST was located on a concrete pad and contained by a concrete dike. The AST was used to store waste Stoddard solvent. The AST was closed in accordance with the closure plan in November 1986, although formal correspondence with MDEQ and/or U.S. EPA was not necessary.

During the original RFI investigation activities, five soil borings were completed and eight monitoring wells were installed at AOI P-6. Soil and groundwater samples were submitted for laboratory analysis of select analytes, which included VOCs, SVOCs, and/or inorganics.

4.4.1.1 Scope and Results

The scope of the supplemental field investigation at AOI P-6 involved collection of groundwater samples for remedial design purposes, to fulfill groundwater sampling requirements as discussed in Section 2.1.1, and to monitor the apparent naturally declining benzene and ethylbenzene concentrations (RFI Work Plan Addendum No. 8 (ENCORE, 2003e)).

The following is a summary of the supplemental RFI sampling activities conducted for groundwater at AOI P-6. The sample was collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

Groundwater Samples

Groundwater samples were collected from five monitoring wells (MWP6-01 through MWP6-04 and MWP6-07) during two separate sampling events, for design purposes and for the second round

sampling event. Well locations are shown on Figure 4-19. The samples collected for design purposes were submitted for laboratory analysis for BTEX. The samples collected as part of the second round of sampling were submitted for laboratory analysis for VOCs.

Two AOI P-6 monitoring wells (MWP6-05 and MWP6-08) were properly abandoned prior to construction activities beginning in the AOI P-6 area. These wells will be replaced following the completion of the construction activities.

The number of locations from which supplemental RFI groundwater samples were collected and the number of samples analyzed for each analyte group is as follows:

Medium	Locations	VOCs
Groundwater	5	10*

*Five for BTEX only

Summaries of the analytical data for all AOI P-6 groundwater samples collected during the RFI are shown in Table 4-28. The analytical data for the supplemental RFI samples are provided in Appendix C. Complete documentation of the data review and validation of the supplemental RFI samples are provided in Appendix D.

4.4.1.2 Discussion of Results

The concentrations of constituents detected in groundwater were compared with the screening criteria as discussed in Section 4.0.

Groundwater Samples

The concentrations of constituents detected in the groundwater samples collected from AOI P-6 exceed the screening criteria for benzene and ethylbenzene.

During both sampling events at AOI P-6, benzene was detected at MWP6-01 and MWP6-02 at concentrations ranging from 0.023 to 0.34 mg/L, which exceeds the screening criteria for IDWC and RDWC of 0.005 mg/L. Ethylbenzene concentrations, detected at MWP6-02, from both rounds of sampling (1.6 mg/L and 1.0 mg/L) exceed the IDWC and RDWC of 0.7 mg/L. Benzene and ethylbenzene concentrations at MWP6-01 and MWP6-02 are generally decreasing.

Figure 4-19 provides a summary of sample locations and analytical results for groundwater.

4.4.1.3 Conclusions

The supplemental RFI groundwater data from AOI P-6 indicate that although benzene and ethylbenzene concentrations exceed the IDWC and RDWC they are generally continuing to naturally decrease as concluded in the RFI Report (ENCORE, 2002a). Based on these results, AOI P-6 is further discussed in the Risk Evaluation presented in Section 5.

Table 1-1 presents a summary of the data, conclusions, and proposed activity for the AOI.

4.4.2 Pipeline Release (AOI P-9)

A pipeline release occurred since the completion of the RFI Report (ENCORE, 2002b) that may have impacted soil and/or groundwater in the vicinity of the Former Plant 18 (Figure 1-5). As such, AOI P-9 is a new AOI investigated as part of RFI Work Plan Addendum No. 5 (ENCORE, 2003b).

On August 7, 2002, alkali-oily wastewater was reported to be leaking from three areas on a pipeline located in an overhead pipe trestle that runs along the north and east side of the Former Plant 18 footprint. The pipeline transports alkali-oily wastewater from the GM Powertrain Engineering building to the Pontiac Metal Center WWTP. The leaking pipe spilled an undetermined amount of wastewater to soil below the trestle. Based on this information and the results of chemical analysis of a sample of the alkali-oily wastewater, an investigative program was developed to address the nature and extent of impacts caused by this release. The release was reported to the U.S. EPA National Response Center (NRC) and the MDEQ. The pipeline was subsequently repaired to stop the leak.

On January 15, 2003, an additional leak was observed approximately 225 feet south of the point at which the utility trestle turns and runs south along the east side of the former Plant 18 footprint. Once the leak was observed the sump pump directing the alkali oily wastewater into the trestle was immediately stopped and the wastewater was transported to the WWTP via vacuum truck. Due to the sub-zero winter temperatures the leak froze forming a column of frozen wastewater from the ground surface to the overhead trestle. The frozen wastewater was broken out with a backhoe and transported to the WWTP to await treatment once it thawed. Due to the cold temperature and frozen ground conditions, the wastewater did not infiltrate the ground surface. As such, additional impacts to AOI P-9 are not expected. The leak was subsequently fixed on January 20, 2003.

Plant 18 was demolished in 1998. According to GM personnel the basements were backfilled with demolition debris (concrete, brick, etc). Significant voids may be present in these backfilled areas. RFI Work Plan Addendum No. 5 (ENCORE, 2003b) describes the initial investigation for the immediate area surrounding an overhead trestle pipeline release that occurred at the Site.

4.4.2.1 Scope and Results

The scope of the field investigations at AOI P-9 involved collection of soil and groundwater samples to determine whether a potential release exceeding screening criteria has occurred from the Pipeline Release (RFI Work Plan Addendum No. 5, (ENCORE, 2003b)). Additional soil investigative activities were conducted following the completion of the investigation described in the RFI Work Plan Addendum No. 5 (ENCORE, 2003b).

The following is a summary of the supplemental sampling activities conducted for each medium at AOI P-9. Samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

Test Pit Samples

One test pit was completed (TP9-01) to identify the potential presence of LNAPL due to stained soils observed during the completion of soil borings to delineate the Former Plant 18 basement. A soil sample was collected and submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics.

Soil Boring Samples

Fourteen soil borings (BP9-01 through BP9-10 and MWP9-01 through MWP9-04) were completed to provide areal coverage of the AOI as proposed in RFI Work Plan Addendum No. 5, (ENCORE, 2003b). Three additional soil borings (BP9-11 through BP9-13) were completed to delineate benzo(a)pyrene detections in the soil. Fourteen additional borings (P18-01 through P18-13 and P18-17) were completed as part of a separate investigation at AOI P-9 to ensure the safety of construction workers installing new parking lots and subsurface utilities in this area. The results of this work were considered pertinent to this AOI P-9 work and as such, are included in this Report. Soil boring locations are shown on Figure 4-20.

All samples, excluding the three analyzed for benzo(a)pyrene only, were submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics. Soil boring logs and well construction diagrams are provided in Appendix B.

Groundwater Samples

Groundwater samples were collected from three monitoring wells (MWP9-01, MWP9-03, and MWP9-04) downgradient of the release (southwest groundwater flow). A monitoring well was not installed at MWW9-02 because a saturated zone was not encountered. Monitoring well locations are shown in Figure 4-21. One of the monitoring wells (MWP9-03) was installed within the footprint of the former basement (located in the northeast corner of the building footprint) and was advanced to the former basement floor. MWP9-03 was set as a water table well with the well screen installed at the basement floor elevation. Two rounds of groundwater samples were collected for the AOI P-9 wells.

The number of locations from which samples were collected from each medium and the number of samples analyzed for each analyte group are as follows:

Medium	Locations	VOCs	SVOCs	PCBs	Inorganics
Test Pit	1	1	1	1	1
Soil Boring	31	61	67*	61	61
Groundwater	3	6	6	6	6

*Six for benzo(a)pyrene only.

Summaries of the analytical data for the soil and groundwater samples are shown in Tables 4-29 and 4-30, respectively. The analytical data for all samples are provided in Appendix C. Complete documentation of the data review and validation is provided in Appendix D.

4.4.2.2 Discussion of Results

The concentrations of constituents detected in soil and groundwater were compared with the screening criteria as discussed in Section 4.0.

Test Pits Samples

The concentrations of constituents detected in the test pit soil sample collected from AOI P-9 do not exceed the screening criteria. Figure 4-20 provides a summary of sample locations and analytical for soil.

Soil Boring Samples

The concentrations of constituents detected in the soil boring samples collected from AOI P-9 exceed screening criteria for benzo(a)pyrene.

Benzo(a)pyrene exceeds the IDC of 8 mg/kg at BP9-06 (0 to 2 feet, 6.3 mg/kg), BP9-07 (0 to 2 feet, 11 mg/kg), and BP9-08 (0 to 2 feet, 12 mg/kg). Due to the lack of soil data north, west and south of BP9-07, three additional soil borings (BP9-11, BP9-12, and BP9-13) were completed to delineate the benzo(a)pyrene exceedances, all concentrations were below screening criteria.

Figure 4-20 provides a summary of sample locations and analytical results for soil.

Groundwater Samples

The concentrations of constituents detected in the groundwater samples collected from AOI P-9 exceed screening criteria for phenols, antimony, nickel, selenium, and vanadium.

Two SVOCs were detected at concentrations exceeding screening criteria in the groundwater sampled at AOI P-9. 2,4-Dimethylphenol was detected in the second sample collected from MWP9-03 at concentration of 0.6 mg/L, this exceeds the RDWC (0.37 mg/L). The total methylphenol concentrations (1.28 and 1.2 mg/L), from both samples collected from MWP9-03, exceed the RDWC and IDWC of 0.37 and 1.0 mg/L, respectively.

Four metals were detected in the groundwater. Antimony was detected in both samples collected from MWP9-03 at a concentration of 0.0094 and 0.0131 mg/L, which exceeds the RDWC and IDWC 0.006 mg/L. Nickel was detected in the first sample collected from MWP9-03 at a concentration of 0.128 mg/L, which exceed the RDWC and IDWC of 0.100 mg/L. Selenium was detected in the sample collected from the first sample collected at MWP9-01 at a concentration of 0.0607, which exceed the RDWC and IDWC of 0.05 mg/L. Vanadium was detected in both samples collected from MWP9-01 and MWP9-03 (0.578. 0.0843, 0.0115, and 0.0087 mg/L, respectively), which exceeds the RDWC and IDWC (0.0045 and 0.062 mg/L, respectively) for both MWP9-01 samples and the RDWC for both MWP9-03 samples.

Figure 4-21 provides a summary of sample locations and analytical results for groundwater.

4.4.2.3 Conclusions

The RFI soil and groundwater data from AOI P-9 indicate that a release has occurred to soil and groundwater at AOI P-9. Benzo(a)pyrene was detected at concentrations that exceed the IDC for soil, inorganics and phenols were detected at concentrations that exceed the RDWC and IDWC for groundwater. Based on these results, AOI P-9 is further discussed in the Risk Evaluation presented in Section 5.

Table 1-1 presents a summary of the data, conclusions, and proposed activity for the AOI.

4.4.3 Former Plant 18 (AOI P-10)

Information obtained since the completion of the RFI Report (ENCORE, 2002b) indicates that PCBs are present in the sediment and water of the storm sewer system that serviced the west side of Former Plant 18 (Figure 1-5). AOI P-10 is a new AOI investigated as part of RFI Work Plan Addendum No. 6 (ENCORE, 2003c).

On July 19, 1978, oil was reported to be leaking from a transformer on the roof of Plant 18. A portion of the oil had overflowed a concrete dyke around the transformer, subsequently flowing down

a roof drain to the storm sewer; and an undetermined amount had seeped through the roof to the floor of Plant 18.

Approximately 82 gallons of PCB-containing oil was released from transformer EC-635 in Substation L. Approximately 34 gallons were contained within the transformer containment area on the roof. According to available information, approximately 48 gallons overflowed the containment dyke and may have entered the roof drain into the Site storm sewers. It was reported that most of the oil that entered the roof drain had settled in the two manholes (ST321A and ST321) closest to former Plant 18. Immediately upon discovery of the leak, a neoprene plug was put in the roof drain within the substation and "Speedi-Dry" was applied to absorb the oil. Manhole ST321 was promptly sandbagged to prevent discharge to the downstream storm sewers. The downspouts and laterals from the roof to manhole ST321A and the sewer line from ST321A to ST321 were flushed and vacuumed out.

Based on laboratory analytical results from samples collected in July 1978, the PCB-containing material was contained on the Site. The available information did not specify whether the collected samples were liquid or sediment. The results of this analysis are included in the RFI Work Plan Addendum No.6 (ENCORE, 2003c). Upon discovery of the release, federal and state personnel were notified, including the U.S. EPA and the Michigan Department of Natural Resources (MDNR).

From a review of videotaped inspections, the north-south storm sewer located west of the Former Plant 18 exhibits sedimentation that appears to originate from abandoned laterals that serviced Former Plant 18 area. It appears that the laterals from the Former Plant 18 area have not been plugged, and were observed to be leaking or discharging both water and sediment into the main sewer.

The north-south storm sewer reach from manhole ST321 to manhole ST322, consists of approximately 68 linear feet of 42-inch diameter concrete pipe which appears to be structurally sound. The storm sewer reach was observed to be leaking with approximately 6-inches of sediment and debris throughout the invert of the pipe reach.

During a 2002 storm sewer system investigation, PCBs were shown to be present in storm sewer water and sediment samples collected in the vicinity of Former Plant 18. Concentrations of PCBs and oil and grease were detected in both storm sewer water and sediment in the storm sewer system west of Former Plant 18. Additional samples of the storm sewer water and sediment were collected subsequent to cleaning activities from fifteen manholes and catch basins along the storm sewer lines in the vicinity of Former Plant 18 and were submitted for laboratory analysis of PCBs and oil and grease. of the 15 manholes and catch basins sampled, 12 had PCBs detected (3 water and

9 sediment) and 11 had oil and grease (2 water and 9 sediment) detected above reporting limits. The analytical results are summarized in the RFI Work Plan Addendum No. 6 (ENCORE, 2003c).

4.4.3.1 Scope and Results

The scope of the field investigation at AOI P-10 involved collection of soil samples to determine whether a potential release exceeding screening criteria has occurred form Former Plant 18 (RFI Work Plan Addendum No. 6, (ENCORE, 2003c)).

The following is a summary of the supplemental RFI soil sampling activities conducted at AOI P-10. Samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

Soil Samples

Six soil borings (MWP10-01 through MWP10-06) associated with the installation of monitoring wells proposed in RFI Work Plan Addendum No. 6 (ENCORE, 2003c) were completed in the vicinity of the historical transformer leak and laterals servicing Former Plant 18. Only three of the soil borings completed were converted to monitoring wells (MWP10-01, MWP10-03, and MWP10-05) since the soil at MWP10-02, MWP10-04 and MWP10-06 consisted of dry clay with no observed water bearing zones. The soil samples were submitted for laboratory analysis for SVOCs and PCBs. Soil boring and monitoring well locations are shown on Figure 4-22. Soil boring logs and well construction diagrams are provided in Appendix B.

Groundwater Samples

Three monitoring wells were installed (MWP10-01, MWP10-03, and MWP10-05) at AOI P-10. Well locations are shown on Figure 4-22. No groundwater samples were submitted for laboratory analysis because of an insufficient volume of groundwater in the wells. The three monitoring wells were installed in an area that was observed to consist predominantly of dry clay.

The number of locations from which soil samples were collected and the number of samples analyzed for each analyte group are as follows:

Medium	Locations	SVOCs	PCBs
Soil Boring	6	12	12

Summaries of the analytical data for the soil samples are shown in Table 4-31. The analytical data for all samples are provided in Appendix C. Complete documentation of the data review and validation is provided in Appendix D.

4.4.3.2 Discussion of Results

The concentrations of constituents detected in soil were compared with the screening criteria as discussed in Section 4.0.

Soil Samples

The concentrations of constituents detected in the soil boring samples collected from AOI P-10 do not exceed the screening criteria. Figure 4-22 provides a summary of sample locations and analytical for soil.

4.4.3.3 Conclusions

The RFI soil data from AOI P-10 do not indicate that a release has occurred at AOI P-10. Concentrations detected in soil do not exceed screening criteria. No groundwater was encountered at AOI P-10. NFA or investigation is warranted for this area.

Table 1-1 presents a summary of the data and conclusions for this AOI.

4.4.4 Trestle Pipeline Release (AOI P-11)

Information obtained since the completion of the RFI Report (ENCORE, 2002b) indicates that a recent overhead pipeline release may have impacted soil and/or groundwater in the vicinity of the former Plant 18. As such, the pipeline release area was not included in the RFI and has been identified as AOI P-11 (Figure 1-5).

On March 6, 2003, alkali-oily wastewater was reported to be flowing freely from a broken pipeline in an overhead pipe trestle that runs along the north side of the former Plant 18 footprint. The broken pipe was located approximately 150 feet east of storm sewer manhole ST321 and 150 feet west of the Glenwood Avenue extension. The broken pipe was part of a replacement pipeline that conveyed alkali-oily wastewater from Powertrain Engineering to the on-Site Industrial WWTP. The cause of the pipe breach was insufficient structural bracing along the overhead pipeline. The pipe was subsequently repaired on March 7, 2003, and additional bracing has been provided along the entire length of the trestle.

The broken pipe spilled approximately 500 gallons of alkali-oily wastewater to the ground surface below the trestle. Once the break in the line was observed, the sump pump was immediately shutdown and the wastewater that continued to be generated at Powertrain was transported to the WWTP via vacuum truck.

All stained soils in the vicinity of the release were collected and placed in a roll-off box for subsequent disposal characterization. Frozen wastewater and stained soils were present beneath the snow from a snowfall event which occurred late on March 4 or early on March 5, 2003, indicating that the release likely occurred prior to March 5, 2003. When the snow cover was removed, it was observed that the liquid had penetrated the ground surface below the trestle and migrated westerly within the subsurface along the north side of former Plant 18. The wastewater was observed to have seeped out of the bottom of an embankment and pooled on the concrete in the vicinity of the northwest corner of former Plant 18 fence line, and north of the trestle. The embankment results in an elevation change just north of the trestle where the ground surface descends approximately six to eight feet to the north. Asphalt covers the slope along the length of this elevation change from the area of the broken pipe to just east of the area where the wastewater seeped out of the embankment.

Pooled liquid was also observed to be in the immediate area of storm sewer manhole ST321. Manhole ST321 is elevated from the ground surface and there was no evidence of wastewater infiltration. From previous sewer investigations, there is evidence of infiltration in the storm sewer located west of former Plant 18. In addition, pooled liquid was observed on the asphalt surface west of Former Plant 18. The extent of wastewater that accumulated west of former Plant 18 could not be determined due to several stationary storage racks stored in the area.

4.4.4.1 Scope and Results

The scope of the field investigation at AOI P-11 involved collection of soil and groundwater samples to determine whether a potential release exceeding screening criteria has occurred from the trestle pipeline release (RFI Work Plan Addendum No. 7, (ENCORE, 2003d)).

A sewer water sample was not collected as proposed in the RFI Work Plan Addendum No. 7 (ENCORE, 2003d) due to the detection of only one constituent in groundwater exceeding RDWC.

The following is a summary of the RFI sampling activities conducted for each medium at AOI P-11. Samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

Soil Samples

Ten soil borings were completed at AOI P-10 (BP11-01 through BP11-06 and MWP11-01 through MWP11-04) as proposed in the RFI Work Plan Addendum No. 7, (ENCORE, 2003d). Three soil borings were completed as monitoring wells (MWP11-01, MWP11-02, and MWP11-04). MWP11-03 was not completed as a monitoring well because a saturated zone was not encountered. Sample locations are shown in Figure 4-22. The samples were submitted for laboratory analysis for VOCs,

SVOCs, PCBs, and inorganics. Soil boring logs and well construction diagrams are provided in Appendix B.

Groundwater Samples

Groundwater samples were collected from two monitoring wells (MWP11-01 and MWP11-04) that were installed downgradient of the release. Natural recharge did not occur at MWP11-02, therefore a groundwater sample could not be collected. Monitoring well locations are shown on Figure 4-21. Samples were submitted for laboratory analysis for VOCs, SVOCs, PCBs, and inorganics.

The number of locations from which samples were collected for each medium and the number of samples analyzed for each analyte group are as follows:

Medium	Locations	VOCs	SVOCs	PCBs	Inorganics
Soil	10	23	23	23	23
Groundwater	2	2	2	2	2

Summaries of the analytical data for the soil and groundwater samples are shown in Tables 4-32 and 4-33, respectively. The analytical data for all samples are provided in Appendix C. Complete documentation of the data review and validation is provided in Appendix D.

4.4.4.2 Discussion of Results

The concentrations of constituents detected in soil and groundwater were compared with the screening criteria as discussed in Section 4.0.

Soil Samples

The concentrations of constituents detected in the soil boring samples collected from AOI P-11 exceed the screening criteria for manganese. The manganese concentration (3,260 mg/kg) detected in the sample collected from the 0 to 2 foot interval for BP11-06 exceeds the IPSIC of 1,500 mg/kg. No other constituents exceeded the screening criteria. Figure 4-22 provides a summary of sample locations and analytical for soil.

Groundwater Samples

The concentrations of constituents detected in the groundwater samples collected from AOI P-11 exceed the screening criteria for cobalt. Cobalt was detected in MWP11-01 at a concentration of 0.0535 mg/L, exceeding the RDWC of 0.04 mg/L. Figure 4-21 provides a summary of sample locations and analytical for groundwater.

4.4.4.3 Conclusions

The RFI soil and groundwater data from AOI P-11 indicate that a release has occurred at AOI P-11. Manganese was detected in soil at a concentration exceeding the IPSIC. Cobalt was detected in groundwater at a concentration that exceeds the RDWC. Based on these results, AOI P-11 is further discussed in the Risk Evaluation presented in Section 5.

Table 1-1 presents a summary of the data, conclusions, and proposed activity for the AOI.

4.5 Other Areas

4.5.1 Storm Water Detention Facility (SWDF)

The SWDF for the Site is located on the south side of Montcalm Avenue. The SWDF became operational in May 1982, intercepting and treating the Site storm water discharged to Outfall 001.

The SWDF is composed of two elements: a storm water treatment facility, and a 2,000,000-gallon storm water detention basin. The SWDF was originally designed to eliminate free oil and reduce the amount of solids present in the effluent originating from dry weather flow, and to minimize free oils and solids concentrations in the effluents originating from wet weather flow. In June 1999, the SWDF was retrofitted with granular activated carbon units to include a treatment process for PCB removal.

During a routine cleaning and inspection of the SWDF completed during September 2002, cracks in the concrete floor were observed as well as missing or degraded sections of rubber seals between the concrete slabs. On the basis of these observations, a subsurface investigation was completed to determine if any potentially impacted storm water from the storm water detention pond was infiltrating into the subsurface, and if so, the possible impacts to soil and/or groundwater.

4.5.1.1 Scope and Results

The scope of the supplemental field investigation at the SWDF involved collection of soil and groundwater samples to determine whether a potential release exceeding applicable screening criteria has occurred from the SWDF.

The following is a summary of sampling activities conducted for each medium at the SWDF. Samples were collected in accordance with the procedures discussed in Section 2.4, except as otherwise noted. A summary of field investigations performed is presented in Table 1-1.

Soil Samples

Eleven soil borings were completed at the SWDF (DP-01 through DP-08 and MWDP-01 through MWDP-03). Borings DP-01 through DP-08 were completed through the bottom of the detention basin, while soil borings installed during the installation of monitoring wells MWDP-01 through MWDP-03 were completed directly south of the detention basin. The concrete floor was repaired after the borings were backfilled. Sample locations are shown in Figure 4-23. Soil samples were collected from borings DP-03, DP-04, MWDP-01, MWDP-02 and MWDP-03. Soil samples for laboratory analysis were not collected from the remaining borings because saturation was encountered directly beneath the floor of the SWDF. The samples were submitted for laboratory analysis of VOCs, SVOCs, PCBs, and inorganics. Soil boring logs and well construction diagrams are provided in Appendix B.

Groundwater Samples

Temporary well points were set at each boring within the detention basin (DP-01 through DP-08) to collect groundwater samples. Temporary piezometers were installed in the three monitoring wells (MWDP-01, MWDP-02 and MWDP-03) located adjacent to and downgradient of the detention basin. Groundwater samples collected from the temporary well points and temporary monitoring wells were submitted for laboratory analysis for VOCs, SVOCs, PCBs and inorganics (total and dissolved). A groundwater sample was not collected from DP-04. Groundwater samples collected from temporary monitoring wells MWDP-02 and MWDP-03 were not analyzed for dissolved inorganics due to insufficient groundwater recharge. Monitoring well locations are shown on Figure 4-24.

The number of locations from which samples were collected for each medium and the number of samples analyzed for each analyte group are as follows:

Medium	Locations	VOCs	SVOCs	PCBs	Inorganics
Soil	5	7	7	7	7
Groundwater	10	11	11	11	11

Summaries of the analytical data for the soil and groundwater samples are shown in Tables 4-34 and 4-35, respectively. The analytical data for all samples are provided in Appendix C. Complete documentation of the data review and validation is provided in Appendix D.

4.5.1.2 Discussion of Results

The concentrations of constituents detected in soil and groundwater were compared with the screening criteria as discussed in Section 4.0.

Soil Samples

The concentrations of constituents detected at the SWDF do not exceed the industrial screening criteria. Residential screening criteria was used to evaluate locations MW-01, MW-02 and MW-03 located within approximately six feet from the south property line, which is bordered by a public park. Although arsenic was detected at a concentration above the RDC (7.6 mg/kg) at MW-02 (1 to 3 foot interval, 9.3 mg/kg)), the detected concentration is below the Site-specific background concentration for arsenic in soils (13.2 mg/kg). The Site-specific background concentrations are presented in the RFI Report (ENCORE, 2002b).

Figure 4-23 provides a summary of sample locations and analytical for soil.

Groundwater Samples

The concentrations of constituents detected in the groundwater samples collected from the SWDF exceed the screening criteria for PCBs and five inorganics. PCBs were detected at DP-02 (0.0011 mg/L), DP-03 (0.00063 mg/L, DP-05 (0.0017 mg/L) and DP-06 (0.00093 mg/L) at concentrations exceeding the IDWC and RDWC of 0.0005 mg/L.

Antimony was detected in total and dissolved samples collected from DP-03 (0.0067 and 0.0082 mg/L, respectively) and DP-07 (0.0129 and 0.0223 mg/L, respectively) at concentrations that exceed the RDWC and IDWC 0.006 mg/L. Antimony was detected in the dissolved sample from DP-02 in excess of the RDWC and IDWC. Cadmium was detected at a concentration exceeding the RDWC and IDWC of 0.005 mg/L at MW-02 (0.0067 mg/L). Lead was detected at concentrations exceeding the RDWC and IDWC (0.004 mg/L) in the total samples from DP-03 (0.0737 mg/L), DP-08 (0.0078 mg/L), MW-02 (0.164 mg/L), and MW-03 (0.0164 mg/L). Manganese was detected in the samples from MW-02 (1.64 mg/L, total manganese) and MW-01 (1.02 mg/L, dissolved manganese) at concentrations that exceed the RDWC of 0.86 mg/L. Vanadium was detected in both total and dissolved samples collected from DP-02 (0.0135 and 0.0082 mg/L), DP-03 (0.0294 and 0.0116 mg/L), DP-05 (0.0072 and 0.0071 mg/L), and DP-06 (0.005 and 0.0048 mg/L) in excess of the RDWC of 0.0045 mg/L. Vanadium was also detected at concentrations exceeding the RDWC at MW-03 (0.0049 mg/L) and the RDWC and IDWC (0.062 mg/L) at MW-02 (0.087 mg/L) in total samples collected from these wells.

Figure 4-24 provides a summary of sample locations and analytical for groundwater.

4.5.1.3 Conclusions

The RFI soil data from SWDF does not indicate a release to soil has occurred from the detention basin. However, the RFI groundwater data shows that concentrations of PCBs and five inorganics

were detected above screening criteria. Based on these results, the SWDF is further discussed in the Risk Evaluation presented in Section 5.

Table 1-1 presents a summary of the data, conclusions and proposed activity for the SWDF.

4.5.2 Semi-Annual Groundwater Monitoring

Two semi-annual groundwater sampling events were completed at the Site in November 2002 and May 2003. The analytical results for these sampling events are presented and evaluated in the following documents:

- November 2002 Semi-Annual Groundwater Monitoring Event Summary Report (ENCORE, 2003h); and
- May 2003 Semi-Annual Groundwater Monitoring Event Summary Report (ENCORE, 2003i).

Section 5 of this Report evaluates the data collected during these monitoring events. Due to the additional groundwater data collected during the semi-annual monitoring events and the December 2002 revisions to the MDEQ Part 201 screening criteria, Section 5 reevaluates all groundwater data, for all AOIs and off-Site areas, collected during the RFI. Tables 4-36 through 4-42b present groundwater data summaries for the AOIs and off-Site areas where groundwater was not discussed in this Report.

4.6 LNAPL Delineation

4.6.1 LNAPL Area No. 1

The delineation activities completed for LNAPL Area No. 1 were summarized in the RFI Report (ENCORE, 2002b). Since the preparation of the RFI Report (ENCORE, 2002b), LNAPL has been detected in an additional AOI W-1 monitoring well. Monitoring well MWW1-05 was installed to provide a delineation well in the southeast corner of the LNAPL Area No. 1 for the free product plume.

On November 11, 2002, Site-wide groundwater levels were collected. During this monitoring event, LNAPL was observed in well MWW1-05 for the first time. Table 443 summarizes the LNAPL thickness observed in MWW1-05.

4.6.2 LNAPL Area No. 3

The RFI Report (ENCORE, 2002b) summarized the LNAPL delineation activities completed at LNAPL Area No. 3. On October 28, 2003, groundwater levels in AOI W-8 were collected to prepare a groundwater contour map. During this monitoring event, LNAPL was observed in well MWW8-08 for the first time. During the initial RFI activities, this well was used as a delineation well.

As discussed in Section 4.2.2 of this Report, one soil boring was completed, and two recovery and three monitoring wells were installed to evaluate potential LNAPL extraction and recharge rates. The one soil boring and three monitoring wells were installed to determine the elevation of the LNAPL plume/storm sewer interface. Table 4-43 summarizes the LNAPL thickness observed at MWW8-08, the three new monitoring wells and the two recovery wells.

4.6.3 LNAPL Area No. 4

LNAPL Area No. 4 is located within AOI M-2. LNAPL was discovered in AOI M-2 during Site-wide groundwater level monitoring event in August 2002. Additional investigation of LNAPL Area No. 4 was conducted to define the horizontal extent and thickness of LNAPL in this area.

4.6.3.1 Scope and Results

Nine additional monitoring wells were installed to delineate the extent of the LNAPL. One LNAPL sample was collected from MWM2-06 and submitted for laboratory analysis for VOCs, SVOCs, PCBs, inorganics and fingerprinting.

4.6.3.2 Discussion of Results

Fingerprinting analysis describes the LNAPL as a mixture of mildly weathered No. 2 fuel oil (No. 2 diesel fuel) or highly degraded asphalt (Zymax, 2002). The LNAPL fingerprinting report is presented in Appendix E.

The results of chemical analysis of LNAPL samples collected from MWM2-06 indicate that VOCs, SVOCs, PCBs, and inorganics are present in the LNAPL. The concentrations of VOCs detected range from methyl cyclohexane at 0.27 mg/kg to 1,1-dichloroethane at 21 mg/kg. The concentrations of SVOCs detected range from 2-methylnaphthalene at 59 mg/kg to phenanthrene at 660 mg/kg. The total PCB concentration detected was 170 mg/kg. The concentrations of inorganics detected ranged from cobalt at 0.084 mg/kg to nickel at 91.7 mg/kg.

The LNAPL analytical results are presented in Table 4-18 and are further discussed and evaluated in Section 4.3.2.

The measured thickness of LNAPL in Area No. 4 appears to vary from the four monitoring events conducted at monitoring well MWM2-06 (Table 4-43). The maximum thickness of LNAPL encountered was 1.32 feet and the minimum thickness was 0.01 feet. Figure 2-1 presents the horizontal extent of the current LNAPL Area No. 4 plume and Table 4-43 summarizes the LNAPL thickness observations.

It should be noted that an existing storm sewer runs though the middle of this area and that a depression in the groundwater table has been observed. Figure 3-5 presents a localized groundwater flow contour map for LNAPL Area No. 4, AOI M-2.

4.6.3.3 Conclusions

LNAPL Area No. 4 has been adequately delineated and appears to be localized to a small area within AOI M-2. The migration of LNAPL with the overall groundwater flow at the Site has been influenced by the presence of a storm sewer in the area.

4.6.4 LNAPL Area No. 5

LNAPL Area No. 5 is located within AOI M-16. LNAPL was discovered in two monitoring wells installed in the basement of Plant 25. Additional investigations of LNAPL Area No. 5 have been initiated to define the horizontal extent and thickness of LNAPL in this area.

4.6.4.1 Scope and Results

Three downgradient and side-gradient wells have been installed to the west of Plant 25. An additional eighteen soil borings have been completed inside Plant 25 to visually delineate the LNAPL area. Several additional wells will be installed to determine the thickness and extent of the LNAPL plume. Table 4-43 summarizes the LNAPL thickness in the two existing LNAPL Area No. 5 wells containing free product. These delineation activities are ongoing.

4.6.4.2 Discussion of Results

Fingerprinting analysis describes the LNAPL as a likely mixture of a moderately weathered No. 2 fuel oil (or No. 2 diesel fuel) and a highly degraded oil (or asphalt) (Zymax, 2003). The LNAPL fingerprinting report is presented in Appendix E.

The results of chemical analysis of LNAPL samples collected from MWM4-06 indicate that VOCs, SVOCs, PCBs, and inorganics are present in the LNAPL. The concentrations of VOCs detected range from benzene at 0.14 mg/kg to xylene at 39 mg/kg. The concentrations of SVOCs detected range from fluorene at 140 mg/kg to bis(2-ethylhexyl)phthalate at 530 mg/kg. The total PCB concentration detected was 83 mg/kg. The concentrations of inorganics ranged from cadmium at 0.089 mg/kg to zinc at 27.9 mg/kg.

The LNAPL analytical results are presented in Table 4-26 and are further discussed and evaluated in Section 4.3.7.

4.6.4.3 Conclusions

LNAPL Area No. 5 is currently undergoing further investigation to fully delineate the extent of LNAPL. Additional wells will be installed to determine the extent of LNAPL in the area. Monitoring wells will also be installed to determine the apparent thickness of LNAPL.

4.6.5 LNAPL Area No. 6

LNAPL Area No. 6 is located along the storm sewer line in AOIW-9. The possible presence of LNAPL was detected during a geotechnical investigation completed as part of a redevelopment proposal for the DA. RFI Work Plan Addendum No. 9 (ENCORE, 2003f) was prepared and implemented to investigate the potential presence of LNAPL in the area. A sheen (less than 0.1 feet) of LNAPL was observed in MWW9-02 for several weeks following installation. During groundwater level monitoring along the sewer line through the DA in October 2003, 0.25 feet of LNAPL was detected in MWW9-02. Table 4-43 summarizes the LNAPL thickness reading collected from MWW9-02.

Delineation has been completed at this LNAPL area. Monitoring wells (MWW9-03, MWW9-05, MWW9-06, and MWW9-07) bound the area where LNAPL was observed. Monitoring well MWW9-01 is located along the storm sewer south of MWW9-02 (downgradient to sewer flow) and LNAPL has not been observed in that well. Figure 2-2 presents the horizontal extent of the current LNAPL Area No. 6 plume.

At present an LNAPL sample could not be collected from LNAPL Area No. 6, due to the small volume of LNAPL present in MWW9-02.

4.6.5.1 Conclusions

LNAPL Area No. 6 has been adequately delineated and appears to be localized to a small area within AOI W-9. A LNAPL sample will be collected for fingerprint and chemical (VOCs, SVOCs, PCBs, and inorganics) analysis when sufficient volume is available.

5. Human Health Risk Evaluation

Section 4 discussed the results of the RFI field investigations for the AOIs where supplemental RFI field work was completed after preparation of the RFI Report (ENCORE, 2002b). It also compared all RFI soil and groundwater data collected at these AOIs with screening criteria, as defined in Section 4.0 to identify whether a potentially significant release of hazardous constituents has occurred. The environmental media that have been identified to have been affected by potentially significant releases and the primary constituents affecting each medium are summarized in Section 5.1. The potential for exposure to these media are discussed in Section 5.2 and the significance of these potential exposures is evaluated in Section 5.3. The results of the evaluation are summarized in Section 5.4.

5.1 Potentially Significant Releases

As discussed in Section 4.0, a potentially significant release at the AOIs where supplemental RFI field work was completed is identified based on comparison of the RFI characterization data for soil and groundwater with screening criteria. The results of the comparisons discussed in Section 4 are summarized for soil and groundwater in Sections 5.1.1 and 5.1.2, respectively.

5.1.1 Soil

The tables for Section 4 summarized the soil characterization data for each AOI, as well as the ratios of the highest measured concentrations for each constituent at each AOI to the screening criteria. As discussed in Section 4.0, the screening criteria for soil are the MDEQ Part 201 generic cleanup criteria for industrial sites that are based on direct contact, inhalation of soil vapor and particulates in ambient air, and inhalation of soil vapor in indoor air (MDEQ, 2002). The industrial Part 201 criteria were derived by the MDEQ based on a cancer risk of 10^{-5} and a HQ of 1.

A potentially significant release to soil at an AOI is identified in the Section 4 tables by comparing the highest Site-related concentration of each chemical in surface and subsurface soil at the AOI to the screening criteria. As a conservative assumption, all concentrations of organic chemicals are assumed to be Site-related. For inorganic chemicals, Site-related concentrations are considered those that are higher than the Site-specific background levels shown in the Section 4 soil tables, which were summarized and discussed in Table 3-4 and in Section 3.9 of the RFI Report (ENCORE, 2002b), respectively. Ratios of the highest Site-related concentrations in surface or subsurface soil to the screening criteria that exceed 1 are considered indications of a potentially significant release to soil. As shown in the Section 4 tables, the ratios for certain constituents exceed 1 at the following AOIs where supplemental RFI field work was completed:

- AOI F-7 (Wastewater Collection Sumps at Fiero Powerhouse)
- AOI F-15 (Oil/Solvent Catch Basin)
- AOI M-2 (Former Plating Operations Area)
- AOI P-9 (Pipeline Release Investigation)
- AOI P-11 (Trestle Pipeline Release Investigation)
- AOI W-1 (West Yard)
- AOI W-8 (Former Plant 9 Basement AST Area)
- AOI W-9 (Former Central Foundry Resin Spill and UST)

This list of AOIs does not include AOIs where supplemental RFI field work was not necessary.

As noted in Section 4.2.5 of this Report, proposed industrial redevelopment is expected to be initiated at the Site where AOIs W-1, W-8, and W-9 are located. To evaluate potential exposures of workers to constituents in soil under this Site redevelopment scenario, the soil samples within the planned extent of the proposed industrial redevelopment were grouped and evaluated as a single area called "Area of Industrial Redevelopment". As shown on Table 4-14, certain locations in the Area of Industrial Redevelopment have potentially significant releases to soil.

Among the AOIs listed above, only AOIs F-15 and M-2 have constituents with concentrations that are higher than the screening criteria based on inhalation of soil vapor in indoor air (i.e., 1,1-dichloroethene and tetrachloroethene at AOI F-15, and 1,1-dichloroethene at AOI M-2). These constituents and concentrations are the same as those evaluated in the RFI Report (ENCORE, 2002b) and found to present no unacceptable exposure. Since these data were previously discussed in Section 5 of the RFI Report (ENCORE, 2002b), the discussion is not repeated in this Report. No constituents in soil at the Area of Industrial Redevelopment have concentrations that exceed the criteria based on vapor intrusion.

In addition to the soil characterization data summarized in the Section 4 tables, chemical characterization data for LNAPL was collected during the supplemental RFI field work at AOIs M-2 and M-16, as discussed in Sections 4.3.2 and 4.3.7, respectively. The chemical characterization data for the LNAPL at each of these AOIs are summarized in Tables 4-18 and 4-26, respectively. Although soil sampling completed during the RFI did not specifically target the depth interval in which the LNAPL layer fluctuates with the water table (the smear zone), a theoretical upper bound on the concentration of a LNAPL constituent in the smear zone soil (C_{soil}) can be estimated as follows:

$$C_{soil} = C_{NAPL} \cdot r_{NAPL} \cdot \frac{n}{r_{soil}}$$

where C_{NAPL} is the concentration of a chemical in the LNAPL, $?_{NAPL}$ is the density of the LNAPL (approximately 0.9 kg/L), *n* is the total porosity of the soil (assumed to be 0.43), and $?_{soil}$ is the dry bulk density of the soil (assumed to be 1.5 kg/L). The assumed soil porosity and bulk density are the default values U.S. EPA recommended in the Soil Screening Guidance (U.S. EPA, 1996). This calculation assumes 100% non-aqueous phase liquid (NAPL) saturation of the soil voids and is highly conservative since typical NAPL residual saturation does not exceed 20% to 50%, depending on the type of NAPL and soil.

The upper-bound smear zone soil concentrations estimated using the highest concentrations detected in the LNAPL at each AOI are shown in Table 5-1, and are compared with the soil screening criteria discussed above. As shown in Table 5-1, two constituents have upper-bound smear zone soil concentrations that exceed the screening criteria (1,1-dichloroethene and PCBs at AOI M-2, and PCBs at AOI M-16).

The potential for human exposure to the constituents in soil and LNAPL-containing soil with concentrations higher than the screening criteria is discussed in Section 5.2 and the significance of any potential exposure is discussed in Section 5.4. Section 5.4 also includes discussion of potential exposures of workers to the LNAPLs at AOIs M-2 and M-16 during subsurface construction activities that the soil screening criteria do not address (e.g., dermal contact with LNAPL) and hypothetical exposure of routine workers to vapors that are assumed to migrate from the LNAPL into indoor air.

5.1.2 Groundwater

Groundwater quality data were collected from four saturated zones during the RFI and the supplemental RFI field investigations, as discussed in the RFI Report (ENCORE, 2002b). Data from monitoring wells screened in the shallow unconfined water table zone are summarized in Table 5-2a, and data from monitoring wells screened in the intermediate zone (glaciolacustrine deposits) and in the deep zones (upper and lower sand and gravel outwash deposits) are summarized in Table 5-2b. Where appropriate based on the locations of the monitoring wells, the groundwater data on these Tables are grouped and summarized by AOI or area. Data from monitoring wells not specifically associated with a particular AOI (or area) are summarized as a group under "Site-wide hydrogeologic investigation" (SWHI). The locations of the monitoring wells are shown on Figures 4-1 through 4-5.

Tables 5-2a and 5-2b show the detected constituents, their detection frequencies and range of detected concentrations, and the ratios of the highest measured concentrations to the screening criteria. The screening criteria for groundwater are the MDEQ Part 201 generic cleanup criteria. The specific Part 201 criteria used here for identifying a potentially significant release for all four saturated

zones are those based on residential drinking water use (MDEQ, 2002), although these saturated zones are not a current or reasonably expected future drinking water source for the Site or the immediate vicinity. It should be noted that a deed restriction to prevent installation of water supply wells in the shallow unconfined water table zone at the Site may be established as part of the corrective measures proposed for the Site. In addition, the Part 201 criteria based on inhalation of groundwater vapor in indoor air and the criteria based on direct contact by workers conducting excavations (MDEQ, 2002) are also used to identify potentially significant releases in the unconfined saturated zone, which is as shallow as 10 ft bgs at some locations.

A potentially significant release to groundwater is identified in Tables 5-2a and 5-2b by comparing the highest concentration of each chemical in groundwater at an area to the screening criteria. The ratios of the highest concentrations to each set of screening criteria are shown in Tables 5-2a and 5-2b. Ratios higher than 1 are considered indications of a potentially significant release to groundwater.

As shown in Table 5-2a, organic chemicals with concentrations higher than the screening criteria in the shallow groundwater consist primarily of the VOCs: benzene, 1,1-dichloroethene, and vinyl chloride. Each of these VOCs is found at concentrations higher than the screening criteria at only one to three AOIs. No VOC has a concentration higher than the criteria based on inhalation of vapors in indoor air or the criteria based on direct contact by excavation workers.

Table 5-2a also shows that the following organic constituents were detected at concentrations that are higher than the screening criteria: bis(2-ethylhexyl)phthalate, 2,4-dimethylphenol, methylphenol (total), pentachlorophenol, PCBs, and 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) toxicity equivalent (TEQ). These organic constituents have a very small number of concentrations that are higher than the screening criteria. Only two concentrations of bis(2-ethylhexyl)phthalate (at AOIs M-2 and W-10), two concentrations 2,4-dimethylphenol (at AOIs P-9 and W-8), three concentrations of methylphenol (total) (at AOIs P-9 and W-8), and one concentration of pentachlorophenol (at AOI P-9) among 204 to 205 samples of shallow groundwater across the Site are higher than the screening criteria.

The presence of PCBs and 2,3,7,8-TCDD TEQ in groundwater at concentrations higher than the screening criteria is likely related to the presence of these chemicals in LNAPLs on the water table at AOIs W-1 and W-8. These constituents and concentrations are the same as those evaluated in Section 5.3.1 of the RFI Report (ENCORE, 2002b) and found to present no unacceptable exposure. Because these data were previously discussed in the RFI Report (ENCORE, 2002b), the discussion is not repeated in this Report.

Several metals are also present in the shallow groundwater at concentrations higher than the screening criteria, as shown in Table 5-2a. The most prevalent of these are manganese,

thallium, and vanadium. As discussed in Section 3 of the RFI Report (ENCORE, 2002b), the only thallium concentrations higher than the screening criteria were those that were obtained by Method 6010B, which was the method originally specified in the RFI Work Plan (ENCORE, 2001b). Based on a review of the thallium results from the initial phase of field work, U.S. EPA and GM determined that Method 6010B has a high potential for false detection of thallium at low concentrations in aqueous matrices (groundwater and surface water), and identified Method 6020 as a more appropriate method. All thallium analyses in subsequent phases of field work were done using Method 6020. The thallium concentrations obtained by Method 6020 do not exceed the screening criteria.

The groundwater data from the intermediate saturated zones have only four chemicals with concentrations higher than the screening criteria discussed above (acetone, bis(2-ethylhexyl)phthalate, lead, and thallium), as shown in Table 5-2a. Except for acetone, these chemicals have concentrations higher than the screening criteria in only one monitoring well in the intermediate saturated zone, and are unlikely to be associated with a release. Specifically, bis(2-ethylhexyl)phthalate and lead were detected at concentrations of 0.0088 mg/L and 0.0135 mg/L, respectively, at monitoring well IDW7 in January of 2002. Subsequent sampling and analysis during the semi-annual groundwater sampling events (November 2002 and May 2003) showed bis(2-ethylhexyl)phthalate and lead to be non-detect or below the screening criteria at IWD7. Based on recent groundwater results from this well and the frequency of detection, the concentrations of bis(2-ethylhexyl)phthalate and lead in well IDW7 are unlikely to be the result of a release.

In the deep saturated zones, the only chemicals with concentrations higher than a screening criterion are acetone and methylene chloride. The presence of acetone in the groundwater samples appears to be unrelated to a release at any AOI. As discussed in Section 4 of the RFI Report (ENCORE, 2002b), the presence of acetone in the groundwater samples is likely associated with well construction materials (coated bentonite pellets). Subsequent sampling and analysis during the most recent semi-annual groundwater sampling event (May 2003) showed acetone to be non-detect at GWP6 and GWD8, the two locations where acetone had previously exceeded the screening criteria. Therefore, the presence of acetone at these locations during previous sampling is not associated with a release from an AOI. The presence of methylene chloride in the groundwater sample at DWD12 does not appear to be due to a release at any AOI, as it is generally considered a common laboratory contaminant (U.S. EPA, 1989). During the two previous rounds of groundwater sampling at this location the methylene chloride results were non-detect. On October 31, 2003, a groundwater sample and field duplicate were collected from this location to confirm the methylene chloride concentration from May 2003. The analytical results from these samples showed that methylene chloride was not detectable. Therefore, the presence of methylene chloride at this location during previous sampling is not associated with a release from an AOI.

The potential for human exposure to constituents in groundwater with concentrations higher than the screening criteria is discussed in Section 5.2, and the significance of any potential exposure is discussed in Section 5.3.

5.2 Exposure Pathways

The potential for exposure to media affected by the potentially significant releases identified in Section 5.1 under current conditions and reasonably expected future land use is discussed below.

Soil

Contaminated soil identified at AOIs F-7, F-15, M-2, and M-19 is covered by building floors or pavement, which prevents current exposure of workers engaged in routine activities or exposure of trespassers. However, potential exposure of workers engaged in subsurface construction activities at these AOIs is possible, and potential exposure of workers engaged in routine activities is possible if building floors or pavement in these areas were removed in the future. Contaminated soil at AOIs P-9, P-11, W-1, W-8, W-9, and the Area of Industrial Redevelopment is not covered or not entirely covered, so potential exposure of workers engaged in routine activities and subsurface construction activities, and exposure of trespassers is possible. At AOIs M-2 and M-16, potential exposure of workers via direct contact with LNAPLs during subsurface construction activities and potential exposure of routine workers via assumed vapor migration from LNAPLs into indoor air of existing manufacturing buildings is also possible.

Groundwater

As discussed in Section 3.7 of the RFI Report (ENCORE, 2002b), the Site and the immediate vicinity obtain potable water from the City of Detroit, and do not rely on local groundwater in any of the saturated zones as a drinking water supply. Therefore, drinking water exposure of workers and residents at and around the Site is not expected. However, potential exposure of workers to groundwater in the shallow saturated zone during subsurface construction activities is possible because the water table at the Site at many locations is shallower than the expected maximum excavation depths of 10 to 12 ft bgs. No current exposure to groundwater in the intermediate and deep saturated zones is expected because these zones are deeper than the expected maximum excavation depths, and groundwater from these zones is not currently used for any purpose at the Site or in the immediate vicinity.

The potential significance of exposures via the complete pathways identified above is discussed in Section 5.3.

5.3 Significance of Potential Exposures

The significance of potential exposures, from complete exposure pathways, identified in Section 5.2 is discussed below.

5.3.1 Soil

The significance of potential exposures to soil contamination can be evaluated by estimating the cumulative cancer and noncancer risks associated with the potential exposures and comparing them with the U.S. EPA-established levels for determining whether corrective measures are warranted under RCRA Corrective Action. Under U.S. EPA policy, corrective measures are not warranted when the site-related cumulative cancer risk does not exceed 10^{-4} and the noncancer hazard index (HI) does not exceed 1 (61 FR 19432, May 1, 1996; U.S. EPA, 1991b).

Upper-bound estimates of high-end cumulative cancer and noncancer risks for potential exposure of workers to soil at the AOIs identified in Section 5.1.1 are shown in Table 5-3. These upper-bound estimates are calculated using the highest concentration of each constituent detected in soil at each area, and the conservative exposure factors that were used to derive the U.S. EPA Region 9 risk-based preliminary remediation goals (PRGs) for soil in generic commercial/industrial settings (U.S. EPA, 2002a). High-end cumulative cancer and noncancer risk estimates for an area would be lower if concentrations representative of the area were used instead of the highest concentrations, and if site-specific exposure factors were used to account for the magnitude, frequency, and duration of exposures appropriate for the particular area, as would be done in risk assessments following U.S. EPA guidance (1989). These upper-bound estimates of high-end cumulative cancer and noncancer risks for routine workers also represent conservative estimates of risks for potential exposure of workers during occasional maintenance/construction activities and for potential exposure of trespassers (ENVIRON, 2003).

As summarized in Table 5-3, these upper-bound estimates of cumulative cancer risk and HI do not exceed 10^{-4} or 1, respectively, for the following AOIs where supplemental RFI activities were completed:

- AOI F-7 (Wastewater Collection Sumps at Fiero Powerhouse)
- AOI F-15 (Oil/Solvent Catch Basin)
- AOI M-2 (Former Plating Operations Area)
- AOI P-9 (Pipeline Release Investigation)
- AOI P-11 (Trestle Pipeline Release Investigation)

This means that there are no unacceptable exposures at these AOIs, except these calculations do not address the potential for indoor air exposure at AOI F-15 which was evaluated in Section 5.3.1 of the RFI Report and found to present no unacceptable exposure.

Potential exposures at AOIs W-1, W-8, W-9, and the proposed Area of Industrial Redevelopment are further evaluated below by developing conservative estimates of the average concentrations for certain chemicals at each AOI to provide more representative concentrations to which receptors might be exposed under current and reasonably expected future conditions. Potential exposures of construction workers during activities in the proposed Area of Industrial Redevelopment are also evaluated using a larger-scale, short-term construction scenario that might be associated with redevelopment of this part of the Site.

Conservative estimates of the average concentrations are calculated as 95% upper confidence limits (UCLs) on the means of surface (0 to 2 ft) and depth-averaged (0 to 10 ft) concentrations at each sampling location for evaluating potential exposure of routine workers/trespassers and construction workers, respectively. Data that consist of non-detects are conservatively replaced with one-half sample quantitation limits (SQLs), and unusually high SQLs are handled as recommended in U.S. EPA guidance (U.S. EPA, 1989).

The 95% UCL for each chemical is calculated using the nonparametric bootstrap method known as the bias-corrected and accelerated (BCa) method with 4,000 bootstrap replications (Efron and Tibshirani, 1998). A nonparametric bootstrap confidence interval does not rely on assumptions about the data's underlying probability distribution which are often difficult to confirm, but instead are based on statistical re-sampling of the empirical distribution of the observed concentrations. For an empirical distribution that is approximately normal, the bootstrap confidence interval will be essentially the same as the normal confidence interval. For an empirical distribution that is not normal, however, the bootstrap confidence interval will be more accurate than a confidence interval calculated assuming a normal (or even lognormal) distribution (U.S. EPA, 1997b).

Table 5-4a shows the high-end estimates of cumulative cancer risk and HI for AOIs W-1, W-8, W-9, and the proposed Area of Industrial Redevelopment that are based on 95% UCLs for certain chemicals at each AOI. The chemicals chosen for 95% UCL calculations at each AOI are those with maximum concentrations that contribute most significantly to the cumulative cancer and noncancer risks. Using 95% UCLs for these chemicals and maximum concentrations for other chemicals still overestimates cumulative risks, but is an efficient approach that is consistent with U.S. EPA guidance (1989; page 6-25). As shown on this table, these high-end estimates of cumulative cancer risk and HI do not exceed 10^{-4} or 1, respectively, except for the construction worker scenario at AOI W-1. The calculation of these cumulative cancer and noncancer risk estimates is provided in Appendix F.1 and is discussed below.

The construction worker scenario for AOI W-1 is further evaluated using exposure factors for a construction scenario at the Site. Table 5-4b summarizes the estimates of cumulative cancer risk and HI for construction workers at AOI W-1, which do not exceed 10^{-4} or 1, respectively, as shown in the calculations provided in Appendix F.2. This means that there is no unacceptable current exposure to soil at these AOIs.

AOI W-1 (West Yard)

Potential exposure of routine workers to surface soil in unpaved areas and potential exposure of construction workers to surface and subsurface soil at AOI W-1 are possible. The estimates of cancer risk and HQ shown in Appendix F.1 are calculated using the maximum concentrations of each chemical detected in surface soil at AOI W-1, except bootstrap 95% UCLs are used for benzene (0.1 mg/kg), xylenes (0.25 mg/kg), benzo(a)pyrene (2.4 mg/kg), 2-methylnaphthalene (6.6 mg/kg), naphthalene (23 mg/kg), PCBs (0.8 mg/kg), antimony (6.7 mg/kg), arsenic (16 mg/kg), chromium (437 mg/kg), copper (418 mg/kg), iron (127,000 mg/kg), manganese (2,460 mg/kg), mercury (0.1 mg/kg), thallium (2.2 mg/kg), and 2,3,7,8-TCDD TEQ (3.8×10^{-5} mg/kg). As shown in Table 5-4a, the estimated high-end cumulative cancer risk and HI at AOI W-1 based on these exposure concentrations are approximately 4×10^{-5} and 1, respectively.

The calculations in Appendix F.1 assume that workers contact contaminated soil during the entire workday for 250 days per year and 25 years (U.S. EPA, 2002a). However, the frequency of potential exposure of workers to soil at AOI W-1 is expected to be much lower. Currently, many of the areas where concentrations are higher than the screening criteria are covered with gravel or concrete. No routine activity is being conducted in these areas, so workers currently have little opportunity for direct contact with soil in this area. Potential future exposures of routine workers at the Area of Industrial Redevelopment are evaluated separately below. The frequency of current exposure to contaminated soil at AOI W-1 is expected to be on the order of only a few days a year at most. This means the calculations in Appendix F.1 are conservative high-end estimates of cumulative cancer and noncancer risks for routine workers at AOI W-1.

The estimates of cancer risk and HQ for workers who perform occasional construction that involves excavating into subsurface soil are calculated in Appendix F.2. These estimates are calculated using the maximum concentrations of each chemical detected at AOI W-1, except depth-averaged bootstrap 95% UCLs are used for 2-methylnaphthalene (12 mg/kg), naphthalene (18 mg/kg), PCBs (14 mg/kg), and manganese (1,860 mg/kg) for the construction worker scenario. As shown in Table 5-4b, the estimated high-end cumulative cancer risk and HI for this scenario at AOI W-1 based on these exposure concentrations are approximately 1×10^{-5} and 0.6, respectively.

The calculations in Appendix F.2 assume that workers contact surface and subsurface soil during the entire workday for 5 days per year and 10 years (ENVIRON, 2003), which are conservative estimates on how long a typical construction worker may be involved in construction at GM Sites. Potential future exposures of construction workers at the Area of Industrial Redevelopment are evaluated separately below. The frequency of current exposure to soil at AOIW-1 is expected to be on the order of only a few days per year at most. This means the calculations in Appendix F.2 are conservative high-end estimates of cumulative cancer and noncancer risks for occasional excavations at AOIW-1.

Since the risk estimates for potential exposure of both routine and construction workers do not exceed U.S. EPA's acceptable cancer risk range of 10^{-6} to 10^{-4} and HI limit of 1 (U.S. EPA, 1991b), the concentrations of chemicals in soil at AOIW-1 do not pose an unacceptable risk.

AOIW-8 (Former Plant 9 Basement AST Area)

Potential exposure of routine workers to surface soil in unpaved areas and potential exposure of construction workers to surface and subsurface soil at AOIW-8 are possible. The estimates of cancer risk and HQ shown in Appendix F.1 are calculated using the maximum concentrations of each chemical detected at AOIW-8, except a 95% UCL is used for antimony (12 mg/kg), chromium (325 mg/kg), copper (2610 mg/kg), and mercury (0.59 mg/kg). As shown in Table 5-4a, the estimated high-end cumulative cancer risk and HI at AOIW-8 based on these exposure concentrations are approximately 7×10^{-5} and 0.9, respectively.

The calculations in Appendix F.1 assume that workers contact surface or subsurface soil during the entire workday for 250 days per year and 25 years (U.S. EPA, 2002a). However, the frequency of potential exposure of workers to soil at AOIW-8 is expected to be much lower. Currently, many of the areas where concentrations are higher than the screening criteria are covered with gravel or concrete. No routine activity is being conducted in these areas, so workers currently have little opportunity for direct contact with soil in this area. Construction activity is being planned for the portions of AOIW-8 that will be used for the Area of Industrial Redevelopment. The areas that will be used for the Area of Industrial Redevelopment are evaluated separately below. The frequency of current exposure to contaminated soil at AOIW-8 is expected to be on the order of only a few days a year at most. This means the calculations in Appendix F.1 are conservative high-end estimates of cumulative cancer and noncancer risks at AOIW-8. Since these estimates do not exceed U.S. EPA's acceptable cancer risk range of 10^{-6} to 10^{-4} and HI limit of 1 (U.S. EPA, 1991b), the concentrations of chemicals in soil at AOIW-8 do not pose an unacceptable risk.

AOIW-9 (Former Central Foundry Resin Spill and UST)

Potential exposure of routine workers to surface soil in unpaved areas and potential exposure of construction workers to surface and subsurface soil at AOIW-9 are possible. The estimates of cancer

risk and HQ shown in Appendix F.1 are calculated using the maximum concentrations of each chemical detected at AOI W-9, except bootstrap 95% UCLs are used for benzo(a)pyrene and PCBs. The bootstrap 95% UCLs on the mean concentrations are approximately 1.5 and 3.6 mg/kg, for benzo(a)pyrene and PCBs, respectively. As shown in Table 5-4a, the estimated high-end cumulative cancer risk and HI at AOI W-9 based on these exposure concentrations are approximately 4×10^{-5} and 0.9, respectively. These calculations do not include the data at and around soil boring BW9-02, because that area is currently fenced to prevent unauthorized worker access until corrective measures to address the presence of PCBs in the soil is completed, which is discussed in the CMP Report (ENCORE, 2003j). The restricted-access area around boring BW9-02 is shown on Figure 4-12.

The calculations in Appendix F.1 assume that workers contact contaminated soil during the entire workday for 250 days per year and 25 years (U.S. EPA, 2002a). However, the frequency of potential exposure of workers to soil at AOI W-9 is expected to be much lower. Currently, many of the areas where concentrations are higher than the screening criteria are covered with gravel or concrete. No routine activity is being conducted or planned in these areas, so workers currently have little opportunity for direct contact with soil in this area. Construction activity is being planned for the portion of AOI W-9 that will be used for the Area of Industrial Redevelopment, which is evaluated separately below. The frequency of current exposure to contaminated soil at AOI W-9 is expected to be on the order of only a few days a year at most. This means the calculations in Appendix F.1 are conservative high-end estimates of cumulative cancer and noncancer risks at AOI W-9. Since these estimates do not exceed U.S. EPA's acceptable cancer risk range of 10^{-6} to 10^{-4} and HI limit of 1 (U.S. EPA, 1991b), the concentrations of benzo(a)pyrene, PCBs, and other chemicals in soil at AOI W-9 outside the restricted-access area shown on Figure 4-12 do not pose an unacceptable risk.

Proposed Area of Industrial Redevelopment

Potential exposure of routine workers to surface soil in unpaved areas and potential exposure of construction workers to surface and subsurface soil at the proposed Area of Industrial Redevelopment are possible. The estimates of cancer risk and HQ shown in Appendix F.1 are calculated using the maximum concentrations of each chemical detected in the surface soil at the proposed Area of Industrial Redevelopment, except bootstrap 95% UCLs are used for xylenes (0.1 mg/kg), benzo(a)pyrene (1.3 mg/kg), 2-methylnaphthalene (2.9 mg/kg), naphthalene (9.7 mg/kg), PCBs (1.6 mg/kg), antimony (3.7 mg/kg), arsenic (12 mg/kg), chromium (279 mg/kg), copper (333 mg/kg), iron (157,000 mg/kg), manganese (1,620 mg/kg), mercury (0.14 mg/kg), thallium (1.2 mg/kg), and 2,3,7,8-TCDD TEQ (4.4×10^{-5} mg/kg). As shown in Table 5-4a, the estimated high-end cumulative cancer risk and HI at the proposed Area of Industrial Redevelopment based on these exposure concentrations are approximately 4×10^{-5} and 1, respectively. Like the calculations for AOI W-9 discussed above, these calculations also do not include the data at and around soil boring BW9-02, because that area is currently fenced to prevent unauthorized worker access until corrective

measures to address the presence of PCBs in the soil is completed. The restricted-access area around boring BW9-02 is shown on Figure 4-12.

The calculations in Appendix F.1 assume that workers contact contaminated soil during the entire workday for 250 days per year and 25 years (U.S. EPA, 2002a). However, the frequency of potential exposure of workers to soil at the proposed Area of Industrial Redevelopment is expected to be much lower. Currently, many of the areas where concentrations are higher than the screening criteria are covered with gravel or concrete. If the proposed Area of Industrial Redevelopment is initiated, some or all of these areas may be under the building, pavement, or other ground cover that would prevent or limit contact by workers during routine activities, depending on the final construction plans for the distribution center. Under the current construction plans, the Area of Industrial Redevelopment would occupy approximately 970,000 sq ft and paved areas would cover 1,700,000 sq ft, which constitutes a total of approximately 89% of the Area of Industrial Redevelopment. This means the calculations in Appendix F.1 are conservative high-end estimates of cumulative cancer and noncancer risks at the Area of Industrial Redevelopment. These estimates of risk are also conservative estimates for potential exposure of workers conducting excavations during occasional maintenance activities and potential exposure of trespassers (ENVIRON, 2003).

For the larger-scale, short-term construction scenario, an exposure frequency of up to approximately 125 days over a period of 1 year is expected to give estimates of cancer and noncancer risks that are within the acceptable limits, as discussed further in Appendix F.2. These estimates of risks are calculated using the maximum concentrations of each chemical detected at the Area of Industrial Redevelopment, except depth-averaged bootstrap 95% UCLs are used for xylenes (0.55 mg/kg), benzo(a)pyrene (5 mg/kg), 2-methylnaphthalene (2.6 mg/kg), naphthalene (1.4 mg/kg), PCBs (2.9 mg/kg), antimony (4.5 mg/kg), arsenic (8.8 mg/kg), total chromium (119 mg/kg), cobalt (9 mg/kg), copper (983 mg/kg), iron (37,600 mg/kg), manganese (799 mg/kg), mercury (0.25 mg/kg), and thallium (1.2 mg/kg). The maximum concentrations and 95% UCL concentrations do not include the following samples: BW1-02-S(0-2), BW1-03-S(0-2), BW1-07-S(0-2), BW1-09-S(0-2), BW9-03-S(0-2)072803, BMWW8-02-S(0-2), SBSB5-04.0, SSTT4 (0-6), SSTT5 (0-6), SW8-03-S(0-2), SW8-04-S(0-2), SW8-05-S(0-2), SW8-09-S(0-2), SSTT2 (0-6), and SBTT3-5.0. Concentrations in these samples would present an unacceptable risk for a larger scale, short-term construction scenario. Larger-scale, short-term construction in these areas will be restricted in the updated Due Care Plan (to be revised in January 2004) until final industrial redevelopment plans have been finalized. Once the final redevelopment plans have been determined, this area will be reevaluated to determine the appropriate soil removal actions required, if any. As shown in Table 5-4c, the estimated high-end cumulative cancer risk and HI for this scenario at the Area of Industrial Redevelopment based on the exposure concentrations discussed above are approximately 9×10^{-6} and 1, respectively.

Since the risk estimates for potential exposure of both routine and construction workers do not exceed U.S. EPA's acceptable cancer risk range of 10^{-6} to 10^{-4} and HI limit of 1 (U.S. EPA, 1991b), the concentrations of chemicals in soil, excluding the samples listed above, at the Area of Industrial Redevelopment do not pose an unacceptable risk.

As noted in Section 5.1.1 and in Sections 4.3.2 and 4.3.7 of this Report, subsurface soil at AOIs M-2 and M-16 contains LNAPL at the water table. The LNAPLs at these AOIs have constituents with concentrations that correspond to theoretical upper-bound smear zone soil concentrations that exceed the soil screening criteria used in Section 5.1.1. The significance of potential exposure of workers to these constituents during excavation associated with occasional maintenance or construction activities is evaluated in Appendix F.2. Potential exposure of workers via direct contact with the LNAPLs and inhalation of vapors from exposed LNAPL is also evaluated in Appendix F.2, which discusses the exposure concentrations, exposure factors, toxicity values, and risk calculations used to evaluate these pathways. As noted above, no construction is actually being conducted or is planned at these areas.

The cumulative cancer risk and HI for each exposure pathway for each LNAPL area are summarized on Table 5-5.

These estimates are calculated using the highest concentration of each constituent detected in each LNAPL at AOIs M-2 and M-16. This summary shows that potential exposure of workers conducting excavations during occasional maintenance or construction activities is not expected to result in significant cancer or noncancer risks. The same evaluation for the LNAPLs at AOIs W-1, W-8, and W-10 was discussed in Section 5 of the RFI Report (ENCORE, 2002b).

The LNAPLs at AOI M-2 and AOI M-16 are under existing manufacturing buildings, and the LNAPL at AOI W-8 (which was identified during the original RFI activities and discussed in the RFI Report (ENCORE, 2002b)) could become located under a proposed building in the Area of Industrial Redevelopment. To evaluate the potential for significant exposure if constituents of the LNAPLs at AOIs M-2, M-16, and W-8 were to migrate through the foundation of a building, a simplified and conservative approach is used in which vapor concentrations in equilibrium with each LNAPL (source vapor concentrations) are estimated and directly compared with inhalation limits. As shown in Appendix F.3, these ratios are all less than 1.

The approach presented in Appendix F.3 is highly conservative since these estimated vapor concentrations would undergo attenuation if they migrate through the soil and any foundation cracks into indoor air. Conservative attenuation coefficients for VOCs are typically on the order of 10,000-fold or more. This means that the indoor air concentrations of VOCs due to vapor intrusion, if

vapor intrusion were to occur, would be at least 10,000 times lower than the source vapor concentrations, and the ratios shown in Appendix F.3 also would be at least 10,000 times lower.

To illustrate this point, attenuation coefficients are calculated in Appendix F.3 using the generic commercial/industrial building characteristics recommended by MDEQ (2002), a conservative separation of 1.5 m between the subsurface vapor source and the building (based on site-specific depth to the water table), and assuming that soil between the LNAPL and the building consists of only sand. Even with these assumptions, which are highly conservative for the existing buildings overlying the LNAPL at AOI M-2, AOI M-16, and the proposed Area of Industrial Redevelopment, the attenuation coefficients are at least approximately 10,000-fold. These calculations show that the LNAPL constituents, if assumed to migrate into indoor air, would not exceed any occupational inhalation limit and would contribute insignificantly to indoor air concentrations that include chemicals from occupational sources.

5.3.2 Groundwater

As discussed in Section 5.2, potential current exposure to groundwater at and around the Site is limited to worker contact with groundwater in the shallow unconfined water table zone during excavation activities that extend into the water table. Screening criteria for evaluating the significance of these potential current exposures do not need to include the screening criteria that are based on residential drinking water use, which are used in the evaluation discussed in Section 5.1.2. Instead, the evaluation of significance is more appropriately conducted using only the screening criteria that are based on worker contact with groundwater while performing excavations. Comparison of the data from monitoring wells screened in the shallow unconfined water table zone with these criteria is included in the right-most column in Table 5-2a. The ratios in this column show that the only instances where concentrations exceed these screening criteria are for 2,3,7,8-TCDD TEQ at AOIs W-1 and W-8, and for PCBs at AOI W-1. As discussed in Section 5.1.2, these samples were evaluated in Section 5.3.1 of the RFI Report (ENCORE, 2002b). Section 5.3.2 of the RFI Report (ENCORE, 2002b) concluded that the aqueous-phase concentrations in the groundwater do not pose a significant risk to workers who might contact groundwater while performing occasional excavations.

The significance of potential exposure of workers to constituents in LNAPL during occasional excavations is evaluated in Appendix F.2, and the results of the calculations are summarized above in Section 5.3.1. The results show that the estimates of cumulative cancer and noncancer risks associated with such exposures at AOIs M-2 and M-16 do not exceed 10^{-4} or HI of 1, respectively. These risk estimates show that such exposures would not pose a significant risk.

The significance of potential exposure of workers to vapors that are assumed to migrate from LNAPL into buildings is evaluated in Appendix F.3, and the results of the evaluation are summarized

above in Section 5.3.1. The results show that the assumed contribution of LNAPL vapor concentrations to indoor air mixtures that include chemicals from occupational sources would be insignificant.

5.4 Conclusions

Soil and groundwater at a number of AOIs at the Site are considered to have been affected by potentially significant releases when the highest constituent concentrations in these media are compared with generic risk-based screening criteria. However, when the likelihood of complete exposure pathways, current Site-specific conditions, and 95% UCLs rather than the highest concentrations are considered, the concentrations of constituents in these media do not present a significant exposure, except one area at AOIW-9 where GM has developed a corrective measure (ENCORE, 2003j) and a few areas at the proposed Area of Industrial Redevelopment where results will be reevaluated, following finalization of redevelopment plans, to address the presence of contaminants in surface and subsurface soil. GM has restricted worker access to the area at AOIW-9 until the corrective measures are completed. Similarly, GM has restricted any large-scale construction activities in the proposed Area of Industrial Redevelopment until the corrective measures in that area are completed.

6. Summary/Conclusions

The supplemental RFI included field investigations at the following AOIs and other areas:

Fiero
AOI F-7: Wastewater Collection Sumps
AOI F-8: Paint Sludge Storage Area Form
AOI F-15: Oil/Solvent Catch Basin

Demolition Area
AOI W-1: West Yard
AOI W-8: Former Plant 9 Basement AST Area
AOI W-9: Former Central Foundry (Plant 6) Resin Spill and UST
AOI W-10: Railroad Marshalling Area Drainage System

Metal Fabrication Division
AOI M-1: WWTP
AOI M-2: Former Plating Operations Area
AOI M-4: Plant 25 Former Gasoline UST and Current Gasoline UST Location
AOI M-5: Former A-2 Fill Area
AOI M-7: ELPO Building
AOI M-9: Heat Treat Oil Storage Area
AOI M-16: Plant 25 Basement Sump Area
AOI M-25: Plant 33 Basement Sump Area

Powertrain
AOI P-6: Former UST Farm and Stoddard Solvent AST
AOI P-9: Pipeline Release;
AOI P-10: Former Plant 18
AOI P-11: Trestle Pipeline Release

Other
Storm Water Detention Facility

The objectives of supplemental RFI activities were to complete investigations necessary to:

- Determine hydrogeologic conditions, as necessary, to properly investigate releases from the new AOIs;

- Characterize the nature and extent of releases of hazardous waste and/or hazardous constituents in environmental media at the new AOIs;
- Assess potential risk to human health and the environment associated with releases of hazardous waste and/or hazardous constituents at the new AOIs;
- Provide sufficient data to support the RCRA corrective action EI determination for the new AOIs;
- Determine whether interim corrective measures are necessary to control current unacceptable risks, if any, to human health at the new AOIs;
- Determine whether corrective measures are necessary to mitigate current and future unacceptable risks, if any, to human health and the environment for the new AOIs;
- Determine the impact, if any, from discharges from the new AOIs to off-Site areas;
- Determine the impact, if any, below several sumps and pits;
- Fulfill provisions for a second round of groundwater sampling, as described in the RFI Work Plan (ENCORE, 2001b);
- Provide further characterization of groundwater quality at existing AOIs based on U.S. EPA comments on the CA750/CA725 determination;
- Monitor Site-wide groundwater conditions by completing two semi-annual sampling events (November 2002 and May 2003); and
- Delineate free product plumes.

Based on the results of the supplemental RFI field investigations it was determine that a potentially significant release has occurred at 14 AOIs and the SWDF. The findings of the field investigation are discussed in Section 4 of this Report. The potential health significance of the constituents found in soil, groundwater, and LNAPL are discussed in a risk evaluation presented in Section 5 of this Report.

6.1 No Significant Release Found

Among the AOIs and off-Site areas investigated during the supplemental RFI, the following have no significant release of hazardous constituents to the environment. The determination is based on a conservative approach in which the highest concentration of a constituent at an area is compared with screening criteria:

Fiero
AOI F-8: Paint Sludge Storage Area Form

Metal Fabrication Division
AOI M-7: ELPO Building
AOI M-9: Heat Treat Oil Storage Area
AOI M-25: Plant 33 Basement Sump Area

Powertrain
AOI P-10: Former Plant 18

The results of the RFI indicate that no further investigation of these areas is warranted.

6.2 AOIs Discussed In Risk Evaluation

A release of hazardous constituents was identified at 14 AOIs and the SWDF, based on a conservative approach in which the highest concentrations of a constituent at an AOI or area were compared against screening criteria. Using the RFI characterization data on the nature and extent of constituents at these areas, the health significance of these releases under current and reasonably expected future land use were evaluated. The finding of the RFI field investigation and conclusion of the risk evaluation are summarized below:

Fiero
AOI F-7: Wastewater Collection Sumps
A release was identified based on the presence of 1,1-dichloroethene and tetrachloroethene within groundwater. However, the results of the risk evaluation indicate that this area does not pose an unacceptable health risk. NFA is proposed for soils. Groundwater at this AOI will be addressed in the CMP.

AOI F-15: Oil/Solvent Catch Basin
A release was identified based on the presence of tetrachloroethene in the soil at concentrations greater than the screening criteria. However, the results of the risk evaluations presented in the RFI Report (ENCORE, 2002b) and in this Report indicate that this area does not pose an unacceptable health risk, therefore, NFA is required.

Demolition Area
AOI W-1: West Yard
A release was identified based on the presence of lead, manganese, chromium and PCBs in the soil and select VOCs, inorganics, PCBs, and dioxins in the groundwater at concentrations higher than the screening criteria. The results of the risk evaluations presented in the RFI Report (ENCORE, 2002b) and in this Report indicate that this area does not pose an unacceptable health risk. NFA is required for soils. An LNAPL plume (LNAPL Area No. 1) is present in this AOI. This AOI will be evaluated further in the CMP.

AOI W-8: Former Plant 9 Basement AST Area
A release was identified based on the presence of arsenic, manganese, chromium, and lead in the soil and select inorganics, PCBs, and dioxins in the groundwater at concentrations higher than the

screening criteria. The results of the risk evaluations presented in the RFI Report (ENCORE, 2002b) and in this Report indicate that this area does not pose an unacceptable health risk. NFA is required for soils. An LNAPL plume (LNAPL Area No. 3) is present in this AOI. This AOI will be evaluated further in the CMP.

AOI W-9: Former Central Foundry (Plant 6) Resin Spill and UST

A release was identified based on the presence of manganese, chromium, and PCBs in the soil, and lead in the groundwater at concentrations higher than the screening criteria. An LNAPL plume (LNAPL Area No. 6) is present in this AOI. This AOI will be evaluated further in the CMP.

Area of Industrial Redevelopment

A release was identified based on the presence of inorganics, SVOCs, PCBs, and dioxins in soil at concentrations exceeding the screening criteria. LNAPL Areas Nos. 1, 3, and 6 are within this area. The risk evaluation presented in Section 5, indicated that constituents do pose an unacceptable risk to human health under a large scale, short term construction scenario. This area will be further addressed in the CMP.

AOI W-10: Railroad Marshalling Area Drainage System

A release was identified based on the presence of manganese and chromium in the surface soil, lead in the deeper soil borings, and select arsenic, thallium, PCBs, and bis-(2-ethylhexyl)-phthalate in the groundwater at concentrations higher than the screening criteria during the initial RFI investigations. The risk evaluation presented in the RFI Report (ENCORE, 2002b) indicate that these constituents in soil do not pose an unacceptable health risk, therefore NFA is proposed for soils. An LNAPL plume (LNAPL Area No. 2) is present in this AOI. This AOI will be evaluated further in the CMP.

<u>Metal Fabrication Division</u>

AOI M-1: WWTP

A release was identified based on the presence of PCBs in the soil and cyanide in the groundwater at concentrations higher than the screening criteria. The risk evaluation indicates that these constituents do not pose an unacceptable health risk. NFA is proposed for soils. Groundwater at this AOI will be addressed in the CMP.

AOI M-2: Former Plating Operations Area

A release was identified based on the presence of manganese and 1,1-dichloroethene in soil, and bis(2-ethylhexyl)phthalate and select VOCs and inorganics in groundwater at concentrations higher than the screening criteria. The risk evaluations presented in the RFI Report (ENCORE, 2002b) and in this Report, indicate that these constituents in soil do not pose an unacceptable health risk, therefore NFA is proposed for soils. An LNAPL plume (LNAPL Area No. 4) is present in this AOI. This AOI will be addressed in the CMP.

AOI M-4: Plant 25 Former Gasoline UST and Current Gasoline UST Location
A release was identified based on the presence of benzene, ethylbenzene, and xylenes in the groundwater at concentrations higher than the screening criteria. NFA is required for soils. Groundwater at this AOI will be addressed in the CMP.

AOI M-5: Former A-2 Fill Area
A release was identified based on the presence of lead in the soil and barium, manganese, and PCBs in the groundwater at concentrations higher than the screening criteria. The risk evaluation indicates that these constituents do not pose an unacceptable threat to workers. NFA is required for soils. Groundwater at this AOI will be addressed in the CMP.

AOI M-16: Plant 25 Basement Sump Area
A release was identified based on the presence of vinyl chloride in the groundwater at concentrations higher than the screening criteria. NFA is required for soils. An LNAPL plume (LNAPL Area No. 5) is present in this AOI. This AOI will be evaluated further in the CMP.

Powertrain
AOI P-6: Emissions Control Building Former UST Farm and Former Stoddard Solvent AST
A release was identified based on the presence of benzene, toluene, ethyl benzene, and xylenes in the groundwater at concentrations higher than the screening criteria. NFA is required for soils. Groundwater at this AOI will be addressed in the CMP.

AOI P-9: Pipeline Release
A release based on the presence of benzo(a)pyrene in soil, and phenols, antimony, nickel, selenium, and vanadium in groundwater at concentrations higher than the screening criteria. The risk evaluation indicates that these constituents do not pose an unacceptable health risk, therefore NFA is required for soil. Groundwater at this AOI will be evaluated in the CMP.

AOI P-11: Trestle Pipeline Release
A release based on the presence of manganese in soil, and cobalt in groundwater at concentrations higher than the screening criteria. The risk evaluation indicates that these constituents do not pose an unacceptable health risk, therefore NFA is required for soil. Groundwater at this AOI will be evaluated in the CMP.

Other Area
Stormwater Detention Facility
A release based on the presence of PCBs and select inorganics in groundwater at concentrations higher than the screening criteria. The risk evaluation indicates that these constituents do not pose

an unacceptable health risk, therefore NFA is required for soil. Groundwater at this AOI will be evaluated in the CMP.

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Tables

ENCORE
Environmental Corporate Remediation

TABLE 1-1
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS, PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SUMMARY OF SUPPLEMENTAL RFI ACTIVITIES, RESULTS, AND PROPOSED FURTHER ACTIVITY

AOI #	AOI Description	Summary of Primary Materials Managed	Reason for Investigation						Supplemental RFI No. 1 Activities	Soil Laboratory Analysis Performed	Groundwater Laboratory Analysis Performed	Analytical Results That Exceed Part 201 Industrial Criteria		RFI Report Proposed Activity	Supplemental RFI Report No. I Proposed Activity
			Semi- Annual Sampling*	Second Round Sampling	Pits/ Sumps	Remediation Design	Other	RFI Work Plan Addendum				Soil	Groundwater		
Study Area 1 - Fiero															
F-7	Wastewater Collection Sumps - Located in the basement of the Powerhouse	- Industrial wastewater			X			8	- Cleaned and repaired sumps - Installed 1 groundwater monitoring well - Collected 1 soil sample - Collected 3 groundwater samples	- VOCs - SVOCs - PCBs - Inorganics	- 1,1-DCE - TCE	No exceedances	1,1-DCE (0.013 mg/L) TCE (0.0062 mg/L)	Sump pits to be repaired	Soil: NFA Groundwater: Perform CMP
F-8	Paint Sludge Storage Area - Located north of Building 17 - The concrete pad is 12 by 24 ft and is unbermed - It is covered with a corrugated roof	- Storage of nonhazardous paint sludge and sludge from filtering waste bonderite			X				- 1 subsurface soil sample collected	- VOCs - SVOCs - PCBs - Inorganics		No exceedances		Trench and sump to be properly abandoned	NFA
F-15	Fuel AST Area: Oil/Solvent Catch Basin - Located in the Fiero Loading dock - Contents of catch basin was an oil sludge - Catch basin cleaned and inspected	- Unknown			X			8	- Completed 3 soil borings	- VOCs		No exceedances		Catch basin to be properly abandoned	NFA
Study Area 2 - Demolition Area															
W-1	West Yard - Approximately 20 acres in size - Entire yard was historically used for materials management activities, including: - Disposal of foundry sand, refuse, sludge and trash; - The storage of hazardous waste (former hazardous waste storage pad); - Former railroad marshalling area; and - a backfilled settling basin	- Impacted soils, groundwater, and LNAPL containing VOCs, SVOCs, metals, PCB and Dioxins	X	X				9	- Completed 1 soil boring - 3 groundwater samples collected - Groundwater samples were collected at selected, previously installed, downgradient wells (DWD-13, MWW1-04, MWW1-05)	- VOCs - SVOCs - PCBs - Inorganics	- MWW1-04 & -05 PCBs only - DWD13 VOCs, SVOCs, PCBs, Inorganics - Semi-annual wells - VOCs, SVOCs, PCBs, Inorganics, Dioxins, and Furans	Arsenic (9 mg/kg) Manganese (7,260 mg/kg) Chromium (total) (340 mg/kg)	Total PCBs (0.0013 mg/L) Vanadium (0.0484 mg/L)* Manganese (1.2 mg/L)* Methylene chloride (0.3 mg/L)* Acetone (12 mg/L)*	Perform CMP	Soil: NFA Groundwater: Perform CMP LNAPL: Perform CMP
W-8	Plant 9-Basement - 12 ASTs ranging in size from 2,000 gal to 14,000 gal - The tanks were located along the north side of Plant 9 basement - Kerosene-like odors noticed in storm sewer in this area	- Kerosene - Coolant (141-KC)		X				9	- Completed 5 soil borings - Collected 6 groundwater samples - Installed 2 recovery wells - Installed 3 groundwater monitoring wells - Evaluated 11 soil borings for the presence of LNAPL (no samples collected)	- VOCs - SVOCs - PCBs - Inorganics	- VOCs - SVOCs - PCBs - Inorganics - Methylene chloride (Nov. 2003 sample only)	Arsenic (54 mg/kg) Manganese (1,990 mg/kg) Chromium (total) (363 mg/kg) Lead (8,440 mg/kg)	Manganese (5.41 mg/L) Nickel (0.307 mg/L) Lead (0.122 mg/L) Vanadium (0.239 mg/L) Arsenic (0.0849 mg/L) Beryllium (0.0054 mg/L) Chromium (total) (0.295 mg/L) Cobalt (0.0879 mg/L) Thallium (0.003 mg/L) 2,4-Dimethylphenol (2.5 mg/L) Total methylphenols (4.6 mg/L)	Perform CMP	Soil: NFA Groundwater: Perform CMP LNAPL: Perform CMP
W-9	Former Central Foundry (Plant 6) - Formerly located east of the West Yard - Produced gray iron from metallic ore to be casted into automotive parts - Operations ceased in 1987 and the plant was demolished in 1995 - 20,000 gal. UST	- Gasoline - Metals - PCBs - Arsenic - Resin	X					9	- Completed 9 soil borings - Collected 4 groundwater samples - Installed 2 groundwater monitoring wells - Evaluated 9 soil borings for the presence of LNAPL - Collected 1 LNAPL sample	- VOCs - SVOCs - PCBs - Inorganics	- VOCs - SVOCs - PCBs - Inorganics - Semi-annual wells - VOCs, SVOCs, PCBs, Inorganics, Dioxins, and Furans	Manganese (3,680 mg/kg)	Lead (0.0391 mg/L)	Perform CMP	Perform CMP
W-10	Railroad Marshalling Area Drainage System - Extends the entire length of the west boundary of the West Yard - Used for the temporary storage of railcars loaded with scrap metal and grinding waste to be shipped off-site - A drainage system was installed in 1972 to collect the waste draining out of the railcars - The marshalling area is no longer used for the storage of railcars, although the drainage system remains in place	- Waste from metal chips - Oils - PCBs	X	X					- Collected 4 groundwater samples		- VOCs - SVOCs - PCBs - Inorganics - Semi-annual wells - VOCs, SVOCs, PCBs, Inorganics, Dioxins, and Furans		No exceedances	Perform CMP	Soil: NFA Groundwater: Perform CMP LNAPL: Perform CMP
Study Area 3 - Metal Fabrication Division															
M-1	Wastewater Treatment Plant (WWTP) - Located west of Plants 5/23 and Plant 14 - Included up to 55 ASTs historically utilized for the WWTP - Ground cover includes pavement, gravel, and grass - Known releases included alkali/oily water, cyanide plating solution, acidic alkali water, lime slurry, reclaimed oil, storing metallic water, chrome solution, and cyanide solution. - History of exceedances of lead, phenol, and Chromium VI at sanitary sewer outfall 003	- Treated metals (including chromium VI) - Treated alkali/oily wastes - Oil - Sludge - Sulfuric Acid - Lime, Alum, Polymer, Caustic - Pickle Liquid						8	- Installed 3 monitoring wells - Collected 5 groundwater samples		- Cyanide		Cyanide (1.3 mg/L)	NFA	Soil: NFA Groundwater: Perform CMP

TABLE 1-1
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS, PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SUMMARY OF SUPPLEMENTAL RFI ACTIVITIES, RESULTS, AND PROPOSED FURTHER ACTIVITY

AOI #	AOI Description	Summary of Primary Materials Managed	Reason for Investigation						Supplemental RFI No. 1 Activities	Soil Laboratory Analysis Performed	Groundwater Laboratory Analysis Performed	Analytical Results That Exceed Part 201 Industrial Criteria		RFI Report Proposed Activity	Supplemental RFI Report No. I Proposed Activity
			Semi- Annual Sampling*	Second Round Sampling	Pits/ Sumps	Remediation Design	Other	RFI Work Plan Addendum				Soil	Groundwater		
M-2	Former Plating Operations Area - Western portion of Plant 2 - Types of plating included meatier (copper coating) and utility (nickel and chrome plating) - Plating pits showed evidence of corrosion during Site visit	- Metals (including copper, nickel, and chromium VI) - Chlorinated solvents		X				4	- LNAPL delineation - Collected 1 LNAPL sample for chemical analysis and fingerprinting - Completed 5 soil borings - Installed 9 monitoring wells - Collected 22 groundwater samples	- VOCs - SVOCs - PCBs - Inorganics	- VOCs - SVOCs - PCBs - Inorganics	No exceedances	1,1,1-TCA (0.555 mg/L) 1,1,2-TCA (0.02 mg/L) 1,1-DCE (0.091 mg/L) 1,1-DCA (1.9 mg/L) PCE (0.0075 mg/L) TCE (0.056 mg/L) cis-1,2-DCE (0.09 mg/L) bis(2-ethylphthalate) (0.024 mg/L) Methylene chloride (0.024 mg/L) Vinyl Chloride (0.027 mg/L) Nickel (10.4 mg/L) Vanadium (0.0054 mg/L) Cyanide (0.55 mg/L)	Soils: NFA Groundwater: Perform CMP	Soil: NFA Groundwater: Perform CMP LNAPL: Perform CMP
M-4	Plant 25 Former Gasoline UST & Current Gasoline AST - Prior documented release (gasoline) from former UST (1,000 gal)	- Gasoline (leaded and unleaded)		X		X		8, 8A	- LNAPL delineation - Collected 1 LNAPL sample for chemical analysis and fingerprinting - Installed 2 groundwater monitoring wells - Collected 1 soil sample - Collected 11 groundwater samples	- VOCs - SVOCs - PCBs - Inorganics	- BTEX - VOCs	Waiting for validated analytical data	Benzene (0.98 mg/L) Ethylbenzene (1.5 mg/L)	Soils: NFA Groundwater: Perform CMP	Soil: NFA Groundwater: Perform CMP LNAPL: Perform CMP
M-5	Former Fill Area A-2 - Used for disposal of plant refuse and industrial waste including partially burned materials	- Wastewater sludge - PCBs - Partially burned waste						8	- Installed 3 monitoring wells - Collected 5 groundwater samples		- PCBs - Barium - Manganese		Barium (2.2 mg/L) Manganese (1.16 mg/L) PCBs (0.00059 mg/L)	NFA	Soil: NFA Groundwater: Perform CMP (Collect second round groundwater samples from new wells)
M-7	ELPO Building/Flammable Liquids Storage Building - Includes ELPO Operations Building and Flammable Liquids Storage Building - Series of concrete trenches and sumps which convey wastewater containing metals	- Solvents - Alkali Cleaners - Phosphoric Acid - Chromic Acid - PCBs - Metals					X		- Completed 1 soil boring - Visual inspection of subsurface conditions	- VOCs - SVOCs - PCBs - Inorganics		No exceedances		NFA	NFA
M-9	Former Plant 1 Heat Treat Oil Storage Area - 4 ASTs near the eastern wall of Plant 11 - ASTs contained inside a floor pit with sump that discharges to WWTP	- Dirty heat treat quench oil - LC-7 coolant - Acidic material		X	X				- 1 surficial soil sample collected - 1 groundwater sample collected	- VOCs - SVOCs - PCBs - Inorganics	- VOCs - SVOCs - PCBs - Inorganics	No exceedances	No exceedances	Sump will be properly abandoned NFA	NFA
M-16	Plant 25 Basement Sump Area - Sludge tank, pumping system, and several floor sumps - Area currently flooded - Several of the sumps and pits filled with grout, unable to ascertain condition - Evidence of water on foundation walls	- Sludges - Oils		X				8, 8A	- 1 LNAPL sample collected (MWM4-06) - 1 soil sample collected from monitoring well installation - 6 groundwater monitoring wells installed - 4 groundwater samples collected - Completed 18 soil borings, sampled 4 (waiting for validated analytical results)	- VOCs - SVOCs - PCBs - Inorganics	- VOCs - SVOCs - PCBs - Inorganics - MWW16-02 second round sample for cyanide only	No exceedances Validated Analytical Data not available for 4 sampled soil borings.	Vinyl Chloride (0.014 mg/L)	NFA	Soil: NFA Groundwater: Perform CMP LNAPL: Delineation Activities and Perform CMP
M-25	Plant 25 East Basement Sump Area - Plants 25 and 33 housed engine machining and assembly operations, material storage and shipping - Basement sump area is located along the east wall of Plant 33 , the floor sump discharges to Plant 25 which discharges to the WWTP - Plant 25 and 33 under extensive renovation	- Framing system wax						8	- Installed one groundwater monitoring well - 1 groundwater sample collected		- VOCs - SVOCs - PCBs - Inorganics		No exceedances	NFA	NFA
Study Area 4 - Powertrain															
P-6	Former UST Farm & Stoddard Solvent AST - West of the northwest corner of the Emissions Control building - Release from UST(s) was discovered in 1984 - Remediation performed in 1984 and tanks removed in 1987 - Documentation of previous investigations and remediation does not exist - Recent (Jan 2001) construction activities indicate subsurface contamination exceeds Part 201 Criteria for BTEX compounds	- Gasoline - Indolene I clear gas - GM calibration solvent - Stoddard solvent		X		X			- Collected 10 groundwater samples		- VOCs - BTEX		Benzene (0.34 mg/L) Ethylbenzene (1.6 mg/L)	Perform CMP	Soil: NFA Groundwater: Perform CMP
P-9	Pipeline Release Investigation - Alkali-oily wastewater reported leaking (Aug./02) from trestle pipeline at NE side of former Plant 18 - Jan. /03 a second leak reported - Plant 18 demolished in 1998	- Alkali-oily wastewater						5	- Installed 3 groundwater monitoring wells - Completed 31 soil borings (14 for areal coverage, 3 borings to investigate for benzo (a)pyrene, 14 safety of workers) - Collected 3 groundwater samples - Completed and sampled one test pit	- VOCs - SVOCs - PCBs - Inorganics	- VOCs - SVOCs - PCBs - Inorganics - Benzo(a)pyrene (BP9-11 to BP9-13)	Benzo(a)pyrene (12 mg/kg)	2,4-dimethylphenol (0.6 mg/L) Total methylphenols (1.28 mg/L) Antimony (0.0131 mg/L) Nickel (0.128 mg/l) Selenium (0.0607 mg/L) Vanadium (0.578 mg/L)	Not evaluated in RFI Report	Soil: NFA Groundwater: Perform CMP

TABLE 1-1
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS, PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SUMMARY OF SUPPLEMENTAL RFI ACTIVITIES, RESULTS, AND PROPOSED FURTHER ACTIVITY

AOI #	AOI Description	Summary of Primary Materials Managed	Reason for Investigation						Supplemental RFI No. 1 Activities	Soil Laboratory Analysis Performed	Groundwater Laboratory Analysis Performed	Analytical Results That Exceed Part 201 Industrial Criteria		RFI Report Proposed Activity	Supplemental RFI Report No. I Proposed Activity
			Semi- Annual Sampling*	Second Round Sampling	Pits/ Sumps	Remediation Design	Other	RFI Work Plan Addendum				Soil	Groundwater		
P-10	Former Plant 18 - July 1978 oil reported to be leaking form transformer on roof of Plant 18 - 2002 Storm sewer investigation - PCBs present in sewer water & sediment samples	- PCBs - Oil and Grease						6	- Completed 6 soil borings - Installed 3 monitoring wells	-SVOCs -PCBs	Groundwater not encountered	No exceedances		Not evaluated in RFI Report	NFA
P-11	Trestle Pipeline Release Investigation - Overhead trestle pipeline release in Mar./03 in vicinity of Former Plant 18 - Alkali-oily wastewater reported flowing from broken pipeline along north side of Former Plant 18 - stained soils in area of release collected for disposal - Pooled liquid observed near storm sewer MH	- Alkali-oily wastewater						7	- Completed 10 soil borings - Installed 3 monitoring wells - Collected 2 groundwater samples	- VOCs - SVOCs - PCBs - Inorganics	- VOCs - SVOCs - PCBs - Inorganics	Manganese (3,260 mg/kg)	Cobalt (0.0535 mg/L)	Not evaluated in RFI Report	Soil: NFA Groundwater: Perform CMP
Other Areas															
	Storm Water Detention Facility (SWDF) - Located on the south side of Montcalm Avenue - Operational in May 1982, intercepting and treating the Site storm water discharged to Outfall 001 - During routine cleaning/inspection (Sept./02) cracks in the concrete floor and degraded sections of rubber seals observed - Subsurface investigation to determine if impacted storm water from pond was infiltrating into the subsurface	- Storm water	X				X		- Repair to concrete and rubber seals - 5 soil samples collected, temporary well installed at each boring location - 3 temporary piezometers installed in 3 boring locations - 5 soil samples collected - 6 groundwater samples collected	- VOCs - SVOCs - PCBs - Inorganics	- VOCs - SVOCs - PCBs - Inorganics (total and dissolved) - MW-02 and MW-03 only total	Arsenic (9.3 mg/kg)	PCBs (0.0017 mg/L) Antimony (total)(0.0129 mg/L) Cadmium (total)(0.0067 mg/L) Lead (total)(0.164 mg/L) Manganese(total) (1.64 mg/L) Vanadium(total) (0.087 mg/L) Antimony(dissolved) (0.0223 mg/L) Manganese(dissolved) (1.02 mg/L) Vanadium(dissolved) (0.0116 mg/L)	Not evaluated in RFI Report	Soil: NFA Groundwater: Perform CMP
	Site-Wide Groundwater Monitoring - **Sampling locations included in the November 2003 and May 2003 semi-annual groundwater monitoring events		X						- Semi-annual hydrogeologic investigations - Included 2 AOI F-12 (MWF12-01 and -02) wells and 3 Site-wide wells (IWP5, GWP3, and GWP6)		- VOCs - SVOCs - PCBs - Inorganics - Dioxins - Furans		Manganese (1.05 mg/L) Acetone (1.4 mg/L)		Perform CMP
Other	Proposed Industrial Redevelopment Area - During follow up activities to a geotechnical borehole investigation in AOIs W1, W8, and W9, stained soils and potential LNAPL was observed in the soil - Geotechnical investigation consisted of completing 36 soil borings - 16 of the 36 boreholes exhibited stained/discolored soils, and/or elevated PID readings	- Impacted soils, groundwater, and LNAPL containing VOCs, SVOCs, metals, PCB and Dioxins						9	- 33 Soil borings completed - Collected soil samples from 15 soil borings - Installed 8 groundwater monitoring wells - Collected 5 groundwater samples - Evaluated 13 soil borings for the presence of LNAPL - Collected 1 LNAPL sample	- VOCs - SVOCs - PCBs - Inorganics	- VOCs - SVOCs - PCBs - Inorganics	Arsenic (54 mg/kg) Chromium (total) (360 mg/kg) Manganese (7,260 mg/kg) Lead (8,440 mg/kg)	Lead (0.0391 mg/L) 2,4-Dimethylphenol (2.5 mg/L) Total methylphenols (4.6 mg/L)	Not evaluated in RFI Report	Soil: NFA Groundwater: Perform CMP

* = Constituent concentration from Semi-Annual Groundwater sampling results

* *= Refer to Table 2-1 Semi-Annual Groundwater Monitoring Events Sampling Locations

NFA = No Further Action

FA = Further Action

CMP = Corrective Measures Proposal

IDWC = Part 201 Generic Industrial Drinking Water Criteria (Groundwater)

IPSIC = Part 201 Generic Industrial Particulate Soil Inhalation Criteria (Soil)

IDC = Part 201 Generic Industrial Direct Contact Criteria (Soil)

RDC = Part 201 Generic Residential Direct Contact Criteria (Soil)

RDWC = Part 201 Generic Residential Drinking Water Criteria (Groundwater)

TABLE 2-1
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SEMI-ANNUAL GROUNDWATER
SAMPLING LOCATIONS

November 2002	May 2003
MWD6	MWD6
MWW1-02	MWW1-02
MWW1-03	MWW1-03
MWW1-06	MWW1-06
MWW10-03	MWW10-03
MWF12-01	MWF12-01
MWF12-02	MWF12-02
MWF1	MWF1
MW40-99	MW40-99
IWD7	IWD7
IWP5	IWP5
GWD11	GWD11
DWD10	DWD10
DWD12	DWD12
GWP3	GWP3
GWD9	GWD9
	MWW1-04
	GWP6
	GWD8

TABLE 2-2

GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

GROUNDWATER SAMPLING PARAMETER SUMMARY

Date (mm/dd/yyyy)	Well ID	pH	Specific Conductivity mS/cm	Temperature degree C	Turbidity NTU	DO mg/L	ORP mV	DTW ft	Flow Rate mL/min	Volume Purged gallons
FIERO										
	F-7									
8/11/2003	MWF7-01	8.72	1.59	22.96	1.88	0.24	97	22.1	100.00	0.396
8/11/2003	MWF7-02	7.61	1.30	22.15	4.76	0.36	100	22.1	100.00	2.378
8/11/2003	MWF7-03	7.19	0.48	19.89	4.61	0.28	64	23.89	100.00	1.189
DEMOLITION AREA										
	W-1									
7/17/2002	MWW1-04	11.82	1.83	20.1	1.60	0.85	17	5.87	100.00	
11/10/2003	MWW1-04	9.68	1.45	14.20	4.2	0.37	-7	4.1	100.00	0.793
8/19/2002	MWW1-05	6.36	4.23	18.43	4.61	0.23	-206.1	7.19	50.00	1.321
	W-8									
11/14/2002	MWW8-08	Monitoring Well Was Pumped Dry Twice And Sampled								
11/12/2002	MWW8-10	7.94	1.88	12.73	18.1	0.16	35	9.13	100.00	2.113
11/12/2002	MWW8-11	7.19	1.43	12.70	4.7	0.11	50	9.38	100.00	3.302
11/12/2002	MWW8-12	12.10	1.45	10.94	3.42	0.3	51	10.5	100.00	0.660
8/25/2003	MWW8-13	10.46	1.32	19.25	5.54	0.03	124	20.19	100.00	1.189
	W-9									
8/25/2003	MWW9-01	Monitoring Well Was Pumped Dry Twice And Sampled								
9/30/2003	MWW9-03	7.16	1.28	13.05	1.7	0.58	-88	24.75	100.00	1.321
9/30/2003	MWW9-05	Monitoring Well Was Dry - No Samples Collected								
9/30/2003	MWW9-06	7.99	1.32	12.57	0.75	4.85	44	24.44	150.00	3.566
9/30/2003	MWW9-07	Monitoring Well Was Dry - No Samples Collected								
9/30/2003	TWW9-01	9.09	14.37	13.09	2.11	0.43	106	21.78	150.00	1.981
METAL FABRICATION DIVISION										
	M-1									
8/12/2003	MWM1-02	6.85	2.71	17.44	4.39	0.93	27	14.28	100.00	1.215
8/12/2003	MWM1-03	6.95	4.43	16.00	1.88	0.23	5	15.01	100.00	0.925
8/12/2003	MWM1-04	6.89	2.52	17.00	1.34	2.63	-3	20.65	100.00	0.528
8/12/2003	MWM1-05	7.13	2.53	16.65	2.01	0.27	-74	17.57	100.00	0.925
8/12/2003	MWM1-06	6.98	4.47	16.70	3.37	0.22	-115	13.97	100.00	0.528
	M-2									
11/12/2002	MWM2-01	7.05	3.75	15.44	4.95	0.88	199	12.89	100.00	1.321
6/23/2003	MWM2-01	7.24	6.33	13.70	3.22	1.6	-	12.88	100.00	1.321
11/12/2002	MWM2-02	7.43	1.14	16.85	0.13	0.26	-50	16.86	250.00	7.000
6/23/2003	MWM2-02	7.45	0.57	15.48	3.12	0.17	-	16.82	100.00	1.189
11/12/2002	MWM2-03	7.39	1.73	17.69	0.05	0.49	149	16.98	250.00	8.000
6/23/2003	MWM2-03	7.02	1.47	17.77	3.51	0.42	39	16.45	150.00	5.548
11/12/2002	MWM2-04	6.87	1.57	19.09	0.04	0.1	-43	16.74	300.00	14.000
6/24/2003	MWM2-04	6.69	0.97	18.98	22	0.37	-42	16.64	150.00	4.161
11/12/2002	MWM2-05	7.55	0.94	18.52	0.15	0.09	-120	16.16	500.00	12.000
6/23/2003	MWM2-05	7.41	0.53	18.06	3.1	0.15	-35	16.02	200.00	2.113
11/12/2002	MWM2-07	6.65	1.36	20.76	4.83	0.13	-41	16.95	250.00	4.000
6/23/2003	MWM2-07	6.43	1.01	20.14	2.28	0.09	-101	16.83	150.00	2.576
11/12/2002	MWM2-08	7.00	6.61	17.62	0.03	0.21	78	16.9	250.00	8.000
6/24/2003	MWM2-15	7.36	0.64	20.62	2.87	0.33	272	16.36	120.00	1.902
6/24/2003	MWM2-16	7.04	0.72	20.49	2.88	0.46	-99	16.58	150.00	0.991
6/23/2003	MWM2-17	7.41	0.92	19.46	0.9	0.14	-	16.36	100.00	0.793
6/24/2003	MWM2-18	6.84	0.88	22.38	4.38	0.39	-130	16.63	150.00	5.151
6/23/2003	MWM2-19	6.52	1.52	22.00	0.9	0.28	-72	16.7	120.00	0.951
6/23/2003	MWM2-20	6.99	0.91	18.94	4.97	0.17	-84	16.26	150.00	1.783
6/23/2003	MWM2-22	6.35	1.40	20.55	1.29	0.12	-115	16.7	125.00	1.486
6/23/2003	MWM2-23	6.35	0.96	20.24	1.42	0.17	0.93	16.73	140.00	0.925
6/23/2003	MWM2-24	6.34	1.75	20.80	3.03	0.17	-85	16.5	125.00	1.321
	M-4									
11/14/2002	MWM4-01	7.04	1.71	11.83	0.23	2.66	76	26.74	100.00	1.000
9/30/2003	MWM4-01	8.11	3.35	2.22	3.16	2.71	-29	27.64	100.00	0.528
11/14/2002	MWM4-02	7.68	5.50	14.79	1	0.2	68	5.5	100.00	0.925
10/1/2003	MWM4-02	8.34	1.05	14.81	2.88	0.31	-105	6.82	150.00	1.981
11/14/2002	MWM4-03	7.50	4.82	11.99	0.19	0.14	71	25.42	100.00	2.000
9/30/2003	MWM4-03	6.82	5.27	12.02	3.82	0.14	57	26.21	150.00	2.774
11/14/2002	MWM4-04	7.23	5.58	13.07	0.25	1.19	-	10.03	75.00	0.500
9/30/2003	MWM4-04	8.45	6.16	14.00	0.71	2.57	-131	9.31	100.00	0.660
11/14/2002	MWM4-05	7.10	0.73	13.16	0.04	0.26	76	9.65	100.00	1.000
10/1/2003	MWM4-05	8.02	0.76	13.09	0.6	0.68	-108	9.09	100.00	3.302
10/1/2003	MWM4-07	6.51	4.51	15.51	1.58	0.17	-88	29.65	200.00	5.019

TABLE 2-2

GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

GROUNDWATER SAMPLING PARAMETER SUMMARY

Date (mm/dd/yyyy)	Well ID	pH	Specific Conductivity mS/cm	Temperature degree C	Turbidity NTU	DO mg/L	ORP mV	DTW ft	Flow Rate mL/min	Volume Purged gallons
	M-5									
8/12/2003	MW2-99	6.77	22.20	18.54	1.77	0.35	-120		100.00	2.008
8/12/2003	MWM5-01	10.10	20.30	18.51	4.65	0.26	-85	5.91	100.00	1.981
8/12/2003	MWM5-02	6.47	2.61	15.83	4.1	0.27	-252	21.5	100.00	0.528
8/12/2003	MWM5-03	6.60	4.30	15.82	1.63	0.58	-179	23.21	100.00	0.528
8/12/2003	MWM5-04	6.43	6.08	17.01	1.43	0.48	80	24.12	100.00	0.660
	M-9									
11/14/2002	MWM9-02	9.80	27.80	13.79	2.75	4.53	-68	15.47	50.00	2.000
	M-16									
8/11/2003	MWM16-01	6.98	4.65	18.10	4.95	0.08	--	24.65	80.00	3.381
11/13/2002	MWM16-02	7.20	1.46	10.80	4.3	4.58	67	24.2	100.00	2.510
8/11/2003	MWM16-02	7.33	1.67	19.20	4.2	3.56	--	24.97	80.00	1.479
8/11/2003	MWM16-04	7.08	3.90	16.35	1.83	1.8	--	24.55	80.00	0.766
8/11/2003	MWM16-05	Monitoring Well Was Dry - No Samples Collected								
	M-25									
8/11/2003	MWM25-01	Monitoring Well Was Dry - No Samples Collected								
8/11/2003	MWM25-02	6.98	3.51	16.22	0.18	0.52	62	24.75	100.00	0.660
POWERTRAIN										
	P-9									
6/15/2003	MWP9-01	11.54	1.50	16.87	4.02	0.29	172	3.9	150.00	1.000
6/8/2003	MWP9-01	11.16	1.46	14.39	2.26	0.45	160	4.66	120.00	1.800
6/8/2003	MWP9-03	11.41	2.27	13.73	3.79	0.06	46	5.54	200.00	4.227
6/15/2003	MWP9-03	11.09	2.13	15.74	-	0.08	-7	4.88	150.00	1.000
6/15/2003	MWP9-04	7.53	1.34	15.43	2.64	0.15	18	15.72	100.00	0.793
6/8/2003	MWP9-04	7.51	1.33	13.87	1.63	0.21	102	15.43	100.00	0.793
	P-10									
6/15/2003	MWP10-01	Monitoring Well Was Dry - No Samples Collected								
6/15/2003	MWP10-03	Monitoring Well Was Dry - No Samples Collected								
6/15/2003	MWP10-05	Monitoring Well Was Dry - No Samples Collected								
	P-11									
6/15/2003	MWP11-01	7.06	1.35	12.93	4.26	0.56	89	11.94	150.00	1.500
6/15/2003	MWP11-02	Monitoring Well Was Dry - No Samples Collected								
6/15/2003	MWP11-04	6.86	1.86	17.25	4.68	0.05	-101	3.84	120.00	3.329

TABLE 3-1

GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATON

SUBSURFACE STRATIGRAPHIC DATA SUMMARY

Well ID	TOC	Elevation P/Casing	Ground	Installation Date/Status	Total Depth	Screen Intake (ft bgs)		Screen Intake Elevation		Flow Zone
						Top	Bottom	Top	Bottom	
FIERO										
F-7										
MWF7-03	973.31	973.60	973.63	7/24/2003	35	22	32	951.63	941.63	Clay/Sand
DEMOLITION AREA										
W-1										
MWW1-06	943.63	--	943.75	7/30/2002	16	4	16	939.75	927.75	Marl
W-8										
MWW8-13	970.22	970.50	967.75	5/29/2003	67	17	27	950.75	940.75	Sand/Silty Clay
MWW8-14	970.23	970.63	967.71	10/11/2003	31.5	11.5	31.5	956.21	936.21	Silty Clay/Silt/Sand
MWW8-15	970.24	970.40	967.71	10/11/2003	31.5	11.5	31.5	956.21	936.21	Silty Clay/Silt/Silty Clay
MWW8-16	970.46	970.83	968.00	10/11/2003	31.5	11.5	31.5	956.50	936.50	Sitly Clay/Silt/Sand/Silty Clay
RWW8-01	970.33	970.65	967.86	7/30/2003	37	10	30	957.86	937.86	Silty Clay
RWW8-02	970.75	971.38	967.94	7/30/2002	32	9.3	29.3	958.64	938.64	Silty Clay
W-9										
MWW9-01	969.60	969.94	969.94	7/28/2003	37	24	34	945.94	935.94	Sand/Silt/Peat/Silt/Sand
MWW9-02	973.26	973.56	970.64	7/28/2003	37	23	33	947.64	937.64	Sand/Silt/Silty Clay
MWW9-03	971.98	972.37	969.11	9/8/2003	37	18	28	951.11	941.11	Silt/Sand/Clay
MWW9-05	973.79	974.06	970.71	7/28/2003	37	23	33	947.71	937.71	Silty Clay
MWW9-06	973.82	974.15	970.82	9/10/2003	37	23	33	947.82	937.82	Sand/Silt
MWW9-07	970.59	970.76	967.59	9/10/2003	27	13	23	954.59	944.59	Silt
TWW9-01	971.14	--	970.79	8/18/2003	37	21	31	949.79	939.79	Sand
MFD										
M-1										
MWM1-04	970.25	970.6	967.65	7/23/2003	27	15	25	952.65	942.65	Silty Clay/Sand
MWM1-05	967.48	967.67	967.66	7/23/2003	27	15	25	952.66	942.66	Sand
MWM1-06	964.07	964.34	964.32	7/23/2003	27	15	25	949.32	939.32	Sand
M-2										
MWM2-15	967.58	967.88	967.94	5/31/2003	25	15	25	952.94	942.94	Sand/Silty Clay
MWM2-16	967.70	968.00	968.00	6/1/2003	25	14	24	954.00	944.00	Sand/Silty Clay
MWM2-17	967.43	967.88	967.88	4/24/2003	28.6	18	28	949.88	939.88	Sand/Silty Clay
MWM2-18	967.59	967.94	967.94	5/18/2003	32	18	28	949.94	939.94	Sand/Silt
MWM2-19	967.74	968.00	968.00	5/18/2003	25	15	25	953.00	943.00	Sandy Clay/Silty Sand/Silty Clay
MWM2-20	967.30	967.81	967.81	4/24/2003	33	19	29	948.81	938.81	Silty Sand/Sand/Silty Clay
MWM2-22	967.56	967.94	967.94	6/1/2003	25	15	25	952.94	942.94	Sand
MWM2-23	967.61	967.94	967.94	5/18/2003	30	15	25	952.94	942.94	Sand
MWM2-24	967.36	967.94	967.94	5/18/2003	30	20	30	947.94	937.94	Sand/Clay
M-4										
MWM4-06	911.10	961.31	961.29	7/21/2003	11	1	10	960.29	951.29	Sand
MWM4-07	985.22	985.44	985.44	9/15/2003	35	28	38	957.44	947.44	Sand
M-5										
MWM5-02	977.07	977.36	977.33	7/28/2003	27	17	27	960.33	950.33	Silty Clay/Sand/Silt/Sand
MWM5-03	979.11	979.11	979.10	7/22/2003	36.5	23.5	33.5	955.60	945.60	Sand
MWM5-04	979.55	979.91	979.91	7/22/2003	37	16	26	963.91	953.91	Sand/Silty Clay
M-16										
MWM16-03	960.92	961.26	961.26	7/21/2003	15	2	12	959.26	949.26	Sand
MWM16-04	980.20	980.52	980.73	7/21/2003	27	17	27	963.73	953.73	Sand/Silt
MWM16-05	980.96	981.05	981.12	7/21/2003	27	17	26	964.12	955.12	Sand/Silt/Silty Clay/Silt/Sand
MWM16-07	981.20	981.50	981.52	8/18/2003	37	22	32	959.52	949.52	Clay/Sand
MWM16-08	982.05	982.35	982.35	8/18/2003	32	18	28	964.35	954.35	Sand/Silt/Clay/Sand
MWM16-09	981.80	982.05	982.06	8/18/2003	37	2	30	980.06	952.06	Clay/Sand
M-25										
MWM25-02	980.06	980.28	980.28	7/21/2003	27	16	26	964.28	954.28	Silt/Sand
POWERTRAIN										
P-9										
MWP9-01	987.24	987.54	985.04	4/28/2003	8	3	8	982.04	977.04	Silty Sand/Silty Clay
MWP9-03	987.92	988.32	985.64	4/29/2003	27	15	25	970.64	960.64	Silt/Silty Sand/Silty Clay
MWP9-04	988.81	988.91	985.89	5/8/2003	27	13	23	972.89	962.89	Clay/Sand/Clay
P-10										
MWP10-01	987.51	987.97	984.93	5/1/2003	47	26	36	958.93	948.93	Silty Clay/Sand
MWP10-03	987.63	987.95	985.22	5/7/2003	37	27	37			Silty Sand/Sand
MWP10-05	988.74	989.09	986.31	5/7/2003	37	26	36	960.31	950.31	Silty Clay/Silty Sand
P-11										
MWP11-01	985.49	985.77	982.84	5/6/2003	27	9	19	973.84	963.84	Sand
MWP11-02	984.26	984.64	981.68	5/6/2003	27	9	19	972.68	962.68	Silt
MWP11-04	964.36	964.73	964.73	4/29/2003	27	10	20	954.73	944.73	Silty Clay/Silty Sand

TABLE 3-1

GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATON

SUBSURFACE STRATIGRAPHIC DATA SUMMARY

Well ID	TOC	Elevation P/Casing	Ground	Installation Date/Status	Total Depth	Screen Intake (ft bgs)		Screen Intake Elevation		Flow Zone
						Top	Bottom	Top	Bottom	
SWDF										
DP-01	--		939.14	10/3/2002	15					
DP-02	--		939.11	10/3/2002	15					
DP-03	--		939.42	10/3/2002	15					
DP-04	--		939.71	10/3/2002	15					
DP-05	--		939.78	10/3/2002	15					
DP-06	--		939.79	10/3/2002	15					
DP-07	--		939.81	10/3/2002	10					
DP-08	--		939.87	10/3/2002	15					
MW-01	949.95		947.93	10/4/2002	20					
MW-02	951.12		948.70	10/4/2002	20					
MW-03	948.40		948.70	10/4/2002	15					

Notes:
1. TOC - top of casing
2. P/Casing - Protective casing
3. ft bgs - feet below ground surface

TABLE 3-2
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

AOIs W-8, W-9 AND M-2 GROUNDWATER ELEVATIONS

Well ID	Depth to Water feet bgs	Groundwater Elevation AMSL
AOI M2 (August 27, 2003)		
MWM2-01	13.13	950.65
MWM2-02	17.04	950.78
MWM2-03	16.98	950.87
MWM2-04	16.88	950.80
MWM2-05	16.35	950.62
MWM2-06	17.44	950.61*
MWM2-07	17.02	950.58
MWM2-08	--	967.56
MWM2-15	16.68	950.90
MWM2-16	16.84	950.86
MWM2-17	16.59	950.84
MWM2-18	16.88	950.71
MWM2-19	17.00	950.74
MWM2-20	16.60	950.70
MWM2-22	16.98	950.58
MWM2-23	17.02	950.59
MWM2-24	16.77	950.59
AOI W-8 (October 28, 2003)		
MWW8-03	31.76	942.77*
MWW8-04	8.80	961.60
MWW8-06	33.52	942.25*
MWW8-07	31.16	943.53*
MWW8-08	31.59	939.51*
MWW8-09	14.66	957.32*
MWW8-10	8.56	961.40
MWW8-11	7.43	962.91
MWW8-12	7.80	962.30
MWW8-13	19.87	950.35
MWW8-14	30.25	940.02*
MWW8-15	32.31	937.95*
MWW8-16	29.99	940.95*
RWW8-01	26.18	944.25*
RWW8-02	31.50	940.51*
AOI W-9 (October 27, 2003)		
MWW8-10	8.67	961.29
MWW8-05	13.52	954.69
MW43-99	15.34	953.74
MWD3	13.98	956.60
MW38-99	18.07	952.12
DW 22	24.02	946.48
MW 22	26.51	944.19
MW37-99	23.58	946.18
MW44-99	26.06	945.83
MWW1-05	30.66	942.56*
MW-19S	29.59	941.54
MWW9-01	--	969.60
MWW9-02	33.92	939.54*
MWW9-03	24.66	947.32
MWW9-05	26.72	947.07
MWW9-06	24.28	949.54
MWW9-07	17.89	952.70
TWW9-01	21.6	949.54

Notes

1. feet bgs - feet below ground surface.
2. AMSL - Above mean sea level.
3. * - This water level was corrected to reflect the influence of the LNAPL present in this well.
4. A correction factor of 0.80 which represents the average LNAPL density/water density was used.

TABLE 4-1

GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

CONSTITUENTS OF CONCERN/SCREENING CRITERIA FOR AOIs

A: SOIL COC LIST

Chemical	RSVIC (mg/kg)	RPSIC (mg/kg)	RDC (mg/kg)	ISVIC (mg/kg)	IVSIC (mg/kg)	IPSIC (mg/kg)	IDC (mg/kg)
VOC							
Acetone	110,000	3.90E+08	23,000	110,000	160,000	1.70E+08	73,000
Benzene	1.6	380,000	180	8.4	45	470,000	400
1,1-Dichloroethane	230	3.3E+07	890	430	2,500	1.5.E+07	890
1,2-Dichloroethane	2.1	120,000	91	11	21	150,000	420
1,1-Dichloroethene	0.062	62,000	200	0.33	3.7	78,000	570
cis-1,2-Dichloroethene	22	2.30E+06	640	41	210	1.00E+06	640
Ethyl Benzene	87	1.00E+07	140	140	2,400	1.30E+07	140
Methylene Chloride	45	6.60E+06	1,300	240	700	8.30E+06	2,300
Tetrachloroethene	11	5.40E+06	88	60	600	6.80E+06	88
Toluene	250	2.70E+07	250	250	3,300	1.20E+07	250
Trichloroethene	7.1	1.80E+06	500	37	260	2.30E+06	500
1,1,1-Trichloroethane	250	6.70E+07	460	460	4,500	2.90E+07	460
1,1,2-Trichloroethane	4.6	190,000	180	24	57	250,000	840
Vinyl Chloride	0.27	350,000	3.8	2.8	29	890,000	34
SVOC							
2-4-Dimethylphenol	NA	4.70E+06	11,000	NA	NA	2.10E+06	36,000
Benzo(a)pyrene	NA	1,500	2	NA	NA	1,900	8
bis(2-Ethylhexyl)phthalate	NA	700,000	2,800	NA	NA	890,000	10,000
Butylbenzylphthalate	NA	4.70E+07	310	NA	NA	2.10E+07	310
Dibenz(a,h)anthracene	NA	NA	2	NA	NA	NA	8
Methylphenol (Cresol)	NA	6.70E+06	11,000	NA	NA	2.90E+06	36,000
Pentachlorophenol	NA	100,000	90	NA	NA	130,000	320
P/PCB							
PCBs (total)	3,000	5,200	4	16,000	810	6,500	16
INORGANIC							
Antimony	NA	13,000	180	NA	NA	5,900	670
Arsenic	NA	720	7.6	NA	NA	910	37
Barium	NA	330,000	37,000	NA	NA	150,000	130,000
Beryllium	NA	1,300	410	NA	NA	590	1,600
Cadmium	NA	1,700	550	NA	NA	2,200	2,100
Chromium Total	NA	330,000	790,000	NA	NA	150,000	1.00E+06
Cobalt	NA	13,000	2,600	NA	NA	5,900	9,000
Copper	NA	130,000	20,000	NA	NA	59,000	73,000
Cyanide (total)	NA	250	12	NA	NA	250	250
Iron	NA	NA	160,000	NA	NA	NA	580,000
Lead	NA	100,000	400	NA	NA	4,400	900
Manganese	NA	3,300	25,000	NA	NA	1,500	90,000
Nickel	NA	13,000	40,000	NA	NA	16,000	150,000
Selenium	NA	130,000	2,600	NA	NA	59,000	9,600
Thallium	NA	NA	35	NA	NA	NA	130
Vanadium	NA	NA	750	NA	NA	NA	5,500
CDD/F							
2,3,7,8-TCDD Equivalent	NA	0.071	0.00009	NA	NA	0.089	0.00099

Notes:

RSVIC - Residential Soil Volatilization to Indoor Air Inhalation Criteria

RVSIC - Residential Infinite Source Volatile Soil Inhalation Criteria

RPSIC - Residential Particulate Soil Inhalation Criteria

RDC - Residential Direct Contact

ISVIC - Industrial Soil Volatilization to Indoor Air Inhalation Criteria

IVSIC - Industrial Infinite Source Volatile Soil Inhalation Criteria

IPSIC - Industrial Particulate Soil Inhalation Criteria

IDC - Industrial Direct Contact

RDWC - Residential Drinking Water Criteria

IDWC - Industrial Drinking Water Criteria

RGVIC - Residential Groundwater Volatilization to Indoor Air Inhalation Criteria

IGVIC - Industrial Groundwater Volatilization to Indoor Air Inhalation Criteria

GCC - Groundwater Contact Criteria

NA - Not Applicable

TABLE 4-1

GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

CONSTITUENTS OF CONCERN/SCREENING CRITERIA FOR AOIs

B: GROUNDWATER COC LIST

Chemical	RDWC (mg/L)	IDWC (mg/L)	RGVIC (mg/L)	IGVIC (mg/L)	GCC (mg/L)
VOC					
Acetone	0.73	2.1	1,000,000	1,000,000	31,000
Benzene	0.005	0.005	5.6	35	11
1,1-Dichloroethane	0.88	2.5	1,000	2,300	2,400
1,2-Dichloroethane	0.005	0.005	9.6	59	19
1,1-Dichloroethene	0.007	0.007	0.2	1.3	11
cis-1,2-Dichloroethene	0.07	0.07	93	210	200
Ethyl Benzene	0.074	0.074	110	170	170
Methylene Chloride	0.005	0.005	220	1,400	220
Tetrachloroethene	0.005	0.005	25	170	12
Toluene	0.79	0.79	530	530	530
Trichloroethene	0.005	0.005	15	97	22
1,1,1-Trichloroethane	0.2	0.2	660	1,300	1,300
1,1,2-Trichloroethane	0.005	0.005	17	110	21
Vinyl Chloride	0.002	0.002	1.1	13	1
SVOC					
2-4-Dimethylphenol	0.37	1	NA	NA	520
Benzo(a)pyrene	0.005	0.005	NA	NA	0.002
bis(2-Ethylhexyl)phthalate	0.006	0.006	NA	NA	0.32
Butylbenzylphthalate	1.2	2.7	NA	NA	2.7
Dibenz(a,h)anthracene	5	5	NA	NA	5
Methylphenol (Cresol)	0.37	1	NA	NA	810
Pentachlorophenol	0.001	0.001	NA	NA	0.2
P/PCB					
PCBs (total)	0.0005	0.0005	0.045	0.045	0.0033
INORGANIC					
Antimony	0.006	0.006	NA	NA	68
Arsenic	0.05	0.05	NA	NA	4.3
Barium	2	2	NA	NA	14,000
Beryllium	0.004	0.004	NA	NA	290
Cadmium	0.005	0.005	NA	NA	190
Chromium Total	0.1	0.1	NA	NA	290,000
Cobalt	0.04	0.1	NA	NA	2,400
Copper	1.4	4.0	NA	NA	7,400
Cyanide (total)	0.2	0.2	NA	NA	57
Iron	300	300	NA	NA	58,000
Lead	0.004	0.004	NA	NA	NA
Manganese	0.05	0.05	NA	NA	9,100
Nickel	0.1	0.1	NA	NA	74,000
Selenium	0.05	0.05	NA	NA	970
Thallium	0.002	0.002	NA	NA	13
Vanadium	0.0045	0.062	NA	NA	970
CDD/F					
2,3,7,8-TCDD Equivalent	3.00E-08	3.00E-08	NA	NA	1.00E-08

Notes:

RSVIC - Residential Soil Volatilization to Indoor Air Inhalation Criteria

RVSIC - Residential Infinite Source Volatile Soil Inhalation Criteria

RPSIC - Residential Particulate Soil Inhalation Criteria

RDC - Residential Direct Contact

ISVIC - Industrial Soil Volatilization to Indoor Air Inhalation Criteria

IVSIC - Industrial Infinite Source Volatile Soil Inhalation Criteria

IPSIC - Industrial Particulate Soil Inhalation Criteria

IDC - Industrial Direct Contact

RDWC - Residential Drinking Water Criteria

IDWC - Industrial Drinking Water Criteria

RGVIC - Residential Groundwater Volatilization to Indoor Air Inhalation Criteria

IGVIC - Industrial Groundwater Volatilization to Indoor Air Inhalation Criteria

GCC - Groundwater Contact Criteria

NA - Not Applicable

TABLE 4-2
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-07 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
VOC	Acetone	67-64-1	ID	8	4	1.20E-02	7.10E-01	2.20E-03	7.40E-02		1.1E+05	6.5E-06	1.6E+05	4.4E-06	1.7E+08	4.2E-09	7.3E+04	9.7E-06	1.1E+05	6.5E-06	1.3E+05	5.5E-06	3.9E+08	1.8E-09	2.3E+04	3.1E-05
VOC	Benzene	71-43-2	A	8	2	1.30E-01	1.60E-01	3.40E-04	1.70E-02		8.4E+00	1.9E-02	4.5E+01	3.6E-03	4.7E+05	3.4E-07	4.0E+02	4.0E-04	1.6E+00	1.0E-01	1.3E+01	1.2E-02	3.8E+05	4.2E-07	1.8E+02	8.9E-04
VOC	Bromodichloromethane	75-27-4	B2	8	1	1.70E-03	1.70E-03	5.40E-04	1.90E-02		6.4E+00	2.7E-04	3.1E+01	5.5E-05	1.1E+05	1.5E-08	4.9E+02	3.5E-06	1.2E+00	1.4E-03	9.1E+00	1.9E-04	8.4E+04	2.0E-08	1.1E+02	1.5E-05
VOC	Bromoform	75-25-2	B2	8				7.20E-04	3.10E-02		7.7E+02		3.1E+03		3.6E+06		8.7E+02		1.5E+02		9.0E+02		2.8E+06		8.2E+02	
VOC	Bromomethane	74-83-9	D	8				1.60E-03	5.00E-02		1.6E+00		1.3E+01		1.5E+05		1.0E+03		8.6E-01		1.1E+01		3.3E+05		3.2E+02	
VOC	2-Butanone	78-93-3	ID	8	2	2.10E-01	2.30E-01	1.50E-03	8.00E-02		2.7E+04	8.5E-06	3.5E+04	6.6E-06	2.9E+07	7.9E-09	2.7E+04	8.5E-06	2.7E+04	8.5E-06	2.9E+04	7.9E-06	6.7E+07	3.4E-09	2.7E+04	8.5E-06
VOC	Carbon Disulfide	75-15-0		8				2.80E-04	6.70E-02		1.4E+02		1.6E+03		2.1E+07		2.8E+02		7.6E+01		1.3E+03		4.7E+07		2.8E+02	
VOC	Carbon Tetrachloride	56-23-5	B2	8				4.90E-04	1.90E-02		9.9E-01		1.2E+01		1.7E+05		3.9E+02		1.9E-01		3.5E+00		1.3E+05		9.6E+01	
VOC	Chlorobenzene	108-90-7	D	8				3.90E-04	1.60E-02		2.2E+02		9.2E+02		2.1E+06		2.6E+02		1.2E+02		7.7E+02		4.7E+06		2.6E+02	
VOC	Chloroethane	75-00-3		8				9.40E-04	7.10E-02		9.5E+02		3.6E+04		2.9E+08		9.5E+02		9.5E+02		3.0E+04		6.7E+08		9.5E+02	
VOC	Chloroform	67-66-3	B2	8	3	6.30E-03	5.70E-02	5.30E-04	9.90E-03		3.8E+01	1.5E-03	1.5E+02	3.8E-04	1.6E+06	3.6E-08	1.5E+03	3.8E-05	7.2E+00	7.9E-03	4.5E+01	1.3E-03	1.3E+06	4.4E-08	1.2E+03	4.8E-05
VOC	Chloromethane	74-87-3	D	8				4.80E-04	2.90E-02		1.0E+01		1.2E+02		2.6E+06		1.1E+03		2.3E+00		4.0E+01		4.9E+06		1.1E+03	
VOC	Cumene	98-82-8	D	8	2	1.10E-01	1.10E-01	5.50E-04	7.80E-03		3.9E+02	2.8E-04	2.0E+03	5.5E-05	2.6E+06	4.2E-08	3.9E+02	2.8E-04	3.9E+02	2.8E-04	1.7E+03	6.5E-05	5.8E+06	1.9E-08	3.9E+02	2.8E-04
VOC	Cyclohexane	110-82-7	ID	8	3	5.30E-02	2.20E+00	4.70E-04	1.30E-03																	
VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	8				1.10E-03	1.60E-01		1.2E+00		1.5E+01		5.9E+03		1.2E+00		1.2E+00		1.3E+01		1.3E+04		1.2E+00	
VOC	Dibromochloromethane	124-48-1	C	8				6.30E-04	2.50E-02		2.1E+01		8.0E+01		1.6E+05		5.0E+02		3.9E+00		2.4E+01		1.3E+05		1.1E+02	
VOC	1,2-Dibromoethane	106-93-4	B2	8				3.60E-04	3.60E-02		3.6E+00		5.8E+00		1.8E+04		4.3E-01		6.7E-01		1.7E+00		1.4E+04		2.5E-01	
VOC	1,2-Dichlorobenzene	95-50-1	D	8				4.50E-04	3.10E-02		2.1E+02		4.6E+04		4.4E+07		2.1E+02		2.1E+02		3.9E+04		1.0E+08		2.1E+02	
VOC	1,3-Dichlorobenzene	541-73-1	D	8				6.70E-04	1.80E-02								1.7E+02								1.7E+02	
VOC	1,4-Dichlorobenzene	106-46-7	C	8				4.80E-04	3.10E-02		1.0E+02		2.6E+02		5.7E+05		1.9E+03		1.9E+01		7.7E+01		4.5E+05		4.0E+02	
VOC	Dichlorodifluoromethane	75-71-8		8				8.80E-04	7.30E-02		1.7E+03		6.3E+04		1.5E+09		1.0E+03		9.0E+02		5.3E+04		3.3E+09		1.0E+03	
VOC	1,1-Dichloroethane	75-34-3	C	8	3	1.90E-03	2.90E-02	3.10E-04	2.70E-02		4.3E+02	6.7E-05	2.5E+03	1.2E-05	1.5E+07	1.9E-09	8.9E+02	3.3E-05	2.3E+02	1.3E-04	2.1E+03	1.4E-05	3.3E+07	8.8E-10	8.9E+02	3.3E-05
VOC	1,2-Dichloroethane	107-06-2	B2	8				4.40E-04	2.10E-02		1.1E+01		2.1E+01		1.5E+05		4.2E+02		2.1E+00		6.2E+00		1.2E+05		9.1E+01	
VOC	1,1-Dichloroethene	75-35-4	C	8	1	9.10E-03	9.10E-03	5.40E-04	3.30E-02		3.3E-01	2.8E-02	3.7E+00	2.5E-03	7.8E+04	1.2E-07	5.7E+02	1.6E-05	6.2E-02	1.5E-01	1.1E+00	8.3E-03	6.2E+04	1.5E-07	2.0E+02	4.6E-05
VOC	cis-1,2-Dichloroethene	156-59-2	D	8				3.40E-04	3.10E-02		4.1E+01		2.1E+02		1.0E+06		6.4E+02		2.2E+01		1.8E+02		2.3E+06		6.4E+02	
VOC	trans-1,2-Dichloroethene	156-60-5		8				3.90E-04	3.50E-02		4.3E+01		3.3E+02		2.1E+06		1.4E+03		2.3E+01		2.8E+02		4.7E+06		1.4E+03	
VOC	1,2-Dichloropropane	78-87-5	B2	8				3.40E-04	1.80E-02		7.4E+00		3.0E+01		1.2E+05		5.5E+02		4.0E+00		2.5E+01		2.7E+05		1.4E+02	
VOC	1,3-Dichloropropene (total)	542-75-6	B2	8				5.10E-04	2.30E-02		5.4E+00		6.0E+01		5.9E+05		2.4E+02		1.0E+00		1.8E+01		7.8E+05		1.0E+01	
VOC	Ethyl Benzene	100-41-4	D	8	3	1.40E-02	2.50E-01	6.10E-04	7.40E-04		1.4E+02	1.8E-03	2.4E+03	1.0E-04	1.3E+07	1.9E-08	1.4E+02	1.8E-03	8.7E+01	2.9E-03	7.2E+02	3.5E-04	1.0E+07	2.5E-08	1.4E+02	1.8E-03
VOC	2-Hexanone	591-78-6		8				1.30E-03	5.80E-02		1.8E+03		1.3E+03		1.2E+06		2.5E+03		9.9E+02		1.1E+03		2.7E+06		2.5E+03	
VOC	Methyl Acetate	79-20-9		8	2	2.50E-01	3.50E-01	1.10E-03	4.50E-02																	
VOC	Methyl tert-butyl ether	1634-04-4		8				3.10E-04	2.10E-02		5.9E+03		3.0E+04		8.8E+07		5.9E+03		5.9E+03		2.5E+04		2.0E+08		1.5E+03	
VOC	4-Methyl-2-pentanone	108-10-1	ID	8				9.20E-04	5.60E-02		2.7E+03		5.3E+04		6.0E+07		2.7E+03		2.7E+03		4.5E+04		1.4E+08		2.7E+03	
VOC	Methylcyclohexane	108-87-2		8	3	1.30E-01	4.90E+00	4.70E-04	7.40E-04																	
VOC	Methylene Chloride	75-09-2	B2	8				1.40E-03	7.90E-02		2.4E+02		7.0E+02		8.3E+06		2.3E+03		4.5E+01		2.1E+02		6.6E+06		1.3E+03	
VOC	Styrene	100-42-5		8				3.30E-04	3.30E-02		5.2E+02		3.3E+03		6.9E+06		5.2E+02		2.5E+02		9.7E+02		5.5E+06		4.0E+02	
VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	8				4.30E-04	2.10E-02		2.3E+01		3.4E+01		6.8E+04		2.4E+02		4.3E+00		1.0E+01		5.4E+04		5.3E+01	
VOC	Tetrachloroethene	127-18-4	C-B2	8	5	2.80E-03	9.30E-01	5.30E-04	2.00E-02		6.0E+01	1.6E-02	6.0E+02	1.6E-03	6.8E+06	1.4E-07	8.8E+01	1.1E-02	1.1E+01	8.5E-02	1.8E+02	5.2E-03	5.4E+06	1.7E-07	8.8E+01	1.1E-02
VOC	Toluene	108-88-3	D	8	7	3.80E-04	1.50E+00	9.90E-03	9.90E-03		2.5E+02	6.0E-03	3.3E+03	4.5E-04	1.2E+07	1.3E-07	2.5E+02	6.0E-03	2.5E+02	6.0E-03	2.8E+03	5.4E-04	2.7E+07	5.6E-08	2.5E+02	6.0E-03
VOC	1,2,4-Trichlorobenzene	120-82-1	D	8				6.10E-04	2.10E-02		1.1E+03		3.4E+04		1.1E+07		1.1E+03		1.1E+03		2.8E+04		2.5E+07		9.9E+02	
VOC	1,1,1-Trichloroethane	71-55-6	D	8	6	4.50E-03	1.80E+00	4.30E-04	5.00E-04		4.6E+02	3.9E-03	4.5E+03	4.0E-04	2.9E+07	6.2E-08	4.6E+02	3.9E-03	2.5E+02	7.2E-03	3.8E+03	4.7E-04	6.7E+07	2.7E-08	4.6E+02	3.9E-03
VOC	1,1,2-Trichloroethane	79-00-5	C	8				3.60E-04	3.10E-02		2.4E+01		5.7E+01		2.5E+05		8.4E+02		4.6E+00		1.7E+01		1.9E+05		1.8E+02	
VOC	Trichloroethene	79-01-6	C-B2	8	2	2.80E-03	5.50E-02	6.50E-04	3.30E-02		3.7E+01	1.5E-03	2.6E+02	2.1E-04	2.3E+06	2.4E-08	5.0E+02	1.1E-04	7.1E+00	7.7E-03	7.8E+01	7.1E-04	1.8E+06	3.1E-08	5.0E+02	1.1E-04
VOC	Trichlorofluoromethane	75-69-4		8				3.90E-04	3.60E-02		5.6E+02		1.1E+05		1.7E+09		5.6E+02		5.6E+02		9.2E+04		3.8E+09		5.6E+02	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		8				9.70E-04	7.10E-02		5.5E+02		2.1E+05		2.3E+09		5.5E+02		5.5E+02		1.8E+05		5.1E+09		5.5E+02	
VOC	Vinyl Chloride	75-01-4	A	8				4.70E-04	2.10E-02		2.8E+00		2.9E+01		8.9E+05		3.4E+01		2.7E-01		4.2E+00		3.5E+05		3.8E+00	
VOC	Xylenes (total)	1330-20-7	ID	8	2	2.80E+00	3.50E+00	1.20E-03	1.90E-02		1.5E+02	2.3E-02	5.4E+04	6.5E-05	1.3E+08	2.7E-08	1.5E+02	2.3E-02	1.5E+02	2.3E-02	4.6E+04	7.6E-05	2.9E+08	1.2E-08	1.5E+02	2.3E-02
SVOC	Acenaphthene	83-32-9		8				2.00E-02	7.50E-02		3.5E+05		9.7E+04		6.2E+06		1.3E+05		1.9E+05		8.1E+04		1.4E+07		4.1E+04	
SVOC	Acenaphthylene	208-96-8	D	8				2.00E-02	6.90E-02		3.0E+03		2.7E+03		1.0E+06		5.2E+03		1.6E+03		2.2E+03		2.3E+06		1.6E+03	
SVOC	Acetophenone	98-86-2	D	8				1.90E-02	7.40E-02		1.1E+03		5.2E+04		1.4E+07		1.1E+03		1.1E+03		4.4E+04		3.3E+07		1.1E+03	
SVOC	Anthracene	120-12-7	D	8	1	6.70E-02	6.70E-02	1.90E-02	7.20E-02		1.0E+06	6.7E-08	1.6E+06	4.2E-08	2.9E+07	2.3E-09	7.3E+05	9.2E-08	1.0E+06	6.7E-08	1.4E+06	4.8E-08	6.7E+07	1.0E-09	2.3E+05	2.9E-07
SVOC	Atrazine	1912-24-9		8				1.90E-02	2.20E-01								3.3E+02								7.1E+01	
SVOC	Benzaldehyde	100-52-7		8				2.20E-02	2.50E-01																	
SVOC	Benzo(a)anthracene	56-55-3	B2	8	2	3.20E-01	4.20E-01	1.80E-02	7.00E-02								8.0E+01	5.3E-03							2.0E+01	2.1E-02
SVOC	Benzo(a)pyrene	50-32-8	B2	8	2	3.50E-01	4.00E-01	1.90E-02	7.70E-02						1.9E+03	2.1E-04	8.0E+00	5.0E-02					1.5E+03	2.7E-04	2.0E+00	2.0E-01
SVOC	Benzo(b)fluoranthene	205-99-2	B2	8	2	4.10E-01	6.00E-01	2.10E-02	7.40E-02								8.0E+01	7.5E-03							2.0E+01	3.0E-02
SVOC	Benzo(g,h,i)perylene	191-24-2	D	8	2	1.90E-01	3.00E-01	2.30E-02	7.00E-02						3.5E+05	8.6E-07	7.0E+03	4.3E-05					8.0E+05	3.8E-07	2.5E+03	1.2E-04
SVOC	Benzo(k)fluoranthene	207-08-9	B2	8	2	1.70E-01	2.40E-01	1.90E-02	6.80E-02								8.0E+02	3.0E-04							2.0E+02	1.2E-03
SVOC	Biphenyl	92-52-4	D	8				2.20E-02	2.10E-01																	
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	6				4.80E-02	6.90E-02																	
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	8				1.90E-02	7.50E-02		4.4E+01		1.3E+01		1.2E+04		5.8E+01		8.3E+00		3.8E+00		9.4E+03		1.3E+01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	8	3	1.10E-01	3.90E+00	2.30E-02	6.00E-02						8.9E+05	4.4E-06	1.0E+04	3.9E-04					7.0E+05	5.6E-06	2.8E+03	1.4E-03
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	8				2.00E-02	9.00E-02																	
SVOC	Butylbenzylphthalate	85-68-7	C	8	2	2.70E-01	4.00E-01	1.80E-02	6.50E-02						2.1E+07	1.9E-08	3.1E+02	1.3E-03					4.7E+07	8.5E-09	3.1E+02	1.3E-03
SVOC	Caprolactam	105-60-2		8				2.20E-02	2.70E-01						2.9E+05		3.1E+05						6.7E+05		5.3E+04	
SVOC	Carbazole	86-74-8	B2	8				2.30E-02	7.70E-02								2.4E+03								5.3E+02	
SVOC	4-Chloro-3-methylphenol	59-50-7		8				1.90E-02	7.50E-02								1.5E+04								4.5E+03	
SVOC	4-Chloroaniline	106-47-8		8				6.40E-03	7.50E-02																	
SVOC	2-Chloronaphthalene	91-58-7		8				2.00E-02	7.10E-02								1.8E+05								5.6E+04	
SVOC	2-Chlorophenol	95-57-8		8				1.90E-02	7.70E-02								4.5E+03								1.4E+03	
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		8				2.00E-02	7.70E-02																	
SVOC	Chrysene	218-01-9	B2	8	2	4.30E-01	4.50E-01	1.80E-02	5.90E-02								8.0E+03	5.6E-05							2.0E+03	2.3E-04
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	8	1	6.70E-02	6.70E-02	2.20E-02	7.50E-02								8.0E+00	8.4E-03							2.0E+00	3.4E-02
SVOC	Dibenzofuran	132-64-9	D	8	2	6.00E-02	2.70E-01	2.00E-02	6.40E-02																	
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	8				9.80E-03	5.80E-02						8.2E+03		3.0E+01						6.5E+03		6.6E+00	
SVOC	2,4-Dichlorophenol	120-83-2		6				5.20E-02	7.40E-02						2.3E+06		1.8E+03						5.1E+06		6.6E+02	
SVOC	Diethylphthalate	84-66-2	D	8				2.10E-02	2.20E-01						1.5E+06		7.4E+02						3.3E+06		7.4E+02	
SVOC	2,4-Dimethylphenol	105-67-9		8				3.40E-02	1.20E-01						2.1E+06		3.6E+04						4.7E+06		1.1E+04	

TABLE 4-2
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-07 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	Dimethylphthalate	131-11-3	D	8				2.00E-02	2.40E-01						1.5E+06		7.9E+02						3.3E+06		7.9E+02	
SVOC	Di-n-butylphthalate	84-74-2	D	8				2.40E-02	2.20E-01						1.5E+06		7.6E+02						3.3E+06		7.6E+02	
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		6				1.60E-01	2.40E-01								2.6E+02								7.9E+01	
SVOC	2,4-Dinitrophenol	51-28-5		6				1.10E-01	1.60E-01																	
SVOC	2,4-Dinitrotoluene	121-14-2	B2	8				1.90E-02	6.80E-02						2.0E+04		2.2E+02						1.6E+04		4.8E+01	
SVOC	2,6-Dinitrotoluene	606-20-2	B2	8				1.90E-02	7.10E-02																	
SVOC	Di-n-octylphthalate	117-84-0		8				1.90E-02	8.00E-02								2.0E+04								6.9E+03	
SVOC	Fluoranthene	206-44-0	D	8	2	6.20E-01	7.00E-01	2.40E-02	7.10E-02		1.0E+06	7.0E-07	8.9E+05	7.9E-07	4.1E+06	1.7E-07	1.3E+05	5.4E-06	1.0E+06	7.0E-07	7.4E+05	9.5E-07	9.3E+06	7.5E-08	4.6E+04	1.5E-05
SVOC	Fluorene	86-73-7	D	8				2.10E-02	7.10E-02		1.0E+06		1.5E+05		4.1E+06		8.7E+04		5.8E+05		1.3E+05		9.3E+06		2.7E+04	
SVOC	Hexachlorobenzene	118-74-1	B2	8				1.90E-02	8.30E-02		2.2E+02		5.6E+01		8.5E+03		3.7E+01		4.1E+01		1.7E+01		6.8E+03		8.9E+00	
SVOC	Hexachlorobutadiene	87-68-3	C	8				1.80E-02	6.60E-02		3.5E+02		4.6E+02		1.8E+05		3.5E+02		1.3E+02		1.3E+02		1.4E+05		1.0E+02	
SVOC	Hexachlorocyclopentadiene	77-47-4	E	8				1.60E-02	8.90E-02		5.6E+01		6.0E+01		5.9E+03		7.2E+02		3.0E+01		5.0E+01		1.3E+04		7.2E+02	
SVOC	Hexachloroethane	67-72-1	C	6				4.90E-02	7.10E-02		7.9E+01		6.6E+02		1.0E+05		7.3E+02		4.0E+01		5.5E+02		2.3E+05		2.3E+02	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	8	2	1.90E-01	2.30E-01	2.30E-02	8.90E-02								8.0E+01	2.9E-03							2.0E+01	1.2E-02
SVOC	Isophorone	78-59-1	C	8				2.00E-02	6.50E-02						8.2E+06		2.4E+03						1.2E+07		2.4E+03	
SVOC	2-Methylnaphthalene	91-57-6	ID	8	2	2.40E-01	1.20E+00	1.90E-02	6.10E-02								2.6E+04	4.6E-05							8.1E+03	1.5E-04
SVOC	Methylphenol (total)	1319-77-3		8				1.60E-02	6.90E-02						2.9E+06		3.6E+04						6.7E+06		1.1E+04	
SVOC	Naphthalene	91-20-3	C	6	2	1.40E-01	8.30E-01	5.00E-02	6.30E-02		4.7E+02	1.8E-03	3.5E+02	2.4E-03	8.8E+04	9.4E-06	5.2E+04	1.6E-05	2.5E+02	3.3E-03	3.0E+02	2.8E-03	2.0E+05	4.2E-06	1.6E+04	5.2E-05
SVOC	2-Nitroaniline	88-74-4		8				2.00E-02	6.80E-02																	
SVOC	3-Nitroaniline	99-09-2	C	8				1.30E-02	2.10E-01																	
SVOC	4-Nitroaniline	100-01-6	C	8				1.90E-02	1.00E-01																	
SVOC	Nitrobenzene	98-95-3	D	8				1.90E-02	6.80E-02		1.7E+02		6.4E+01		2.1E+04		3.4E+02		9.1E+01		5.4E+01		4.7E+04		1.0E+02	
SVOC	2-Nitrophenol	88-75-5		8				1.70E-02	6.80E-02								2.0E+03								6.3E+02	
SVOC	4-Nitrophenol	100-02-7		8				1.20E-01	2.80E-01																	
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	8				2.10E-02	7.20E-02								7.8E+03								1.7E+03	
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	8				2.00E-02	6.50E-02						2.0E+03		5.4E+00						1.6E+03		1.2E+00	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	8				2.00E-02	7.70E-02																	
SVOC	Pentachlorophenol	87-86-5	B2	8				9.10E-02	1.80E-01						1.3E+05		3.2E+02						1.0E+05		9.0E+01	
SVOC	Phenanthrene	85-01-8	D	8	2	3.90E-01	7.40E-01	2.10E-02	6.60E-02		5.1E+03	1.5E-04	1.9E+02	3.9E-03	2.9E+03	2.6E-04	5.2E+03	1.4E-04	2.8E+03	2.6E-04	1.6E+02	4.6E-03	6.7E+03	1.1E-04	1.6E+03	4.6E-04
SVOC	Phenol	108-95-2	ID	8				1.90E-02	7.20E-02						1.8E+07		1.2E+04						4.0E+07		1.2E+04	
SVOC	Pyrene	129-00-0	D	8	2	5.20E-01	5.60E-01	1.80E-02	6.50E-02		1.0E+06	5.6E-07	7.8E+05	7.2E-07	2.9E+06	1.9E-07	8.4E+04	6.7E-06	1.0E+06	5.6E-07	6.5E+05	8.6E-07	6.7E+06	8.4E-08	2.9E+04	1.9E-05
SVOC	2,4,5-Trichlorophenol	95-95-4		8				2.20E-02	8.10E-02						1.0E+07		7.3E+04						2.3E+07		2.3E+04	
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	8				1.80E-02	9.30E-02						1.3E+06		3.3E+03						1.0E+06		7.1E+02	
P/PCB	PCBs (total)	1336-36-3	B2	8	2	1.74E+00	1.85E+00	3.00E-03	2.60E-02		1.6E+04	1.2E-04	8.1E+02	2.3E-03	6.5E+03	2.9E-04	1.6E+01	1.2E-01	3.0E+03	6.2E-04	2.4E+02	7.7E-03	5.2E+03	3.6E-04	4.0E+00	4.6E-01
INORG	Antimony	7440-36-0		8	3	4.34E-01	3.08E+00	1.21E-01	6.26E-01						5.9E+03	5.2E-04	6.7E+02	4.6E-03					1.3E+04	2.4E-04	1.8E+02	1.7E-02
INORG	Arsenic	7440-38-2	A	8	8	1.01E+00	3.94E+01			1.3E+01					9.1E+02	2.9E-02	3.7E+01	7.1E-01					7.2E+02	3.6E-02	7.6E+00	**3.4E+00**
INORG	Barium	7440-39-3	D	8	8	6.82E+00	2.05E+02			1.1E+02					1.5E+05	6.3E-04	1.3E+05	7.3E-04					3.3E+05	2.9E-04	3.7E+04	2.6E-03
INORG	Beryllium	7440-41-7	B1	8	4	6.49E-02	9.95E-01	3.56E-02	5.87E-02	1.5E+00					5.9E+02		1.6E+03						1.3E+03		4.1E+02	
INORG	Cadmium	7440-43-9	B1	8	6	9.36E-02	4.12E-01	8.40E-03	9.30E-03	1.2E+00					2.2E+03		2.1E+03						1.7E+03		5.5E+02	
INORG	Chromium (total)	7440-47-3		8	8	4.64E+00	3.35E+02			4.9E+01					2.4E+02	**1.2E+00**	9.2E+03	3.1E-02					2.6E+02	**1.1E+00**	2.5E+03	1.1E-01
INORG	Cobalt	7440-48-4	B1	8	8	2.21E+00	7.97E+00			1.7E+01					5.9E+03		9.0E+03						1.3E+04		2.6E+03	
INORG	Copper	7440-50-8	D	8	8	4.18E+00	3.91E+01			3.2E+01					5.9E+04	1.2E-04	7.3E+04	9.7E-05					1.3E+05	5.5E-05	2.0E+04	3.6E-04
INORG	Lead	7439-92-1	B2	8	8	2.60E+00	4.96E+02			4.9E+01					4.4E+04	1.0E-02	9.0E+02	5.0E-01					1.0E+05	4.5E-03	4.0E+02	**1.1E+00**
INORG	Manganese	7439-96-5	D	8	8	1.01E+02	3.03E+02			5.1E+02					1.5E+03		9.0E+04						3.3E+03		2.5E+04	
INORG	Mercury	7439-97-6	D	8	2	2.93E-01	3.02E-01	8.70E-03	1.86E-02	1.3E-01	8.9E+01	1.9E-03	6.2E+01	2.8E-03	8.8E+03	2.0E-05	5.8E+02	3.0E-04	4.8E+01	3.6E-03	5.2E+01	3.3E-03	2.0E+04	8.6E-06	1.6E+02	1.1E-03
INORG	Nickel	7440-02-0	A	8	8	5.55E+00	1.34E+02			3.0E+01					1.6E+04	6.5E-03	1.5E+05	6.9E-04					1.3E+04	8.0E-03	4.0E+04	2.6E-03
INORG	Selenium	7782-49-2	D	8	3	5.11E-01	1.05E+01	2.25E-01	3.45E-01	4.1E-01					5.9E+04	1.7E-04	9.6E+03	1.1E-03					1.3E+05	7.8E-05	2.6E+03	3.9E-03
INORG	Silver	7440-22-4	D	8				5.24E-02	2.21E-01						2.9E+03		9.0E+03						6.7E+03		2.5E+03	
INORG	Thallium	7440-28-0		8	3	3.79E-01	1.14E+00	5.15E-01	6.38E-01								1.3E+02	8.8E-03							3.5E+01	3.3E-02
INORG	Vanadium	7440-62-2		8	8	4.89E+00	2.15E+01			3.3E+01							5.5E+03								7.5E+02	
INORG	Zinc	7440-66-6	D	8	8	1.25E+01	1.19E+02			1.9E+02							6.3E+05								1.7E+05	

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-3
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-07 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	4				5.10E-04	1.00E-02	1.0E+06		3.1E+04		7.3E-01	
Shallow	VOC	Benzene	71-43-2	T	A	4				1.60E-04	1.00E-03	3.5E+01		1.1E+01		5.0E-03	
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	4	2	2.00E-03	2.20E-03	1.70E-04	1.00E-03	3.7E+01	5.9E-05	1.4E+01	1.6E-04	1.0E-01	2.2E-02
Shallow	VOC	Bromoform	75-25-2	T	B2	4				1.80E-04	1.00E-03	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	4				2.00E-04	1.00E-03	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	4				4.10E-04	1.00E-02	2.4E+05		2.4E+05		1.3E+01	
Shallow	VOC	Carbon Disulfide	75-15-0	T		4	1	4.70E-04	4.70E-04	2.00E-04	1.00E-03	5.5E+02	8.5E-07	1.2E+03	3.9E-07	8.0E-01	5.9E-04
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	4				1.20E-04	1.00E-03	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	4				1.40E-04	1.00E-03	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		4	2	3.30E-03	4.70E-03	2.60E-04	1.00E-03	5.7E+03	8.2E-07	4.4E+02	1.1E-05	4.3E-01	1.1E-02
Shallow	VOC	Chloroform	67-66-3	T	B2	4	3	2.90E-04	9.50E-03	1.40E-04	1.40E-04	1.8E+02	5.3E-05	1.5E+02	6.3E-05	1.0E-01	9.5E-02
Shallow	VOC	Chloromethane	74-87-3	T	D	4	1	2.80E-04	2.80E-04	1.30E-04	1.00E-03	4.5E+01	6.2E-06	4.9E+02	5.7E-07	2.6E-01	1.1E-03
Shallow	VOC	Cumene	98-82-8	T	D	4				1.20E-04	1.00E-03	5.6E+01		5.6E+01		8.0E-01	
Shallow	VOC	Cyclohexane	110-82-7	T	ID	4				1.30E-04	1.00E-03						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	4				6.20E-04	2.00E-03	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	4				2.60E-04	1.00E-03	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	4				2.20E-04	1.00E-03	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	4				1.10E-04	1.00E-03	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	4				1.50E-04	1.00E-03			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	4				1.70E-04	1.00E-03	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		4				2.60E-04	2.00E-03	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	4	4	6.00E-03	2.30E-02			2.3E+03	1.0E-05	2.4E+03	9.6E-06	8.8E-01	2.6E-02
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	4				2.10E-04	1.00E-03	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	7	6	1.10E-03	2.00E-02	2.20E-04	2.20E-04	1.3E+00	1.5E-02	1.1E+01	1.8E-03	7.0E-03	**2.9E+00**
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	4	4	2.30E-04	5.60E-04			2.1E+02	2.7E-06	2.0E+02	2.8E-06	7.0E-02	8.0E-03
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		4				1.50E-04	5.00E-04	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	4				1.70E-04	1.00E-03	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	4				2.70E-04	1.00E-03	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	4				1.20E-04	1.00E-03	1.7E+02		1.7E+02		7.0E-01	
Shallow	VOC	2-Hexanone	591-78-6	T		4				4.60E-04	1.00E-02	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		4				4.10E-04	1.00E-02						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		4				1.30E-04	5.00E-03	4.7E+04		6.1E+02		2.4E-01	
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	4				2.30E-04	1.00E-02	2.0E+04		1.3E+04		1.8E+00	
Shallow	VOC	Methylcyclohexane	108-87-2	T		4				1.50E-04	1.00E-03						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	4				3.40E-04	1.00E-03	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	Styrene	100-42-5	T		4				1.50E-04	1.00E-03	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	4				2.50E-04	1.00E-03	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	7	6	5.60E-04	6.30E-03	1.20E-04	1.20E-04	1.7E+02	3.7E-05	1.2E+01	5.3E-04	5.0E-03	**1.3E+00**
Shallow	VOC	Toluene	108-88-3	T	D	4	3	2.00E-04	2.60E-04	1.80E-04	1.80E-04	5.3E+02	4.9E-07	5.3E+02	4.9E-07	1.0E+00	2.6E-04
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	4				1.70E-04	1.00E-03	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	4	4	6.30E-03	1.00E-02			1.3E+03	7.7E-06	1.3E+03	7.7E-06	2.0E-01	5.0E-02
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	4				3.00E-04	1.00E-03	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	4	2	3.90E-04	4.20E-04	1.40E-04	1.00E-03	9.7E+01	4.3E-06	2.2E+01	1.9E-05	5.0E-03	8.4E-02
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		4				2.80E-04	1.00E-03	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		4				3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	4				1.50E-04	1.00E-03	1.3E+01		1.0E+00		2.0E-03	
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	4				3.30E-04	1.00E-03	1.9E+02		1.9E+02		1.0E+01	
Shallow	SVOC	Acenaphthene	83-32-9	T		4				8.00E-04	5.00E-03	4.2E+00		4.2E+00		1.3E+00	
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	4				7.10E-04	5.00E-03	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	4				2.60E-03	1.00E-02	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	4				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		4				2.50E-03	5.00E-03			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		4				2.80E-03	1.00E-02						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	4				7.00E-04	5.00E-03			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	4				7.30E-04	5.00E-03			2.0E-03		5.0E-03	

TABLE 4-3
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-07 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	4				9.40E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	4				8.50E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	4				8.40E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	4				2.60E-03	1.00E-02						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	4				8.70E-04	5.00E-03						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	4				9.70E-04	5.00E-03	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	4				2.70E-03	5.00E-03			3.2E-01		6.0E-03	
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	4				8.80E-04	5.00E-03						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	4				8.80E-04	5.00E-03			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		4	1	4.10E-03	4.10E-03	2.50E-03	1.00E-02			3.9E+05	1.1E-08	5.8E+00	7.1E-04
Shallow	SVOC	Carbazole	86-74-8	T	B2	4				8.20E-04	1.00E-02			7.4E+00		8.5E-02	
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		4				9.90E-04	5.00E-03			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		4				6.10E-04	1.00E-02						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		4				8.50E-04	5.00E-03			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		4				1.00E-03	5.00E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		4				7.90E-04	5.00E-03						
Shallow	SVOC	Chrysene	218-01-9	T	B2	4				7.50E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	4				7.90E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	4				1.10E-03	5.00E-03						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	4				9.30E-04	2.00E-02			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		4				8.50E-04	1.00E-02			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	4				6.50E-04	5.00E-03			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		4				8.50E-04	5.00E-03			5.2E+02		3.7E-01	
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	4				7.60E-04	5.00E-03			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	4				6.70E-04	5.00E-03			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		4				1.30E-03	2.00E-02			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		4				3.00E-03	2.00E-02						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	4				7.90E-04	5.00E-03			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	4				5.70E-04	5.00E-03						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		4				1.10E-03	5.00E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	4				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	4				1.00E-03	5.00E-03	2.0E+00		2.0E+00		8.8E-01	
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	4				7.40E-04	5.00E-03	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	4				7.30E-04	5.00E-03	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	4				1.10E-03	5.00E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	4				7.40E-04	5.00E-03	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	4				6.30E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	4				6.30E-04	5.00E-03			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	4				6.40E-04	5.00E-03			2.5E+01		2.6E-01	
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		4				1.30E-03	5.00E-03			8.1E+02		3.7E-01	
Shallow	SVOC	Naphthalene	91-20-3	T	C	4				7.50E-04	5.00E-03	3.1E+01		3.1E+01		5.2E-01	
Shallow	SVOC	2-Nitroaniline	88-74-4	T		4				7.00E-04	2.00E-02						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	4				7.10E-04	2.00E-02						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	4				1.30E-03	2.00E-02						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	4				8.10E-04	5.00E-03	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		4				2.10E-03	5.00E-03			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		4				1.90E-03	2.00E-02						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	4				1.40E-03	5.00E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	4				6.70E-04	5.00E-03			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	4				7.80E-04	5.00E-03						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	4				2.40E-03	5.00E-03			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	4				8.20E-04	5.00E-03	1.0E+00		1.0E+00		5.2E-02	
Shallow	SVOC	Phenol	108-95-2	T	ID	4				2.60E-03	5.00E-03			2.9E+04		4.4E+00	
Shallow	SVOC	Pyrene	129-00-0	T	D	4				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		4				1.20E-03	5.00E-03			1.7E+02		7.3E-01	

TABLE 4-3
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-07 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	4				1.70E-03	5.00E-03			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	D	B2	2				4.00E-04	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	4				8.20E-05	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	INORG	Antimony	7440-36-0	D		4	1	3.00E-03	3.00E-03	2.20E-03	2.50E-02			6.8E+01	4.4E-05	6.0E-03	5.0E-01
Shallow	INORG	Antimony	7440-36-0	T		4				2.20E-03	2.50E-02			6.8E+01		6.0E-03	
Shallow	INORG	Arsenic	7440-38-2	D	A	4	2	1.24E-02	4.16E-02	3.90E-03	1.00E-02			4.3E+00	9.7E-03	5.0E-02	8.3E-01
Shallow	INORG	Arsenic	7440-38-2	T	A	4	2	2.36E-02	3.00E-02	3.90E-03	1.00E-02			4.3E+00	7.0E-03	5.0E-02	6.0E-01
Shallow	INORG	Barium	7440-39-3	D	D	4	4	1.85E-02	6.46E-02					1.4E+04	4.6E-06	2.0E+00	3.2E-02
Shallow	INORG	Barium	7440-39-3	T	D	4	4	1.73E-02	5.72E-02					1.4E+04	4.1E-06	2.0E+00	2.9E-02
Shallow	INORG	Beryllium	7440-41-7	D	B1	4				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Beryllium	7440-41-7	T	B1	4				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	D	B1	4				2.80E-04	5.00E-03			1.9E+02		5.0E-03	
Shallow	INORG	Cadmium	7440-43-9	T	B1	4	1	3.80E-04	3.80E-04	2.80E-04	5.00E-03			1.9E+02	2.0E-06	5.0E-03	7.6E-02
Shallow	INORG	Chromium (total)	7440-47-3	D		4				1.40E-03	1.00E-02			4.6E+02		1.0E-01	
Shallow	INORG	Chromium (total)	7440-47-3	T		4	2	1.50E-03	2.90E-03	1.40E-03	1.00E-02			4.6E+02	6.3E-06	1.0E-01	2.9E-02
Shallow	INORG	Cobalt	7440-48-4	D	B1	4				1.30E-03	2.00E-02			2.4E+03		4.0E-02	
Shallow	INORG	Cobalt	7440-48-4	T	B1	4				1.30E-03	2.00E-02			2.4E+03		4.0E-02	
Shallow	INORG	Copper	7440-50-8	D	D	4	1	1.54E-02	1.54E-02	4.20E-03	5.00E-03			7.4E+03	2.1E-06	1.4E+00	1.1E-02
Shallow	INORG	Copper	7440-50-8	T	D	4	1	1.79E-02	1.79E-02	4.20E-03	5.00E-03			7.4E+03	2.4E-06	1.4E+00	1.3E-02
Shallow	INORG	Lead	7439-92-1	D	B2	4				2.50E-03	3.00E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	4	1	3.00E-03	3.00E-03	2.50E-03	3.00E-03					4.0E-03	7.5E-01
Shallow	INORG	Manganese	7439-96-5	D	D	4	4	1.10E-03	2.69E-01					9.1E+03	3.0E-05	8.6E-01	3.1E-01
Shallow	INORG	Manganese	7439-96-5	T	D	4	4	1.50E-03	2.34E-01					9.1E+03	2.6E-05	8.6E-01	2.7E-01
Shallow	INORG	Mercury	7439-97-6	D	D	4				6.90E-05	2.00E-04	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Mercury	7439-97-6	T	D	4	1	1.70E-04	1.70E-04	6.90E-05	2.00E-04	5.6E-02	3.0E-03	5.6E-02	3.0E-03	2.0E-03	8.5E-02
Shallow	INORG	Nickel	7440-02-0	D	A	4	2	2.70E-03	3.60E-03	2.20E-03	2.00E-02			7.4E+04	4.9E-08	1.0E-01	3.6E-02
Shallow	INORG	Nickel	7440-02-0	T	A	4	2	4.10E-03	4.90E-03	2.20E-03	2.00E-02			7.4E+04	6.6E-08	1.0E-01	4.9E-02
Shallow	INORG	Selenium	7782-49-2	D	D	4				4.50E-03	5.00E-03			9.7E+02		5.0E-02	
Shallow	INORG	Selenium	7782-49-2	T	D	4				4.50E-03	5.00E-03			9.7E+02		5.0E-02	
Shallow	INORG	Silver	7440-22-4	D	D	4				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	4				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		4	1	2.50E-05	2.50E-05	1.80E-05	1.00E-02			1.3E+01	1.9E-06	2.0E-03	1.3E-02
Shallow	INORG	Thallium	7440-28-0	T		4	1	2.50E-05	2.50E-05	1.80E-05	1.00E-02			1.3E+01	1.9E-06	2.0E-03	1.3E-02
Shallow	INORG	Vanadium	7440-62-2	D		4	3	8.40E-04	2.47E-02	8.20E-04	8.20E-04			9.7E+02	2.5E-05	4.5E-03	**5.5E+00**
Shallow	INORG	Vanadium	7440-62-2	T		4	2	7.80E-03	1.71E-02	8.20E-04	1.00E-02			9.7E+02	1.8E-05	4.5E-03	**3.8E+00**
Shallow	INORG	Zinc	7440-66-6	D	D	4	2	1.58E-02	2.08E-02	1.20E-02	2.00E-02			1.1E+05	1.9E-07	2.4E+00	8.7E-03
Shallow	INORG	Zinc	7440-66-6	T	D	4	3	1.24E-02	1.69E-01	2.00E-02	2.00E-02			1.1E+05	1.5E-06	2.4E+00	7.0E-02

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-4
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-08 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
VOC	Acetone	67-64-1	ID	4	2	8.70E-03	9.50E-03	2.30E-02	2.50E-02		1.1E+05	8.6E-08	1.6E+05	5.9E-08	1.7E+08	5.6E-11	7.3E+04	1.3E-07	1.1E+05	8.6E-08	1.3E+05	7.3E-08	3.9E+08	2.4E-11	2.3E+04	4.1E-07
VOC	Benzene	71-43-2	A	4				7.10E-04	6.30E-03		8.4E+00		4.5E+01		4.7E+05		4.0E+02		1.6E+00		1.3E+01		3.8E+05		1.8E+02	
VOC	Bromodichloromethane	75-27-4	B2	4				1.30E-03	6.30E-03		6.4E+00		3.1E+01		1.1E+05		4.9E+02		1.2E+00		9.1E+00		8.4E+04		1.1E+02	
VOC	Bromoform	75-25-2	B2	4				1.80E-03	6.30E-03		7.7E+02		3.1E+03		3.6E+06		8.7E+02		1.5E+02		9.0E+02		2.8E+06		8.2E+02	
VOC	Bromomethane	74-83-9	D	4				2.00E-03	1.30E-02		1.6E+00		1.3E+01		1.5E+05		1.0E+03		8.6E-01		1.1E+01		3.3E+05		3.2E+02	
VOC	2-Butanone	78-93-3	ID	4	2	3.40E-03	3.60E-03	2.30E-02	2.50E-02		2.7E+04	1.3E-07	3.5E+04	1.0E-07	2.9E+07	1.2E-10	2.7E+04	1.3E-07	2.7E+04	1.3E-07	2.9E+04	1.2E-07	6.7E+07	5.4E-11	2.7E+04	1.3E-07
VOC	Carbon Disulfide	75-15-0		4				8.50E-04	6.30E-03		1.4E+02		1.6E+03		2.1E+07		2.8E+02		7.6E+01		1.3E+03		4.7E+07		2.8E+02	
VOC	Carbon Tetrachloride	56-23-5	B2	4				1.10E-03	6.30E-03		9.9E-01		1.2E+01		1.7E+05		3.9E+02		1.9E-01		3.5E+00		1.3E+05		9.6E+01	
VOC	Chlorobenzene	108-90-7	D	4				5.70E-04	6.30E-03		2.2E+02		9.2E+02		2.1E+06		2.6E+02		1.2E+02		7.7E+02		4.7E+06		2.6E+02	
VOC	Chloroethane	75-00-3		4				2.40E-03	1.30E-02		9.5E+02		3.6E+04		2.9E+08		9.5E+02		9.5E+02		3.0E+04		6.7E+08		9.5E+02	
VOC	Chloroform	67-66-3	B2	4				9.00E-04	6.30E-03		3.8E+01		1.5E+02		1.6E+06		1.5E+03		7.2E+00		4.5E+01		1.3E+06		1.2E+03	
VOC	Chloromethane	74-87-3	D	4				1.40E-03	1.30E-02		1.0E+01		1.2E+02		2.6E+06		1.1E+03		2.3E+00		4.0E+01		4.9E+06		1.1E+03	
VOC	Cumene	98-82-8	D	4				7.70E-04	6.30E-03		3.9E+02		2.0E+03		2.6E+06		3.9E+02		3.9E+02		1.7E+03		5.8E+06		3.9E+02	
VOC	Cyclohexane	110-82-7	ID	4				1.10E-03	1.30E-02																	
VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	4				1.80E-03	1.30E-02		1.2E+00		1.5E+01		5.9E+03		1.2E+00		1.2E+00		1.3E+01		1.3E+04		1.2E+00	
VOC	Dibromochloromethane	124-48-1	C	4				1.20E-03	6.30E-03		2.1E+01		8.0E+01		1.6E+05		5.0E+02		3.9E+00		2.4E+01		1.3E+05		1.1E+02	
VOC	1,2-Dibromoethane	106-93-4	B2	4				1.30E-03	6.30E-03		3.6E+00		5.8E+00		1.8E+04		4.3E-01		6.7E-01		1.7E+00		1.4E+04		2.5E-01	
VOC	1,2-Dichlorobenzene	95-50-1	D	4				7.80E-04	6.30E-03		2.1E+02		4.6E+04		4.4E+07		2.1E+02		2.1E+02		3.9E+04		1.0E+08		2.1E+02	
VOC	1,3-Dichlorobenzene	541-73-1	D	4				8.80E-04	6.30E-03								1.7E+02								1.7E+02	
VOC	1,4-Dichlorobenzene	106-46-7	C	4				7.30E-04	6.30E-03		1.0E+02		2.6E+02		5.7E+05		1.9E+03		1.9E+01		7.7E+01		4.5E+05		4.0E+02	
VOC	Dichlorodifluoromethane	75-71-8		4				1.20E-03	1.30E-02		1.7E+03		6.3E+04		1.5E+09		1.0E+03		9.0E+02		5.3E+04		3.3E+09		1.0E+03	
VOC	1,1-Dichloroethane	75-34-3	C	4				6.30E-04	6.30E-03		4.3E+02		2.5E+03		1.5E+07		8.9E+02		2.3E+02		2.1E+03		3.3E+07		8.9E+02	
VOC	1,2-Dichloroethane	107-06-2	B2	4				8.00E-04	6.30E-03		1.1E+01		2.1E+01		1.5E+05		4.2E+02		2.1E+00		6.2E+00		1.2E+05		9.1E+01	
VOC	1,1-Dichloroethene	75-35-4	C	4				1.30E-03	6.30E-03		3.3E-01		3.7E+00		7.8E+04		5.7E+02		6.2E-02		1.1E+00		6.2E+04		2.0E+02	
VOC	cis-1,2-Dichloroethene	156-59-2	D	4				9.20E-04	6.30E-03		4.1E+01		2.1E+02		1.0E+06		6.4E+02		2.2E+01		1.8E+02		2.3E+06		6.4E+02	
VOC	trans-1,2-Dichloroethene	156-60-5		4				8.00E-04	6.30E-03		4.3E+01		3.3E+02		2.1E+06		1.4E+03		2.3E+01		2.8E+02		4.7E+06		1.4E+03	
VOC	1,2-Dichloropropane	78-87-5	B2	4				8.20E-04	6.30E-03		7.4E+00		3.0E+01		1.2E+05		5.5E+02		4.0E+00		2.5E+01		2.7E+05		1.4E+02	
VOC	1,3-Dichloropropene (total)	542-75-6	B2	4				9.40E-04	6.30E-03		5.4E+00		6.0E+01		5.9E+05		2.4E+02		1.0E+00		1.8E+01		7.8E+05		1.0E+01	
VOC	Ethyl Benzene	100-41-4	D	4				6.50E-04	6.30E-03		1.4E+02		2.4E+03		1.3E+07		1.4E+02		8.7E+01		7.2E+02		1.0E+07		1.4E+02	
VOC	2-Hexanone	591-78-6		4				1.90E-03	2.50E-02		1.8E+03		1.3E+03		1.2E+06		2.5E+03		9.9E+02		1.1E+03		2.7E+06		2.5E+03	
VOC	Methyl Acetate	79-20-9		4				1.20E-03	1.30E-02																	
VOC	Methyl tert-butyl ether	1634-04-4		4				9.20E-04	2.50E-02		5.9E+03		3.0E+04		8.8E+07		5.9E+03		5.9E+03		2.5E+04		2.0E+08		1.5E+03	
VOC	4-Methyl-2-pentanone	108-10-1	ID	4				2.10E-03	2.50E-02		2.7E+03		5.3E+04		6.0E+07		2.7E+03		2.7E+03		4.5E+04		1.4E+08		2.7E+03	
VOC	Methylcyclohexane	108-87-2		4	1	1.10E-03	1.10E-03	1.20E-02	1.30E-02																	
VOC	Methylene Chloride	75-09-2	B2	4				1.40E-03	6.30E-03		2.4E+02		7.0E+02		8.3E+06		2.3E+03		4.5E+01		2.1E+02		6.6E+06		1.3E+03	
VOC	Styrene	100-42-5		4				5.50E-04	6.30E-03		5.2E+02		3.3E+03		6.9E+06		5.2E+02		2.5E+02		9.7E+02		5.5E+06		4.0E+02	
VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	4				2.00E-03	6.30E-03		2.3E+01		3.4E+01		6.8E+04		2.4E+02		4.3E+00		1.0E+01		5.4E+04		5.3E+01	
VOC	Tetrachloroethene	127-18-4	C-B2	4				1.30E-03	6.30E-03		6.0E+01		6.0E+02		6.8E+06		8.8E+01		1.1E+01		1.8E+02		5.4E+06		8.8E+01	
VOC	Toluene	108-88-3	D	4	4	1.20E-03	5.00E-03				2.5E+02	2.0E-05	3.3E+03	1.5E-06	1.2E+07	4.2E-10	2.5E+02	2.0E-05	2.5E+02	2.0E-05	2.8E+03	1.8E-06	2.7E+07	1.9E-10	2.5E+02	2.0E-05
VOC	1,2,4-Trichlorobenzene	120-82-1	D	4				9.70E-04	6.30E-03		1.1E+03		3.4E+04		1.1E+07		1.1E+03		1.1E+03		2.8E+04		2.5E+07		9.9E+02	
VOC	1,1,1-Trichloroethane	71-55-6	D	4				1.00E-03	6.30E-03		4.6E+02		4.5E+03		2.9E+07		4.6E+02		2.5E+02		3.8E+03		6.7E+07		4.6E+02	
VOC	1,1,2-Trichloroethane	79-00-5	C	4				1.30E-03	6.30E-03		2.4E+01		5.7E+01		2.5E+05		8.4E+02		4.6E+00		1.7E+01		1.9E+05		1.8E+02	
VOC	Trichloroethene	79-01-6	C-B2	4				8.30E-04	6.30E-03		3.7E+01		2.6E+02		2.3E+06		5.0E+02		7.1E+00		7.8E+01		1.8E+06		5.0E+02	
VOC	Trichlorofluoromethane	75-69-4		4				1.20E-03	1.30E-02		5.6E+02		1.1E+05		1.7E+09		5.6E+02		5.6E+02		9.2E+04		3.8E+09		5.6E+02	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		4				1.00E-03	6.30E-03		5.5E+02		2.1E+05		2.3E+09		5.5E+02		5.5E+02		1.8E+05		5.1E+09		5.5E+02	
VOC	Vinyl Chloride	75-01-4	A	4				1.50E-03	1.30E-02		2.8E+00		2.9E+01		8.9E+05		3.4E+01		2.7E-01		4.2E+00		3.5E+05		3.8E+00	
VOC	Xylenes (total)	1330-20-7	ID	4				2.10E-03	1.30E-02		1.5E+02		5.4E+04		1.3E+08		1.5E+02		1.5E+02		4.6E+04		2.9E+08		1.5E+02	
SVOC	Acenaphthene	83-32-9		4				1.60E-02	4.00E-01		3.5E+05		9.7E+04		6.2E+06		1.3E+05		1.9E+05		8.1E+04		1.4E+07		4.1E+04	
SVOC	Acenaphthylene	208-96-8	D	4				2.20E-02	4.00E-01		3.0E+03		2.7E+03		1.0E+06		5.2E+03		1.6E+03		2.2E+03		2.3E+06		1.6E+03	
SVOC	Acetophenone	98-86-2	D	4				2.40E-02	4.00E-01		1.1E+03		5.2E+04		1.4E+07		1.1E+03		1.1E+03		4.4E+04		3.3E+07		1.1E+03	
SVOC	Anthracene	120-12-7	D	4				2.00E-02	4.00E-01		1.0E+06		1.6E+06		2.9E+07		7.3E+05		1.0E+06		1.4E+06		6.7E+07		2.3E+05	
SVOC	Atrazine	1912-24-9		4				2.60E-02	4.00E-01								3.3E+02								7.1E+01	
SVOC	Benzaldehyde	100-52-7		4				1.60E-02	4.00E-01																	
SVOC	Benzo(a)anthracene	56-55-3	B2	4				2.70E-02	4.00E-01								8.0E+01								2.0E+01	
SVOC	Benzo(a)pyrene	50-32-8	B2	4				1.80E-02	4.00E-01						1.9E+03		8.0E+00						1.5E+03		2.0E+00	
SVOC	Benzo(b)fluoranthene	205-99-2	B2	4				2.40E-02	4.00E-01								8.0E+01								2.0E+01	
SVOC	Benzo(g,h,i)perylene	191-24-2	D	4				1.90E-02	4.00E-01						3.5E+05		7.0E+03						8.0E+05		2.5E+03	
SVOC	Benzo(k)fluoranthene	207-08-9	B2	4				1.90E-02	4.00E-01								8.0E+02								2.0E+02	
SVOC	Biphenyl	92-52-4	D	4				2.10E-02	4.00E-01																	
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	4				3.10E-02	4.00E-01																	
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	4				2.10E-02	4.00E-01		4.4E+01		1.3E+01		1.2E+04		5.8E+01		8.3E+00		3.8E+00		9.4E+03		1.3E+01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	4	2	5.70E-02	1.20E-01	1.50E-02	4.00E-01						8.9E+05	1.3E-07	1.0E+04	1.2E-05					7.0E+05	1.7E-07	2.8E+03	4.3E-05
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	4				1.80E-02	4.00E-01																	
SVOC	Butylbenzylphthalate	85-68-7	C	4				2.50E-02	4.00E-01						2.1E+07		3.1E+02						4.7E+07		3.1E+02	
SVOC	Caprolactam	105-60-2		4				3.30E-02	4.00E-01						2.9E+05		3.1E+05						6.7E+05		5.3E+04	
SVOC	Carbazole	86-74-8	B2	4				2.20E-02	4.00E-01								2.4E+03								5.3E+02	
SVOC	4-Chloro-3-methylphenol	59-50-7		4				2.20E-02	4.00E-01								1.5E+04								4.5E+03	
SVOC	4-Chloroaniline	106-47-8		4				2.40E-02	1.60E+00																	
SVOC	2-Chloronaphthalene	91-58-7		4				2.00E-02	4.00E-01								1.8E+05								5.6E+04	
SVOC	2-Chlorophenol	95-57-8		4				2.10E-02	4.00E-01								4.5E+03								1.4E+03	
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		4				2.00E-02	4.00E-01																	
SVOC	Chrysene	218-01-9	B2	4				2.60E-02	4.00E-01								8.0E+03								2.0E+03	
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	4				2.10E-02	4.00E-01								8.0E+00								2.0E+00	
SVOC	Dibenzofuran	132-64-9	D	4				2.00E-02	4.00E-01																	
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	4				2.10E-02	2.40E+00						8.2E+03		3.0E+01						6.5E+03		6.6E+00	
SVOC	2,4-Dichlorophenol	120-83-2		4				1.90E-02	4.00E-01						2.3E+06		1.8E+03						5.1E+06		6.6E+02	
SVOC	Diethylphthalate	84-66-2	D	4				2.20E-02	4.00E-01						1.5E+06		7.4E+02						3.3E+06		7.4E+02	
SVOC	2,4-Dimethylphenol	105-67-9		4				2.10E-02	4.00E-01						2.1E+06		3.6E+04						4.7E+06		1.1E+04	

TABLE 4-4
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-08 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	Dimethylphthalate	131-11-3	D	4				2.00E-02	4.00E-01						1.5E+06		7.9E+02						3.3E+06		7.9E+02	
SVOC	Di-n-butylphthalate	84-74-2	D	4				2.70E-02	4.00E-01						1.5E+06		7.6E+02						3.3E+06		7.6E+02	
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		4				5.60E-02	2.00E+00								2.6E+02								7.9E+01	
SVOC	2,4-Dinitrophenol	51-28-5		4				5.50E-02	2.00E+00																	
SVOC	2,4-Dinitrotoluene	121-14-2	B2	4				2.60E-02	4.00E-01						2.0E+04		2.2E+02						1.6E+04		4.8E+01	
SVOC	2,6-Dinitrotoluene	606-20-2	B2	4				1.80E-02	4.00E-01																	
SVOC	Di-n-octylphthalate	117-84-0		4				7.50E-02	4.00E-01								2.0E+04								6.9E+03	
SVOC	Fluoranthene	206-44-0	D	4				1.90E-02	4.00E-01		1.0E+06		8.9E+05		4.1E+06		1.3E+05		1.0E+06		7.4E+05		9.3E+06		4.6E+04	
SVOC	Fluorene	86-73-7	D	4				1.80E-02	4.00E-01		1.0E+06		1.5E+05		4.1E+06		8.7E+04		5.8E+05		1.3E+05		9.3E+06		2.7E+04	
SVOC	Hexachlorobenzene	118-74-1	B2	4				2.60E-02	4.00E-01		2.2E+02		5.6E+01		8.5E+03		3.7E+01		4.1E+01		1.7E+01		6.8E+03		8.9E+00	
SVOC	Hexachlorobutadiene	87-68-3	C	4				1.90E-02	4.00E-01		3.5E+02		4.6E+02		1.8E+05		3.5E+02		1.3E+02		1.3E+02		1.4E+05		1.0E+02	
SVOC	Hexachlorocyclopentadiene	77-47-4	E	4				1.20E-02	4.00E-01		5.6E+01		6.0E+01		5.9E+03		7.2E+02		3.0E+01		5.0E+01		1.3E+04		7.2E+02	
SVOC	Hexachloroethane	67-72-1	C	4				2.00E-02	1.20E-01		7.9E+01		6.6E+02		1.0E+05		7.3E+02		4.0E+01		5.5E+02		2.3E+05		2.3E+02	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	4				2.20E-02	4.00E-01								8.0E+01								2.0E+01	
SVOC	Isophorone	78-59-1	C	4				2.60E-02	4.00E-01						8.2E+06		2.4E+03						1.2E+07		2.4E+03	
SVOC	2-Methylnaphthalene	91-57-6	ID	4				2.00E-02	4.00E-01								2.6E+04								8.1E+03	
SVOC	Methylphenol (total)	1319-77-3		4				2.50E-02	4.00E-01						2.9E+06		3.6E+04						6.7E+06		1.1E+04	
SVOC	Naphthalene	91-20-3	C	4				2.00E-02	4.00E-01		4.7E+02		3.5E+02		8.8E+04		5.2E+04		2.5E+02		3.0E+02		2.0E+05		1.6E+04	
SVOC	2-Nitroaniline	88-74-4		4				1.50E-02	2.00E+00																	
SVOC	3-Nitroaniline	99-09-2	C	4				2.60E-02	2.00E+00																	
SVOC	4-Nitroaniline	100-01-6	C	4				2.00E-02	2.00E+00																	
SVOC	Nitrobenzene	98-95-3	D	4				2.80E-02	4.00E-01		1.7E+02		6.4E+01		2.1E+04		3.4E+02		9.1E+01		5.4E+01		4.7E+04		1.0E+02	
SVOC	2-Nitrophenol	88-75-5		4				2.50E-02	4.00E-01								2.0E+03								6.3E+02	
SVOC	4-Nitrophenol	100-02-7		4				6.20E-02	2.00E+00																	
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	4				2.20E-02	4.00E-01								7.8E+03								1.7E+03	
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	4				1.80E-02	4.00E-01						2.0E+03		5.4E+00						1.6E+03		1.2E+00	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	4				3.20E-02	4.00E-01																	
SVOC	Pentachlorophenol	87-86-5	B2	4				7.10E-02	4.10E+00						1.3E+05		3.2E+02						1.0E+05		9.0E+01	
SVOC	Phenanthrene	85-01-8	D	4				2.50E-02	4.00E-01		5.1E+03		1.9E+02		2.9E+03		5.2E+03		2.8E+03		1.6E+02		6.7E+03		1.6E+03	
SVOC	Phenol	108-95-2	ID	4	1	2.70E-01	2.70E-01	3.50E-01	4.00E-01						1.8E+07	1.5E-08	1.2E+04	2.3E-05					4.0E+07	6.8E-09	1.2E+04	2.3E-05
SVOC	Pyrene	129-00-0	D	4				2.50E-02	4.00E-01		1.0E+06		7.8E+05		2.9E+06		8.4E+04		1.0E+06		6.5E+05		6.7E+06		2.9E+04	
SVOC	2,4,5-Trichlorophenol	95-95-4		4				1.80E-02	4.00E-01						1.0E+07		7.3E+04						2.3E+07		2.3E+04	
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	4				2.20E-02	4.00E-01						1.3E+06		3.3E+03						1.0E+06		7.1E+02	
P/PCB	PCBs (total)	1336-36-3	B2	4				2.40E-02	4.00E-02		1.6E+04		8.1E+02		6.5E+03		1.6E+01		3.0E+03		2.4E+02		5.2E+03		4.0E+00	
INORG	Antimony	7440-36-0		4				1.35E-01	2.41E+00						5.9E+03		6.7E+02						1.3E+04		1.8E+02	
INORG	Arsenic	7440-38-2	A	4	4	2.22E+00	3.86E+00			1.3E+01					9.1E+02		3.7E+01						7.2E+02		7.6E+00	
INORG	Barium	7440-39-3	D	4	4	4.60E+00	1.35E+01			1.1E+02					1.5E+05		1.3E+05						3.3E+05		3.7E+04	
INORG	Beryllium	7440-41-7	B1	4	1	8.24E-02	8.24E-02	1.05E-01	1.20E-01	1.5E+00					5.9E+02		1.6E+03						1.3E+03		4.1E+02	
INORG	Cadmium	7440-43-9	B1	4	4	7.78E-02	2.61E-01			1.2E+00					2.2E+03		2.1E+03						1.7E+03		5.5E+02	
INORG	Chromium (total)	7440-47-3		4	4	3.86E+00	5.63E+00			4.9E+01					2.4E+02		9.2E+03						2.6E+02		2.5E+03	
INORG	Cobalt	7440-48-4	B1	4	4	1.83E+00	7.53E+00			1.7E+01					5.9E+03		9.0E+03						1.3E+04		2.6E+03	
INORG	Copper	7440-50-8	D	4	4	4.13E+00	1.52E+01			3.2E+01					5.9E+04		7.3E+04						1.3E+05		2.0E+04	
INORG	Lead	7439-92-1	B2	4	4	2.26E+00	4.95E+00			4.9E+01					4.4E+04		9.0E+02						1.0E+05		4.0E+02	
INORG	Manganese	7439-96-5	D	4	4	1.15E+02	3.22E+02			5.1E+02					1.5E+03		9.0E+04						3.3E+03		2.5E+04	
INORG	Mercury	7439-97-6	D	4	1	9.90E-03	9.90E-03	1.88E-02	3.97E-02	1.3E-01	8.9E+01		6.2E+01		8.8E+03		5.8E+02		4.8E+01		5.2E+01		2.0E+04		1.6E+02	
INORG	Nickel	7440-02-0	A	4	4	4.62E+00	9.03E+00			3.0E+01					1.6E+04		1.5E+05						1.3E+04		4.0E+04	
INORG	Selenium	7782-49-2	D	4				2.53E-01	6.02E-01	4.1E-01					5.9E+04		9.6E+03						1.3E+05		2.6E+03	
INORG	Silver	7440-22-4	D	4				5.88E-02	6.02E-01						2.9E+03		9.0E+03						6.7E+03		2.5E+03	
INORG	Thallium	7440-28-0		4	3	6.97E-01	9.43E-01	3.41E-01	3.41E-01								1.3E+02	7.3E-03							3.5E+01	2.7E-02
INORG	Vanadium	7440-62-2		4	4	4.84E+00	1.01E+01			3.3E+01							5.5E+03								7.5E+02	
INORG	Zinc	7440-66-6	D	4	4	1.54E+01	3.65E+01			1.9E+02							6.3E+05								1.7E+05	

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-5
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-15 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
VOC	Acetone	67-64-1	ID	19	7	4.30E-03	5.70E-01	2.20E-02	1.10E+00		1.1E+05	5.2E-06	1.6E+05	3.6E-06	1.7E+08	3.4E-09	7.3E+04	7.8E-06	1.1E+05	5.2E-06	1.3E+05	4.4E-06	3.9E+08	1.5E-09	2.3E+04	2.5E-05
VOC	Benzene	71-43-2	A	19	3	8.60E-04	4.00E-02	3.20E-04	3.75E-01		8.4E+00	4.8E-03	4.5E+01	8.9E-04	4.7E+05	8.5E-08	4.0E+02	1.0E-04	1.6E+00	2.5E-02	1.3E+01	3.1E-03	3.8E+05	1.1E-07	1.8E+02	2.2E-04
VOC	Bromodichloromethane	75-27-4	B2	19				5.10E-04	3.75E-01		6.4E+00		3.1E+01		1.1E+05		4.9E+02		1.2E+00		9.1E+00		8.4E+04		1.1E+02	
VOC	Bromoform	75-25-2	B2	19				6.70E-04	3.75E-01		7.7E+02		3.1E+03		3.6E+06		8.7E+02		1.5E+02		9.0E+02		2.8E+06		8.2E+02	
VOC	Bromomethane	74-83-9	D	19				1.50E-03	7.50E-01		1.6E+00		1.3E+01		1.5E+05		1.0E+03		8.6E-01		1.1E+01		3.3E+05		3.2E+02	
VOC	2-Butanone	78-93-3	ID	19	5	2.20E-03	3.80E-01	1.40E-03	1.50E+00		2.7E+04	1.4E-05	3.5E+04	1.1E-05	2.9E+07	1.3E-08	2.7E+04	1.4E-05	2.7E+04	1.4E-05	2.9E+04	1.3E-05	6.7E+07	5.7E-09	2.7E+04	1.4E-05
VOC	Carbon Disulfide	75-15-0		19				2.60E-04	3.75E-01		1.4E+02		1.6E+03		2.1E+07		2.8E+02		7.6E+01		1.3E+03		4.7E+07		2.8E+02	
VOC	Carbon Tetrachloride	56-23-5	B2	16				4.60E-04	3.75E-01		9.9E-01		1.2E+01		1.7E+05		3.9E+02		1.9E-01		3.5E+00		1.3E+05		9.6E+01	
VOC	Chlorobenzene	108-90-7	D	19				3.70E-04	3.75E-01		2.2E+02		9.2E+02		2.1E+06		2.6E+02		1.2E+02		7.7E+02		4.7E+06		2.6E+02	
VOC	Chloroethane	75-00-3		19	6	6.30E-03	1.50E+00	8.80E-04	7.50E-01		9.5E+02	1.6E-03	3.6E+04	4.2E-05	2.9E+08	5.2E-09	9.5E+02	1.6E-03	9.5E+02	1.6E-03	3.0E+04	5.0E-05	6.7E+08	2.2E-09	9.5E+02	1.6E-03
VOC	Chloroform	67-66-3	B2	19				5.00E-04	3.75E-01		3.8E+01		1.5E+02		1.6E+06		1.5E+03		7.2E+00		4.5E+01		1.3E+06		1.2E+03	
VOC	Chloromethane	74-87-3	D	19				4.50E-04	7.50E-01		1.0E+01		1.2E+02		2.6E+06		1.1E+03		2.3E+00		4.0E+01		4.9E+06		1.1E+03	
VOC	Cumene	98-82-8	D	19				5.10E-04	3.75E-01		3.9E+02		2.0E+03		2.6E+06		3.9E+02		3.9E+02		1.7E+03		5.8E+06		3.9E+02	
VOC	Cyclohexane	110-82-7	ID	19	2	6.30E-02	1.10E-01	4.40E-04	7.50E-01																	
VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	19				1.10E-03	8.00E-01		1.2E+00		1.5E+01		5.9E+03		1.2E+00		1.2E+00		1.3E+01		1.3E+04		1.2E+00	
VOC	Dibromochloromethane	124-48-1	C	19				5.90E-04	3.75E-01		2.1E+01		8.0E+01		1.6E+05		5.0E+02		3.9E+00		2.4E+01		1.3E+05		1.1E+02	
VOC	1,2-Dibromoethane	106-93-4	B2	19				3.40E-04	3.75E-01		3.6E+00		5.8E+00		1.8E+04		4.3E-01		6.7E-01		1.7E+00		1.4E+04		2.5E-01	
VOC	1,2-Dichlorobenzene	95-50-1	D	19				4.20E-04	3.75E-01		2.1E+02		4.6E+04		4.4E+07		2.1E+02		2.1E+02		3.9E+04		1.0E+08		2.1E+02	
VOC	1,3-Dichlorobenzene	541-73-1	D	19				6.30E-04	3.75E-01								1.7E+02								1.7E+02	
VOC	1,4-Dichlorobenzene	106-46-7	C	19				4.50E-04	3.75E-01		1.0E+02		2.6E+02		5.7E+05		1.9E+03		1.9E+01		7.7E+01		4.5E+05		4.0E+02	
VOC	Dichlorodifluoromethane	75-71-8		19				8.30E-04	7.50E-01		1.7E+03		6.3E+04		1.5E+09		1.0E+03		9.0E+02		5.3E+04		3.3E+09		1.0E+03	
VOC	1,1-Dichloroethane	75-34-3	C	19	12	1.30E-02	6.50E+00	2.90E-04	2.70E-01		4.3E+02	1.5E-02	2.5E+03	2.6E-03	1.5E+07	4.3E-07	8.9E+02	7.3E-03	2.3E+02	2.8E-02	2.1E+03	3.1E-03	3.3E+07	2.0E-07	8.9E+02	7.3E-03
VOC	1,2-Dichloroethane	107-06-2	B2	19				4.10E-04	3.75E-01		1.1E+01		2.1E+01		1.5E+05		4.2E+02		2.1E+00		6.2E+00		1.2E+05		9.1E+01	
VOC	1,1-Dichloroethene	75-35-4	C	19	4	1.60E-02	2.20E+00	5.10E-04	2.70E-01		3.3E-01	**6.7E+00**	3.7E+00	5.9E-01	7.8E+04	2.8E-05	5.7E+02	3.9E-03	6.2E-02	**3.5E+01**	1.1E+00	**2.0E+00**	6.2E+04	3.5E-05	2.0E+02	1.1E-02
VOC	cis-1,2-Dichloroethene	156-59-2	D	19				3.20E-04	3.75E-01		4.1E+01		2.1E+02		1.0E+06		6.4E+02		2.2E+01		1.8E+02		2.3E+06		6.4E+02	
VOC	trans-1,2-Dichloroethene	156-60-5		19				3.70E-04	3.75E-01		4.3E+01		3.3E+02		2.1E+06		1.4E+03		2.3E+01		2.8E+02		4.7E+06		1.4E+03	
VOC	1,2-Dichloropropane	78-87-5	B2	19				3.20E-04	3.75E-01		7.4E+00		3.0E+01		1.2E+05		5.5E+02		4.0E+00		2.5E+01		2.7E+05		1.4E+02	
VOC	1,3-Dichloropropene (total)	542-75-6	B2	19				4.80E-04	3.75E-01		5.4E+00		6.0E+01		5.9E+05		2.4E+02		1.0E+00		1.8E+01		7.8E+05		1.0E+01	
VOC	Ethyl Benzene	100-41-4	D	19	2	2.80E-02	2.00E-01	5.10E-04	3.75E-01		1.4E+02	1.4E-03	2.4E+03	8.3E-05	1.3E+07	1.5E-08	1.4E+02	1.4E-03	8.7E+01	2.3E-03	7.2E+02	2.8E-04	1.0E+07	2.0E-08	1.4E+02	1.4E-03
VOC	2-Hexanone	591-78-6		19				1.30E-03	1.50E+00		1.8E+03		1.3E+03		1.2E+06		2.5E+03		9.9E+02		1.1E+03		2.7E+06		2.5E+03	
VOC	Methyl Acetate	79-20-9		19	2	2.10E-01	2.70E-01	9.50E-04	7.50E-01																	
VOC	Methyl tert-butyl ether	1634-04-4		19				2.90E-04	1.50E+00		5.9E+03		3.0E+04		8.8E+07		5.9E+03		5.9E+03		2.5E+04		2.0E+08		1.5E+03	
VOC	4-Methyl-2-pentanone	108-10-1	ID	19				8.60E-04	1.50E+00		2.7E+03		5.3E+04		6.0E+07		2.7E+03		2.7E+03		4.5E+04		1.4E+08		2.7E+03	
VOC	Methylcyclohexane	108-87-2		19	2	1.50E-01	2.40E-01	4.40E-04	7.50E-01																	
VOC	Methylene Chloride	75-09-2	B2	18	6	2.00E-03	1.50E-01	1.10E-03	3.75E-01		2.4E+02	6.3E-04	7.0E+02	2.1E-04	8.3E+06	1.8E-08	2.3E+03	6.5E-05	4.5E+01	3.3E-03	2.1E+02	7.1E-04	6.6E+06	2.3E-08	1.3E+03	1.2E-04
VOC	Styrene	100-42-5		16				3.10E-04	3.75E-01		5.2E+02		3.3E+03		6.9E+06		5.2E+02		2.5E+02		9.7E+02		5.5E+06		4.0E+02	
VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	19				4.00E-04	3.75E-01		2.3E+01		3.4E+01		6.8E+04		2.4E+02		4.3E+00		1.0E+01		5.4E+04		5.3E+01	
VOC	Tetrachloroethene	127-18-4	C-B2	19	11	1.70E-03	8.10E+01	5.00E-04	1.40E-02		6.0E+01	**1.4E+00**	6.0E+02	1.4E-01	6.8E+06	1.2E-05	8.8E+01	9.2E-01	1.1E+01	**7.4E+00**	1.8E+02	4.5E-01	5.4E+06	1.5E-05	8.8E+01	9.2E-01
VOC	Toluene	108-88-3	D	18	7	7.00E-04	1.80E-01	3.40E-04	3.75E-01		2.5E+02	7.2E-04	3.3E+03	5.5E-05	1.2E+07	1.5E-08	2.5E+02	7.2E-04	2.5E+02	7.2E-04	2.8E+03	6.4E-05	2.7E+07	6.7E-09	2.5E+02	7.2E-04
VOC	1,2,4-Trichlorobenzene	120-82-1	D	19				5.70E-04	3.75E-01		1.1E+03		3.4E+04		1.1E+07		1.1E+03		1.1E+03		2.8E+04		2.5E+07		9.9E+02	
VOC	1,1,1-Trichloroethane	71-55-6	D	19	7	4.30E-02	9.10E+01	4.00E-04	2.20E-01		4.6E+02	2.0E-01	4.5E+03	2.0E-02	2.9E+07	3.1E-06	4.6E+02	2.0E-01	2.5E+02	3.6E-01	3.8E+03	2.4E-02	6.7E+07	1.4E-06	4.6E+02	2.0E-01
VOC	1,1,2-Trichloroethane	79-00-5	C	19				3.40E-04	3.75E-01		2.4E+01		5.7E+01		2.5E+05		8.4E+02		4.6E+00		1.7E+01		1.9E+05		1.8E+02	
VOC	Trichloroethene	79-01-6	C-B2	19	7	2.30E-03	2.10E-01	6.10E-04	1.70E-01		3.7E+01	5.7E-03	2.6E+02	8.1E-04	2.3E+06	9.1E-08	5.0E+02	4.2E-04	7.1E+00	3.0E-02	7.8E+01	2.7E-03	1.8E+06	1.2E-07	5.0E+02	4.2E-04
VOC	Trichlorofluoromethane	75-69-4		19				3.70E-04	7.50E-01		5.6E+02		1.1E+05		1.7E+09		5.6E+02		5.6E+02		9.2E+04		3.8E+09		5.6E+02	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		19				8.00E-04	3.75E-01		5.5E+02		2.1E+05		2.3E+09		5.5E+02		5.5E+02		1.8E+05		5.1E+09		5.5E+02	
VOC	Vinyl Chloride	75-01-4	A	19	4	7.70E-03	1.10E-01	4.40E-04	7.50E-01		2.8E+00	3.9E-02	2.9E+01	3.8E-03	8.9E+05	1.2E-07	3.4E+01	3.2E-03	2.7E-01	4.1E-01	4.2E+00	2.6E-02	3.5E+05	3.1E-07	3.8E+00	2.9E-02
VOC	Xylenes (total)	1330-20-7	ID	19	4	3.20E-02	1.10E+00	1.20E-03	7.50E-01		1.5E+02	7.3E-03	5.4E+04	2.0E-05	1.3E+08	8.5E-09	1.5E+02	7.3E-03	1.5E+02	7.3E-03	4.6E+04	2.4E-05	2.9E+08	3.8E-09	1.5E+02	7.3E-03
SVOC	Acenaphthene	83-32-9		9	1	8.30E-02	8.30E-02	5.80E-02	3.90E-01		3.5E+05	2.4E-07	9.7E+04	8.6E-07	6.2E+06	1.3E-08	1.3E+05	6.4E-07	1.9E+05	4.4E-07	8.1E+04	1.0E-06	1.4E+07	5.9E-09	4.1E+04	2.0E-06
SVOC	Acenaphthylene	208-96-8	D	9				5.30E-02	3.90E-01		3.0E+03		2.7E+03		1.0E+06		5.2E+03		1.6E+03		2.2E+03		2.3E+06		1.6E+03	
SVOC	Acetophenone	98-86-2	D	9	1	1.80E-01	1.80E-01	5.70E-02	3.90E-01		1.1E+03	1.6E-04	5.2E+04	3.5E-06	1.4E+07	1.3E-08	1.1E+03	1.6E-04	1.1E+03	1.6E-04	4.4E+04	4.1E-06	3.3E+07	5.5E-09	1.1E+03	1.6E-04
SVOC	Anthracene	120-12-7	D	9				5.60E-02	3.90E-01		1.0E+06		1.6E+06		2.9E+07		7.3E+05		1.0E+06		1.4E+06		6.7E+07		2.3E+05	
SVOC	Atrazine	1912-24-9		9				1.70E-01	3.90E-01								3.3E+02								7.1E+01	
SVOC	Benzaldehyde	100-52-7		9				1.90E-01	3.90E-01																	
SVOC	Benzo(a)anthracene	56-55-3	B2	9	1	7.60E-02	7.60E-02	6.30E-02	3.90E-01								8.0E+01	9.5E-04							2.0E+01	3.8E-03
SVOC	Benzo(a)pyrene	50-32-8	B2	9				6.80E-02	3.90E-01						1.9E+03		8.0E+00								2.0E+00	
SVOC	Benzo(b)fluoranthene	205-99-2	B2	9				6.60E-02	3.90E-01								8.0E+01								2.0E+01	
SVOC	Benzo(g,h,i)perylene	191-24-2	D	9				6.30E-02	3.90E-01						3.5E+05		7.0E+03						8.0E+05		2.5E+03	
SVOC	Benzo(k)fluoranthene	207-08-9	B2	9				6.00E-02	3.90E-01								8.0E+02								2.0E+02	
SVOC	Biphenyl	92-52-4	D	9				1.60E-01	3.90E-01																	
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	9				5.30E-02	3.90E-01																	
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	9				5.80E-02	3.90E-01		4.4E+01		1.3E+01		1.2E+04		5.8E+01		8.3E+00		3.8E+00		9.4E+03		1.3E+01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	9	4	2.90E-01	9.60E-01	6.10E-02	3.80E-01						8.9E+05	1.1E-06	1.0E+04	9.6E-05					7.0E+05	1.4E-06	2.8E+03	3.4E-04
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	9				6.90E-02	3.90E-01																	
SVOC	Butylbenzylphthalate	85-68-7	C	9				5.80E-02	3.90E-01						2.1E+07		3.1E+02						4.7E+07		3.1E+02	
SVOC	Caprolactam	105-60-2		9				2.00E-01	3.90E-01						2.9E+05		3.1E+05						6.7E+05		5.3E+04	
SVOC	Carbazole	86-74-8	B2	9	1	6.30E-02	6.30E-02	5.90E-02	3.90E-01								2.4E+03	2.6E-05							5.3E+02	1.2E-04
SVOC	4-Chloro-3-methylphenol	59-50-7		9				5.80E-02	3.90E-01								1.5E+04								4.5E+03	
SVOC	4-Chloroaniline	106-47-8		9				5.80E-02	1.60E+00																	
SVOC	2-Chloronaphthalene	91-58-7		9				5.50E-02	3.90E-01								1.8E+05								5.6E+04	
SVOC	2-Chlorophenol	95-57-8		9				5.90E-02	3.90E-01								4.5E+03								1.4E+03	
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		9				5.90E-02	3.90E-01																	
SVOC	Chrysene	218-01-9	B2	9	1	2.00E-01	2.00E-01	5.20E-02	3.90E-01								8.0E+03	2.5E-05							2.0E+03	1.0E-04
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	9				5.80E-02	3.90E-01								8.0E+00								2.0E+00	
SVOC	Dibenzofuran	132-64-9	D	9	1	8.30E-02	8.30E-02	5.70E-02	3.90E-01																	
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	9				4.40E-02	2.40E+00						8.2E+03		3.0E+01						6.5E+03		6.6E+00	
SVOC	2,4-Dichlorophenol	120-83-2		9				5.70E-02	3.90E-01						2.3E+06		1.8E+03						5.1E+06		6.6E+02	
SVOC	Diethylphthalate	84-66-2	D	9				1.70E-01	3.90E-01						1.5E+06		7.4E+02						3.3E+06		7.4E+02	
SVOC	2,4-Dimethylphenol	105-67-9		9				9.10E-02	3.90E-01						2.1E+06		3.6E+04						4.7E+06		1.1E+04	
SVOC	Dimethylphthalate	131-11-3	D	9				1.80E-01	3.90E-01						1.5E+06		7.9E+02						3.3E+06		7.9E+02	

TABLE 4-5
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-15 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	Di-n-butylphthalate	84-74-2	D	9				1.70E-01	3.90E-01						1.5E+06		7.6E+02						3.3E+06		7.6E+02	
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		9				1.80E-01	2.00E+00								2.6E+02								7.9E+01	
SVOC	2,4-Dinitrophenol	51-28-5		9				1.30E-01	2.00E+00																	
SVOC	2,4-Dinitrotoluene	121-14-2	B2	9				5.20E-02	3.90E-01						2.0E+04		2.2E+02						1.6E+04		4.8E+01	
SVOC	2,6-Dinitrotoluene	606-20-2	B2	9				5.50E-02	3.90E-01																	
SVOC	Di-n-octylphthalate	117-84-0		9				6.10E-02	3.90E-01								2.0E+04								6.9E+03	
SVOC	Fluoranthene	206-44-0	D	9	1	4.40E-01	4.40E-01	6.40E-02	3.90E-01		1.0E+06	4.4E-07	8.9E+05	4.9E-07	4.1E+06	1.1E-07	1.3E+05	3.4E-06	1.0E+06	4.4E-07	7.4E+05	5.9E-07	9.3E+06	4.7E-08	4.6E+04	9.6E-06
SVOC	Fluorene	86-73-7	D	9	1	8.20E-02	8.20E-02	5.50E-02	3.90E-01		1.0E+06	8.2E-08	1.5E+05	5.5E-07	4.1E+06	2.0E-08	8.7E+04	9.4E-07	5.8E+05	1.4E-07	1.3E+05	6.3E-07	9.3E+06	8.8E-09	2.7E+04	3.0E-06
SVOC	Hexachlorobenzene	118-74-1	B2	9				6.40E-02	3.90E-01		2.2E+02		5.6E+01		8.5E+03		3.7E+01		4.1E+01		1.7E+01		6.8E+03		8.9E+00	
SVOC	Hexachlorobutadiene	87-68-3	C	9				5.10E-02	3.90E-01		3.5E+02		4.6E+02		1.8E+05		3.5E+02		1.3E+02		1.3E+02		1.4E+05		1.0E+02	
SVOC	Hexachlorocyclopentadiene	77-47-4	E	9				6.80E-02	3.90E-01		5.6E+01		6.0E+01		5.9E+03		7.2E+02		3.0E+01		5.0E+01		1.3E+04		7.2E+02	
SVOC	Hexachloroethane	67-72-1	C	9				5.50E-02	1.20E-01		7.9E+01		6.6E+02		1.0E+05		7.3E+02		4.0E+01		5.5E+02		2.3E+05		2.3E+02	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	9				8.00E-02	3.90E-01								8.0E+01								2.0E+01	
SVOC	Isophorone	78-59-1	C	9				5.00E-02	3.90E-01						8.2E+06		2.4E+03						1.2E+07		2.4E+03	
SVOC	2-Methylnaphthalene	91-57-6	ID	9	2	1.80E-01	1.10E+00	5.50E-02	3.80E-01								2.6E+04	4.2E-05							8.1E+03	1.4E-04
SVOC	Methylphenol (total)	1319-77-3		9	1	2.60E-01	2.60E-01	5.30E-02	3.90E-01						2.9E+06	9.0E-08	3.6E+04	7.2E-06					6.7E+06	3.9E-08	1.1E+04	2.4E-05
SVOC	Naphthalene	91-20-3	C	9	4	1.20E-01	6.30E-01	5.60E-02	3.70E-01		4.7E+02	1.3E-03	3.5E+02	1.8E-03	8.8E+04	7.2E-06	5.2E+04	1.2E-05	2.5E+02	2.5E-03	3.0E+02	2.1E-03	2.0E+05	3.2E-06	1.6E+04	3.9E-05
SVOC	2-Nitroaniline	88-74-4		9				5.20E-02	2.00E+00																	
SVOC	3-Nitroaniline	99-09-2	C	9				1.60E-01	2.00E+00																	
SVOC	4-Nitroaniline	100-01-6	C	9				7.70E-02	2.00E+00																	
SVOC	Nitrobenzene	98-95-3	D	9				5.20E-02	3.90E-01		1.7E+02		6.4E+01		2.1E+04		3.4E+02		9.1E+01		5.4E+01		4.7E+04		1.0E+02	
SVOC	2-Nitrophenol	88-75-5		9				5.20E-02	3.90E-01								2.0E+03								6.3E+02	
SVOC	4-Nitrophenol	100-02-7		9				2.20E-01	2.00E+00																	
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	9				5.60E-02	3.90E-01								7.8E+03								1.7E+03	
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	9				5.00E-02	3.90E-01						2.0E+03		5.4E+00						1.6E+03		1.2E+00	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	9				5.90E-02	3.90E-01																	
SVOC	Pentachlorophenol	87-86-5	B2	9				1.40E-01	4.10E+00						1.3E+05		3.2E+02						1.0E+05		9.0E+01	
SVOC	Phenanthrene	85-01-8	D	9	1	9.50E-01	9.50E-01	5.90E-02	3.90E-01		5.1E+03	1.9E-04	1.9E+02	5.0E-03	2.9E+03	3.3E-04	5.2E+03	1.8E-04	2.8E+03	3.4E-04	1.6E+02	5.9E-03	6.7E+03	1.4E-04	1.6E+03	5.9E-04
SVOC	Phenol	108-95-2	ID	9	1	4.50E-01	4.50E-01	5.60E-02	3.90E-01						1.8E+07	2.5E-08	1.2E+04	3.8E-05					4.0E+07	1.1E-08	1.2E+04	3.8E-05
SVOC	Pyrene	129-00-0	D	9	1	2.30E-01	2.30E-01	5.80E-02	3.90E-01		1.0E+06	2.3E-07	7.8E+05	2.9E-07	2.9E+06	7.9E-08	8.4E+04	2.7E-06	1.0E+06	2.3E-07	6.5E+05	3.5E-07	6.7E+06	3.4E-08	2.9E+04	7.9E-06
SVOC	2,4,5-Trichlorophenol	95-95-4		9				6.30E-02	3.90E-01						1.0E+07		7.3E+04						2.3E+07		2.3E+04	
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	9				7.20E-02	3.90E-01						1.3E+06		3.3E+03						1.0E+06		7.1E+02	
P/PCB	PCBs (total)	1336-36-3	B2	9	1	9.60E-02	9.60E-02	2.30E-02	1.90E-01		1.6E+04	6.0E-06	8.1E+02	1.2E-04	6.5E+03	1.5E-05	1.6E+01	6.0E-03	3.0E+03	3.2E-05	2.4E+02	4.0E-04	5.2E+03	1.8E-05	4.0E+00	2.4E-02
INORG	Antimony	7440-36-0		9	1	3.13E-01	3.13E-01	2.80E-01	2.39E+00						5.9E+03	5.3E-05	6.7E+02	4.7E-04					1.3E+04	2.4E-05	1.8E+02	1.7E-03
INORG	Arsenic	7440-38-2	A	9	9	1.87E+00	2.93E+01			1.3E+01					9.1E+02	1.8E-02	3.7E+01	4.4E-01					7.2E+02	2.2E-02	7.6E+00	**2.1E+00**
INORG	Barium	7440-39-3	D	9	9	6.66E+00	6.00E+01			1.1E+02					1.5E+05		1.3E+05						3.3E+05		3.7E+04	
INORG	Beryllium	7440-41-7	B1	9	9	1.12E-01	4.34E-01			1.5E+00					5.9E+02		1.6E+03						1.3E+03		4.1E+02	
INORG	Cadmium	7440-43-9	B1	9	9	3.55E-02	1.35E+00			1.2E+00					2.2E+03	6.8E-05	2.1E+03	7.1E-05					1.7E+03	8.8E-05	5.5E+02	2.7E-04
INORG	Chromium (total)	7440-47-3		9	9	3.51E+00	1.56E+01			4.9E+01					2.4E+02		9.2E+03						2.6E+02		2.5E+03	
INORG	Cobalt	7440-48-4	B1	9	9	1.87E+00	7.64E+00			1.7E+01					5.9E+03		9.0E+03						1.3E+04		2.6E+03	
INORG	Copper	7440-50-8	D	9	9	7.84E+00	6.50E+01			3.2E+01					5.9E+04	5.6E-04	7.3E+04	4.5E-04					1.3E+05	2.5E-04	2.0E+04	1.7E-03
INORG	Lead	7439-92-1	B2	9	9	3.67E+00	3.01E+01			4.9E+01					4.4E+04		9.0E+02						1.0E+05		4.0E+02	
INORG	Manganese	7439-96-5	D	9	9	4.40E+01	5.82E+02			5.1E+02					1.5E+03	4.8E-02	9.0E+04	8.0E-04					3.3E+03	2.2E-02	2.5E+04	2.9E-03
INORG	Mercury	7439-97-6	D	9	6	2.57E-02	3.92E-02	1.01E-02	3.94E-02	1.3E-01	8.9E+01		6.2E+01		8.8E+03		5.8E+02		4.8E+01		5.2E+01		2.0E+04		1.6E+02	
INORG	Nickel	7440-02-0	A	9	9	5.38E+00	1.81E+01			3.0E+01					1.6E+04		1.5E+05						1.3E+04		4.0E+04	
INORG	Selenium	7782-49-2	D	9	1	3.72E+00	3.72E+00	1.76E-01	5.77E-01	4.1E-01					5.9E+04	5.6E-05	9.6E+03	3.4E-04					1.3E+05	2.5E-05	2.6E+03	1.3E-03
INORG	Silver	7440-22-4	D	9				8.53E-02	5.97E-01						2.9E+03		9.0E+03						6.7E+03		2.5E+03	
INORG	Thallium	7440-28-0		9	3	5.47E-01	9.01E-01	2.99E-01	1.19E+00								1.3E+02	6.9E-03							3.5E+01	2.6E-02
INORG	Vanadium	7440-62-2		9	9	6.49E+00	2.02E+01			3.3E+01							5.5E+03								7.5E+02	
INORG	Zinc	7440-66-6	D	9	9	2.45E+01	8.04E+01			1.9E+02							6.3E+05								1.7E+05	

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-6
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR W-1 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
VOC	Acetone	67-64-1	ID	92	51	2.50E-03	2.20E+00	2.00E-03	5.70E+01		1.1E+05	2.0E-05	1.6E+05	1.4E-05	1.7E+08	1.3E-08	7.3E+04	3.0E-05	1.1E+05	2.0E-05	1.3E+05	1.7E-05	3.9E+08	5.6E-09	2.3E+04	9.6E-05
VOC	Acetonitrile	75-05-8	D	10				5.30E-02	1.40E+01		8.8E+03		1.9E+03		1.8E+06		1.4E+04		4.8E+03		1.6E+03		4.0E+06		4.3E+03	
VOC	Acrolein	107-02-8	ID	10				5.30E-02	1.40E+01		7.6E-01		3.7E-01		5.9E+02		1.2E+04		4.1E-01		3.1E-01		1.3E+03		3.6E+03	
VOC	Acrylonitrile	107-13-1	B1	10				5.30E-02	1.40E+01		3.5E+01		1.7E+01		5.8E+04		7.4E+01		6.6E+00		5.0E+00		4.6E+04		1.6E+01	
VOC	Benzene	71-43-2	A	92	13	2.00E-03	7.20E-01	6.10E-04	5.70E+00		8.4E+00	8.6E-02	4.5E+01	1.6E-02	4.7E+05	1.5E-06	4.0E+02	1.8E-03	1.6E+00	4.5E-01	1.3E+01	5.5E-02	3.8E+05	1.9E-06	1.8E+02	4.0E-03
VOC	Bromodichloromethane	75-27-4	B2	92				1.10E-03	5.70E+00		6.4E+00		3.1E+01		1.1E+05		4.9E+02		1.2E+00		9.1E+00		8.4E+04		1.1E+02	
VOC	Bromoform	75-25-2	B2	92				1.40E-03	5.70E+00		7.7E+02		3.1E+03		3.6E+06		8.7E+02		1.5E+02		9.0E+02		2.8E+06		8.2E+02	
VOC	Bromomethane	74-83-9	D	92				1.60E-03	5.70E+00		1.6E+00		1.3E+01		1.5E+05		1.0E+03		8.6E-01		1.1E+01		3.3E+05		3.2E+02	
VOC	2-Butanone	78-93-3	ID	92	35	2.20E-03	2.30E+00	2.50E-03	5.70E+01		2.7E+04	8.5E-05	3.5E+04	6.6E-05	2.9E+07	7.9E-08	2.7E+04	8.5E-05	2.7E+04	8.5E-05	2.9E+04	7.9E-05	6.7E+07	3.4E-08	2.7E+04	8.5E-05
VOC	Carbon Disulfide	75-15-0		92	4	2.20E-03	9.60E-03	7.00E-04	5.70E+01		1.4E+02	6.9E-05	1.6E+03	6.0E-06	2.1E+07	4.6E-10	2.8E+02	3.4E-05	7.6E+01	1.3E-04	1.3E+03	7.4E-06	4.7E+07	2.0E-10	2.8E+02	3.4E-05
VOC	Carbon Tetrachloride	56-23-5	B2	92				9.00E-04	5.70E+00		9.9E-01		1.2E+01		1.7E+05		3.9E+02		1.9E-01		3.5E+00		1.3E+05		9.6E+01	
VOC	2-Chloro-1,3-butadiene	126-99-8		10				5.30E-03	1.40E+00																	
VOC	3-Chloro-1-propene	107-05-1		10				1.10E-02	2.90E+00																	
VOC	Chlorobenzene	108-90-7	D	92	1	1.10E-01	1.10E-01	4.70E-04	5.70E+00		2.2E+02	5.0E-04	9.2E+02	1.2E-04	2.1E+06	5.2E-08	2.6E+02	4.2E-04	1.2E+02	9.2E-04	7.7E+02	1.4E-04	4.7E+06	2.3E-08	2.6E+02	4.2E-04
VOC	Chloroethane	75-00-3		92	3	2.20E-03	5.20E-03	2.10E-03	5.70E+00		9.5E+02	5.5E-06	3.6E+04	1.4E-07	2.9E+08	1.8E-11	9.5E+02	5.5E-06	9.5E+02	5.5E-06	3.0E+04	1.7E-07	6.7E+08	7.8E-12	9.5E+02	5.5E-06
VOC	Chloroform	67-66-3	B2	92				7.40E-04	5.70E+00		3.8E+01		1.5E+02		1.6E+06		1.5E+03		7.2E+00		4.5E+01		1.3E+06		1.2E+03	
VOC	Chloromethane	74-87-3	D	92				1.20E-03	5.70E+00		1.0E+01		1.2E+02		2.6E+06		1.1E+03		2.3E+00		4.0E+01		4.9E+06		1.1E+03	
VOC	Cumene	98-82-8	D	36	10	2.50E-03	1.10E+00	6.60E-04	2.40E-01		3.9E+02	2.8E-03	2.0E+03	5.5E-04	2.6E+06	4.2E-07	3.9E+02	2.8E-03	3.9E+02	2.8E-03	1.7E+03	6.5E-04	5.8E+06	1.9E-07	3.9E+02	2.8E-03
VOC	Cyclohexane	110-82-7	ID	36	10	2.20E-03	3.00E-01	9.40E-04	5.00E-01																	
VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	46				1.40E-03	2.90E+00		1.2E+00		1.5E+01		5.9E+03		1.2E+00		1.2E+00		1.3E+01		1.3E+04		1.2E+00	
VOC	Dibromochloromethane	124-48-1	C	92				9.90E-04	5.70E+00		2.1E+01		8.0E+01		1.6E+05		5.0E+02		3.9E+00		2.4E+01		1.3E+05		1.1E+02	
VOC	1,2-Dibromoethane	106-93-4	B2	46				1.10E-03	1.40E+00		3.6E+00		5.8E+00		1.8E+04		4.3E-01		6.7E-01		1.7E+00		1.4E+04		2.5E-01	
VOC	Dibromomethane	74-95-3		10				5.30E-03	1.40E+00								2.0E+03								2.0E+03	
VOC	trans-1,4-Dichloro-2-butene	110-57-6		10				5.30E-03	1.40E+00																	
VOC	1,2-Dichlorobenzene	95-50-1	D	85	2	3.40E-03	4.50E-01	6.40E-04	5.70E+00		2.1E+02	2.1E-03	4.6E+04	9.8E-06	4.4E+07	1.0E-08	2.1E+02	2.1E-03	2.1E+02	2.1E-03	3.9E+04	1.2E-05	1.0E+08	4.5E-09	2.1E+02	2.1E-03
VOC	1,3-Dichlorobenzene	541-73-1	D	85	1	1.10E-01	1.10E-01	7.20E-04	5.70E+00								1.7E+02	6.5E-04							1.7E+02	6.5E-04
VOC	1,4-Dichlorobenzene	106-46-7	C	85	1	2.60E-03	2.60E-03	6.00E-04	5.70E+00		1.0E+02	2.6E-05	2.6E+02	1.0E-05	5.7E+05	4.6E-09	1.9E+03	1.4E-06	1.9E+01	1.4E-04	7.7E+01	3.4E-05	4.5E+05	5.8E-09	4.0E+02	6.5E-06
VOC	Dichlorodifluoromethane	75-71-8		46	1	1.40E-03	1.40E-03	9.90E-04	1.40E+00		1.7E+03	8.2E-07	6.3E+04	2.2E-08	1.5E+09	9.3E-13	1.0E+03	1.4E-06	9.0E+02	1.6E-06	5.3E+04	2.6E-08	3.3E+09	4.2E-13	1.0E+03	1.4E-06
VOC	1,1-Dichloroethane	75-34-3	C	92	4	1.85E-02	1.70E-01	5.20E-04	5.70E+00		4.3E+02	4.0E-04	2.5E+03	6.8E-05	1.5E+07	1.1E-08	8.9E+02	1.9E-04	2.3E+02	7.4E-04	2.1E+03	8.1E-05	3.3E+07	5.2E-09	8.9E+02	1.9E-04
VOC	1,2-Dichloroethane	107-06-2	B2	92				6.60E-04	5.70E+00		1.1E+01		2.1E+01		1.5E+05		4.2E+02		2.1E+00		6.2E+00		1.2E+05		9.1E+01	
VOC	1,1-Dichloroethene	75-35-4	C	92				1.10E-03	5.70E+00		3.3E-01		3.7E+00		7.8E+04		5.7E+02		6.2E-02		1.1E+00		6.2E+04		2.0E+02	
VOC	cis-1,2-Dichloroethene	156-59-2	D	92	4	1.23E-02	1.40E+00	7.60E-04	5.70E+00		4.1E+01	3.4E-02	2.1E+02	6.7E-03	1.0E+06	1.4E-06	6.4E+02	2.2E-03	2.2E+01	6.4E-02	1.8E+02	7.8E-03	2.3E+06	6.1E-07	6.4E+02	2.2E-03
VOC	trans-1,2-Dichloroethene	156-60-5		92	1	1.80E-01	1.80E-01	6.60E-04	5.70E+00		4.3E+01	4.2E-03	3.3E+02	5.5E-04	2.1E+06	8.6E-08	1.4E+03	1.3E-04	2.3E+01	7.8E-03	2.8E+02	6.4E-04	4.7E+06	3.8E-08	1.4E+03	1.3E-04
VOC	1,2-Dichloropropane	78-87-5	B2	92				6.80E-04	5.70E+00		7.4E+00		3.0E+01		1.2E+05		5.5E+02		4.0E+00		2.5E+01		2.7E+05		1.4E+02	
VOC	1,3-Dichloropropene (total)	542-75-6	B2	92				7.80E-04	5.70E+00		5.4E+00		6.0E+01		5.9E+05		2.4E+02		1.0E+00		1.8E+01		7.8E+05		1.0E+01	
VOC	1,4-Dioxane	123-91-1	B2	10				5.30E-01	1.40E+02						7.1E+05		2.4E+03						5.7E+05		5.3E+02	
VOC	Ethyl Benzene	100-41-4	D	92	23	2.10E-03	2.50E+01	5.50E-04	2.40E-01		1.4E+02	1.8E-01	2.4E+03	1.0E-02	1.3E+07	1.9E-06	1.4E+02	1.8E-01	8.7E+01	2.9E-01	7.2E+02	3.5E-02	1.0E+07	2.5E-06	1.4E+02	1.8E-01
VOC	Ethyl Methacrylate	97-63-2		4				5.65E-03	1.30E-02																	
VOC	2-Hexanone	591-78-6		92	3	2.50E-03	1.58E-02	1.50E-03	5.70E+01		1.8E+03	8.8E-06	1.3E+03	1.2E-05	1.2E+06	1.3E-08	2.5E+03	6.3E-06	9.9E+02	1.6E-05	1.1E+03	1.4E-05	2.7E+06	5.8E-09	2.5E+03	6.3E-06
VOC	Iodomethane	74-88-4		10				5.30E-03	1.40E+00																	
VOC	Isobutyl Alcohol	78-83-1		10				2.30E+00	6.30E+02		8.9E+03		9.5E+04		4.4E+07		8.9E+03		8.9E+03		7.9E+04		1.0E+08		8.9E+03	
VOC	Methacrylonitrile	126-98-7		10				2.10E-02	5.70E+00																	
VOC	Methyl Acetate	79-20-9		36	8	1.40E-01	3.40E+01	9.90E-04	5.00E-01																	
VOC	Methyl tert-butyl ether	1634-04-4		36				7.60E-04	1.30E+00		5.9E+03		3.0E+04		8.8E+07		5.9E+03		5.9E+03		2.5E+04		2.0E+08		1.5E+03	
VOC	4-Methyl-2-pentanone	108-10-1	ID	92	8	3.00E-03	6.80E-01	1.70E-03	5.70E+01		2.7E+03	2.5E-04	5.3E+04	1.3E-05	6.0E+07	1.1E-08	2.7E+03	2.5E-04	2.7E+03	2.5E-04	4.5E+04	1.5E-05	1.4E+08	4.9E-09	2.7E+03	2.5E-04
VOC	Methylcyclohexane	108-87-2		36	15	6.40E-04	1.40E+00	5.50E-04	4.90E-01																	
VOC	Methylene Chloride	75-09-2	B2	92	11	2.40E-03	2.50E+01	1.20E-03	1.40E+00		2.4E+02	1.0E-01	7.0E+02	3.6E-02	8.3E+06	3.0E-06	2.3E+03	1.1E-02	4.5E+01	5.6E-01	2.1E+02	1.2E-01	6.6E+06	3.8E-06	1.3E+03	1.9E-02
VOC	Methylmethacrylate	80-62-6	E	10				5.30E-03	1.40E+00																	
VOC	Pentachloroethane	76-01-7		10	1	9.90E-02	9.90E-02	1.70E-01	3.00E+01																	
VOC	Propionitrile	107-12-0		10				2.10E-02	5.70E+00																	
VOC	Styrene	100-42-5		92				4.50E-04	5.70E+00		5.2E+02		3.3E+03		6.9E+06		5.2E+02		2.5E+02		9.7E+02		5.5E+06		4.0E+02	
VOC	1,1,1,2-Tetrachloroethane	630-20-6		10				5.30E-03	1.40E+00		3.3E+01		1.2E+02		5.3E+05		4.4E+02		6.2E+00		3.6E+01		4.2E+05		4.4E+02	
VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	92				1.60E-03	5.70E+00		2.3E+01		3.4E+01		6.8E+04		2.4E+02		4.3E+00		1.0E+01		5.4E+04		5.3E+01	
VOC	Tetrachloroethene	127-18-4	C-B2	92	12	2.30E-03	5.60E+00	1.10E-03	5.70E+00		6.0E+01	9.3E-02	6.0E+02	9.3E-03	6.8E+06	8.2E-07	8.8E+01	6.4E-02	1.1E+01	5.1E-01	1.8E+02	3.1E-02	5.4E+06	1.0E-06	8.8E+01	6.4E-02
VOC	Toluene	108-88-3	D	92	38	5.60E-04	4.20E+01	5.40E-04	2.50E-01		2.5E+02	1.7E-01	3.3E+03	1.3E-02	1.2E+07	3.5E-06	2.5E+02	1.7E-01	2.5E+02	1.7E-01	2.8E+03	1.5E-02	2.7E+07	1.6E-06	2.5E+02	1.7E-01
VOC	1,2,4-Trichlorobenzene	120-82-1	D	67				8.00E-04	1.10E+02		1.1E+03		3.4E+04		1.1E+07		1.1E+03		1.1E+03		2.8E+04		2.5E+07		9.9E+02	
VOC	1,1,1-Trichloroethane	71-55-6	D	92	2	2.60E-03	3.90E-03	8.30E-04	5.70E+00		4.6E+02	8.5E-06	4.5E+03	8.7E-07	2.9E+07	1.3E-10	4.6E+02	8.5E-06	2.5E+02	1.6E-05	3.8E+03	1.0E-06	6.7E+07	5.8E-11	4.6E+02	8.5E-06
VOC	1,1,2-Trichloroethane	79-00-5	C	92				1.10E-03	5.70E+00		2.4E+01		5.7E+01		2.5E+05		8.4E+02		4.6E+00		1.7E+01		1.9E+05		1.8E+02	
VOC	Trichloroethene	79-01-6	C-B2	92	5	4.90E-02	2.30E+00	6.90E-04	5.70E+00		3.7E+01	6.2E-02	2.6E+02	8.8E-03	2.3E+06	1.0E-06	5.0E+02	4.6E-03	7.1E+00	3.2E-01	7.8E+01	2.9E-02	1.8E+06	1.3E-06	5.0E+02	4.6E-03
VOC	Trichlorofluoromethane	75-69-4		46	2	1.40E-03	1.50E-03	9.90E-04	1.40E+00		5.6E+02	2.7E-06	1.1E+05	1.4E-08	1.7E+09	8.8E-13	5.6E+02	2.7E-06	5.6E+02	2.7E-06	9.2E+04	1.6E-08	3.8E+09	3.9E-13	5.6E+02	2.7E-06
VOC	1,2,3-Trichloropropane	96-18-4	B2	12				5.30E-03	1.40E+00								8.3E+02								8.3E+02	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		36	3	5.50E-03	8.90E-03	8.40E-04	3.20E-01		5.5E+02	1.6E-05	2.1E+05	4.2E-08	2.3E+09	3.9E-12	5.5E+02	1.6E-05	5.5E+02	1.6E-05	1.8E+05	4.9E-08	5.1E+09	1.7E-12	5.5E+02	1.6E-05
VOC	Vinyl Acetate	108-05-4		10				5.30E-02	1.40E+01		1.5E+03		2.0E+03		5.9E+06		2.4E+03		7.9E+02		1.7E+03		1.3E+07		2.4E+03	
VOC	Vinyl Chloride	75-01-4	A	92	1	9.50E-03	9.50E-03	1.30E-03	5.70E+00		2.8E+00	3.4E-03	2.9E+01	3.3E-04	8.9E+05	1.1E-08	3.4E+01	2.8E-04	2.7E-01	3.5E-02	4.2E+00	2.3E-03	3.5E+05	2.7E-08	3.8E+00	2.5E-03
VOC	Xylenes (total)	1330-20-7	ID	92	27	4.85E-03	1.50E+02	1.80E-03	1.00E-01		1.5E+02	1.0E+00	5.4E+04	2.8E-03	1.3E+08	1.2E-06	1.5E+02	1.0E+00	1.5E+02	1.0E+00	4.6E+04	3.3E-03	2.9E+08	5.2E-07	1.5E+02	1.0E+00
SVOC	Acenaphthene	83-32-9		68	16	2.40E-02	3.60E+01	1.50E-02	3.50E+01		3.5E+05	1.0E-04	9.7E+04	3.7E-04	6.2E+06	5.8E-06	1.3E+05	2.8E-04	1.9E+05	1.9E-04	8.1E+04	4.4E-04	1.4E+07	2.6E-06	4.1E+04	8.8E-04
SVOC	Acenaphthylene	208-96-8	D	68	2	5.80E-02	2.00E+00	2.30E-02	1.10E+02		3.0E+03	6.7E-04	2.7E+03	7.4E-04	1.0E+06	2.0E-06	5.2E+03	3.8E-04	1.6E+03	1.3E-03	2.2E+03	9.1E-04	2.3E+06	8.7E-07	1.6E+03	1.3E-03
SVOC	Acetophenone	98-86-2	D	46				2.10E-02	3.00E+01		1.1E+03		5.2E+04		1.4E+07		1.1E+03		1.1E+03		4.4E+04		3.3E+07		1.1E+03	
SVOC	2-Acetylaminofluorene	53-96-3		10				1.70E+00	3.00E+02																	
SVOC	4-Aminobiphenyl	92-67-1		10				9.00E-01	1.60E+02																	
SVOC	Aniline	62-53-3	B2	10				9.00E-01	6.10E+01						2.9E+04		1.5E+03						6.7E+04		3.3E+02	
SVOC	Anthracene	120-12-7	D	68	20	2.00E-02	2.10E+01	1.80E-02	3.00E+01		1.0E+06	2.1E-05	1.6E+06	1.3E-05	2.9E+07	7.2E-07	7.3E+05	2.9E-05	1.0E+06	2.1E-05	1.4E+06	1.5E-05	6.7E+07	3.1E-07	2.3E+05	9.1E-05
SVOC	Atrazine	1912-24-9		36	1	9.60E-02	9.60E-02	2.60E-02	1.90E+01								3.3E+02	2.9E-04							7.1E+01	1.4E-03
SVOC	Benzaldehyde	100-52-7		36				1.50E-02	1.90E+01																	
SVOC	Benzo(a)anthracene	56-55-3	B2	68	23	4.20E-02	1.50E+01	2.70E-02	1.10E+02								8.0E+01	1.9E-01							2.0E+01	7.5E-01
SVOC	Benzo(a)pyrene	50-32-8	B2	68	16	2.50E-02	8.60E+00	1.80E-02	1.10E+02						1.9E+03	4.5E-03	8.0E+00	**1.1E+00**					1.5E+03	5.7E-03	2.0E+00	**4.3E+00**
SVOC	Benzo(b)fluoranthene	205-99-2	B2	68	24	2.80E-02	1.10E+01	2.40E-02	1.10E+02								8.0E+01	1.4E-01							2.0E+01	5.5E-01
SVOC	Benzo(g,h,i)perylene	191-24-2	D	68	19	2.10E-02	4.50E+00	1.90E-02	1.10E+02						3.5E+05	1.3E-05	7.0E+03	6.4E-04					8.0E+05	5.6E-06	2.5E+03	1.8E-03
SVOC	Benzo(k)fluoranthene	207-08-9	B2	68	12	3.60E-02	5.30E+00	1.90E-02	1.10E+02								8.0E+02	6.6E-03							2.0E+02	2.7E-02

TABLE 4-6
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR W-1 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	Benzyl Alcohol	100-51-6		10				6.90E-01	6.10E+01						1.5E+08		5.8E+03							3.3E+08		5.8E+03	
SVOC	Biphenyl	92-52-4	D	36	3	3.00E-01	3.40E+00	1.90E-02	1.90E+01																		
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	68				2.70E-02	1.10E+02																		
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	68				1.90E-02	1.10E+02		4.4E+01		1.3E+01		1.2E+04		5.8E+01		8.3E+00		3.8E+00		9.4E+03		1.3E+01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	68	19	2.40E-02	7.60E+01	1.40E-02	3.50E+01						8.9E+05	8.5E-05	1.0E+04	7.6E-03						7.0E+05	1.1E-04	2.8E+03	2.7E-02
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	68				1.60E-02	1.10E+02																		
SVOC	2,sec-Butyl-4,6-dinitrophenol	88-85-7		10				1.10E-02	5.70E-02								1.4E+02								6.6E+01		
SVOC	Butylbenzylphthalate	85-68-7	C	68	24	9.40E-02	1.10E+03	2.50E-02	3.50E+01						2.1E+07	5.2E-05	3.1E+02	**3.5E+00**						4.7E+07	2.3E-05	3.1E+02	**3.5E+00**
SVOC	Caprolactam	105-60-2		36				2.90E-02	1.90E+01						2.9E+05		3.1E+05							6.7E+05		5.3E+04	
SVOC	Carbazole	86-74-8	B2	67	8	2.10E-02	1.10E+01	2.00E-02	1.10E+02								2.4E+03	4.6E-03								5.3E+02	2.1E-02
SVOC	4-Chloro-3-methylphenol	59-50-7		68				2.00E-02	1.10E+02								1.5E+04									4.5E+03	
SVOC	4-Chloroaniline	106-47-8		68				2.10E-02	1.10E+02																		
SVOC	p-Chlorobenzilate	510-15-6		10				1.70E-01	3.00E+01																		
SVOC	2-Chloronaphthalene	91-58-7		68				1.80E-02	1.10E+02								1.8E+05									5.6E+04	
SVOC	2-Chlorophenol	95-57-8		68				1.90E-02	1.10E+02								4.5E+03									1.4E+03	
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		68				1.80E-02	1.10E+02																		
SVOC	Chrysene	218-01-9	B2	68	28	4.70E-02	1.60E+01	2.60E-02	1.10E+02								8.0E+03	2.0E-03								2.0E+03	8.0E-03
SVOC	Diallate (total)	2303-16-4		10				3.50E-01	6.10E+01																		
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	68	7	1.80E-02	6.70E-01	2.20E-02	1.10E+02								8.0E+00	8.4E-02								2.0E+00	3.4E-01
SVOC	Dibenzofuran	132-64-9	D	68	15	2.20E-02	2.70E+01	1.80E-02	3.50E+01																		
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	68				1.90E-02	6.50E+02						8.2E+03		3.0E+01							6.5E+03		6.6E+00	
SVOC	2,4-Dichlorophenol	120-83-2		68				1.70E-02	1.10E+02						2.3E+06		1.8E+03							5.1E+06		6.6E+02	
SVOC	2,6-Dichlorophenol	87-65-0		13				1.70E-01	3.00E+01																		
SVOC	Diethylphthalate	84-66-2	D	68				2.00E-02	1.10E+02						1.5E+06		7.4E+02							3.3E+06		7.4E+02	
SVOC	Dimethoate	60-51-5		10				3.90E-02	2.30E+01																		
SVOC	p-(Dimethylamino)azobenzene	60-11-7		10				3.50E-01	6.10E+01																		
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6		10				3.50E-01	6.10E+01																		
SVOC	3,3'-Dimethylbenzidine	119-93-7		10				1.70E-01	3.00E+01																		
SVOC	a,a-Dimethylphenethylamine	122-09-8		10				9.00E-01	1.60E+02																		
SVOC	2,4-Dimethylphenol	105-67-9		68	8	2.40E-02	7.20E+01	1.90E-02	3.50E+01						2.1E+06	3.4E-05	3.6E+04	2.0E-03						4.7E+06	1.5E-05	1.1E+04	6.5E-03
SVOC	Dimethylphthalate	131-11-3	D	68				1.80E-02	1.10E+02						1.5E+06		7.9E+02							3.3E+06		7.9E+02	
SVOC	Di-n-butylphthalate	84-74-2	D	68	4	5.70E+00	4.80E+02	2.40E-02	1.10E+02						1.5E+06	3.2E-04	7.6E+02	6.3E-01						3.3E+06	1.5E-04	7.6E+02	6.3E-01
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		68				5.00E-02	5.60E+02								2.6E+02									7.9E+01	
SVOC	1,3-Dinitrobenzene	99-65-0		10				1.70E-01	3.00E+01																		
SVOC	2,4-Dinitrophenol	51-28-5		68				4.90E-02	5.60E+02																		
SVOC	2,4-Dinitrotoluene	121-14-2	B2	68				2.30E-02	1.10E+02						2.0E+04		2.2E+02							1.6E+04		4.8E+01	
SVOC	2,6-Dinitrotoluene	606-20-2	B2	68				1.60E-02	1.10E+02																		
SVOC	Di-n-octylphthalate	117-84-0		68	1	3.70E+01	3.70E+01	5.70E-02	3.50E+01								2.0E+04	1.9E-03								6.9E+03	5.4E-03
SVOC	Diphenylamine	122-39-4		10				1.70E-01	3.00E+01																		
SVOC	Disulfoton	298-04-4		10				3.90E-02	2.30E+01																		
SVOC	Ethylmethanesulfonate	62-50-0		10				1.70E-01	3.00E+01																		
SVOC	Famphur	52-85-7		10				3.90E-02	2.30E+01																		
SVOC	Fluoranthene	206-44-0	D	68	32	4.60E-02	8.20E+01	1.90E-02	3.00E+01		1.0E+06	8.2E-05	8.9E+05	9.2E-05	4.1E+06	2.0E-05	1.3E+05	6.3E-04	1.0E+06	8.2E-05	7.4E+05	1.1E-04	9.3E+06	8.8E-06	4.6E+04	1.8E-03
SVOC	Fluorene	86-73-7	D	68	22	4.00E-02	3.60E+01	1.60E-02	3.00E+01		1.0E+06	3.6E-05	1.5E+05	2.4E-04	4.1E+06	8.8E-06	8.7E+04	4.1E-04	5.8E+05	6.2E-05	1.3E+05	2.8E-04	9.3E+06	3.9E-06	2.7E+04	1.3E-03
SVOC	Hexachlorobenzene	118-74-1	B2	68				2.30E-02	1.10E+02		2.2E+02		5.6E+01		8.5E+03		3.7E+01		4.1E+01		1.7E+01		6.8E+03		8.9E+00	
SVOC	Hexachlorobutadiene	87-68-3	C	68				1.70E-02	1.10E+02		3.5E+02		4.6E+02		1.8E+05		3.5E+02		1.3E+02		1.3E+02		1.4E+05		1.0E+02	
SVOC	Hexachlorocyclopentadiene	77-47-4	E	67				1.00E-02	1.10E+02		5.6E+01		6.0E+01		5.9E+03		7.2E+02		3.0E+01		5.0E+01		1.3E+04		7.2E+02	
SVOC	Hexachloroethane	67-72-1	C	67				1.80E-02	1.10E+02		7.9E+01		6.6E+02		1.0E+05		7.3E+02		4.0E+01		5.5E+02		2.3E+05		2.3E+02	
SVOC	Hexachlorophene	70-30-4		2				1.80E-01	1.80E-01																		
SVOC	Hexachloropropene	1888-71-7		10				1.70E+00	3.00E+02																		
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	67	14	2.70E-02	3.70E+00	2.30E-02	1.10E+02								8.0E+01	4.6E-02								2.0E+01	1.9E-01
SVOC	Isodrin	465-73-6		10				3.50E-03	1.90E-01																		
SVOC	Isophorone	78-59-1	C	67				2.30E-02	1.10E+02						8.2E+06		2.4E+03							1.2E+07		2.4E+03	
SVOC	Isosafrole (total)	120-58-1		10				3.50E-01	6.10E+01																		
SVOC	Kepone	143-50-0	B2	10				3.50E-02	3.10E+00																		
SVOC	Methapyrilene	91-80-5		10				9.00E-01	1.60E+02																		
SVOC	Methyl parathion	298-00-0		10				3.90E-02	2.30E+01								1.8E+02									5.6E+01	
SVOC	3-Methylcholanthrene	56-49-5		10				3.50E-01	6.10E+01																		
SVOC	Methylmethanesulfonate	66-27-3		10				1.70E-01	3.00E+01																		
SVOC	2-Methylnaphthalene	91-57-6	ID	67	37	2.40E-02	1.50E+02	2.00E-02	2.10E+01								2.6E+04	5.8E-03								8.1E+03	1.9E-02
SVOC	Methylphenol (total)	1319-77-3		67	12	8.60E-02	1.25E+02	2.20E-02	3.50E+01						2.9E+06	4.3E-05	3.6E+04	3.5E-03						6.7E+06	1.9E-05	1.1E+04	1.1E-02
SVOC	Naphthalene	91-20-3	C	67	29	2.20E-02	9.70E+01	2.00E-02	2.10E+01		4.7E+02	2.1E-01	3.5E+02	2.8E-01	8.8E+04	1.1E-03	5.2E+04	1.9E-03	2.5E+02	3.9E-01	3.0E+02	3.2E-01	2.0E+05	4.9E-04	1.6E+04	6.1E-03
SVOC	1,4-Naphthoquinone	130-15-4		10				9.00E-01	1.60E+02																		
SVOC	1-Naphthylamine	134-32-7		10				1.70E-01	3.00E+01																		
SVOC	2-Naphthylamine	91-59-8		10				1.70E-01	3.00E+01																		
SVOC	5-Nitro-o-toluidine	99-55-8		10				3.50E-01	6.10E+01																		
SVOC	2-Nitroaniline	88-74-4		67				1.40E-02	5.60E+02																		
SVOC	3-Nitroaniline	99-09-2	C	67				2.30E-02	5.60E+02																		
SVOC	4-Nitroaniline	100-01-6	C	67				1.80E-02	5.60E+02																		
SVOC	Nitrobenzene	98-95-3	D	67				2.50E-02	1.10E+02		1.7E+02		6.4E+01		2.1E+04		3.4E+02		9.1E+01		5.4E+01		4.7E+04		1.0E+02	
SVOC	2-Nitrophenol	88-75-5		67				2.20E-02	1.10E+02								2.0E+03									6.3E+02	
SVOC	4-Nitrophenol	100-02-7		67				5.50E-02	5.60E+02																		
SVOC	4-Nitroquinoline-1-oxide	56-57-5		10				1.70E+00	3.00E+02																		
SVOC	N-Nitrosodi-n-butylamine	924-16-3		10				1.70E-01	3.00E+01																		

TABLE 4-6
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR W-1 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	N-Nitrosodiethylamine	55-18-5		10				1.70E-01	3.00E+01																	
SVOC	N-Nitrosodimethylamine	62-75-9		10				1.70E-01	3.00E+01																	
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	67				2.00E-02	1.10E+02								7.8E+03								1.7E+03	
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	67				1.60E-02	1.10E+02						2.0E+03		5.4E+00							1.6E+03	1.2E+00	
SVOC	N-Nitrosomethylethylamine	10595-95-6		10				1.70E-01	3.00E+01																	
SVOC	N-Nitrosopiperidine	100-75-4		10				1.70E-01	3.00E+01																	
SVOC	N-Nitrosopyrrolidine	930-55-2		10				1.70E-01	3.00E+01																	
SVOC	N-Nitrosomorpholine	59-89-2		10				1.70E-01	3.00E+01																	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	67				2.80E-02	1.10E+02																	
SVOC	Parathion	56-38-2		10				3.90E-02	2.30E+01																	
SVOC	Pentachlorobenzene	608-93-5		10				1.70E-01	3.00E+01								1.9E+02								1.9E+02	
SVOC	Pentachloronitrobenzene	82-68-8		10				9.00E-01	1.60E+02		2.2E+02		2.8E+02		1.5E+05		5.5E+03		1.2E+02		2.3E+02		3.3E+05		1.7E+03	
SVOC	Pentachlorophenol	87-86-5	B2	67				6.30E-02	1.00E+03						1.3E+05		3.2E+02						1.0E+05		9.0E+01	
SVOC	Phenacetin	62-44-2		10				3.50E-01	6.10E+01																	
SVOC	Phenanthrene	85-01-8	D	67	44	2.30E-02	1.10E+02	2.50E-02	3.70E-01		5.1E+03	2.2E-02	1.9E+02	5.8E-01	2.9E+03	3.8E-02	5.2E+03	2.1E-02	2.8E+03	3.9E-02	1.6E+02	6.9E-01	6.7E+03	1.6E-02	1.6E+03	6.9E-02	
SVOC	Phenol	108-95-2	ID	67	9	5.90E-02	1.40E+02	1.90E-02	3.50E+01						1.8E+07	7.8E-06	1.2E+04	1.2E-02					4.0E+07	3.5E-06	1.2E+04	1.2E-02
SVOC	p-Phenylene diamine	106-50-3		10				1.70E+00	3.00E+02																	
SVOC	Phorate	298-02-2		10				3.90E-02	2.30E+01																	
SVOC	2-Picoline	109-06-8		10				3.50E-01	6.10E+01																	
SVOC	Pronamide	23950-58-5		10				3.50E-01	6.10E+01																	
SVOC	Pyrene	129-00-0	D	67	35	3.20E-02	5.00E+01	2.50E-02	3.00E+01		1.0E+06	5.0E-05	7.8E+05	6.4E-05	2.9E+06	1.7E-05	8.4E+04	6.0E-04	1.0E+06	5.0E-05	6.5E+05	7.7E-05	6.7E+06	7.5E-06	2.9E+04	1.7E-03	
SVOC	Pyridine	110-86-1		10				3.50E-01	6.10E+01		2.0E+00		9.8E+00		1.0E+05		3.7E+01		1.1E+00		8.2E+00		2.3E+05		3.7E+01	
SVOC	Safrole (total)	94-59-7		10				3.50E-01	6.10E+01																	
SVOC	Sulfotepp	3689-24-5		10				3.90E-02	2.30E+01																	
SVOC	1,2,4,5-Tetrachlorobenzene	95-94-3		10				1.70E-01	3.00E+01								2.5E+05								7.7E+04	
SVOC	2,3,4,6-Tetrachlorophenol	58-90-2		10				9.00E-01	1.60E+02																	
SVOC	Thionazin	297-97-2		10				3.90E-02	2.30E+01																	
SVOC	o-Toluidine	95-53-4		10				3.50E-01	6.10E+01																	
SVOC	2,4,5-Trichlorophenol	95-95-4		67				1.60E-02	2.20E+02						1.0E+07		7.3E+04						2.3E+07		2.3E+04	
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	67				2.00E-02	1.10E+02						1.3E+06		3.3E+03						1.0E+06		7.1E+02	
SVOC	O,O,O-Triethyl phosphorothioate	126-68-1		10				3.90E-02	2.30E+01																	
SVOC	1,3,5-Trinitrobenzene	99-35-4		10				9.00E-01	1.60E+02																	
P/PCB	PCBs (total)	1336-36-3	B2	74	34	8.04E-02	9.28E+01	1.00E-02	3.80E+00		1.6E+04	5.8E-03	8.1E+02	1.1E-01	6.5E+03	1.4E-02	1.6E+01	**5.8E+00**	3.0E+03	3.1E-02	2.4E+02	3.9E-01	5.2E+03	1.8E-02	4.0E+00	**2.3E+01**
P/PCB	Aldrin	309-00-2	B2	30				1.10E-02	3.85E-01		7.1E+03		2.0E+02		8.0E+02		4.3E+00		1.3E+03		5.8E+01		6.4E+02		1.0E+00	
P/PCB	alpha-BHC	319-84-6	B2	30				1.10E-02	3.85E-01		1.6E+02		4.1E+01		2.1E+03		1.2E+01		3.0E+01		1.2E+01		1.7E+03		2.6E+00	
P/PCB	beta-BHC	319-85-7	C	30				1.10E-02	3.85E-01						7.4E+03		2.5E+01						5.9E+03		5.4E+00	
P/PCB	delta-BHC	319-86-8	D	30				1.10E-02	3.85E-01																	
P/PCB	gamma-BHC	58-89-9	B2-C	30				1.10E-02	3.85E-01								4.2E+01								8.3E+00	
P/PCB	Chlordane (total)	57-74-9	B2	30				5.30E-03	3.85E-01		5.9E+04		4.2E+03		2.1E+04		1.5E+02		1.1E+04		1.2E+03		3.1E+04		3.1E+01	
P/PCB	4,4'-DDD	72-54-8	B2	30				1.10E-02	7.70E-01						5.6E+04		4.0E+02						4.4E+04		9.5E+01	
P/PCB	4,4'-DDE	72-55-9	B2	30				1.10E-02	7.70E-01						4.0E+04		1.9E+02						3.2E+04		4.5E+01	
P/PCB	4,4'-DDT	50-29-3	B2	30				1.10E-02	7.70E-01						4.0E+04		2.8E+02						3.2E+04		5.7E+01	
P/PCB	Dieldrin	60-57-1	B2	30				1.10E-02	7.70E-01		7.2E+02		6.4E+01		8.5E+02		4.7E+00		1.4E+02		1.9E+01		6.8E+02		1.1E+00	
P/PCB	Endosulfan	115-29-7		30				1.10E-02	7.70E-01								4.4E+03								1.4E+03	
P/PCB	Endosulfan sulfate	1031-07-8		30				1.10E-02	7.70E-01								4.4E+03								1.4E+03	
P/PCB	Endrin	72-20-8	D	30				1.10E-02	7.70E-01								1.9E+02								6.5E+01	
P/PCB	Endrin aldehyde	7421-93-4		30				1.10E-02	7.70E-01								1.9E+02								6.5E+01	
P/PCB	Endrin ketone	53494-70-5		27				1.10E-02	7.70E-01								1.9E+02								6.5E+01	
P/PCB	Heptachlor	76-44-8	B2	30				1.10E-02	3.85E-01		1.9E+03		2.1E+02		3.0E+03		2.3E+01		3.5E+02		6.2E+01		2.4E+03		5.6E+00	
P/PCB	Heptachlor epoxide	1024-57-3	B2	30				1.10E-02	3.85E-01						1.5E+03		9.5E+00						1.2E+03		3.1E+00	
P/PCB	Methoxychlor	72-43-5	D	30				2.70E-02	3.85E+00								5.6E+03								1.9E+03	
P/PCB	Toxaphene	8001-35-2	B2	30				9.00E-02	1.95E+01						1.2E+04		8.5E+01						9.7E+03		2.0E+01	
INORG	Aluminum	7429-90-5	D	31	31	4.38E+02	1.08E+04										3.7E+05	2.9E-02							5.0E+04	2.2E-01
INORG	Antimony	7440-36-0		67	35	3.24E-01	1.74E+03	1.20E-01	2.08E+01						5.9E+03	2.9E-01	6.7E+02	**2.6E+00**					1.3E+04	1.3E-01	1.8E+02	**9.7E+00**
INORG	Arsenic	7440-38-2	A	67	67	6.03E-01	4.43E+01			1.3E+01					9.1E+02	3.4E-02	3.7E+01	8.4E-01					7.2E+02	4.3E-02	7.6E+00	**4.1E+00**
INORG	Barium	7440-39-3	D	67	67	4.66E+00	5.72E+03			1.1E+02					1.5E+05	3.7E-02	1.3E+05	4.3E-02					3.3E+05	1.7E-02	3.7E+04	1.5E-01
INORG	Beryllium	7440-41-7	B1	67	29	2.50E-02	1.05E+00	2.41E-02	1.72E+00	1.5E+00					5.9E+02		1.6E+03						1.3E+03		4.1E+02	
INORG	Cadmium	7440-43-9	B1	67	56	3.68E-02	1.56E+01	2.99E-02	5.89E-01	1.2E+00					2.2E+03	6.5E-03	2.1E+03	6.9E-03					1.7E+03	8.5E-03	5.5E+02	2.6E-02
INORG	Chromium (total)	7440-47-3		67	67	1.69E+00	1.66E+03			4.9E+01					2.4E+02	**6.7E+00**	9.2E+03	1.8E-01					2.6E+02	**6.2E+00**	2.5E+03	6.4E-01
INORG	Chromium III	16065-83-1	D	12	12	1.35E+01	3.77E+02								1.5E+05	2.5E-03	1.0E+06	3.8E-04					3.3E+05	1.1E-03	7.9E+05	4.8E-04
INORG	Chromium VI	18540-29-9	A	12				3.80E-01	4.46E-01						2.4E+02		9.2E+03						2.6E+02		2.5E+03	
INORG	Cobalt	7440-48-4	B1	66	50	9.70E-01	6.44E+01	2.65E+00	4.50E+00	1.7E+01					5.9E+03	8.0E-03	9.0E+03	5.2E-03					1.3E+04	3.6E-03	2.6E+03	1.8E-02
INORG	Copper	7440-50-8	D	67	67	2.79E+00	4.70E+03			3.2E+01					5.9E+04	7.9E-02	7.3E+04	6.4E-02					1.3E+05	3.6E-02	2.0E+04	2.3E-01
INORG	Cyanide (total)	57-12-5	D	56	29	2.32E-01	4.10E+00	1.78E-01	5.89E-01						2.5E+02	1.6E-02	2.5E+02	1.6E-02					2.5E+02	1.6E-02	1.2E+01	3.4E-01
INORG	Iron	7439-89-6	D	31	31	2.06E+03	3.76E+05										5.8E+05	6.5E-01							1.6E+05	**2.4E+00**
INORG	Lead	7439-92-1	B2	66	65	7.11E-01	3.95E+03	9.00E-01	9.00E-01	4.9E+01					4.4E+04	8.9E-02	9.0E+02	**4.3E+00**					1.0E+05	3.9E-02	4.0E+02	**9.8E+00**
INORG	Manganese	7439-96-5	D	79	79	3.24E+01	7.26E+03			5.1E+02					1.5E+03	**4.5E+00**	9.0E+04	7.5E-02					3.3E+03	**2.0E+00**	2.5E+04	2.7E-01
INORG	Mercury	7439-97-6	D	67	31	1.19E-02	4.65E+00	8.80E-03	9.00E-02	1.3E-01	8.9E+01	5.1E-02	6.2E+01	7.3E-02	8.8E+03	5.1E-04	5.8E+02	7.8E-03	4.8E+01	9.4E-02	5.2E+01	8.7E-02	2.0E+04	2.3E-04	1.6E+02	2.8E-02
INORG	Nickel	7440-02-0	A	67	67	3.06E+00	6.01E+02			3.0E+01					1.6E+04	3.6E-02	1.5E+05	3.8E-03					1.3E+04	4.4E-02	4.0E+04	1.4E-02
INORG	Selenium	7782-49-2	D	67	13	2.22E-01	7.67E+00	1.62E-01	1.14E+01	4.1E-01					5.9E+04	1.2E-04	9.6E+03	7.6E-04					1.3E+05	5.6E-05	2.6E+03	2.8E-03
INORG	Silver	7440-22-4	D	67	13	2.75E-01	6.96E+01	5.23E-02	5.20E+00						2.9E+03	2.4E-02	9.0E+03	7.7E-03					6.7E+03	1.0E-02	2.5E+03	2.8E-02
INORG	Thallium	7440-28-0		67	20	2.72E-01	7.72E+00	2.61E-01	2.28E+01								1.3E+02	5.9E-02							3.5E+01	2.2E-01
INORG	Tin	7440-31-5		8	3	2.70E+01	8.40E+01	1.14E+01	1.20E+01																	
INORG	Vanadium	7440-62-2		67	66	4.23E+00	6.14E+01	1.80E+00	1.80E+00	3.3E+01							5.5E+03	5.2E-03							7.5E+02	3.8E-02

TABLE 4-6
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR W-1 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
INORG	Zinc	7440-66-6	D	67	67	3.96E+00	7.40E+03			1.9E+02							6.3E+05	1.1E-02								1.7E+05	4.2E-02
HERB	2,4-D	94-75-7		10				1.10E-01	1.70E-01						2.9E+06		8.6E+03						6.7E+06		2.5E+03	
HERB	2,4,5-T	93-76-5		10				2.70E-02	2.70E-01																	
HERB	2,4,5-TP	93-72-1		10				2.70E-02	3.00E-02								5.5E+03								1.7E+03	
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	B2	27	26	2.57E-07	1.89E-03	8.32E-07	8.32E-07						8.9E-02	2.1E-02	9.9E-04	**1.9E+00**					7.1E-02	2.7E-02	9.0E-05	**2.1E+01**

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the Chlordane isomers (alpha and beta) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-7a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-01 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	38	10	6.80E-04	3.30E-02	5.10E-04	1.00E-02	1.0E+06	3.3E-08	3.1E+04	1.1E-06	7.3E-01	4.5E-02
Shallow	VOC	Benzene	71-43-2	T	A	38	17	1.60E-04	9.10E-02	1.60E-04	1.00E-03	3.5E+01	2.6E-03	1.1E+01	8.3E-03	5.0E-03	**1.8E+01**
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	38				1.70E-04	1.00E-03	3.7E+01		1.4E+01		1.0E-01	
Shallow	VOC	Bromoform	75-25-2	T	B2	38				1.80E-04	1.00E-03	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	37				2.00E-04	1.00E-03	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	38	16	4.30E-04	7.30E-03	4.10E-04	1.00E-02	2.4E+05	3.0E-08	2.4E+05	3.0E-08	1.3E+01	5.6E-04
Shallow	VOC	Carbon Disulfide	75-15-0	T		38	1	1.30E-03	1.30E-03	2.00E-04	1.00E-03	5.5E+02	2.4E-06	1.2E+03	1.1E-06	8.0E-01	1.6E-03
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	38				1.20E-04	1.00E-03	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	38				1.40E-04	1.00E-03	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		38	11	5.30E-04	4.50E-02	2.60E-04	1.00E-03	5.7E+03	7.9E-06	4.4E+02	1.0E-04	4.3E-01	1.0E-01
Shallow	VOC	Chloroform	67-66-3	T	B2	38	1	8.10E-04	8.10E-04	1.40E-04	1.00E-03	1.8E+02	4.5E-06	1.5E+02	5.4E-06	1.0E-01	8.1E-03
Shallow	VOC	Chloromethane	74-87-3	T	D	38	4	1.30E-04	1.70E-04	1.30E-04	1.00E-03	4.5E+01	3.8E-06	4.9E+02	3.5E-07	2.6E-01	6.5E-04
Shallow	VOC	Cumene	98-82-8	T	D	38	12	1.70E-04	8.60E-03	1.20E-04	1.00E-03	5.6E+01	1.5E-04	5.6E+01	1.5E-04	8.0E-01	1.1E-02
Shallow	VOC	Cyclohexane	110-82-7	T	ID	38	11	1.70E-04	1.90E-02	1.30E-04	1.00E-03						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	38				6.20E-04	2.10E-03	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	38				2.60E-04	1.00E-03	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	38				2.20E-04	1.00E-03	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	38	4	4.80E-04	2.00E-03	1.10E-04	1.00E-03	1.6E+02	1.3E-05	1.6E+02	1.3E-05	6.0E-01	3.3E-03
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	38				1.50E-04	1.00E-03			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	38				1.70E-04	1.00E-03	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		38				2.60E-04	2.00E-03	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	38	11	1.60E-04	2.30E-02	1.60E-04	1.00E-03	2.3E+03	1.0E-05	2.4E+03	9.6E-06	8.8E-01	2.6E-02
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	38	1	4.50E-04	4.50E-04	2.10E-04	1.00E-03	5.9E+01	7.6E-06	1.9E+01	2.4E-05	5.0E-03	9.0E-02
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	38				2.40E-04	1.00E-03	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	38	7	4.50E-04	3.90E-03	2.20E-04	5.00E-04	2.1E+02	1.9E-05	2.0E+02	2.0E-05	7.0E-02	5.6E-02
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		38	3	1.80E-04	2.10E-03	1.50E-04	5.00E-04	2.0E+02	1.1E-05	2.2E+02	9.5E-06	1.0E-01	2.1E-02
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	38				1.70E-04	1.00E-03	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	38				2.70E-04	1.00E-03	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	38	8	2.40E-04	1.90E-02	1.20E-04	1.00E-03	1.7E+02	1.1E-04	1.7E+02	1.1E-04	7.0E-01	2.7E-02
Shallow	VOC	2-Hexanone	591-78-6	T		38				4.60E-04	1.00E-02	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		38				4.10E-04	1.00E-02						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		38	3	8.40E-04	7.10E-03	1.30E-04	5.00E-03	4.7E+04	1.5E-07	6.1E+02	1.2E-05	2.4E-01	3.0E-02
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	37	4	2.88E-04	1.60E-03	2.30E-04	1.00E-02	2.0E+04	8.0E-08	1.3E+04	1.2E-07	1.8E+00	8.9E-04
Shallow	VOC	Methylcyclohexane	108-87-2	T		38	11	3.30E-04	7.60E-03	1.50E-04	1.00E-03						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	38	5	5.00E-04	7.00E-03	2.90E-04	1.00E-03	1.4E+03	5.0E-06	2.2E+02	3.2E-05	5.0E-03	**1.4E+00**
Shallow	VOC	Styrene	100-42-5	T		38				1.50E-04	1.00E-03	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	38				2.50E-04	1.00E-03	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	37	3	4.30E-04	2.60E-03	2.30E-04	1.00E-03	1.7E+02	1.5E-05	1.2E+01	2.2E-04	5.0E-03	5.2E-01
Shallow	VOC	Toluene	108-88-3	T	D	38	14	2.50E-04	1.50E-02	1.80E-04	1.00E-03	5.3E+02	2.8E-05	5.3E+02	2.8E-05	1.0E+00	1.5E-02
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	38	1	9.20E-04	9.20E-04	1.70E-04	1.00E-03	3.0E+02	3.1E-06	1.9E+01	4.8E-05	7.0E-02	1.3E-02
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	38				1.50E-04	1.00E-03	1.3E+03		1.3E+03		2.0E-01	
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	38				3.00E-04	1.00E-03	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	38	6	2.40E-04	1.40E-03	1.40E-04	1.00E-03	9.7E+01	1.4E-05	2.2E+01	6.4E-05	5.0E-03	2.8E-01
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		38	1	6.60E-04	6.60E-04	2.80E-04	1.00E-03	1.1E+03	6.0E-07	1.1E+03	6.0E-07	2.6E+00	2.5E-04
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		38				3.20E-04	1.10E-03	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	38	9	1.80E-04	1.80E-02	1.50E-04	1.00E-03	1.3E+01	1.4E-03	1.0E+00	1.8E-02	2.0E-03	**9.0E+00**
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	38	10	6.90E-04	2.00E-01	3.30E-04	1.00E-03	1.9E+02	1.1E-03	1.9E+02	1.1E-03	1.0E+01	2.0E-02
Shallow	SVOC	Acenaphthene	83-32-9	T		38	1	2.40E-03	2.40E-03	8.00E-04	2.50E-02	4.2E+00	5.7E-04	4.2E+00	5.7E-04	1.3E+00	1.8E-03
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	38				7.10E-04	2.50E-02	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	38	1	2.70E-03	2.70E-03	2.60E-03	5.00E-02	6.1E+03	4.4E-07	6.1E+03	4.4E-07	1.5E+00	1.8E-03
Shallow	SVOC	Anthracene	120-12-7	T	D	38				6.80E-04	2.50E-02	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		38				2.50E-03	2.50E-02			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		38				2.80E-03	5.00E-02						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	38				7.00E-04	2.50E-02			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	38				7.30E-04	2.50E-02			2.0E-03		5.0E-03	
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	38				9.40E-04	2.50E-02			2.0E-03		2.0E-03	

TABLE 4-7a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-01 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	38				8.50E-04	2.50E-02			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	38				8.40E-04	2.50E-02			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	38				2.60E-03	5.00E-02						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	38				8.70E-04	2.50E-02						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	36				9.70E-04	2.50E-02	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	38	2	2.70E-03	4.10E-03	2.70E-03	2.50E-02			3.2E-01	1.3E-02	6.0E-03	6.8E-01
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	38				8.80E-04	2.50E-02						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	38				8.80E-04	2.50E-02			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		38				2.50E-03	5.00E-02			3.9E+05		5.8E+00	
Shallow	SVOC	Carbazole	86-74-8	T	B2	38	2	1.50E-03	2.80E-03	8.20E-04	5.00E-02			7.4E+00	3.8E-04	8.5E-02	3.3E-02
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		37				9.90E-04	2.50E-02			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		37				6.10E-04	5.00E-02						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		38				8.50E-04	2.50E-02			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		38				1.00E-03	2.50E-02			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		38				7.90E-04	2.50E-02						
Shallow	SVOC	Chrysene	218-01-9	T	B2	38				7.50E-04	2.50E-02			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	38				7.90E-04	2.50E-02			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	38	1	1.80E-03	1.80E-03	1.10E-03	2.50E-02						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	36				9.30E-04	1.00E-01			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		38				8.50E-04	5.00E-02			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	38				6.50E-04	2.50E-02			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		37	3	1.90E-03	1.10E-02	8.50E-04	2.50E-02			5.2E+02	2.1E-05	3.7E-01	3.0E-02
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	38				7.60E-04	2.50E-02			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	38	3	1.35E-03	2.30E-03	6.70E-04	2.50E-02			1.1E+01	2.1E-04	8.8E-01	2.6E-03
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		38				1.30E-03	1.00E-01			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		38				3.00E-03	1.00E-01						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	38				7.90E-04	2.50E-02			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	38				5.70E-04	2.50E-02						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		38				1.10E-03	2.50E-02			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	38	1	9.90E-04	9.90E-04	8.10E-04	2.50E-02	2.1E-01	4.7E-03	2.1E-01	4.7E-03	2.1E-01	4.7E-03
Shallow	SVOC	Fluorene	86-73-7	T	D	38	1	2.20E-03	2.20E-03	1.00E-03	2.50E-02	2.0E+00	1.1E-03	2.0E+00	1.1E-03	8.8E-01	2.5E-03
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	38				7.40E-04	2.50E-02	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	36				7.30E-04	2.50E-02	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	35				1.10E-03	2.50E-02	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	38				7.40E-04	2.50E-02	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	38				6.30E-04	2.50E-02			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	38				6.30E-04	2.50E-02			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	38	6	8.50E-04	6.10E-03	6.40E-04	2.50E-02			2.5E+01	2.4E-04	2.6E-01	2.3E-02
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		38	1	2.16E-02	2.16E-02	1.30E-03	2.50E-02			8.1E+02	2.7E-05	3.7E-01	5.8E-02
Shallow	SVOC	Naphthalene	91-20-3	T	C	37	4	6.20E-03	1.30E-02	7.50E-04	2.50E-02	3.1E+01	4.2E-04	3.1E+01	4.2E-04	5.2E-01	2.5E-02
Shallow	SVOC	2-Nitroaniline	88-74-4	T		38				7.00E-04	1.00E-01						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	37				7.10E-04	1.00E-01						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	37				1.30E-03	1.00E-01						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	38				8.10E-04	2.50E-02	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		38				2.10E-03	2.50E-02			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		38				1.90E-03	1.00E-01						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	38				1.40E-03	2.50E-02			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	38				6.70E-04	2.50E-02			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	38				7.80E-04	2.50E-02						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	38				2.40E-03	2.50E-02			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	38				8.20E-04	2.50E-02	1.0E+00		1.0E+00		5.2E-02	
Shallow	SVOC	Phenol	108-95-2	T	ID	38	1	1.90E-02	1.90E-02	2.60E-03	2.50E-02			2.9E+04	6.6E-07	4.4E+00	4.3E-03
Shallow	SVOC	Pyrene	129-00-0	T	D	38				1.10E-03	2.50E-02	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		38				1.20E-03	2.50E-02			1.7E+02		7.3E-01	
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	37				1.70E-03	2.50E-02			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	D	B2	12	1	5.22E-04	5.22E-04	8.20E-05	4.00E-04	4.5E-02	1.2E-02	3.3E-03	1.6E-01	5.0E-04	1.0E+00

TABLE 4-7a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-01 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	41	8	3.67E-04	4.59E-03	8.20E-05	4.00E-04	4.5E-02	1.0E-01	3.3E-03	**1.4E+00**	5.0E-04	**9.2E+00**
Shallow	INORG	Antimony	7440-36-0	D		28	4	5.80E-03	7.90E-03	2.20E-03	2.50E-02			6.8E+01	1.2E-04	6.0E-03	**1.3E+00**
Shallow	INORG	Antimony	7440-36-0	T		38	5	2.60E-03	8.60E-03	2.20E-03	2.50E-02			6.8E+01	1.3E-04	6.0E-03	**1.4E+00**
Shallow	INORG	Arsenic	7440-38-2	D	A	28	19	4.00E-03	2.69E-02	3.90E-03	1.00E-02			4.3E+00	6.3E-03	5.0E-02	5.4E-01
Shallow	INORG	Arsenic	7440-38-2	T	A	38	26	2.10E-03	2.64E-02	2.10E-03	1.00E-02			4.3E+00	6.1E-03	5.0E-02	5.3E-01
Shallow	INORG	Barium	7440-39-3	D	D	28	28	5.63E-02	4.07E+00					1.4E+04	2.9E-04	2.0E+00	**2.0E+00**
Shallow	INORG	Barium	7440-39-3	T	D	38	38	3.50E-02	4.57E+00					1.4E+04	3.3E-04	2.0E+00	**2.3E+00**
Shallow	INORG	Beryllium	7440-41-7	D	B1	28	1	7.50E-04	7.50E-04	5.40E-04	1.00E-03			2.9E+02	2.6E-06	4.0E-03	1.9E-01
Shallow	INORG	Beryllium	7440-41-7	T	B1	38				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	D	B1	28	4	3.00E-04	6.90E-04	2.80E-04	5.00E-03			1.9E+02	3.6E-06	5.0E-03	1.4E-01
Shallow	INORG	Cadmium	7440-43-9	T	B1	38	7	2.20E-04	1.10E-03	2.80E-04	5.00E-03			1.9E+02	5.8E-06	5.0E-03	2.2E-01
Shallow	INORG	Chromium (total)	7440-47-3	D		28	3	1.80E-03	8.50E-03	1.40E-03	1.00E-02			4.6E+02	1.8E-05	1.0E-01	8.5E-02
Shallow	INORG	Chromium (total)	7440-47-3	T		38	5	1.40E-03	3.05E-02	1.40E-03	1.00E-02			4.6E+02	6.6E-05	1.0E-01	3.1E-01
Shallow	INORG	Cobalt	7440-48-4	D	B1	28	9	1.30E-03	3.50E-03	1.30E-03	2.00E-02			2.4E+03	1.5E-06	4.0E-02	8.8E-02
Shallow	INORG	Cobalt	7440-48-4	T	B1	38	13	7.60E-04	6.60E-03	7.40E-04	2.00E-02			2.4E+03	2.8E-06	4.0E-02	1.7E-01
Shallow	INORG	Copper	7440-50-8	D	D	28	2	4.50E-03	5.60E-03	4.20E-03	5.00E-03			7.4E+03	7.6E-07	1.4E+00	4.0E-03
Shallow	INORG	Copper	7440-50-8	T	D	38	7	2.30E-03	2.22E-02	1.70E-03	5.00E-03			7.4E+03	3.0E-06	1.4E+00	1.6E-02
Shallow	INORG	Cyanide (total)	57-12-5	T	D	33	22	2.00E-03	1.75E-02	1.70E-03	1.00E-02			5.7E+01	3.1E-04	2.0E-01	8.8E-02
Shallow	INORG	Lead	7439-92-1	D	B2	28				2.50E-03	3.00E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	38	7	1.80E-03	2.71E-02	1.60E-03	3.00E-03					4.0E-03	**6.8E+00**
Shallow	INORG	Manganese	7439-96-5	D	D	28	27	4.72E-02	9.52E-01	9.00E-04	9.00E-04			9.1E+03	1.0E-04	8.6E-01	**1.1E+00**
Shallow	INORG	Manganese	7439-96-5	T	D	38	38	1.30E-03	1.22E+00					9.1E+03	1.3E-04	8.6E-01	**1.4E+00**
Shallow	INORG	Mercury	7439-97-6	D	D	28	6	8.00E-05	1.30E-04	6.90E-05	2.00E-04	5.6E-02	2.3E-03	5.6E-02	2.3E-03	2.0E-03	6.5E-02
Shallow	INORG	Mercury	7439-97-6	T	D	38	6	6.73E-05	1.20E-04	6.90E-05	2.00E-04	5.6E-02	2.1E-03	5.6E-02	2.1E-03	2.0E-03	6.0E-02
Shallow	INORG	Nickel	7440-02-0	D	A	28	19	2.40E-03	1.59E-02	2.20E-03	2.00E-02			7.4E+04	2.1E-07	1.0E-01	1.6E-01
Shallow	INORG	Nickel	7440-02-0	T	A	38	21	2.60E-03	1.94E-02	2.20E-03	2.00E-02			7.4E+04	2.6E-07	1.0E-01	1.9E-01
Shallow	INORG	Selenium	7782-49-2	D	D	28				4.50E-03	5.00E-03			9.7E+02		5.0E-02	
Shallow	INORG	Selenium	7782-49-2	T	D	38	1	4.90E-03	4.90E-03	4.50E-03	5.00E-03			9.7E+02	5.1E-06	5.0E-02	9.8E-02
Shallow	INORG	Silver	7440-22-4	D	D	28				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	38	1	1.50E-03	1.50E-03	9.80E-04	5.00E-03			1.5E+03	1.0E-06	3.4E-02	4.4E-02
Shallow	INORG	Thallium	7440-28-0	D		28	6	4.30E-05	9.10E-03	1.80E-05	1.00E-02			1.3E+01	7.0E-04	2.0E-03	**4.6E+00**
Shallow	INORG	Thallium	7440-28-0	T		38	4	1.80E-05	1.02E-02	1.80E-05	1.00E-02			1.3E+01	7.8E-04	2.0E-03	**5.1E+00**
Shallow	INORG	Vanadium	7440-62-2	D		28	4	1.00E-03	2.45E-02	8.20E-04	1.00E-02			9.7E+02	2.5E-05	4.5E-03	**5.4E+00**
Shallow	INORG	Vanadium	7440-62-2	T		38	8	8.40E-04	4.84E-02	6.70E-04	1.00E-02			9.7E+02	5.0E-05	4.5E-03	**1.1E+01**
Shallow	INORG	Zinc	7440-66-6	D	D	28	2	1.56E-02	2.09E-02	1.20E-02	2.00E-02			1.1E+05	1.9E-07	2.4E+00	8.7E-03
Shallow	INORG	Zinc	7440-66-6	T	D	38	6	1.85E-02	3.82E-02	1.20E-02	2.00E-02			1.1E+05	3.5E-07	2.4E+00	1.6E-02
Shallow	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	D	B2	4	3	1.99E-09	3.03E-09	4.57E-09	4.57E-09			1.0E-08	3.0E-01	3.0E-08	1.0E-01
Shallow	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	T	B2	31	15	1.63E-09	2.16E-08	2.34E-09	3.99E-08			1.0E-08	**2.2E+00**	3.0E-08	7.2E-01

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.
The concentrations for the Target Dioxin congeners were used to calculate a 2,3,7,8-TCDD Equivalent, using EPA 1998 TEFs, before comparing to the Screening Levels for 2,3,7,8-TCDD.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-7b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-01 (DEEP AND INTERMEDIATE GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detect to Residential Drinking Water Criteria
Deep	VOC	Acetone	67-64-1	T	ID	11	5	4.50E-02	3.10E+00	5.10E-04	3.70E-01	2.1E+00	**1.5E+00**	7.3E-01	**4.2E+00**
Deep	VOC	Benzene	71-43-2	T	A	11	2	5.60E-04	4.50E-03	1.60E-04	1.20E-01	5.0E-03	9.0E-01	5.0E-03	9.0E-01
Deep	VOC	Bromodichloromethane	75-27-4	T	B2	10				1.70E-04	4.00E-02	1.0E-01		1.0E-01	
Deep	VOC	Bromoform	75-25-2	T	B2	11				1.80E-04	1.20E-01	1.0E-01		1.0E-01	
Deep	VOC	Bromomethane	74-83-9	T	D	10				2.00E-04	1.00E-01	2.9E-02		1.0E-02	
Deep	VOC	2-Butanone	78-93-3	T	ID	11	1	9.60E-04	9.60E-04	4.10E-04	4.00E-01	3.8E+01	2.5E-05	1.3E+01	7.4E-05
Deep	VOC	Carbon Disulfide	75-15-0	T		11	1	9.40E-03	9.40E-03	2.00E-04	8.00E-02	2.3E+00	4.1E-03	8.0E-01	1.2E-02
Deep	VOC	Carbon Tetrachloride	56-23-5	T	B2	11				1.20E-04	1.20E-01	5.0E-03		5.0E-03	
Deep	VOC	Chlorobenzene	108-90-7	T	D	11				1.40E-04	1.30E-01	1.0E-01		1.0E-01	
Deep	VOC	Chloroethane	75-00-3	T		11				2.60E-04	9.70E-02	1.7E+00		4.3E-01	
Deep	VOC	Chloroform	67-66-3	T	B2	11	1	1.60E-04	1.60E-04	3.50E-04	1.20E-01	1.0E-01	1.6E-03	1.0E-01	1.6E-03
Deep	VOC	Chloromethane	74-87-3	T	D	11				1.30E-04	1.60E-01	1.1E+00		2.6E-01	
Deep	VOC	Cumene	98-82-8	T	D	11				1.20E-04	1.30E-01	2.3E+00		8.0E-01	
Deep	VOC	Cyclohexane	110-82-7	T	ID	11				1.30E-04	1.10E-01				
Deep	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	11				6.20E-04	2.70E-01	2.0E-04		2.0E-04	
Deep	VOC	Dibromochloromethane	124-48-1	T	C	11				2.60E-04	1.20E-01	1.0E-01		1.0E-01	
Deep	VOC	1,2-Dibromoethane	106-93-4	T	B2	11				2.20E-04	1.10E-01	1.0E-03		1.0E-03	
Deep	VOC	1,2-Dichlorobenzene	95-50-1	T	D	11				1.10E-04	1.30E-01	6.0E-01		6.0E-01	
Deep	VOC	1,3-Dichlorobenzene	541-73-1	T	D	11				1.50E-04	1.30E-01	1.9E-02		6.6E-03	
Deep	VOC	1,4-Dichlorobenzene	106-46-7	T	C	11				1.70E-04	1.30E-01	7.5E-02		7.5E-02	
Deep	VOC	Dichlorodifluoromethane	75-71-8	T		11				2.60E-04	1.60E-01	4.8E+00		1.7E+00	
Deep	VOC	1,1-Dichloroethane	75-34-3	T	C	11				1.60E-04	1.00E-01	2.5E+00		8.8E-01	
Deep	VOC	1,2-Dichloroethane	107-06-2	T	B2	11				2.10E-04	9.30E-02	5.0E-03		5.0E-03	
Deep	VOC	1,1-Dichloroethene	75-35-4	T	C	10				2.40E-04	4.00E-02	7.0E-03		7.0E-03	
Deep	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	10				2.20E-04	2.00E-02	7.0E-02		7.0E-02	
Deep	VOC	trans-1,2-Dichloroethene	156-60-5	T		11				1.50E-04	1.10E-01	1.0E-01		1.0E-01	
Deep	VOC	1,2-Dichloropropane	78-87-5	T	B2	11				1.70E-04	1.40E-01	5.0E-03		5.0E-03	
Deep	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	10				3.50E-04	1.20E-01	3.5E-02		8.5E-03	
Deep	VOC	Ethyl Benzene	100-41-4	T	D	10				1.20E-04	1.40E-01	7.0E-01		7.0E-01	
Deep	VOC	2-Hexanone	591-78-6	T		11				4.60E-04	4.00E-01	2.9E+00		1.0E+00	
Deep	VOC	Methyl Acetate	79-20-9	T		11				4.10E-04	4.00E-01				
Deep	VOC	Methyl tert-butyl ether	1634-04-4	T		11				1.30E-04	2.00E-01	6.9E-01		2.4E-01	
Deep	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	8	1	3.20E-04	3.20E-04	2.60E-04	4.00E-01	5.2E+00	6.2E-05	1.8E+00	1.8E-04
Deep	VOC	Methylcyclohexane	108-87-2	T		11				1.50E-04	1.40E-01				
Deep	VOC	Methylene Chloride	75-09-2	T	B2	11	1	1.60E-03	1.60E-03	2.90E-04	9.70E-02	5.0E-03	3.2E-01	5.0E-03	3.2E-01
Deep	VOC	Styrene	100-42-5	T		11				1.50E-04	1.20E-01	1.0E-01		1.0E-01	
Deep	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	11				2.50E-04	1.20E-01	3.5E-02		8.5E-03	
Deep	VOC	Tetrachloroethene	127-18-4	T	C-B2	10				4.20E-04	1.40E-01	5.0E-03		5.0E-03	
Deep	VOC	Toluene	108-88-3	T	D	11				1.80E-04	1.30E-01	1.0E+00		1.0E+00	
Deep	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	11				1.70E-04	1.30E-01	7.0E-02		7.0E-02	
Deep	VOC	1,1,1-Trichloroethane	71-55-6	T	D	11				1.50E-04	1.30E-01	2.0E-01		2.0E-01	
Deep	VOC	1,1,2-Trichloroethane	79-00-5	T	C	11				3.00E-04	1.20E-01	5.0E-03		5.0E-03	
Deep	VOC	Trichloroethene	79-01-6	T	C-B2	11				1.40E-04	1.40E-01	5.0E-03		5.0E-03	
Deep	VOC	Trichlorofluoromethane	75-69-4	T		11				2.80E-04	1.80E-01	7.3E+00		2.6E+00	
Deep	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		11				3.20E-04	1.10E-01	1.7E+02		1.7E+02	
Deep	VOC	Vinyl Chloride	75-01-4	T	A	11				1.50E-04	1.20E-01	2.0E-03		2.0E-03	
Deep	VOC	Xylenes (total)	1330-20-7	T	ID	11				3.30E-04	1.50E-01	1.0E+01		1.0E+01	
Deep	SVOC	Acenaphthene	83-32-9	T		11				8.00E-04	5.00E-03	3.8E+00		1.3E+00	
Deep	SVOC	Acenaphthylene	208-96-8	T	D	11				7.10E-04	5.00E-03	1.5E-01		5.2E-02	
Deep	SVOC	Acetophenone	98-86-2	T	D	11				2.60E-03	1.00E-02	4.4E+00		1.5E+00	
Deep	SVOC	Anthracene	120-12-7	T	D	11				6.80E-04	5.00E-03	4.3E-02		4.3E-02	
Deep	SVOC	Atrazine	1912-24-9	T		11				2.50E-03	5.00E-03	3.0E-03		3.0E-03	
Deep	SVOC	Benzaldehyde	100-52-7	T		11				2.80E-03	1.00E-02				
Deep	SVOC	Benzo(a)anthracene	56-55-3	T	B2	11				7.00E-04	5.00E-03	8.5E-03		2.1E-03	
Deep	SVOC	Benzo(a)pyrene	50-32-8	T	B2	11				7.30E-04	5.00E-03	5.0E-03		5.0E-03	

TABLE 4-7b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-01 (DEEP AND INTERMEDIATE GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detect to Residential Drinking Water Criteria
Deep	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	11				9.40E-04	5.00E-03	2.0E-03		2.0E-03	
Deep	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	11				8.50E-04	5.00E-03	5.0E-03		5.0E-03	
Deep	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	11				8.40E-04	5.00E-03	5.0E-03		5.0E-03	
Deep	SVOC	Biphenyl	92-52-4	T	D	11				2.60E-03	1.00E-02				
Deep	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	11				8.70E-04	5.00E-03				
Deep	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	11				9.70E-04	5.00E-03	8.3E-03		2.0E-03	
Deep	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	11	1	2.90E-03	2.90E-03	2.70E-03	5.00E-03	6.0E-03	4.8E-01	6.0E-03	4.8E-01
Deep	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	11				8.80E-04	5.00E-03				
Deep	SVOC	Butylbenzylphthalate	85-68-7	T	C	11				8.80E-04	5.00E-03	2.7E+00		1.2E+00	
Deep	SVOC	Caprolactam	105-60-2	T		11				2.50E-03	1.00E-02	1.7E+01		5.8E+00	
Deep	SVOC	Carbazole	86-74-8	T	B2	11				8.20E-04	1.00E-02	3.5E-01		8.5E-02	
Deep	SVOC	4-Chloro-3-methylphenol	59-50-7	T		11				9.90E-04	5.00E-03	4.2E-01		1.5E-01	
Deep	SVOC	4-Chloroaniline	106-47-8	T		11				6.10E-04	1.00E-02				
Deep	SVOC	2-Chloronaphthalene	91-58-7	T		11				8.50E-04	5.00E-03	5.2E+00		1.8E+00	
Deep	SVOC	2-Chlorophenol	95-57-8	T		11				1.00E-03	5.00E-03	1.3E-01		4.5E-02	
Deep	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		11				7.90E-04	5.00E-03				
Deep	SVOC	Chrysene	218-01-9	T	B2	11				7.50E-04	5.00E-03	5.0E-03		5.0E-03	
Deep	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	11				7.90E-04	5.00E-03	2.0E-03		2.0E-03	
Deep	SVOC	Dibenzofuran	132-64-9	T	D	11				1.10E-03	5.00E-03				
Deep	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	10				9.30E-04	2.00E-02	4.3E-03		1.1E-03	
Deep	SVOC	2,4-Dichlorophenol	120-83-2	T		11				8.50E-04	1.00E-02	2.1E-01		7.3E-02	
Deep	SVOC	Diethylphthalate	84-66-2	T	D	11	1	7.10E-04	7.10E-04	6.50E-04	5.00E-03	1.6E+01	4.4E-05	5.5E+00	1.3E-04
Deep	SVOC	2,4-Dimethylphenol	105-67-9	T		11				8.50E-04	5.00E-03	1.0E+00		3.7E-01	
Deep	SVOC	Dimethylphthalate	131-11-3	T	D	11				7.60E-04	5.00E-03	2.1E+02		7.3E+01	
Deep	SVOC	Di-n-butylphthalate	84-74-2	T	D	11				6.70E-04	5.00E-03	2.5E+00		8.8E-01	
Deep	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		11				1.30E-03	2.00E-02	2.0E-02		2.0E-02	
Deep	SVOC	2,4-Dinitrophenol	51-28-5	T		11				3.00E-03	2.00E-02				
Deep	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	11				7.90E-04	5.00E-03	3.2E-02		7.7E-03	
Deep	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	11				5.70E-04	5.00E-03				
Deep	SVOC	Di-n-octylphthalate	117-84-0	T		11				1.10E-03	5.00E-03	3.8E-01		1.3E-01	
Deep	SVOC	Fluoranthene	206-44-0	T	D	11				8.10E-04	5.00E-03	2.1E-01		2.1E-01	
Deep	SVOC	Fluorene	86-73-7	T	D	11				1.00E-03	5.00E-03	2.0E+00		8.8E-01	
Deep	SVOC	Hexachlorobenzene	118-74-1	T	B2	11				7.40E-04	5.00E-03	1.0E-03		1.0E-03	
Deep	SVOC	Hexachlorobutadiene	87-68-3	T	C	11				7.30E-04	5.00E-03	4.2E-02		1.5E-02	
Deep	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	10				1.10E-03	5.00E-03	5.0E-02		5.0E-02	
Deep	SVOC	Hexachloroethane	67-72-1	T	C	11				7.40E-04	5.00E-03	2.1E-02		7.3E-03	
Deep	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	11				6.30E-04	5.00E-03	2.0E-03		2.0E-03	
Deep	SVOC	Isophorone	78-59-1	T	C	11				6.30E-04	5.00E-03	3.1E+00		7.7E-01	
Deep	SVOC	2-Methylnaphthalene	91-57-6	T	ID	11				6.40E-04	5.00E-03	7.5E-01		2.6E-01	
Deep	SVOC	Methylphenol (total)	1319-77-3	T		11				1.30E-03	5.00E-03	1.0E+00		3.7E-01	
Deep	SVOC	Naphthalene	91-20-3	T	C	11				7.50E-04	5.00E-03	1.5E+00		5.2E-01	
Deep	SVOC	2-Nitroaniline	88-74-4	T		11				7.00E-04	2.00E-02				
Deep	SVOC	3-Nitroaniline	99-09-2	T	C	11				7.10E-04	2.00E-02				
Deep	SVOC	4-Nitroaniline	100-01-6	T	C	11				1.30E-03	2.00E-02				
Deep	SVOC	Nitrobenzene	98-95-3	T	D	11				8.10E-04	5.00E-03	9.6E-03		3.4E-03	
Deep	SVOC	2-Nitrophenol	88-75-5	T		11				2.10E-03	5.00E-03	5.8E-02		2.0E-02	
Deep	SVOC	4-Nitrophenol	100-02-7	T		11				1.90E-03	2.00E-02				
Deep	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	11				1.40E-03	5.00E-03	1.1E+00		2.7E-01	
Deep	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	11				6.70E-04	5.00E-03	5.0E-03		5.0E-03	
Deep	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	11				7.80E-04	5.00E-03				
Deep	SVOC	Pentachlorophenol	87-86-5	T	B2	11				2.40E-03	5.00E-03	1.0E-03		1.0E-03	
Deep	SVOC	Phenanthrene	85-01-8	T	D	11				8.20E-04	5.00E-03	1.5E-01		5.2E-02	
Deep	SVOC	Phenol	108-95-2	T	ID	11	4	5.20E-03	8.80E-03	2.60E-03	5.00E-03	1.3E+01	6.8E-04	4.4E+00	2.0E-03
Deep	SVOC	Pyrene	129-00-0	T	D	11				1.10E-03	5.00E-03	1.4E-01		1.4E-01	
Deep	SVOC	2,4,5-Trichlorophenol	95-95-4	T		11				1.20E-03	5.00E-03	2.1E+00		7.3E-01	

TABLE 4-7b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-01 (DEEP AND INTERMEDIATE GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detect to Residential Drinking Water Criteria
Deep	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	11				1.70E-03	5.00E-03	4.7E-01		1.2E-01	
Deep	P/PCB	PCBs (total)	1336-36-3	D	B2	1				4.00E-04	4.00E-04	5.0E-04		5.0E-04	
Deep	P/PCB	PCBs (total)	1336-36-3	T	B2	11				8.20E-05	4.00E-04	5.0E-04		5.0E-04	
Deep	INORG	Antimony	7440-36-0	D		5	1	2.30E-03	2.30E-03	2.20E-03	2.50E-02	6.0E-03	3.8E-01	6.0E-03	3.8E-01
Deep	INORG	Antimony	7440-36-0	T		11				2.20E-03	2.50E-02	6.0E-03		6.0E-03	
Deep	INORG	Arsenic	7440-38-2	D	A	5	2	4.40E-03	7.10E-03	3.90E-03	1.00E-02	5.0E-02	1.4E-01	5.0E-02	1.4E-01
Deep	INORG	Arsenic	7440-38-2	T	A	11	7	4.40E-03	1.45E-02	3.90E-03	1.00E-02	5.0E-02	2.9E-01	5.0E-02	2.9E-01
Deep	INORG	Barium	7440-39-3	D	D	5	5	1.15E-01	3.73E-01			2.0E+00	1.9E-01	2.0E+00	1.9E-01
Deep	INORG	Barium	7440-39-3	T	D	11	11	1.26E-01	4.58E-01			2.0E+00	2.3E-01	2.0E+00	2.3E-01
Deep	INORG	Beryllium	7440-41-7	D	B1	5				5.40E-04	1.00E-03	4.0E-03		4.0E-03	
Deep	INORG	Beryllium	7440-41-7	T	B1	11				5.40E-04	1.00E-03	4.0E-03		4.0E-03	
Deep	INORG	Cadmium	7440-43-9	D	B1	5				2.80E-04	5.00E-03	5.0E-03		5.0E-03	
Deep	INORG	Cadmium	7440-43-9	T	B1	11				2.80E-04	5.00E-03	5.0E-03		5.0E-03	
Deep	INORG	Chromium (total)	7440-47-3	D		5	1	2.30E-03	2.30E-03	1.40E-03	1.00E-02	1.0E-01	2.3E-02	1.0E-01	2.3E-02
Deep	INORG	Chromium (total)	7440-47-3	T		11	8	2.30E-03	9.10E-03	1.40E-03	1.00E-02	1.0E-01	9.1E-02	1.0E-01	9.1E-02
Deep	INORG	Cobalt	7440-48-4	D	B1	5	1	2.40E-03	2.40E-03	1.30E-03	2.00E-02	1.0E-01	2.4E-02	4.0E-02	6.0E-02
Deep	INORG	Cobalt	7440-48-4	T	B1	11	5	7.60E-04	2.20E-03	7.40E-04	2.00E-02	1.0E-01	2.2E-02	4.0E-02	5.5E-02
Deep	INORG	Copper	7440-50-8	D	D	5				4.20E-03	5.00E-03	4.0E+00		1.4E+00	
Deep	INORG	Copper	7440-50-8	T	D	11				1.70E-03	5.00E-03	4.0E+00		1.4E+00	
Deep	INORG	Lead	7439-92-1	D	B2	5				2.50E-03	3.00E-03	4.0E-03		4.0E-03	
Deep	INORG	Lead	7439-92-1	T	B2	11	1	1.60E-03	1.60E-03	1.60E-03	3.00E-03	4.0E-03	4.0E-01	4.0E-03	4.0E-01
Deep	INORG	Manganese	7439-96-5	D	D	5	4	3.45E-02	7.03E-02	9.00E-04	9.00E-04	2.5E+00	2.8E-02	8.6E-01	8.2E-02
Deep	INORG	Manganese	7439-96-5	T	D	11	8	2.81E-02	7.12E-02	6.80E-04	9.00E-04	2.5E+00	2.8E-02	8.6E-01	8.3E-02
Deep	INORG	Mercury	7439-97-6	D	D	5	1	7.20E-05	7.20E-05	6.90E-05	6.90E-05	2.0E-03	3.6E-02	2.0E-03	3.6E-02
Deep	INORG	Mercury	7439-97-6	T	D	11				6.90E-05	2.00E-04	2.0E-03		2.0E-03	
Deep	INORG	Nickel	7440-02-0	D	A	5	1	6.40E-03	6.40E-03	2.20E-03	2.00E-02	1.0E-01	6.4E-02	1.0E-01	6.4E-02
Deep	INORG	Nickel	7440-02-0	T	A	11	7	3.00E-03	9.90E-03	2.20E-03	2.00E-02	1.0E-01	9.9E-02	1.0E-01	9.9E-02
Deep	INORG	Selenium	7782-49-2	D	D	5				4.50E-03	5.00E-03	5.0E-02		5.0E-02	
Deep	INORG	Selenium	7782-49-2	T	D	11				4.50E-03	5.00E-03	5.0E-02		5.0E-02	
Deep	INORG	Silver	7440-22-4	D	D	5				1.50E-03	5.00E-03	9.8E-02		3.4E-02	
Deep	INORG	Silver	7440-22-4	T	D	11				9.80E-04	5.00E-03	9.8E-02		3.4E-02	
Deep	INORG	Thallium	7440-28-0	D		5				1.80E-05	1.00E-02	2.0E-03		2.0E-03	
Deep	INORG	Thallium	7440-28-0	T		11				1.80E-05	1.00E-02	2.0E-03		2.0E-03	
Deep	INORG	Vanadium	7440-62-2	D		5				8.20E-04	1.00E-02	6.2E-02		4.5E-03	
Deep	INORG	Vanadium	7440-62-2	T		11				6.70E-04	1.00E-02	6.2E-02		4.5E-03	
Deep	INORG	Zinc	7440-66-6	D	D	5	1	2.36E-02	2.36E-02	1.20E-02	2.00E-02	5.0E+00	4.7E-03	2.4E+00	9.8E-03
Deep	INORG	Zinc	7440-66-6	T	D	11	1	1.65E-02	1.65E-02	1.20E-02	2.00E-02	5.0E+00	3.3E-03	2.4E+00	6.9E-03
Intermediate	VOC	Acetone	67-64-1	T	ID	4	1	3.80E-02	3.80E-02	5.10E-04	7.30E-03	2.1E+00	1.8E-02	7.3E-01	5.2E-02
Intermediate	VOC	Benzene	71-43-2	T	A	4				1.60E-04	2.30E-03	5.0E-03		5.0E-03	
Intermediate	VOC	Bromodichloromethane	75-27-4	T	B2	4				1.70E-04	2.40E-03	1.0E-01		1.0E-01	
Intermediate	VOC	Bromoform	75-25-2	T	B2	4				1.80E-04	2.60E-03	1.0E-01		1.0E-01	
Intermediate	VOC	Bromomethane	74-83-9	T	D	3				2.00E-04	2.90E-03	2.9E-02		1.0E-02	
Intermediate	VOC	2-Butanone	78-93-3	T	ID	4				4.10E-04	5.90E-03	3.8E+01		1.3E+01	
Intermediate	VOC	Carbon Disulfide	75-15-0	T		4				2.00E-04	2.90E-03	2.3E+00		8.0E-01	
Intermediate	VOC	Carbon Tetrachloride	56-23-5	T	B2	4				1.20E-04	1.70E-03	5.0E-03		5.0E-03	
Intermediate	VOC	Chlorobenzene	108-90-7	T	D	4				1.40E-04	2.00E-03	1.0E-01		1.0E-01	
Intermediate	VOC	Chloroethane	75-00-3	T		4				2.60E-04	3.70E-03	1.7E+00		4.3E-01	
Intermediate	VOC	Chloroform	67-66-3	T	B2	4	1	1.70E-04	1.70E-04	3.50E-04	2.00E-03	1.0E-01	1.7E-03	1.0E-01	1.7E-03
Intermediate	VOC	Chloromethane	74-87-3	T	D	4	1	2.10E-04	2.10E-04	4.90E-04	1.90E-03	1.1E+00	1.9E-04	2.6E-01	8.1E-04
Intermediate	VOC	Cumene	98-82-8	T	D	4				1.20E-04	1.70E-03	2.3E+00		8.0E-01	
Intermediate	VOC	Cyclohexane	110-82-7	T	ID	4				1.30E-04	1.90E-03				
Intermediate	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	4				6.20E-04	8.90E-03	2.0E-04		2.0E-04	
Intermediate	VOC	Dibromochloromethane	124-48-1	T	C	4				2.60E-04	3.70E-03	1.0E-01		1.0E-01	
Intermediate	VOC	1,2-Dibromoethane	106-93-4	T	B2	4				2.20E-04	3.10E-03	1.0E-03		1.0E-03	
Intermediate	VOC	1,2-Dichlorobenzene	95-50-1	T	D	4				1.10E-04	1.60E-03	6.0E-01		6.0E-01	

TABLE 4-7b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-01 (DEEP AND INTERMEDIATE GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detect to Residential Drinking Water Criteria
Intermediate	VOC	1,3-Dichlorobenzene	541-73-1	T	D	4				1.50E-04	2.10E-03	1.9E-02		6.6E-03	
Intermediate	VOC	1,4-Dichlorobenzene	106-46-7	T	C	4				1.70E-04	2.40E-03	7.5E-02		7.5E-02	
Intermediate	VOC	Dichlorodifluoromethane	75-71-8	T		4				2.60E-04	3.70E-03	4.8E+00		1.7E+00	
Intermediate	VOC	1,1-Dichloroethane	75-34-3	T	C	4				1.60E-04	2.30E-03	2.5E+00		8.8E-01	
Intermediate	VOC	1,2-Dichloroethane	107-06-2	T	B2	4				2.10E-04	3.00E-03	5.0E-03		5.0E-03	
Intermediate	VOC	1,1-Dichloroethene	75-35-4	T	C	4				2.40E-04	3.40E-03	7.0E-03		7.0E-03	
Intermediate	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	4				2.20E-04	3.10E-03	7.0E-02		7.0E-02	
Intermediate	VOC	trans-1,2-Dichloroethene	156-60-5	T		4				1.50E-04	2.10E-03	1.0E-01		1.0E-01	
Intermediate	VOC	1,2-Dichloropropane	78-87-5	T	B2	4				1.70E-04	2.40E-03	5.0E-03		5.0E-03	
Intermediate	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	4				2.70E-04	3.90E-03	3.5E-02		8.5E-03	
Intermediate	VOC	Ethyl Benzene	100-41-4	T	D	4				1.20E-04	1.70E-03	7.0E-01		7.0E-01	
Intermediate	VOC	2-Hexanone	591-78-6	T		4				4.60E-04	6.60E-03	2.9E+00		1.0E+00	
Intermediate	VOC	Methyl Acetate	79-20-9	T		4				4.10E-04	5.90E-03				
Intermediate	VOC	Methyl tert-butyl ether	1634-04-4	T		4				1.30E-04	1.90E-03	6.9E-01		2.4E-01	
Intermediate	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	3				2.30E-04	3.30E-03	5.2E+00		1.8E+00	
Intermediate	VOC	Methylcyclohexane	108-87-2	T		4				1.50E-04	2.10E-03				
Intermediate	VOC	Methylene Chloride	75-09-2	T	B2	3				2.90E-04	4.90E-03	5.0E-03		5.0E-03	
Intermediate	VOC	Styrene	100-42-5	T		4				1.50E-04	2.10E-03	1.0E-01		1.0E-01	
Intermediate	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	4				2.50E-04	3.60E-03	3.5E-02		8.5E-03	
Intermediate	VOC	Tetrachloroethene	127-18-4	T	C-B2	4				2.30E-04	3.30E-03	5.0E-03		5.0E-03	
Intermediate	VOC	Toluene	108-88-3	T	D	4				1.80E-04	2.60E-03	1.0E+00		1.0E+00	
Intermediate	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	4				1.70E-04	2.40E-03	7.0E-02		7.0E-02	
Intermediate	VOC	1,1,1-Trichloroethane	71-55-6	T	D	4				1.50E-04	2.10E-03	2.0E-01		2.0E-01	
Intermediate	VOC	1,1,2-Trichloroethane	79-00-5	T	C	4				3.00E-04	4.30E-03	5.0E-03		5.0E-03	
Intermediate	VOC	Trichloroethene	79-01-6	T	C-B2	4				1.40E-04	2.00E-03	5.0E-03		5.0E-03	
Intermediate	VOC	Trichlorofluoromethane	75-69-4	T		4				2.80E-04	4.00E-03	7.3E+00		2.6E+00	
Intermediate	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		4				3.20E-04	4.60E-03	1.7E+02		1.7E+02	
Intermediate	VOC	Vinyl Chloride	75-01-4	T	A	4				1.50E-04	2.10E-03	2.0E-03		2.0E-03	
Intermediate	VOC	Xylenes (total)	1330-20-7	T	ID	4				3.30E-04	4.70E-03	1.0E+01		1.0E+01	
Intermediate	SVOC	Acenaphthene	83-32-9	T		4				8.00E-04	8.00E-04	3.8E+00		1.3E+00	
Intermediate	SVOC	Acenaphthylene	208-96-8	T	D	4				7.10E-04	7.10E-04	1.5E-01		5.2E-02	
Intermediate	SVOC	Acetophenone	98-86-2	T	D	4				2.60E-03	2.60E-03	4.4E+00		1.5E+00	
Intermediate	SVOC	Anthracene	120-12-7	T	D	4				6.80E-04	6.80E-04	4.3E-02		4.3E-02	
Intermediate	SVOC	Atrazine	1912-24-9	T		4				2.50E-03	2.50E-03	3.0E-03		3.0E-03	
Intermediate	SVOC	Benzaldehyde	100-52-7	T		4				2.80E-03	2.80E-03				
Intermediate	SVOC	Benzo(a)anthracene	56-55-3	T	B2	4				7.00E-04	7.00E-04	8.5E-03		2.1E-03	
Intermediate	SVOC	Benzo(a)pyrene	50-32-8	T	B2	4				7.30E-04	7.30E-04	5.0E-03		5.0E-03	
Intermediate	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	4				9.40E-04	9.40E-04	2.0E-03		2.0E-03	
Intermediate	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	4				8.50E-04	8.50E-04	5.0E-03		5.0E-03	
Intermediate	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	4				8.40E-04	8.40E-04	5.0E-03		5.0E-03	
Intermediate	SVOC	Biphenyl	92-52-4	T	D	4				2.60E-03	2.60E-03				
Intermediate	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	4				8.70E-04	8.70E-04				
Intermediate	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	4				9.70E-04	9.70E-04	8.3E-03		2.0E-03	
Intermediate	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	4	1	8.80E-03	8.80E-03	2.70E-03	2.70E-03	6.0E-03	**1.5E+00**	6.0E-03	**1.5E+00**
Intermediate	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	4				8.80E-04	8.80E-04				
Intermediate	SVOC	Butylbenzylphthalate	85-68-7	T	C	4				8.80E-04	8.80E-04	2.7E+00		1.2E+00	
Intermediate	SVOC	Caprolactam	105-60-2	T		4	3	6.70E-03	3.90E-02	2.50E-03	2.50E-03	1.7E+01	2.3E-03	5.8E+00	6.7E-03
Intermediate	SVOC	Carbazole	86-74-8	T	B2	4				8.20E-04	8.20E-04	3.5E-01		8.5E-02	
Intermediate	SVOC	4-Chloro-3-methylphenol	59-50-7	T		4				9.90E-04	9.90E-04	4.2E-01		1.5E-01	
Intermediate	SVOC	4-Chloroaniline	106-47-8	T		4				6.10E-04	6.10E-04				
Intermediate	SVOC	2-Chloronaphthalene	91-58-7	T		4				8.50E-04	8.50E-04	5.2E+00		1.8E+00	
Intermediate	SVOC	2-Chlorophenol	95-57-8	T		4				1.00E-03	1.00E-03	1.3E-01		4.5E-02	
Intermediate	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		4				7.90E-04	7.90E-04				
Intermediate	SVOC	Chrysene	218-01-9	T	B2	4				7.50E-04	7.50E-04	5.0E-03		5.0E-03	
Intermediate	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	4				7.90E-04	7.90E-04	2.0E-03		2.0E-03	

TABLE 4-7b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-01 (DEEP AND INTERMEDIATE GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detect to Residential Drinking Water Criteria
Intermediate	SVOC	Dibenzofuran	132-64-9	T	D	4				1.10E-03	1.10E-03				
Intermediate	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	4				9.30E-04	9.30E-04	4.3E-03		1.1E-03	
Intermediate	SVOC	2,4-Dichlorophenol	120-83-2	T		4				8.50E-04	8.50E-04	2.1E-01		7.3E-02	
Intermediate	SVOC	Diethylphthalate	84-66-2	T	D	4				6.50E-04	6.50E-04	1.6E+01		5.5E+00	
Intermediate	SVOC	2,4-Dimethylphenol	105-67-9	T		4				8.50E-04	8.50E-04	1.0E+00		3.7E-01	
Intermediate	SVOC	Dimethylphthalate	131-11-3	T	D	4				7.60E-04	7.60E-04	2.1E+02		7.3E+01	
Intermediate	SVOC	Di-n-butylphthalate	84-74-2	T	D	4				6.70E-04	6.70E-04	2.5E+00		8.8E-01	
Intermediate	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		4				1.30E-03	1.30E-03	2.0E-02		2.0E-02	
Intermediate	SVOC	2,4-Dinitrophenol	51-28-5	T		4				3.00E-03	3.00E-03				
Intermediate	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	4				7.90E-04	7.90E-04	3.2E-02		7.7E-03	
Intermediate	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	4				5.70E-04	5.70E-04				
Intermediate	SVOC	Di-n-octylphthalate	117-84-0	T		4				1.10E-03	1.10E-03	3.8E-01		1.3E-01	
Intermediate	SVOC	Fluoranthene	206-44-0	T	D	4				8.10E-04	8.10E-04	2.1E-01		2.1E-01	
Intermediate	SVOC	Fluorene	86-73-7	T	D	4				1.00E-03	1.00E-03	2.0E+00		8.8E-01	
Intermediate	SVOC	Hexachlorobenzene	118-74-1	T	B2	4				7.40E-04	7.40E-04	1.0E-03		1.0E-03	
Intermediate	SVOC	Hexachlorobutadiene	87-68-3	T	C	4				7.30E-04	7.30E-04	4.2E-02		1.5E-02	
Intermediate	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	4				1.10E-03	1.10E-03	5.0E-02		5.0E-02	
Intermediate	SVOC	Hexachloroethane	67-72-1	T	C	4				7.40E-04	7.40E-04	2.1E-02		7.3E-03	
Intermediate	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	4				6.30E-04	6.30E-04	2.0E-03		2.0E-03	
Intermediate	SVOC	Isophorone	78-59-1	T	C	4				6.30E-04	6.30E-04	3.1E+00		7.7E-01	
Intermediate	SVOC	2-Methylnaphthalene	91-57-6	T	ID	4				6.40E-04	6.40E-04	7.5E-01		2.6E-01	
Intermediate	SVOC	Methylphenol (total)	1319-77-3	T		4	1	2.65E-03	2.65E-03	1.30E-03	1.30E-03	1.0E+00	2.7E-03	3.7E-01	7.2E-03
Intermediate	SVOC	Naphthalene	91-20-3	T	C	4				7.50E-04	7.50E-04	1.5E+00		5.2E-01	
Intermediate	SVOC	2-Nitroaniline	88-74-4	T		4				7.00E-04	7.00E-04				
Intermediate	SVOC	3-Nitroaniline	99-09-2	T	C	4				7.10E-04	7.10E-04				
Intermediate	SVOC	4-Nitroaniline	100-01-6	T	C	4				1.30E-03	1.30E-03				
Intermediate	SVOC	Nitrobenzene	98-95-3	T	D	4				8.10E-04	8.10E-04	9.6E-03		3.4E-03	
Intermediate	SVOC	2-Nitrophenol	88-75-5	T		4				2.10E-03	2.10E-03	5.8E-02		2.0E-02	
Intermediate	SVOC	4-Nitrophenol	100-02-7	T		4				1.90E-03	1.90E-03				
Intermediate	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	4				1.40E-03	1.40E-03	1.1E+00		2.7E-01	
Intermediate	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	4				6.70E-04	6.70E-04	5.0E-03		5.0E-03	
Intermediate	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	4				7.80E-04	7.80E-04				
Intermediate	SVOC	Pentachlorophenol	87-86-5	T	B2	4				2.40E-03	2.40E-03	1.0E-03		1.0E-03	
Intermediate	SVOC	Phenanthrene	85-01-8	T	D	4				8.20E-04	8.20E-04	1.5E-01		5.2E-02	
Intermediate	SVOC	Phenol	108-95-2	T	ID	4	1	7.00E-03	7.00E-03	2.60E-03	2.60E-03	1.3E+01	5.4E-04	4.4E+00	1.6E-03
Intermediate	SVOC	Pyrene	129-00-0	T	D	4				1.10E-03	1.10E-03	1.4E-01		1.4E-01	
Intermediate	SVOC	2,4,5-Trichlorophenol	95-95-4	T		4				1.20E-03	1.20E-03	2.1E+00		7.3E-01	
Intermediate	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	4				1.70E-03	1.70E-03	4.7E-01		1.2E-01	
Intermediate	P/PCB	PCBs (total)	1336-36-3	D	B2	1				8.20E-05	8.20E-05	5.0E-04		5.0E-04	
Intermediate	P/PCB	PCBs (total)	1336-36-3	T	B2	4				8.20E-05	8.20E-05	5.0E-04		5.0E-04	
Intermediate	INORG	Antimony	7440-36-0	D		2				2.20E-03	2.20E-03	6.0E-03		6.0E-03	
Intermediate	INORG	Antimony	7440-36-0	T		4				2.20E-03	3.40E-03	6.0E-03		6.0E-03	
Intermediate	INORG	Arsenic	7440-38-2	D	A	2	1	6.20E-03	6.20E-03	3.90E-03	3.90E-03	5.0E-02	1.2E-01	5.0E-02	1.2E-01
Intermediate	INORG	Arsenic	7440-38-2	T	A	4	3	2.70E-03	5.20E-03	2.10E-03	2.10E-03	5.0E-02	1.0E-01	5.0E-02	1.0E-01
Intermediate	INORG	Barium	7440-39-3	D	D	2	2	4.00E-02	4.04E-01			2.0E+00	2.0E-01	2.0E+00	2.0E-01
Intermediate	INORG	Barium	7440-39-3	T	D	4	4	6.77E-02	4.32E-01			2.0E+00	2.2E-01	2.0E+00	2.2E-01
Intermediate	INORG	Beryllium	7440-41-7	D	B1	2				5.40E-04	5.40E-04	4.0E-03		4.0E-03	
Intermediate	INORG	Beryllium	7440-41-7	T	B1	4				5.40E-04	6.00E-04	4.0E-03		4.0E-03	
Intermediate	INORG	Cadmium	7440-43-9	D	B1	2	1	2.80E-04	2.80E-04	2.80E-04	2.80E-04	5.0E-03	5.6E-02	5.0E-03	5.6E-02
Intermediate	INORG	Cadmium	7440-43-9	T	B1	4	2	2.80E-04	5.70E-04	2.80E-04	2.80E-04	5.0E-03	1.1E-01	5.0E-03	1.1E-01
Intermediate	INORG	Chromium (total)	7440-47-3	D		2				1.40E-03	1.40E-03	1.0E-01		1.0E-01	
Intermediate	INORG	Chromium (total)	7440-47-3	T		4	1	6.80E-03	6.80E-03	1.40E-03	1.50E-03	1.0E-01	6.8E-02	1.0E-01	6.8E-02
Intermediate	INORG	Cobalt	7440-48-4	D	B1	2				1.30E-03	1.30E-03	1.0E-01		4.0E-02	
Intermediate	INORG	Cobalt	7440-48-4	T	B1	4	1	1.40E-03	1.40E-03	7.40E-04	1.30E-03	1.0E-01	1.4E-02	4.0E-02	3.5E-02
Intermediate	INORG	Copper	7440-50-8	D	D	2				4.20E-03	4.20E-03	4.0E+00		1.4E+00	

TABLE 4-7b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-01 (DEEP AND INTERMEDIATE GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detect to Residential Drinking Water Criteria
Intermediate	INORG	Copper	7440-50-8	T	D	4				1.70E-03	4.20E-03	4.0E+00		1.4E+00	
Intermediate	INORG	Lead	7439-92-1	D	B2	2				2.50E-03	2.50E-03	4.0E-03		4.0E-03	
Intermediate	INORG	Lead	7439-92-1	T	B2	4	1	1.35E-02	1.35E-02	1.60E-03	2.50E-03	4.0E-03	**3.4E+00**	4.0E-03	**3.4E+00**
Intermediate	INORG	Manganese	7439-96-5	D	D	2	2	2.80E-03	1.59E-01			2.5E+00	6.4E-02	8.6E-01	1.8E-01
Intermediate	INORG	Manganese	7439-96-5	T	D	4	4	6.31E-02	1.77E-01			2.5E+00	7.1E-02	8.6E-01	2.1E-01
Intermediate	INORG	Mercury	7439-97-6	D	D	2				6.90E-05	6.90E-05	2.0E-03		2.0E-03	
Intermediate	INORG	Mercury	7439-97-6	T	D	4				6.90E-05	8.70E-05	2.0E-03		2.0E-03	
Intermediate	INORG	Nickel	7440-02-0	D	A	2				2.20E-03	2.20E-03	1.0E-01		1.0E-01	
Intermediate	INORG	Nickel	7440-02-0	T	A	4	1	5.70E-03	5.70E-03	2.20E-03	2.90E-03	1.0E-01	5.7E-02	1.0E-01	5.7E-02
Intermediate	INORG	Selenium	7782-49-2	D	D	2				4.50E-03	4.50E-03	5.0E-02		5.0E-02	
Intermediate	INORG	Selenium	7782-49-2	T	D	4				4.50E-03	4.70E-03	5.0E-02		5.0E-02	
Intermediate	INORG	Silver	7440-22-4	D	D	2				1.50E-03	1.50E-03	9.8E-02		3.4E-02	
Intermediate	INORG	Silver	7440-22-4	T	D	4				9.80E-04	1.50E-03	9.8E-02		3.4E-02	
Intermediate	INORG	Thallium	7440-28-0	D		2				1.80E-05	5.00E-03	2.0E-03		2.0E-03	
Intermediate	INORG	Thallium	7440-28-0	T		4	1	4.40E-05	4.40E-05	3.30E-05	5.00E-03	2.0E-03	2.2E-02	2.0E-03	2.2E-02
Intermediate	INORG	Vanadium	7440-62-2	D		2	1	2.50E-03	2.50E-03	8.20E-04	8.20E-04	6.2E-02	4.0E-02	4.5E-03	5.6E-01
Intermediate	INORG	Vanadium	7440-62-2	T		4	1	4.90E-03	4.90E-03	6.70E-04	8.20E-04	6.2E-02	7.9E-02	4.5E-03	**1.1E+00**
Intermediate	INORG	Zinc	7440-66-6	D	D	2				1.20E-02	1.20E-02	5.0E+00		2.4E+00	
Intermediate	INORG	Zinc	7440-66-6	T	D	4	1	5.92E-01	5.92E-01	1.20E-02	1.40E-02	5.0E+00	1.2E-01	2.4E+00	2.5E-01

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-8
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-8 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
VOC	Acetone	67-64-1	ID	43	22	5.70E-03	3.00E-01	1.80E-03	2.00E-01		1.1E+05	2.7E-06	1.6E+05	1.9E-06	1.7E+08	1.8E-09	7.3E+04	4.1E-06	1.1E+05	2.7E-06	1.3E+05	2.3E-06	3.9E+08	7.7E-10	2.3E+04	1.3E-05
VOC	Benzene	71-43-2	A	42	5	8.40E-04	5.70E-02	3.00E-04	2.00E-02		8.4E+00	6.8E-03	4.5E+01	1.3E-03	4.7E+05	1.2E-07	4.0E+02	1.4E-04	1.6E+00	3.6E-02	1.3E+01	4.4E-03	3.8E+05	1.5E-07	1.8E+02	3.2E-04
VOC	Bromodichloromethane	75-27-4	B2	42				4.70E-04	1.80E-02		6.4E+00		3.1E+01		1.1E+05		4.9E+02		1.2E+00		9.1E+00		8.4E+04		1.1E+02	
VOC	Bromoform	75-25-2	B2	42				5.20E-04	1.90E-02		7.7E+02		3.1E+03		3.6E+06		8.7E+02		1.5E+02		9.0E+02		2.8E+06		8.2E+02	
VOC	Bromomethane	74-83-9	D	43	1	2.23E-02	2.23E-02	1.20E-03	5.60E-02		1.6E+00	1.4E-02	1.3E+01	1.7E-03	1.5E+05	1.5E-07	1.0E+03	2.2E-05	8.6E-01	2.6E-02	1.1E+01	2.0E-03	3.3E+05	6.8E-08	3.2E+02	7.0E-05
VOC	2-Butanone	78-93-3	ID	43	14	2.20E-03	1.30E-01	1.30E-03	1.30E-01		2.7E+04	4.8E-06	3.5E+04	3.7E-06	2.9E+07	4.5E-09	2.7E+04	4.8E-06	2.7E+04	4.8E-06	2.9E+04	4.5E-06	6.7E+07	1.9E-09	2.7E+04	4.8E-06
VOC	Carbon Disulfide	75-15-0		43	3	3.10E-04	1.60E-03	2.40E-04	4.20E-02		1.4E+02	1.1E-05	1.6E+03	1.0E-06	2.1E+07	7.6E-11	2.8E+02	5.7E-06	7.6E+01	2.1E-05	1.3E+03	1.2E-06	4.7E+07	3.4E-11	2.8E+02	5.7E-06
VOC	Carbon Tetrachloride	56-23-5	B2	42				4.20E-04	2.40E-02		9.9E-01		1.2E+01		1.7E+05		3.9E+02		1.9E-01		3.5E+00		1.3E+05		9.6E+01	
VOC	Chlorobenzene	108-90-7	D	43				3.40E-04	1.80E-02		2.2E+02		9.2E+02		2.1E+06		2.6E+02		1.2E+02		7.7E+02		4.7E+06		2.6E+02	
VOC	Chloroethane	75-00-3		43				8.20E-04	5.10E-02		9.5E+02		3.6E+04		2.9E+08		9.5E+02		9.5E+02		3.0E+04		6.7E+08		9.5E+02	
VOC	Chloroform	67-66-3	B2	43				4.60E-04	1.80E-02		3.8E+01		1.5E+02		1.6E+06		1.5E+03		7.2E+00		4.5E+01		1.3E+06		1.2E+03	
VOC	Chloromethane	74-87-3	D	43				4.20E-04	3.70E-02		1.0E+01		1.2E+02		2.6E+06		1.1E+03		2.3E+00		4.0E+01		4.9E+06		1.1E+03	
VOC	Cumene	98-82-8	D	43	7	8.60E-04	4.60E-02	4.80E-04	8.50E-03		3.9E+02	1.2E-04	2.0E+03	2.3E-05	2.6E+06	1.8E-08	3.9E+02	1.2E-04	3.9E+02	1.2E-04	1.7E+03	2.7E-05	5.8E+06	7.9E-09	3.9E+02	1.2E-04
VOC	Cyclohexane	110-82-7	ID	43	4	1.30E-03	8.30E-02	4.10E-04	2.50E-02																	
VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	43				9.90E-04	9.70E-02		1.2E+00		1.5E+01		5.9E+03		1.2E+00		1.2E+00		1.3E+01		1.3E+04		1.2E+00	
VOC	Dibromochloromethane	124-48-1	C	42				5.50E-04	1.50E-02		2.1E+01		8.0E+01		1.6E+05		5.0E+02		3.9E+00		2.4E+01		1.3E+05		1.1E+02	
VOC	1,2-Dibromoethane	106-93-4	B2	42				3.20E-04	2.30E-02		3.6E+00		5.8E+00		1.8E+04		4.3E-01		6.7E-01		1.7E+00		1.4E+04		2.5E-01	
VOC	1,2-Dichlorobenzene	95-50-1	D	43	2	6.30E-03	3.20E-02	3.90E-04	1.90E-02		2.1E+02	1.5E-04	4.6E+04	7.0E-07	4.4E+07	7.3E-10	2.1E+02	1.5E-04	2.1E+02	1.5E-04	3.9E+04	8.2E-07	1.0E+08	3.2E-10	2.1E+02	1.5E-04
VOC	1,3-Dichlorobenzene	541-73-1	D	43				5.90E-04	1.80E-02								1.7E+02								1.7E+02	
VOC	1,4-Dichlorobenzene	106-46-7	C	43	3	7.60E-04	1.95E-02	4.20E-04	1.90E-02		1.0E+02	2.0E-04	2.6E+02	7.5E-05	5.7E+05	3.4E-08	1.9E+03	1.0E-05	1.9E+01	1.0E-03	7.7E+01	2.5E-04	4.5E+05	4.3E-08	4.0E+02	4.9E-05
VOC	Dichlorodifluoromethane	75-71-8		43				7.70E-04	4.50E-02		1.7E+03		6.3E+04		1.5E+09		1.0E+03		9.0E+02		5.3E+04		3.3E+09		1.0E+03	
VOC	1,1-Dichloroethane	75-34-3	C	43	1	1.10E-03	1.10E-03	2.70E-04	2.20E-02		4.3E+02	2.6E-06	2.5E+03	4.4E-07	1.5E+07	7.3E-11	8.9E+02	1.2E-06	2.3E+02	4.8E-06	2.1E+03	5.2E-07	3.3E+07	3.3E-11	8.9E+02	1.2E-06
VOC	1,2-Dichloroethane	107-06-2	B2	43				3.80E-04	1.30E-02		1.1E+01		2.1E+01		1.5E+05		4.2E+02		2.1E+00		6.2E+00		1.2E+05		9.1E+01	
VOC	1,1-Dichloroethene	75-35-4	C	43	2	6.80E-04	1.00E-03	4.70E-04	3.10E-02		3.3E-01	3.0E-03	3.7E+00	2.7E-04	7.8E+04	1.3E-08	5.7E+02	1.8E-06	6.2E-02	1.6E-02	1.1E+00	9.1E-04	6.2E+04	1.6E-08	2.0E+02	5.0E-06
VOC	cis-1,2-Dichloroethene	156-59-2	D	43				2.80E-04	2.30E-02		4.1E+01		2.1E+02		1.0E+06		6.4E+02		2.2E+01		1.8E+02		2.3E+06		6.4E+02	
VOC	trans-1,2-Dichloroethene	156-60-5		43				3.40E-04	3.20E-02		4.3E+01		3.3E+02		2.1E+06		1.4E+03		2.3E+01		2.8E+02		4.7E+06		1.4E+03	
VOC	1,2-Dichloropropane	78-87-5	B2	43				3.00E-04	1.90E-02		7.4E+00		3.0E+01		1.2E+05		5.5E+02		4.0E+00		2.5E+01		2.7E+05		1.4E+02	
VOC	1,3-Dichloropropene (total)	542-75-6	B2	42				4.40E-04	1.70E-02		5.4E+00		6.0E+01		5.9E+05		2.4E+02		1.0E+00		1.8E+01		7.8E+05		1.0E+01	
VOC	Ethyl Benzene	100-41-4	D	43	12	6.80E-04	1.30E-01	5.10E-04	1.45E-02		1.4E+02	9.3E-04	2.4E+03	5.4E-05	1.3E+07	1.0E-08	1.4E+02	9.3E-04	8.7E+01	1.5E-03	7.2E+02	1.8E-04	1.0E+07	1.3E-08	1.4E+02	9.3E-04
VOC	2-Hexanone	591-78-6		43				1.20E-03	9.50E-02		1.8E+03		1.3E+03		1.2E+06		2.5E+03		9.9E+02		1.1E+03		2.7E+06		2.5E+03	
VOC	Methyl Acetate	79-20-9		43	6	1.40E-03	2.30E-01	9.50E-04	5.40E-02																	
VOC	Methyl tert-butyl ether	1634-04-4		43				2.70E-04	2.20E-02		5.9E+03		3.0E+04		8.8E+07		5.9E+03		5.9E+03		2.5E+04		2.0E+08		1.5E+03	
VOC	4-Methyl-2-pentanone	108-10-1	ID	43	4	2.40E-03	3.40E-03	8.00E-04	6.30E-02		2.7E+03	1.3E-06	5.3E+04	6.4E-08	6.0E+07	5.7E-11	2.7E+03	1.3E-06	2.7E+03	1.3E-06	4.5E+04	7.6E-08	1.4E+08	2.4E-11	2.7E+03	1.3E-06
VOC	Methylcyclohexane	108-87-2		43	10	7.00E-04	1.00E-01	4.10E-04	2.80E-02																	
VOC	Methylene Chloride	75-09-2	B2	43	4	1.70E-03	7.50E-02	1.10E-03	6.50E-02		2.4E+02	3.1E-04	7.0E+02	1.1E-04	8.3E+06	9.0E-09	2.3E+03	3.3E-05	4.5E+01	1.7E-03	2.1E+02	3.6E-04	6.6E+06	1.1E-08	1.3E+03	5.8E-05
VOC	Styrene	100-42-5		42				2.80E-04	2.00E-02		5.2E+02		3.3E+03		6.9E+06		5.2E+02		2.5E+02		9.7E+02		5.5E+06		4.0E+02	
VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	43				3.70E-04	1.80E-02		2.3E+01		3.4E+01		6.8E+04		2.4E+02		4.3E+00		1.0E+01		5.4E+04		5.3E+01	
VOC	Tetrachloroethene	127-18-4	C-B2	43	1	1.10E-03	1.10E-03	4.60E-04	1.90E-02		6.0E+01	1.8E-05	6.0E+02	1.8E-06	6.8E+06	1.6E-10	8.8E+01	1.3E-05	1.1E+01	1.0E-04	1.8E+02	6.1E-06	5.4E+06	2.0E-10	8.8E+01	1.3E-05
VOC	Toluene	108-88-3	D	43	25	7.30E-04	5.60E-02	3.20E-04	1.50E-02		2.5E+02	2.2E-04	3.3E+03	1.7E-05	1.2E+07	4.7E-09	2.5E+02	2.2E-04	2.5E+02	2.2E-04	2.8E+03	2.0E-05	2.7E+07	2.1E-09	2.5E+02	2.2E-04
VOC	1,2,4-Trichlorobenzene	120-82-1	D	43				5.30E-04	2.40E-02		1.1E+03		3.4E+04		1.1E+07		1.1E+03		1.1E+03		2.8E+04		2.5E+07		9.9E+02	
VOC	1,1,1-Trichloroethane	71-55-6	D	42				3.70E-04	1.90E-02		4.6E+02		4.5E+03		2.9E+07		4.6E+02		2.5E+02		3.8E+03		6.7E+07		4.6E+02	
VOC	1,1,2-Trichloroethane	79-00-5	C	42				3.20E-04	2.60E-02		2.4E+01		5.7E+01		2.5E+05		8.4E+02		4.6E+00		1.7E+01		1.9E+05		1.8E+02	
VOC	Trichloroethene	79-01-6	C-B2	43				5.70E-04	2.40E-02		3.7E+01		2.6E+02		2.3E+06		5.0E+02		7.1E+00		7.8E+01		1.8E+06		5.0E+02	
VOC	Trichlorofluoromethane	75-69-4		43				3.40E-04	3.70E-02		5.6E+02		1.1E+05		1.7E+09		5.6E+02		5.6E+02		9.2E+04		3.8E+09		5.6E+02	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		43				8.00E-04	6.10E-02		5.5E+02		2.1E+05		2.3E+09		5.5E+02		5.5E+02		1.8E+05		5.1E+09		5.5E+02	
VOC	Vinyl Chloride	75-01-4	A	43				4.10E-04	4.10E-02		2.8E+00		2.9E+01		8.9E+05		3.4E+01		2.7E-01		4.2E+00		3.5E+05		3.8E+00	
VOC	Xylenes (total)	1330-20-7	ID	43	13	1.20E-03	7.70E-01	1.10E-03	1.60E-02		1.5E+02	5.1E-03	5.4E+04	1.4E-05	1.3E+08	5.9E-09	1.5E+02	5.1E-03	1.5E+02	5.1E-03	4.6E+04	1.7E-05	2.9E+08	2.7E-09	1.5E+02	5.1E-03
SVOC	Acenaphthene	83-32-9		43	7	2.70E-02	6.90E-01	2.00E-02	3.00E+00		3.5E+05	2.0E-06	9.7E+04	7.1E-06	6.2E+06	1.1E-07	1.3E+05	5.3E-06	1.9E+05	3.6E-06	8.1E+04	8.5E-06	1.4E+07	4.9E-08	4.1E+04	1.7E-05
SVOC	Acenaphthylene	208-96-8	D	43				2.00E-02	2.80E+00		3.0E+03		2.7E+03		1.0E+06		5.2E+03		1.6E+03		2.2E+03		2.3E+06		1.6E+03	
SVOC	Acetophenone	98-86-2	D	43				1.90E-02	3.00E+00		1.1E+03		5.2E+04		1.4E+07		1.1E+03		1.1E+03		4.4E+04		3.3E+07		1.1E+03	
SVOC	Anthracene	120-12-7	D	43	16	2.20E-02	3.50E+00	1.90E-02	2.90E+00		1.0E+06	3.5E-06	1.6E+06	2.2E-06	2.9E+07	1.2E-07	7.3E+05	4.8E-06	1.0E+06	3.5E-06	1.4E+06	2.5E-06	6.7E+07	5.2E-08	2.3E+05	1.5E-05
SVOC	Atrazine	1912-24-9		43				1.90E-02	8.90E+00								3.3E+02								7.1E+01	
SVOC	Benzaldehyde	100-52-7		43				2.20E-02	1.00E+01																	
SVOC	Benzo(a)anthracene	56-55-3	B2	43	18	2.30E-02	3.90E+00	1.90E-02	3.30E+00								8.0E+01	4.9E-02							2.0E+01	2.0E-01
SVOC	Benzo(a)pyrene	50-32-8	B2	43	11	4.00E-02	6.10E+00	2.00E-02	3.60E+00						1.9E+03	3.2E-03	8.0E+00	7.6E-01					1.5E+03	4.1E-03	2.0E+00	**3.1E+00**
SVOC	Benzo(b)fluoranthene	205-99-2	B2	43	16	3.10E-02	6.90E+00	2.20E-02	3.40E+00								8.0E+01	8.6E-02							2.0E+01	3.5E-01
SVOC	Benzo(g,h,i)perylene	191-24-2	D	43	8	3.20E-02	3.40E+00	2.40E-02	3.30E+00						3.5E+05	9.7E-06	7.0E+03	4.9E-04					8.0E+05	4.3E-06	2.5E+03	1.4E-03
SVOC	Benzo(k)fluoranthene	207-08-9	B2	43	10	2.70E-02	3.30E+00	2.00E-02	3.10E+00								8.0E+02	4.1E-03							2.0E+02	1.7E-02
SVOC	Biphenyl	92-52-4	D	43	3	3.40E-02	2.40E-01	2.20E-02	8.30E+00																	
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	43				1.80E-02	2.80E+00																	
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	43				1.90E-02	3.00E+00		4.4E+01		1.3E+01		1.2E+04		5.8E+01		8.3E+00		3.8E+00		9.4E+03		1.3E+01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	43	16	2.50E-02	1.80E+00	2.30E-02	3.20E+00						8.9E+05	2.0E-06	1.0E+04	1.8E-04					7.0E+05	2.6E-06	2.8E+03	6.4E-04
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	43				2.00E-02	3.60E+00																	
SVOC	Butylbenzylphthalate	85-68-7	C	43	1	7.70E-01	7.70E-01	1.80E-02	3.00E+00						2.1E+07	3.7E-08	3.1E+02	2.5E-03					4.7E+07	1.6E-08	3.1E+02	2.5E-03
SVOC	Caprolactam	105-60-2		43				2.20E-02	1.10E+01						2.9E+05		3.1E+05						6.7E+05		5.3E+04	
SVOC	Carbazole	86-74-8	B2	43	3	6.50E-02	1.00E+00	2.30E-02	3.10E+00								2.4E+03	4.2E-04							5.3E+02	1.9E-03
SVOC	4-Chloro-3-methylphenol	59-50-7		43				1.90E-02	3.00E+00								1.5E+04								4.5E+03	
SVOC	4-Chloroaniline	106-47-8		43				6.40E-03	3.00E+00																	
SVOC	2-Chloronaphthalene	91-58-7		43				2.00E-02	2.80E+00								1.8E+05								5.6E+04	
SVOC	2-Chlorophenol	95-57-8		43				1.90E-02	3.10E+00								4.5E+03								1.4E+03	
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		43				2.00E-02	3.10E+00																	

TABLE 4-8
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-8 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	Chrysene	218-01-9	B2	43	19	3.50E-02	5.90E+00	1.90E-02	2.70E+00								8.0E+03	7.4E-04								2.0E+03	3.0E-03
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	43	1	1.00E+00	1.00E+00	2.20E-02	3.00E+00								8.0E+00	1.3E-01								2.0E+00	5.0E-01
SVOC	Dibenzofuran	132-64-9	D	43	6	3.10E-02	6.10E-01	2.00E-02	3.00E+00																		
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	43				9.80E-03	2.40E+00						8.2E+03		3.0E+01							6.5E+03		6.6E+00	
SVOC	2,4-Dichlorophenol	120-83-2		43				1.70E-02	3.00E+00						2.3E+06		1.8E+03							5.1E+06		6.6E+02	
SVOC	Diethylphthalate	84-66-2	D	43				2.10E-02	8.90E+00						1.5E+06		7.4E+02							3.3E+06		7.4E+02	
SVOC	2,4-Dimethylphenol	105-67-9		43				3.40E-02	4.70E+00						2.1E+06		3.6E+04							4.7E+06		1.1E+04	
SVOC	Dimethylphthalate	131-11-3	D	43				2.00E-02	9.50E+00						1.5E+06		7.9E+02							3.3E+06		7.9E+02	
SVOC	Di-n-butylphthalate	84-74-2	D	43	1	3.60E+00	3.60E+00	2.40E-02	8.90E+00						1.5E+06	2.4E-06	7.6E+02	4.7E-03						3.3E+06	1.1E-06	7.6E+02	4.7E-03
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		43				7.70E-02	9.50E+00								2.6E+02									7.9E+01	
SVOC	2,4-Dinitrophenol	51-28-5		43				1.00E-01	6.50E+00																		
SVOC	2,4-Dinitrotoluene	121-14-2	B2	43				1.90E-02	2.70E+00						2.0E+04		2.2E+02							1.6E+04		4.8E+01	
SVOC	2,6-Dinitrotoluene	606-20-2	B2	43				1.90E-02	2.80E+00																		
SVOC	Di-n-octylphthalate	117-84-0		43				1.90E-02	3.20E+00								2.0E+04									6.9E+03	
SVOC	Fluoranthene	206-44-0	D	43	24	6.80E-02	6.90E+00	2.55E-02	3.30E+00		1.0E+06	6.9E-06	8.9E+05	7.8E-06	4.1E+06	1.7E-06	1.3E+05	5.3E-05	1.0E+06	6.9E-06	7.4E+05	9.3E-06	9.3E+06	7.4E-07	4.6E+04	1.5E-04
SVOC	Fluorene	86-73-7	D	43	15	5.70E-02	2.10E+01	2.10E-02	2.80E+00		1.0E+06	2.1E-05	1.5E+05	1.4E-04	4.1E+06	5.1E-06	8.7E+04	2.4E-04	5.8E+05	3.6E-05	1.3E+05	1.6E-04	9.3E+06	2.3E-06	2.7E+04	7.8E-04
SVOC	Hexachlorobenzene	118-74-1	B2	43				1.90E-02	3.30E+00		2.2E+02		5.6E+01		8.5E+03		3.7E+01		4.1E+01		1.7E+01		6.8E+03		8.9E+00	
SVOC	Hexachlorobutadiene	87-68-3	C	43				1.80E-02	2.70E+00		3.5E+02		4.6E+02		1.8E+05		3.5E+02		1.3E+02		1.3E+02		1.4E+05		1.0E+02	
SVOC	Hexachlorocyclopentadiene	77-47-4	E	41				1.60E-02	3.60E+00		5.6E+01		6.0E+01		5.9E+03		7.2E+02		3.0E+01		5.0E+01		1.3E+04		7.2E+02	
SVOC	Hexachloroethane	67-72-1	C	43				1.90E-02	2.80E+00		7.9E+01		6.6E+02		1.0E+05		7.3E+02		4.0E+01		5.5E+02		2.3E+05		2.3E+02	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	43	8	2.70E-02	2.90E+00	2.40E-02	4.10E+00								8.0E+01	3.6E-02							2.0E+01	1.5E-01
SVOC	Isophorone	78-59-1	C	43				2.00E-02	2.60E+00						8.2E+06		2.4E+03						1.2E+07		2.4E+03	
SVOC	2-Methylnaphthalene	91-57-6	ID	43	14	2.50E-02	6.70E+00	1.90E-02	2.80E+00								2.6E+04	2.6E-04							8.1E+03	8.3E-04
SVOC	Methylphenol (total)	1319-77-3		43				1.60E-02	2.80E+00						2.9E+06		3.6E+04						6.7E+06		1.1E+04	
SVOC	Naphthalene	91-20-3	C	43	10	2.40E-02	6.60E-01	2.00E-02	2.90E+00		4.7E+02	1.4E-03	3.5E+02	1.9E-03	8.8E+04	7.5E-06	5.2E+04	1.3E-05	2.5E+02	2.6E-03	3.0E+02	2.2E-03	2.0E+05	3.3E-06	1.6E+04	4.1E-05
SVOC	2-Nitroaniline	88-74-4		43				2.00E-02	2.70E+00																		
SVOC	3-Nitroaniline	99-09-2	C	43				1.30E-02	8.30E+00																		
SVOC	4-Nitroaniline	100-01-6	C	43				1.90E-02	4.00E+00																		
SVOC	Nitrobenzene	98-95-3	D	43				1.90E-02	2.70E+00		1.7E+02		6.4E+01		2.1E+04		3.4E+02		9.1E+01		5.4E+01		4.7E+04		1.0E+02	
SVOC	2-Nitrophenol	88-75-5		43				1.70E-02	2.70E+00								2.0E+03								6.3E+02	
SVOC	4-Nitrophenol	100-02-7		43				1.20E-01	1.10E+01																		
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	43				2.10E-02	2.90E+00								7.8E+03								1.7E+03	
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	43				2.00E-02	2.60E+00						2.0E+03		5.4E+00						1.6E+03		1.2E+00	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	43				2.00E-02	3.10E+00																		
SVOC	Pentachlorophenol	87-86-5	B2	39				9.10E-02	7.10E+00						1.3E+05		3.2E+02						1.0E+05		9.0E+01	
SVOC	Phenanthrene	85-01-8	D	43	29	1.95E-02	4.20E+01	2.30E-02	3.90E-01		5.1E+03	8.2E-03	1.9E+02	2.2E-01	2.9E+03	1.4E-02	5.2E+03	8.1E-03	2.8E+03	1.5E-02	1.6E+02	2.6E-01	6.7E+03	6.3E-03	1.6E+03	2.6E-02
SVOC	Phenol	108-95-2	ID	43	1	1.10E-01	1.10E-01	1.90E-02	2.90E+00						1.8E+07	6.1E-09	1.2E+04	9.2E-06					4.0E+07	2.8E-09	1.2E+04	9.2E-06
SVOC	Pyrene	129-00-0	D	43	24	6.30E-02	1.10E+01	1.90E-02	3.00E+00		1.0E+06	1.1E-05	7.8E+05	1.4E-05	2.9E+06	3.8E-06	8.4E+04	1.3E-04	1.0E+06	1.1E-05	6.5E+05	1.7E-05	6.7E+06	1.6E-06	2.9E+04	3.8E-04
SVOC	2,4,5-Trichlorophenol	95-95-4		43				2.20E-02	3.30E+00						1.0E+07		7.3E+04						2.3E+07		2.3E+04	
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	43				1.80E-02	3.70E+00						1.3E+06		3.3E+03						1.0E+06		7.1E+02	
P/PCB	PCBs (total)	1336-36-3	B2	46	22	1.72E-02	9.60E-01	3.20E-03	3.90E-02		1.6E+04	6.0E-05	8.1E+02	1.2E-03	6.5E+03	1.5E-04	1.6E+01	6.0E-02	3.0E+03	3.2E-04	2.4E+02	4.0E-03	5.2E+03	1.8E-04	4.0E+00	2.4E-01
INORG	Antimony	7440-36-0		43	19	1.63E-01	1.01E+02	2.71E-01	2.39E+00						5.9E+03	1.7E-02	6.7E+02	1.5E-01					1.3E+04	7.8E-03	1.8E+02	5.6E-01
INORG	Arsenic	7440-38-2	A	43	43	2.17E+00	5.40E+01			1.3E+01					9.1E+02	4.5E-02	3.7E+01	**1.1E+00**					7.2E+02	5.7E-02	7.6E+00	**5.4E+00**
INORG	Barium	7440-39-3	D	43	43	7.06E+00	4.04E+03			1.1E+02					1.5E+05	2.6E-02	1.3E+05	3.0E-02					3.3E+05	1.2E-02	3.7E+04	1.1E-01
INORG	Beryllium	7440-41-7	B1	43	29	3.21E-02	1.07E+00	3.68E-02	5.66E-02	1.5E+00					5.9E+02		1.6E+03						1.3E+03		4.1E+02	
INORG	Cadmium	7440-43-9	B1	43	34	3.96E-02	3.85E+01	8.90E-03	1.82E-01	1.2E+00					2.2E+03	1.7E-02	2.1E+03	1.8E-02					1.7E+03	2.2E-02	5.5E+02	6.8E-02
INORG	Chromium (total)	7440-47-3		45	45	4.17E+00	1.26E+03			4.9E+01					2.4E+02	**5.0E+00**	9.2E+03	1.3E-01					2.6E+02	**4.7E+00**	2.5E+03	4.8E-01
INORG	Chromium III	16065-83-1	D	2	2	3.14E+01	3.17E+02								1.5E+05	2.1E-03	1.0E+06	3.2E-04					3.3E+05	9.6E-04	7.9E+05	4.0E-04
INORG	Chromium VI	18540-29-9	A	2	2	6.00E-01	1.38E+00								2.4E+02	5.7E-03	9.2E+03	1.5E-04					2.6E+02	5.3E-03	2.5E+03	5.5E-04
INORG	Cobalt	7440-48-4	B1	43	43	1.62E+00	6.42E+01			1.7E+01					5.9E+03	7.9E-03	9.0E+03	5.2E-03					1.3E+04	3.6E-03	2.6E+03	1.8E-02
INORG	Copper	7440-50-8	D	43	43	5.82E+00	2.58E+04			3.2E+01					5.9E+04	4.4E-01	7.3E+04	3.5E-01					1.3E+05	2.0E-01	2.0E+04	**1.3E+00**
INORG	Cyanide (total)	57-12-5	D	2				1.88E-01	2.09E-01						2.5E+02		2.5E+02						2.5E+02		1.2E+01	
INORG	Lead	7439-92-1	B2	43	43	2.03E+00	8.44E+03			4.9E+01					4.4E+04	1.9E-01	9.0E+02	**9.3E+00**					1.0E+05	8.4E-02	4.0E+02	**2.1E+01**
INORG	Manganese	7439-96-5	D	51	51	1.14E+02	2.78E+03			5.1E+02					1.5E+03	**1.5E+00**	9.0E+04	2.5E-02					3.3E+03	6.9E-01	2.5E+04	9.1E-02
INORG	Mercury	7439-97-6	D	43	28	1.17E-02	6.55E+00	8.90E-03	1.87E-02	1.3E-01	8.9E+01	7.2E-02	6.2E+01	1.0E-01	8.8E+03	7.3E-04	5.8E+02	1.1E-02	4.8E+01	1.3E-01	5.2E+01	1.2E-01	2.0E+04	3.2E-04	1.6E+02	4.0E-02
INORG	Nickel	7440-02-0	A	43	43	4.82E+00	1.89E+03			3.0E+01					1.6E+04	1.2E-01	1.5E+05	1.2E-02					1.3E+04	1.4E-01	4.0E+04	4.6E-02
INORG	Selenium	7782-49-2	D	43	12	1.56E-01	8.62E+00	1.71E-01	4.82E+00	4.1E-01					5.9E+04	1.4E-04	9.6E+03	8.6E-04					1.3E+05	6.3E-05	2.6E+03	3.2E-03
INORG	Silver	7440-22-4	D	43	5	5.96E-02	2.61E+00	5.25E-02	5.97E-01						2.9E+03	9.0E-04	9.0E+03	2.9E-04					6.7E+03	3.9E-04	2.5E+03	1.0E-03
INORG	Thallium	7440-28-0		43	20	4.22E-01	2.12E+00	5.24E-01	6.58E+00								1.3E+02	1.6E-02							3.5E+01	6.1E-02
INORG	Vanadium	7440-62-2		43	43	4.94E+00	5.20E+01			3.3E+01							5.5E+03	3.5E-03							7.5E+02	2.6E-02
INORG	Zinc	7440-66-6	D	43	43	1.78E+01	5.82E+03			1.9E+02							6.3E+05	8.9E-03							1.7E+05	3.3E-02

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-9
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-08 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	19	6	1.63E-03	1.60E-01	5.10E-04	1.10E-03	1.0E+06	1.6E-07	3.1E+04	5.2E-06	7.3E-01	2.2E-01
Shallow	VOC	Benzene	71-43-2	T	A	19	7	1.80E-04	6.25E-04	1.60E-04	4.00E-03	3.5E+01	1.8E-05	1.1E+01	5.7E-05	5.0E-03	1.3E-01
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	19				1.70E-04	4.00E-03	3.7E+01		1.4E+01		1.0E-01	
Shallow	VOC	Bromoform	75-25-2	T	B2	19				1.80E-04	4.00E-03	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	16				1.60E-04	4.00E-03	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	19	3	5.40E-04	4.40E-03	3.60E-04	4.00E-02	2.4E+05	1.8E-08	2.4E+05	1.8E-08	1.3E+01	3.4E-04
Shallow	VOC	Carbon Disulfide	75-15-0	T		19	8	2.40E-04	1.10E-03	2.00E-04	4.00E-03	5.5E+02	2.0E-06	1.2E+03	9.2E-07	8.0E-01	1.4E-03
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	19				1.20E-04	4.00E-03	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	19				1.40E-04	4.00E-03	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		19				2.20E-04	4.00E-03	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	19	4	1.40E-04	2.40E-04	1.40E-04	4.00E-03	1.8E+02	1.3E-06	1.5E+02	1.6E-06	1.0E-01	2.4E-03
Shallow	VOC	Chloromethane	74-87-3	T	D	19	1	2.60E-04	2.60E-04	1.30E-04	4.00E-03	4.5E+01	5.8E-06	4.9E+02	5.3E-07	2.6E-01	1.0E-03
Shallow	VOC	Cumene	98-82-8	T	D	19	6	1.80E-04	1.70E-03	1.20E-04	4.00E-03	5.6E+01	3.0E-05	5.6E+01	3.0E-05	8.0E-01	2.1E-03
Shallow	VOC	Cyclohexane	110-82-7	T	ID	19	1	2.20E-04	2.20E-04	1.30E-04	4.00E-03						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	19				5.30E-04	8.00E-03	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	19				2.50E-04	4.00E-03	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	19				2.20E-04	4.00E-03	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	19				1.10E-04	4.00E-03	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	19				1.50E-04	4.00E-03			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	19				1.60E-04	4.00E-03	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		19				2.30E-04	8.00E-03	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	19	6	1.90E-04	3.00E-03	1.60E-04	4.00E-03	2.3E+03	1.3E-06	2.4E+03	1.3E-06	8.8E-01	3.4E-03
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	19				2.10E-04	4.00E-03	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	19				2.20E-04	4.00E-03	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	19	2	3.00E-04	2.30E-03	2.20E-04	2.00E-03	2.1E+02	1.1E-05	2.0E+02	1.2E-05	7.0E-02	3.3E-02
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		19	1	6.30E-04	6.30E-04	1.50E-04	2.00E-03	2.0E+02	3.2E-06	2.2E+02	2.9E-06	1.0E-01	6.3E-03
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	19				1.70E-04	4.00E-03	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	19				1.50E-04	4.00E-03	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	19	8	1.50E-04	7.00E-04	1.20E-04	4.00E-03	1.7E+02	4.1E-06	1.7E+02	4.1E-06	7.0E-01	1.0E-03
Shallow	VOC	2-Hexanone	591-78-6	T		19				3.10E-04	4.00E-02	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		19				4.10E-04	4.00E-02						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		19				1.30E-04	2.00E-02	4.7E+04		6.1E+02		2.4E-01	
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	18	8	4.30E-04	4.90E-03	2.30E-04	4.00E-02	2.0E+04	2.5E-07	1.3E+04	3.8E-07	1.8E+00	2.7E-03
Shallow	VOC	Methylcyclohexane	108-87-2	T		19	1	1.90E-04	1.90E-04	1.50E-04	4.00E-03						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	18	1	5.00E-04	5.00E-04	2.80E-04	4.00E-03	1.4E+03	3.6E-07	2.2E+02	2.3E-06	5.0E-03	1.0E-01
Shallow	VOC	Styrene	100-42-5	T		19				1.50E-04	4.00E-03	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	19				2.30E-04	4.00E-03	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	19	1	8.90E-04	8.90E-04	1.20E-04	4.00E-03	1.7E+02	5.2E-06	1.2E+01	7.4E-05	5.0E-03	1.8E-01
Shallow	VOC	Toluene	108-88-3	T	D	19	9	2.00E-04	2.00E-03	1.80E-04	4.00E-03	5.3E+02	3.8E-06	5.3E+02	3.8E-06	1.0E+00	2.0E-03
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	19				1.50E-04	4.00E-03	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	19				1.50E-04	4.00E-03	1.3E+03		1.3E+03		2.0E-01	
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	19				2.10E-04	4.00E-03	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	19	2	2.00E-04	2.60E-03	1.40E-04	4.00E-03	9.7E+01	2.7E-05	2.2E+01	1.2E-04	5.0E-03	5.2E-01
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		19				2.50E-04	4.00E-03	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		19				2.30E-04	4.00E-03	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	19	1	3.10E-04	3.10E-04	1.50E-04	4.00E-03	1.3E+01	2.4E-05	1.0E+00	3.1E-04	2.0E-03	1.6E-01
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	19	9	5.10E-04	2.80E-03	3.30E-04	4.00E-03	1.9E+02	1.5E-05	1.9E+02	1.5E-05	1.0E+01	2.8E-04
Shallow	SVOC	Acenaphthene	83-32-9	T		19	2	2.20E-03	3.10E-03	8.00E-04	1.40E-01	4.2E+00	7.4E-04	4.2E+00	7.4E-04	1.3E+00	2.4E-03
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	19				7.10E-04	8.20E-02	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	19				2.60E-03	1.30E-01	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	19	2	7.30E-04	7.90E-04	6.80E-04	1.20E-01	4.3E-02	1.8E-02	4.3E-02	1.8E-02	4.3E-02	1.8E-02
Shallow	SVOC	Atrazine	1912-24-9	T		19				2.50E-03	7.00E-02			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		19				2.80E-03	1.20E-01						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	19				7.00E-04	1.40E-01			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	19				7.30E-04	1.10E-01			2.0E-03		5.0E-03	

TABLE 4-9
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-08 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	19				9.40E-04	1.40E-01			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	19				8.50E-04	1.40E-01			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	19				8.40E-04	1.30E-01			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	19				2.60E-03	1.30E-01						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	19				8.70E-04	2.00E-01						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	19				9.70E-04	3.40E-01	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	19				2.70E-03	5.40E-02			3.2E-01		6.0E-03	
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	19				8.80E-04	1.60E-01						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	19				8.80E-04	4.60E-02			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		19	1	5.50E+00	5.50E+00	2.50E-03	9.00E-02			3.9E+05	1.4E-05	5.8E+00	9.5E-01
Shallow	SVOC	Carbazole	86-74-8	T	B2	19				8.20E-04	1.20E-01			7.4E+00		8.5E-02	
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		19				9.90E-04	1.10E-01			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		18				6.10E-04	1.80E-01						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		19				8.50E-04	1.50E-01			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		19				1.00E-03	2.60E-01			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		19				7.90E-04	1.30E-01						
Shallow	SVOC	Chrysene	218-01-9	T	B2	19				7.50E-04	1.30E-01			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	19				7.90E-04	1.40E-01			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	19				1.10E-03	1.30E-01						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	17				9.30E-04	9.40E-02			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		19				8.50E-04	1.40E-01			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	19				6.50E-04	5.00E-02			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		19	1	2.50E+00	2.50E+00	8.50E-04	1.70E-02			5.2E+02	4.8E-03	3.7E-01	**6.8E+00**
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	19				7.60E-04	4.00E-02			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	19				6.70E-04	7.40E-02			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		19				1.30E-03	4.20E-01			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		19				3.00E-03	6.60E-01						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	19				7.90E-04	9.20E-02			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	19				5.70E-04	1.40E-01						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		19				1.10E-03	1.40E-01			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	19				8.10E-04	1.40E-01	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	19	8	1.50E-03	2.10E-02	1.00E-03	1.50E-01	2.0E+00	1.1E-02	2.0E+00	1.1E-02	8.8E-01	2.4E-02
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	19				7.40E-04	1.50E-01	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	19				7.30E-04	3.00E-01	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	17				1.10E-03	2.20E-01	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	19				7.40E-04	3.20E-01	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	19				6.30E-04	1.40E-01			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	19				6.30E-04	1.70E-01			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	19	4	6.50E-04	5.10E-03	6.40E-04	1.90E-01			2.5E+01	2.0E-04	2.6E-01	2.0E-02
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		19	1	4.69E+00	4.69E+00	1.30E-03	2.60E-02			8.1E+02	5.8E-03	3.7E-01	**1.3E+01**
Shallow	SVOC	Naphthalene	91-20-3	T	C	19	4	1.70E-03	2.60E-03	7.50E-04	2.60E-01	3.1E+01	8.4E-05	3.1E+01	8.4E-05	5.2E-01	5.0E-03
Shallow	SVOC	2-Nitroaniline	88-74-4	T		19				7.00E-04	9.80E-02						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	18				7.10E-04	9.60E-02						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	19				1.30E-03	1.20E-01						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	19				8.10E-04	2.60E-01	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		19				2.10E-03	1.90E-01			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		19				1.90E-03	7.00E-01						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	19				1.40E-03	1.30E-01			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	19				6.70E-04	2.20E-01			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	19				7.80E-04	3.60E-01						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	19				2.40E-03	5.20E-01			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	19	9	1.00E-03	2.80E-02	8.20E-04	1.40E-01	1.0E+00	2.8E-02	1.0E+00	2.8E-02	5.2E-02	5.4E-01
Shallow	SVOC	Phenol	108-95-2	T	ID	19	2	4.60E-02	1.20E+00	2.60E-03	5.20E-02			2.9E+04	4.1E-05	4.4E+00	2.7E-01
Shallow	SVOC	Pyrene	129-00-0	T	D	19				1.10E-03	1.30E-01	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		19				1.20E-03	1.70E-01			1.7E+02		7.3E-01	

TABLE 4-9
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-08 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	19				1.70E-03	1.40E-01			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	D	B2	5				8.20E-05	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	19	1	7.36E-04	7.36E-04	8.20E-05	4.00E-04	4.5E-02	1.6E-02	3.3E-03	2.2E-01	5.0E-04	**1.5E+00**
Shallow	INORG	Antimony	7440-36-0	D		14	3	2.50E-03	8.00E-03	2.20E-03	2.20E-03			6.8E+01	1.2E-04	6.0E-03	**1.3E+00**
Shallow	INORG	Antimony	7440-36-0	T		19	3	2.80E-03	7.90E-03	2.20E-03	3.40E-03			6.8E+01	1.2E-04	6.0E-03	**1.3E+00**
Shallow	INORG	Arsenic	7440-38-2	D	A	14	10	4.10E-03	3.41E-02	3.90E-03	1.00E-02			4.3E+00	7.9E-03	5.0E-02	6.8E-01
Shallow	INORG	Arsenic	7440-38-2	T	A	19	15	4.10E-03	8.49E-02	3.90E-03	1.00E-02			4.3E+00	2.0E-02	5.0E-02	**1.7E+00**
Shallow	INORG	Barium	7440-39-3	D	D	14	14	2.60E-02	3.01E-01					1.4E+04	2.2E-05	2.0E+00	1.5E-01
Shallow	INORG	Barium	7440-39-3	T	D	19	18	2.65E-02	1.03E+00	8.20E-04	8.20E-04			1.4E+04	7.4E-05	2.0E+00	5.2E-01
Shallow	INORG	Beryllium	7440-41-7	D	B1	14				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Beryllium	7440-41-7	T	B1	19	2	6.20E-04	5.40E-03	4.70E-04	1.00E-03			2.9E+02	1.9E-05	4.0E-03	**1.4E+00**
Shallow	INORG	Cadmium	7440-43-9	D	B1	14	3	2.80E-04	5.50E-04	2.80E-04	2.80E-04			1.9E+02	2.9E-06	5.0E-03	1.1E-01
Shallow	INORG	Cadmium	7440-43-9	T	B1	19	7	2.90E-04	3.90E-03	2.80E-04	3.60E-04			1.9E+02	2.1E-05	5.0E-03	7.8E-01
Shallow	INORG	Chromium (total)	7440-47-3	D		14	2	5.00E-03	4.76E-02	1.40E-03	1.00E-02			4.6E+02	1.0E-04	1.0E-01	4.8E-01
Shallow	INORG	Chromium (total)	7440-47-3	T		19	6	1.15E-03	2.95E-01	1.00E-03	1.00E-02			4.6E+02	6.4E-04	1.0E-01	**3.0E+00**
Shallow	INORG	Cobalt	7440-48-4	D	B1	14	5	1.40E-03	9.30E-03	1.30E-03	2.00E-02			2.4E+03	3.9E-06	4.0E-02	2.3E-01
Shallow	INORG	Cobalt	7440-48-4	T	B1	19	6	1.90E-03	8.79E-02	7.40E-04	2.00E-02			2.4E+03	3.7E-05	4.0E-02	**2.2E+00**
Shallow	INORG	Copper	7440-50-8	D	D	14	2	4.40E-03	5.20E-03	4.20E-03	5.00E-03			7.4E+03	7.0E-07	1.4E+00	3.7E-03
Shallow	INORG	Copper	7440-50-8	T	D	19	3	6.60E-03	2.14E-01	1.70E-03	5.00E-03			7.4E+03	2.9E-05	1.4E+00	1.5E-01
Shallow	INORG	Lead	7439-92-1	D	B2	14				2.50E-03	3.00E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	19	3	5.70E-03	1.22E-01	1.60E-03	3.00E-03					4.0E-03	**3.1E+01**
Shallow	INORG	Manganese	7439-96-5	D	D	14	14	2.10E-03	3.24E+00					9.1E+03	3.6E-04	8.6E-01	**3.8E+00**
Shallow	INORG	Manganese	7439-96-5	T	D	19	19	3.50E-03	5.41E+00					9.1E+03	5.9E-04	8.6E-01	**6.3E+00**
Shallow	INORG	Mercury	7439-97-6	D	D	14	2	1.10E-04	1.90E-04	6.90E-05	2.00E-04	5.6E-02	3.4E-03	5.6E-02	3.4E-03	2.0E-03	9.5E-02
Shallow	INORG	Mercury	7439-97-6	T	D	19	5	7.00E-05	2.60E-04	6.90E-05	2.00E-04	5.6E-02	4.6E-03	5.6E-02	4.6E-03	2.0E-03	1.3E-01
Shallow	INORG	Nickel	7440-02-0	D	A	14	11	2.30E-03	1.56E-02	2.20E-03	2.20E-03			7.4E+04	2.1E-07	1.0E-01	1.6E-01
Shallow	INORG	Nickel	7440-02-0	T	A	19	14	3.40E-03	3.07E-01	2.20E-03	2.00E-02			7.4E+04	4.1E-06	1.0E-01	**3.1E+00**
Shallow	INORG	Selenium	7782-49-2	D	D	14				4.50E-03	5.00E-03			9.7E+02		5.0E-02	
Shallow	INORG	Selenium	7782-49-2	T	D	19				3.90E-03	5.00E-03			9.7E+02		5.0E-02	
Shallow	INORG	Silver	7440-22-4	D	D	14				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	19				9.80E-04	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		14	3	2.10E-05	7.40E-03	1.80E-05	5.00E-03			1.3E+01	5.7E-04	2.0E-03	**3.7E+00**
Shallow	INORG	Thallium	7440-28-0	T		19	3	1.00E-03	6.10E-03	1.50E-05	1.00E-02			1.3E+01	4.7E-04	2.0E-03	**3.1E+00**
Shallow	INORG	Vanadium	7440-62-2	D		14	4	6.40E-04	3.80E-03	8.20E-04	1.00E-02			9.7E+02	3.9E-06	4.5E-03	8.4E-01
Shallow	INORG	Vanadium	7440-62-2	T		19	8	6.70E-04	2.39E-01	6.70E-04	1.00E-02			9.7E+02	2.5E-04	4.5E-03	**5.3E+01**
Shallow	INORG	Zinc	7440-66-6	D	D	14	2	2.25E-02	3.21E-02	1.20E-02	2.00E-02			1.1E+05	2.9E-07	2.4E+00	1.3E-02
Shallow	INORG	Zinc	7440-66-6	T	D	19	3	3.38E-02	6.31E-01	1.20E-02	2.00E-02			1.1E+05	5.7E-06	2.4E+00	2.6E-01
Shallow	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	T	B2	4	4	1.95E-09	1.97E-08					1.0E-08	**2.0E+00**	3.0E-08	6.6E-01

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.
The concentrations for the Target Dioxin congeners were used to calculate a 2,3,7,8-TCDD Equivalent, using EPA 1998 TEFs, before comparing to the Screening Levels for 2,3,7,8-TCDD.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-10
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-9 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
VOC	Acetone	67-64-1	ID	43	7	3.20E-03	3.10E-01	1.80E-03	2.90E-02		1.1E+05	2.8E-06	1.6E+05	1.9E-06	1.7E+08	1.8E-09	7.3E+04	4.2E-06	1.1E+05	2.8E-06	1.3E+05	2.4E-06	3.9E+08	7.9E-10	2.3E+04	1.3E-05
VOC	Benzene	71-43-2	A	43	4	3.70E-04	8.00E-04	3.00E-04	2.60E-02		8.4E+00	9.5E-05	4.5E+01	1.8E-05	4.7E+05	1.7E-09	4.0E+02	2.0E-06	1.6E+00	5.0E-04	1.3E+01	6.2E-05	3.8E+05	2.1E-09	1.8E+02	4.4E-06
VOC	Bromodichloromethane	75-27-4	B2	43				3.50E-04	1.50E-02		6.4E+00		3.1E+01		1.1E+05		4.9E+02		1.2E+00		9.1E+00		8.4E+04		1.1E+02	
VOC	Bromoform	75-25-2	B2	43				4.60E-04	2.40E-02		7.7E+02		3.1E+03		3.6E+06		8.7E+02		1.5E+02		9.0E+02		2.8E+06		8.2E+02	
VOC	Bromomethane	74-83-9	D	43				9.50E-04	4.00E-02		1.6E+00		1.3E+01		1.5E+05		1.0E+03		8.6E-01		1.1E+01		3.3E+05		3.2E+02	
VOC	2-Butanone	78-93-3	ID	43	4	2.30E-03	7.80E-03	1.30E-03	1.20E-01		2.7E+04	2.9E-07	3.5E+04	2.2E-07	2.9E+07	2.7E-10	2.7E+04	2.9E-07	2.7E+04	2.9E-07	2.9E+04	2.7E-07	6.7E+07	1.2E-10	2.7E+04	2.9E-07
VOC	Carbon Disulfide	75-15-0		43	4	3.10E-04	1.20E-03	2.50E-04	5.30E-02		1.4E+02	8.6E-06	1.6E+03	7.5E-07	2.1E+07	5.7E-11	2.8E+02	4.3E-06	7.6E+01	1.6E-05	1.3E+03	9.2E-07	4.7E+07	2.6E-11	2.8E+02	4.3E-06
VOC	Carbon Tetrachloride	56-23-5	B2	43				4.20E-04	1.50E-02		9.9E-01		1.2E+01		1.7E+05		3.9E+02		1.9E-01		3.5E+00		1.3E+05		9.6E+01	
VOC	Chlorobenzene	108-90-7	D	43				3.40E-04	1.20E-02		2.2E+02		9.2E+02		2.1E+06		2.6E+02		1.2E+02		7.7E+02		4.7E+06		2.6E+02	
VOC	Chloroethane	75-00-3		43				8.20E-04	5.70E-02		9.5E+02		3.6E+04		2.9E+08		9.5E+02		9.5E+02		3.0E+04		6.7E+08		9.5E+02	
VOC	Chloroform	67-66-3	B2	43				3.70E-04	1.50E-02		3.8E+01		1.5E+02		1.6E+06		1.5E+03		7.2E+00		4.5E+01		1.3E+06		1.2E+03	
VOC	Chloromethane	74-87-3	D	43				4.10E-04	2.30E-02		1.0E+01		1.2E+02		2.6E+06		1.1E+03		2.3E+00		4.0E+01		4.9E+06		1.1E+03	
VOC	Cumene	98-82-8	D	43	2	5.30E-04	3.11E-03	3.70E-04	1.20E-02		3.9E+02	8.0E-06	2.0E+03	1.6E-06	2.6E+06	1.2E-09	3.9E+02	8.0E-06	3.9E+02	8.0E-06	1.7E+03	1.8E-06	5.8E+06	5.4E-10	3.9E+02	8.0E-06
VOC	Cyclohexane	110-82-7	ID	43	3	8.30E-04	2.90E-02	4.10E-04	1.50E-02																	
VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	43				9.90E-04	1.20E-01		1.2E+00		1.5E+01		5.9E+03		1.2E+00		1.2E+00		1.3E+01		1.3E+04		1.2E+00	
VOC	Dibromochloromethane	124-48-1	C	43				4.60E-04	2.00E-02		2.1E+01		8.0E+01		1.6E+05		5.0E+02		3.9E+00		2.4E+01		1.3E+05		1.1E+02	
VOC	1,2-Dibromoethane	106-93-4	B2	43				3.20E-04	2.90E-02		3.6E+00		5.8E+00		1.8E+04		4.3E-01		6.7E-01		1.7E+00		1.4E+04		2.5E-01	
VOC	1,2-Dichlorobenzene	95-50-1	D	43				3.90E-04	2.40E-02		2.1E+02		4.6E+04		4.4E+07		2.1E+02		2.1E+02		3.9E+04		1.0E+08		2.1E+02	
VOC	1,3-Dichlorobenzene	541-73-1	D	43				3.90E-04	1.50E-02								1.7E+02								1.7E+02	
VOC	1,4-Dichlorobenzene	106-46-7	C	43				3.50E-04	2.40E-02		1.0E+02		2.6E+02		5.7E+05		1.9E+03		1.9E+01		7.7E+01		4.5E+05		4.0E+02	
VOC	Dichlorodifluoromethane	75-71-8		43				5.00E-04	5.80E-02		1.7E+03		6.3E+04		1.5E+09		1.0E+03		9.0E+02		5.3E+04		3.3E+09		1.0E+03	
VOC	1,1-Dichloroethane	75-34-3	C	43	2	4.18E-04	1.20E-03	2.70E-04	2.10E-02		4.3E+02	2.8E-06	2.5E+03	4.8E-07	1.5E+07	8.0E-11	8.9E+02	1.3E-06	2.3E+02	5.2E-06	2.1E+03	5.7E-07	3.3E+07	3.6E-11	8.9E+02	1.3E-06
VOC	1,2-Dichloroethane	107-06-2	B2	43				3.80E-04	1.70E-02		1.1E+01		2.1E+01		1.5E+05		4.2E+02		2.1E+00		6.2E+00		1.2E+05		9.1E+01	
VOC	1,1-Dichloroethene	75-35-4	C	43	1	5.55E-04	5.55E-04	4.70E-04	2.60E-02		3.3E-01	1.7E-03	3.7E+00	1.5E-04	7.8E+04	7.1E-09	5.7E+02	9.7E-07	6.2E-02	9.0E-03	1.1E+00	5.0E-04	6.2E+04	9.0E-09	2.0E+02	2.8E-06
VOC	cis-1,2-Dichloroethene	156-59-2	D	43				3.00E-04	2.40E-02		4.1E+01		2.1E+02		1.0E+06		6.4E+02		2.2E+01		1.8E+02		2.3E+06		6.4E+02	
VOC	trans-1,2-Dichloroethene	156-60-5		43				3.40E-04	2.70E-02		4.3E+01		3.3E+02		2.1E+06		1.4E+03		2.3E+01		2.8E+02		4.7E+06		1.4E+03	
VOC	1,2-Dichloropropane	78-87-5	B2	43				3.00E-04	1.40E-02		7.4E+00		3.0E+01		1.2E+05		5.5E+02		4.0E+00		2.5E+01		2.7E+05		1.4E+02	
VOC	1,3-Dichloropropene (total)	542-75-6	B2	43				3.90E-04	1.80E-02		5.4E+00		6.0E+01		5.9E+05		2.4E+02		1.0E+00		1.8E+01		7.8E+05		1.0E+01	
VOC	Ethyl Benzene	100-41-4	D	43				3.70E-04	2.10E-02		1.4E+02		2.4E+03		1.3E+07		1.4E+02		8.7E+01		7.2E+02		1.0E+07		1.4E+02	
VOC	2-Hexanone	591-78-6		43				1.00E-03	4.60E-02		1.8E+03		1.3E+03		1.2E+06		2.5E+03		9.9E+02		1.1E+03		2.7E+06		2.5E+03	
VOC	Methyl Acetate	79-20-9		43	1	2.60E+00	2.60E+00	9.20E-04	1.50E-02																	
VOC	Methyl tert-butyl ether	1634-04-4		43				2.70E-04	2.90E-02		5.9E+03		3.0E+04		8.8E+07		5.9E+03		5.9E+03		2.5E+04		2.0E+08		1.5E+03	
VOC	4-Methyl-2-pentanone	108-10-1	ID	43	1	9.50E-04	9.50E-04	8.00E-04	4.40E-02		2.7E+03	3.5E-07	5.3E+04	1.8E-08	6.0E+07	1.6E-11	2.7E+03	3.5E-07	2.7E+03	3.5E-07	4.5E+04	2.1E-08	1.4E+08	6.8E-12	2.7E+03	3.5E-07
VOC	Methylcyclohexane	108-87-2		43	4	5.50E-04	5.60E-02	3.90E-04	1.50E-02																	
VOC	Methylene Chloride	75-09-2	B2	43	9	1.70E-03	1.30E-01	1.10E-03	7.30E-03		2.4E+02	5.4E-04	7.0E+02	1.9E-04	8.3E+06	1.6E-08	2.3E+03	5.7E-05	4.5E+01	2.9E-03	2.1E+02	6.2E-04	6.6E+06	2.0E-08	1.3E+03	1.0E-04
VOC	Styrene	100-42-5		43				2.90E-04	2.60E-02		5.2E+02		3.3E+03		6.9E+06		5.2E+02		2.5E+02		9.7E+02		5.5E+06		4.0E+02	
VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	43				3.70E-04	1.70E-02		2.3E+01		3.4E+01		6.8E+04		2.4E+02		4.3E+00		1.0E+01		5.4E+04		5.3E+01	
VOC	Tetrachloroethene	127-18-4	C-B2	43				4.60E-04	2.30E-02		6.0E+01		6.0E+02		6.8E+06		8.8E+01		1.1E+01		1.8E+02		5.4E+06		8.8E+01	
VOC	Toluene	108-88-3	D	43	9	4.50E-04	3.70E-02	3.20E-04	7.30E-03		2.5E+02	1.5E-04	3.3E+03	1.1E-05	1.2E+07	3.1E-09	2.5E+02	1.5E-04	2.5E+02	1.5E-04	2.8E+03	1.3E-05	2.7E+07	1.4E-09	2.5E+02	1.5E-04
VOC	1,2,4-Trichlorobenzene	120-82-1	D	43				3.60E-04	1.70E-02		1.1E+03		3.4E+04		1.1E+07		1.1E+03		1.1E+03		2.8E+04		2.5E+07		9.9E+02	
VOC	1,1,1-Trichloroethane	71-55-6	D	43	2	6.20E-04	1.50E-03	3.70E-04	1.50E-02		4.6E+02	3.3E-06	4.5E+03	3.3E-07	2.9E+07	5.2E-11	4.6E+02	3.3E-06	2.5E+02	6.0E-06	3.8E+03	3.9E-07	6.7E+07	2.2E-11	4.6E+02	3.3E-06
VOC	1,1,2-Trichloroethane	79-00-5	C	43				3.20E-04	2.40E-02		2.4E+01		5.7E+01		2.5E+05		8.4E+02		4.6E+00		1.7E+01		1.9E+05		1.8E+02	
VOC	Trichloroethene	79-01-6	C-B2	43	1	4.08E-03	4.08E-03	4.70E-04	2.60E-02		3.7E+01	1.1E-04	2.6E+02	1.6E-05	2.3E+06	1.8E-09	5.0E+02	8.2E-06	7.1E+00	5.7E-04	7.8E+01	5.2E-05	1.8E+06	2.3E-09	5.0E+02	8.2E-06
VOC	Trichlorofluoromethane	75-69-4		43	1	8.40E-04	8.40E-04	3.40E-04	2.90E-02		5.6E+02	1.5E-06	1.1E+05	7.6E-09	1.7E+09	4.9E-13	5.6E+02	1.5E-06	5.6E+02	1.5E-06	9.2E+04	9.1E-09	3.8E+09	2.2E-13	5.6E+02	1.5E-06
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		43	2	6.90E-03	8.20E-03	6.80E-04	5.70E-02		5.5E+02	1.5E-05	2.1E+05	3.9E-08	2.3E+09	3.6E-12	5.5E+02	1.5E-05	5.5E+02	1.5E-05	1.8E+05	4.6E-08	5.1E+09	1.6E-12	5.5E+02	1.5E-05
VOC	Vinyl Chloride	75-01-4	A	43				4.10E-04	1.70E-02		2.8E+00		2.9E+01		8.9E+05		3.4E+01		2.7E-01		4.2E+00		3.5E+05		3.8E+00	
VOC	Xylenes (total)	1330-20-7	ID	43	1	6.30E-02	6.30E-02	1.10E-03	1.50E-02		1.5E+02	4.2E-04	5.4E+04	1.2E-06	1.3E+08	4.8E-10	1.5E+02	4.2E-04	1.5E+02	4.2E-04	4.6E+04	1.4E-06	2.9E+08	2.2E-10	1.5E+02	4.2E-04
SVOC	Acenaphthene	83-32-9		43	7	3.10E-02	2.20E+00	1.90E-02	1.10E+00		3.5E+05	6.3E-06	9.7E+04	2.3E-05	6.2E+06	3.5E-07	1.3E+05	1.7E-05	1.9E+05	1.2E-05	8.1E+04	2.7E-05	1.4E+07	1.6E-07	4.1E+04	5.4E-05
SVOC	Acenaphthylene	208-96-8	D	42				1.90E-02	4.10E+00		3.0E+03		2.7E+03		1.0E+06		5.2E+03		1.6E+03		2.2E+03		2.3E+06		1.6E+03	
SVOC	Acetophenone	98-86-2	D	43				1.80E-02	4.10E+00		1.1E+03		5.2E+04		1.4E+07		1.1E+03		1.1E+03		4.4E+04		3.3E+07		1.1E+03	
SVOC	Anthracene	120-12-7	D	43	13	2.10E-02	3.40E+00	1.80E-02	1.00E+00		1.0E+06	3.4E-06	1.6E+06	2.1E-06	2.9E+07	1.2E-07	7.3E+05	4.7E-06	1.0E+06	3.4E-06	1.4E+06	2.4E-06	6.7E+07	5.1E-08	2.3E+05	1.5E-05
SVOC	Atrazine	1912-24-9		43				1.80E-02	4.10E+00								3.3E+02								7.1E+01	
SVOC	Benzaldehyde	100-52-7		43				2.20E-02	4.10E+00																	
SVOC	Benzo(a)anthracene	56-55-3	B2	43	21	1.80E-02	1.20E+01	1.70E-02	1.20E+00								8.0E+01	1.5E-01							2.0E+01	6.0E-01
SVOC	Benzo(a)pyrene	50-32-8	B2	43	19	2.70E-02	8.80E+00	1.80E-02	1.30E+00						1.9E+03	4.6E-03	8.0E+00	**1.1E+00**					1.5E+03	5.9E-03	2.0E+00	**4.4E+00**
SVOC	Benzo(b)fluoranthene	205-99-2	B2	43	22	4.00E-02	1.00E+01	2.10E-02	1.20E+00								8.0E+01	1.3E-01							2.0E+01	5.0E-01
SVOC	Benzo(g,h,i)perylene	191-24-2	D	43	19	2.40E-02	4.80E+00	2.30E-02	1.20E+00						3.5E+05	1.4E-05	7.0E+03	6.9E-04					8.0E+05	6.0E-06	2.5E+03	1.9E-03
SVOC	Benzo(k)fluoranthene	207-08-9	B2	43	16	2.00E-02	4.50E+00	1.80E-02	1.10E+00								8.0E+02	5.6E-03							2.0E+02	2.3E-02
SVOC	Biphenyl	92-52-4	D	43	5	6.80E-02	3.00E-01	2.20E-02	4.10E+00																	
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	43				1.70E-02	4.10E+00																	
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	43				1.80E-02	4.10E+00		4.4E+01		1.3E+01		1.2E+04		5.8E+01		8.3E+00		3.8E+00		9.4E+03		1.3E+01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	43	13	9.20E-02	5.30E+01	2.30E-02	4.10E+00						8.9E+05	6.0E-05	1.0E+04	5.3E-03					7.0E+05	7.6E-05	2.8E+03	1.9E-02
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	43				1.90E-02	4.10E+00																	
SVOC	Butylbenzylphthalate	85-68-7	C	43	8	3.60E-02	2.80E+01	1.70E-02	4.10E+00						2.1E+07	1.3E-06	3.1E+02	9.0E-02					4.7E+07	6.0E-07	3.1E+02	9.0E-02
SVOC	Caprolactam	105-60-2		43				2.20E-02	4.10E+00						2.9E+05		3.1E+05						6.7E+05		5.3E+04	
SVOC	Carbazole	86-74-8	B2	43	7	5.40E-02	1.40E+00	2.30E-02	1.10E+00								2.4E+03	5.8E-04							5.3E+02	2.6E-03
SVOC	4-Chloro-3-methylphenol	59-50-7		43				1.80E-02	4.10E+00								1.5E+04								4.5E+03	
SVOC	4-Chloroaniline	106-47-8		43				6.30E-03	1.60E+01																	
SVOC	2-Chloronaphthalene	91-58-7		43				1.90E-02	4.10E+00								1.8E+05								5.6E+04	
SVOC	2-Chlorophenol	95-57-8		43				1.80E-02	4.10E+00								4.5E+03								1.4E+03	
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		42				1.90E-02	4.10E+00																	
SVOC	Chrysene	218-01-9	B2	43	21	3.10E-02	1.40E+01	1.70E-02	9.80E-01								8.0E+03	1.8E-03							2.0E+03	7.0E-03
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	43	9	6.40E-02	1.40E+00	2.20E-02	1.10E+00								8.0E+00	1.8E-01							2.0E+00	7.0E-01
SVOC	Dibenzofuran	132-64-9	D	43	13	2.00E-02	1.00E+00	1.90E-02	1.10E+00																	
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	43				9.50E-03	2.50E+01						8.2E+03		3.0E+01						6.5E+03		6.6E+00	
SVOC	2,4-Dichlorophenol	120-83-2		43				1.60E-02	4.10E+00								2.3E+06						5.1E+06		6.6E+02	
SVOC	Diethylphthalate	84-66-2	D	43				2.10E-02	4.10E+00								1.5E+06						3.3E+06		7.4E+02	
SVOC	2,4-Dimethylphenol	105-67-9		43	1	6.20E-02	6.20E-02	3.30E-02	4.10E+00						2.1E+06	3.0E-08	3.6E+04	1.7E-06					4.7E+06	1.3E-08	1.1E+04	5.6E-06

TABLE 4-10
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-9 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	Dimethylphthalate	131-11-3	D	43				1.90E-02	4.10E+00						1.5E+06		7.9E+02							3.3E+06		7.9E+02	
SVOC	Di-n-butylphthalate	84-74-2	D	43				2.40E-02	4.10E+00						1.5E+06		7.6E+02							3.3E+06		7.6E+02	
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		42				7.50E-02	2.10E+01								2.6E+02									7.9E+01	
SVOC	2,4-Dinitrophenol	51-28-5		42				1.00E-01	2.10E+01																		
SVOC	2,4-Dinitrotoluene	121-14-2	B2	43				1.80E-02	4.10E+00						2.0E+04		2.2E+02							1.6E+04		4.8E+01	
SVOC	2,6-Dinitrotoluene	606-20-2	B2	42				1.80E-02	4.10E+00																		
SVOC	Di-n-octylphthalate	117-84-0		43	1	2.90E+00	2.90E+00	1.80E-02	4.10E+00								2.0E+04	1.5E-04								6.9E+03	4.2E-04
SVOC	Fluoranthene	206-44-0	D	43	22	2.80E-02	2.80E+01	2.40E-02	1.20E+00		1.0E+06	2.8E-05	8.9E+05	3.1E-05	4.1E+06	6.8E-06	1.3E+05	2.2E-04	1.0E+06	2.8E-05	7.4E+05	3.8E-05	9.3E+06	3.0E-06	4.6E+04	6.1E-04
SVOC	Fluorene	86-73-7	D	42	6	7.30E-02	1.50E+00	2.10E-02	1.00E+00		1.0E+06	1.5E-06	1.5E+05	1.0E-05	4.1E+06	3.7E-07	8.7E+04	1.7E-05	5.8E+05	2.6E-06	1.3E+05	1.2E-05	9.3E+06	1.6E-07	2.7E+04	5.6E-05
SVOC	Hexachlorobenzene	118-74-1	B2	43				1.80E-02	4.10E+00		2.2E+02		5.6E+01		8.5E+03		3.7E+01		4.1E+01		1.7E+01		6.8E+03		8.9E+00	
SVOC	Hexachlorobutadiene	87-68-3	C	43				1.70E-02	4.10E+00		3.5E+02		4.6E+02		1.8E+05		3.5E+02		1.3E+02		1.3E+02		1.4E+05		1.0E+02	
SVOC	Hexachlorocyclopentadiene	77-47-4	E	43				1.50E-02	4.10E+00		5.6E+01		6.0E+01		5.9E+03		7.2E+02		3.0E+01		5.0E+01		1.3E+04		7.2E+02	
SVOC	Hexachloroethane	67-72-1	C	43				1.80E-02	1.20E+00		7.9E+01		6.6E+02		1.0E+05		7.3E+02		4.0E+01		5.5E+02		2.3E+05		2.3E+02	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	43	15	2.40E-02	4.50E+00	2.30E-02	1.50E+00								8.0E+01	5.6E-02							2.0E+01	2.3E-01
SVOC	Isophorone	78-59-1	C	43				1.90E-02	4.10E+00						8.2E+06		2.4E+03						1.2E+07		2.4E+03	
SVOC	2-Methylnaphthalene	91-57-6	ID	42	17	2.70E-02	8.70E-01	1.80E-02	1.00E+00								2.6E+04	3.3E-05							8.1E+03	1.1E-04
SVOC	Methylphenol (total)	1319-77-3		43	1	1.11E-01	1.11E-01	1.50E-02	4.10E+00						2.9E+06	3.8E-08	3.6E+04	3.1E-06					6.7E+06	1.7E-08	1.1E+04	1.0E-05
SVOC	Naphthalene	91-20-3	C	42	15	2.70E-02	7.90E-01	1.90E-02	1.00E+00		4.7E+02	1.7E-03	3.5E+02	2.3E-03	8.8E+04	9.0E-06	5.2E+04	1.5E-05	2.5E+02	3.2E-03	3.0E+02	2.6E-03	2.0E+05	4.0E-06	1.6E+04	4.9E-05
SVOC	2-Nitroaniline	88-74-4		43				1.90E-02	2.10E+01																		
SVOC	3-Nitroaniline	99-09-2	C	43				1.20E-02	2.10E+01																		
SVOC	4-Nitroaniline	100-01-6	C	43				1.80E-02	2.10E+01																		
SVOC	Nitrobenzene	98-95-3	D	43				1.80E-02	4.10E+00		1.7E+02		6.4E+01		2.1E+04		3.4E+02		9.1E+01		5.4E+01		4.7E+04		1.0E+02	
SVOC	2-Nitrophenol	88-75-5		43				1.60E-02	4.10E+00								2.0E+03								6.3E+02	
SVOC	4-Nitrophenol	100-02-7		43				1.10E-01	2.10E+01																		
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	43				2.10E-02	4.10E+00								7.8E+03								1.7E+03	
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	43				1.90E-02	4.10E+00						2.0E+03		5.4E+00						1.6E+03		1.2E+00	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	43				1.90E-02	4.10E+00																	
SVOC	Pentachlorophenol	87-86-5	B2	34				8.90E-02	4.20E+01						1.3E+05		3.2E+02						1.0E+05		9.0E+01	
SVOC	Phenanthrene	85-01-8	D	43	22	3.50E-02	1.60E+01	2.10E-02	1.10E+00		5.1E+03	3.1E-03	1.9E+02	8.4E-02	2.9E+03	5.5E-03	5.2E+03	3.1E-03	2.8E+03	5.7E-03	1.6E+02	1.0E-01	6.7E+03	2.4E-03	1.6E+03	1.0E-02
SVOC	Phenol	108-95-2	ID	43	4	6.10E-02	1.13E+00	1.80E-02	4.10E+00						1.8E+07	6.3E-08	1.2E+04	9.4E-05					4.0E+07	2.8E-08	1.2E+04	9.4E-05
SVOC	Pyrene	129-00-0	D	43	24	2.00E-02	2.80E+01	1.70E-02	1.10E+00		1.0E+06	2.8E-05	7.8E+05	3.6E-05	2.9E+06	9.7E-06	8.4E+04	3.3E-04	1.0E+06	2.8E-05	6.5E+05	4.3E-05	6.7E+06	4.2E-06	2.9E+04	9.7E-04
SVOC	2,4,5-Trichlorophenol	95-95-4		43				2.20E-02	4.10E+00						1.0E+07		7.3E+04						2.3E+07		2.3E+04	
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	43				1.70E-02	4.10E+00						1.3E+06		3.3E+03						1.0E+06		7.1E+02	
P/PCB	PCBs (total)	1336-36-3	B2	387	255	1.08E-02	3.95E+02	3.00E-03	4.10E-02		1.6E+04	2.5E-02	8.1E+02	4.9E-01	6.5E+03	6.1E-02	1.6E+01	**2.5E+01**	3.0E+03	1.3E-01	2.4E+02	**1.6E+00**	5.2E+03	7.6E-02	4.0E+00	**9.9E+01**
INORG	Antimony	7440-36-0		43	32	1.27E-01	6.26E+00	5.12E-01	2.54E+00						5.9E+03	1.1E-03	6.7E+02	9.3E-03					1.3E+04	4.8E-04	1.8E+02	3.5E-02
INORG	Arsenic	7440-38-2	A	44	44	1.01E+00	1.92E+01			1.3E+01					9.1E+02	6.6E-03	3.7E+01	1.6E-01					7.2E+02	8.3E-03	7.6E+00	7.9E-01
INORG	Barium	7440-39-3	D	43	43	3.74E+00	3.78E+02			1.1E+02					1.5E+05	1.8E-03	1.3E+05	2.1E-03					3.3E+05	8.1E-04	3.7E+04	7.2E-03
INORG	Beryllium	7440-41-7	B1	43	23	5.15E-02	5.90E-01	3.49E-02	1.24E-01	1.5E+00					5.9E+02		1.6E+03						1.3E+03		4.1E+02	
INORG	Cadmium	7440-43-9	B1	43	32	2.44E-02	5.86E+00	8.40E-03	4.86E-02	1.2E+00					2.2E+03	2.1E-03	2.1E+03	2.2E-03					1.7E+03	2.7E-03	5.5E+02	8.5E-03
INORG	Chromium (total)	7440-47-3		44	44	2.89E+00	5.23E+02			4.9E+01					2.4E+02	**2.0E+00**	9.2E+03	5.1E-02					2.6E+02	**1.8E+00**	2.5E+03	1.9E-01
INORG	Chromium III	16065-83-1	D	1	1	1.94E+02	1.94E+02								1.5E+05	1.3E-03	1.0E+06	1.9E-04					3.3E+05	5.9E-04	7.9E+05	2.5E-04
INORG	Chromium VI	18540-29-9	A	1	1	6.38E-01	6.38E-01								2.4E+02	2.7E-03	9.2E+03	6.9E-05					2.6E+02	2.5E-03	2.5E+03	2.6E-04
INORG	Cobalt	7440-48-4	B1	43	43	7.76E-01	1.41E+01			1.7E+01					5.9E+03		9.0E+03						1.3E+04		2.6E+03	
INORG	Copper	7440-50-8	D	43	43	2.31E+00	4.60E+02			3.2E+01					5.9E+04	7.3E-03	7.3E+04	5.9E-03					1.3E+05	3.3E-03	2.0E+04	2.1E-02
INORG	Cyanide (total)	57-12-5	D	4	2	2.60E-01	6.12E-01	1.80E-01	1.87E-01						2.5E+02	2.4E-03	2.5E+02	2.4E-03					2.5E+02	2.4E-03	1.2E+01	5.1E-02
INORG	Lead	7439-92-1	B2	43	43	3.16E+00	4.29E+02			4.9E+01					4.4E+04	8.6E-03	9.0E+02	4.2E-01					1.0E+05	3.8E-03	4.0E+02	9.5E-01
INORG	Manganese	7439-96-5	D	46	46	1.09E+02	4.82E+03			5.1E+02					1.5E+03	**2.9E+00**	9.0E+04	4.8E-02					3.3E+03	**1.3E+00**	2.5E+04	1.7E-01
INORG	Mercury	7439-97-6	D	43	30	1.07E-02	3.28E-01	8.80E-03	1.88E-02	1.3E-01	8.9E+01	2.2E-03	6.2E+01	3.2E-03	8.8E+03	2.3E-05	5.8E+02	3.4E-04	4.8E+01	4.1E-03	5.2E+01	3.8E-03	2.0E+04	9.9E-06	1.6E+02	1.2E-03
INORG	Nickel	7440-02-0	A	43	43	2.08E+00	1.54E+02			3.0E+01					1.6E+04	7.7E-03	1.5E+05	8.3E-04					1.3E+04	9.5E-03	4.0E+04	3.1E-03
INORG	Selenium	7782-49-2	D	43	4	2.56E-01	1.71E+00	2.21E-01	6.18E+00	4.1E-01					5.9E+04	2.2E-05	9.6E+03	1.4E-04					1.3E+05	1.0E-05	2.6E+03	5.0E-04
INORG	Silver	7440-22-4	D	43	9	2.29E-01	6.53E-01	4.24E-02	6.14E-01						2.9E+03	2.3E-04	9.0E+03	7.3E-05					6.7E+03	9.7E-05	2.5E+03	2.6E-04
INORG	Thallium	7440-28-0		43	15	3.88E-01	3.32E+00	2.31E-01	1.24E+01								1.3E+02	2.6E-02							3.5E+01	9.5E-02
INORG	Vanadium	7440-62-2		43	43	4.48E+00	2.32E+01			3.3E+01							5.5E+03								7.5E+02	
INORG	Zinc	7440-66-6	D	43	43	5.19E+00	2.34E+03			1.9E+02							6.3E+05	3.4E-03							1.7E+05	1.3E-02

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-11a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-09 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	6	2	1.50E-02	3.50E-02	5.10E-04	6.60E-04	1.0E+06	3.5E-08	3.1E+04	1.1E-06	7.3E-01	4.8E-02
Shallow	VOC	Benzene	71-43-2	T	A	6	1	2.85E-04	2.85E-04	1.60E-04	1.00E-03	3.5E+01	8.1E-06	1.1E+01	2.6E-05	5.0E-03	5.7E-02
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	6				1.70E-04	1.00E-03	3.7E+01		1.4E+01		1.0E-01	
Shallow	VOC	Bromoform	75-25-2	T	B2	6				1.80E-04	1.00E-03	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	6				1.60E-04	1.00E-03	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	6	1	2.05E-03	2.05E-03	3.60E-04	1.00E-02	2.4E+05	8.5E-09	2.4E+05	8.5E-09	1.3E+01	1.6E-04
Shallow	VOC	Carbon Disulfide	75-15-0	T		6	1	1.40E-03	1.40E-03	2.00E-04	1.00E-03	5.5E+02	2.5E-06	1.2E+03	1.2E-06	8.0E-01	1.8E-03
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	6				1.20E-04	1.00E-03	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	6				1.40E-04	1.00E-03	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		6				2.20E-04	1.00E-03	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	6				1.40E-04	1.00E-03	1.8E+02		1.5E+02		1.0E-01	
Shallow	VOC	Chloromethane	74-87-3	T	D	6				1.30E-04	1.00E-03	4.5E+01		4.9E+02		2.6E-01	
Shallow	VOC	Cumene	98-82-8	T	D	6	1	2.55E-04	2.55E-04	1.20E-04	1.00E-03	5.6E+01	4.6E-06	5.6E+01	4.6E-06	8.0E-01	3.2E-04
Shallow	VOC	Cyclohexane	110-82-7	T	ID	6	1	7.90E-04	7.90E-04	1.30E-04	1.00E-03						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	6				5.30E-04	2.00E-03	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	6				2.50E-04	1.00E-03	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	6				2.20E-04	1.00E-03	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	6				1.10E-04	1.00E-03	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	6				1.50E-04	1.00E-03			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	6				1.60E-04	1.00E-03	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		6				2.30E-04	2.00E-03	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	6				1.60E-04	1.00E-03	2.3E+03		2.4E+03		8.8E-01	
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	6				2.10E-04	1.00E-03	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	6				2.20E-04	1.00E-03	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	6				2.20E-04	5.00E-04	2.1E+02		2.0E+02		7.0E-02	
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		6				1.50E-04	5.00E-04	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	6				1.70E-04	1.00E-03	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	6				1.50E-04	1.00E-03	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	6				1.20E-04	1.00E-03	1.7E+02		1.7E+02		7.0E-01	
Shallow	VOC	2-Hexanone	591-78-6	T		6				3.10E-04	1.00E-02	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		6				4.10E-04	1.00E-02						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		6				1.30E-04	5.00E-03	4.7E+04		6.1E+02		2.4E-01	
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	4	1	2.55E-03	2.55E-03	2.30E-04	1.00E-02	2.0E+04	1.3E-07	1.3E+04	2.0E-07	1.8E+00	1.4E-03
Shallow	VOC	Methylcyclohexane	108-87-2	T		6	1	8.55E-04	8.55E-04	1.50E-04	1.00E-03						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	6				2.80E-04	1.00E-03	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	Styrene	100-42-5	T		6				1.50E-04	1.00E-03	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	6				2.30E-04	1.00E-03	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	6				1.20E-04	1.00E-03	1.7E+02		1.2E+01		5.0E-03	
Shallow	VOC	Toluene	108-88-3	T	D	6	1	2.75E-04	2.75E-04	1.70E-04	1.00E-03	5.3E+02	5.2E-07	5.3E+02	5.2E-07	1.0E+00	2.8E-04
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	6				1.50E-04	1.00E-03	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	6	1	2.50E-04	2.50E-04	1.80E-04	1.00E-03	1.3E+03	1.9E-07	1.3E+03	1.9E-07	2.0E-01	1.3E-03
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	6				2.10E-04	1.00E-03	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	6				1.40E-04	1.00E-03	9.7E+01		2.2E+01		5.0E-03	
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		6	2	9.50E-04	2.20E-03	2.50E-04	2.50E-04	1.1E+03	2.0E-06	1.1E+03	2.0E-06	2.6E+00	8.5E-04
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		6				2.30E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	6				1.50E-04	1.00E-03	1.3E+01		1.0E+00		2.0E-03	
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	6	1	1.25E-03	1.25E-03	3.30E-04	1.00E-03	1.9E+02	6.6E-06	1.9E+02	6.6E-06	1.0E+01	1.3E-04
Shallow	SVOC	Acenaphthene	83-32-9	T		6				6.90E-04	5.00E-03	4.2E+00		4.2E+00		1.3E+00	
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	6				4.10E-04	5.00E-03	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	6				6.50E-04	1.00E-02	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	6				5.90E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		6				3.50E-04	5.00E-03			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		6				5.90E-04	1.00E-02						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	6				6.80E-04	5.00E-03			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	6				5.30E-04	5.00E-03			2.0E-03		5.0E-03	

TABLE 4-11a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-09 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	6				7.00E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	6				7.00E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	6				6.40E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	6				6.50E-04	1.00E-02						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	6				8.70E-04	5.00E-03						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	6				9.70E-04	8.50E-03	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	6	1	5.80E-04	5.80E-04	2.00E-04	5.00E-03			3.2E-01	1.8E-03	6.0E-03	9.7E-02
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	6				7.80E-04	5.00E-03						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	6				2.30E-04	5.00E-03			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		6				4.50E-04	1.00E-02			3.9E+05		5.8E+00	
Shallow	SVOC	Carbazole	86-74-8	T	B2	6				6.10E-04	1.00E-02			7.4E+00		8.5E-02	
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		6				5.50E-04	5.00E-03			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		5				9.00E-04	1.00E-02						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		6				7.30E-04	5.00E-03			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		6				1.00E-03	6.50E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		6				6.60E-04	5.00E-03						
Shallow	SVOC	Chrysene	218-01-9	T	B2	6				6.70E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	6				6.80E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	6				6.60E-04	5.00E-03						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	5				4.70E-04	2.00E-02			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		6				7.00E-04	1.00E-02			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	6				2.50E-04	5.00E-03			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		6	1	1.04E-02	1.04E-02	8.50E-04	5.00E-03			5.2E+02	2.0E-05	3.7E-01	2.8E-02
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	6				2.00E-04	5.00E-03			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	6				3.70E-04	5.00E-03			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		6				1.30E-03	2.00E-02			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		6				3.00E-03	2.00E-02						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	6				4.60E-04	5.00E-03			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	6				5.70E-04	5.00E-03						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		6				6.90E-04	5.00E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	6				7.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	6				7.50E-04	5.00E-03	2.0E+00		2.0E+00		8.8E-01	
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	6				7.40E-04	5.00E-03	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	6				7.30E-04	7.50E-03	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	6				1.10E-03	5.50E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	6				7.40E-04	8.00E-03	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	6				6.30E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	6				6.30E-04	5.00E-03			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	6				6.40E-04	5.00E-03			2.5E+01		2.6E-01	
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		6				9.00E-04	5.00E-03			8.1E+02		3.7E-01	
Shallow	SVOC	Naphthalene	91-20-3	T	C	6				7.50E-04	6.50E-03	3.1E+01		3.1E+01		5.2E-01	
Shallow	SVOC	2-Nitroaniline	88-74-4	T		6				4.90E-04	2.00E-02						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	5				4.80E-04	2.00E-02						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	6				5.90E-04	2.00E-02						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	6				8.10E-04	6.50E-03	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		6				9.50E-04	5.00E-03			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		6				1.90E-03	2.00E-02						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	6				6.40E-04	5.00E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	6				6.70E-04	5.50E-03			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	6				7.80E-04	9.00E-03						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	6				2.40E-03	1.30E-02			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	6				6.80E-04	5.00E-03	1.0E+00		1.0E+00		5.2E-02	
Shallow	SVOC	Phenol	108-95-2	T	ID	6				1.30E-03	6.50E-03			2.9E+04		4.4E+00	
Shallow	SVOC	Pyrene	129-00-0	T	D	6				6.30E-04	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		6				8.60E-04	5.00E-03			1.7E+02		7.3E-01	

TABLE 4-11a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-09 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	6				7.10E-04	5.00E-03			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	D	B2	1				4.00E-04	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	6				8.20E-05	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	INORG	Antimony	7440-36-0	D		2				2.20E-03	2.50E-02			6.8E+01		6.0E-03	
Shallow	INORG	Antimony	7440-36-0	T		6				2.20E-03	2.50E-02			6.8E+01		6.0E-03	
Shallow	INORG	Arsenic	7440-38-2	D	A	2				3.90E-03	1.00E-02			4.3E+00		5.0E-02	
Shallow	INORG	Arsenic	7440-38-2	T	A	6	3	3.70E-03	1.54E-02	2.90E-03	1.00E-02			4.3E+00	3.6E-03	5.0E-02	3.1E-01
Shallow	INORG	Barium	7440-39-3	D	D	2	2	5.40E-02	1.47E-01					1.4E+04	1.1E-05	2.0E+00	7.4E-02
Shallow	INORG	Barium	7440-39-3	T	D	6	6	1.73E-02	4.20E-01					1.4E+04	3.0E-05	2.0E+00	2.1E-01
Shallow	INORG	Beryllium	7440-41-7	D	B1	2				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Beryllium	7440-41-7	T	B1	6				4.70E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	D	B1	2				2.80E-04	5.00E-03			1.9E+02		5.0E-03	
Shallow	INORG	Cadmium	7440-43-9	T	B1	6				2.80E-04	5.00E-03			1.9E+02		5.0E-03	
Shallow	INORG	Chromium (total)	7440-47-3	D		2	1	1.04E-02	1.04E-02	1.00E-02	1.00E-02			4.6E+02	2.3E-05	1.0E-01	1.0E-01
Shallow	INORG	Chromium (total)	7440-47-3	T		6	2	1.12E-02	5.68E-02	1.00E-03	1.00E-02			4.6E+02	1.2E-04	1.0E-01	5.7E-01
Shallow	INORG	Cobalt	7440-48-4	D	B1	2	1	1.40E-03	1.40E-03	1.30E-03	1.30E-03			2.4E+03	5.8E-07	4.0E-02	3.5E-02
Shallow	INORG	Cobalt	7440-48-4	T	B1	6	3	2.35E-03	2.90E-03	1.10E-03	1.30E-03			2.4E+03	1.2E-06	4.0E-02	7.3E-02
Shallow	INORG	Copper	7440-50-8	D	D	2				4.20E-03	5.00E-03			7.4E+03		1.4E+00	
Shallow	INORG	Copper	7440-50-8	T	D	6	1	2.80E-03	2.80E-03	1.80E-03	5.00E-03			7.4E+03	3.8E-07	1.4E+00	2.0E-03
Shallow	INORG	Lead	7439-92-1	D	B2	2				2.50E-03	3.00E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	6	1	3.91E-02	3.91E-02	2.30E-03	3.00E-03					4.0E-03	**9.8E+00**
Shallow	INORG	Manganese	7439-96-5	D	D	2	2	1.98E-02	2.42E-01					9.1E+03	2.7E-05	8.6E-01	2.8E-01
Shallow	INORG	Manganese	7439-96-5	T	D	6	6	1.65E-02	6.70E-01					9.1E+03	7.4E-05	8.6E-01	7.8E-01
Shallow	INORG	Mercury	7439-97-6	D	D	2				6.90E-05	2.00E-04	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Mercury	7439-97-6	T	D	6	1	8.60E-05	8.60E-05	6.70E-05	2.00E-04	5.6E-02	1.5E-03	5.6E-02	1.5E-03	2.0E-03	4.3E-02
Shallow	INORG	Nickel	7440-02-0	D	A	2	1	2.20E-03	2.20E-03	2.20E-03	2.20E-03			7.4E+04	3.0E-08	1.0E-01	2.2E-02
Shallow	INORG	Nickel	7440-02-0	T	A	6	3	3.80E-03	3.85E-02	2.10E-03	2.20E-03			7.4E+04	5.2E-07	1.0E-01	3.9E-01
Shallow	INORG	Selenium	7782-49-2	D	D	2				4.50E-03	5.00E-03			9.7E+02		5.0E-02	
Shallow	INORG	Selenium	7782-49-2	T	D	6				3.90E-03	5.00E-03			9.7E+02		5.0E-02	
Shallow	INORG	Silver	7440-22-4	D	D	2				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	6				1.10E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		2	2	3.80E-05	5.30E-03					1.3E+01	4.1E-04	2.0E-03	**2.7E+00**
Shallow	INORG	Thallium	7440-28-0	T		6	1	1.24E-02	1.24E-02	1.50E-05	1.80E-05			1.3E+01	9.5E-04	2.0E-03	**6.2E+00**
Shallow	INORG	Vanadium	7440-62-2	D		2				8.20E-04	1.00E-02			9.7E+02		4.5E-03	
Shallow	INORG	Vanadium	7440-62-2	T		6	2	1.90E-03	4.50E-03	8.20E-04	1.00E-02			9.7E+02	4.6E-06	4.5E-03	1.0E+00
Shallow	INORG	Zinc	7440-66-6	D	D	2				1.20E-02	2.00E-02			1.1E+05		2.4E+00	
Shallow	INORG	Zinc	7440-66-6	T	D	6	1	5.44E-02	5.44E-02	1.20E-02	2.00E-02			1.1E+05	4.9E-07	2.4E+00	2.3E-02

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-11b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-09 (DEEP AND INTERMEDIATE GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detect to Residential Drinking Water Criteria
Deep	VOC	Acetone	67-64-1	T	ID	6	2	6.60E-04	1.60E-03	1.10E-03	1.10E-03	2.1E+00	7.6E-04	7.3E-01	2.2E-03
Deep	VOC	Benzene	71-43-2	T	A	6				1.60E-04	3.70E-04	5.0E-03		5.0E-03	
Deep	VOC	Bromodichloromethane	75-27-4	T	B2	6				1.70E-04	3.20E-04	1.0E-01		1.0E-01	
Deep	VOC	Bromoform	75-25-2	T	B2	6				1.80E-04	3.70E-04	1.0E-01		1.0E-01	
Deep	VOC	Bromomethane	74-83-9	T	D	6				2.00E-04	3.00E-04	2.9E-02		1.0E-02	
Deep	VOC	2-Butanone	78-93-3	T	ID	6				4.10E-04	5.90E-04	3.8E+01		1.3E+01	
Deep	VOC	Carbon Disulfide	75-15-0	T		6	3	2.40E-04	9.30E-04	2.00E-04	2.40E-04	2.3E+00	4.0E-04	8.0E-01	1.2E-03
Deep	VOC	Carbon Tetrachloride	56-23-5	T	B2	6				1.20E-04	3.70E-04	5.0E-03		5.0E-03	
Deep	VOC	Chlorobenzene	108-90-7	T	D	6				1.40E-04	3.80E-04	1.0E-01		1.0E-01	
Deep	VOC	Chloroethane	75-00-3	T		6				2.60E-04	2.90E-04	1.7E+00		4.3E-01	
Deep	VOC	Chloroform	67-66-3	T	B2	6	1	2.80E-04	2.80E-04	1.40E-04	3.50E-04	1.0E-01	2.8E-03	1.0E-01	2.8E-03
Deep	VOC	Chloromethane	74-87-3	T	D	6				1.30E-04	4.90E-04	1.1E+00		2.6E-01	
Deep	VOC	Cumene	98-82-8	T	D	6				1.20E-04	3.90E-04	2.3E+00		8.0E-01	
Deep	VOC	Cyclohexane	110-82-7	T	ID	6				1.30E-04	3.30E-04				
Deep	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	6				6.20E-04	8.20E-04	2.0E-04		2.0E-04	
Deep	VOC	Dibromochloromethane	124-48-1	T	C	6				2.60E-04	3.70E-04	1.0E-01		1.0E-01	
Deep	VOC	1,2-Dibromoethane	106-93-4	T	B2	6				2.20E-04	3.40E-04	1.0E-03		1.0E-03	
Deep	VOC	1,2-Dichlorobenzene	95-50-1	T	D	6				1.10E-04	3.80E-04	6.0E-01		6.0E-01	
Deep	VOC	1,3-Dichlorobenzene	541-73-1	T	D	6				1.50E-04	3.80E-04	1.9E-02		6.6E-03	
Deep	VOC	1,4-Dichlorobenzene	106-46-7	T	C	6				1.70E-04	3.80E-04	7.5E-02		7.5E-02	
Deep	VOC	Dichlorodifluoromethane	75-71-8	T		6				2.60E-04	4.90E-04	4.8E+00		1.7E+00	
Deep	VOC	1,1-Dichloroethane	75-34-3	T	C	6				1.60E-04	3.00E-04	2.5E+00		8.8E-01	
Deep	VOC	1,2-Dichloroethane	107-06-2	T	B2	6				2.10E-04	2.80E-04	5.0E-03		5.0E-03	
Deep	VOC	1,1-Dichloroethene	75-35-4	T	C	6				2.40E-04	3.10E-04	7.0E-03		7.0E-03	
Deep	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	6				2.20E-04	3.50E-04	7.0E-02		7.0E-02	
Deep	VOC	trans-1,2-Dichloroethene	156-60-5	T		6				1.50E-04	3.30E-04	1.0E-01		1.0E-01	
Deep	VOC	1,2-Dichloropropane	78-87-5	T	B2	6				1.70E-04	4.10E-04	5.0E-03		5.0E-03	
Deep	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	6				2.70E-04	3.50E-04	3.5E-02		8.5E-03	
Deep	VOC	Ethyl Benzene	100-41-4	T	D	4				1.20E-04	4.10E-04	7.0E-01		7.0E-01	
Deep	VOC	2-Hexanone	591-78-6	T		6				4.60E-04	5.80E-04	2.9E+00		1.0E+00	
Deep	VOC	Methyl Acetate	79-20-9	T		6				4.10E-04	5.40E-04				
Deep	VOC	Methyl tert-butyl ether	1634-04-4	T		6	4	2.40E-04	5.20E-03	2.70E-04	2.70E-04	6.9E-01	7.5E-03	2.4E-01	2.2E-02
Deep	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	6				2.30E-04	2.60E-04	5.2E+00		1.8E+00	
Deep	VOC	Methylcyclohexane	108-87-2	T		6				1.50E-04	4.20E-04				
Deep	VOC	Methylene Chloride	75-09-2	T	B2	7	1	1.80E-02	1.80E-02	2.80E-04	3.40E-04	5.0E-03	**3.6E+00**	5.0E-03	**3.6E+00**
Deep	VOC	Styrene	100-42-5	T		6				1.50E-04	3.50E-04	1.0E-01		1.0E-01	
Deep	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	6				2.50E-04	3.60E-04	3.5E-02		8.5E-03	
Deep	VOC	Tetrachloroethene	127-18-4	T	C-B2	6				2.30E-04	4.20E-04	5.0E-03		5.0E-03	
Deep	VOC	Toluene	108-88-3	T	D	6				1.80E-04	3.90E-04	1.0E+00		1.0E+00	
Deep	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	6				1.70E-04	4.00E-04	7.0E-02		7.0E-02	
Deep	VOC	1,1,1-Trichloroethane	71-55-6	T	D	6				1.50E-04	3.90E-04	2.0E-01		2.0E-01	
Deep	VOC	1,1,2-Trichloroethane	79-00-5	T	C	6				3.00E-04	3.60E-04	5.0E-03		5.0E-03	
Deep	VOC	Trichloroethene	79-01-6	T	C-B2	6				1.40E-04	4.20E-04	5.0E-03		5.0E-03	
Deep	VOC	Trichlorofluoromethane	75-69-4	T		6				2.80E-04	5.40E-04	7.3E+00		2.6E+00	
Deep	VOC	1,1,2-Trichloro-1,2,2-trifluoroeth	76-13-1	T		6				3.20E-04	3.20E-04	1.7E+02		1.7E+02	
Deep	VOC	Vinyl Chloride	75-01-4	T	A	6				1.50E-04	3.60E-04	2.0E-03		2.0E-03	
Deep	VOC	Xylenes (total)	1330-20-7	T	ID	6				3.30E-04	4.40E-04	1.0E+01		1.0E+01	
Deep	SVOC	Acenaphthene	83-32-9	T		6				8.00E-04	8.00E-04	3.8E+00		1.3E+00	
Deep	SVOC	Acenaphthylene	208-96-8	T	D	6				7.10E-04	7.10E-04	1.5E-01		5.2E-02	
Deep	SVOC	Acetophenone	98-86-2	T	D	6				2.60E-03	2.60E-03	4.4E+00		1.5E+00	
Deep	SVOC	Anthracene	120-12-7	T	D	6				6.80E-04	6.80E-04	4.3E-02		4.3E-02	
Deep	SVOC	Atrazine	1912-24-9	T		6				2.50E-03	2.50E-03	3.0E-03		3.0E-03	
Deep	SVOC	Benzaldehyde	100-52-7	T		6				2.80E-03	2.80E-03				
Deep	SVOC	Benzo(a)anthracene	56-55-3	T	B2	6				7.00E-04	7.00E-04	8.5E-03		2.1E-03	
Deep	SVOC	Benzo(a)pyrene	50-32-8	T	B2	6				7.30E-04	7.30E-04	5.0E-03		5.0E-03	

TABLE 4-11b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-09 (DEEP AND INTERMEDIATE GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detect to Residential Drinking Water Criteria
Deep	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	6				9.40E-04	9.40E-04	2.0E-03		2.0E-03	
Deep	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	6				8.50E-04	8.50E-04	5.0E-03		5.0E-03	
Deep	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	6				8.40E-04	8.40E-04	5.0E-03		5.0E-03	
Deep	SVOC	Biphenyl	92-52-4	T	D	6				2.60E-03	2.60E-03				
Deep	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	6				8.70E-04	8.70E-04				
Deep	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	5				9.70E-04	9.70E-04	8.3E-03		2.0E-03	
Deep	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	6				2.70E-03	2.70E-03	6.0E-03		6.0E-03	
Deep	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	6				8.80E-04	8.80E-04				
Deep	SVOC	Butylbenzylphthalate	85-68-7	T	C	6				8.80E-04	8.80E-04	2.7E+00		1.2E+00	
Deep	SVOC	Caprolactam	105-60-2	T		6	1	3.10E-03	3.10E-03	2.50E-03	2.50E-03	1.7E+01	1.8E-04	5.8E+00	5.3E-04
Deep	SVOC	Carbazole	86-74-8	T	B2	6				8.20E-04	8.20E-04	3.5E-01		8.5E-02	
Deep	SVOC	4-Chloro-3-methylphenol	59-50-7	T		6				9.90E-04	9.90E-04	4.2E-01		1.5E-01	
Deep	SVOC	4-Chloroaniline	106-47-8	T		6				6.10E-04	6.10E-04				
Deep	SVOC	2-Chloronaphthalene	91-58-7	T		6				8.50E-04	8.50E-04	5.2E+00		1.8E+00	
Deep	SVOC	2-Chlorophenol	95-57-8	T		6				1.00E-03	1.00E-03	1.3E-01		4.5E-02	
Deep	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		6				7.90E-04	7.90E-04				
Deep	SVOC	Chrysene	218-01-9	T	B2	6				7.50E-04	7.50E-04	5.0E-03		5.0E-03	
Deep	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	6				7.90E-04	7.90E-04	2.0E-03		2.0E-03	
Deep	SVOC	Dibenzofuran	132-64-9	T	D	6				1.10E-03	1.10E-03				
Deep	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	6				9.30E-04	9.30E-04	4.3E-03		1.1E-03	
Deep	SVOC	2,4-Dichlorophenol	120-83-2	T		6				8.50E-04	8.50E-04	2.1E-01		7.3E-02	
Deep	SVOC	Diethylphthalate	84-66-2	T	D	6				6.50E-04	6.50E-04	1.6E+01		5.5E+00	
Deep	SVOC	2,4-Dimethylphenol	105-67-9	T		6				8.50E-04	8.50E-04	1.0E+00		3.7E-01	
Deep	SVOC	Dimethylphthalate	131-11-3	T	D	6				7.60E-04	7.60E-04	2.1E+02		7.3E+01	
Deep	SVOC	Di-n-butylphthalate	84-74-2	T	D	6				6.70E-04	6.70E-04	2.5E+00		8.8E-01	
Deep	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		6				1.30E-03	1.30E-03	2.0E-02		2.0E-02	
Deep	SVOC	2,4-Dinitrophenol	51-28-5	T		6				3.00E-03	3.00E-03				
Deep	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	6				7.90E-04	7.90E-04	3.2E-02		7.7E-03	
Deep	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	6				5.70E-04	5.70E-04				
Deep	SVOC	Di-n-octylphthalate	117-84-0	T		6				1.10E-03	1.10E-03	3.8E-01		1.3E-01	
Deep	SVOC	Fluoranthene	206-44-0	T	D	6				8.10E-04	8.10E-04	2.1E-01		2.1E-01	
Deep	SVOC	Fluorene	86-73-7	T	D	6				1.00E-03	1.00E-03	2.0E+00		8.8E-01	
Deep	SVOC	Hexachlorobenzene	118-74-1	T	B2	6				7.40E-04	7.40E-04	1.0E-03		1.0E-03	
Deep	SVOC	Hexachlorobutadiene	87-68-3	T	C	5				7.30E-04	7.30E-04	4.2E-02		1.5E-02	
Deep	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	5				1.10E-03	1.10E-03	5.0E-02		5.0E-02	
Deep	SVOC	Hexachloroethane	67-72-1	T	C	6				7.40E-04	7.40E-04	2.1E-02		7.3E-03	
Deep	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	6				6.30E-04	6.30E-04	2.0E-03		2.0E-03	
Deep	SVOC	Isophorone	78-59-1	T	C	6				6.30E-04	6.30E-04	3.1E+00		7.7E-01	
Deep	SVOC	2-Methylnaphthalene	91-57-6	T	ID	5				6.40E-04	6.40E-04	7.5E-01		2.6E-01	
Deep	SVOC	Methylphenol (total)	1319-77-3	T		6				1.30E-03	1.30E-03	1.0E+00		3.7E-01	
Deep	SVOC	Naphthalene	91-20-3	T	C	5				7.50E-04	7.50E-04	1.5E+00		5.2E-01	
Deep	SVOC	2-Nitroaniline	88-74-4	T		6				7.00E-04	7.00E-04				
Deep	SVOC	3-Nitroaniline	99-09-2	T	C	6				7.10E-04	7.10E-04				
Deep	SVOC	4-Nitroaniline	100-01-6	T	C	6				1.30E-03	1.30E-03				
Deep	SVOC	Nitrobenzene	98-95-3	T	D	6				8.10E-04	8.10E-04	9.6E-03		3.4E-03	
Deep	SVOC	2-Nitrophenol	88-75-5	T		6				2.10E-03	2.10E-03	5.8E-02		2.0E-02	
Deep	SVOC	4-Nitrophenol	100-02-7	T		6				1.90E-03	1.90E-03				
Deep	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	6				1.40E-03	1.40E-03	1.1E+00		2.7E-01	
Deep	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	6				6.70E-04	6.70E-04	5.0E-03		5.0E-03	
Deep	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	6				7.80E-04	7.80E-04				
Deep	SVOC	Pentachlorophenol	87-86-5	T	B2	6				2.40E-03	2.40E-03	1.0E-03		1.0E-03	
Deep	SVOC	Phenanthrene	85-01-8	T	D	6				8.20E-04	8.20E-04	1.5E-01		5.2E-02	
Deep	SVOC	Phenol	108-95-2	T	ID	6				2.60E-03	2.60E-03	1.3E+01		4.4E+00	
Deep	SVOC	Pyrene	129-00-0	T	D	6				1.10E-03	1.10E-03	1.4E-01		1.4E-01	
Deep	SVOC	2,4,5-Trichlorophenol	95-95-4	T		6				1.20E-03	1.20E-03	2.1E+00		7.3E-01	

TABLE 4-11b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-09 (DEEP AND INTERMEDIATE GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detect to Residential Drinking Water Criteria
Deep	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	6				1.70E-03	1.70E-03	4.7E-01		1.2E-01	
Deep	P/PCB	PCBs (total)	1336-36-3	T	B2	6				8.20E-05	8.20E-05	5.0E-04		5.0E-04	
Deep	INORG	Antimony	7440-36-0	D		2	1	2.70E-03	2.70E-03	2.20E-03	2.20E-03	6.0E-03	4.5E-01	6.0E-03	4.5E-01
Deep	INORG	Antimony	7440-36-0	T		6	1	4.90E-03	4.90E-03	2.20E-03	3.40E-03	6.0E-03	8.2E-01	6.0E-03	8.2E-01
Deep	INORG	Arsenic	7440-38-2	D	A	2	2	5.20E-03	2.59E-02			5.0E-02	5.2E-01	5.0E-02	5.2E-01
Deep	INORG	Arsenic	7440-38-2	T	A	6	5	3.10E-03	3.95E-02	2.10E-03	2.10E-03	5.0E-02	7.9E-01	5.0E-02	7.9E-01
Deep	INORG	Barium	7440-39-3	D	D	2	2	9.89E-02	2.02E-01			2.0E+00	1.0E-01	2.0E+00	1.0E-01
Deep	INORG	Barium	7440-39-3	T	D	6	6	3.60E-02	5.85E-01			2.0E+00	2.9E-01	2.0E+00	2.9E-01
Deep	INORG	Beryllium	7440-41-7	D	B1	2				5.40E-04	5.40E-04	4.0E-03		4.0E-03	
Deep	INORG	Beryllium	7440-41-7	T	B1	6				5.40E-04	6.00E-04	4.0E-03		4.0E-03	
Deep	INORG	Cadmium	7440-43-9	D	B1	2				2.80E-04	2.80E-04	5.0E-03		5.0E-03	
Deep	INORG	Cadmium	7440-43-9	T	B1	6	1	3.00E-04	3.00E-04	2.80E-04	2.80E-04	5.0E-03	6.0E-02	5.0E-03	6.0E-02
Deep	INORG	Chromium (total)	7440-47-3	D		2				1.40E-03	1.40E-03	1.0E-01		1.0E-01	
Deep	INORG	Chromium (total)	7440-47-3	T		6	5	2.80E-03	8.40E-03	1.40E-03	1.40E-03	1.0E-01	8.4E-02	1.0E-01	8.4E-02
Deep	INORG	Cobalt	7440-48-4	D	B1	2				1.30E-03	1.30E-03	1.0E-01		4.0E-02	
Deep	INORG	Cobalt	7440-48-4	T	B1	6	3	7.60E-04	8.40E-03	7.40E-04	1.30E-03	1.0E-01	8.4E-02	4.0E-02	2.1E-01
Deep	INORG	Copper	7440-50-8	D	D	2				4.20E-03	4.20E-03	4.0E+00		1.4E+00	
Deep	INORG	Copper	7440-50-8	T	D	6				1.70E-03	4.20E-03	4.0E+00		1.4E+00	
Deep	INORG	Lead	7439-92-1	D	B2	2				2.50E-03	2.50E-03	4.0E-03		4.0E-03	
Deep	INORG	Lead	7439-92-1	T	B2	6				1.60E-03	2.50E-03	4.0E-03		4.0E-03	
Deep	INORG	Manganese	7439-96-5	D	D	2	1	6.18E-02	6.18E-02	9.00E-04	9.00E-04	2.5E+00	2.5E-02	8.6E-01	7.2E-02
Deep	INORG	Manganese	7439-96-5	T	D	6	5	4.61E-02	2.55E-01	9.00E-04	9.00E-04	2.5E+00	1.0E-01	8.6E-01	3.0E-01
Deep	INORG	Mercury	7439-97-6	D	D	2				6.90E-05	6.90E-05	2.0E-03		2.0E-03	
Deep	INORG	Mercury	7439-97-6	T	D	6				6.90E-05	8.70E-05	2.0E-03		2.0E-03	
Deep	INORG	Nickel	7440-02-0	D	A	2				2.20E-03	2.20E-03	1.0E-01		1.0E-01	
Deep	INORG	Nickel	7440-02-0	T	A	6	4	3.10E-03	9.30E-03	2.20E-03	2.90E-03	1.0E-01	9.3E-02	1.0E-01	9.3E-02
Deep	INORG	Selenium	7782-49-2	D	D	2				4.50E-03	4.50E-03	5.0E-02		5.0E-02	
Deep	INORG	Selenium	7782-49-2	T	D	6				4.50E-03	4.70E-03	5.0E-02		5.0E-02	
Deep	INORG	Silver	7440-22-4	D	D	2				1.50E-03	1.50E-03	9.8E-02		3.4E-02	
Deep	INORG	Silver	7440-22-4	T	D	6	1	1.30E-03	1.30E-03	9.80E-04	1.50E-03	9.8E-02	1.3E-02	3.4E-02	3.8E-02
Deep	INORG	Thallium	7440-28-0	D		2				1.80E-05	1.80E-05	2.0E-03		2.0E-03	
Deep	INORG	Thallium	7440-28-0	T		6				1.80E-05	3.30E-05	2.0E-03		2.0E-03	
Deep	INORG	Vanadium	7440-62-2	D		2				8.20E-04	8.20E-04	6.2E-02		4.5E-03	
Deep	INORG	Vanadium	7440-62-2	T		6				6.70E-04	8.20E-04	6.2E-02		4.5E-03	
Deep	INORG	Zinc	7440-66-6	D	D	2				1.20E-02	1.20E-02	5.0E+00		2.4E+00	
Deep	INORG	Zinc	7440-66-6	T	D	6				1.20E-02	1.40E-02	5.0E+00		2.4E+00	

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-12
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-10 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	10	1	3.10E-03	3.10E-03	5.10E-04	1.10E-03	1.0E+06	3.1E-09	3.1E+04	1.0E-07	7.3E-01	4.2E-03
Shallow	VOC	Benzene	71-43-2	T	A	10	3	1.90E-04	5.80E-04	1.60E-04	3.70E-04	3.5E+01	1.7E-05	1.1E+01	5.3E-05	5.0E-03	1.2E-01
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	10	1	3.00E-04	3.00E-04	1.70E-04	3.20E-04	3.7E+01	8.1E-06	1.4E+01	2.1E-05	1.0E-01	3.0E-03
Shallow	VOC	Bromoform	75-25-2	T	B2	10				1.80E-04	3.70E-04	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	10				2.00E-04	3.00E-04	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	10	1	1.00E-03	1.00E-03	4.10E-04	5.90E-04	2.4E+05	4.2E-09	2.4E+05	4.2E-09	1.3E+01	7.7E-05
Shallow	VOC	Carbon Disulfide	75-15-0	T		10	1	2.00E-04	2.00E-04	2.00E-04	2.40E-04	5.5E+02	3.6E-07	1.2E+03	1.7E-07	8.0E-01	2.5E-04
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	10				1.20E-04	3.70E-04	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	10				1.40E-04	3.80E-04	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		10				2.60E-04	2.90E-04	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	10	3	2.00E-04	5.70E-04	1.40E-04	3.50E-04	1.8E+02	3.2E-06	1.5E+02	3.8E-06	1.0E-01	5.7E-03
Shallow	VOC	Chloromethane	74-87-3	T	D	10				1.30E-04	4.90E-04	4.5E+01		4.9E+02		2.6E-01	
Shallow	VOC	Cumene	98-82-8	T	D	10	1	3.00E-04	3.00E-04	1.20E-04	3.90E-04	5.6E+01	5.4E-06	5.6E+01	5.4E-06	8.0E-01	3.8E-04
Shallow	VOC	Cyclohexane	110-82-7	T	ID	10				1.30E-04	3.30E-04						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	10				6.20E-04	8.20E-04	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	10				2.60E-04	3.70E-04	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	10				2.20E-04	3.40E-04	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	10				1.10E-04	3.80E-04	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	10				1.50E-04	3.80E-04			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	10				1.70E-04	3.80E-04	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		10				2.60E-04	4.90E-04	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	10	3	7.30E-04	1.20E-03	1.60E-04	3.00E-04	2.3E+03	5.2E-07	2.4E+03	5.0E-07	8.8E-01	1.4E-03
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	10				2.10E-04	2.80E-04	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	10				2.40E-04	3.10E-04	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	10				2.20E-04	3.50E-04	2.1E+02		2.0E+02		7.0E-02	
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		10				1.50E-04	3.30E-04	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	10				1.70E-04	4.10E-04	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	10				2.70E-04	3.50E-04	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	10	4	1.50E-04	1.00E-03	1.20E-04	4.10E-04	1.7E+02	5.9E-06	1.7E+02	5.9E-06	7.0E-01	1.4E-03
Shallow	VOC	2-Hexanone	591-78-6	T		10				4.60E-04	5.80E-04	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		10				4.10E-04	5.40E-04						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		10	4	6.70E-04	2.00E-02	1.30E-04	2.70E-04	4.7E+04	4.3E-07	6.1E+02	3.3E-05	2.4E-01	8.3E-02
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	10	1	2.40E-04	2.40E-04	2.30E-04	2.60E-04	2.0E+04	1.2E-08	1.3E+04	1.8E-08	1.8E+00	1.3E-04
Shallow	VOC	Methylcyclohexane	108-87-2	T		10				1.50E-04	4.20E-04						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	6				2.90E-04	3.40E-04	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	Styrene	100-42-5	T		10				1.50E-04	3.50E-04	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	10				2.50E-04	3.60E-04	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	10				2.30E-04	4.20E-04	1.7E+02		1.2E+01		5.0E-03	
Shallow	VOC	Toluene	108-88-3	T	D	10	4	5.90E-04	1.90E-03	1.80E-04	3.90E-04	5.3E+02	3.6E-06	5.3E+02	3.6E-06	1.0E+00	1.9E-03
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	10				1.70E-04	4.00E-04	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	10	2	4.10E-04	6.20E-04	1.50E-04	3.90E-04	1.3E+03	4.8E-07	1.3E+03	4.8E-07	2.0E-01	3.1E-03
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	10				3.00E-04	3.60E-04	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	10				1.40E-04	4.20E-04	9.7E+01		2.2E+01		5.0E-03	
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		10				2.80E-04	5.40E-04	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		10				3.20E-04	3.20E-04	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	10				1.50E-04	3.60E-04	1.3E+01		1.0E+00		2.0E-03	
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	10	4	5.80E-04	7.80E-03	3.30E-04	4.40E-04	1.9E+02	4.1E-05	1.9E+02	4.1E-05	1.0E+01	7.8E-04
Shallow	SVOC	Acenaphthene	83-32-9	T		10				8.00E-04	3.20E-03	4.2E+00		4.2E+00		1.3E+00	
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	10				7.10E-04	2.80E-03	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	10				2.60E-03	1.00E-02	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	10				6.80E-04	2.70E-03	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		10				2.50E-03	1.00E-02			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		10				2.80E-03	1.10E-02						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	10				7.00E-04	2.80E-03			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	10				7.30E-04	2.90E-03			2.0E-03		5.0E-03	

TABLE 4-12
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-10 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	10				9.40E-04	3.80E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	10				8.50E-04	3.40E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	10				8.40E-04	3.40E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	10				2.60E-03	1.00E-02						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	10				8.70E-04	3.50E-03						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	10				9.70E-04	3.90E-03	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	10	1	1.50E-01	1.50E-01	2.70E-03	1.10E-02			3.2E-01	4.7E-01	6.0E-03	**2.5E+01**
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	10				8.80E-04	3.50E-03						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	10				8.80E-04	3.50E-03			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		10				2.50E-03	1.00E-02			3.9E+05		5.8E+00	
Shallow	SVOC	Carbazole	86-74-8	T	B2	10				8.20E-04	3.30E-03			7.4E+00		8.5E-02	
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		10				9.90E-04	4.00E-03			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		10				6.10E-04	2.40E-03						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		10				8.50E-04	3.40E-03			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		10				1.00E-03	4.00E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		10				7.90E-04	3.20E-03						
Shallow	SVOC	Chrysene	218-01-9	T	B2	10				7.50E-04	3.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	10				7.90E-04	3.20E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	10				1.10E-03	4.40E-03						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	10				9.30E-04	3.70E-03			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		10				8.50E-04	3.40E-03			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	10				6.50E-04	2.60E-03			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		10				8.50E-04	3.40E-03			5.2E+02		3.7E-01	
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	10				7.60E-04	3.00E-03			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	10				6.70E-04	2.70E-03			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		10				1.30E-03	5.20E-03			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		10				3.00E-03	1.20E-02						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	10				7.90E-04	3.20E-03			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	10				5.70E-04	2.30E-03						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		10				1.10E-03	4.40E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	10	1	8.20E-04	8.20E-04	8.10E-04	3.20E-03	2.1E-01	3.9E-03	2.1E-01	3.9E-03	2.1E-01	3.9E-03
Shallow	SVOC	Fluorene	86-73-7	T	D	10	1	1.90E-03	1.90E-03	1.00E-03	4.00E-03	2.0E+00	9.5E-04	2.0E+00	9.5E-04	8.8E-01	2.2E-03
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	10				7.40E-04	3.00E-03	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	10				7.30E-04	2.90E-03	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	6				1.10E-03	4.40E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	10				7.40E-04	3.00E-03	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	10				6.30E-04	2.50E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	10				6.30E-04	2.50E-03			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	10	1	7.50E-03	7.50E-03	6.40E-04	6.40E-04			2.5E+01	3.0E-04	2.6E-01	2.9E-02
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		10				1.30E-03	5.20E-03			8.1E+02		3.7E-01	
Shallow	SVOC	Naphthalene	91-20-3	T	C	10	1	6.90E-03	6.90E-03	7.50E-04	7.50E-04	3.1E+01	2.2E-04	3.1E+01	2.2E-04	5.2E-01	1.3E-02
Shallow	SVOC	2-Nitroaniline	88-74-4	T		10				7.00E-04	2.80E-03						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	10				7.10E-04	2.80E-03						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	10				1.30E-03	5.20E-03						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	10				8.10E-04	3.20E-03	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		10				2.10E-03	8.40E-03			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		10				1.90E-03	7.60E-03						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	10				1.40E-03	5.60E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	10				6.70E-04	2.70E-03			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	10				7.80E-04	3.10E-03						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	10				2.40E-03	9.60E-03			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	10				8.20E-04	3.30E-03	1.0E+00		1.0E+00		5.2E-02	
Shallow	SVOC	Phenol	108-95-2	T	ID	10				2.60E-03	1.00E-02			2.9E+04		4.4E+00	
Shallow	SVOC	Pyrene	129-00-0	T	D	10				1.10E-03	4.40E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		10				1.20E-03	4.80E-03			1.7E+02		7.3E-01	

TABLE 4-12
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-10 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	10				1.70E-03	6.80E-03			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	D	B2	1				8.20E-05	8.20E-05	4.5E-02		3.3E-03		5.0E-04	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	10	2	4.09E-04	8.31E-04	8.20E-05	8.20E-05	4.5E-02	1.8E-02	3.3E-03	2.5E-01	5.0E-04	**1.7E+00**
Shallow	INORG	Antimony	7440-36-0	D		5				2.20E-03	2.20E-03			6.8E+01		6.0E-03	
Shallow	INORG	Antimony	7440-36-0	T		10	1	2.30E-03	2.30E-03	2.20E-03	3.40E-03			6.8E+01	3.4E-05	6.0E-03	3.8E-01
Shallow	INORG	Arsenic	7440-38-2	D	A	5	2	5.00E-03	5.91E-02	3.90E-03	3.90E-03			4.3E+00	1.4E-02	5.0E-02	**1.2E+00**
Shallow	INORG	Arsenic	7440-38-2	T	A	10	4	4.90E-03	6.33E-02	2.10E-03	3.90E-03			4.3E+00	1.5E-02	5.0E-02	**1.3E+00**
Shallow	INORG	Barium	7440-39-3	D	D	5	5	1.05E-02	1.09E-01					1.4E+04	7.8E-06	2.0E+00	5.5E-02
Shallow	INORG	Barium	7440-39-3	T	D	10	10	1.16E-02	2.19E-01					1.4E+04	1.6E-05	2.0E+00	1.1E-01
Shallow	INORG	Beryllium	7440-41-7	D	B1	5				5.40E-04	5.40E-04			2.9E+02		4.0E-03	
Shallow	INORG	Beryllium	7440-41-7	T	B1	10				5.40E-04	6.00E-04			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	D	B1	5				2.80E-04	2.80E-04			1.9E+02		5.0E-03	
Shallow	INORG	Cadmium	7440-43-9	T	B1	10				2.80E-04	2.80E-04			1.9E+02		5.0E-03	
Shallow	INORG	Chromium (total)	7440-47-3	D		5	2	5.30E-03	6.50E-03	1.40E-03	1.40E-03			4.6E+02	1.4E-05	1.0E-01	6.5E-02
Shallow	INORG	Chromium (total)	7440-47-3	T		10	3	5.60E-03	1.84E-02	1.40E-03	1.50E-03			4.6E+02	4.0E-05	1.0E-01	1.8E-01
Shallow	INORG	Cobalt	7440-48-4	D	B1	5	2	2.50E-03	1.11E-02	1.30E-03	1.30E-03			2.4E+03	4.6E-06	4.0E-02	2.8E-01
Shallow	INORG	Cobalt	7440-48-4	T	B1	10	4	1.30E-03	1.14E-02	7.40E-04	1.30E-03			2.4E+03	4.8E-06	4.0E-02	2.9E-01
Shallow	INORG	Copper	7440-50-8	D	D	5	1	4.60E-03	4.60E-03	4.20E-03	4.20E-03			7.4E+03	6.2E-07	1.4E+00	3.3E-03
Shallow	INORG	Copper	7440-50-8	T	D	10	1	4.30E-03	4.30E-03	1.70E-03	4.20E-03			7.4E+03	5.8E-07	1.4E+00	3.1E-03
Shallow	INORG	Lead	7439-92-1	D	B2	5				2.50E-03	2.50E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	10				1.60E-03	2.50E-03					4.0E-03	
Shallow	INORG	Manganese	7439-96-5	D	D	5	5	1.09E-02	4.83E-01					9.1E+03	5.3E-05	8.6E-01	5.6E-01
Shallow	INORG	Manganese	7439-96-5	T	D	10	10	9.90E-03	5.11E-01					9.1E+03	5.6E-05	8.6E-01	5.9E-01
Shallow	INORG	Mercury	7439-97-6	D	D	5				6.90E-05	6.90E-05	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Mercury	7439-97-6	T	D	10	2	7.50E-05	9.10E-05	6.90E-05	8.70E-05	5.6E-02	1.6E-03	5.6E-02	1.6E-03	2.0E-03	4.6E-02
Shallow	INORG	Nickel	7440-02-0	D	A	5	3	3.10E-03	2.42E-02	2.20E-03	2.20E-03			7.4E+04	3.3E-07	1.0E-01	2.4E-01
Shallow	INORG	Nickel	7440-02-0	T	A	10	5	3.50E-03	2.47E-02	2.20E-03	2.90E-03			7.4E+04	3.3E-07	1.0E-01	2.5E-01
Shallow	INORG	Selenium	7782-49-2	D	D	5				4.50E-03	4.50E-03			9.7E+02		5.0E-02	
Shallow	INORG	Selenium	7782-49-2	T	D	10	1	4.90E-03	4.90E-03	4.50E-03	4.70E-03			9.7E+02	5.1E-06	5.0E-02	9.8E-02
Shallow	INORG	Silver	7440-22-4	D	D	5				1.50E-03	1.50E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	10				9.80E-04	1.50E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		5	2	2.80E-05	5.50E-03	1.80E-05	1.80E-05			1.3E+01	4.2E-04	2.0E-03	**2.8E+00**
Shallow	INORG	Thallium	7440-28-0	T		10	1	6.80E-03	6.80E-03	1.80E-05	3.30E-05			1.3E+01	5.2E-04	2.0E-03	**3.4E+00**
Shallow	INORG	Vanadium	7440-62-2	D		5	2	1.70E-03	2.40E-03	8.20E-04	8.20E-04			9.7E+02	2.5E-06	4.5E-03	5.3E-01
Shallow	INORG	Vanadium	7440-62-2	T		10	3	1.20E-03	3.00E-03	6.70E-04	8.20E-04			9.7E+02	3.1E-06	4.5E-03	6.7E-01
Shallow	INORG	Zinc	7440-66-6	D	D	5				1.20E-02	1.20E-02			1.1E+05		2.4E+00	
Shallow	INORG	Zinc	7440-66-6	T	D	10	1	1.46E-02	1.46E-02	1.20E-02	1.40E-02			1.1E+05	1.3E-07	2.4E+00	6.1E-03
Shallow	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	T	B2	9	3	1.74E-09	4.88E-09	2.71E-09	3.99E-08			1.0E-08	4.9E-01	3.0E-08	1.6E-01

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.
The concentrations for the Target Dioxin congeners were used to calculate a 2,3,7,8-TCDD Equivalent, using EPA 1998 TEFs, before comparing to the Screening Levels for 2,3,7,8-TCDD.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-13

GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SAMPLING LOCATIONS WITHIN PROPOSED AREA OF INDUSTRIAL REDEVELOPMENT

SAMPLING LOCATIONS		
BW1-08	RWW8-02	BW9-11
BW8-02	SBDW21	SW8-09
BW8-04	BW1-03	SW8-10
BW8-05	BW1-04	SW9-01
BW8-10	BW1-07	SW9-02
BW8-11	BW1-09	SW9-03
BW9-03	BW1-11	SW9-04
BW9-04	SW8-03	SW9-05
BW9-05	SW8-04	SW9-10
BW9-06	SW8-05	SW9-11
BW9-07	SW8-06	SW9-12
BW9-08	SW8-07	BP-6
BW9-09	SW8-08	SBSB2
BW9-12	KMV-05	SBSB5
BW9-14	ND01-06	SBTT3
BW9-15	ND01-07	SSTT3
BW9-16	ND01-08	ND01-01
BW9-17	ND01-09	ND01-02
BW9-18	SBTT2	ND01-03
TWW9-01	SSTT2	ND01-04
SW9-06	SBTT4	ND01-05
SW9-07	SSTT4	ND01-11
SW9-08	SBTT5	ND01-12
SW9-09	SBTT5	MW-3
SW9-13	SBWD1	MW-4
SBTT1	SBWD2	MW-5
SSTT1	MWW8-01	MW-11
MWW8-03	MWW8-02	MW-12
MWW8-06	MWW8-05	MW-13
MWW8-07	MW-22	MW-18
MWW8-08	MW-24-99	DW-18-99
BMWW8-09	MW-25-99	MW-19
MWW8-09	MW-36-99	MW-20
BMWW8-10	MW-37-99	MW-26-99
MWW8-10	MW-38-99	MW-27-99
BMWW8-11	MW-43-99	MW-28-99
MWW8-11	MW-44-99	MW-33-99
BMWW8-12	BW1-01	MW-34-99
MWW8-12	BW1-02	MW-39-99
MWW8-13	BW1-05	MW-40-99
MWW8-14	BW1-06	MW-42-99
MWW8-15	BW1-10	MWW1-05
MWW8-16	BW8-01	BMWW5-01
SBMWW8-17	BW8-03	MWW5-01
MWW9-02	BW8-06	MWW8-04
MWW9-03	BW8-07	MWW9-01
MWW9-05	BW8-08	BMWW10-02
MWW9-06	BW8-09	MWW10-02
MWW9-07	BW9-01	BW10-02
MWD3	BW9-02	GWD9
RWW8-01	BW9-10	DWD10

TABLE 4-14
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AREA OF INDUSTRIAL REDEVELOPMENT (SOIL)

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
VOC	Acetone	67-64-1	ID	138	61	2.70E-03	2.20E+00	1.80E-03	5.70E+01		1.1E+05	2.0E-05	1.6E+05	1.4E-05	1.7E+08	1.3E-08	7.3E+04	3.0E-05	1.1E+05	2.0E-05	1.3E+05	1.7E-05	5.6E-09	3.9E+08	9.6E-05	2.3E+04
VOC	Acetonitrile	75-05-8	D	6				5.30E-02	1.40E+01		8.8E+03		1.9E+03		1.8E+06		1.4E+04		4.8E+03		1.6E+03			4.0E+06		4.3E+03
VOC	Acrolein	107-02-8	ID	6				5.30E-02	1.40E+01		7.6E-01		3.7E-01		5.9E+02		1.2E+04		4.1E-01		3.1E-01			1.3E+03		3.6E+03
VOC	Acrylonitrile	107-13-1	B1	6				5.30E-02	1.40E+01		3.5E+01		1.7E+01		5.8E+04		7.4E+01		6.6E+00		5.0E+00			4.6E+04		1.6E+01
VOC	Benzene	71-43-2	A	137	19	3.70E-04	7.20E-01	3.00E-04	5.70E+00		8.4E+00	8.6E-02	4.5E+01	1.6E-02	4.7E+05	1.5E-06	4.0E+02	1.8E-03	1.6E+00	4.5E-01	1.3E+01	5.5E-02	1.9E-06	3.8E+05	4.0E-03	1.8E+02
VOC	Bromodichloromethane	75-27-4	B2	137				3.50E-04	5.70E+00		6.4E+00		3.1E+01		1.1E+05		4.9E+02		1.2E+00		9.1E+00			8.4E+04		1.1E+02
VOC	Bromoform	75-25-2	B2	137				4.60E-04	5.70E+00		7.7E+02		3.1E+03		3.6E+06		8.7E+02		1.5E+02		9.0E+02			2.8E+06		8.2E+02
VOC	Bromomethane	74-83-9	D	138	1	2.23E-02	2.23E-02	9.50E-04	5.70E+00		1.6E+00	1.4E-02	1.3E+01	1.7E-03	1.5E+05	1.5E-07	1.0E+03	2.2E-05	8.6E-01	2.6E-02	1.1E+01	2.0E-03	6.8E-08	3.3E+05	7.0E-05	3.2E+02
VOC	2-Butanone	78-93-3	ID	138	41	2.20E-03	1.60E+00	1.30E-03	5.70E+01		2.7E+04	5.9E-05	3.5E+04	4.6E-05	2.9E+07	5.5E-08	2.7E+04	5.9E-05	2.7E+04	5.9E-05	2.9E+04	5.5E-05	2.4E-08	6.7E+07	5.9E-05	2.7E+04
VOC	Carbon Disulfide	75-15-0		138	9	3.10E-04	3.90E-03	2.40E-04	5.70E+01		1.4E+02	2.8E-05	1.6E+03	2.4E-06	2.1E+07	1.9E-10	2.8E+02	1.4E-05	7.6E+01	5.1E-05	1.3E+03	3.0E-06	8.3E-11	4.7E+07	1.4E-05	2.8E+02
VOC	Carbon Tetrachloride	56-23-5	B2	137				4.20E-04	5.70E+00		9.9E-01		1.2E+01		1.7E+05		3.9E+02		1.9E-01		3.5E+00			1.3E+05		9.6E+01
VOC	2-Chloro-1,3-butadiene	126-99-8		6				5.30E-03	1.40E+00																	
VOC	3-Chloro-1-propene	107-05-1		6				1.10E-02	2.90E+00																	
VOC	Chlorobenzene	108-90-7	D	138	1	1.10E-01	1.10E-01	3.40E-04	5.70E+00		2.2E+02	5.0E-04	9.2E+02	1.2E-04	2.1E+06	5.2E-08	2.6E+02	4.2E-04	1.2E+02	9.2E-04	7.7E+02	1.4E-04	2.3E-08	4.7E+06	4.2E-04	2.6E+02
VOC	Chloroethane	75-00-3		138	3	2.20E-03	5.20E-03	8.20E-04	5.70E+00		9.5E+02	5.5E-06	3.6E+04	1.4E-07	2.9E+08	1.8E-11	9.5E+02	5.5E-06	9.5E+02	5.5E-06	3.0E+04	1.7E-07	7.8E-12	6.7E+08	5.5E-06	9.5E+02
VOC	Chloroform	67-66-3	B2	138				3.70E-04	5.70E+00		3.8E+01		1.5E+02		1.6E+06		1.5E+03		7.2E+00		4.5E+01			1.3E+06		1.2E+03
VOC	Chloromethane	74-87-3	D	138				4.10E-04	5.70E+00		1.0E+01		1.2E+02		2.6E+06		1.1E+03		2.3E+00		4.0E+01			4.9E+06		1.1E+03
VOC	Cumene	98-82-8	D	104	19	5.30E-04	1.10E+00	3.70E-04	2.50E-01		3.9E+02	2.8E-03	2.0E+03	5.5E-04	2.6E+06	4.2E-07	3.9E+02	2.8E-03	3.9E+02	2.8E-03	1.7E+03	6.5E-04	1.9E-07	5.8E+06	2.8E-03	3.9E+02
VOC	Cyclohexane	110-82-7	ID	104	16	8.30E-04	3.00E-01	4.10E-04	6.40E-01																	
VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	110				9.90E-04	2.90E+00		1.2E+00		1.5E+01		5.9E+03		1.2E+00		1.2E+00		1.3E+01			1.3E+04		1.2E+00
VOC	Dibromochloromethane	124-48-1	C	137				4.60E-04	5.70E+00		2.1E+01		8.0E+01		1.6E+05		5.0E+02		3.9E+00		2.4E+01			1.3E+05		1.1E+02
VOC	1,2-Dibromoethane	106-93-4	B2	109				3.20E-04	1.40E+00		3.6E+00		5.8E+00		1.8E+04		4.3E-01		6.7E-01		1.7E+00			1.4E+04		2.5E-01
VOC	Dibromomethane	74-95-3		6				5.30E-03	1.40E+00								2.0E+03									2.0E+03
VOC	trans-1,4-Dichloro-2-butene	110-57-6		6				5.30E-03	1.40E+00																	
VOC	1,2-Dichlorobenzene	95-50-1	D	131	3	3.40E-03	3.20E-02	3.90E-04	5.70E+00		2.1E+02	1.5E-04	4.6E+04	7.0E-07	4.4E+07	7.3E-10	2.1E+02	1.5E-04	2.1E+02	1.5E-04	3.9E+04	8.2E-07	3.2E-10	1.0E+08	1.5E-04	2.1E+02
VOC	1,3-Dichlorobenzene	541-73-1	D	131	1	1.10E-01	1.10E-01	3.90E-04	5.70E+00								1.7E+02	6.5E-04							6.5E-04	1.7E+02
VOC	1,4-Dichlorobenzene	106-46-7	C	131	4	7.60E-04	1.95E-02	3.50E-04	5.70E+00		1.0E+02	2.0E-04	2.6E+02	7.5E-05	5.7E+05	3.4E-08	1.9E+03	1.0E-05	1.9E+01	1.0E-03	7.7E+01	2.5E-04	4.3E-08	4.5E+05	4.9E-05	4.0E+02
VOC	Dichlorodifluoromethane	75-71-8		110	1	1.40E-03	1.40E-03	5.00E-04	1.40E+00		1.7E+03	8.2E-07	6.3E+04	2.2E-08	1.5E+09	9.3E-13	1.0E+03	1.4E-06	9.0E+02	1.6E-06	5.3E+04	2.6E-08	4.2E-13	3.3E+09	1.4E-06	1.0E+03
VOC	1,1-Dichloroethane	75-34-3	C	138	9	4.18E-04	2.80E-01	2.70E-04	5.70E+00		4.3E+02	6.5E-04	2.5E+03	1.1E-04	1.5E+07	1.9E-08	8.9E+02	3.1E-04	2.3E+02	1.2E-03	2.1E+03	1.3E-04	8.5E-09	3.3E+07	3.1E-04	8.9E+02
VOC	1,2-Dichloroethane	107-06-2	B2	138				3.80E-04	5.70E+00		1.1E+01		2.1E+01		1.5E+05		4.2E+02		2.1E+00		6.2E+00			1.2E+05		9.1E+01
VOC	1,1-Dichloroethene	75-35-4	C	138	4	5.55E-04	2.90E-02	4.70E-04	5.70E+00		3.3E-01	8.8E-02	3.7E+00	7.8E-03	7.8E+04	3.7E-07	5.7E+02	5.1E-05	6.2E-02	4.7E-01	1.1E+00	2.6E-02	4.7E-07	6.2E+04	1.5E-04	2.0E+02
VOC	cis-1,2-Dichloroethene	156-59-2	D	138	2	1.50E-01	1.90E-01	2.80E-04	5.70E+00		4.1E+01	4.6E-03	2.1E+02	9.0E-04	1.0E+06	1.9E-07	6.4E+02	3.0E-04	2.2E+01	8.6E-03	1.8E+02	1.1E-03	8.3E-08	2.3E+06	3.0E-04	6.4E+02
VOC	trans-1,2-Dichloroethene	156-60-5		138				3.40E-04	5.70E+00		4.3E+01		3.3E+02		2.1E+06		1.4E+03		2.3E+01		2.8E+02			4.7E+06		1.4E+03
VOC	1,2-Dichloropropane	78-87-5	B2	138				3.00E-04	5.70E+00		7.4E+00		3.0E+01		1.2E+05		5.5E+02		4.0E+00		2.5E+01			2.7E+05		1.4E+02
VOC	1,3-Dichloropropene (total)	542-75-6	B2	137				3.90E-04	5.70E+00		5.4E+00		6.0E+01		5.9E+05		2.4E+02		1.0E+00		1.8E+01			7.8E+05		1.0E+01
VOC	1,4-Dioxane	123-91-1	B2	6				5.30E-01	1.40E+02						7.1E+05		2.4E+03							5.7E+05		5.3E+02
VOC	Ethyl Benzene	100-41-4	D	138	31	6.80E-04	2.50E+01	3.70E-04	3.20E-01		1.4E+02	1.8E-01	2.4E+03	1.0E-02	1.3E+07	1.9E-06	1.4E+02	1.8E-01	8.7E+01	2.9E-01	7.2E+02	3.5E-02	2.5E-06	1.0E+07	1.8E-01	1.4E+02
VOC	Ethyl Methacrylate	97-63-2		3				5.65E-03	1.30E-02																	
VOC	2-Hexanone	591-78-6		138	3	2.50E-03	1.58E-02	1.00E-03	5.70E+01		1.8E+03	8.8E-06	1.3E+03	1.2E-05	1.2E+06	1.3E-08	2.5E+03	6.3E-06	9.9E+02	1.6E-05	1.1E+03	1.4E-05	5.8E-09	2.7E+06	6.3E-06	2.5E+03
VOC	Iodomethane	74-88-4		6				5.30E-03	1.40E+00																	
VOC	Isobutyl Alcohol	78-83-1		6				2.30E+00	6.30E+02		8.9E+03		9.5E+04		4.4E+07		8.9E+03		8.9E+03		7.9E+04			1.0E+08		8.9E+03
VOC	Methacrylonitrile	126-98-7		6				2.10E-02	5.70E+00																	
VOC	Methyl Acetate	79-20-9		104	16	1.40E-03	3.40E+01	9.20E-04	4.50E-01																	
VOC	Methyl tert-butyl ether	1634-04-4		104				2.70E-04	1.30E+00		5.9E+03		3.0E+04		8.8E+07		5.9E+03		5.9E+03		2.5E+04			2.0E+08		1.5E+03
VOC	4-Methyl-2-pentanone	108-10-1	ID	138	15	9.50E-04	6.80E-01	8.00E-04	5.70E+01		2.7E+03	2.5E-04	5.3E+04	1.3E-05	6.0E+07	1.1E-08	2.7E+03	2.5E-04	2.7E+03	2.5E-04	4.5E+04	1.5E-05	4.9E-09	1.4E+08	2.5E-04	2.7E+03
VOC	Methylcyclohexane	108-87-2		104	25	5.50E-04	1.40E+00	3.90E-04	6.40E-01																	
VOC	Methylene Chloride	75-09-2	B2	138	22	1.70E-03	2.50E+01	1.10E-03	1.40E+00		2.4E+02	1.0E-01	7.0E+02	3.6E-02	8.3E+06	3.0E-06	2.3E+03	1.1E-02	4.5E+01	5.6E-01	2.1E+02	1.2E-01	3.8E-06	6.6E+06	1.9E-02	1.3E+03
VOC	Methylmethacrylate	80-62-6	E	6				5.30E-03	1.40E+00																	
VOC	Pentachloroethane	76-01-7		6	1	9.90E-02	9.90E-02	1.70E-01	3.00E+01																	
VOC	Propionitrile	107-12-0		6				2.10E-02	5.70E+00																	
VOC	Styrene	100-42-5		137				2.80E-04	5.70E+00		5.2E+02		3.3E+03		6.9E+06		5.2E+02		2.5E+02		9.7E+02			5.5E+06		4.0E+02
VOC	1,1,1,2-Tetrachloroethane	630-20-6		6				5.30E-03	1.40E+00		3.3E+01		1.2E+02		5.3E+05		4.4E+02		6.2E+00		3.6E+01			4.2E+05		4.4E+02
VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	138				3.70E-04	5.70E+00		2.3E+01		3.4E+01		6.8E+04		2.4E+02		4.3E+00		1.0E+01			5.4E+04		5.3E+01
VOC	Tetrachloroethene	127-18-4	C-B2	138	8	1.10E-03	1.20E-01	4.60E-04	5.70E+00		6.0E+01	2.0E-03	6.0E+02	2.0E-04	6.8E+06	1.8E-08	8.8E+01	1.4E-03	1.1E+01	1.1E-02	1.8E+02	6.7E-04	2.2E-08	5.4E+06	1.4E-03	8.8E+01
VOC	Toluene	108-88-3	D	138	60	4.50E-04	4.20E+01	3.20E-04	2.50E-01		2.5E+02	1.7E-01	3.3E+03	1.3E-02	1.2E+07	3.5E-06	2.5E+02	1.7E-01	2.5E+02	1.7E-01	2.8E+03	1.5E-02	1.6E-06	2.7E+07	1.7E-01	2.5E+02
VOC	1,2,4-Trichlorobenzene	120-82-1	D	119				3.60E-04	1.10E+02		1.1E+03		3.4E+04		1.1E+07		1.1E+03		1.1E+03		2.8E+04			2.5E+07		9.9E+02
VOC	1,1,1-Trichloroethane	71-55-6	D	137	4	6.20E-04	3.90E-03	3.70E-04	5.70E+00		4.6E+02	8.5E-06	4.5E+03	8.7E-07	2.9E+07	1.3E-10	4.6E+02	8.5E-06	2.5E+02	1.6E-05	3.8E+03	1.0E-06	5.8E-11	6.7E+07	8.5E-06	4.6E+02
VOC	1,1,2-Trichloroethane	79-00-5	C	137				3.20E-04	5.70E+00		2.4E+01		5.7E+01		2.5E+05		8.4E+02		4.6E+00		1.7E+01			1.9E+05		1.8E+02
VOC	Trichloroethene	79-01-6	C-B2	138	5	4.08E-03	2.50E-01	4.70E-04	5.70E+00		3.7E+01	6.8E-03	2.6E+02	9.6E-04	2.3E+06	1.1E-07	5.0E+02	5.0E-04	7.1E+00	3.5E-02	7.8E+01	3.2E-03	1.4E-07	1.8E+06	5.0E-04	5.0E+02
VOC	Trichlorofluoromethane	75-69-4		110	1	8.40E-04	8.40E-04	3.40E-04	1.40E+00		5.6E+02	1.5E-06	1.1E+05	7.6E-09	1.7E+09	4.9E-13	5.6E+02	1.5E-06	5.6E+02	1.5E-06	9.2E+04	9.1E-09	2.2E-13	3.8E+09	1.5E-06	5.6E+02
VOC	1,2,3-Trichloropropane	96-18-4	B2	6				5.30E-03	1.40E+00								8.3E+02									8.3E+02
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		104	5	5.50E-03	8.90E-03	6.80E-04	3.20E-01		5.5E+02	1.6E-05	2.1E+05	4.2E-08	2.3E+09	3.9E-12	5.5E+02	1.6E-05	5.5E+02	1.6E-05	1.8E+05	4.9E-08	1.7E-12	5.1E+09	1.6E-05	5.5E+02
VOC	Vinyl Acetate	108-05-4		6				5.30E-02	1.40E+01		1.5E+03		2.0E+03		5.9E+06		2.4E+03		7.9E+02		1.7E+03			1.3E+07		2.4E+03
VOC	Vinyl Chloride	75-01-4	A	138				4.10E-04	5.70E+00		2.8E+00		2.9E+01		8.9E+05		3.4E+01		2.7E-01		4.2E+00			3.5E+05		3.8E+00
VOC	Xylenes (total)	1330-20-7	ID	138	35	1.20E-03	1.50E+02	1.10E-03	5.00E-01		1.5E+02	1.0E+00	5.4E+04	2.8E-03	1.3E+08	1.2E-06	1.5E+02	1.0E+00	1.5E+02	1.0E+00	4.6E+04	3.3E-03	5.2E-07	2.9E+08	1.0E+00	1.5E+02
SVOC	Acenaphthene	83-32-9		119	27	2.40E-02	3.60E+01	1.90E-02	3.00E+01		3.5E+05	1.0E-04	9.7E+04	3.7E-04	6.2E+06	5.8E-06	1.3E+05	2.8E-04	1.9E+05	1.9E-04	8.1E+04	4.4E-04	2.6E-06	1.4E+07	8.8E-04	4.1E+04
SVOC	Acenaphthylene	208-96-8	D	118	1	2.00E+00	2.00E+00	1.90E-02	1.10E+02		3.0E+03	6.7E-04	2.7E+03	7.4E-04	1.0E+06	2.0E-06	5.2E+03	3.8E-04	1.6E+03	1.3E-03	2.2E+03	9.1E-04	8.7E-07	2.3E+06	1.3E-03	1.6E+03
SVOC	Acetophenone	98-86-2	D	110				1.80E-02	3.00E+01		1.1E+03		5.2E+04		1.4E+07		1.1E+03		1.1E+03		4.4E+04			3.3E+07		1.1E+03
SVOC	2-Acetylaminofluorene	53-96-3		6				1.70E+00	3.00E+02																	
SVOC	4-Aminobiphenyl	92-67-1		6				9.00E-01	1.60E+02																	
SVOC	Aniline	62-53-3	B2	6				9.00E-01	6.10E+01						2.9E+04		1.5E+03							6.7E+04		3.3E+02
SVOC	Anthracene	120-12-7	D	119	45	2.10E-02	2.10E+01	1.80E-02	3.00E+01		1.0E+06	2.1E-05	1.6E+06	1.3E-05	2.9E+07	7.2E-07	7.3E+05	2.9E-05	1.0E+06	2.1E-05	1.4E+06	1.5E-05	3.1E-07	6.7E+07	9.1E-05	2.3E+05
SVOC	Atrazine	1912-24-9		104				1.80E-02	1.60E+01								3.3E+02									7.1E+01
SVOC	Benzaldehyde	100-52-7		104				2.20E-02	1.80E+01																	
SVOC	Benzo(a)anthracene	56-55-3	B2	119	52	1.80E-02	1.50E+01	1.70E-02	1.10E+02								8.0E+01	1.9E-01							7.5E-01	2.0E+01
SVOC	Benzo(a)pyrene	50-32-8	B2	119	41	2.70E-02	8.80E+00	1.80E-02	1.10E+02						1.9E+03	4.6E-03	8.0E+00	**1.1E+00**					5.9E-03	1.5E+03	**4.4E+00**	2.0E+00
SVOC	Benzo(b)fluoranthene	205-99-2	B2	119	51	3.10E-02	1.10E+01	2.10E-02	1.10E+02								8.0E+01	1.4E-01							5.5E-01	2.0E+01
SVOC	Benzo(g,h,i)perylene	191-24-2	D	119	40	2.40E-02	4.80E+00	2.30E-02	1.10E+02						3.5E+05	1.4E-05	7.0E+03	6.9E-04					6.0E-06	8.0E+05	1.9E-03	2.5E+03
SVOC	Benzo(k)fluoranthene	207-08-9	B2	119	33	2.00E-02	5.30E+00	1.80E-02	1.10E+02								8.0E+02	6.6E-03							2.7E-02	2.0E+02
SVOC	Benzyl Alcohol	100-51-6		6				6.90E-01	6.10E+01						1.5E+08		5.8E+03							3.3E+08		5.8E+03
SVOC	Biphenyl	92-52-4	D	104	9	3.40E-02	3.40E+00	2.20E-02	1.50E+01																	
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	119				1.70E-02	1.10E+02																	
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	119				1.80E-02	1.10E+02		4.4E+01		1.3E+01		1.2E+04		5.8E+01		8.3E+00		3.8E+00			9.4E+03		1.3E+01
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	119	33	2.50E-02	7.60E+01	2.30E-02	3.00E+01						8.9E+05	8.5E-05	1.0E+04	7.6E-03					1.1E-04	7.0E+05	2.7E-02	2.8E+03

TABLE 4-14
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AREA OF INDUSTRIAL REDEVELOPMENT (SOIL)

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	119				1.90E-02	1.10E+02																	
SVOC	2,sec-Butyl-4,6-dinitrophenol	88-85-7		6				1.10E-02	5.70E-02								1.4E+02									6.6E+01
SVOC	Butylbenzylphthalate	85-68-7	C	119	24	3.60E-02	1.10E+03	1.70E-02	3.00E+01						2.1E+07	5.2E-05	3.1E+02	**3.5E+00**						2.3E-05	4.7E+07	**3.5E+00**	3.1E+02
SVOC	Caprolactam	105-60-2		104				2.20E-02	1.90E+01						2.9E+05		3.1E+05								6.7E+05		5.3E+04
SVOC	Carbazole	86-74-8	B2	119	15	2.10E-02	1.10E+01	2.30E-02	1.10E+02								2.4E+03	4.6E-03								2.1E-02	5.3E+02
SVOC	4-Chloro-3-methylphenol	59-50-7		119				1.80E-02	1.10E+02								1.5E+04										4.5E+03
SVOC	4-Chloroaniline	106-47-8		119				6.30E-03	1.10E+02																		
SVOC	p-Chlorobenzilate	510-15-6		6				1.70E-01	3.00E+01																		
SVOC	2-Chloronaphthalene	91-58-7		119				1.90E-02	1.10E+02								1.8E+05										5.6E+04
SVOC	2-Chlorophenol	95-57-8		119				1.80E-02	1.10E+02								4.5E+03										1.4E+03
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		118				1.90E-02	1.10E+02																		
SVOC	Chrysene	218-01-9	B2	119	58	3.10E-02	1.60E+01	1.70E-02	1.10E+02								8.0E+03	2.0E-03								8.0E-03	2.0E+03
SVOC	Diallate (total)	2303-16-4		6				3.50E-01	6.10E+01																		
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	119	13	1.80E-02	1.40E+00	2.20E-02	1.10E+02								8.0E+00	1.8E-01								7.0E-01	2.0E+00
SVOC	Dibenzofuran	132-64-9	D	119	28	2.00E-02	2.70E+01	1.90E-02	3.00E+01																		
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	119				9.50E-03	6.50E+02						8.2E+03		3.0E+01								6.5E+03		6.6E+00
SVOC	2,4-Dichlorophenol	120-83-2		119				1.60E-02	1.10E+02						2.3E+06		1.8E+03								5.1E+06		6.6E+02
SVOC	2,6-Dichlorophenol	87-65-0		6				1.70E-01	3.00E+01																		
SVOC	Diethylphthalate	84-66-2	D	119				2.10E-02	1.10E+02						1.5E+06		7.4E+02								3.3E+06		7.4E+02
SVOC	Dimethoate	60-51-5		6				7.10E-01	2.30E+01																		
SVOC	p-(Dimethylamino)azobenzene	60-11-7		6				3.50E-01	6.10E+01																		
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6		6				3.50E-01	6.10E+01																		
SVOC	3,3'-Dimethylbenzidine	119-93-7		6				1.70E-01	3.00E+01																		
SVOC	a,a-Dimethylphenethylamine	122-09-8		6				9.00E-01	1.60E+02																		
SVOC	2,4-Dimethylphenol	105-67-9		119	7	2.40E-02	7.20E+01	3.30E-02	3.00E+01						2.1E+06	3.4E-05	3.6E+04	2.0E-03						1.5E-05	4.7E+06	6.5E-03	1.1E+04
SVOC	Dimethylphthalate	131-11-3	D	119				1.90E-02	1.10E+02						1.5E+06		7.9E+02								3.3E+06		7.9E+02
SVOC	Di-n-butylphthalate	84-74-2	D	119	4	3.60E+00	4.80E+02	2.40E-02	1.10E+02						1.5E+06	3.2E-04	7.6E+02	6.3E-01						1.5E-04	3.3E+06	6.3E-01	7.6E+02
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		118				7.50E-02	5.60E+02								2.6E+02										7.9E+01
SVOC	1,3-Dinitrobenzene	99-65-0		6				1.70E-01	3.00E+01																		
SVOC	2,4-Dinitrophenol	51-28-5		118				1.00E-01	5.60E+02																		
SVOC	2,4-Dinitrotoluene	121-14-2	B2	119				1.80E-02	1.10E+02						2.0E+04		2.2E+02								1.6E+04		4.8E+01
SVOC	2,6-Dinitrotoluene	606-20-2	B2	118				1.80E-02	1.10E+02																		
SVOC	Di-n-octylphthalate	117-84-0		119	2	2.90E+00	3.70E+01	1.80E-02	3.00E+01								2.0E+04	1.9E-03								5.4E-03	6.9E+03
SVOC	Diphenylamine	122-39-4		6				1.70E-01	3.00E+01																		
SVOC	Disulfoton	298-04-4		6				7.10E-01	2.30E+01																		
SVOC	Ethylmethanesulfonate	62-50-0		6				1.70E-01	3.00E+01																		
SVOC	Famphur	52-85-7		6				7.10E-01	2.30E+01																		
SVOC	Fluoranthene	206-44-0	D	119	64	2.80E-02	8.20E+01	2.40E-02	3.00E+01		1.0E+06	8.2E-05	8.9E+05	9.2E-05	4.1E+06	2.0E-05	1.3E+05	6.3E-04	1.0E+06	8.2E-05	7.4E+05	1.1E-04	8.8E-06	9.3E+06	1.8E-03	4.6E+04
SVOC	Fluorene	86-73-7	D	118	37	4.00E-02	3.60E+01	2.10E-02	3.00E+01		1.0E+06	3.6E-05	1.5E+05	2.4E-04	4.1E+06	8.8E-06	8.7E+04	4.1E-04	5.8E+05	6.2E-05	1.3E+05	2.8E-04	3.9E-06	9.3E+06	1.3E-03	2.7E+04
SVOC	Hexachlorobenzene	118-74-1	B2	119				1.80E-02	1.10E+02		2.2E+02		5.6E+01		8.5E+03		3.7E+01		4.1E+01		1.7E+01			6.8E+03		8.9E+00
SVOC	Hexachlorobutadiene	87-68-3	C	119				1.70E-02	1.10E+02		3.5E+02		4.6E+02		1.8E+05		3.5E+02		1.3E+02		1.3E+02			1.4E+05		1.0E+02
SVOC	Hexachlorocyclopentadiene	77-47-4	E	117				1.50E-02	1.10E+02		5.6E+01		6.0E+01		5.9E+03		7.2E+02		3.0E+01		5.0E+01			1.3E+04		7.2E+02
SVOC	Hexachloroethane	67-72-1	C	119				1.80E-02	1.10E+02		7.9E+01		6.6E+02		1.0E+05		7.3E+02		4.0E+01		5.5E+02			2.3E+05		2.3E+02
SVOC	Hexachloropropene	1888-71-7		6				1.70E+00	3.00E+02																		
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	119	32	2.40E-02	4.50E+00	2.30E-02	1.10E+02								8.0E+01	5.6E-02								2.3E-01	2.0E+01
SVOC	Isodrin	465-73-6		6				3.50E-03	1.90E-01																		
SVOC	Isophorone	78-59-1	C	119				1.90E-02	1.10E+02						8.2E+06		2.4E+03								1.2E+07		2.4E+03
SVOC	Isosafrole (total)	120-58-1		6				3.50E-01	6.10E+01																		
SVOC	Kepone	143-50-0	B2	6				3.50E-02	3.10E+00																		
SVOC	Methapyrilene	91-80-5		6				9.00E-01	1.60E+02																		
SVOC	Methyl parathion	298-00-0		6				7.10E-01	2.30E+01								1.8E+02										5.6E+01
SVOC	3-Methylcholanthrene	56-49-5		6				3.50E-01	6.10E+01																		
SVOC	Methylmethanesulfonate	66-27-3		6				1.70E-01	3.00E+01																		
SVOC	2-Methylnaphthalene	91-57-6	ID	118	54	2.50E-02	1.50E+02	1.80E-02	2.10E+01								2.6E+04	5.8E-03								1.9E-02	8.1E+03
SVOC	Methylphenol (total)	1319-77-3		119	9	8.60E-02	1.25E+02	1.50E-02	3.00E+01						2.9E+06	4.3E-05	3.6E+04	3.5E-03						1.9E-05	6.7E+06	1.1E-02	1.1E+04
SVOC	Naphthalene	91-20-3	C	118	44	2.40E-02	9.70E+01	1.90E-02	2.10E+01		4.7E+02	2.1E-01	3.5E+02	2.8E-01	8.8E+04	1.1E-03	5.2E+04	1.9E-03	2.5E+02	3.9E-01	3.0E+02	3.2E-01	4.9E-04	2.0E+05	6.1E-03	1.6E+04
SVOC	1,4-Naphthoquinone	130-15-4		6				9.00E-01	1.60E+02																		
SVOC	1-Naphthylamine	134-32-7		6				1.70E-01	3.00E+01																		
SVOC	2-Naphthylamine	91-59-8		6				1.70E-01	3.00E+01																		
SVOC	5-Nitro-o-toluidine	99-55-8		6				3.50E-01	6.10E+01																		
SVOC	2-Nitroaniline	88-74-4		119				1.90E-02	5.60E+02																		
SVOC	3-Nitroaniline	99-09-2	C	119				1.20E-02	5.60E+02																		
SVOC	4-Nitroaniline	100-01-6	C	119				1.80E-02	5.60E+02																		
SVOC	Nitrobenzene	98-95-3	D	119				1.80E-02	1.10E+02		1.7E+02		6.4E+01		2.1E+04		3.4E+02		9.1E+01		5.4E+01			4.7E+04		1.0E+02
SVOC	2-Nitrophenol	88-75-5		119				1.60E-02	1.10E+02								2.0E+03										6.3E+02
SVOC	4-Nitrophenol	100-02-7		119				1.10E-01	5.60E+02																		
SVOC	4-Nitroquinoline-1-oxide	56-57-5		6				1.70E+00	3.00E+02																		
SVOC	N-Nitrosodi-n-butylamine	924-16-3		6				1.70E-01	3.00E+01																		
SVOC	N-Nitrosodiethylamine	55-18-5		6				1.70E-01	3.00E+01																		
SVOC	N-Nitrosodimethylamine	62-75-9		6				1.70E-01	3.00E+01																		
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	119				2.10E-02	1.10E+02								7.8E+03										1.7E+03
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	119				1.90E-02	1.10E+02						2.0E+03		5.4E+00								1.6E+03		1.2E+00
SVOC	N-Nitrosomethylethylamine	10595-95-6		6				1.70E-01	3.00E+01																		
SVOC	N-Nitrosopiperidine	100-75-4		6				1.70E-01	3.00E+01																		
SVOC	N-Nitrosopyrrolidine	930-55-2		6				1.70E-01	3.00E+01																		
SVOC	N-Nitrosomorpholine	59-89-2		6				1.70E-01	3.00E+01																		
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	119				1.90E-02	1.10E+02																		
SVOC	Parathion	56-38-2		6				7.10E-01	2.30E+01																		
SVOC	Pentachlorobenzene	608-93-5		6				1.70E-01	3.00E+01								1.9E+02										1.9E+02
SVOC	Pentachloronitrobenzene	82-68-8		6				9.00E-01	1.60E+02		2.2E+02		2.8E+02		1.5E+05		5.5E+03		1.2E+02		2.3E+02			3.3E+05		1.7E+03
SVOC	Pentachlorophenol	87-86-5	B2	106				8.90E-02	1.00E+03						1.3E+05		3.2E+02								1.0E+05		9.0E+01
SVOC	Phenacetin	62-44-2		6				3.50E-01	6.10E+01																		
SVOC	Phenanthrene	85-01-8	D	119	77	1.95E-02	1.10E+02	2.10E-02	7.10E+00		5.1E+03	2.2E-02	1.9E+02	5.8E-01	2.9E+03	3.8E-02	5.2E+03	2.1E-02	2.8E+03	3.9E-02	1.6E+02	6.9E-01	1.6E-02	6.7E+03	6.9E-02	1.6E+03
SVOC	Phenol	108-95-2	ID	119	12	5.90E-02	1.40E+02	1.80E-02	3.00E+01						1.8E+07	7.8E-06	1.2E+04	1.2E-02					3.5E-06	4.0E+07	1.2E-02	1.2E+04
SVOC	p-Phenylene diamine	106-50-3		6				1.70E+00	3.00E+02																		

TABLE 4-14
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AREA OF INDUSTRIAL REDEVELOPMENT (SOIL)

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	Phorate	298-02-2		6				7.10E-01	2.30E+01																	
SVOC	2-Picoline	109-06-8		6				3.50E-01	6.10E+01																	
SVOC	Pronamide	23950-58-5		6				3.50E-01	6.10E+01																	
SVOC	Pyrene	129-00-0	D	119	68	2.00E-02	5.00E+01	1.70E-02	3.00E+01		1.0E+06	5.0E-05	7.8E+05	6.4E-05	2.9E+06	1.7E-05	8.4E+04	6.0E-04	1.0E+06	5.0E-05	6.5E+05	7.7E-05	7.5E-06	6.7E+06	1.7E-03	2.9E+04
SVOC	Pyridine	110-86-1		6				3.50E-01	6.10E+01		2.0E+00		9.8E+00		1.0E+05		3.7E+01		1.1E+00		8.2E+00			2.3E+05		3.7E+01
SVOC	Safrole (total)	94-59-7		6				3.50E-01	6.10E+01																	
SVOC	Sulfotepp	3689-24-5		6				7.10E-01	2.30E+01																	
SVOC	1,2,4,5-Tetrachlorobenzene	95-94-3		6				1.70E-01	3.00E+01								2.5E+05									7.7E+04
SVOC	2,3,4,6-Tetrachlorophenol	58-90-2		6				9.00E-01	1.60E+02																	
SVOC	Thionazin	297-97-2		6				7.10E-01	2.30E+01																	
SVOC	o-Toluidine	95-53-4		6				3.50E-01	6.10E+01																	
SVOC	2,4,5-Trichlorophenol	95-95-4		119				2.20E-02	2.20E+02						1.0E+07		7.3E+04							2.3E+07		2.3E+04
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	119				1.70E-02	1.10E+02						1.3E+06		3.3E+03							1.0E+06		7.1E+02
SVOC	O,O,O-Triethyl phosphorothioate	126-68-1		6				7.10E-01	2.30E+01																	
SVOC	1,3,5-Trinitrobenzene	99-35-4		6				9.00E-01	1.60E+02																	
P/PCB	PCBs (total)	1336-36-3	B2	466	303	1.08E-02	3.95E+02	3.00E-03	3.80E+00		1.6E+04	2.5E-02	8.1E+02	4.9E-01	6.5E+03	6.1E-02	1.6E+01	**2.5E+01**	3.0E+03	1.3E-01	2.4E+02	**1.6E+00**	7.6E-02	5.2E+03	**9.9E+01**	4.0E+00
P/PCB	Aldrin	309-00-2	B2	15				1.10E-02	2.30E-01		7.1E+03		2.0E+02		8.0E+02		4.3E+00		1.3E+03		5.8E+01			6.4E+02		1.0E+00
P/PCB	alpha-BHC	319-84-6	B2	15				1.10E-02	2.30E-01		1.6E+02		4.1E+01		2.1E+03		1.2E+01		3.0E+01		1.2E+01			1.7E+03		2.6E+00
P/PCB	beta-BHC	319-85-7	C	15				1.10E-02	2.30E-01						7.4E+03		2.5E+01							5.9E+03		5.4E+00
P/PCB	delta-BHC	319-86-8	D	15				1.10E-02	2.30E-01																	
P/PCB	gamma-BHC	58-89-9	B2-C	15				1.10E-02	2.30E-01								4.2E+01									8.3E+00
P/PCB	Chlordane (total)	57-74-9	B2	15				5.30E-03	2.30E-01		5.9E+04		4.2E+03		2.1E+04		1.5E+02		1.1E+04		1.2E+03			3.1E+04		3.1E+01
P/PCB	4,4'-DDD	72-54-8	B2	15				1.10E-02	4.60E-01						5.6E+04		4.0E+02							4.4E+04		9.5E+01
P/PCB	4,4'-DDE	72-55-9	B2	15				1.10E-02	4.60E-01						4.0E+04		1.9E+02							3.2E+04		4.5E+01
P/PCB	4,4'-DDT	50-29-3	B2	15				1.10E-02	4.60E-01						4.0E+04		2.8E+02							3.2E+04		5.7E+01
P/PCB	Dieldrin	60-57-1	B2	15				1.10E-02	4.60E-01		7.2E+02		6.4E+01		8.5E+02		4.7E+00		1.4E+02		1.9E+01			6.8E+02		1.1E+00
P/PCB	Endosulfan	115-29-7		15				1.10E-02	4.60E-01								4.4E+03									1.4E+03
P/PCB	Endosulfan sulfate	1031-07-8		15				1.10E-02	4.60E-01								4.4E+03									1.4E+03
P/PCB	Endrin	72-20-8	D	15				1.10E-02	4.60E-01								1.9E+02									6.5E+01
P/PCB	Endrin aldehyde	7421-93-4		15				1.10E-02	4.60E-01								1.9E+02									6.5E+01
P/PCB	Endrin ketone	53494-70-5		14				1.10E-02	4.60E-01								1.9E+02									6.5E+01
P/PCB	Heptachlor	76-44-8	B2	15				1.10E-02	2.30E-01		1.9E+03		2.1E+02		3.0E+03		2.3E+01		3.5E+02		6.2E+01			2.4E+03		5.6E+00
P/PCB	Heptachlor epoxide	1024-57-3	B2	15				1.10E-02	2.30E-01						1.5E+03		9.5E+00							1.2E+03		3.1E+00
P/PCB	Methoxychlor	72-43-5	D	15				2.70E-02	2.30E+00								5.6E+03									1.9E+03
P/PCB	Toxaphene	8001-35-2	B2	15				9.00E-02	1.10E+01						1.2E+04		8.5E+01							9.7E+03		2.0E+01
INORG	Aluminum	7429-90-5	D	15	15	4.38E+02	1.08E+04										3.7E+05	2.9E-02							2.2E-01	5.0E+04
INORG	Antimony	7440-36-0		119	70	1.27E-01	1.74E+03	2.56E-01	2.08E+01						5.9E+03	2.9E-01	6.7E+02	**2.6E+00**					1.3E-01	1.3E+04	**9.7E+00**	1.8E+02
INORG	Arsenic	7440-38-2	A	120	120	7.97E-01	5.40E+01			1.3E+01					9.1E+02	4.5E-02	3.7E+01	**1.1E+00**					5.7E-02	7.2E+02	**5.4E+00**	7.6E+00
INORG	Barium	7440-39-3	D	119	119	6.33E+00	4.04E+03			1.1E+02					1.5E+05	2.6E-02	1.3E+05	3.0E-02					1.2E-02	3.3E+05	1.1E-01	3.7E+04
INORG	Beryllium	7440-41-7	B1	119	64	2.50E-02	1.07E+00	2.41E-02	1.72E+00	1.5E+00					5.9E+02		1.6E+03							1.3E+03		4.1E+02
INORG	Cadmium	7440-43-9	B1	119	99	2.44E-02	3.85E+01	8.40E-03	5.53E-01	1.2E+00					2.2E+03	1.7E-02	2.1E+03	1.8E-02					2.2E-02	1.7E+03	6.8E-02	5.5E+02
INORG	Calcium	7440-70-2		15	15	2.42E+03	8.86E+04																			
INORG	Chromium (total)	7440-47-3		122	122	4.12E+00	1.66E+03			4.9E+01					2.4E+02	**6.7E+00**	9.2E+03	1.8E-01					**6.2E+00**	2.6E+02	6.4E-01	2.5E+03
INORG	Chromium III	16065-83-1	D	15	15	1.35E+01	3.77E+02								1.5E+05	2.5E-03	1.0E+06	3.8E-04					1.1E-03	3.3E+05	4.8E-04	7.9E+05
INORG	Chromium VI	18540-29-9	A	15	3	6.00E-01	1.38E+00	3.80E-01	4.46E-01						2.4E+02	5.7E-03	9.2E+03	1.5E-04					5.3E-03	2.6E+02	5.5E-04	2.5E+03
INORG	Cobalt	7440-48-4	B1	119	115	7.76E-01	6.44E+01	2.65E+00	2.99E+00	1.7E+01					5.9E+03	8.0E-03	9.0E+03	5.2E-03					3.6E-03	1.3E+04	1.8E-02	2.6E+03
INORG	Copper	7440-50-8	D	119	119	2.31E+00	2.58E+04			3.2E+01					5.9E+04	4.4E-01	7.3E+04	3.5E-01					2.0E-01	1.3E+05	**1.3E+00**	2.0E+04
INORG	Cyanide (total)	57-12-5	D	39	21	2.32E-01	4.10E+00	1.78E-01	5.73E-01						2.5E+02	1.6E-02	2.5E+02	1.6E-02					1.6E-02	2.5E+02	3.4E-01	1.2E+01
INORG	Iron	7439-89-6	D	15	15	6.09E+03	3.76E+05										5.8E+05	6.5E-01							**2.4E+00**	1.6E+05
INORG	Lead	7439-92-1	B2	119	119	2.03E+00	8.44E+03			4.9E+01					4.4E+04	1.9E-01	9.0E+02	**9.3E+00**					8.4E-02	1.0E+05	**2.1E+01**	4.0E+02
INORG	Magnesium	7439-95-4		15	15	6.22E+02	1.65E+04								2.9E+06	5.7E-03	1.0E+06	1.7E-02					2.5E-03	6.7E+06	1.7E-02	1.0E+06
INORG	Manganese	7439-96-5	D	142	142	1.07E+02	7.04E+03			5.1E+02					1.5E+03	**4.4E+00**	9.0E+04	7.3E-02					**2.0E+00**	3.3E+03	2.6E-01	2.5E+04
INORG	Mercury	7439-97-6	D	119	75	1.07E-02	6.55E+00	8.80E-03	5.98E-02	1.3E-01	8.9E+01	7.2E-02	6.2E+01	1.0E-01	8.8E+03	7.3E-04	5.8E+02	1.1E-02	4.8E+01	1.3E-01	5.2E+01	1.2E-01	3.2E-04	2.0E+04	4.0E-02	1.6E+02
INORG	Nickel	7440-02-0	A	119	119	2.08E+00	1.89E+03			3.0E+01					1.6E+04	1.2E-01	1.5E+05	1.2E-02					1.4E-01	1.3E+04	4.6E-02	4.0E+04
INORG	Potassium	7440-09-7		15	5	5.79E+02	2.69E+03	5.23E+02	5.98E+02																	
INORG	Selenium	7782-49-2	D	119	28	1.56E-01	8.62E+00	1.62E-01	1.14E+01	4.1E-01					5.9E+04	1.4E-04	9.6E+03	8.6E-04					6.3E-05	1.3E+05	3.2E-03	2.6E+03
INORG	Silver	7440-22-4	D	119	24	5.96E-02	6.96E+01	4.24E-02	5.20E+00						2.9E+03	2.4E-02	9.0E+03	7.7E-03					1.0E-02	6.7E+03	2.8E-02	2.5E+03
INORG	Sodium	7440-23-5		15	15	1.09E+02	6.75E+02										1.0E+06	6.8E-04							6.8E-04	1.0E+06
INORG	Thallium	7440-28-0		119	45	2.72E-01	7.72E+00	2.31E-01	2.28E+01								1.3E+02	5.9E-02							2.2E-01	3.5E+01
INORG	Tin	7440-31-5		4	3	2.70E+01	8.40E+01	1.14E+01	1.14E+01																	
INORG	Vanadium	7440-62-2		119	119	4.48E+00	6.14E+01			3.3E+01							5.5E+03	5.2E-03							3.8E-02	7.5E+02
INORG	Zinc	7440-66-6	D	119	119	5.19E+00	7.40E+03			1.9E+02							6.3E+05	1.1E-02							4.2E-02	1.7E+05
HERB	2,4-D	94-75-7		6				1.10E-01	1.70E-01						2.9E+06		8.6E+03							6.7E+06		2.5E+03
HERB	2,4,5-T	93-76-5		6				2.70E-02	2.70E-01																	
HERB	2,4,5-TP	93-72-1		6				2.70E-02	3.00E-02								5.5E+03									1.7E+03
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	B2	21	21	2.57E-07	1.89E-03								8.9E-02	2.1E-02	9.9E-04	**1.9E+00**					2.7E-02	7.1E-02	**2.1E+01**	9.0E-05

Notes:
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to Polychlorinated biphenyls (PCBs) for cancer effects and Aroclor 1254 for noncancer effects.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the Chlordane isomers (alpha and beta) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-15
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-01 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	6				5.10E-04	1.00E-02	1.0E+06		3.1E+04		7.3E-01	
Shallow	VOC	Benzene	71-43-2	T	A	6				1.60E-04	1.00E-03	3.5E+01		1.1E+01		5.0E-03	
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	6	1	1.90E-04	1.90E-04	1.70E-04	1.00E-03	3.7E+01	5.1E-06	1.4E+01	1.4E-05	1.0E-01	1.9E-03
Shallow	VOC	Bromoform	75-25-2	T	B2	6				1.80E-04	1.00E-03	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	6				2.00E-04	1.00E-03	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	6				4.10E-04	1.00E-02	2.4E+05		2.4E+05		1.3E+01	
Shallow	VOC	Carbon Disulfide	75-15-0	T		6				2.00E-04	1.00E-03	5.5E+02		1.2E+03		8.0E-01	
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	6				1.20E-04	1.00E-03	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	6				1.40E-04	1.00E-03	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		6				2.60E-04	1.00E-03	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	6	3	4.20E-04	6.70E-04	1.40E-04	1.40E-04	1.8E+02	3.7E-06	1.5E+02	4.5E-06	1.0E-01	6.7E-03
Shallow	VOC	Chloromethane	74-87-3	T	D	6				1.30E-04	1.00E-03	4.5E+01		4.9E+02		2.6E-01	
Shallow	VOC	Cumene	98-82-8	T	D	6				1.20E-04	1.00E-03	5.6E+01		5.6E+01		8.0E-01	
Shallow	VOC	Cyclohexane	110-82-7	T	ID	6				1.30E-04	1.00E-03						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	6				6.20E-04	2.00E-03	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	6				2.60E-04	1.00E-03	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	6				2.20E-04	1.00E-03	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	6				1.10E-04	1.00E-03	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	6				1.50E-04	1.00E-03			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	6				1.70E-04	1.00E-03	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		6	4	6.70E-04	2.40E-02	2.60E-04	2.60E-04	3.0E+02	8.0E-05	3.0E+02	8.0E-05	1.7E+00	1.4E-02
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	6				1.60E-04	1.00E-03	2.3E+03		2.4E+03		8.8E-01	
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	6				2.10E-04	1.00E-03	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	6				2.40E-04	1.00E-03	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	6				2.20E-04	5.00E-04	2.1E+02		2.0E+02		7.0E-02	
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		6				1.50E-04	5.00E-04	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	6				1.70E-04	1.00E-03	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	6				2.70E-04	1.00E-03	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	6				1.20E-04	1.00E-03	1.7E+02		1.7E+02		7.0E-01	
Shallow	VOC	2-Hexanone	591-78-6	T		6				4.60E-04	1.00E-02	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		6				4.10E-04	1.00E-02						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		6				1.30E-04	5.00E-03	4.7E+04		6.1E+02		2.4E-01	
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	6				2.30E-04	1.00E-02	2.0E+04		1.3E+04		1.8E+00	
Shallow	VOC	Methylcyclohexane	108-87-2	T		6				1.50E-04	1.00E-03						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	6				3.40E-04	1.00E-03	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	Styrene	100-42-5	T		6				1.50E-04	1.00E-03	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	6				2.50E-04	1.00E-03	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	6	2	3.80E-04	4.10E-04	2.30E-04	1.00E-03	1.7E+02	2.4E-06	1.2E+01	3.4E-05	5.0E-03	8.2E-02
Shallow	VOC	Toluene	108-88-3	T	D	6	1	4.40E-04	4.40E-04	1.80E-04	1.00E-03	5.3E+02	8.3E-07	5.3E+02	8.3E-07	1.0E+00	4.4E-04
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	6				1.70E-04	1.00E-03	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	6	3	5.30E-04	1.00E-03	1.50E-04	1.00E-03	1.3E+03	7.7E-07	1.3E+03	7.7E-07	2.0E-01	5.0E-03
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	6				3.00E-04	1.00E-03	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	6				1.40E-04	1.00E-03	9.7E+01		2.2E+01		5.0E-03	
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		6				2.80E-04	1.00E-03	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		6				3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	6				1.50E-04	1.00E-03	1.3E+01		1.0E+00		2.0E-03	
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	6	1	3.70E-04	3.70E-04	3.30E-04	1.00E-03	1.9E+02	1.9E-06	1.9E+02	1.9E-06	1.0E+01	3.7E-05
Shallow	SVOC	Acenaphthene	83-32-9	T		6				8.00E-04	5.00E-03	4.2E+00		4.2E+00		1.3E+00	
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	6				7.10E-04	5.00E-03	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	6				2.60E-03	1.00E-02	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	6				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		6				2.50E-03	5.00E-03			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		6				2.80E-03	1.00E-02						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	6				7.00E-04	5.00E-03			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	6				7.30E-04	5.00E-03			2.0E-03		5.0E-03	
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	6				9.40E-04	5.00E-03			2.0E-03		2.0E-03	

TABLE 4-15
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-01 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	6				8.50E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	6				8.40E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	6				2.60E-03	1.00E-02						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	6				8.70E-04	5.00E-03						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	6				9.70E-04	5.00E-03	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	6				2.70E-03	5.00E-03			3.2E-01		6.0E-03	
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	6				8.80E-04	5.00E-03						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	6				8.80E-04	5.00E-03			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		6				2.50E-03	1.00E-02			3.9E+05		5.8E+00	
Shallow	SVOC	Carbazole	86-74-8	T	B2	6				8.20E-04	1.00E-02			7.4E+00		8.5E-02	
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		6				9.90E-04	5.00E-03			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		3				6.10E-04	1.00E-02						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		6				8.50E-04	5.00E-03			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		6				1.00E-03	5.00E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		6				7.90E-04	5.00E-03						
Shallow	SVOC	Chrysene	218-01-9	T	B2	6				7.50E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	6				7.90E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	6				1.10E-03	5.00E-03						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	3				9.30E-04	2.00E-02			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		6				8.50E-04	1.00E-02			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	6				6.50E-04	5.00E-03			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		6				8.50E-04	5.00E-03			5.2E+02		3.7E-01	
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	6				7.60E-04	5.00E-03			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	6				6.70E-04	5.00E-03			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		6				1.30E-03	2.00E-02			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		6				3.00E-03	2.00E-02						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	6				7.90E-04	5.00E-03			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	6				5.70E-04	5.00E-03						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		6				1.10E-03	5.00E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	6				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	6				1.00E-03	5.00E-03	2.0E+00		2.0E+00		8.8E-01	
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	6				7.40E-04	5.00E-03	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	6				7.30E-04	5.00E-03	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	6				1.10E-03	5.00E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	6				7.40E-04	5.00E-03	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	6				6.30E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	6				6.30E-04	5.00E-03			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	6				6.40E-04	5.00E-03			2.5E+01		2.6E-01	
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		6				1.30E-03	5.00E-03			8.1E+02		3.7E-01	
Shallow	SVOC	Naphthalene	91-20-3	T	C	6				7.50E-04	5.00E-03	3.1E+01		3.1E+01		5.2E-01	
Shallow	SVOC	2-Nitroaniline	88-74-4	T		6				7.00E-04	2.00E-02						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	3				7.10E-04	2.00E-02						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	6				1.30E-03	2.00E-02						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	6				8.10E-04	5.00E-03	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		6				2.10E-03	5.00E-03			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		6				1.90E-03	2.00E-02						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	6				1.40E-03	5.00E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	6				6.70E-04	5.00E-03			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	6				7.80E-04	5.00E-03						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	6				2.40E-03	5.00E-03			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	6				8.20E-04	5.00E-03	1.0E+00		1.0E+00		5.2E-02	
Shallow	SVOC	Phenol	108-95-2	T	ID	6				2.60E-03	5.00E-03			2.9E+04		4.4E+00	
Shallow	SVOC	Pyrene	129-00-0	T	D	6				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		6				1.20E-03	5.00E-03			1.7E+02		7.3E-01	
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	6				1.70E-03	5.00E-03			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	D	B2	3				8.20E-05	4.00E-04	4.5E-02		3.3E-03		5.0E-04	

TABLE 4-15
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-01 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	6				8.20E-05	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	INORG	Antimony	7440-36-0	D		6	2	4.20E-03	6.00E-03	2.20E-03	2.50E-02			6.8E+01	8.8E-05	6.0E-03	1.0E+00
Shallow	INORG	Antimony	7440-36-0	T		6	2	5.00E-03	7.70E-03	2.20E-03	2.50E-02			6.8E+01	1.1E-04	6.0E-03	**1.3E+00**
Shallow	INORG	Arsenic	7440-38-2	D	A	6	3	4.20E-03	6.40E-03	3.90E-03	1.00E-02			4.3E+00	1.5E-03	5.0E-02	1.3E-01
Shallow	INORG	Arsenic	7440-38-2	T	A	6	5	4.70E-03	7.00E-03	1.00E-02	1.00E-02			4.3E+00	1.6E-03	5.0E-02	1.4E-01
Shallow	INORG	Barium	7440-39-3	D	D	6	6	1.41E-02	1.77E-01					1.4E+04	1.3E-05	2.0E+00	8.9E-02
Shallow	INORG	Barium	7440-39-3	T	D	6	6	1.36E-02	1.72E-01					1.4E+04	1.2E-05	2.0E+00	8.6E-02
Shallow	INORG	Beryllium	7440-41-7	D	B1	6				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Beryllium	7440-41-7	T	B1	6				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	D	B1	6				2.80E-04	5.00E-03			1.9E+02		5.0E-03	
Shallow	INORG	Cadmium	7440-43-9	T	B1	6	1	3.80E-04	3.80E-04	2.80E-04	5.00E-03			1.9E+02	2.0E-06	5.0E-03	7.6E-02
Shallow	INORG	Chromium (total)	7440-47-3	D		4	1	3.64E-02	3.64E-02	1.40E-03	1.00E-02			4.6E+02	7.9E-05	1.0E-01	3.6E-01
Shallow	INORG	Chromium III	16065-83-1	D	D	2	1	3.87E-02	3.87E-02	1.40E-03	1.40E-03			2.9E+05	1.3E-07	3.8E+01	1.0E-03
Shallow	INORG	Chromium III	16065-83-1	T	D	6	2		4.85E-02	1.40E-03	1.00E-02			2.9E+05	1.7E-07	3.8E+01	1.3E-03
Shallow	INORG	Chromium VI	18540-29-9	D	A	2				6.90E-03	6.90E-03			4.6E+02		1.0E-01	
Shallow	INORG	Chromium VI	18540-29-9	T	A	6	1	3.38E-02	3.38E-02	6.90E-03	2.00E-02			4.6E+02	7.3E-05	1.0E-01	3.4E-01
Shallow	INORG	Cobalt	7440-48-4	D	B1	6	4	2.20E-03	2.90E-03	1.30E-03	1.30E-03			2.4E+03	1.2E-06	4.0E-02	7.3E-02
Shallow	INORG	Cobalt	7440-48-4	T	B1	6	4	2.20E-03	2.80E-03	1.30E-03	1.30E-03			2.4E+03	1.2E-06	4.0E-02	7.0E-02
Shallow	INORG	Copper	7440-50-8	D	D	6				4.20E-03	5.00E-03			7.4E+03		1.4E+00	
Shallow	INORG	Copper	7440-50-8	T	D	6				4.20E-03	5.00E-03			7.4E+03		1.4E+00	
Shallow	INORG	Cyanide (total)	57-12-5	T	D	11	7	5.50E-03	1.30E+00	1.70E-03	1.80E-03			5.7E+01	2.3E-02	2.0E-01	**6.5E+00**
Shallow	INORG	Lead	7439-92-1	D	B2	6				2.50E-03	3.00E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	6				2.50E-03	3.00E-03					4.0E-03	
Shallow	INORG	Manganese	7439-96-5	D	D	6	5	9.40E-04	5.46E-01	9.00E-04	9.00E-04			9.1E+03	6.0E-05	8.6E-01	6.3E-01
Shallow	INORG	Manganese	7439-96-5	T	D	6	5	2.63E-02	5.48E-01	9.00E-04	9.00E-04			9.1E+03	6.0E-05	8.6E-01	6.4E-01
Shallow	INORG	Mercury	7439-97-6	D	D	6				6.90E-05	2.00E-04	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Mercury	7439-97-6	T	D	6				6.90E-05	2.00E-04	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Nickel	7440-02-0	D	A	6	2	2.40E-03	3.00E-03	2.20E-03	2.20E-03			7.4E+04	4.1E-08	1.0E-01	3.0E-02
Shallow	INORG	Nickel	7440-02-0	T	A	6	1	3.70E-03	3.70E-03	2.20E-03	2.00E-02			7.4E+04	5.0E-08	1.0E-01	3.7E-02
Shallow	INORG	Selenium	7782-49-2	D	D	6	2	5.00E-03	5.60E-03	4.50E-03	5.00E-03			9.7E+02	5.8E-06	5.0E-02	1.1E-01
Shallow	INORG	Selenium	7782-49-2	T	D	6	2	4.50E-03	6.50E-03	4.50E-03	5.00E-03			9.7E+02	6.7E-06	5.0E-02	1.3E-01
Shallow	INORG	Silver	7440-22-4	D	D	6				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	6				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		6	3	2.60E-05	5.40E-05	5.00E-03	1.00E-02			1.3E+01	4.2E-06	2.0E-03	2.7E-02
Shallow	INORG	Thallium	7440-28-0	T		6	1	4.50E-05	4.50E-05	1.80E-05	1.00E-02			1.3E+01	3.5E-06	2.0E-03	2.3E-02
Shallow	INORG	Vanadium	7440-62-2	D		6	2	1.00E-03	1.70E-03	8.20E-04	1.00E-02			9.7E+02	1.8E-06	4.5E-03	3.8E-01
Shallow	INORG	Vanadium	7440-62-2	T		6	1	2.80E-03	2.80E-03	8.20E-04	1.00E-02			9.7E+02	2.9E-06	4.5E-03	6.2E-01
Shallow	INORG	Zinc	7440-66-6	D	D	6	1	1.89E-02	1.89E-02	1.20E-02	2.00E-02			1.1E+05	1.7E-07	2.4E+00	7.9E-03
Shallow	INORG	Zinc	7440-66-6	T	D	6				1.20E-02	2.00E-02			1.1E+05		2.4E+00	

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.
The MDEQ Drinking Water Criteria for Chromium III was calculated by ENVIRON to account for valence specific toxicity.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-16
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-2 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
VOC	Acetone	67-64-1	ID	88	17	2.18E-03	4.50E-01	1.70E-03	1.00E+00		1.1E+05	4.1E-06	1.6E+05	2.8E-06	1.7E+08	2.6E-09	7.3E+04	6.2E-06	1.1E+05	4.1E-06	1.3E+05	3.5E-06	3.9E+08	1.2E-09	2.3E+04	2.0E-05
VOC	Benzene	71-43-2	A	88	4	1.10E-03	2.50E-02	3.10E-04	2.60E-01		8.4E+00	3.0E-03	4.5E+01	5.6E-04	4.7E+05	5.3E-08	4.0E+02	6.3E-05	1.6E+00	1.6E-02	1.3E+01	1.9E-03	3.8E+05	6.6E-08	1.8E+02	1.4E-04
VOC	Bromodichloromethane	75-27-4	B2	88				4.90E-04	2.60E-01		6.4E+00		3.1E+01		1.1E+05		4.9E+02		1.2E+00		9.1E+00		8.4E+04		1.1E+02	
VOC	Bromoform	75-25-2	B2	88				6.50E-04	2.60E-01		7.7E+02		3.1E+03		3.6E+06		8.7E+02		1.5E+02		9.0E+02		2.8E+06		8.2E+02	
VOC	Bromomethane	74-83-9	D	88				1.30E-03	5.10E-01		1.6E+00		1.3E+01		1.5E+05		1.0E+03		8.6E-01		1.1E+01		3.3E+05		3.2E+02	
VOC	2-Butanone	78-93-3	ID	88	8	2.80E-03	1.50E-01	1.30E-03	1.00E+00		2.7E+04	5.6E-06	3.5E+04	4.3E-06	2.9E+07	5.2E-09	2.7E+04	5.6E-06	2.7E+04	5.6E-06	2.9E+04	5.2E-06	6.7E+07	2.2E-09	2.7E+04	5.6E-06
VOC	Carbon Disulfide	75-15-0		88	9	6.70E-04	7.20E-02	2.50E-04	2.60E-01		1.4E+02	5.1E-04	1.6E+03	4.5E-05	2.1E+07	3.4E-09	2.8E+02	2.6E-04	7.6E+01	9.5E-04	1.3E+03	5.5E-05	4.7E+07	1.5E-09	2.8E+02	2.6E-04
VOC	Carbon Tetrachloride	56-23-5	B2	88				4.40E-04	2.60E-01		9.9E-01		1.2E+01		1.7E+05		3.9E+02		1.9E-01		3.5E+00		1.3E+05		9.6E+01	
VOC	Chlorobenzene	108-90-7	D	88				3.60E-04	2.60E-01		2.2E+02		9.2E+02		2.1E+06		2.6E+02		1.2E+02		7.7E+02		4.7E+06		2.6E+02	
VOC	Chloroethane	75-00-3		88	2	2.40E-03	8.00E-03	8.60E-04	5.10E-01		9.5E+02	8.4E-06	3.6E+04	2.2E-07	2.9E+08	2.8E-11	9.5E+02	8.4E-06	9.5E+02	8.4E-06	3.0E+04	2.7E-07	6.7E+08	1.2E-11	9.5E+02	8.4E-06
VOC	Chloroform	67-66-3	B2	88	7	9.90E-04	4.40E-03	4.80E-04	2.60E-01		3.8E+01	1.2E-04	1.5E+02	2.9E-05	1.6E+06	2.8E-09	1.5E+03	2.9E-06	7.2E+00	6.1E-04	4.5E+01	9.8E-05	1.3E+06	3.4E-09	1.2E+03	3.7E-06
VOC	Chloromethane	74-87-3	D	88				4.30E-04	5.10E-01		1.0E+01		1.2E+02		2.6E+06		1.1E+03		2.3E+00		4.0E+01		4.9E+06		1.1E+03	
VOC	Cumene	98-82-8	D	88	3	8.00E-04	2.30E-03	5.00E-04	2.60E-01		3.9E+02	5.9E-06	2.0E+03	1.2E-06	2.6E+06	8.8E-10	3.9E+02	5.9E-06	3.9E+02	5.9E-06	1.7E+03	1.4E-06	5.8E+06	4.0E-10	3.9E+02	5.9E-06
VOC	Cyclohexane	110-82-7	ID	88	2	6.00E-04	1.80E-02	4.20E-04	5.10E-01																	
VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	88				1.00E-03	5.80E-01		1.2E+00		1.5E+01		5.9E+03		1.2E+00		1.2E+00		1.3E+01		1.3E+04		1.2E+00	
VOC	Dibromochloromethane	124-48-1	C	88				5.70E-04	2.60E-01		2.1E+01		8.0E+01		1.6E+05		5.0E+02		3.9E+00		2.4E+01		1.3E+05		1.1E+02	
VOC	1,2-Dibromoethane	106-93-4	B2	88				3.30E-04	2.60E-01		3.6E+00		5.8E+00		1.8E+04		4.3E-01		6.7E-01		1.7E+00		1.4E+04		2.5E-01	
VOC	1,2-Dichlorobenzene	95-50-1	D	88	2	9.20E-04	1.60E-02	4.00E-04	2.60E-01		2.1E+02	7.6E-05	4.6E+04	3.5E-07	4.4E+07	3.6E-10	2.1E+02	7.6E-05	2.1E+02	7.6E-05	3.9E+04	4.1E-07	1.0E+08	1.6E-10	2.1E+02	7.6E-05
VOC	1,3-Dichlorobenzene	541-73-1	D	88	1	8.70E-04	8.70E-04	5.90E-04	2.60E-01								1.7E+02	5.1E-06							1.7E+02	5.1E-06
VOC	1,4-Dichlorobenzene	106-46-7	C	88	1	1.30E-03	1.30E-03	4.30E-04	2.60E-01		1.0E+02	1.3E-05	2.6E+02	5.0E-06	5.7E+05	2.3E-09	1.9E+03	6.8E-07	1.9E+01	6.8E-05	7.7E+01	1.7E-05	4.5E+05	2.9E-09	4.0E+02	3.3E-06
VOC	Dichlorodifluoromethane	75-71-8		88				8.00E-04	5.10E-01		1.7E+03		6.3E+04		1.5E+09		1.0E+03		9.0E+02		5.3E+04		3.3E+09		1.0E+03	
VOC	1,1-Dichloroethane	75-34-3	C	88	42	1.20E-03	4.40E+01	2.80E-04	2.60E-01		4.3E+02	1.0E-01	2.5E+03	1.8E-02	1.5E+07	2.9E-06	8.9E+02	4.9E-02	2.3E+02	1.9E-01	2.1E+03	2.1E-02	3.3E+07	1.3E-06	8.9E+02	4.9E-02
VOC	1,2-Dichloroethane	107-06-2	B2	88	3	1.60E-03	3.30E-01	4.00E-04	2.60E-01		1.1E+01	3.0E-02	2.1E+01	1.6E-02	1.5E+05	2.2E-06	4.2E+02	7.9E-04	2.1E+00	1.6E-01	6.2E+00	5.3E-02	1.2E+05	2.8E-06	9.1E+01	3.6E-03
VOC	1,1-Dichloroethene	75-35-4	C	88	15	7.90E-04	1.80E+00	4.90E-04	2.60E-01		3.3E-01	**5.5E+00**	3.7E+00	4.9E-01	7.8E+04	2.3E-05	5.7E+02	3.2E-03	6.2E-02	**2.9E+01**	1.1E+00	**1.6E+00**	6.2E+04	2.9E-05	2.0E+02	9.0E-03
VOC	cis-1,2-Dichloroethene	156-59-2	D	88	1	5.70E-03	5.70E-03	3.10E-04	2.60E-01		4.1E+01	1.4E-04	2.1E+02	2.7E-05	1.0E+06	5.7E-09	6.4E+02	8.9E-06	2.2E+01	2.6E-04	1.8E+02	3.2E-05	2.3E+06	2.5E-09	6.4E+02	8.9E-06
VOC	trans-1,2-Dichloroethene	156-60-5		88				3.60E-04	2.60E-01		4.3E+01		3.3E+02		2.1E+06		1.4E+03		2.3E+01		2.8E+02		4.7E+06		1.4E+03	
VOC	1,2-Dichloropropane	78-87-5	B2	88				3.10E-04	2.60E-01		7.4E+00		3.0E+01		1.2E+05		5.5E+02		4.0E+00		2.5E+01		2.7E+05		1.4E+02	
VOC	1,3-Dichloropropene (total)	542-75-6	B2	88				4.60E-04	2.60E-01		5.4E+00		6.0E+01		5.9E+05		2.4E+02		1.0E+00		1.8E+01		7.8E+05		1.0E+01	
VOC	Ethyl Benzene	100-41-4	D	87	6	5.10E-04	2.40E-02	4.40E-04	2.60E-01		1.4E+02	1.7E-04	2.4E+03	1.0E-05	1.3E+07	1.8E-09	1.4E+02	1.7E-04	8.7E+01	2.8E-04	7.2E+02	3.3E-05	1.0E+07	2.4E-09	1.4E+02	1.7E-04
VOC	2-Hexanone	591-78-6		88	1	5.60E-03	5.60E-03	1.20E-03	1.00E+00		1.8E+03	3.1E-06	1.3E+03	4.3E-06	1.2E+06	4.7E-09	2.5E+03	2.2E-06	9.9E+02	5.7E-06	1.1E+03	5.1E-06	2.7E+06	2.1E-09	2.5E+03	2.2E-06
VOC	Methyl Acetate	79-20-9		88	10	1.18E-03	5.70E-01	8.20E-04	5.10E-01																	
VOC	Methyl tert-butyl ether	1634-04-4		88				2.80E-04	1.00E+00		5.9E+03		3.0E+04		8.8E+07		5.9E+03		5.9E+03		2.5E+04		2.0E+08		1.5E+03	
VOC	4-Methyl-2-pentanone	108-10-1	ID	88	12	1.20E-03	1.80E+00	8.40E-04	1.00E+00		2.7E+03	6.7E-04	5.3E+04	3.4E-05	6.0E+07	3.0E-08	2.7E+03	6.7E-04	2.7E+03	6.7E-04	4.5E+04	4.0E-05	1.4E+08	1.3E-08	2.7E+03	6.7E-04
VOC	Methylcyclohexane	108-87-2		88	4	6.60E-04	2.10E-02	4.20E-04	5.10E-01																	
VOC	Methylene Chloride	75-09-2	B2	88	6	1.70E-03	4.70E-01	9.70E-04	2.90E-01		2.4E+02	2.0E-03	7.0E+02	6.7E-04	8.3E+06	5.7E-08	2.3E+03	2.0E-04	4.5E+01	1.0E-02	2.1E+02	2.2E-03	6.6E+06	7.1E-08	1.3E+03	3.6E-04
VOC	Styrene	100-42-5		88				3.00E-04	2.60E-01		5.2E+02		3.3E+03		6.9E+06		5.2E+02		2.5E+02		9.7E+02		5.5E+06		4.0E+02	
VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	88				3.90E-04	2.60E-01		2.3E+01		3.4E+01		6.8E+04		2.4E+02		4.3E+00		1.0E+01		5.4E+04		5.3E+01	
VOC	Tetrachloroethene	127-18-4	C-B2	88	39	9.20E-04	1.90E+00	4.80E-04	2.60E-01		6.0E+01	3.2E-02	6.0E+02	3.2E-03	6.8E+06	2.8E-07	8.8E+01	2.2E-02	1.1E+01	1.7E-01	1.8E+02	1.1E-02	5.4E+06	3.5E-07	8.8E+01	2.2E-02
VOC	Toluene	108-88-3	D	88	33	4.00E-04	2.90E+00	3.30E-04	2.60E-01		2.5E+02	1.2E-02	3.3E+03	8.8E-04	1.2E+07	2.4E-07	2.5E+02	1.2E-02	2.5E+02	1.2E-02	2.8E+03	1.0E-03	2.7E+07	1.1E-07	2.5E+02	1.2E-02
VOC	1,2,4-Trichlorobenzene	120-82-1	D	88				5.60E-04	2.60E-01		1.1E+03		3.4E+04		1.1E+07		1.1E+03		1.1E+03		2.8E+04		2.5E+07		9.9E+02	
VOC	1,1,1-Trichloroethane	71-55-6	D	88	49	4.40E-04	4.60E+00	3.90E-04	2.30E-01		4.6E+02	1.0E-02	4.5E+03	1.0E-03	2.9E+07	1.6E-07	4.6E+02	1.0E-02	2.5E+02	1.8E-02	3.8E+03	1.2E-03	6.7E+07	6.9E-08	4.6E+02	1.0E-02
VOC	1,1,2-Trichloroethane	79-00-5	C	82	1	4.10E-03	4.10E-03	3.30E-04	2.60E-01		2.4E+01	1.7E-04	5.7E+01	7.2E-05	2.5E+05	1.6E-08	8.4E+02	4.9E-06	4.6E+00	8.9E-04	1.7E+01	2.4E-04	1.9E+05	2.2E-08	1.8E+02	2.3E-05
VOC	Trichloroethene	79-01-6	C-B2	88	14	5.53E-04	4.40E-01	5.70E-04	2.60E-01		3.7E+01	1.2E-02	2.6E+02	1.7E-03	2.3E+06	1.9E-07	5.0E+02	8.8E-04	7.1E+00	6.2E-02	7.8E+01	5.6E-03	1.8E+06	2.4E-07	5.0E+02	8.8E-04
VOC	Trichlorofluoromethane	75-69-4		88				3.60E-04	5.10E-01		5.6E+02		1.1E+05		1.7E+09		5.6E+02		5.6E+02		9.2E+04		3.8E+09		5.6E+02	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		88	2	7.80E-04	2.20E-03	6.90E-04	2.60E-01		5.5E+02	4.0E-06	2.1E+05	1.0E-08	2.3E+09	9.6E-13	5.5E+02	4.0E-06	5.5E+02	4.0E-06	1.8E+05	1.2E-08	5.1E+09	4.3E-13	5.5E+02	4.0E-06
VOC	Vinyl Chloride	75-01-4	A	88				4.20E-04	5.10E-01		2.8E+00		2.9E+01		8.9E+05		3.4E+01		2.7E-01		4.2E+00		3.5E+05		3.8E+00	
VOC	Xylenes (total)	1330-20-7	ID	88	7	3.20E-03	1.70E-01	1.10E-03	5.10E-01		1.5E+02	1.1E-03	5.4E+04	3.1E-06	1.3E+08	1.3E-09	1.5E+02	1.1E-03	1.5E+02	1.1E-03	4.6E+04	3.7E-06	2.9E+08	5.9E-10	1.5E+02	1.1E-03
SVOC	Acenaphthene	83-32-9		84	5	1.30E-01	1.40E+00	1.40E-02	7.80E+00		3.5E+05	4.0E-06	9.7E+04	1.4E-05	6.2E+06	2.3E-07	1.3E+05	1.1E-05	1.9E+05	7.4E-06	8.1E+04	1.7E-05	1.4E+07	1.0E-07	4.1E+04	3.4E-05
SVOC	Acenaphthylene	208-96-8	D	84				1.95E-02	7.80E+00		3.0E+03		2.7E+03		1.0E+06		5.2E+03		1.6E+03		2.2E+03		2.3E+06		1.6E+03	
SVOC	Acetophenone	98-86-2	D	84				1.80E-02	7.80E+00		1.1E+03		5.2E+04		1.4E+07		1.1E+03		1.1E+03		4.4E+04		3.3E+07		1.1E+03	
SVOC	Anthracene	120-12-7	D	84	9	5.50E-01	8.50E+00	1.80E-02	7.30E+00		1.0E+06	8.5E-06	1.6E+06	5.3E-06	2.9E+07	2.9E-07	7.3E+05	1.2E-05	1.0E+06	8.5E-06	1.4E+06	6.1E-06	6.7E+07	1.3E-07	2.3E+05	3.7E-05
SVOC	Atrazine	1912-24-9		84				1.80E-02	8.50E+00								3.3E+02								7.1E+01	
SVOC	Benzaldehyde	100-52-7		84				1.40E-02	9.60E+00																	
SVOC	Benzo(a)anthracene	56-55-3	B2	84	3	3.60E-02	1.40E+00	1.75E-02	7.80E+00								8.0E+01	1.8E-02							2.0E+01	7.0E-02
SVOC	Benzo(a)pyrene	50-32-8	B2	84	2	3.10E-02	9.10E-01	1.50E-02	7.80E+00						1.9E+03	4.8E-04	8.0E+00	1.1E-01					1.5E+03	6.1E-04	2.0E+00	4.6E-01
SVOC	Benzo(b)fluoranthene	205-99-2	B2	84	2	4.50E-02	1.20E+00	2.05E-02	7.80E+00								8.0E+01	1.5E-02							2.0E+01	6.0E-02
SVOC	Benzo(g,h,i)perylene	191-24-2	D	84	3	1.10E-01	4.60E-01	1.70E-02	7.80E+00						3.5E+05	1.3E-06	7.0E+03	6.6E-05					8.0E+05	5.8E-07	2.5E+03	1.8E-04
SVOC	Benzo(k)fluoranthene	207-08-9	B2	84	2	2.10E-02	5.60E-01	1.70E-02	7.80E+00								8.0E+02	7.0E-04							2.0E+02	2.8E-03
SVOC	Biphenyl	92-52-4	D	84	1	2.80E-02	2.80E-02	1.90E-02	7.90E+00																	
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	84				1.70E-02	7.80E+00																	
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	84				1.80E-02	7.80E+00		4.4E+01		1.3E+01		1.2E+04		5.8E+01		8.3E+00		3.8E+00		9.4E+03		1.3E+01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	84	22	1.90E-02	5.80E+01	1.30E-02	7.80E+00						8.9E+05	6.5E-05	1.0E+04	5.8E-03					7.0E+05	8.3E-05	2.8E+03	2.1E-02
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	84				1.50E-02	7.80E+00																	
SVOC	Butylbenzylphthalate	85-68-7	C	84	1	1.50E+00	1.50E+00	1.70E-02	7.80E+00						2.1E+07	7.1E-08	3.1E+02	4.8E-03					4.7E+07	3.2E-08	3.1E+02	4.8E-03
SVOC	Caprolactam	105-60-2		84				2.20E-02	1.00E+01						2.9E+05		3.1E+05						6.7E+05		5.3E+04	
SVOC	Carbazole	86-74-8	B2	84	1	3.10E-01	3.10E-01	2.00E-02	7.80E+00								2.4E+03	1.3E-04							5.3E+02	5.8E-04
SVOC	4-Chloro-3-methylphenol	59-50-7		84				1.80E-02	7.80E+00								1.5E+04								4.5E+03	
SVOC	4-Chloroaniline	106-47-8		84				6.25E-03	3.10E+01																	
SVOC	2-Chloronaphthalene	91-58-7		84				1.80E-02	7.80E+00								1.8E+05								5.6E+04	
SVOC	2-Chlorophenol	95-57-8		84				1.80E-02	7.80E+00								4.5E+03								1.4E+03	
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		84				1.80E-02	7.80E+00																	
SVOC	Chrysene	218-01-9	B2	84	7	1.63E-02	1.40E+00	1.80E-02	7.80E+00								8.0E+03	1.8E-04							2.0E+03	7.0E-04
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	84	1	1.70E-01	1.70E-01	1.90E-02	7.80E+00								8.0E+00	2.1E-02							2.0E+00	8.5E-02
SVOC	Dibenzofuran	132-64-9	D	84	3	3.10E-02	3.50E-01	1.80E-02	7.80E+00																	
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	84				9.50E-03	4.70E+01						8.2E+03		3.0E+01						6.5E+03		6.6E+00	
SVOC	2,4-Dichlorophenol	120-83-2		84				1.60E-02	7.80E+00						2.3E+06		1.8E+03						5.1E+06		6.6E+02	
SVOC	Diethylphthalate	84-66-2	D	84				2.00E-02	8.50E+00						1.5E+06		7.4E+02						3.3E+06		7.4E+02	
SVOC	2,4-Dimethylphenol	105-67-9		84				1.90E-02	7.80E+00						2.1E+06		3.6E+04						4.7E+06		1.1E+04	

TABLE 4-16
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-2 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	Dimethylphthalate	131-11-3	D	84				1.80E-02	9.00E+00						1.5E+06		7.9E+02						3.3E+06		7.9E+02	
SVOC	Di-n-butylphthalate	84-74-2	D	84	1	3.30E-02	3.30E-02	2.40E-02	8.50E+00						1.5E+06	2.2E-08	7.6E+02	4.3E-05					3.3E+06	1.0E-08	7.6E+02	4.3E-05
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		84				5.00E-02	4.00E+01								2.6E+02								7.9E+01	
SVOC	2,4-Dinitrophenol	51-28-5		84				4.90E-02	4.00E+01																	
SVOC	2,4-Dinitrotoluene	121-14-2	B2	84				1.80E-02	7.80E+00						2.0E+04		2.2E+02						1.6E+04		4.8E+01	
SVOC	2,6-Dinitrotoluene	606-20-2	B2	84				1.50E-02	7.80E+00																	
SVOC	Di-n-octylphthalate	117-84-0		84				1.80E-02	7.80E+00								2.0E+04								6.9E+03	
SVOC	Fluoranthene	206-44-0	D	84	15	1.80E-02	5.20E+00	1.70E-02	7.30E+00		1.0E+06	5.2E-06	8.9E+05	5.8E-06	4.1E+06	1.3E-06	1.3E+05	4.0E-05	1.0E+06	5.2E-06	7.4E+05	7.0E-06	9.3E+06	5.6E-07	4.6E+04	1.1E-04
SVOC	Fluorene	86-73-7	D	84	12	3.00E-01	5.70E+01	1.50E-02	7.30E+00		1.0E+06	5.7E-05	1.5E+05	3.8E-04	4.1E+06	1.4E-05	8.7E+04	6.6E-04	5.8E+05	9.8E-05	1.3E+05	4.4E-04	9.3E+06	6.1E-06	2.7E+04	2.1E-03
SVOC	Hexachlorobenzene	118-74-1	B2	84				1.80E-02	7.80E+00		2.2E+02		5.6E+01		8.5E+03		3.7E+01		4.1E+01		1.7E+01		6.8E+03		8.9E+00	
SVOC	Hexachlorobutadiene	87-68-3	C	84				1.70E-02	7.80E+00		3.5E+02		4.6E+02		1.8E+05		3.5E+02		1.3E+02		1.3E+02		1.4E+05		1.0E+02	
SVOC	Hexachlorocyclopentadiene	77-47-4	E	84				1.00E-02	7.80E+00		5.6E+01		6.0E+01		5.9E+03		7.2E+02		3.0E+01		5.0E+01		1.3E+04		7.2E+02	
SVOC	Hexachloroethane	67-72-1	C	84				1.80E-02	2.70E+00		7.9E+01		6.6E+02		1.0E+05		7.3E+02		4.0E+01		5.5E+02		2.3E+05		2.3E+02	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	84	1	4.60E-01	4.60E-01	2.00E-02	7.80E+00								8.0E+01	5.8E-03							2.0E+01	2.3E-02
SVOC	Isophorone	78-59-1	C	84	1	6.90E-02	6.90E-02	1.95E-02	7.80E+00						8.2E+06	8.4E-09	2.4E+03	2.9E-05					1.2E+07	5.8E-09	2.4E+03	2.9E-05
SVOC	2-Methylnaphthalene	91-57-6	ID	84	10	1.80E-02	2.10E+00	1.80E-02	7.30E+00								2.6E+04	8.1E-05							8.1E+03	2.6E-04
SVOC	Methylphenol (total)	1319-77-3		84	1	1.38E-01	1.38E-01	1.50E-02	7.80E+00						2.9E+06	4.8E-08	3.6E+04	3.8E-06					6.7E+06	2.1E-08	1.1E+04	1.3E-05
SVOC	Naphthalene	91-20-3	C	84	6	1.48E-02	2.90E-01	1.80E-02	7.80E+00		4.7E+02	6.2E-04	3.5E+02	8.3E-04	8.8E+04	3.3E-06	5.2E+04	5.6E-06	2.5E+02	1.2E-03	3.0E+02	9.7E-04	2.0E+05	1.5E-06	1.6E+04	1.8E-05
SVOC	2-Nitroaniline	88-74-4		84				1.30E-02	4.00E+01																	
SVOC	3-Nitroaniline	99-09-2	C	84				1.20E-02	4.00E+01																	
SVOC	4-Nitroaniline	100-01-6	C	84				1.80E-02	4.00E+01																	
SVOC	Nitrobenzene	98-95-3	D	84				1.80E-02	7.80E+00		1.7E+02		6.4E+01		2.1E+04		3.4E+02		9.1E+01		5.4E+01		4.7E+04		1.0E+02	
SVOC	2-Nitrophenol	88-75-5		84				1.60E-02	7.80E+00								2.0E+03								6.3E+02	
SVOC	4-Nitrophenol	100-02-7		84				5.50E-02	4.00E+01																	
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	84				2.00E-02	7.80E+00								7.8E+03								1.7E+03	
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	84				1.50E-02	7.80E+00						2.0E+03		5.4E+00						1.6E+03		1.2E+00	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	84				1.95E-02	7.80E+00																	
SVOC	Pentachlorophenol	87-86-5	B2	84				6.20E-02	8.00E+01						1.3E+05		3.2E+02						1.0E+05		9.0E+01	
SVOC	Phenanthrene	85-01-8	D	84	24	2.75E-02	5.70E+01	2.10E-02	1.70E+00		5.1E+03	1.1E-02	1.9E+02	3.0E-01	2.9E+03	2.0E-02	5.2E+03	1.1E-02	2.8E+03	2.0E-02	1.6E+02	3.6E-01	6.7E+03	8.5E-03	1.6E+03	3.6E-02
SVOC	Phenol	108-95-2	ID	84				1.80E-02	7.80E+00						1.8E+07		1.2E+04						4.0E+07		1.2E+04	
SVOC	Pyrene	129-00-0	D	84	20	4.70E-02	7.60E+00	1.75E-02	1.70E+00		1.0E+06	7.6E-06	7.8E+05	9.7E-06	2.9E+06	2.6E-06	8.4E+04	9.0E-05	1.0E+06	7.6E-06	6.5E+05	1.2E-05	6.7E+06	1.1E-06	2.9E+04	2.6E-04
SVOC	2,4,5-Trichlorophenol	95-95-4		84				1.50E-02	7.80E+00						1.0E+07		7.3E+04						2.3E+07		2.3E+04	
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	84				1.70E-02	7.80E+00						1.3E+06		3.3E+03						1.0E+06		7.1E+02	
P/PCB	PCBs (total)	1336-36-3	B2	76	17	5.28E-02	3.98E+00	2.10E-02	4.20E-02		1.6E+04	2.5E-04	8.1E+02	4.9E-03	6.5E+03	6.1E-04	1.6E+01	2.5E-01	3.0E+03	1.3E-03	2.4E+02	1.7E-02	5.2E+03	7.6E-04	4.0E+00	9.9E-01
INORG	Antimony	7440-36-0		83	10	2.25E-01	3.17E+00	1.19E-01	2.53E+00						5.9E+03	5.4E-04	6.7E+02	4.7E-03					1.3E+04	2.4E-04	1.8E+02	1.8E-02
INORG	Arsenic	7440-38-2	A	84	84	5.96E-01	1.94E+01			1.3E+01					9.1E+02	6.8E-03	3.7E+01	1.7E-01					7.2E+02	8.6E-03	7.6E+00	8.2E-01
INORG	Barium	7440-39-3	D	84	83	2.88E+00	3.44E+02	7.12E-02	7.12E-02	1.1E+02					1.5E+05	1.6E-03	1.3E+05	1.8E-03					3.3E+05	7.1E-04	3.7E+04	6.3E-03
INORG	Beryllium	7440-41-7	B1	84	71	3.31E-02	4.53E+00	2.46E-02	3.77E-01	1.5E+00					5.9E+02	5.1E-03	1.6E+03	1.9E-03					1.3E+03	2.3E-03	4.1E+02	7.3E-03
INORG	Cadmium	7440-43-9	B1	84	67	3.81E-02	3.98E+00	9.20E-03	1.11E+00	1.2E+00					2.2E+03	1.3E-03	2.1E+03	1.3E-03					1.7E+03	1.6E-03	5.5E+02	5.1E-03
INORG	Chromium (total)	7440-47-3		17	17	3.81E+00	1.36E+02			4.9E+01					2.4E+02	3.6E-01	9.2E+03	9.4E-03					2.6E+02	3.3E-01	2.5E+03	3.5E-02
INORG	Chromium III	16065-83-1	D	67	67	1.91E+00	6.70E+02								1.5E+05	4.5E-03	1.0E+06	6.7E-04					3.3E+05	2.0E-03	7.9E+05	8.5E-04
INORG	Chromium VI	18540-29-9	A	68	14	7.07E-02	7.76E+00	3.69E-01	6.31E-01						2.4E+02	3.2E-02	9.2E+03	8.4E-04					2.6E+02	3.0E-02	2.5E+03	3.1E-03
INORG	Cobalt	7440-48-4	B1	84	84	1.20E+00	3.01E+01			1.7E+01					5.9E+03	2.2E-03	9.0E+03	1.4E-03					1.3E+04	9.8E-04	2.6E+03	4.9E-03
INORG	Copper	7440-50-8	D	84	84	2.06E+00	2.60E+03			3.2E+01					5.9E+04	4.4E-02	7.3E+04	3.5E-02					1.3E+05	2.0E-02	2.0E+04	1.3E-01
INORG	Cyanide (total)	57-12-5	D	67	31	1.92E-01	5.18E+01	1.79E-01	5.96E-01						2.5E+02	2.1E-01	2.5E+02	2.1E-01					2.5E+02	2.1E-01	1.2E+01	**4.3E+00**
INORG	Lead	7439-92-1	B2	84	84	1.57E+00	1.83E+02			4.9E+01					4.4E+04	3.0E-03	9.0E+02	1.5E-01					1.0E+05	1.3E-03	4.0E+02	3.3E-01
INORG	Manganese	7439-96-5	D	96	96	5.30E+01	2.22E+03			5.1E+02					1.5E+03	**1.1E+00**	9.0E+04	1.9E-02					3.3E+03	5.2E-01	2.5E+04	6.8E-02
INORG	Mercury	7439-97-6	D	84	53	9.60E-03	5.63E-01	8.80E-03	3.88E-02	1.3E-01	8.9E+01	4.9E-03	6.2E+01	7.0E-03	8.8E+03	4.9E-05	5.8E+02	7.5E-04	4.8E+01	9.0E-03	5.2E+01	8.3E-03	2.0E+04	2.2E-05	1.6E+02	2.7E-03
INORG	Nickel	7440-02-0	A	84	84	3.49E+00	4.14E+03			3.0E+01					1.6E+04	2.6E-01	1.5E+05	2.7E-02					1.3E+04	3.2E-01	4.0E+04	1.0E-01
INORG	Selenium	7782-49-2	D	84	5	3.82E-01	3.83E+00	1.66E-01	1.11E+00	4.1E-01					5.9E+04	5.8E-05	9.6E+03	3.6E-04					1.3E+05	2.6E-05	2.6E+03	1.3E-03
INORG	Silver	7440-22-4	D	84	3	9.31E-02	2.45E-01	5.15E-02	6.31E-01						2.9E+03	8.4E-05	9.0E+03	2.7E-05					6.7E+03	3.7E-05	2.5E+03	9.8E-05
INORG	Thallium	7440-28-0		84	24	2.80E-01	2.71E+00	2.87E-01	3.22E+00								1.3E+02	2.1E-02							3.5E+01	7.7E-02
INORG	Vanadium	7440-62-2		84	84	3.42E+00	3.32E+01			3.3E+01							5.5E+03	6.9E-05							7.5E+02	5.1E-04
INORG	Zinc	7440-66-6	D	84	84	7.23E+00	3.64E+02			1.9E+02							6.3E+05	2.8E-04							1.7E+05	1.0E-03

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-17
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-02 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	36	16	8.25E-04	3.40E+00	5.10E-04	6.90E-02	1.0E+06	3.4E-06	3.1E+04	1.1E-04	7.3E-01	**4.7E+00**
Shallow	VOC	Benzene	71-43-2	T	A	36				1.60E-04	2.50E-02	3.5E+01		1.1E+01		5.0E-03	
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	36	2	4.80E-04	7.20E-04	1.70E-04	2.50E-02	3.7E+01	1.9E-05	1.4E+01	5.1E-05	1.0E-01	7.2E-03
Shallow	VOC	Bromoform	75-25-2	T	B2	36				1.80E-04	2.50E-02	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	36				2.00E-04	2.50E-02	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	36				4.10E-04	2.50E-01	2.4E+05		2.4E+05		1.3E+01	
Shallow	VOC	Carbon Disulfide	75-15-0	T		36				2.00E-04	2.50E-02	5.5E+02		1.2E+03		8.0E-01	
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	36				1.20E-04	2.50E-02	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	36				1.40E-04	2.50E-02	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		36	7	2.70E-03	5.80E-02	2.60E-04	1.80E-02	5.7E+03	1.0E-05	4.4E+02	1.3E-04	4.3E-01	1.3E-01
Shallow	VOC	Chloroform	67-66-3	T	B2	36	11	2.00E-04	5.80E-03	1.40E-04	2.20E-02	1.8E+02	3.2E-05	1.5E+02	3.9E-05	1.0E-01	5.8E-02
Shallow	VOC	Chloromethane	74-87-3	T	D	36	1	1.60E-04	1.60E-04	1.30E-04	3.10E-02	4.5E+01	3.6E-06	4.9E+02	3.3E-07	2.6E-01	6.2E-04
Shallow	VOC	Cumene	98-82-8	T	D	36				1.20E-04	2.50E-02	5.6E+01		5.6E+01		8.0E-01	
Shallow	VOC	Cyclohexane	110-82-7	T	ID	36				1.30E-04	2.50E-02						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	36				6.20E-04	5.10E-02	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	36				2.60E-04	2.50E-02	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	36				2.20E-04	2.50E-02	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	36				1.10E-04	2.50E-02	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	36				1.50E-04	2.50E-02			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	36				1.70E-04	2.50E-02	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		36				2.60E-04	5.00E-02	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	36	34	4.80E-04	1.90E+00	3.20E-03	1.10E-02	2.3E+03	8.3E-04	2.4E+03	7.9E-04	8.8E-01	**2.2E+00**
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	36	6	6.20E-04	1.00E-02	2.10E-04	2.50E-02	5.9E+01	1.7E-04	1.9E+01	5.3E-04	5.0E-03	**2.0E+00**
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	36	25	3.30E-04	9.10E-02	2.40E-04	1.60E-02	1.3E+00	7.0E-02	1.1E+01	8.3E-03	7.0E-03	**1.3E+01**
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	36	9	5.80E-04	7.15E-02	2.20E-04	2.20E-02	2.1E+02	3.4E-04	2.0E+02	3.6E-04	7.0E-02	1.0E+00
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		36	3	5.45E-04	3.20E-03	1.50E-04	2.10E-02	2.0E+02	1.6E-05	2.2E+02	1.5E-05	1.0E-01	3.2E-02
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	36				1.70E-04	2.60E-02	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	36				2.70E-04	2.50E-02	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	29				1.20E-04	2.50E-02	1.7E+02		1.7E+02		7.0E-01	
Shallow	VOC	2-Hexanone	591-78-6	T		36				4.60E-04	2.50E-01	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		36				4.10E-04	2.50E-01						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		36				1.30E-04	1.20E-01	4.7E+04		6.1E+02		2.4E-01	
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	36	3	1.00E-03	3.20E-02	2.30E-04	2.50E-01	2.0E+04	1.6E-06	1.3E+04	2.5E-06	1.8E+00	1.8E-02
Shallow	VOC	Methylcyclohexane	108-87-2	T		36				1.50E-04	2.60E-02						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	36	10	3.75E-04	2.40E-02	2.90E-04	2.50E-02	1.4E+03	1.7E-05	2.2E+02	1.1E-04	5.0E-03	**4.8E+00**
Shallow	VOC	Styrene	100-42-5	T		36				1.50E-04	2.50E-02	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	36				2.50E-04	2.50E-02	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	36	6	7.20E-04	7.50E-03	2.30E-04	2.60E-02	1.7E+02	4.4E-05	1.2E+01	6.3E-04	5.0E-03	**1.5E+00**
Shallow	VOC	Toluene	108-88-3	T	D	36	1	2.00E-03	2.00E-03	1.80E-04	2.50E-02	5.3E+02	3.8E-06	5.3E+02	3.8E-06	1.0E+00	2.0E-03
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	36				1.70E-04	2.50E-02	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	36	27	4.50E-04	6.00E-01	1.50E-04	1.00E-02	1.3E+03	4.6E-04	1.3E+03	4.6E-04	2.0E-01	**3.0E+00**
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	36	3	1.00E-02	2.00E-02	3.00E-04	2.20E-02	1.1E+02	1.8E-04	2.1E+01	9.5E-04	5.0E-03	**4.0E+00**
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	36	10	1.40E-03	5.60E-02	1.40E-04	2.60E-02	9.7E+01	5.8E-04	2.2E+01	2.5E-03	5.0E-03	**1.1E+01**
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		36				2.80E-04	3.40E-02	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		36	1	6.30E-04	6.30E-04	3.20E-04	2.50E-02	1.7E+02	3.7E-06	1.7E+02	3.7E-06	1.7E+02	3.7E-06
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	36	8	3.80E-04	2.10E-02	1.50E-04	2.50E-02	1.3E+01	1.6E-03	1.0E+00	2.1E-02	2.0E-03	**1.1E+01**
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	36				3.30E-04	2.80E-02	1.9E+02		1.9E+02		1.0E+01	
Shallow	SVOC	Acenaphthene	83-32-9	T		32	1	8.40E-04	8.40E-04	6.90E-04	5.00E-03	4.2E+00	2.0E-04	4.2E+00	2.0E-04	1.3E+00	6.5E-04
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	32				4.10E-04	5.00E-03	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	32				6.50E-04	1.00E-02	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	32	1	7.80E-04	7.80E-04	5.90E-04	5.00E-03	4.3E-02	1.8E-02	4.3E-02	1.8E-02	4.3E-02	1.8E-02
Shallow	SVOC	Atrazine	1912-24-9	T		32				3.50E-04	5.00E-03			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		32				5.90E-04	1.00E-02						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	32				6.80E-04	5.00E-03			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	32				5.30E-04	5.00E-03			2.0E-03		5.0E-03	
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	32				7.10E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	32				7.00E-04	5.00E-03			5.0E-03		5.0E-03	

TABLE 4-17
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-02 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	32				6.40E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	32				6.50E-04	1.00E-02						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	32				8.70E-04	5.00E-03						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	32				9.70E-04	5.00E-03	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	32	5	1.10E-03	2.40E-02	2.00E-04	5.00E-03			3.2E-01	7.5E-02	6.0E-03	**4.0E+00**
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	32				7.80E-04	5.00E-03						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	32				2.30E-04	5.00E-03			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		32	1	4.90E-04	4.90E-04	4.50E-04	1.00E-02			3.9E+05	1.3E-09	5.8E+00	8.4E-05
Shallow	SVOC	Carbazole	86-74-8	T	B2	32				6.10E-04	1.00E-02			7.4E+00		8.5E-02	
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		32				5.50E-04	5.00E-03			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		30				6.10E-04	1.00E-02						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		32				7.30E-04	5.00E-03			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		32				1.00E-03	5.00E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		32				6.60E-04	5.00E-03						
Shallow	SVOC	Chrysene	218-01-9	T	B2	32				6.70E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	32				6.80E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	32				6.60E-04	5.00E-03						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	29				4.70E-04	2.00E-02			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		32				7.00E-04	1.00E-02			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	32	3	5.50E-04	2.40E-03	2.50E-04	5.00E-03			1.1E+03	2.2E-06	5.5E+00	4.4E-04
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		32	3	1.00E-03	1.30E-03	8.50E-04	5.00E-03			5.2E+02	2.5E-06	3.7E-01	3.5E-03
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	32				2.00E-04	5.00E-03			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	32	5	4.40E-04	1.10E-03	3.70E-04	5.00E-03			1.1E+01	1.0E-04	8.8E-01	1.3E-03
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		32				1.30E-03	2.00E-02			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		32				3.00E-03	2.00E-02						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	32				4.60E-04	5.00E-03			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	32				5.70E-04	5.00E-03						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		32				6.90E-04	5.00E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	32				7.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	32	6	1.20E-03	4.40E-03	7.50E-04	5.00E-03	2.0E+00	2.2E-03	2.0E+00	2.2E-03	8.8E-01	5.0E-03
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	32				7.40E-04	5.00E-03	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	32				7.30E-04	5.00E-03	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	32				1.10E-03	5.00E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	32				7.40E-04	5.00E-03	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	32				6.30E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	32				6.30E-04	5.00E-03			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	32	4	1.10E-03	2.10E-03	6.40E-04	5.00E-03			2.5E+01	8.4E-05	2.6E-01	8.1E-03
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		32				9.00E-04	5.00E-03			8.1E+02		3.7E-01	
Shallow	SVOC	Naphthalene	91-20-3	T	C	32	4	1.30E-03	1.60E-03	7.50E-04	5.00E-03	3.1E+01	5.2E-05	3.1E+01	5.2E-05	5.2E-01	3.1E-03
Shallow	SVOC	2-Nitroaniline	88-74-4	T		32				4.90E-04	2.00E-02						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	29				4.80E-04	2.00E-02						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	31				5.90E-04	2.00E-02						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	32				8.10E-04	5.00E-03	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		32				9.50E-04	5.00E-03			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		32				1.90E-03	2.00E-02						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	32				6.40E-04	5.00E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	32				6.70E-04	5.00E-03			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	32				7.80E-04	5.00E-03						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	32				2.40E-03	5.00E-03			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	32	7	9.10E-04	7.50E-03	6.80E-04	5.00E-03	1.0E+00	7.5E-03	1.0E+00	7.5E-03	5.2E-02	1.4E-01
Shallow	SVOC	Phenol	108-95-2	T	ID	32				1.30E-03	5.00E-03			2.9E+04		4.4E+00	
Shallow	SVOC	Pyrene	129-00-0	T	D	32				6.30E-04	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		32				8.60E-04	5.00E-03			1.7E+02		7.3E-01	
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	32				7.10E-04	5.00E-03			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	D	B2	5				8.20E-05	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	32	1	4.12E-04	4.12E-04	8.20E-05	4.00E-04	4.5E-02	9.1E-03	3.3E-03	1.2E-01	5.0E-04	8.2E-01
Shallow	INORG	Antimony	7440-36-0	D		10	2	3.40E-03	3.90E-03	2.20E-03	2.20E-03			6.8E+01	5.7E-05	6.0E-03	6.5E-01

TABLE 4-17
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-02 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	INORG	Antimony	7440-36-0	T		32	2	2.30E-03	2.50E-03	2.20E-03	3.40E-03			6.8E+01	3.7E-05	6.0E-03	4.2E-01
Shallow	INORG	Arsenic	7440-38-2	D	A	10	2	1.27E-02	3.07E-02	3.90E-03	3.90E-03			4.3E+00	7.1E-03	5.0E-02	6.1E-01
Shallow	INORG	Arsenic	7440-38-2	T	A	32	17	1.83E-03	3.81E-02	2.10E-03	3.90E-03			4.3E+00	8.9E-03	5.0E-02	7.6E-01
Shallow	INORG	Barium	7440-39-3	D	D	10	10	2.05E-02	2.09E-01					1.4E+04	1.5E-05	2.0E+00	1.0E-01
Shallow	INORG	Barium	7440-39-3	T	D	32	32	1.62E-02	2.58E-01					1.4E+04	1.8E-05	2.0E+00	1.3E-01
Shallow	INORG	Beryllium	7440-41-7	D	B1	10				5.40E-04	5.40E-04			2.9E+02		4.0E-03	
Shallow	INORG	Beryllium	7440-41-7	T	B1	32				5.40E-04	6.00E-04			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	D	B1	10	2	2.20E-04	3.30E-04	2.80E-04	2.80E-04			1.9E+02	1.7E-06	5.0E-03	6.6E-02
Shallow	INORG	Cadmium	7440-43-9	T	B1	32	8	2.80E-04	3.80E-04	2.80E-04	2.80E-04			1.9E+02	2.0E-06	5.0E-03	7.6E-02
Shallow	INORG	Chromium (total)	7440-47-3	D		6				1.40E-03	1.40E-03			4.6E+02		1.0E-01	
Shallow	INORG	Chromium (total)	7440-47-3	T		24	6	1.28E-03	3.20E-03	1.50E-03	1.50E-03			4.6E+02	7.0E-06	1.0E-01	3.2E-02
Shallow	INORG	Chromium III	16065-83-1	D	D	4	1	3.45E-03	3.45E-03	1.40E-03	1.40E-03			2.9E+05	1.2E-08	3.8E+01	9.1E-05
Shallow	INORG	Chromium III	16065-83-1	T	D	8				1.40E-03	1.40E-03			2.9E+05		3.8E+01	
Shallow	INORG	Chromium VI	18540-29-9	D	A	4	1	7.90E-03	7.90E-03	6.90E-03	6.90E-03			4.6E+02	1.7E-05	1.0E-01	7.9E-02
Shallow	INORG	Chromium VI	18540-29-9	T	A	8				6.90E-03	6.90E-03			4.6E+02		1.0E-01	
Shallow	INORG	Cobalt	7440-48-4	D	B1	10	7	1.50E-03	1.87E-02	1.30E-03	1.30E-03			2.4E+03	7.8E-06	4.0E-02	4.7E-01
Shallow	INORG	Cobalt	7440-48-4	T	B1	32	27	8.00E-04	3.05E-02	7.40E-04	1.30E-03			2.4E+03	1.3E-05	4.0E-02	7.6E-01
Shallow	INORG	Copper	7440-50-8	D	D	10	5	4.80E-03	1.68E-02	4.20E-03	4.20E-03			7.4E+03	2.3E-06	1.4E+00	1.2E-02
Shallow	INORG	Copper	7440-50-8	T	D	32	5	4.60E-03	2.51E-01	1.70E-03	4.20E-03			7.4E+03	3.4E-05	1.4E+00	1.8E-01
Shallow	INORG	Cyanide (total)	57-12-5	T	D	11	7	3.18E-03	5.50E-01	1.70E-03	1.70E-03			5.7E+01	9.6E-03	2.0E-01	**2.8E+00**
Shallow	INORG	Lead	7439-92-1	D	B2	10				2.50E-03	2.50E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	32	1	2.20E-02	2.20E-02	1.60E-03	2.50E-03					4.0E-03	**5.5E+00**
Shallow	INORG	Manganese	7439-96-5	D	D	10	10	3.70E-03	1.17E+00					9.1E+03	1.3E-04	8.6E-01	**1.4E+00**
Shallow	INORG	Manganese	7439-96-5	T	D	32	31	3.60E-03	1.21E+00	6.80E-04	6.80E-04			9.1E+03	1.3E-04	8.6E-01	**1.4E+00**
Shallow	INORG	Mercury	7439-97-6	D	D	10	1	7.70E-05	7.70E-05	6.90E-05	2.00E-04	5.6E-02	1.4E-03	5.6E-02	1.4E-03	2.0E-03	3.9E-02
Shallow	INORG	Mercury	7439-97-6	T	D	32	2	7.70E-05	1.00E-04	6.90E-05	2.00E-04	5.6E-02	1.8E-03	5.6E-02	1.8E-03	2.0E-03	5.0E-02
Shallow	INORG	Nickel	7440-02-0	D	A	10	10	2.70E-03	1.68E-01					7.4E+04	2.3E-06	1.0E-01	**1.7E+00**
Shallow	INORG	Nickel	7440-02-0	T	A	32	31	3.20E-03	1.06E+01	2.90E-03	2.90E-03			7.4E+04	1.4E-04	1.0E-01	**1.1E+02**
Shallow	INORG	Selenium	7782-49-2	D	D	10	1	5.70E-03	5.70E-03	4.50E-03	4.50E-03			9.7E+02	5.9E-06	5.0E-02	1.1E-01
Shallow	INORG	Selenium	7782-49-2	T	D	32	2	5.00E-03	5.40E-03	4.50E-03	4.70E-03			9.7E+02	5.6E-06	5.0E-02	1.1E-01
Shallow	INORG	Silver	7440-22-4	D	D	10				1.50E-03	1.50E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	32	2	7.95E-04	1.00E-03	9.80E-04	1.50E-03			1.5E+03	6.7E-07	3.4E-02	2.9E-02
Shallow	INORG	Thallium	7440-28-0	D		10	4	4.80E-05	5.60E-03	1.80E-05	5.00E-03			1.3E+01	4.3E-04	2.0E-03	**2.8E+00**
Shallow	INORG	Thallium	7440-28-0	T		32	4	2.00E-05	5.50E-03	1.80E-05	5.00E-03			1.3E+01	4.2E-04	2.0E-03	**2.8E+00**
Shallow	INORG	Vanadium	7440-62-2	D		10	4	1.90E-03	5.80E-03	8.20E-04	8.20E-04			9.7E+02	6.0E-06	4.5E-03	**1.3E+00**
Shallow	INORG	Vanadium	7440-62-2	T		32	9	1.00E-03	1.16E-02	6.70E-04	8.20E-04			9.7E+02	1.2E-05	4.5E-03	**2.6E+00**
Shallow	INORG	Zinc	7440-66-6	D	D	10	3	1.51E-02	8.48E-02	1.20E-02	1.20E-02			1.1E+05	7.7E-07	2.4E+00	3.5E-02
Shallow	INORG	Zinc	7440-66-6	T	D	32	4	1.52E-02	5.54E-01	1.20E-02	1.40E-02			1.1E+05	5.0E-06	2.4E+00	2.3E-01

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.
The MDEQ Drinking Water Criteria for Chromium III was calculated by ENVIRON to account for valence specific toxicity.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-18
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-2 - LNAPL AREA NO. 4

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)
VOC	Acetone	67-64-1	ID	1					5.30E-02	5.30E-02
VOC	Benzene	71-43-2	A	1					7.60E-03	7.60E-03
VOC	Bromodichloromethane	75-27-4	B2	1					9.00E-03	9.00E-03
VOC	Bromoform	75-25-2	B2	1					1.20E-02	1.20E-02
VOC	Bromomethane	74-83-9	D	1					4.60E-02	4.60E-02
VOC	2-Butanone	78-93-3	ID	1					5.70E-02	5.70E-02
VOC	Carbon Disulfide	75-15-0		1					5.00E-03	5.00E-03
VOC	Carbon Tetrachloride	56-23-5	B2	1					1.50E-02	1.50E-02
VOC	Chlorobenzene	108-90-7	D	1					6.40E-03	6.40E-03
VOC	Chloroethane	75-00-3		1					5.20E-02	5.20E-02
VOC	Chloroform	67-66-3	B2	1	1	4.20E-01	4.20E-01	4.20E-01		
VOC	Chloromethane	74-87-3	D	1					1.50E-02	1.50E-02
VOC	Cumene	98-82-8	D	1	1	7.90E-01	7.90E-01	7.90E-01		
VOC	Cyclohexane	110-82-7	ID	1					6.80E-03	6.80E-03
VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	1					2.50E-02	2.50E-02
VOC	Dibromochloromethane	124-48-1	C	1					1.20E-02	1.20E-02
VOC	1,2-Dibromoethane	106-93-4	B2	1					8.40E-03	8.40E-03
VOC	1,2-Dichlorobenzene	95-50-1	D	1					7.60E-03	7.60E-03
VOC	1,3-Dichlorobenzene	541-73-1	D	1					9.10E-03	9.10E-03
VOC	1,4-Dichlorobenzene	106-46-7	C	1					9.50E-03	9.50E-03
VOC	Dichlorodifluoromethane	75-71-8		1					2.50E-02	2.50E-02
VOC	1,1-Dichloroethane	75-34-3	C	1	1	2.10E+01	2.10E+01	2.10E+01		
VOC	1,2-Dichloroethane	107-06-2	B2	1					1.40E-02	1.40E-02
VOC	1,1-Dichloroethene	75-35-4	C	1	1	2.40E+00	2.40E+00	2.40E+00		
VOC	cis-1,2-Dichloroethene	156-59-2	D	1					8.60E-03	8.60E-03
VOC	trans-1,2-Dichloroethene	156-60-5		1					1.10E-02	1.10E-02
VOC	1,2-Dichloropropane	78-87-5	B2	1					1.40E-02	1.40E-02
VOC	1,3-Dichloropropene (total)	542-75-6	B2	1					8.50E-03	8.50E-03

TABLE 4-18
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-2 - LNAPL AREA NO. 4

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)
VOC	Ethyl Benzene	100-41-4	D	1	1	2.70E+00	2.70E+00	2.70E+00		
VOC	2-Hexanone	591-78-6		1					1.80E-02	1.80E-02
VOC	Methyl Acetate	79-20-9		1					2.60E-02	2.60E-02
VOC	Methyl tert-butyl ether	1634-04-4		1					9.00E-03	9.00E-03
VOC	4-Methyl-2-pentanone	108-10-1	ID	1	1	3.40E-01	3.40E-01	3.40E-01		
VOC	Methylcyclohexane	108-87-2		1	1	2.70E-01	2.70E-01	2.70E-01		
VOC	Methylene Chloride	75-09-2	B2	1	1	1.30E+00	1.30E+00	1.30E+00		
VOC	Styrene	100-42-5		1					7.90E-03	7.90E-03
VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	1					1.10E-02	1.10E-02
VOC	Tetrachloroethene	127-18-4	C-B2	1	1	1.10E+01	1.10E+01	1.10E+01		
VOC	Toluene	108-88-3	D	1	1	3.30E+00	3.30E+00	3.30E+00		
VOC	1,2,4-Trichlorobenzene	120-82-1	D	1					1.20E-02	1.20E-02
VOC	1,1,1-Trichloroethane	71-55-6	D	1	1	4.40E+00	4.40E+00	4.40E+00		
VOC	1,1,2-Trichloroethane	79-00-5	C	1					8.70E-03	8.70E-03
VOC	Trichloroethene	79-01-6	C-B2	1	1	1.40E+00	1.40E+00	1.40E+00		
VOC	Trichlorofluoromethane	75-69-4		1					9.70E-03	9.70E-03
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		1					3.20E-02	3.20E-02
VOC	Vinyl Chloride	75-01-4	A	1					2.00E-02	2.00E-02
VOC	Xylenes (total)	1330-20-7	ID	1	1	1.00E+01	1.00E+01	1.00E+01		
SVOC	Acenaphthene	83-32-9		1					3.50E-01	3.50E-01
SVOC	Acenaphthylene	208-96-8	D	1					4.80E-01	4.80E-01
SVOC	Acetophenone	98-86-2	D	1					5.00E-01	5.00E-01
SVOC	Anthracene	120-12-7	D	1	1	1.20E+02	1.20E+02	1.20E+02		
SVOC	Atrazine	1912-24-9		1					5.50E-01	5.50E-01
SVOC	Benzaldehyde	100-52-7		1					3.50E-01	3.50E-01
SVOC	Benzo(a)anthracene	56-55-3	B2	1					5.80E-01	5.80E-01
SVOC	Benzo(a)pyrene	50-32-8	B2	1					3.80E-01	3.80E-01
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1					5.00E-01	5.00E-01

TABLE 4-18
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-2 - LNAPL AREA NO. 4

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1					4.00E-01	4.00E-01
SVOC	Benzo(k)fluoranthene	207-08-9	B2	1					4.00E-01	4.00E-01
SVOC	Biphenyl	92-52-4	D	1					4.50E-01	4.50E-01
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	1					6.50E-01	6.50E-01
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	1					4.50E-01	4.50E-01
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	1					3.20E-01	3.20E-01
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	1					3.80E-01	3.80E-01
SVOC	Butylbenzylphthalate	85-68-7	C	1					5.20E-01	5.20E-01
SVOC	Caprolactam	105-60-2		1					7.00E-01	7.00E-01
SVOC	Carbazole	86-74-8	B2	1					4.80E-01	4.80E-01
SVOC	4-Chloro-3-methylphenol	59-50-7		1					4.80E-01	4.80E-01
SVOC	4-Chloroaniline	106-47-8		1					5.00E-01	5.00E-01
SVOC	2-Chloronaphthalene	91-58-7		1					4.20E-01	4.20E-01
SVOC	2-Chlorophenol	95-57-8		1					4.50E-01	4.50E-01
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		1					4.20E-01	4.20E-01
SVOC	Chrysene	218-01-9	B2	1					5.50E-01	5.50E-01
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	1					4.50E-01	4.50E-01
SVOC	Dibenzofuran	132-64-9	D	1					4.20E-01	4.20E-01
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	1					4.50E-01	4.50E-01
SVOC	2,4-Dichlorophenol	120-83-2		1					4.00E-01	4.00E-01
SVOC	Diethylphthalate	84-66-2	D	1					4.80E-01	4.80E-01
SVOC	2,4-Dimethylphenol	105-67-9		1					4.50E-01	4.50E-01
SVOC	Dimethylphthalate	131-11-3	D	1					4.20E-01	4.20E-01
SVOC	Di-n-butylphthalate	84-74-2	D	1					5.80E-01	5.80E-01
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		1					1.20E+00	1.20E+00
SVOC	2,4-Dinitrophenol	51-28-5		1					1.20E+00	1.20E+00
SVOC	2,4-Dinitrotoluene	121-14-2	B2	1					5.50E-01	5.50E-01
SVOC	2,6-Dinitrotoluene	606-20-2	B2	1					3.80E-01	3.80E-01

TABLE 4-18
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-2 - LNAPL AREA NO. 4

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)
SVOC	Di-n-octylphthalate	117-84-0		1					1.60E+00	1.60E+00
SVOC	Fluoranthene	206-44-0	D	1	1	1.30E+02	1.30E+02	1.30E+02		
SVOC	Fluorene	86-73-7	D	1	1	1.70E+02	1.70E+02	1.70E+02		
SVOC	Hexachlorobenzene	118-74-1	B2	1					5.50E-01	5.50E-01
SVOC	Hexachlorobutadiene	87-68-3	C	1					4.00E-01	4.00E-01
SVOC	Hexachlorocyclopentadiene	77-47-4	E	1					2.50E-01	2.50E-01
SVOC	Hexachloroethane	67-72-1	C	1					4.20E-01	4.20E-01
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1					4.80E-01	4.80E-01
SVOC	Isophorone	78-59-1	C	1					5.50E-01	5.50E-01
SVOC	2-Methylnaphthalene	91-57-6	ID	1	1	5.90E+01	5.90E+01	5.90E+01		
SVOC	Methylphenol (total)	1319-77-3		1					5.20E-01	5.20E-01
SVOC	Naphthalene	91-20-3	C	1					4.20E-01	4.20E-01
SVOC	2-Nitroaniline	88-74-4		1					3.20E-01	3.20E-01
SVOC	3-Nitroaniline	99-09-2	C	1					5.50E-01	5.50E-01
SVOC	4-Nitroaniline	100-01-6	C	1					4.20E-01	4.20E-01
SVOC	Nitrobenzene	98-95-3	D	1					6.00E-01	6.00E-01
SVOC	2-Nitrophenol	88-75-5		1					5.20E-01	5.20E-01
SVOC	4-Nitrophenol	100-02-7		1					1.30E+00	1.30E+00
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	1					4.80E-01	4.80E-01
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	1					3.80E-01	3.80E-01
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	1					6.80E-01	6.80E-01
SVOC	Pentachlorophenol	87-86-5	B2	1					1.50E+00	1.50E+00
SVOC	Phenanthrene	85-01-8	D	1	1	6.60E+02	6.60E+02	6.60E+02		
SVOC	Phenol	108-95-2	ID	1					4.50E-01	4.50E-01
SVOC	Pyrene	129-00-0	D	1	1	1.70E+02	1.70E+02	1.70E+02		
SVOC	2,4,5-Trichlorophenol	95-95-4		1					3.80E-01	3.80E-01
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	1					4.80E-01	4.80E-01
P/PCB	PCBs (total)	1336-36-3	B2	1	1	1.70E+02	1.70E+02	1.70E+02		

TABLE 4-18
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-2 - LNAPL AREA NO. 4

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)
INORG	Antimony	7440-36-0		1	1	4.80E-01	4.80E-01	4.80E-01		
INORG	Arsenic	7440-38-2	A	1	1	6.50E+00	6.50E+00	6.50E+00		
INORG	Barium	7440-39-3	D	1					6.60E-02	6.60E-02
INORG	Beryllium	7440-41-7	B1	1					6.80E-02	6.80E-02
INORG	Cadmium	7440-43-9	B1	1					1.60E-02	1.60E-02
INORG	Chromium (total)	7440-47-3		1	1	2.70E+00	2.70E+00	2.70E+00		
INORG	Cobalt	7440-48-4	B1	1	1	8.40E-02	8.40E-02	8.40E-02		
INORG	Copper	7440-50-8	D	1	1	3.20E+00	3.20E+00	3.20E+00		
INORG	Cyanide (total)	57-12-5	D	1	1	1.20E-01	1.20E-01	1.20E-01		
INORG	Lead	7439-92-1	B2	1	1	8.30E-01	8.30E-01	8.30E-01		
INORG	Manganese	7439-96-5	D	1					7.10E-02	7.10E-02
INORG	Mercury	7439-97-6	D	1					1.60E-02	1.60E-02
INORG	Nickel	7440-02-0	A	1	1	9.17E+01	9.20E+01	9.17E+01		
INORG	Selenium	7782-49-2	D	1					4.30E-01	4.30E-01
INORG	Silver	7440-22-4	D	1	1	1.10E-01	1.10E-01	1.10E-01		
INORG	Thallium	7440-28-0		1					5.80E-01	5.80E-01
INORG	Vanadium	7440-62-2		1					6.90E-02	6.90E-02
INORG	Zinc	7440-66-6	D	1	1	1.90E+00	1.90E+00	1.90E+00		

Notes:
Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-19
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-04 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	13	3	2.10E-03	1.70E-01	5.10E-04	3.70E-02	1.0E+06	1.7E-07	3.1E+04	5.5E-06	7.3E-01	2.3E-01
Shallow	VOC	Benzene	71-43-2	T	A	19	6	3.30E-04	9.80E-01	1.60E-04	4.00E-04	3.5E+01	2.8E-02	1.1E+01	8.9E-02	5.0E-03	**2.0E+02**
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	13	1	3.00E-04	3.00E-04	1.70E-04	1.10E-02	3.7E+01	8.1E-06	1.4E+01	2.1E-05	1.0E-01	3.0E-03
Shallow	VOC	Bromoform	75-25-2	T	B2	13				1.80E-04	1.20E-02	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	13				2.00E-04	1.00E-02	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	13				4.10E-04	2.00E-02	2.4E+05		2.4E+05		1.3E+01	
Shallow	VOC	Carbon Disulfide	75-15-0	T		13	1	2.10E-03	2.10E-03	2.00E-04	8.00E-03	5.5E+02	3.8E-06	1.2E+03	1.8E-06	8.0E-01	2.6E-03
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	13				1.20E-04	1.20E-02	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	13				1.40E-04	1.30E-02	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		13				2.60E-04	9.70E-03	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	13	3	8.90E-04	1.30E-03	1.40E-04	1.20E-02	1.8E+02	7.2E-06	1.5E+02	8.7E-06	1.0E-01	1.3E-02
Shallow	VOC	Chloromethane	74-87-3	T	D	13				1.30E-04	1.60E-02	4.5E+01		4.9E+02		2.6E-01	
Shallow	VOC	Cumene	98-82-8	T	D	13	4	2.70E-04	1.90E-02	1.20E-04	1.30E-02	5.6E+01	3.4E-04	5.6E+01	3.4E-04	8.0E-01	2.4E-02
Shallow	VOC	Cyclohexane	110-82-7	T	ID	13	3	1.30E-01	3.00E-01	1.30E-04	3.30E-04						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	13				6.20E-04	2.70E-02	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	13				2.60E-04	1.20E-02	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	13				2.20E-04	1.10E-02	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	13	1	2.10E-04	2.10E-04	1.10E-04	1.30E-02	1.6E+02	1.3E-06	1.6E+02	1.3E-06	6.0E-01	3.5E-04
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	13				1.50E-04	1.30E-02			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	13	1	1.90E-04	1.90E-04	1.70E-04	1.30E-02	7.4E+01	2.6E-06	6.4E+00	3.0E-05	7.5E-02	2.5E-03
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		13				2.60E-04	1.60E-02	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	13				1.60E-04	1.00E-02	2.3E+03		2.4E+03		8.8E-01	
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	13				2.10E-04	9.30E-03	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	13				2.40E-04	1.00E-02	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	13				2.20E-04	1.20E-02	2.1E+02		2.0E+02		7.0E-02	
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		13				1.50E-04	1.10E-02	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	13				1.70E-04	1.40E-02	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	13				2.70E-04	1.20E-02	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	19	7	2.70E-04	1.50E+00	1.20E-04	4.10E-04	1.7E+02	8.8E-03	1.7E+02	8.8E-03	7.0E-01	**2.1E+00**
Shallow	VOC	2-Hexanone	591-78-6	T		13				4.60E-04	1.90E-02	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		13				4.10E-04	1.80E-02						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		13	1	1.20E-03	1.20E-03	1.30E-04	9.00E-03	4.7E+04	2.6E-08	6.1E+02	2.0E-06	2.4E-01	5.0E-03
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	13				2.30E-04	8.70E-03	2.0E+04		1.3E+04		1.8E+00	
Shallow	VOC	Methylcyclohexane	108-87-2	T		13	3	1.80E-02	6.30E-02	1.50E-04	4.20E-04						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	8	2	3.50E-04	1.40E-03	3.40E-04	1.10E-02	1.4E+03	1.0E-06	2.2E+02	6.4E-06	5.0E-03	2.8E-01
Shallow	VOC	Styrene	100-42-5	T		13				1.50E-04	1.20E-02	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	13				2.50E-04	1.20E-02	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	13				2.30E-04	1.40E-02	1.7E+02		1.2E+01		5.0E-03	
Shallow	VOC	Toluene	108-88-3	T	D	19	6	3.10E-04	5.70E-02	1.70E-04	4.50E-04	5.3E+02	1.1E-04	5.3E+02	1.1E-04	1.0E+00	5.7E-02
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	13	1	2.40E-04	2.40E-04	1.70E-04	1.30E-02	3.0E+02	8.0E-07	1.9E+01	1.3E-05	7.0E-02	3.4E-03
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	13				1.50E-04	1.30E-02	1.3E+03		1.3E+03		2.0E-01	
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	13				3.00E-04	1.20E-02	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	13				1.40E-04	1.40E-02	9.7E+01		2.2E+01		5.0E-03	
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		13				2.80E-04	1.80E-02	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		13				3.20E-04	1.10E-02	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	13				1.50E-04	1.20E-02	1.3E+01		1.0E+00		2.0E-03	
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	19	4	3.00E-01	1.40E+00	3.30E-04	8.20E-04	1.9E+02	7.4E-03	1.9E+02	7.4E-03	1.0E+01	1.4E-01
Shallow	INORG	Lead	7439-92-1	D	B2	8				2.50E-03	2.50E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	10				1.60E-03	2.50E-03					4.0E-03	

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-20
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-05 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	P/PCB	PCBs (total)	1336-36-3	D	B2	2				8.20E-05	8.20E-05	4.5E-02		3.3E-03		5.0E-04	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	9	4	4.19E-04	1.64E-03	8.20E-05	8.20E-05	4.5E-02	3.6E-02	3.3E-03	5.0E-01	5.0E-04	**3.3E+00**
Shallow	INORG	Antimony	7440-36-0	D		4	1	4.30E-03	4.30E-03	2.20E-03	2.20E-03			6.8E+01	6.3E-05	6.0E-03	7.2E-01
Shallow	INORG	Antimony	7440-36-0	T		4	1	3.50E-03	3.50E-03	2.20E-03	2.20E-03			6.8E+01	5.1E-05	6.0E-03	5.8E-01
Shallow	INORG	Arsenic	7440-38-2	D	A	4	2	2.49E-02	2.67E-02	3.90E-03	3.90E-03			4.3E+00	6.2E-03	5.0E-02	5.3E-01
Shallow	INORG	Arsenic	7440-38-2	T	A	4	3	4.10E-03	2.73E-02	3.90E-03	3.90E-03			4.3E+00	6.3E-03	5.0E-02	5.5E-01
Shallow	INORG	Barium	7440-39-3	D	D	4	4	1.28E+00	4.72E+00					1.4E+04	3.4E-04	2.0E+00	**2.4E+00**
Shallow	INORG	Barium	7440-39-3	T	D	9	9	2.05E-01	4.80E+00					1.4E+04	3.4E-04	2.0E+00	**2.4E+00**
Shallow	INORG	Beryllium	7440-41-7	D	B1	4				5.40E-04	5.40E-04			2.9E+02		4.0E-03	
Shallow	INORG	Beryllium	7440-41-7	T	B1	4				5.40E-04	5.40E-04			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	D	B1	4	3	3.00E-04	6.60E-04	2.80E-04	2.80E-04			1.9E+02	3.5E-06	5.0E-03	1.3E-01
Shallow	INORG	Cadmium	7440-43-9	T	B1	4	3	3.60E-04	7.10E-04	2.80E-04	2.80E-04			1.9E+02	3.7E-06	5.0E-03	1.4E-01
Shallow	INORG	Chromium (total)	7440-47-3	D		4	3	1.80E-03	2.20E-03	1.40E-03	1.40E-03			4.6E+02	4.8E-06	1.0E-01	2.2E-02
Shallow	INORG	Chromium (total)	7440-47-3	T		4	3	2.50E-03	2.05E-02	1.40E-03	1.40E-03			4.6E+02	4.5E-05	1.0E-01	2.1E-01
Shallow	INORG	Cobalt	7440-48-4	D	B1	4	1	8.00E-03	8.00E-03	1.30E-03	1.30E-03			2.4E+03	3.3E-06	4.0E-02	2.0E-01
Shallow	INORG	Cobalt	7440-48-4	T	B1	4	1	7.90E-03	7.90E-03	1.30E-03	1.30E-03			2.4E+03	3.3E-06	4.0E-02	2.0E-01
Shallow	INORG	Copper	7440-50-8	D	D	4				4.20E-03	4.20E-03			7.4E+03		1.4E+00	
Shallow	INORG	Copper	7440-50-8	T	D	4	1	5.20E-03	5.20E-03	4.20E-03	4.20E-03			7.4E+03	7.0E-07	1.4E+00	3.7E-03
Shallow	INORG	Lead	7439-92-1	D	B2	4				2.50E-03	2.50E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	4				2.50E-03	2.50E-03					4.0E-03	
Shallow	INORG	Manganese	7439-96-5	D	D	4	4	9.53E-01	3.57E+00					9.1E+03	3.9E-04	8.6E-01	**4.2E+00**
Shallow	INORG	Manganese	7439-96-5	T	D	9	9	1.25E-01	3.63E+00					9.1E+03	4.0E-04	8.6E-01	**4.2E+00**
Shallow	INORG	Mercury	7439-97-6	D	D	4				6.90E-05	6.90E-05	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Mercury	7439-97-6	T	D	4				6.90E-05	6.90E-05	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Nickel	7440-02-0	D	A	4	2	1.06E-02	1.60E-02	2.20E-03	2.20E-03			7.4E+04	2.2E-07	1.0E-01	1.6E-01
Shallow	INORG	Nickel	7440-02-0	T	A	4	2	1.69E-02	1.75E-02	2.20E-03	2.20E-03			7.4E+04	2.4E-07	1.0E-01	1.8E-01
Shallow	INORG	Selenium	7782-49-2	D	D	4				4.50E-03	4.50E-03			9.7E+02		5.0E-02	
Shallow	INORG	Selenium	7782-49-2	T	D	4				4.50E-03	4.50E-03			9.7E+02		5.0E-02	
Shallow	INORG	Silver	7440-22-4	D	D	4				1.50E-03	1.50E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	4				1.50E-03	1.50E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		4	2	5.00E-03	5.90E-03	1.80E-05	1.80E-05			1.3E+01	4.5E-04	2.0E-03	**3.0E+00**
Shallow	INORG	Thallium	7440-28-0	T		4	1	3.00E-05	3.00E-05	1.80E-05	5.00E-03			1.3E+01	2.3E-06	2.0E-03	1.5E-02
Shallow	INORG	Vanadium	7440-62-2	D		4	2	8.00E-03	1.00E-02	8.20E-04	8.20E-04			9.7E+02	1.0E-05	4.5E-03	**2.2E+00**
Shallow	INORG	Vanadium	7440-62-2	T		4	2	7.80E-03	1.04E-02	8.20E-04	8.20E-04			9.7E+02	1.1E-05	4.5E-03	**2.3E+00**
Shallow	INORG	Zinc	7440-66-6	D	D	4	1	1.33E-02	1.33E-02	1.20E-02	1.20E-02			1.1E+05	1.2E-07	2.4E+00	5.5E-03
Shallow	INORG	Zinc	7440-66-6	T	D	4				1.20E-02	1.20E-02			1.1E+05		2.4E+00	
Shallow	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	D	B2	2				5.02E-09	6.62E-09			1.0E-08		3.0E-08	
Shallow	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	T	B2	2				5.85E-09	9.14E-09			1.0E-08		3.0E-08	

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Target Dioxin congeners were used to calculate a 2,3,7,8-TCDD Equivalent, using EPA 1998 TEFs, before comparing to the Screening Levels for 2,3,7,8-TCDD.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-21
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-7 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
VOC	Acetone	67-64-1	ID	23	7	2.10E-03	1.30E-02	1.70E-03	7.10E+00		1.1E+05	1.2E-07	1.6E+05	8.1E-08	1.7E+08	7.6E-11	7.3E+04	1.8E-07	1.1E+05	1.2E-07	1.3E+05	1.0E-07	3.9E+08	3.3E-11	2.3E+04	5.7E-07
VOC	Benzene	71-43-2	A	23	2	3.30E-03	1.70E-02	5.20E-04	1.80E+00		8.4E+00	2.0E-03	4.5E+01	3.8E-04	4.7E+05	3.6E-08	4.0E+02	4.3E-05	1.6E+00	1.1E-02	1.3E+01	1.3E-03	3.8E+05	4.5E-08	1.8E+02	9.4E-05
VOC	Bromodichloromethane	75-27-4	B2	23				9.50E-04	1.80E+00		6.4E+00		3.1E+01		1.1E+05		4.9E+02		1.2E+00		9.1E+00		8.4E+04		1.1E+02	
VOC	Bromoform	75-25-2	B2	23				1.30E-03	1.80E+00		7.7E+02		3.1E+03		3.6E+06		8.7E+02		1.5E+02		9.0E+02		2.8E+06		8.2E+02	
VOC	Bromomethane	74-83-9	D	23				1.40E-03	3.50E+00		1.6E+00		1.3E+01		1.5E+05		1.0E+03		8.6E-01		1.1E+01		3.3E+05		3.2E+02	
VOC	2-Butanone	78-93-3	ID	23	1	3.20E-03	3.20E-03	2.10E-03	7.10E+00		2.7E+04	1.2E-07	3.5E+04	9.1E-08	2.9E+07	1.1E-10	2.7E+04	1.2E-07	2.7E+04	1.2E-07	2.9E+04	1.1E-07	6.7E+07	4.8E-11	2.7E+04	1.2E-07
VOC	Carbon Disulfide	75-15-0		23	1	2.50E-03	2.50E-03	6.20E-04	1.80E+00		1.4E+02	1.8E-05	1.6E+03	1.6E-06	2.1E+07	1.2E-10	2.8E+02	8.9E-06	7.6E+01	3.3E-05	1.3E+03	1.9E-06	4.7E+07	5.3E-11	2.8E+02	8.9E-06
VOC	Carbon Tetrachloride	56-23-5	B2	23				7.90E-04	1.80E+00		9.9E-01		1.2E+01		1.7E+05		3.9E+02		1.9E-01		3.5E+00		1.3E+05		9.6E+01	
VOC	Chlorobenzene	108-90-7	D	23				4.10E-04	1.80E+00		2.2E+02		9.2E+02		2.1E+06		2.6E+02		1.2E+02		7.7E+02		4.7E+06		2.6E+02	
VOC	Chloroethane	75-00-3		23				1.70E-03	3.50E+00		9.5E+02		3.6E+04		2.9E+08		9.5E+02		9.5E+02		3.0E+04		6.7E+08		9.5E+02	
VOC	Chloroform	67-66-3	B2	23				6.50E-04	1.80E+00		3.8E+01		1.5E+02		1.6E+06		1.5E+03		7.2E+00		4.5E+01		1.3E+06		1.2E+03	
VOC	Chloromethane	74-87-3	D	23				1.00E-03	3.50E+00		1.0E+01		1.2E+02		2.6E+06		1.1E+03		2.3E+00		4.0E+01		4.9E+06		1.1E+03	
VOC	Cumene	98-82-8	D	23	2	8.20E-03	4.60E-02	5.60E-04	1.80E+00		3.9E+02	1.2E-04	2.0E+03	2.3E-05	2.6E+06	1.8E-08	3.9E+02	1.2E-04	3.9E+02	1.2E-04	1.7E+03	2.7E-05	5.8E+06	7.9E-09	3.9E+02	1.2E-04
VOC	Cyclohexane	110-82-7	ID	23	3	4.60E-03	1.20E+00	7.90E-04	3.50E+00																	
VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	23				1.30E-03	3.50E+00		1.2E+00		1.5E+01		5.9E+03		1.2E+00		1.2E+00		1.3E+01		1.3E+04		1.2E+00	
VOC	Dibromochloromethane	124-48-1	C	23				8.70E-04	1.80E+00		2.1E+01		8.0E+01		1.6E+05		5.0E+02		3.9E+00		2.4E+01		1.3E+05		1.1E+02	
VOC	1,2-Dibromoethane	106-93-4	B2	23				9.50E-04	1.80E+00		3.6E+00		5.8E+00		1.8E+04		4.3E-01		6.7E-01		1.7E+00		1.4E+04		2.5E-01	
VOC	1,2-Dichlorobenzene	95-50-1	D	23				5.60E-04	1.80E+00		2.1E+02		4.6E+04		4.4E+07		2.1E+02		2.1E+02		3.9E+04		1.0E+08		2.1E+02	
VOC	1,3-Dichlorobenzene	541-73-1	D	23				6.30E-04	1.80E+00								1.7E+02								1.7E+02	
VOC	1,4-Dichlorobenzene	106-46-7	C	23	1	2.90E-03	2.90E-03	5.30E-04	1.80E+00		1.0E+02	2.9E-05	2.6E+02	1.1E-05	5.7E+05	5.1E-09	1.9E+03	1.5E-06	1.9E+01	1.5E-04	7.7E+01	3.8E-05	4.5E+05	6.4E-09	4.0E+02	7.3E-06
VOC	Dichlorodifluoromethane	75-71-8		23				8.70E-04	3.50E+00		1.7E+03		6.3E+04		1.5E+09		1.0E+03		9.0E+02		5.3E+04		3.3E+09		1.0E+03	
VOC	1,1-Dichloroethane	75-34-3	C	23				4.60E-04	1.80E+00		4.3E+02		2.5E+03		1.5E+07		8.9E+02		2.3E+02		2.1E+03		3.3E+07		8.9E+02	
VOC	1,2-Dichloroethane	107-06-2	B2	23				5.80E-04	1.80E+00		1.1E+01		2.1E+01		1.5E+05		4.2E+02		2.1E+00		6.2E+00		1.2E+05		9.1E+01	
VOC	1,1-Dichloroethene	75-35-4	C	23				9.50E-04	1.80E+00		3.3E-01		3.7E+00		7.8E+04		5.7E+02		6.2E-02		1.1E+00		6.2E+04		2.0E+02	
VOC	cis-1,2-Dichloroethene	156-59-2	D	23	2	9.30E-03	5.10E-02	6.70E-04	1.80E+00		4.1E+01	1.2E-03	2.1E+02	2.4E-04	1.0E+06	5.1E-08	6.4E+02	8.0E-05	2.2E+01	2.3E-03	1.8E+02	2.8E-04	2.3E+06	2.2E-08	6.4E+02	8.0E-05
VOC	trans-1,2-Dichloroethene	156-60-5		23	2	2.20E-03	5.70E-03	5.80E-04	1.80E+00		4.3E+01	1.3E-04	3.3E+02	1.7E-05	2.1E+06	2.7E-09	1.4E+03	4.1E-06	2.3E+01	2.5E-04	2.8E+02	2.0E-05	4.7E+06	1.2E-09	1.4E+03	4.1E-06
VOC	1,2-Dichloropropane	78-87-5	B2	23				6.00E-04	1.80E+00		7.4E+00		3.0E+01		1.2E+05		5.5E+02		4.0E+00		2.5E+01		2.7E+05		1.4E+02	
VOC	1,3-Dichloropropene (total)	542-75-6	B2	23				6.80E-04	1.80E+00		5.4E+00		6.0E+01		5.9E+05		2.4E+02		1.0E+00		1.8E+01		7.8E+05		1.0E+01	
VOC	Ethyl Benzene	100-41-4	D	23	3	8.80E-04	7.30E-02	4.70E-04	1.80E+00		1.4E+02	5.2E-04	2.4E+03	3.0E-05	1.3E+07	5.6E-09	1.4E+02	5.2E-04	8.7E+01	8.4E-04	7.2E+02	1.0E-04	1.0E+07	7.3E-09	1.4E+02	5.2E-04
VOC	2-Hexanone	591-78-6		23				1.30E-03	7.10E+00		1.8E+03		1.3E+03		1.2E+06		2.5E+03		9.9E+02		1.1E+03		2.7E+06		2.5E+03	
VOC	Methyl Acetate	79-20-9		23	1	6.50E-02	6.50E-02	8.70E-04	3.50E+00																	
VOC	Methyl tert-butyl ether	1634-04-4		23				6.70E-04	7.10E+00		5.9E+03		3.0E+04		8.8E+07		5.9E+03		5.9E+03		2.5E+04		2.0E+08		1.5E+03	
VOC	4-Methyl-2-pentanone	108-10-1	ID	23				1.50E-03	7.10E+00		2.7E+03		5.3E+04		6.0E+07		2.7E+03		2.7E+03		4.5E+04		1.4E+08		2.7E+03	
VOC	Methylcyclohexane	108-87-2		23	6	8.80E-04	3.90E+00	4.70E-04	9.00E-03																	
VOC	Methylene Chloride	75-09-2	B2	23	2	9.00E-02	1.00E-01	1.00E-03	1.80E+00		2.4E+02	4.2E-04	7.0E+02	1.4E-04	8.3E+06	1.2E-08	2.3E+03	4.3E-05	4.5E+01	2.2E-03	2.1E+02	4.8E-04	6.6E+06	1.5E-08	1.3E+03	7.7E-05
VOC	Styrene	100-42-5		22				4.00E-04	1.80E+00		5.2E+02		3.3E+03		6.9E+06		5.2E+02		2.5E+02		9.7E+02		5.5E+06		4.0E+02	
VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	23				1.40E-03	1.80E+00		2.3E+01		3.4E+01		6.8E+04		2.4E+02		4.3E+00		1.0E+01		5.4E+04		5.3E+01	
VOC	Tetrachloroethene	127-18-4	C-B2	23	4	3.40E-03	5.00E+01	9.50E-04	1.50E-02		6.0E+01	8.3E-01	6.0E+02	8.3E-02	6.8E+06	7.4E-06	8.8E+01	5.7E-01	1.1E+01	**4.5E+00**	1.8E+02	2.8E-01	5.4E+06	9.3E-06	8.8E+01	5.7E-01
VOC	Toluene	108-88-3	D	23	3	3.90E-03	2.10E-02	4.20E-04	1.80E+00		2.5E+02	8.4E-05	3.3E+03	6.4E-06	1.2E+07	1.8E-09	2.5E+02	8.4E-05	2.5E+02	8.4E-05	2.8E+03	7.5E-06	2.7E+07	7.8E-10	2.5E+02	8.4E-05
VOC	1,2,4-Trichlorobenzene	120-82-1	D	23				7.10E-04	1.80E+00		1.1E+03		3.4E+04		1.1E+07		1.1E+03		1.1E+03		2.8E+04		2.5E+07		9.9E+02	
VOC	1,1,1-Trichloroethane	71-55-6	D	23	1	5.30E-01	5.30E-01	7.30E-04	9.60E-03		4.6E+02	1.2E-03	4.5E+03	1.2E-04	2.9E+07	1.8E-08	4.6E+02	1.2E-03	2.5E+02	2.1E-03	3.8E+03	1.4E-04	6.7E+07	7.9E-09	4.6E+02	1.2E-03
VOC	1,1,2-Trichloroethane	79-00-5	C	22				9.50E-04	1.80E+00		2.4E+01		5.7E+01		2.5E+05		8.4E+02		4.6E+00		1.7E+01		1.9E+05		1.8E+02	
VOC	Trichloroethene	79-01-6	C-B2	23	3	1.30E-02	1.30E+00	6.00E-04	1.70E-02		3.7E+01	3.5E-02	2.6E+02	5.0E-03	2.3E+06	5.7E-07	5.0E+02	2.6E-03	7.1E+00	1.8E-01	7.8E+01	1.7E-02	1.8E+06	7.2E-07	5.0E+02	2.6E-03
VOC	Trichlorofluoromethane	75-69-4		23				8.70E-04	3.50E+00		5.6E+02		1.1E+05		1.7E+09		5.6E+02		5.6E+02		9.2E+04		3.8E+09		5.6E+02	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		23	1	6.40E-01	6.40E-01	7.40E-04	3.60E-02		5.5E+02	1.2E-03	2.1E+05	3.0E-06	2.3E+09	2.8E-10	5.5E+02	1.2E-03	5.5E+02	1.2E-03	1.8E+05	3.6E-06	5.1E+09	1.3E-10	5.5E+02	1.2E-03
VOC	Vinyl Chloride	75-01-4	A	23				1.10E-03	3.50E+00		2.8E+00		2.9E+01		8.9E+05		3.4E+01		2.7E-01		4.2E+00		3.5E+05		3.8E+00	
VOC	Xylenes (total)	1330-20-7	ID	23	2	2.00E-02	2.40E-01	1.50E-03	3.50E+00		1.5E+02	1.6E-03	5.4E+04	4.4E-06	1.3E+08	1.8E-09	1.5E+02	1.6E-03	1.5E+02	1.6E-03	4.6E+04	5.2E-06	2.9E+08	8.3E-10	1.5E+02	1.6E-03
SVOC	Acenaphthene	83-32-9		23				1.60E-02	3.80E-01		3.5E+05		9.7E+04		6.2E+06		1.3E+05		1.9E+05		8.1E+04		1.4E+07		4.1E+04	
SVOC	Acenaphthylene	208-96-8	D	23				2.20E-02	3.80E-01		3.0E+03		2.7E+03		1.0E+06		5.2E+03		1.6E+03		2.2E+03		2.3E+06		1.6E+03	
SVOC	Acetophenone	98-86-2	D	23				2.30E-02	3.80E-01		1.1E+03		5.2E+04		1.4E+07		1.1E+03		1.1E+03		4.4E+04		3.3E+07		1.1E+03	
SVOC	Anthracene	120-12-7	D	23				1.90E-02	3.80E-01		1.0E+06		1.6E+06		2.9E+07		7.3E+05		1.0E+06		1.4E+06		6.7E+07		2.3E+05	
SVOC	Atrazine	1912-24-9		23				2.50E-02	6.80E-01								3.3E+02								7.1E+01	
SVOC	Benzaldehyde	100-52-7		23				1.60E-02	7.70E-01																	
SVOC	Benzo(a)anthracene	56-55-3	B2	23	1	3.40E-01	3.40E-01	2.60E-02	3.80E-01								8.0E+01	4.3E-03							2.0E+01	1.7E-02
SVOC	Benzo(a)pyrene	50-32-8	B2	23	1	5.10E-01	5.10E-01	1.70E-02	3.80E-01						1.9E+03	2.7E-04	8.0E+00	6.4E-02					1.5E+03	3.4E-04	2.0E+00	2.6E-01
SVOC	Benzo(b)fluoranthene	205-99-2	B2	23	2	3.10E-01	7.50E-01	2.30E-02	3.80E-01								8.0E+01	9.4E-03							2.0E+01	3.8E-02
SVOC	Benzo(g,h,i)perylene	191-24-2	D	23	1	3.70E-01	3.70E-01	1.80E-02	3.80E-01						3.5E+05	1.1E-06	7.0E+03	5.3E-05					8.0E+05	4.6E-07	2.5E+03	1.5E-04
SVOC	Benzo(k)fluoranthene	207-08-9	B2	23	1	3.40E-01	3.40E-01	1.80E-02	3.80E-01								8.0E+02	4.3E-04							2.0E+02	1.7E-03
SVOC	Biphenyl	92-52-4	D	23				2.00E-02	6.30E-01																	
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	23				3.00E-02	3.80E-01																	
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	23				2.00E-02	3.80E-01		4.4E+01		1.3E+01		1.2E+04		5.8E+01		8.3E+00		3.8E+00		9.4E+03		1.3E+01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	23	3	7.00E-02	1.20E+00	5.60E-02	3.80E-01						8.9E+05	1.3E-06	1.0E+04	1.2E-04					7.0E+05	1.7E-06	2.8E+03	4.3E-04
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	23				1.70E-02	3.80E-01																	
SVOC	Butylbenzylphthalate	85-68-7	C	23	1	8.10E-01	8.10E-01	2.40E-02	3.80E-01						2.1E+07	3.9E-08	3.1E+02	2.6E-03					4.7E+07	1.7E-08	3.1E+02	2.6E-03
SVOC	Caprolactam	105-60-2		23				3.20E-02	8.10E-01						2.9E+05		3.1E+05						6.7E+05		5.3E+04	
SVOC	Carbazole	86-74-8	B2	23				2.20E-02	3.80E-01								2.4E+03								5.3E+02	
SVOC	4-Chloro-3-methylphenol	59-50-7		23				2.20E-02	3.80E-01								1.5E+04								4.5E+03	
SVOC	4-Chloroaniline	106-47-8		23				2.30E-02	1.50E+00																	
SVOC	2-Chloronaphthalene	91-58-7		23				1.90E-02	3.80E-01								1.8E+05								5.6E+04	
SVOC	2-Chlorophenol	95-57-8		23				2.00E-02	3.80E-01								4.5E+03								1.4E+03	
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		23				1.90E-02	3.80E-01																	
SVOC	Chrysene	218-01-9	B2	23	1	4.60E-01	4.60E-01	2.50E-02	3.80E-01								8.0E+03	5.8E-05							2.0E+03	2.3E-04
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	23	1	1.30E-01	1.30E-01	2.00E-02	3.80E-01								8.0E+00	1.6E-02							2.0E+00	6.5E-02
SVOC	Dibenzofuran	132-64-9	D	23				1.90E-02	3.80E-01																	
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	23				2.00E-02	2.30E+00						8.2E+03		3.0E+01						6.5E+03		6.6E+00	
SVOC	2,4-Dichlorophenol	120-83-2		23				1.80E-02	3.80E-01						2.3E+06		1.8E+03						5.1E+06		6.6E+02	
SVOC	Diethylphthalate	84-66-2	D	23				2.20E-02	6.80E-01						1.5E+06		7.4E+02						3.3E+06		7.4E+02	
SVOC	2,4-Dimethylphenol	105-67-9		23				2.00E-02	3.80E-01						2.1E+06		3.6E+04						4.7E+06		1.1E+04	
SVOC	Dimethylphthalate	131-11-3	D	23				1.90E-02	7.20E-01						1.5E+06		7.9E+02						3.3E+06		7.9E+02	

TABLE 4-21
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-7 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	Di-n-butylphthalate	84-74-2	D	23				2.60E-02	6.80E-01						1.5E+06		7.6E+02							3.3E+06		7.6E+02	
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		23				5.50E-02	2.00E+00								2.6E+02									7.9E+01	
SVOC	2,4-Dinitrophenol	51-28-5		23				5.30E-02	2.00E+00																		
SVOC	2,4-Dinitrotoluene	121-14-2	B2	23				2.50E-02	3.80E-01						2.0E+04		2.2E+02							1.6E+04		4.8E+01	
SVOC	2,6-Dinitrotoluene	606-20-2	B2	23				1.70E-02	3.80E-01																		
SVOC	Di-n-octylphthalate	117-84-0		23				5.60E-02	3.80E-01								2.0E+04									6.9E+03	
SVOC	Fluoranthene	206-44-0	D	23	2	2.60E-01	5.40E-01	1.80E-02	3.80E-01		1.0E+06	5.4E-07	8.9E+05	6.1E-07	4.1E+06	1.3E-07	1.3E+05	4.2E-06	1.0E+06	5.4E-07	7.4E+05	7.3E-07	9.3E+06	5.8E-08	4.6E+04	1.2E-05
SVOC	Fluorene	86-73-7	D	23				1.70E-02	3.80E-01		1.0E+06		1.5E+05		4.1E+06		8.7E+04		5.8E+05		1.3E+05		9.3E+06		2.7E+04	
SVOC	Hexachlorobenzene	118-74-1	B2	23				2.50E-02	3.80E-01		2.2E+02		5.6E+01		8.5E+03		3.7E+01		4.1E+01		1.7E+01		6.8E+03		8.9E+00	
SVOC	Hexachlorobutadiene	87-68-3	C	23				1.80E-02	3.80E-01		3.5E+02		4.6E+02		1.8E+05		3.5E+02		1.3E+02		1.3E+02		1.4E+05		1.0E+02	
SVOC	Hexachlorocyclopentadiene	77-47-4	E	23				1.10E-02	3.80E-01		5.6E+01		6.0E+01		5.9E+03		7.2E+02		3.0E+01		5.0E+01		1.3E+04		7.2E+02	
SVOC	Hexachloroethane	67-72-1	C	23				1.90E-02	2.20E-01		7.9E+01		6.6E+02		1.0E+05		7.3E+02		4.0E+01		5.5E+02		2.3E+05		2.3E+02	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	23	1	3.40E-01	3.40E-01	2.20E-02	3.80E-01								8.0E+01	4.3E-03								2.0E+01	1.7E-02
SVOC	Isophorone	78-59-1	C	23				2.50E-02	3.80E-01						8.2E+06		2.4E+03							1.2E+07		2.4E+03	
SVOC	2-Methylnaphthalene	91-57-6	ID	23	1	1.90E-01	1.90E-01	1.90E-02	3.80E-01								2.6E+04	7.3E-06								8.1E+03	2.3E-05
SVOC	Methylphenol (total)	1319-77-3		23				2.40E-02	3.80E-01						2.9E+06		3.6E+04							6.7E+06		1.1E+04	
SVOC	Naphthalene	91-20-3	C	23	1	1.70E-01	1.70E-01	1.90E-02	3.80E-01		4.7E+02	3.6E-04	3.5E+02	4.9E-04	8.8E+04	1.9E-06	5.2E+04	3.3E-06	2.5E+02	6.8E-04	3.0E+02	5.7E-04	2.0E+05	8.5E-07	1.6E+04	1.1E-05
SVOC	2-Nitroaniline	88-74-4		23				1.50E-02	2.00E+00																		
SVOC	3-Nitroaniline	99-09-2	C	23				2.50E-02	2.00E+00																		
SVOC	4-Nitroaniline	100-01-6	C	23				1.90E-02	2.00E+00																		
SVOC	Nitrobenzene	98-95-3	D	23				2.70E-02	3.80E-01		1.7E+02		6.4E+01		2.1E+04		3.4E+02		9.1E+01		5.4E+01		4.7E+04		1.0E+02	
SVOC	2-Nitrophenol	88-75-5		23				2.40E-02	3.80E-01								2.0E+03									6.3E+02	
SVOC	4-Nitrophenol	100-02-7		23				6.00E-02	2.00E+00																		
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	23				2.20E-02	3.80E-01								7.8E+03									1.7E+03	
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	23				1.70E-02	3.80E-01						2.0E+03		5.4E+00							1.6E+03		1.2E+00	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	23				3.10E-02	3.80E-01																		
SVOC	Pentachlorophenol	87-86-5	B2	23				6.80E-02	3.90E+00						1.3E+05		3.2E+02							1.0E+05		9.0E+01	
SVOC	Phenanthrene	85-01-8	D	23	3	5.30E-02	3.70E-01	5.40E-02	3.80E-01		5.1E+03	7.3E-05	1.9E+02	1.9E-03	2.9E+03	1.3E-04	5.2E+03	7.1E-05	2.8E+03	1.3E-04	1.6E+02	2.3E-03	6.7E+03	5.5E-05	1.6E+03	2.3E-04
SVOC	Phenol	108-95-2	ID	23				2.00E-02	3.80E-01						1.8E+07		1.2E+04							4.0E+07		1.2E+04	
SVOC	Pyrene	129-00-0	D	23	2	2.40E-01	2.90E-01	2.40E-02	3.80E-01		1.0E+06	2.9E-07	7.8E+05	3.7E-07	2.9E+06	1.0E-07	8.4E+04	3.5E-06	1.0E+06	2.9E-07	6.5E+05	4.5E-07	6.7E+06	4.3E-08	2.9E+04	1.0E-05
SVOC	2,4,5-Trichlorophenol	95-95-4		23				1.70E-02	3.80E-01						1.0E+07		7.3E+04							2.3E+07		2.3E+04	
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	23				2.20E-02	3.80E-01						1.3E+06		3.3E+03							1.0E+06		7.1E+02	
P/PCB	PCBs (total)	1336-36-3	B2	23	1	2.39E-01	2.39E-01	2.10E-02	3.80E-02		1.6E+04	1.5E-05	8.1E+02	3.0E-04	6.5E+03	3.7E-05	1.6E+01	1.5E-02	3.0E+03	8.0E-05	2.4E+02	1.0E-03	5.2E+03	4.6E-05	4.0E+00	6.0E-02
INORG	Antimony	7440-36-0		23	4	3.58E-01	6.64E-01	5.05E-01	2.29E+00						5.9E+03	1.1E-04	6.7E+02	9.9E-04					1.3E+04	5.1E-05	1.8E+02	3.7E-03
INORG	Arsenic	7440-38-2	A	23	23	2.57E+00	1.30E+01			1.3E+01					9.1E+02		3.7E+01						7.2E+02		7.6E+00	
INORG	Barium	7440-39-3	D	23	23	1.02E+01	6.33E+01			1.1E+02					1.5E+05		1.3E+05						3.3E+05		3.7E+04	
INORG	Beryllium	7440-41-7	B1	23	21	6.33E-02	4.75E-01	4.74E-02	5.04E-02	1.5E+00					5.9E+02		1.6E+03						1.3E+03		4.1E+02	
INORG	Cadmium	7440-43-9	B1	23	18	7.41E-02	6.25E-01	4.67E-02	4.87E-02	1.2E+00					2.2E+03		2.1E+03						1.7E+03		5.5E+02	
INORG	Chromium (total)	7440-47-3		23	23	4.83E+00	3.00E+01			4.9E+01					2.4E+02		9.2E+03						2.6E+02		2.5E+03	
INORG	Cobalt	7440-48-4	B1	23	23	2.36E+00	8.74E+00			1.7E+01					5.9E+03		9.0E+03						1.3E+04		2.6E+03	
INORG	Copper	7440-50-8	D	23	23	7.48E+00	2.73E+01			3.2E+01					5.9E+04		7.3E+04						1.3E+05		2.0E+04	
INORG	Lead	7439-92-1	B2	23	23	3.02E+00	3.56E+02			4.9E+01					4.4E+04	7.0E-03	9.0E+02	3.4E-01					1.0E+05	3.1E-03	4.0E+02	7.7E-01
INORG	Manganese	7439-96-5	D	23	23	1.77E+02	1.03E+03			5.1E+02					1.5E+03	3.5E-01	9.0E+04	5.8E-03					3.3E+03	1.6E-01	2.5E+04	2.1E-02
INORG	Mercury	7439-97-6	D	23	14	8.15E-03	6.62E-02	8.70E-03	3.76E-02	1.3E-01	8.9E+01		6.2E+01		8.8E+03		5.8E+02		4.8E+01		5.2E+01		2.0E+04		1.6E+02	
INORG	Nickel	7440-02-0	A	23	23	6.71E+00	2.42E+01			3.0E+01					1.6E+04		1.5E+05						1.3E+04		4.0E+04	
INORG	Selenium	7782-49-2	D	23	2	3.24E-01	5.87E-01	1.75E-01	5.77E-01	4.1E-01					5.9E+04	3.0E-06	9.6E+03	1.8E-05					1.3E+05	1.4E-06	2.6E+03	6.8E-05
INORG	Silver	7440-22-4	D	23				5.68E-02	5.77E-01						2.9E+03		9.0E+03						6.7E+03		2.5E+03	
INORG	Thallium	7440-28-0		23	14	4.86E-01	1.08E+00	5.56E-01	1.15E+00								1.3E+02	8.3E-03							3.5E+01	3.1E-02
INORG	Vanadium	7440-62-2		23	23	7.07E+00	1.88E+01			3.3E+01							5.5E+03								7.5E+02	
INORG	Zinc	7440-66-6	D	23	23	1.73E+01	9.34E+01			1.9E+02							6.3E+05								1.7E+05	

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-22
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-09 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
VOC	Acetone	67-64-1	ID	8	6	2.00E-03	2.30E-01	1.90E-03	3.50E-02		1.1E+05	2.1E-06	1.6E+05	1.4E-06	1.7E+08	1.4E-09	7.3E+04	3.2E-06	1.1E+05	2.1E-06	1.3E+05	1.8E-06	3.9E+08	5.9E-10	2.3E+04	1.0E-05
VOC	Benzene	71-43-2	A	8	1	9.70E-03	9.70E-03	5.30E-04	4.60E-01		8.4E+00	1.2E-03	4.5E+01	2.2E-04	4.7E+05	2.1E-08	4.0E+02	2.4E-05	1.6E+00	6.1E-03	1.3E+01	7.5E-04	3.8E+05	2.6E-08	1.8E+02	5.4E-05
VOC	Bromodichloromethane	75-27-4	B2	8				9.70E-04	4.60E-01		6.4E+00		3.1E+01		1.1E+05		4.9E+02		1.2E+00		9.1E+00		8.4E+04		1.1E+02	
VOC	Bromoform	75-25-2	B2	8				1.30E-03	4.60E-01		7.7E+02		3.1E+03		3.6E+06		8.7E+02		1.5E+02		9.0E+02		2.8E+06		8.2E+02	
VOC	Bromomethane	74-83-9	D	8				1.50E-03	9.30E-01		1.6E+00		1.3E+01		1.5E+05		1.0E+03		8.6E-01		1.1E+01		3.3E+05		3.2E+02	
VOC	2-Butanone	78-93-3	ID	8	1	5.80E-03	5.80E-03	2.20E-03	1.90E+00		2.7E+04	2.1E-07	3.5E+04	1.7E-07	2.9E+07	2.0E-10	2.7E+04	2.1E-07	2.7E+04	2.1E-07	2.9E+04	2.0E-07	6.7E+07	8.7E-11	2.7E+04	2.1E-07
VOC	Carbon Disulfide	75-15-0		8	1	1.40E-03	1.40E-03	6.30E-04	4.60E-01		1.4E+02	1.0E-05	1.6E+03	8.8E-07	2.1E+07	6.7E-11	2.8E+02	5.0E-06	7.6E+01	1.8E-05	1.3E+03	1.1E-06	4.7E+07	3.0E-11	2.8E+02	5.0E-06
VOC	Carbon Tetrachloride	56-23-5	B2	8				8.10E-04	4.60E-01		9.9E-01		1.2E+01		1.7E+05		3.9E+02		1.9E-01		3.5E+00		1.3E+05		9.6E+01	
VOC	Chlorobenzene	108-90-7	D	8				4.20E-04	4.60E-01		2.2E+02		9.2E+02		2.1E+06		2.6E+02		1.2E+02		7.7E+02		4.7E+06		2.6E+02	
VOC	Chloroethane	75-00-3		8				1.80E-03	9.30E-01		9.5E+02		3.6E+04		2.9E+08		9.5E+02		9.5E+02		3.0E+04		6.7E+08		9.5E+02	
VOC	Chloroform	67-66-3	B2	8				6.60E-04	4.60E-01		3.8E+01		1.5E+02		1.6E+06		1.5E+03		7.2E+00		4.5E+01		1.3E+06		1.2E+03	
VOC	Chloromethane	74-87-3	D	8				1.10E-03	9.30E-01		1.0E+01		1.2E+02		2.6E+06		1.1E+03		2.3E+00		4.0E+01		4.9E+06		1.1E+03	
VOC	Cumene	98-82-8	D	8	1	4.60E-02	4.60E-02	5.70E-04	4.60E-01		3.9E+02	1.2E-04	2.0E+03	2.3E-05	2.6E+06	1.8E-08	3.9E+02	1.2E-04	3.9E+02	1.2E-04	1.7E+03	2.7E-05	5.8E+06	7.9E-09	3.9E+02	1.2E-04
VOC	Cyclohexane	110-82-7	ID	8	2	1.40E-03	2.20E-03	8.10E-04	9.30E-01																	
VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	8				1.30E-03	9.30E-01		1.2E+00		1.5E+01		5.9E+03		1.2E+00		1.2E+00		1.3E+01		1.3E+04		1.2E+00	
VOC	Dibromochloromethane	124-48-1	C	8				8.90E-04	4.60E-01		2.1E+01		8.0E+01		1.6E+05		5.0E+02		3.9E+00		2.4E+01		1.3E+05		1.1E+02	
VOC	1,2-Dibromoethane	106-93-4	B2	8				9.70E-04	4.60E-01		3.6E+00		5.8E+00		1.8E+04		4.3E-01		6.7E-01		1.7E+00		1.4E+04		2.5E-01	
VOC	1,2-Dichlorobenzene	95-50-1	D	8				5.70E-04	4.60E-01		2.1E+02		4.6E+04		4.4E+07		2.1E+02		2.1E+02		3.9E+04		1.0E+08		2.1E+02	
VOC	1,3-Dichlorobenzene	541-73-1	D	8				6.50E-04	4.60E-01								1.7E+02								1.7E+02	
VOC	1,4-Dichlorobenzene	106-46-7	C	8				5.40E-04	4.60E-01		1.0E+02		2.6E+02		5.7E+05		1.9E+03		1.9E+01		7.7E+01		4.5E+05		4.0E+02	
VOC	Dichlorodifluoromethane	75-71-8		8				8.90E-04	9.30E-01		1.7E+03		6.3E+04		1.5E+09		1.0E+03		9.0E+02		5.3E+04		3.3E+09		1.0E+03	
VOC	1,1-Dichloroethane	75-34-3	C	8	1	9.00E-03	9.00E-03	4.70E-04	4.60E-01		4.3E+02	2.1E-05	2.5E+03	3.6E-06	1.5E+07	6.0E-10	8.9E+02	1.0E-05	2.3E+02	3.9E-05	2.1E+03	4.3E-06	3.3E+07	2.7E-10	8.9E+02	1.0E-05
VOC	1,2-Dichloroethane	107-06-2	B2	8				5.90E-04	4.60E-01		1.1E+01		2.1E+01		1.5E+05		4.2E+02		2.1E+00		6.2E+00		1.2E+05		9.1E+01	
VOC	1,1-Dichloroethene	75-35-4	C	8				9.70E-04	4.60E-01		3.3E-01		3.7E+00		7.8E+04		5.7E+02		6.2E-02		1.1E+00		6.2E+04		2.0E+02	
VOC	cis-1,2-Dichloroethene	156-59-2	D	8				6.80E-04	4.60E-01		4.1E+01		2.1E+02		1.0E+06		6.4E+02		2.2E+01		1.8E+02		2.3E+06		6.4E+02	
VOC	trans-1,2-Dichloroethene	156-60-5		8				5.90E-04	4.60E-01		4.3E+01		3.3E+02		2.1E+06		1.4E+03		2.3E+01		2.8E+02		4.7E+06		1.4E+03	
VOC	1,2-Dichloropropane	78-87-5	B2	8				6.10E-04	4.60E-01		7.4E+00		3.0E+01		1.2E+05		5.5E+02		4.0E+00		2.5E+01		2.7E+05		1.4E+02	
VOC	1,3-Dichloropropene (total)	542-75-6	B2	8				7.00E-04	4.60E-01		5.4E+00		6.0E+01		5.9E+05		2.4E+02		1.0E+00		1.8E+01		7.8E+05		1.0E+01	
VOC	Ethyl Benzene	100-41-4	D	7	2	8.00E-04	5.60E-02	4.80E-04	4.60E-01		1.4E+02	4.0E-04	2.4E+03	2.3E-05	1.3E+07	4.3E-09	1.4E+02	4.0E-04	8.7E+01	6.4E-04	7.2E+02	7.8E-05	1.0E+07	5.6E-09	1.4E+02	4.0E-04
VOC	2-Hexanone	591-78-6		8				1.40E-03	1.90E+00		1.8E+03		1.3E+03		1.2E+06		2.5E+03		9.9E+02		1.1E+03		2.7E+06		2.5E+03	
VOC	Methyl Acetate	79-20-9		8				8.90E-04	9.30E-01																	
VOC	Methyl tert-butyl ether	1634-04-4		8				6.80E-04	1.90E+00		5.9E+03		3.0E+04		8.8E+07		5.9E+03		5.9E+03		2.5E+04		2.0E+08		1.5E+03	
VOC	4-Methyl-2-pentanone	108-10-1	ID	8				1.50E-03	1.90E+00		2.7E+03		5.3E+04		6.0E+07		2.7E+03		2.7E+03		4.5E+04		1.4E+08		2.7E+03	
VOC	Methylcyclohexane	108-87-2		8	4	1.10E-03	4.90E-03	4.80E-04	9.30E-01																	
VOC	Methylene Chloride	75-09-2	B2	8				1.10E-03	4.60E-01		2.4E+02		7.0E+02		8.3E+06		2.3E+03		4.5E+01		2.1E+02		6.6E+06		1.3E+03	
VOC	Styrene	100-42-5		8				4.00E-04	4.60E-01		5.2E+02		3.3E+03		6.9E+06		5.2E+02		2.5E+02		9.7E+02		5.5E+06		4.0E+02	
VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	8				1.50E-03	4.60E-01		2.3E+01		3.4E+01		6.8E+04		2.4E+02		4.3E+00		1.0E+01		5.4E+04		5.3E+01	
VOC	Tetrachloroethene	127-18-4	C-B2	8	2	3.70E-03	3.80E-02	9.70E-04	4.60E-01		6.0E+01	6.3E-04	6.0E+02	6.3E-05	6.8E+06	5.6E-09	8.8E+01	4.3E-04	1.1E+01	3.5E-03	1.8E+02	2.1E-04	5.4E+06	7.0E-09	8.8E+01	4.3E-04
VOC	Toluene	108-88-3	D	8	4	6.40E-04	2.90E-02	4.30E-04	4.60E-01		2.5E+02	1.2E-04	3.3E+03	8.8E-06	1.2E+07	2.4E-09	2.5E+02	1.2E-04	2.5E+02	1.2E-04	2.8E+03	1.0E-05	2.7E+07	1.1E-09	2.5E+02	1.2E-04
VOC	1,2,4-Trichlorobenzene	120-82-1	D	8				7.20E-04	4.60E-01		1.1E+03		3.4E+04		1.1E+07		1.1E+03		1.1E+03		2.8E+04		2.5E+07		9.9E+02	
VOC	1,1,1-Trichloroethane	71-55-6	D	8				7.40E-04	4.60E-01		4.6E+02		4.5E+03		2.9E+07		4.6E+02		2.5E+02		3.8E+03		6.7E+07		4.6E+02	
VOC	1,1,2-Trichloroethane	79-00-5	C	7				9.70E-04	4.60E-01		2.4E+01		5.7E+01		2.5E+05		8.4E+02		4.6E+00		1.7E+01		1.9E+05		1.8E+02	
VOC	Trichloroethene	79-01-6	C-B2	8	1	2.70E-02	2.70E-02	6.10E-04	4.60E-01		3.7E+01	7.3E-04	2.6E+02	1.0E-04	2.3E+06	1.2E-08	5.0E+02	5.4E-05	7.1E+00	3.8E-03	7.8E+01	3.5E-04	1.8E+06	1.5E-08	5.0E+02	5.4E-05
VOC	Trichlorofluoromethane	75-69-4		8				8.90E-04	9.30E-01		5.6E+02		1.1E+05		1.7E+09		5.6E+02		5.6E+02		9.2E+04		3.8E+09		5.6E+02	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		8				7.50E-04	4.60E-01		5.5E+02		2.1E+05		2.3E+09		5.5E+02		5.5E+02		1.8E+05		5.1E+09		5.5E+02	
VOC	Vinyl Chloride	75-01-4	A	8				1.10E-03	9.30E-01		2.8E+00		2.9E+01		8.9E+05		3.4E+01		2.7E-01		4.2E+00		3.5E+05		3.8E+00	
VOC	Xylenes (total)	1330-20-7	ID	8	2	2.30E-03	2.00E-01	1.50E-03	9.30E-01		1.5E+02	1.3E-03	5.4E+04	3.7E-06	1.3E+08	1.5E-09	1.5E+02	1.3E-03	1.5E+02	1.3E-03	4.6E+04	4.3E-06	2.9E+08	6.9E-10	1.5E+02	1.3E-03
SVOC	Acenaphthene	83-32-9		8				5.70E-02	8.30E-01		3.5E+05		9.7E+04		6.2E+06		1.3E+05		1.9E+05		8.1E+04		1.4E+07		4.1E+04	
SVOC	Acenaphthylene	208-96-8	D	8				5.20E-02	1.10E+00		3.0E+03		2.7E+03		1.0E+06		5.2E+03		1.6E+03		2.2E+03		2.3E+06		1.6E+03	
SVOC	Acetophenone	98-86-2	D	8				5.50E-02	1.20E+00		1.1E+03		5.2E+04		1.4E+07		1.1E+03		1.1E+03		4.4E+04		3.3E+07		1.1E+03	
SVOC	Anthracene	120-12-7	D	8				5.40E-02	1.00E+00		1.0E+06		1.6E+06		2.9E+07		7.3E+05		1.0E+06		1.4E+06		6.7E+07		2.3E+05	
SVOC	Atrazine	1912-24-9		8				1.70E-01	1.30E+00								3.3E+02								7.1E+01	
SVOC	Benzaldehyde	100-52-7		8				1.90E-01	8.30E-01																	
SVOC	Benzo(a)anthracene	56-55-3	B2	8				6.10E-02	1.40E+00								8.0E+01								2.0E+01	
SVOC	Benzo(a)pyrene	50-32-8	B2	8				6.60E-02	8.90E-01						1.9E+03		8.0E+00						1.5E+03		2.0E+00	
SVOC	Benzo(b)fluoranthene	205-99-2	B2	8				6.40E-02	1.20E+00								8.0E+01								2.0E+01	
SVOC	Benzo(g,h,i)perylene	191-24-2	D	8				6.10E-02	9.50E-01						3.5E+05		7.0E+03						8.0E+05		2.5E+03	
SVOC	Benzo(k)fluoranthene	207-08-9	B2	8				5.90E-02	9.50E-01								8.0E+02								2.0E+02	
SVOC	Biphenyl	92-52-4	D	8				1.60E-01	1.10E+00																	
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	8				5.20E-02	1.50E+00																	
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	8				5.70E-02	1.10E+00		4.4E+01		1.3E+01		1.2E+04		5.8E+01		8.3E+00		3.8E+00		9.4E+03		1.3E+01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	8	2	1.70E-01	2.40E+00	6.00E-02	5.40E-01						8.9E+05	2.7E-06	1.0E+04	2.4E-04					7.0E+05	3.4E-06	2.8E+03	8.6E-04
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	8				6.80E-02	8.90E-01																	
SVOC	Butylbenzylphthalate	85-68-7	C	8				5.70E-02	1.20E+00						2.1E+07		3.1E+02						4.7E+07		3.1E+02	
SVOC	Caprolactam	105-60-2		8				2.00E-01	1.70E+00						2.9E+05		3.1E+05						6.7E+05		5.3E+04	
SVOC	Carbazole	86-74-8	B2	8				5.80E-02	1.10E+00								2.4E+03								5.3E+02	
SVOC	4-Chloro-3-methylphenol	59-50-7		8				5.70E-02	1.10E+00								1.5E+04								4.5E+03	
SVOC	4-Chloroaniline	106-47-8		8				5.70E-02	2.10E+00																	
SVOC	2-Chloronaphthalene	91-58-7		8				5.30E-02	1.00E+00								1.8E+05								5.6E+04	
SVOC	2-Chlorophenol	95-57-8		8				5.80E-02	1.10E+00								4.5E+03								1.4E+03	
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		8				5.80E-02	1.00E+00																	
SVOC	Chrysene	218-01-9	B2	8				5.10E-02	1.30E+00								8.0E+03								2.0E+03	
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	8				5.70E-02	1.10E+00								8.0E+00								2.0E+00	
SVOC	Dibenzofuran	132-64-9	D	8				5.50E-02	1.00E+00																	
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	8				4.30E-02	3.30E+00						8.2E+03		3.0E+01						6.5E+03		6.6E+00	
SVOC	2,4-Dichlorophenol	120-83-2		8				5.50E-02	9.50E-01						2.3E+06		1.8E+03						5.1E+06		6.6E+02	
SVOC	Diethylphthalate	84-66-2	D	8				1.70E-01	1.10E+00						1.5E+06		7.4E+02						3.3E+06		7.4E+02	
SVOC	2,4-Dimethylphenol	105-67-9		8				8.90E-02	1.10E+00						2.1E+06		3.6E+04						4.7E+06		1.1E+04	
SVOC	Dimethylphthalate	131-11-3	D	8				1.80E-01	1.00E+00						1.5E+06		7.9E+02						3.3E+06		7.9E+02	

TABLE 4-22
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-09 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	Di-n-butylphthalate	84-74-2	D	8				1.70E-01	1.40E+00						1.5E+06		7.6E+02						3.3E+06		7.6E+02	
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		8				1.80E-01	2.80E+00								2.6E+02								7.9E+01	
SVOC	2,4-Dinitrophenol	51-28-5		8				1.20E-01	2.80E+00																	
SVOC	2,4-Dinitrotoluene	121-14-2	B2	8				5.10E-02	1.30E+00						2.0E+04		2.2E+02						1.6E+04		4.8E+01	
SVOC	2,6-Dinitrotoluene	606-20-2	B2	8				5.30E-02	8.90E-01																	
SVOC	Di-n-octylphthalate	117-84-0		8				6.00E-02	3.80E+00								2.0E+04								6.9E+03	
SVOC	Fluoranthene	206-44-0	D	8	1	2.20E+00	2.20E+00	6.20E-02	5.40E-01		1.0E+06	2.2E-06	8.9E+05	2.5E-06	4.1E+06	5.4E-07	1.3E+05	1.7E-05	1.0E+06	2.2E-06	7.4E+05	3.0E-06	9.3E+06	2.4E-07	4.6E+04	4.8E-05
SVOC	Fluorene	86-73-7	D	8				5.30E-02	8.90E-01		1.0E+06		1.5E+05		4.1E+06		8.7E+04		5.8E+05		1.3E+05		9.3E+06		2.7E+04	
SVOC	Hexachlorobenzene	118-74-1	B2	8				6.20E-02	1.30E+00		2.2E+02		5.6E+01		8.5E+03		3.7E+01		4.1E+01		1.7E+01		6.8E+03		8.9E+00	
SVOC	Hexachlorobutadiene	87-68-3	C	8				5.00E-02	9.50E-01		3.5E+02		4.6E+02		1.8E+05		3.5E+02		1.3E+02		1.3E+02		1.4E+05		1.0E+02	
SVOC	Hexachlorocyclopentadiene	77-47-4	E	8				6.60E-02	5.90E-01		5.6E+01		6.0E+01		5.9E+03		7.2E+02		3.0E+01		5.0E+01		1.3E+04		7.2E+02	
SVOC	Hexachloroethane	67-72-1	C	8				5.30E-02	1.00E+00		7.9E+01		6.6E+02		1.0E+05		7.3E+02		4.0E+01		5.5E+02		2.3E+05		2.3E+02	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	8				7.80E-02	1.10E+00								8.0E+01								2.0E+01	
SVOC	Isophorone	78-59-1	C	8				4.90E-02	1.30E+00						8.2E+06		2.4E+03						1.2E+07		2.4E+03	
SVOC	2-Methylnaphthalene	91-57-6	ID	8				5.30E-02	1.00E+00								2.6E+04								8.1E+03	
SVOC	Methylphenol (total)	1319-77-3		8				5.20E-02	1.20E+00						2.9E+06		3.6E+04						6.7E+06		1.1E+04	
SVOC	Naphthalene	91-20-3	C	8				5.40E-02	1.00E+00		4.7E+02		3.5E+02		8.8E+04		5.2E+04		2.5E+02		3.0E+02		2.0E+05		1.6E+04	
SVOC	2-Nitroaniline	88-74-4		8				5.10E-02	2.80E+00																	
SVOC	3-Nitroaniline	99-09-2	C	8				1.60E-01	2.80E+00																	
SVOC	4-Nitroaniline	100-01-6	C	8				7.50E-02	2.80E+00																	
SVOC	Nitrobenzene	98-95-3	D	8				5.10E-02	1.40E+00		1.7E+02		6.4E+01		2.1E+04		3.4E+02		9.1E+01		5.4E+01		4.7E+04		1.0E+02	
SVOC	2-Nitrophenol	88-75-5		8				5.10E-02	1.20E+00								2.0E+03								6.3E+02	
SVOC	4-Nitrophenol	100-02-7		8				2.10E-01	3.10E+00																	
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	8				5.40E-02	1.10E+00								7.8E+03								1.7E+03	
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	8				4.90E-02	8.90E-01						2.0E+03		5.4E+00						1.6E+03		1.2E+00	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	8				5.80E-02	1.60E+00																	
SVOC	Pentachlorophenol	87-86-5	B2	8				1.30E-01	5.50E+00						1.3E+05		3.2E+02						1.0E+05		9.0E+01	
SVOC	Phenanthrene	85-01-8	D	8	1	6.60E+00	6.60E+00	5.80E-02	5.40E-01		5.1E+03	1.3E-03	1.9E+02	3.5E-02	2.9E+03	2.3E-03	5.2E+03	1.3E-03	2.8E+03	2.4E-03	1.6E+02	4.1E-02	6.7E+03	9.9E-04	1.6E+03	4.1E-03
SVOC	Phenol	108-95-2	ID	8				5.40E-02	1.10E+00						1.8E+07		1.2E+04						4.0E+07		1.2E+04	
SVOC	Pyrene	129-00-0	D	8	1	2.80E+00	2.80E+00	5.70E-02	5.40E-01		1.0E+06	2.8E-06	7.8E+05	3.6E-06	2.9E+06	9.7E-07	8.4E+04	3.3E-05	1.0E+06	2.8E-06	6.5E+05	4.3E-06	6.7E+06	4.2E-07	2.9E+04	9.7E-05
SVOC	2,4,5-Trichlorophenol	95-95-4		8				6.10E-02	8.90E-01						1.0E+07		7.3E+04						2.3E+07		2.3E+04	
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	8				7.00E-02	1.10E+00						1.3E+06		3.3E+03						1.0E+06		7.1E+02	
P/PCB	PCBs (total)	1336-36-3	B2	8	3	4.71E-02	9.18E-02	5.40E-02	3.60E-01		1.6E+04	5.7E-06	8.1E+02	1.1E-04	6.5E+03	1.4E-05	1.6E+01	5.7E-03	3.0E+03	3.1E-05	2.4E+02	3.8E-04	5.2E+03	1.8E-05	4.0E+00	2.3E-02
INORG	Antimony	7440-36-0		8				1.36E-01	6.51E+00						5.9E+03		6.7E+02						1.3E+04		1.8E+02	
INORG	Arsenic	7440-38-2	A	8	8	3.50E+00	2.47E+01			1.3E+01					9.1E+02	1.3E-02	3.7E+01	3.1E-01					7.2E+02	1.6E-02	7.6E+00	**1.5E+00**
INORG	Barium	7440-39-3	D	8	8	1.72E+01	2.41E+02			1.1E+02					1.5E+05	8.7E-04	1.3E+05	1.0E-03					3.3E+05	4.0E-04	3.7E+04	3.5E-03
INORG	Beryllium	7440-41-7	B1	8	8	1.01E-01	4.15E+00			1.5E+00					5.9E+02	4.4E-03	1.6E+03	1.6E-03					1.3E+03	2.0E-03	4.1E+02	6.4E-03
INORG	Cadmium	7440-43-9	B1	8	8	7.49E-02	3.63E-01			1.2E+00					2.2E+03		2.1E+03						1.7E+03		5.5E+02	
INORG	Chromium (total)	7440-47-3		8	8	4.89E+00	4.82E+01			4.9E+01					2.4E+02		9.2E+03						2.6E+02		2.5E+03	
INORG	Cobalt	7440-48-4	B1	8	8	3.94E+00	1.06E+02			1.7E+01					5.9E+03	1.5E-02	9.0E+03	9.8E-03					1.3E+04	6.8E-03	2.6E+03	3.4E-02
INORG	Copper	7440-50-8	D	8	8	7.79E+00	3.04E+01			3.2E+01					5.9E+04		7.3E+04						1.3E+05		2.0E+04	
INORG	Lead	7439-92-1	B2	8	8	5.09E+00	1.48E+01			4.9E+01					4.4E+04		9.0E+02						1.0E+05		4.0E+02	
INORG	Manganese	7439-96-5	D	8	8	3.70E+01	4.25E+02			5.1E+02					1.5E+03		9.0E+04						3.3E+03		2.5E+04	
INORG	Mercury	7439-97-6	D	8	8	1.38E-02	1.53E-01			1.3E-01	8.9E+01	2.6E-04	6.2E+01	3.7E-04	8.8E+03	2.6E-06	5.8E+02	4.0E-05	4.8E+01	4.8E-04	5.2E+01	4.4E-04	2.0E+04	1.2E-06	1.6E+02	1.4E-04
INORG	Nickel	7440-02-0	A	8	8	6.03E+00	1.86E+01			3.0E+01					1.6E+04		1.5E+05						1.3E+04		4.0E+04	
INORG	Selenium	7782-49-2	D	8	2	4.49E+00	1.46E+01	1.72E-01	5.61E-01	4.1E-01					5.9E+04	2.4E-04	9.6E+03	1.5E-03					1.3E+05	1.1E-04	2.6E+03	5.5E-03
INORG	Silver	7440-22-4	D	8	1	1.45E-01	1.45E-01	8.31E-02	1.63E+00						2.9E+03	5.0E-05	9.0E+03	1.6E-05					6.7E+03	2.2E-05	2.5E+03	5.8E-05
INORG	Thallium	7440-28-0		8	4	3.99E-01	1.52E+00	1.08E+00	3.26E+00								1.3E+02	1.2E-02							3.5E+01	4.3E-02
INORG	Vanadium	7440-62-2		8	8	6.29E+00	4.69E+01			3.3E+01							5.5E+03	2.6E-03							7.5E+02	1.9E-02
INORG	Zinc	7440-66-6	D	8	8	1.72E+01	2.50E+02			1.9E+02							6.3E+05	9.7E-05							1.7E+05	3.6E-04

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-23
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-09 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	2	1	2.00E-02	2.00E-02	1.10E-03	1.10E-03	1.0E+06	2.0E-08	3.1E+04	6.5E-07	7.3E-01	2.7E-02
Shallow	VOC	Benzene	71-43-2	T	A	2				1.60E-04	3.70E-04	3.5E+01		1.1E+01		5.0E-03	
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	2	1	3.90E-04	3.90E-04	3.20E-04	3.20E-04	3.7E+01	1.1E-05	1.4E+01	2.8E-05	1.0E-01	3.9E-03
Shallow	VOC	Bromoform	75-25-2	T	B2	2				1.80E-04	3.70E-04	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	2				2.00E-04	3.00E-04	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	2	1	1.90E-03	1.90E-03	5.90E-04	5.90E-04	2.4E+05	7.9E-09	2.4E+05	7.9E-09	1.3E+01	1.5E-04
Shallow	VOC	Carbon Disulfide	75-15-0	T		2	2	2.50E-04	4.10E-04			5.5E+02	7.5E-07	1.2E+03	3.4E-07	8.0E-01	5.1E-04
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	2				1.20E-04	3.70E-04	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	2				1.40E-04	3.80E-04	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		2				2.60E-04	2.90E-04	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	2	1	2.40E-03	2.40E-03	3.50E-04	3.50E-04	1.8E+02	1.3E-05	1.5E+02	1.6E-05	1.0E-01	2.4E-02
Shallow	VOC	Chloromethane	74-87-3	T	D	2				1.30E-04	4.90E-04	4.5E+01		4.9E+02		2.6E-01	
Shallow	VOC	Cumene	98-82-8	T	D	2				1.20E-04	3.90E-04	5.6E+01		5.6E+01		8.0E-01	
Shallow	VOC	Cyclohexane	110-82-7	T	ID	2				1.30E-04	3.30E-04						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	2				6.20E-04	8.20E-04	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	2				2.60E-04	3.70E-04	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	2				2.20E-04	3.40E-04	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	2				1.10E-04	3.80E-04	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	2				1.50E-04	3.80E-04			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	2				1.70E-04	3.80E-04	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		2				2.60E-04	4.90E-04	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	2				1.60E-04	3.00E-04	2.3E+03		2.4E+03		8.8E-01	
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	2				2.10E-04	2.80E-04	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	2				2.40E-04	3.10E-04	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	2				2.20E-04	3.50E-04	2.1E+02		2.0E+02		7.0E-02	
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		2				1.50E-04	3.30E-04	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	2				1.70E-04	4.10E-04	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	1				3.50E-04	3.50E-04	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	2				1.20E-04	4.10E-04	1.7E+02		1.7E+02		7.0E-01	
Shallow	VOC	2-Hexanone	591-78-6	T		2				4.60E-04	5.80E-04	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		2				4.10E-04	5.40E-04						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		2	1	8.10E-04	8.10E-04	2.70E-04	2.70E-04	4.7E+04	1.7E-08	6.1E+02	1.3E-06	2.4E-01	3.4E-03
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	1				2.60E-04	2.60E-04	2.0E+04		1.3E+04		1.8E+00	
Shallow	VOC	Methylcyclohexane	108-87-2	T		2				1.50E-04	4.20E-04						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	1				3.40E-04	3.40E-04	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	Styrene	100-42-5	T		2				1.50E-04	3.50E-04	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	2				2.50E-04	3.60E-04	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	1				4.20E-04	4.20E-04	1.7E+02		1.2E+01		5.0E-03	
Shallow	VOC	Toluene	108-88-3	T	D	2				1.80E-04	3.90E-04	5.3E+02		5.3E+02		1.0E+00	
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	2				1.70E-04	4.00E-04	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	2				1.50E-04	3.90E-04	1.3E+03		1.3E+03		2.0E-01	
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	2				3.00E-04	3.60E-04	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	2				1.40E-04	4.20E-04	9.7E+01		2.2E+01		5.0E-03	
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		2				2.80E-04	5.40E-04	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		2				3.20E-04	3.20E-04	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	2				1.50E-04	3.60E-04	1.3E+01		1.0E+00		2.0E-03	
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	2				3.30E-04	4.40E-04	1.9E+02		1.9E+02		1.0E+01	
Shallow	SVOC	Acenaphthene	83-32-9	T		2				8.00E-04	8.00E-04	4.2E+00		4.2E+00		1.3E+00	
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	2				7.10E-04	7.10E-04	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	2				2.60E-03	2.60E-03	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	2				6.80E-04	6.80E-04	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		2				2.50E-03	2.50E-03			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		2				2.80E-03	2.80E-03						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	2				7.00E-04	7.00E-04			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	2				7.30E-04	7.30E-04			2.0E-03		5.0E-03	

TABLE 4-23
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-09 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	2				9.40E-04	9.40E-04			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	2				8.50E-04	8.50E-04			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	2				8.40E-04	8.40E-04			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	2				2.60E-03	2.60E-03						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	2				8.70E-04	8.70E-04						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	2				9.70E-04	9.70E-04	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	2				2.70E-03	2.70E-03			3.2E-01		6.0E-03	
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	2				8.80E-04	8.80E-04						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	2				8.80E-04	8.80E-04			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		2				2.50E-03	2.50E-03			3.9E+05		5.8E+00	
Shallow	SVOC	Carbazole	86-74-8	T	B2	2				8.20E-04	8.20E-04			7.4E+00		8.5E-02	
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		2				9.90E-04	9.90E-04			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		2				6.10E-04	6.10E-04						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		2				8.50E-04	8.50E-04			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		2				1.00E-03	1.00E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		2				7.90E-04	7.90E-04						
Shallow	SVOC	Chrysene	218-01-9	T	B2	2				7.50E-04	7.50E-04			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	2				7.90E-04	7.90E-04			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	2				1.10E-03	1.10E-03						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	2				9.30E-04	9.30E-04			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		2				8.50E-04	8.50E-04			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	2				6.50E-04	6.50E-04			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		2				8.50E-04	8.50E-04			5.2E+02		3.7E-01	
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	2				7.60E-04	7.60E-04			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	2				6.70E-04	6.70E-04			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		2				1.30E-03	1.30E-03			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		2				3.00E-03	3.00E-03						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	2				7.90E-04	7.90E-04			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	2				5.70E-04	5.70E-04						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		2				1.10E-03	1.10E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	2				8.10E-04	8.10E-04	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	2				1.00E-03	1.00E-03	2.0E+00		2.0E+00		8.8E-01	
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	2				7.40E-04	7.40E-04	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	2				7.30E-04	7.30E-04	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	1				1.10E-03	1.10E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	2				7.40E-04	7.40E-04	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	2				6.30E-04	6.30E-04			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	2				6.30E-04	6.30E-04			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	2				6.40E-04	6.40E-04			2.5E+01		2.6E-01	
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		2				1.30E-03	1.30E-03			8.1E+02		3.7E-01	
Shallow	SVOC	Naphthalene	91-20-3	T	C	2				7.50E-04	7.50E-04	3.1E+01		3.1E+01		5.2E-01	
Shallow	SVOC	2-Nitroaniline	88-74-4	T		2				7.00E-04	7.00E-04						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	2				7.10E-04	7.10E-04						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	2				1.30E-03	1.30E-03						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	2				8.10E-04	8.10E-04	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		2				2.10E-03	2.10E-03			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		2				1.90E-03	1.90E-03						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	2				1.40E-03	1.40E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	2				6.70E-04	6.70E-04			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	2				7.80E-04	7.80E-04						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	2				2.40E-03	2.40E-03			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	2				8.20E-04	8.20E-04	1.0E+00		1.0E+00		5.2E-02	
Shallow	SVOC	Phenol	108-95-2	T	ID	2				2.60E-03	2.60E-03			2.9E+04		4.4E+00	
Shallow	SVOC	Pyrene	129-00-0	T	D	2				1.10E-03	1.10E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		2				1.20E-03	1.20E-03			1.7E+02		7.3E-01	

TABLE 4-23
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-09 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	2				1.70E-03	1.70E-03			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	2				8.20E-05	8.20E-05	4.5E-02		3.3E-03		5.0E-04	
Shallow	INORG	Antimony	7440-36-0	D		1				2.20E-03	2.20E-03			6.8E+01		6.0E-03	
Shallow	INORG	Antimony	7440-36-0	T		2	1	3.30E-03	3.30E-03	3.40E-03	3.40E-03			6.8E+01	4.9E-05	6.0E-03	5.5E-01
Shallow	INORG	Arsenic	7440-38-2	D	A	1	1	5.70E-03	5.70E-03					4.3E+00	1.3E-03	5.0E-02	1.1E-01
Shallow	INORG	Arsenic	7440-38-2	T	A	2	1	4.20E-03	4.20E-03	2.10E-03	2.10E-03			4.3E+00	9.8E-04	5.0E-02	8.4E-02
Shallow	INORG	Barium	7440-39-3	D	D	1	1	5.48E-01	5.48E-01					1.4E+04	3.9E-05	2.0E+00	2.7E-01
Shallow	INORG	Barium	7440-39-3	T	D	2	2	5.04E-01	5.69E-01					1.4E+04	4.1E-05	2.0E+00	2.8E-01
Shallow	INORG	Beryllium	7440-41-7	D	B1	1				5.40E-04	5.40E-04			2.9E+02		4.0E-03	
Shallow	INORG	Beryllium	7440-41-7	T	B1	2				5.40E-04	6.00E-04			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	D	B1	1				2.80E-04	2.80E-04			1.9E+02		5.0E-03	
Shallow	INORG	Cadmium	7440-43-9	T	B1	2	1	2.90E-04	2.90E-04	2.80E-04	2.80E-04			1.9E+02	1.5E-06	5.0E-03	5.8E-02
Shallow	INORG	Chromium (total)	7440-47-3	D		1	1	2.80E-03	2.80E-03					4.6E+02	6.1E-06	1.0E-01	2.8E-02
Shallow	INORG	Chromium (total)	7440-47-3	T		2	1	3.00E-03	3.00E-03	1.50E-03	1.50E-03			4.6E+02	6.5E-06	1.0E-01	3.0E-02
Shallow	INORG	Cobalt	7440-48-4	D	B1	1	1	2.20E-03	2.20E-03					2.4E+03	9.2E-07	4.0E-02	5.5E-02
Shallow	INORG	Cobalt	7440-48-4	T	B1	2	2	2.20E-03	2.40E-03					2.4E+03	1.0E-06	4.0E-02	6.0E-02
Shallow	INORG	Copper	7440-50-8	D	D	1				4.20E-03	4.20E-03			7.4E+03		1.4E+00	
Shallow	INORG	Copper	7440-50-8	T	D	2				1.70E-03	4.20E-03			7.4E+03		1.4E+00	
Shallow	INORG	Lead	7439-92-1	D	B2	1				2.50E-03	2.50E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	2				1.60E-03	2.50E-03					4.0E-03	
Shallow	INORG	Manganese	7439-96-5	D	D	1				9.00E-04	9.00E-04			9.1E+03		8.6E-01	
Shallow	INORG	Manganese	7439-96-5	T	D	2	1	4.30E-03	4.30E-03	9.00E-04	9.00E-04			9.1E+03	4.7E-07	8.6E-01	5.0E-03
Shallow	INORG	Mercury	7439-97-6	D	D	1				6.90E-05	6.90E-05	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Mercury	7439-97-6	T	D	2				6.90E-05	8.70E-05	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Nickel	7440-02-0	D	A	1	1	4.10E-03	4.10E-03					7.4E+04	5.5E-08	1.0E-01	4.1E-02
Shallow	INORG	Nickel	7440-02-0	T	A	2	2	3.50E-03	7.30E-03					7.4E+04	9.9E-08	1.0E-01	7.3E-02
Shallow	INORG	Selenium	7782-49-2	D	D	1				4.50E-03	4.50E-03			9.7E+02		5.0E-02	
Shallow	INORG	Selenium	7782-49-2	T	D	2				4.50E-03	4.70E-03			9.7E+02		5.0E-02	
Shallow	INORG	Silver	7440-22-4	D	D	1				1.50E-03	1.50E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	2				9.80E-04	1.50E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		1	1	5.10E-05	5.10E-05					1.3E+01	3.9E-06	2.0E-03	2.6E-02
Shallow	INORG	Thallium	7440-28-0	T		2	1	7.20E-05	7.20E-05	3.30E-05	3.30E-05			1.3E+01	5.5E-06	2.0E-03	3.6E-02
Shallow	INORG	Vanadium	7440-62-2	D		1	1	3.70E-03	3.70E-03					9.7E+02	3.8E-06	4.5E-03	8.2E-01
Shallow	INORG	Vanadium	7440-62-2	T		2	2	1.00E-03	4.10E-03					9.7E+02	4.2E-06	4.5E-03	9.1E-01
Shallow	INORG	Zinc	7440-66-6	D	D	1	1	1.39E-02	1.39E-02					1.1E+05	1.3E-07	2.4E+00	5.8E-03
Shallow	INORG	Zinc	7440-66-6	T	D	2	1	8.23E-02	8.23E-02	1.20E-02	1.20E-02			1.1E+05	7.5E-07	2.4E+00	3.4E-02

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-24
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-16 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
VOC	Acetone	67-64-1	ID	7	1	1.30E-02	1.30E-02	2.30E-03	2.50E-02		1.1E+05	1.2E-07	1.6E+05	8.1E-08	1.7E+08	7.6E-11	7.3E+04	1.8E-07	1.1E+05	1.2E-07	1.3E+05	1.0E-07	3.9E+08	3.3E-11	2.3E+04	5.7E-07
VOC	Benzene	71-43-2	A	7				3.00E-04	6.30E-03		8.4E+00		4.5E+01		4.7E+05		4.0E+02		1.6E+00		1.3E+01		3.8E+05		1.8E+02	
VOC	Bromodichloromethane	75-27-4	B2	7				2.90E-04	6.30E-03		6.4E+00		3.1E+01		1.1E+05		4.9E+02		1.2E+00		9.1E+00		8.4E+04		1.1E+02	
VOC	Bromoform	75-25-2	B2	7				3.80E-04	6.30E-03		7.7E+02		3.1E+03		3.6E+06		8.7E+02		1.5E+02		9.0E+02		2.8E+06		8.2E+02	
VOC	Bromomethane	74-83-9	D	7				7.90E-04	1.30E-02		1.6E+00		1.3E+01		1.5E+05		1.0E+03		8.6E-01		1.1E+01		3.3E+05		3.2E+02	
VOC	2-Butanone	78-93-3	ID	7	1	2.80E-03	2.80E-03	2.90E-03	2.50E-02		2.7E+04	1.0E-07	3.5E+04	8.0E-08	2.9E+07	9.7E-11	2.7E+04	1.0E-07	2.7E+04	1.0E-07	2.9E+04	9.7E-08	6.7E+07	4.2E-11	2.7E+04	1.0E-07
VOC	Carbon Disulfide	75-15-0		7				8.50E-04	6.30E-03		1.4E+02		1.6E+03		2.1E+07		2.8E+02		7.6E+01		1.3E+03		4.7E+07		2.8E+02	
VOC	Carbon Tetrachloride	56-23-5	B2	7				4.20E-04	6.30E-03		9.9E-01		1.2E+01		1.7E+05		3.9E+02		1.9E-01		3.5E+00		1.3E+05		9.6E+01	
VOC	Chlorobenzene	108-90-7	D	7				2.80E-04	6.30E-03		2.2E+02		9.2E+02		2.1E+06		2.6E+02		1.2E+02		7.7E+02		4.7E+06		2.6E+02	
VOC	Chloroethane	75-00-3		7				9.30E-04	1.30E-02		9.5E+02		3.6E+04		2.9E+08		9.5E+02		9.5E+02		3.0E+04		6.7E+08		9.5E+02	
VOC	Chloroform	67-66-3	B2	7				3.10E-04	6.30E-03		3.8E+01		1.5E+02		1.6E+06		1.5E+03		7.2E+00		4.5E+01		1.3E+06		1.2E+03	
VOC	Chloromethane	74-87-3	D	7				4.70E-04	1.30E-02		1.0E+01		1.2E+02		2.6E+06		1.1E+03		2.3E+00		4.0E+01		4.9E+06		1.1E+03	
VOC	Cumene	98-82-8	D	7				3.10E-04	6.30E-03		3.9E+02		2.0E+03		2.6E+06		3.9E+02		3.9E+02		1.7E+03		5.8E+06		3.9E+02	
VOC	Cyclohexane	110-82-7	ID	7				4.70E-04	1.30E-02																	
VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	7				1.20E-03	1.30E-02		1.2E+00		1.5E+01		5.9E+03		1.2E+00		1.2E+00		1.3E+01		1.3E+04		1.2E+00	
VOC	Dibromochloromethane	124-48-1	C	7				3.80E-04	6.30E-03		2.1E+01		8.0E+01		1.6E+05		5.0E+02		3.9E+00		2.4E+01		1.3E+05		1.1E+02	
VOC	1,2-Dibromoethane	106-93-4	B2	7				4.00E-04	6.30E-03		3.6E+00		5.8E+00		1.8E+04		4.3E-01		6.7E-01		1.7E+00		1.4E+04		2.5E-01	
VOC	1,2-Dichlorobenzene	95-50-1	D	7				3.40E-04	6.30E-03		2.1E+02		4.6E+04		4.4E+07		2.1E+02		2.1E+02		3.9E+04		1.0E+08		2.1E+02	
VOC	1,3-Dichlorobenzene	541-73-1	D	7				3.20E-04	6.30E-03								1.7E+02								1.7E+02	
VOC	1,4-Dichlorobenzene	106-46-7	C	7				2.90E-04	6.30E-03		1.0E+02		2.6E+02		5.7E+05		1.9E+03		1.9E+01		7.7E+01		4.5E+05		4.0E+02	
VOC	Dichlorodifluoromethane	75-71-8		7				4.20E-04	1.30E-02		1.7E+03		6.3E+04		1.5E+09		1.0E+03		9.0E+02		5.3E+04		3.3E+09		1.0E+03	
VOC	1,1-Dichloroethane	75-34-3	C	7				3.70E-04	6.30E-03		4.3E+02		2.5E+03		1.5E+07		8.9E+02		2.3E+02		2.1E+03		3.3E+07		8.9E+02	
VOC	1,2-Dichloroethane	107-06-2	B2	7				4.90E-04	6.30E-03		1.1E+01		2.1E+01		1.5E+05		4.2E+02		2.1E+00		6.2E+00		1.2E+05		9.1E+01	
VOC	1,1-Dichloroethene	75-35-4	C	7				1.10E-03	6.30E-03		3.3E-01		3.7E+00		7.8E+04		5.7E+02		6.2E-02		1.1E+00		6.2E+04		2.0E+02	
VOC	cis-1,2-Dichloroethene	156-59-2	D	7				5.40E-04	6.30E-03		4.1E+01		2.1E+02		1.0E+06		6.4E+02		2.2E+01		1.8E+02		2.3E+06		6.4E+02	
VOC	trans-1,2-Dichloroethene	156-60-5		7				5.00E-04	6.30E-03		4.3E+01		3.3E+02		2.1E+06		1.4E+03		2.3E+01		2.8E+02		4.7E+06		1.4E+03	
VOC	1,2-Dichloropropane	78-87-5	B2	7				4.70E-04	6.30E-03		7.4E+00		3.0E+01		1.2E+05		5.5E+02		4.0E+00		2.5E+01		2.7E+05		1.4E+02	
VOC	1,3-Dichloropropene (total)	542-75-6	B2	7				3.20E-04	6.30E-03		5.4E+00		6.0E+01		5.9E+05		2.4E+02		1.0E+00		1.8E+01		7.8E+05		1.0E+01	
VOC	Ethyl Benzene	100-41-4	D	7				3.10E-04	6.30E-03		1.4E+02		2.4E+03		1.3E+07		1.4E+02		8.7E+01		7.2E+02		1.0E+07		1.4E+02	
VOC	2-Hexanone	591-78-6		7				8.50E-04	2.50E-02		1.8E+03		1.3E+03		1.2E+06		2.5E+03		9.9E+02		1.1E+03		2.7E+06		2.5E+03	
VOC	Methyl Acetate	79-20-9		7	1	2.50E-02	2.50E-02	9.30E-04	1.30E-02																	
VOC	Methyl tert-butyl ether	1634-04-4		7				5.10E-04	2.50E-02		5.9E+03		3.0E+04		8.8E+07		5.9E+03		5.9E+03		2.5E+04		2.0E+08		1.5E+03	
VOC	4-Methyl-2-pentanone	108-10-1	ID	7				9.30E-04	2.50E-02		2.7E+03		5.3E+04		6.0E+07		2.7E+03		2.7E+03		4.5E+04		1.4E+08		2.7E+03	
VOC	Methylcyclohexane	108-87-2		7	1	5.70E-04	5.70E-04	6.40E-04	1.30E-02																	
VOC	Methylene Chloride	75-09-2	B2	7				9.30E-04	6.30E-03		2.4E+02		7.0E+02		8.3E+06		2.3E+03		4.5E+01		2.1E+02		6.6E+06		1.3E+03	
VOC	Styrene	100-42-5		7				2.70E-04	6.30E-03		5.2E+02		3.3E+03		6.9E+06		5.2E+02		2.5E+02		9.7E+02		5.5E+06		4.0E+02	
VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	7				5.90E-04	6.30E-03		2.3E+01		3.4E+01		6.8E+04		2.4E+02		4.3E+00		1.0E+01		5.4E+04		5.3E+01	
VOC	Tetrachloroethene	127-18-4	C-B2	7				3.90E-04	6.30E-03		6.0E+01		6.0E+02		6.8E+06		8.8E+01		1.1E+01		1.8E+02		5.4E+06		8.8E+01	
VOC	Toluene	108-88-3	D	7	4	5.70E-04	2.70E-03	7.40E-04	5.00E-03		2.5E+02	1.1E-05	3.3E+03	8.2E-07	1.2E+07	2.3E-10	2.5E+02	1.1E-05	2.5E+02	1.1E-05	2.8E+03	9.6E-07	2.7E+07	1.0E-10	2.5E+02	1.1E-05
VOC	1,2,4-Trichlorobenzene	120-82-1	D	7				3.00E-04	6.30E-03		1.1E+03		3.4E+04		1.1E+07		1.1E+03		1.1E+03		2.8E+04		2.5E+07		9.9E+02	
VOC	1,1,1-Trichloroethane	71-55-6	D	7				6.40E-04	6.30E-03		4.6E+02		4.5E+03		2.9E+07		4.6E+02		2.5E+02		3.8E+03		6.7E+07		4.6E+02	
VOC	1,1,2-Trichloroethane	79-00-5	C	4				5.50E-04	6.30E-03		2.4E+01		5.7E+01		2.5E+05		8.4E+02		4.6E+00		1.7E+01		1.9E+05		1.8E+02	
VOC	Trichloroethene	79-01-6	C-B2	7				3.90E-04	6.30E-03		3.7E+01		2.6E+02		2.3E+06		5.0E+02		7.1E+00		7.8E+01		1.8E+06		5.0E+02	
VOC	Trichlorofluoromethane	75-69-4		7				1.20E-03	1.30E-02		5.6E+02		1.1E+05		1.7E+09		5.6E+02		5.6E+02		9.2E+04		3.8E+09		5.6E+02	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		7				5.60E-04	6.30E-03		5.5E+02		2.1E+05		2.3E+09		5.5E+02		5.5E+02		1.8E+05		5.1E+09		5.5E+02	
VOC	Vinyl Chloride	75-01-4	A	7				7.00E-04	1.30E-02		2.8E+00		2.9E+01		8.9E+05		3.4E+01		2.7E-01		4.2E+00		3.5E+05		3.8E+00	
VOC	Xylenes (total)	1330-20-7	ID	7				9.30E-04	1.30E-02		1.5E+02		5.4E+04		1.3E+08		1.5E+02		1.5E+02		4.6E+04		2.9E+08		1.5E+02	
SVOC	Acenaphthene	83-32-9		7				2.10E-02	3.70E-01		3.5E+05		9.7E+04		6.2E+06		1.3E+05		1.9E+05		8.1E+04		1.4E+07		4.1E+04	
SVOC	Acenaphthylene	208-96-8	D	7				2.10E-02	3.70E-01		3.0E+03		2.7E+03		1.0E+06		5.2E+03		1.6E+03		2.2E+03		2.3E+06		1.6E+03	
SVOC	Acetophenone	98-86-2	D	7				2.00E-02	3.70E-01		1.1E+03		5.2E+04		1.4E+07		1.1E+03		1.1E+03		4.4E+04		3.3E+07		1.1E+03	
SVOC	Anthracene	120-12-7	D	7				2.00E-02	3.70E-01		1.0E+06		1.6E+06		2.9E+07		7.3E+05		1.0E+06		1.4E+06		6.7E+07		2.3E+05	
SVOC	Atrazine	1912-24-9		7				2.00E-02	3.70E-01								3.3E+02								7.1E+01	
SVOC	Benzaldehyde	100-52-7		7				2.30E-02	3.70E-01																	
SVOC	Benzo(a)anthracene	56-55-3	B2	7	1	6.00E-02	6.00E-02	1.90E-02	3.70E-01								8.0E+01	7.5E-04							2.0E+01	3.0E-03
SVOC	Benzo(a)pyrene	50-32-8	B2	7	1	1.30E-01	1.30E-01	2.00E-02	3.70E-01						1.9E+03	6.8E-05	8.0E+00	1.6E-02					1.5E+03	8.7E-05	2.0E+00	6.5E-02
SVOC	Benzo(b)fluoranthene	205-99-2	B2	7	1	2.60E-01	2.60E-01	2.20E-02	3.70E-01								8.0E+01	3.3E-03							2.0E+01	1.3E-02
SVOC	Benzo(g,h,i)perylene	191-24-2	D	7	2	5.70E-02	2.90E-01	6.00E-02	3.70E-01						3.5E+05	8.3E-07	7.0E+03	4.1E-05					8.0E+05	3.6E-07	2.5E+03	1.2E-04
SVOC	Benzo(k)fluoranthene	207-08-9	B2	7	2	6.50E-02	7.40E-02	2.00E-02	3.70E-01								8.0E+02	9.3E-05							2.0E+02	3.7E-04
SVOC	Biphenyl	92-52-4	D	7				2.30E-02	3.70E-01																	
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	7				1.90E-02	3.70E-01																	
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	7				2.00E-02	3.70E-01		4.4E+01		1.3E+01		1.2E+04		5.8E+01		8.3E+00		3.8E+00		9.4E+03		1.3E+01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	7	5	7.60E-02	7.30E-01	2.40E-02	6.80E-02						8.9E+05	8.2E-07	1.0E+04	7.3E-05					7.0E+05	1.0E-06	2.8E+03	2.6E-04
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	7				2.10E-02	3.70E-01																	
SVOC	Butylbenzylphthalate	85-68-7	C	7	1	1.50E-01	1.50E-01	1.90E-02	3.70E-01						2.1E+07	7.1E-09	3.1E+02	4.8E-04					4.7E+07	3.2E-09	3.1E+02	4.8E-04
SVOC	Caprolactam	105-60-2		7				2.30E-02	3.70E-01						2.9E+05		3.1E+05						6.7E+05		5.3E+04	
SVOC	Carbazole	86-74-8	B2	7				2.40E-02	3.70E-01								2.4E+03								5.3E+02	
SVOC	4-Chloro-3-methylphenol	59-50-7		7				2.00E-02	3.70E-01								1.5E+04								4.5E+03	
SVOC	4-Chloroaniline	106-47-8		7				6.70E-03	1.50E+00																	
SVOC	2-Chloronaphthalene	91-58-7		7				2.10E-02	3.70E-01								1.8E+05								5.6E+04	
SVOC	2-Chlorophenol	95-57-8		7				2.00E-02	3.70E-01								4.5E+03								1.4E+03	
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		7				2.10E-02	3.70E-01																	
SVOC	Chrysene	218-01-9	B2	7	1	1.10E-01	1.10E-01	1.90E-02	3.70E-01								8.0E+03	1.4E-05							2.0E+03	5.5E-05
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	7				2.30E-02	3.70E-01								8.0E+00								2.0E+00	
SVOC	Dibenzofuran	132-64-9	D	7				2.10E-02	3.70E-01																	
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	7				1.00E-02	2.30E+00						8.2E+03		3.0E+01						6.5E+03		6.6E+00	
SVOC	2,4-Dichlorophenol	120-83-2		7				1.80E-02	3.70E-01						2.3E+06		1.8E+03						5.1E+06		6.6E+02	
SVOC	Diethylphthalate	84-66-2	D	7				2.20E-02	3.70E-01						1.5E+06		7.4E+02						3.3E+06		7.4E+02	
SVOC	2,4-Dimethylphenol	105-67-9		7				3.50E-02	3.70E-01						2.1E+06		3.6E+04						4.7E+06		1.1E+04	
SVOC	Dimethylphthalate	131-11-3	D	7				2.10E-02	3.70E-01						1.5E+06		7.9E+02						3.3E+06		7.9E+02	

TABLE 4-24
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-16 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	Di-n-butylphthalate	84-74-2	D	7				2.50E-02	3.70E-01						1.5E+06		7.6E+02						3.3E+06		7.6E+02	
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		7				8.00E-02	1.90E+00								2.6E+02								7.9E+01	
SVOC	2,4-Dinitrophenol	51-28-5		7				1.10E-01	1.90E+00																	
SVOC	2,4-Dinitrotoluene	121-14-2	B2	7				2.00E-02	3.70E-01						2.0E+04		2.2E+02						1.6E+04		4.8E+01	
SVOC	2,6-Dinitrotoluene	606-20-2	B2	7				2.00E-02	3.70E-01																	
SVOC	Di-n-octylphthalate	117-84-0		7				2.00E-02	3.70E-01								2.0E+04								6.9E+03	
SVOC	Fluoranthene	206-44-0	D	7	2	4.30E-02	1.30E-01	6.10E-02	3.70E-01		1.0E+06	1.3E-07	8.9E+05	1.5E-07	4.1E+06	3.2E-08	1.3E+05	1.0E-06	1.0E+06	1.3E-07	7.4E+05	1.8E-07	9.3E+06	1.4E-08	4.6E+04	2.8E-06
SVOC	Fluorene	86-73-7	D	7				2.20E-02	3.70E-01		1.0E+06		1.5E+05		4.1E+06		8.7E+04		5.8E+05		1.3E+05		9.3E+06		2.7E+04	
SVOC	Hexachlorobenzene	118-74-1	B2	7				2.00E-02	3.70E-01		2.2E+02		5.6E+01		8.5E+03		3.7E+01		4.1E+01		1.7E+01		6.8E+03		8.9E+00	
SVOC	Hexachlorobutadiene	87-68-3	C	7				1.90E-02	3.70E-01		3.5E+02		4.6E+02		1.8E+05		3.5E+02		1.3E+02		1.3E+02		1.4E+05		1.0E+02	
SVOC	Hexachlorocyclopentadiene	77-47-4	E	7				1.70E-02	3.70E-01		5.6E+01		6.0E+01		5.9E+03		7.2E+02		3.0E+01		5.0E+01		1.3E+04		7.2E+02	
SVOC	Hexachloroethane	67-72-1	C	7				2.00E-02	1.10E-01		7.9E+01		6.6E+02		1.0E+05		7.3E+02		4.0E+01		5.5E+02		2.3E+05		2.3E+02	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	7	2	3.90E-02	2.10E-01	7.60E-02	3.70E-01								8.0E+01	2.6E-03							2.0E+01	1.1E-02
SVOC	Isophorone	78-59-1	C	7				2.10E-02	3.70E-01						8.2E+06		2.4E+03						1.2E+07		2.4E+03	
SVOC	2-Methylnaphthalene	91-57-6	ID	7				2.00E-02	3.70E-01								2.6E+04								8.1E+03	
SVOC	Methylphenol (total)	1319-77-3		7				1.70E-02	3.70E-01						2.9E+06		3.6E+04						6.7E+06		1.1E+04	
SVOC	Naphthalene	91-20-3	C	7				2.10E-02	3.70E-01		4.7E+02		3.5E+02		8.8E+04		5.2E+04		2.5E+02		3.0E+02		2.0E+05		1.6E+04	
SVOC	2-Nitroaniline	88-74-4		7				2.10E-02	1.90E+00																	
SVOC	3-Nitroaniline	99-09-2	C	7				1.30E-02	1.90E+00																	
SVOC	4-Nitroaniline	100-01-6	C	7				2.00E-02	1.90E+00																	
SVOC	Nitrobenzene	98-95-3	D	7				2.00E-02	3.70E-01		1.7E+02		6.4E+01		2.1E+04		3.4E+02		9.1E+01		5.4E+01		4.7E+04		1.0E+02	
SVOC	2-Nitrophenol	88-75-5		7				1.80E-02	3.70E-01								2.0E+03								6.3E+02	
SVOC	4-Nitrophenol	100-02-7		7				1.20E-01	1.90E+00																	
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	7				2.20E-02	3.70E-01								7.8E+03								1.7E+03	
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	7				2.10E-02	3.70E-01						2.0E+03		5.4E+00						1.6E+03		1.2E+00	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	7				2.10E-02	3.70E-01																	
SVOC	Pentachlorophenol	87-86-5	B2	7				9.60E-02	3.80E+00						1.3E+05		3.2E+02						1.0E+05		9.0E+01	
SVOC	Phenanthrene	85-01-8	D	7				2.20E-02	3.70E-01		5.1E+03		1.9E+02		2.9E+03		5.2E+03		2.8E+03		1.6E+02		6.7E+03		1.6E+03	
SVOC	Phenol	108-95-2	ID	7				2.00E-02	3.70E-01						1.8E+07		1.2E+04						4.0E+07		1.2E+04	
SVOC	Pyrene	129-00-0	D	7	2	8.10E-02	1.10E-01	5.50E-02	3.70E-01		1.0E+06	1.1E-07	7.8E+05	1.4E-07	2.9E+06	3.8E-08	8.4E+04	1.3E-06	1.0E+06	1.1E-07	6.5E+05	1.7E-07	6.7E+06	1.6E-08	2.9E+04	3.8E-06
SVOC	2,4,5-Trichlorophenol	95-95-4		7				2.30E-02	3.70E-01						1.0E+07		7.3E+04						2.3E+07		2.3E+04	
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	7				1.90E-02	3.70E-01						1.3E+06		3.3E+03						1.0E+06		7.1E+02	
P/PCB	PCBs (total)	1336-36-3	B2	7	4	5.12E-02	4.79E-01	2.20E-02	3.70E-02		1.6E+04	3.0E-05	8.1E+02	5.9E-04	6.5E+03	7.4E-05	1.6E+01	3.0E-02	3.0E+03	1.6E-04	2.4E+02	2.0E-03	5.2E+03	9.2E-05	4.0E+00	1.2E-01
INORG	Antimony	7440-36-0		7	4	2.24E-01	6.68E-01	2.61E-01	3.10E-01						5.9E+03	1.1E-04	6.7E+02	1.0E-03					1.3E+04	5.1E-05	1.8E+02	3.7E-03
INORG	Arsenic	7440-38-2	A	7	7	2.81E+00	8.99E+00			1.3E+01					9.1E+02		3.7E+01						7.2E+02		7.6E+00	
INORG	Barium	7440-39-3	D	7	7	8.60E+00	9.41E+02			1.1E+02					1.5E+05	5.5E-03	1.3E+05	6.4E-03					3.3E+05	2.5E-03	3.7E+04	2.2E-02
INORG	Beryllium	7440-41-7	B1	7	5	1.86E-01	1.62E+00	2.49E-02	1.13E-01	1.5E+00					5.9E+02	1.5E-04	1.6E+03	5.6E-05					1.3E+03	6.9E-05	4.1E+02	2.2E-04
INORG	Cadmium	7440-43-9	B1	7	7	8.94E-02	4.32E-01			1.2E+00					2.2E+03		2.1E+03						1.7E+03		5.5E+02	
INORG	Chromium (total)	7440-47-3		7	7	4.28E+00	1.76E+01			4.9E+01					2.4E+02		9.2E+03						2.6E+02		2.5E+03	
INORG	Cobalt	7440-48-4	B1	7	7	2.23E+00	1.61E+01			1.7E+01					5.9E+03		9.0E+03						1.3E+04		2.6E+03	
INORG	Copper	7440-50-8	D	7	7	8.16E+00	2.57E+01			3.2E+01					5.9E+04		7.3E+04						1.3E+05		2.0E+04	
INORG	Lead	7439-92-1	B2	7	7	3.24E+00	7.49E+01			4.9E+01					4.4E+04	5.8E-04	9.0E+02	2.9E-02					1.0E+05	2.6E-04	4.0E+02	6.4E-02
INORG	Manganese	7439-96-5	D	7	7	1.67E+02	1.13E+03			5.1E+02					1.5E+03	4.1E-01	9.0E+04	6.9E-03					3.3E+03	1.9E-01	2.5E+04	2.5E-02
INORG	Mercury	7439-97-6	D	7	3	1.30E-02	1.26E-01	9.10E-03	3.72E-02	1.3E-01	8.9E+01		6.2E+01		8.8E+03		5.8E+02		4.8E+01		5.2E+01		2.0E+04		1.6E+02	
INORG	Nickel	7440-02-0	A	7	7	5.16E+00	3.13E+01			3.0E+01					1.6E+04	7.5E-05	1.5E+05	8.0E-06					1.3E+04	9.2E-05	4.0E+04	3.0E-05
INORG	Selenium	7782-49-2	D	7	1	3.97E-01	3.97E-01	1.68E-01	5.65E-01	4.1E-01					5.9E+04		9.6E+03						1.3E+05		2.6E+03	
INORG	Silver	7440-22-4	D	7				4.24E-02	5.65E-01						2.9E+03		9.0E+03						6.7E+03		2.5E+03	
INORG	Thallium	7440-28-0		7	4	3.27E-01	5.58E-01	1.09E+00	1.13E+00								1.3E+02	4.3E-03							3.5E+01	1.6E-02
INORG	Vanadium	7440-62-2		7	7	7.57E+00	2.59E+01			3.3E+01							5.5E+03								7.5E+02	
INORG	Zinc	7440-66-6	D	7	7	2.74E+01	6.06E+01			1.9E+02							6.3E+05								1.7E+05	

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-25
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-16 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	4	1	6.95E-03	6.95E-03	5.10E-04	1.00E-02	1.0E+06	7.0E-09	3.1E+04	2.2E-07	7.3E-01	9.5E-03
Shallow	VOC	Benzene	71-43-2	T	A	4				1.60E-04	1.00E-03	3.5E+01		1.1E+01		5.0E-03	
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	4	1	2.15E-04	2.15E-04	1.70E-04	1.00E-03	3.7E+01	5.8E-06	1.4E+01	1.5E-05	1.0E-01	2.2E-03
Shallow	VOC	Bromoform	75-25-2	T	B2	4				1.80E-04	1.00E-03	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	3				2.00E-04	1.00E-03	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	4				4.10E-04	1.00E-02	2.4E+05		2.4E+05		1.3E+01	
Shallow	VOC	Carbon Disulfide	75-15-0	T		4				2.00E-04	1.00E-03	5.5E+02		1.2E+03		8.0E-01	
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	4				1.20E-04	1.00E-03	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	4				1.40E-04	1.00E-03	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		4				2.60E-04	1.00E-03	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	4	2	2.00E-04	6.55E-04	1.40E-04	3.50E-04	1.8E+02	3.6E-06	1.5E+02	4.4E-06	1.0E-01	6.6E-03
Shallow	VOC	Chloromethane	74-87-3	T	D	4				1.30E-04	1.00E-03	4.5E+01		4.9E+02		2.6E-01	
Shallow	VOC	Cumene	98-82-8	T	D	4				1.20E-04	1.00E-03	5.6E+01		5.6E+01		8.0E-01	
Shallow	VOC	Cyclohexane	110-82-7	T	ID	4				1.30E-04	1.00E-03						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	4				6.20E-04	2.00E-03	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	4				2.60E-04	1.00E-03	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	4				2.20E-04	1.00E-03	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	4				1.10E-04	1.00E-03	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	4				1.50E-04	1.00E-03			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	4				1.70E-04	1.00E-03	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		4				2.60E-04	2.00E-03	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	4				1.60E-04	1.00E-03	2.3E+03		2.4E+03		8.8E-01	
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	4				2.10E-04	1.00E-03	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	4				2.40E-04	1.00E-03	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	4				2.20E-04	5.00E-04	2.1E+02		2.0E+02		7.0E-02	
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		4				1.50E-04	5.00E-04	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	4				1.70E-04	1.00E-03	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	4				2.70E-04	1.00E-03	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	4				1.20E-04	1.00E-03	1.7E+02		1.7E+02		7.0E-01	
Shallow	VOC	2-Hexanone	591-78-6	T		4				4.60E-04	1.00E-02	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		4				4.10E-04	1.00E-02						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		4	1	7.15E-03	7.15E-03	1.30E-04	5.00E-03	4.7E+04	1.5E-07	6.1E+02	1.2E-05	2.4E-01	3.0E-02
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	3				2.30E-04	1.00E-02	2.0E+04		1.3E+04		1.8E+00	
Shallow	VOC	Methylcyclohexane	108-87-2	T		4				1.50E-04	1.00E-03						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	4				2.90E-04	1.00E-03	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	Styrene	100-42-5	T		4				1.50E-04	1.00E-03	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	4				2.50E-04	1.00E-03	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	4				2.30E-04	1.00E-03	1.7E+02		1.2E+01		5.0E-03	
Shallow	VOC	Toluene	108-88-3	T	D	4	1	1.90E-04	1.90E-04	1.80E-04	1.00E-03	5.3E+02	3.6E-07	5.3E+02	3.6E-07	1.0E+00	1.9E-04
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	4				1.70E-04	1.00E-03	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	4	2	2.90E-03	3.00E-03	1.50E-04	1.00E-03	1.3E+03	2.3E-06	1.3E+03	2.3E-06	2.0E-01	1.5E-02
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	4				3.00E-04	1.00E-03	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	4				1.40E-04	1.00E-03	9.7E+01		2.2E+01		5.0E-03	
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		4				2.80E-04	1.00E-03	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		4				3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	5	3	1.40E-02	2.30E-02	1.50E-04	3.60E-04	1.3E+01	1.8E-03	1.0E+00	2.3E-02	2.0E-03	**1.2E+01**
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	4				3.30E-04	1.00E-03	1.9E+02		1.9E+02		1.0E+01	
Shallow	SVOC	Acenaphthene	83-32-9	T		4				8.00E-04	5.00E-03	4.2E+00		4.2E+00		1.3E+00	
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	4				7.10E-04	5.00E-03	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	4				2.60E-03	1.00E-02	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	4				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		4				2.50E-03	5.00E-03			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		4				2.80E-03	1.00E-02						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	4				7.00E-04	5.00E-03			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	4				7.30E-04	5.00E-03			2.0E-03		5.0E-03	

TABLE 4-25
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-16 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	4				9.40E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	4				8.50E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	4				8.40E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	4				2.60E-03	1.00E-02						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	4				8.70E-04	5.00E-03						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	4				9.70E-04	5.00E-03	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	4	3	2.03E-03	5.50E-03	2.70E-03	2.70E-03			3.2E-01	1.7E-02	6.0E-03	9.2E-01
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	4				8.80E-04	5.00E-03						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	4				8.80E-04	5.00E-03			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		4				2.50E-03	1.00E-02			3.9E+05		5.8E+00	
Shallow	SVOC	Carbazole	86-74-8	T	B2	4				8.20E-04	1.00E-02			7.4E+00		8.5E-02	
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		4				9.90E-04	5.00E-03			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		4				6.10E-04	1.00E-02						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		4				8.50E-04	5.00E-03			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		4				1.00E-03	5.00E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		4				7.90E-04	5.00E-03						
Shallow	SVOC	Chrysene	218-01-9	T	B2	4				7.50E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	4				7.90E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	4				1.10E-03	5.00E-03						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	4				9.30E-04	2.00E-02			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		4				8.50E-04	1.00E-02			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	4				6.50E-04	5.00E-03			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		4				8.50E-04	5.00E-03			5.2E+02		3.7E-01	
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	4				7.60E-04	5.00E-03			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	4				6.70E-04	5.00E-03			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		4				1.30E-03	2.00E-02			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		4				3.00E-03	2.00E-02						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	4				7.90E-04	5.00E-03			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	4				5.70E-04	5.00E-03						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		4				1.10E-03	5.00E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	4				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	4				1.00E-03	5.00E-03	2.0E+00		2.0E+00		8.8E-01	
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	4				7.40E-04	5.00E-03	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	4				7.30E-04	5.00E-03	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	4				1.10E-03	5.00E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	4				7.40E-04	5.00E-03	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	4				6.30E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	4				6.30E-04	5.00E-03			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	4				6.40E-04	5.00E-03			2.5E+01		2.6E-01	
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		4				1.30E-03	5.00E-03			8.1E+02		3.7E-01	
Shallow	SVOC	Naphthalene	91-20-3	T	C	4				7.50E-04	5.00E-03	3.1E+01		3.1E+01		5.2E-01	
Shallow	SVOC	2-Nitroaniline	88-74-4	T		4				7.00E-04	2.00E-02						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	4				7.10E-04	2.00E-02						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	4				1.30E-03	2.00E-02						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	4				8.10E-04	5.00E-03	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		4				2.10E-03	5.00E-03			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		4				1.90E-03	2.00E-02						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	4				1.40E-03	5.00E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	4				6.70E-04	5.00E-03			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	4				7.80E-04	5.00E-03						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	4				2.40E-03	5.00E-03			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	4				8.20E-04	5.00E-03	1.0E+00		1.0E+00		5.2E-02	
Shallow	SVOC	Phenol	108-95-2	T	ID	4				2.60E-03	5.00E-03			2.9E+04		4.4E+00	
Shallow	SVOC	Pyrene	129-00-0	T	D	4				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		4				1.20E-03	5.00E-03			1.7E+02		7.3E-01	

TABLE 4-25
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-16 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	4				1.70E-03	5.00E-03			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	D	B2	1				4.00E-04	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	4				8.20E-05	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	INORG	Antimony	7440-36-0	D		3				2.20E-03	2.50E-02			6.8E+01		6.0E-03	
Shallow	INORG	Antimony	7440-36-0	T		4				2.20E-03	2.50E-02			6.8E+01		6.0E-03	
Shallow	INORG	Arsenic	7440-38-2	D	A	3	1	8.30E-03	8.30E-03	3.90E-03	1.00E-02			4.3E+00	1.9E-03	5.0E-02	1.7E-01
Shallow	INORG	Arsenic	7440-38-2	T	A	4	1	8.80E-03	8.80E-03	2.10E-03	1.00E-02			4.3E+00	2.0E-03	5.0E-02	1.8E-01
Shallow	INORG	Barium	7440-39-3	D	D	3	3	4.58E-02	2.12E-01					1.4E+04	1.5E-05	2.0E+00	1.1E-01
Shallow	INORG	Barium	7440-39-3	T	D	4	4	3.60E-02	2.15E-01					1.4E+04	1.5E-05	2.0E+00	1.1E-01
Shallow	INORG	Beryllium	7440-41-7	D	B1	3				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Beryllium	7440-41-7	T	B1	4				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	D	B1	3				2.80E-04	5.00E-03			1.9E+02		5.0E-03	
Shallow	INORG	Cadmium	7440-43-9	T	B1	4				2.80E-04	5.00E-03			1.9E+02		5.0E-03	
Shallow	INORG	Chromium (total)	7440-47-3	D		3				1.40E-03	1.00E-02			4.6E+02		1.0E-01	
Shallow	INORG	Chromium (total)	7440-47-3	T		4	2	1.40E-03	1.60E-03	1.40E-03	1.00E-02			4.6E+02	3.5E-06	1.0E-01	1.6E-02
Shallow	INORG	Cobalt	7440-48-4	D	B1	3	1	2.60E-03	2.60E-03	1.30E-03	2.00E-02			2.4E+03	1.1E-06	4.0E-02	6.5E-02
Shallow	INORG	Cobalt	7440-48-4	T	B1	4	2	9.75E-04	2.65E-03	7.40E-04	2.00E-02			2.4E+03	1.1E-06	4.0E-02	6.6E-02
Shallow	INORG	Copper	7440-50-8	D	D	3				4.20E-03	5.00E-03			7.4E+03		1.4E+00	
Shallow	INORG	Copper	7440-50-8	T	D	4				1.70E-03	5.00E-03			7.4E+03		1.4E+00	
Shallow	INORG	Lead	7439-92-1	D	B2	3				2.50E-03	3.00E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	4				1.60E-03	3.00E-03					4.0E-03	
Shallow	INORG	Manganese	7439-96-5	D	D	3	3	9.66E-02	1.05E+00					9.1E+03	1.2E-04	8.6E-01	**1.2E+00**
Shallow	INORG	Manganese	7439-96-5	T	D	4	3	9.65E-02	1.09E+00	6.80E-04	6.80E-04			9.1E+03	1.2E-04	8.6E-01	**1.3E+00**
Shallow	INORG	Mercury	7439-97-6	D	D	3				6.90E-05	2.00E-04	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Mercury	7439-97-6	T	D	4				6.90E-05	2.00E-04	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Nickel	7440-02-0	D	A	3	1	3.10E-03	3.10E-03	2.20E-03	2.00E-02			7.4E+04	4.2E-08	1.0E-01	3.1E-02
Shallow	INORG	Nickel	7440-02-0	T	A	4	1	4.70E-03	4.70E-03	2.20E-03	2.00E-02			7.4E+04	6.4E-08	1.0E-01	4.7E-02
Shallow	INORG	Selenium	7782-49-2	D	D	3				4.50E-03	5.00E-03			9.7E+02		5.0E-02	
Shallow	INORG	Selenium	7782-49-2	T	D	4				4.50E-03	5.00E-03			9.7E+02		5.0E-02	
Shallow	INORG	Silver	7440-22-4	D	D	3				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	4				9.80E-04	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		3				1.80E-05	1.00E-02			1.3E+01		2.0E-03	
Shallow	INORG	Thallium	7440-28-0	T		4				1.80E-05	1.00E-02			1.3E+01		2.0E-03	
Shallow	INORG	Vanadium	7440-62-2	D		3				8.20E-04	1.00E-02			9.7E+02		4.5E-03	
Shallow	INORG	Vanadium	7440-62-2	T		4				6.70E-04	1.00E-02			9.7E+02		4.5E-03	
Shallow	INORG	Zinc	7440-66-6	D	D	3	2	1.04E-02	1.56E-02	2.00E-02	2.00E-02			1.1E+05	1.4E-07	2.4E+00	6.5E-03
Shallow	INORG	Zinc	7440-66-6	T	D	4	1	1.35E-02	1.35E-02	1.20E-02	2.00E-02			1.1E+05	1.2E-07	2.4E+00	5.6E-03

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-26
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-16 - LNAPL AREA NO. 5

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)
VOC	Acetone	67-64-1	ID	1					5.40E-02	5.40E-02
VOC	Benzene	71-43-2	A	1	1	1.40E-01	1.40E-01	1.40E-01		
VOC	Bromodichloromethane	75-27-4	B2	1					9.20E-03	9.20E-03
VOC	Bromoform	75-25-2	B2	1					1.20E-02	1.20E-02
VOC	Bromomethane	74-83-9	D	1					4.70E-02	4.70E-02
VOC	2-Butanone	78-93-3	ID	1					5.80E-02	5.80E-02
VOC	Carbon Disulfide	75-15-0		1					5.00E-03	5.00E-03
VOC	Carbon Tetrachloride	56-23-5	B2	1					1.60E-02	1.60E-02
VOC	Chlorobenzene	108-90-7	D	1					6.50E-03	6.50E-03
VOC	Chloroethane	75-00-3		1					5.30E-02	5.30E-02
VOC	Chloroform	67-66-3	B2	1					1.30E-02	1.30E-02
VOC	Chloromethane	74-87-3	D	1					1.60E-02	1.60E-02
VOC	Cumene	98-82-8	D	1	1	6.10E-01	6.10E-01	6.10E-01		
VOC	Cyclohexane	110-82-7	ID	1	1	7.30E-01	7.30E-01	7.30E-01		
VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	1					2.60E-02	2.60E-02
VOC	Dibromochloromethane	124-48-1	C	1					1.20E-02	1.20E-02
VOC	1,2-Dibromoethane	106-93-4	B2	1					8.50E-03	8.50E-03
VOC	1,2-Dichlorobenzene	95-50-1	D	1					7.70E-03	7.70E-03
VOC	1,3-Dichlorobenzene	541-73-1	D	1					9.30E-03	9.30E-03
VOC	1,4-Dichlorobenzene	106-46-7	C	1					9.60E-03	9.60E-03
VOC	Dichlorodifluoromethane	75-71-8		1					2.60E-02	2.60E-02
VOC	1,1-Dichloroethane	75-34-3	C	1					1.20E-02	1.20E-02
VOC	1,2-Dichloroethane	107-06-2	B2	1					1.50E-02	1.50E-02
VOC	1,1-Dichloroethene	75-35-4	C	1					8.80E-03	8.80E-03
VOC	cis-1,2-Dichloroethene	156-59-2	D	1	1	3.00E-01	3.00E-01	3.00E-01		
VOC	trans-1,2-Dichloroethene	156-60-5		1					1.10E-02	1.10E-02
VOC	1,2-Dichloropropane	78-87-5	B2	1					1.50E-02	1.50E-02

TABLE 4-26
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-16 - LNAPL AREA NO. 5

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)
VOC	1,3-Dichloropropene (total)	542-75-6	B2	1					8.60E-03	8.60E-03
VOC	Ethyl Benzene	100-41-4	D	1	1	7.10E+00	7.10E+00	7.10E+00		
VOC	2-Hexanone	591-78-6		1					1.80E-02	1.80E-02
VOC	Methyl Acetate	79-20-9		1	1	4.80E-01	4.80E-01	4.80E-01		
VOC	Methyl tert-butyl ether	1634-04-4		1					9.20E-03	9.20E-03
VOC	4-Methyl-2-pentanone	108-10-1	ID	1					2.70E-02	2.70E-02
VOC	Methylcyclohexane	108-87-2		1	1	1.90E+00	1.90E+00	1.90E+00		
VOC	Methylene Chloride	75-09-2	B2	1					1.80E-02	1.80E-02
VOC	Styrene	100-42-5		1					8.10E-03	8.10E-03
VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	1					1.10E-02	1.10E-02
VOC	Tetrachloroethene	127-18-4	C-B2	1	1	2.20E-01	2.20E-01	2.20E-01		
VOC	Toluene	108-88-3	D	1	1	1.20E+01	1.20E+01	1.20E+01		
VOC	1,2,4-Trichlorobenzene	120-82-1	D	1					1.20E-02	1.20E-02
VOC	1,1,1-Trichloroethane	71-55-6	D	1					1.00E-02	1.00E-02
VOC	1,1,2-Trichloroethane	79-00-5	C	1					8.80E-03	8.80E-03
VOC	Trichloroethene	79-01-6	C-B2	1	1	5.30E-01	5.30E-01	5.30E-01		
VOC	Trichlorofluoromethane	75-69-4		1					9.90E-03	9.90E-03
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		1					3.20E-02	3.20E-02
VOC	Vinyl Chloride	75-01-4	A	1					2.00E-02	2.00E-02
VOC	Xylenes (total)	1330-20-7	ID	1	1	3.90E+01	3.90E+01	3.90E+01		
SVOC	Acenaphthene	83-32-9		1					5.70E+01	5.70E+01
SVOC	Acenaphthylene	208-96-8	D	1					5.70E+01	5.70E+01
SVOC	Acetophenone	98-86-2	D	1					5.40E+01	5.40E+01
SVOC	Anthracene	120-12-7	D	1					5.40E+01	5.40E+01
SVOC	Atrazine	1912-24-9		1					5.40E+01	5.40E+01
SVOC	Benzaldehyde	100-52-7		1					6.30E+01	6.30E+01
SVOC	Benzo(a)anthracene	56-55-3	B2	1					5.10E+01	5.10E+01

TABLE 4-26
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-16 - LNAPL AREA NO. 5

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)
SVOC	Benzo(a)pyrene	50-32-8	B2	1					5.40E+01	5.40E+01
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1					6.00E+01	6.00E+01
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1					6.60E+01	6.60E+01
SVOC	Benzo(k)fluoranthene	207-08-9	B2	1					5.40E+01	5.40E+01
SVOC	Biphenyl	92-52-4	D	1					6.30E+01	6.30E+01
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	1					5.10E+01	5.10E+01
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	1					5.40E+01	5.40E+01
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	1	1	5.30E+02	5.30E+02	5.30E+02		
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	1					5.70E+01	5.70E+01
SVOC	Butylbenzylphthalate	85-68-7	C	1	1	4.00E+02	4.00E+02	4.00E+02		
SVOC	Caprolactam	105-60-2		1					6.30E+01	6.30E+01
SVOC	Carbazole	86-74-8	B2	1					6.60E+01	6.60E+01
SVOC	4-Chloro-3-methylphenol	59-50-7		1					5.40E+01	5.40E+01
SVOC	4-Chloroaniline	106-47-8		1					1.80E+01	1.80E+01
SVOC	2-Chloronaphthalene	91-58-7		1					5.70E+01	5.70E+01
SVOC	2-Chlorophenol	95-57-8		1					5.40E+01	5.40E+01
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		1					5.70E+01	5.70E+01
SVOC	Chrysene	218-01-9	B2	1					5.10E+01	5.10E+01
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	1					6.30E+01	6.30E+01
SVOC	Dibenzofuran	132-64-9	D	1					5.70E+01	5.70E+01
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	1					2.80E+01	2.80E+01
SVOC	2,4-Dichlorophenol	120-83-2		1					4.80E+01	4.80E+01
SVOC	Diethylphthalate	84-66-2	D	1					6.00E+01	6.00E+01
SVOC	2,4-Dimethylphenol	105-67-9		1					9.60E+01	9.60E+01
SVOC	Dimethylphthalate	131-11-3	D	1					5.70E+01	5.70E+01
SVOC	Di-n-butylphthalate	84-74-2	D	1					6.90E+01	6.90E+01
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		1					2.20E+02	2.20E+02

TABLE 4-26
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-16 - LNAPL AREA NO. 5

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)
SVOC	2,4-Dinitrophenol	51-28-5		1					3.00E+02	3.00E+02
SVOC	2,4-Dinitrotoluene	121-14-2	B2	1					5.40E+01	5.40E+01
SVOC	2,6-Dinitrotoluene	606-20-2	B2	1					5.40E+01	5.40E+01
SVOC	Di-n-octylphthalate	117-84-0		1					5.40E+01	5.40E+01
SVOC	Fluoranthene	206-44-0	D	1					6.90E+01	6.90E+01
SVOC	Fluorene	86-73-7	D	1	1	1.40E+02	1.40E+02	1.40E+02		
SVOC	Hexachlorobenzene	118-74-1	B2	1					5.40E+01	5.40E+01
SVOC	Hexachlorobutadiene	87-68-3	C	1					5.10E+01	5.10E+01
SVOC	Hexachlorocyclopentadiene	77-47-4	E	1					4.50E+01	4.50E+01
SVOC	Hexachloroethane	67-72-1	C	1					5.40E+01	5.40E+01
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1					6.00E+01	6.00E+01
SVOC	Isophorone	78-59-1	C	1					5.70E+01	5.70E+01
SVOC	2-Methylnaphthalene	91-57-6	ID	1					5.40E+01	5.40E+01
SVOC	Methylphenol (total)	1319-77-3		1					4.50E+01	4.50E+01
SVOC	Naphthalene	91-20-3	C	1					5.70E+01	5.70E+01
SVOC	2-Nitroaniline	88-74-4		1					5.70E+01	5.70E+01
SVOC	3-Nitroaniline	99-09-2	C	1					3.60E+01	3.60E+01
SVOC	4-Nitroaniline	100-01-6	C	1					5.40E+01	5.40E+01
SVOC	Nitrobenzene	98-95-3	D	1					5.40E+01	5.40E+01
SVOC	2-Nitrophenol	88-75-5		1					4.80E+01	4.80E+01
SVOC	4-Nitrophenol	100-02-7		1					3.30E+02	3.30E+02
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	1					6.00E+01	6.00E+01
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	1					5.70E+01	5.70E+01
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	1					5.70E+01	5.70E+01
SVOC	Pentachlorophenol	87-86-5	B2	1					2.60E+02	2.60E+02
SVOC	Phenanthrene	85-01-8	D	1	1	2.50E+02	2.50E+02	2.50E+02		
SVOC	Phenol	108-95-2	ID	1					5.40E+01	5.40E+01

TABLE 4-26
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-16 - LNAPL AREA NO. 5

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)
SVOC	Pyrene	129-00-0	D	1					5.10E+01	5.10E+01
SVOC	2,4,5-Trichlorophenol	95-95-4		1					6.30E+01	6.30E+01
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	1					5.10E+01	5.10E+01
P/PCB	PCBs (total)	1336-36-3	B2	1	1	8.32E+01	8.30E+01	8.32E+01		
INORG	Antimony	7440-36-0		1	1	2.70E-01	2.70E-01	2.70E-01		
INORG	Arsenic	7440-38-2	A	1	1	1.11E+01	1.10E+01	1.11E+01		
INORG	Barium	7440-39-3	D	1					6.60E-02	6.60E-02
INORG	Beryllium	7440-41-7	B1	1					6.80E-02	6.80E-02
INORG	Cadmium	7440-43-9	B1	1	1	8.90E-02	8.90E-02	8.90E-02		
INORG	Chromium (total)	7440-47-3		1	1	2.90E+00	2.90E+00	2.90E+00		
INORG	Cobalt	7440-48-4	B1	1	1	1.90E-01	1.90E-01	1.90E-01		
INORG	Copper	7440-50-8	D	1	1	4.10E+00	4.10E+00	4.10E+00		
INORG	Lead	7439-92-1	B2	1	1	1.40E+01	1.40E+01	1.40E+01		
INORG	Manganese	7439-96-5	D	1					7.10E-02	7.10E-02
INORG	Mercury	7439-97-6	D	1					1.60E-02	1.60E-02
INORG	Nickel	7440-02-0	A	1	1	1.30E+00	1.30E+00	1.30E+00		
INORG	Selenium	7782-49-2	D	1					4.30E-01	4.30E-01
INORG	Silver	7440-22-4	D	1					1.00E-01	1.00E-01
INORG	Thallium	7440-28-0		1					5.80E-01	5.80E-01
INORG	Vanadium	7440-62-2		1	1	3.10E+00	3.10E+00	3.10E+00		
INORG	Zinc	7440-66-6	D	1	1	2.79E+01	2.80E+01	2.79E+01		

Notes:
Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-27
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-25 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	1				6.60E-04	6.60E-04	1.0E+06		3.1E+04		7.3E-01	
Shallow	VOC	Benzene	71-43-2	T	A	1				2.00E-04	2.00E-04	3.5E+01		1.1E+01		5.0E-03	
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	1				2.00E-04	2.00E-04	3.7E+01		1.4E+01		1.0E-01	
Shallow	VOC	Bromoform	75-25-2	T	B2	1				3.20E-04	3.20E-04	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	1				1.60E-04	1.60E-04	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	1				3.60E-04	3.60E-04	2.4E+05		2.4E+05		1.3E+01	
Shallow	VOC	Carbon Disulfide	75-15-0	T		1	1	2.03E-04	2.03E-04			5.5E+02	3.7E-07	1.2E+03	1.7E-07	8.0E-01	2.5E-04
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	1				1.80E-04	1.80E-04	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	1				1.60E-04	1.60E-04	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		1				2.20E-04	2.20E-04	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	1				2.10E-04	2.10E-04	1.8E+02		1.5E+02		1.0E-01	
Shallow	VOC	Chloromethane	74-87-3	T	D	1				2.60E-04	2.60E-04	4.5E+01		4.9E+02		2.6E-01	
Shallow	VOC	Cumene	98-82-8	T	D	1				1.50E-04	1.50E-04	5.6E+01		5.6E+01		8.0E-01	
Shallow	VOC	Cyclohexane	110-82-7	T	ID	1				3.40E-04	3.40E-04						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	1				5.30E-04	5.30E-04	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	1				2.50E-04	2.50E-04	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	1				2.20E-04	2.20E-04	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	1				1.50E-04	1.50E-04	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	1				2.00E-04	2.00E-04			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	1				1.60E-04	1.60E-04	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		1				2.30E-04	2.30E-04	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	1				2.60E-04	2.60E-04	2.3E+03		2.4E+03		8.8E-01	
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	1				2.20E-04	2.20E-04	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	1				2.20E-04	2.20E-04	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	1				2.50E-04	2.50E-04	2.1E+02		2.0E+02		7.0E-02	
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		1				2.40E-04	2.40E-04	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	1				1.80E-04	1.80E-04	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	1				1.70E-04	1.70E-04	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Methyl Acetate	79-20-9	T		1				6.80E-04	6.80E-04						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		1				2.10E-04	2.10E-04	4.7E+04		6.1E+02		2.4E-01	
Shallow	VOC	Methylcyclohexane	108-87-2	T		1				2.40E-04	2.40E-04						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	1				2.80E-04	2.80E-04	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	1				2.30E-04	2.30E-04	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	1				1.20E-04	1.20E-04	1.7E+02		1.2E+01		5.0E-03	
Shallow	VOC	Toluene	108-88-3	T	D	1				1.70E-04	1.70E-04	5.3E+02		5.3E+02		1.0E+00	
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	1				1.50E-04	1.50E-04	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	1				1.80E-04	1.80E-04	1.3E+03		1.3E+03		2.0E-01	
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	1				2.10E-04	2.10E-04	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	1				2.20E-04	2.20E-04	9.7E+01		2.2E+01		5.0E-03	
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		1				2.50E-04	2.50E-04	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		1				2.30E-04	2.30E-04	1.7E+02		1.7E+02		1.7E+02	
Shallow	SVOC	Acenaphthene	83-32-9	T		1				6.90E-04	6.90E-04	4.2E+00		4.2E+00		1.3E+00	
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	1				4.10E-04	4.10E-04	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	1				6.50E-04	6.50E-04	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	1				5.90E-04	5.90E-04	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		1				3.50E-04	3.50E-04			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		1				5.90E-04	5.90E-04						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	1				6.80E-04	6.80E-04			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	1				5.30E-04	5.30E-04			2.0E-03		5.0E-03	
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	1				7.10E-04	7.10E-04			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	1				7.00E-04	7.00E-04			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	1				6.40E-04	6.40E-04			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	1				6.50E-04	6.50E-04						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	1				1.00E-03	1.00E-03						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	1				1.70E-03	1.70E-03	2.1E+02		5.7E+00		2.0E-03	

TABLE 4-27
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-25 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	1				2.00E-04	2.00E-04			3.2E-01		6.0E-03	
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	1				7.80E-04	7.80E-04						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	1				2.30E-04	2.30E-04			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		1	1	8.13E-04	8.13E-04					3.9E+05	2.1E-09	5.8E+00	1.4E-04
Shallow	SVOC	Carbazole	86-74-8	T	B2	1				6.10E-04	6.10E-04			7.4E+00		8.5E-02	
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		1				5.50E-04	5.50E-04			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		1				9.00E-04	9.00E-04						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		1				7.30E-04	7.30E-04			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		1				1.30E-03	1.30E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		1				6.60E-04	6.60E-04						
Shallow	SVOC	Chrysene	218-01-9	T	B2	1				6.70E-04	6.70E-04			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	1				6.80E-04	6.80E-04			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	1				6.60E-04	6.60E-04						
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		1				7.00E-04	7.00E-04			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	1				2.50E-04	2.50E-04			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		1				1.00E-03	1.00E-03			5.2E+02		3.7E-01	
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	1				2.00E-04	2.00E-04			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	1				3.70E-04	3.70E-04			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		1				2.10E-03	2.10E-03			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		1				3.30E-03	3.30E-03						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	1				4.60E-04	4.60E-04			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	1				7.10E-04	7.10E-04						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		1				6.90E-04	6.90E-04			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	1				7.10E-04	7.10E-04	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	1				7.50E-04	7.50E-04	2.0E+00		2.0E+00		8.8E-01	
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	1				7.70E-04	7.70E-04	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	1				1.50E-03	1.50E-03	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	1				1.10E-03	1.10E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	1				1.60E-03	1.60E-03	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	1				6.90E-04	6.90E-04			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	1				8.60E-04	8.60E-04			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	1				9.30E-04	9.30E-04			2.5E+01		2.6E-01	
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		1				9.00E-04	9.00E-04			8.1E+02		3.7E-01	
Shallow	SVOC	Naphthalene	91-20-3	T	C	1				1.30E-03	1.30E-03	3.1E+01		3.1E+01		5.2E-01	
Shallow	SVOC	2-Nitroaniline	88-74-4	T		1				4.90E-04	4.90E-04						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	1				4.80E-04	4.80E-04						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	1				5.90E-04	5.90E-04						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	1				1.30E-03	1.30E-03	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		1				9.50E-04	9.50E-04			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		1				3.50E-03	3.50E-03						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	1				6.40E-04	6.40E-04			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	1				1.10E-03	1.10E-03			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	1				1.80E-03	1.80E-03						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	1				2.60E-03	2.60E-03			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	1				6.80E-04	6.80E-04	1.0E+00		1.0E+00		5.2E-02	
Shallow	SVOC	Phenol	108-95-2	T	ID	1				1.30E-03	1.30E-03			2.9E+04		4.4E+00	
Shallow	SVOC	Pyrene	129-00-0	T	D	1				6.30E-04	6.30E-04	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		1				8.60E-04	8.60E-04			1.7E+02		7.3E-01	
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	1				7.10E-04	7.10E-04			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	1				8.20E-05	8.20E-05	4.5E-02		3.3E-03		5.0E-04	
Shallow	INORG	Antimony	7440-36-0	T		1				3.10E-03	3.10E-03			6.8E+01		6.0E-03	
Shallow	INORG	Arsenic	7440-38-2	T	A	1	1	4.80E-03	4.80E-03					4.3E+00	1.1E-03	5.0E-02	9.6E-02
Shallow	INORG	Barium	7440-39-3	T	D	1	1	8.95E-02	8.95E-02					1.4E+04	6.4E-06	2.0E+00	4.5E-02
Shallow	INORG	Beryllium	7440-41-7	T	B1	1				4.70E-04	4.70E-04			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	T	B1	1				3.60E-04	3.60E-04			1.9E+02		5.0E-03	

TABLE 4-27
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-25 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	INORG	Chromium (total)	7440-47-3	T		1	1	1.05E-03	1.05E-03					4.6E+02	2.3E-06	1.0E-01	1.1E-02
Shallow	INORG	Cobalt	7440-48-4	T	B1	1	1	3.20E-03	3.20E-03					2.4E+03	1.3E-06	4.0E-02	8.0E-02
Shallow	INORG	Copper	7440-50-8	T	D	1				1.80E-03	1.80E-03			7.4E+03		1.4E+00	
Shallow	INORG	Lead	7439-92-1	T	B2	1				2.30E-03	2.30E-03					4.0E-03	
Shallow	INORG	Manganese	7439-96-5	T	D	1	1	5.54E-01	5.54E-01					9.1E+03	6.1E-05	8.6E-01	6.4E-01
Shallow	INORG	Mercury	7439-97-6	T	D	1				6.70E-05	6.70E-05	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Nickel	7440-02-0	T	A	1	1	7.50E-03	7.50E-03					7.4E+04	1.0E-07	1.0E-01	7.5E-02
Shallow	INORG	Selenium	7782-49-2	T	D	1				3.90E-03	3.90E-03			9.7E+02		5.0E-02	
Shallow	INORG	Silver	7440-22-4	T	D	1				1.10E-03	1.10E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	T		1	1	1.01E-04	1.01E-04					1.3E+01	7.8E-06	2.0E-03	5.1E-02
Shallow	INORG	Vanadium	7440-62-2	T		1				9.60E-04	9.60E-04			9.7E+02		4.5E-03	
Shallow	INORG	Zinc	7440-66-6	T	D	1				1.30E-02	1.30E-02			1.1E+05		2.4E+00	

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-28
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI P-06 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	14	2	1.20E-02	2.10E-02	5.10E-04	8.50E-02	1.0E+06	2.1E-08	3.1E+04	6.8E-07	7.3E-01	2.9E-02
Shallow	VOC	Benzene	71-43-2	T	A	19	14	3.10E-04	1.20E+00	1.60E-04	3.70E-04	3.5E+01	3.4E-02	1.1E+01	1.1E-01	5.0E-03	**2.4E+02**
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	14	1	3.40E-04	3.40E-04	1.70E-04	2.80E-02	3.7E+01	9.2E-06	1.4E+01	2.4E-05	1.0E-01	3.4E-03
Shallow	VOC	Bromoform	75-25-2	T	B2	14				1.80E-04	3.00E-02	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	10				2.00E-04	3.30E-02	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	14	2	5.90E-04	2.00E-03	4.10E-04	6.80E-02	2.4E+05	8.3E-09	2.4E+05	8.3E-09	1.3E+01	1.5E-04
Shallow	VOC	Carbon Disulfide	75-15-0	T		14				2.00E-04	3.30E-02	5.5E+02		1.2E+03		8.0E-01	
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	14				1.20E-04	2.30E-02	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	14				1.40E-04	2.40E-02	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		14				2.60E-04	4.30E-02	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	14	4	6.50E-04	1.50E-03	1.40E-04	2.30E-02	1.8E+02	8.3E-06	1.5E+02	1.0E-05	1.0E-01	1.5E-02
Shallow	VOC	Chloromethane	74-87-3	T	D	14	1	1.80E-04	1.80E-04	1.30E-04	3.10E-02	4.5E+01	4.0E-06	4.9E+02	3.7E-07	2.6E-01	6.9E-04
Shallow	VOC	Cumene	98-82-8	T	D	14	2	3.30E-02	3.90E-02	1.20E-04	2.00E-02	5.6E+01	7.0E-04	5.6E+01	7.0E-04	8.0E-01	4.9E-02
Shallow	VOC	Cyclohexane	110-82-7	T	ID	14	5	4.20E-04	1.10E-01	1.30E-04	3.30E-04						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	14				6.20E-04	1.00E-01	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	14				2.60E-04	4.30E-02	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	14				2.20E-04	3.70E-02	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	14				1.10E-04	2.40E-02	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	14				1.50E-04	2.50E-02			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	14				1.70E-04	2.80E-02	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		14				2.60E-04	4.30E-02	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	14	1	5.10E-04	5.10E-04	1.60E-04	2.70E-02	2.3E+03	2.2E-07	2.4E+03	2.1E-07	8.8E-01	5.8E-04
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	14				2.10E-04	3.50E-02	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	14				2.40E-04	4.00E-02	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	14				2.20E-04	3.70E-02	2.1E+02		2.0E+02		7.0E-02	
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		14				1.50E-04	2.50E-02	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	14				1.70E-04	2.80E-02	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	14				2.70E-04	4.50E-02	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	19	10	1.50E-04	1.60E+00	1.20E-04	4.10E-04	1.7E+02	9.4E-03	1.7E+02	9.4E-03	7.0E-01	**2.3E+00**
Shallow	VOC	2-Hexanone	591-78-6	T		14				4.60E-04	7.70E-02	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		14				4.10E-04	6.80E-02						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		14	2	5.40E-04	2.10E-03	1.30E-04	2.20E-02	4.7E+04	4.5E-08	6.1E+02	3.4E-06	2.4E-01	8.8E-03
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	9	1	7.90E-04	7.90E-04	2.30E-04	3.80E-02	2.0E+04	4.0E-08	1.3E+04	6.1E-08	1.8E+00	4.4E-04
Shallow	VOC	Methylcyclohexane	108-87-2	T		14	2	4.90E-02	7.80E-02	1.50E-04	2.50E-02						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	13				2.90E-04	5.70E-02	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	Styrene	100-42-5	T		14				1.50E-04	2.50E-02	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	14				2.50E-04	4.20E-02	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	14				2.30E-04	3.80E-02	1.7E+02		1.2E+01		5.0E-03	
Shallow	VOC	Toluene	108-88-3	T	D	19	10	1.90E-04	5.40E+00	1.80E-04	3.90E-04	5.3E+02	1.0E-02	5.3E+02	1.0E-02	1.0E+00	**5.4E+00**
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	14				1.70E-04	2.80E-02	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	14				1.50E-04	2.50E-02	1.3E+03		1.3E+03		2.0E-01	
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	14				3.00E-04	5.00E-02	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	14				1.40E-04	2.60E-02	9.7E+01		2.2E+01		5.0E-03	
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		14				2.80E-04	4.70E-02	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		14				3.20E-04	5.30E-02	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	14				1.50E-04	2.50E-02	1.3E+01		1.0E+00		2.0E-03	
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	19	6	3.70E-04	4.20E+00	3.30E-04	1.30E-03	1.9E+02	2.2E-02	1.9E+02	2.2E-02	1.0E+01	4.2E-01
Shallow	SVOC	Acenaphthene	83-32-9	T		10				8.00E-04	4.00E-03	4.2E+00		4.2E+00		1.3E+00	
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	10				7.10E-04	3.60E-03	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	10				2.60E-03	1.30E-02	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	10				6.80E-04	3.40E-03	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		10				2.50E-03	1.20E-02			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		10				2.80E-03	1.40E-02						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	10				7.00E-04	3.50E-03			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	10				7.30E-04	3.60E-03			2.0E-03		5.0E-03	

TABLE 4-28
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI P-06 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	10				9.40E-04	4.70E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	10				8.50E-04	4.20E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	10				8.40E-04	4.20E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	10				2.60E-03	1.30E-02						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	10				8.70E-04	4.40E-03						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	10				9.70E-04	4.80E-03	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	10				2.70E-03	1.40E-02			3.2E-01		6.0E-03	
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	10				8.80E-04	4.40E-03						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	10				8.80E-04	4.40E-03			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		10	1	1.20E-02	1.20E-02	2.50E-03	1.20E-02			3.9E+05	3.1E-08	5.8E+00	2.1E-03
Shallow	SVOC	Carbazole	86-74-8	T	B2	10				8.20E-04	4.10E-03			7.4E+00		8.5E-02	
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		10				9.90E-04	5.00E-03			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		10				6.10E-04	3.00E-03						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		10				8.50E-04	4.20E-03			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		10				1.00E-03	5.00E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		10				7.90E-04	4.00E-03						
Shallow	SVOC	Chrysene	218-01-9	T	B2	10				7.50E-04	3.80E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	10				7.90E-04	4.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	10				1.10E-03	5.50E-03						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	10				9.30E-04	4.60E-03			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		10				8.50E-04	4.20E-03			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	10				6.50E-04	3.20E-03			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		10	2	3.50E-03	2.80E-02	8.50E-04	8.50E-04			5.2E+02	5.4E-05	3.7E-01	7.6E-02
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	10				7.60E-04	3.80E-03			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	10				6.70E-04	3.40E-03			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		10				1.30E-03	6.50E-03			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		10				3.00E-03	1.50E-02						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	10				7.90E-04	4.00E-03			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	10				5.70E-04	2.80E-03						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		10				1.10E-03	5.50E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	10				8.10E-04	4.00E-03	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	10				1.00E-03	5.00E-03	2.0E+00		2.0E+00		8.8E-01	
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	10				7.40E-04	3.70E-03	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	10				7.30E-04	3.60E-03	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	9				1.10E-03	5.50E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	10				7.40E-04	3.70E-03	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	10				6.30E-04	3.20E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	10				6.30E-04	3.20E-03			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	10	2	9.90E-03	1.60E-02	6.40E-04	6.40E-04			2.5E+01	6.4E-04	2.6E-01	6.2E-02
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		10	1	2.95E-01	2.95E-01	1.30E-03	3.20E-03			8.1E+02	3.6E-04	3.7E-01	8.0E-01
Shallow	SVOC	Naphthalene	91-20-3	T	C	10	2	8.60E-02	9.30E-02	7.50E-04	7.50E-04	3.1E+01	3.0E-03	3.1E+01	3.0E-03	5.2E-01	1.8E-01
Shallow	SVOC	2-Nitroaniline	88-74-4	T		10				7.00E-04	3.50E-03						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	10				7.10E-04	3.60E-03						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	10				1.30E-03	6.50E-03						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	10				8.10E-04	4.00E-03	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		10				2.10E-03	1.00E-02			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		10				1.90E-03	9.50E-03						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	10				1.40E-03	7.00E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	10				6.70E-04	3.40E-03			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	10				7.80E-04	3.90E-03						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	10				2.40E-03	1.20E-02			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	10				8.20E-04	4.10E-03	1.0E+00		1.0E+00		5.2E-02	
Shallow	SVOC	Phenol	108-95-2	T	ID	10	1	3.60E-02	3.60E-02	2.60E-03	6.50E-03			2.9E+04	1.2E-06	4.4E+00	8.2E-03
Shallow	SVOC	Pyrene	129-00-0	T	D	10				1.10E-03	5.50E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		10				1.20E-03	6.00E-03			1.7E+02		7.3E-01	

TABLE 4-28
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI P-06 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	10				1.70E-03	8.50E-03			1.0E+01		1.2E-01	
Shallow	INORG	Antimony	7440-36-0	D		1				2.20E-03	2.20E-03			6.8E+01		6.0E-03	
Shallow	INORG	Antimony	7440-36-0	T		1				2.20E-03	2.20E-03			6.8E+01		6.0E-03	
Shallow	INORG	Arsenic	7440-38-2	D	A	1				3.90E-03	3.90E-03			4.3E+00		5.0E-02	
Shallow	INORG	Arsenic	7440-38-2	T	A	1				3.90E-03	3.90E-03			4.3E+00		5.0E-02	
Shallow	INORG	Barium	7440-39-3	D	D	1	1	9.78E-01	9.78E-01					1.4E+04	7.0E-05	2.0E+00	4.9E-01
Shallow	INORG	Barium	7440-39-3	T	D	1	1	9.94E-01	9.94E-01					1.4E+04	7.1E-05	2.0E+00	5.0E-01
Shallow	INORG	Beryllium	7440-41-7	D	B1	1				5.40E-04	5.40E-04			2.9E+02		4.0E-03	
Shallow	INORG	Beryllium	7440-41-7	T	B1	1				5.40E-04	5.40E-04			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	D	B1	1	1	3.80E-04	3.80E-04					1.9E+02	2.0E-06	5.0E-03	7.6E-02
Shallow	INORG	Cadmium	7440-43-9	T	B1	1	1	3.80E-04	3.80E-04					1.9E+02	2.0E-06	5.0E-03	7.6E-02
Shallow	INORG	Chromium (total)	7440-47-3	D		1				1.40E-03	1.40E-03			4.6E+02		1.0E-01	
Shallow	INORG	Chromium (total)	7440-47-3	T		1				1.40E-03	1.40E-03			4.6E+02		1.0E-01	
Shallow	INORG	Cobalt	7440-48-4	D	B1	1	1	8.30E-03	8.30E-03					2.4E+03	3.5E-06	4.0E-02	2.1E-01
Shallow	INORG	Cobalt	7440-48-4	T	B1	1	1	8.00E-03	8.00E-03					2.4E+03	3.3E-06	4.0E-02	2.0E-01
Shallow	INORG	Copper	7440-50-8	D	D	1				4.20E-03	4.20E-03			7.4E+03		1.4E+00	
Shallow	INORG	Copper	7440-50-8	T	D	1				4.20E-03	4.20E-03			7.4E+03		1.4E+00	
Shallow	INORG	Lead	7439-92-1	D	B2	9				2.50E-03	2.50E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	10				1.60E-03	2.50E-03					4.0E-03	
Shallow	INORG	Manganese	7439-96-5	D	D	1	1	7.22E-01	7.22E-01					9.1E+03	7.9E-05	8.6E-01	8.4E-01
Shallow	INORG	Manganese	7439-96-5	T	D	1	1	7.41E-01	7.41E-01					9.1E+03	8.1E-05	8.6E-01	8.6E-01
Shallow	INORG	Mercury	7439-97-6	D	D	1				6.90E-05	6.90E-05	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Mercury	7439-97-6	T	D	1				6.90E-05	6.90E-05	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Nickel	7440-02-0	D	A	1	1	1.30E-02	1.30E-02					7.4E+04	1.8E-07	1.0E-01	1.3E-01
Shallow	INORG	Nickel	7440-02-0	T	A	1	1	1.32E-02	1.32E-02					7.4E+04	1.8E-07	1.0E-01	1.3E-01
Shallow	INORG	Selenium	7782-49-2	D	D	1				4.50E-03	4.50E-03			9.7E+02		5.0E-02	
Shallow	INORG	Selenium	7782-49-2	T	D	1				4.50E-03	4.50E-03			9.7E+02		5.0E-02	
Shallow	INORG	Silver	7440-22-4	D	D	1				1.50E-03	1.50E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	1				1.50E-03	1.50E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		1	1	1.50E-04	1.50E-04					1.3E+01	1.2E-05	2.0E-03	7.5E-02
Shallow	INORG	Thallium	7440-28-0	T		1	1	1.70E-04	1.70E-04					1.3E+01	1.3E-05	2.0E-03	8.5E-02
Shallow	INORG	Vanadium	7440-62-2	D		1				8.20E-04	8.20E-04			9.7E+02		4.5E-03	
Shallow	INORG	Vanadium	7440-62-2	T		1				8.20E-04	8.20E-04			9.7E+02		4.5E-03	
Shallow	INORG	Zinc	7440-66-6	D	D	1	1	1.25E-02	1.25E-02					1.1E+05	1.1E-07	2.4E+00	5.2E-03
Shallow	INORG	Zinc	7440-66-6	T	D	1				1.20E-02	1.20E-02			1.1E+05		2.4E+00	

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-29
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI P-09 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
VOC	Acetone	67-64-1	ID	61	21	2.90E-03	3.70E-02	2.60E-03	1.50E-01		1.1E+05	3.4E-07	1.6E+05	2.3E-07	1.7E+08	2.2E-10	7.3E+04	5.1E-07	1.1E+05	3.4E-07	1.3E+05	2.8E-07	3.9E+08	9.5E-11	2.3E+04	1.6E-06
VOC	Benzene	71-43-2	A	61	1	4.10E-04	4.10E-04	2.60E-04	1.40E-02		8.4E+00	4.9E-05	4.5E+01	9.1E-06	4.7E+05	8.7E-10	4.0E+02	1.0E-06	1.6E+00	2.6E-04	1.3E+01	3.2E-05	3.8E+05	1.1E-09	1.8E+02	2.3E-06
VOC	Bromodichloromethane	75-27-4	B2	61				2.50E-04	1.30E-02		6.4E+00		3.1E+01		1.1E+05		4.9E+02		1.2E+00		9.1E+00		8.4E+04		1.1E+02	
VOC	Bromoform	75-25-2	B2	61				3.40E-04	1.20E-02		7.7E+02		3.1E+03		3.6E+06		8.7E+02		1.5E+02		9.0E+02		2.8E+06		8.2E+02	
VOC	Bromomethane	74-83-9	D	61				6.90E-04	4.20E-02		1.6E+00		1.3E+01		1.5E+05		1.0E+03		8.6E-01		1.1E+01		3.3E+05		3.2E+02	
VOC	2-Butanone	78-93-3	ID	61	13	1.50E-03	8.90E-03	1.00E-03	9.50E-02		2.7E+04	3.3E-07	3.5E+04	2.5E-07	2.9E+07	3.1E-10	2.7E+04	3.3E-07	2.7E+04	3.3E-07	2.9E+04	3.1E-07	6.7E+07	1.3E-10	2.7E+04	3.3E-07
VOC	Carbon Disulfide	75-15-0		61	2	3.20E-03	1.10E-02	2.10E-04	1.70E-02		1.4E+02	7.9E-05	1.6E+03	6.9E-06	2.1E+07	5.2E-10	2.8E+02	3.9E-05	7.6E+01	1.4E-04	1.3E+03	8.5E-06	4.7E+07	2.3E-10	2.8E+02	3.9E-05
VOC	Carbon Tetrachloride	56-23-5	B2	61				3.70E-04	1.80E-02		9.9E-01		1.2E+01		1.7E+05		3.9E+02		1.9E-01		3.5E+00		1.3E+05		9.6E+01	
VOC	Chlorobenzene	108-90-7	D	61				2.50E-04	1.30E-02		2.2E+02		9.2E+02		2.1E+06		2.6E+02		1.2E+02		7.7E+02		4.7E+06		2.6E+02	
VOC	Chloroethane	75-00-3		61				7.10E-04	3.80E-02		9.5E+02		3.6E+04		2.9E+08		9.5E+02		9.5E+02		3.0E+04		6.7E+08		9.5E+02	
VOC	Chloroform	67-66-3	B2	61				2.70E-04	1.30E-02		3.8E+01		1.5E+02		1.6E+06		1.5E+03		7.2E+00		4.5E+01		1.3E+06		1.2E+03	
VOC	Chloromethane	74-87-3	D	61				3.60E-04	2.80E-02		1.0E+01		1.2E+02		2.6E+06		1.1E+03		2.3E+00		4.0E+01		4.9E+06		1.1E+03	
VOC	Cumene	98-82-8	D	61	4	3.10E-04	1.40E-03	2.70E-04	1.80E-02		3.9E+02	3.6E-06	2.0E+03	7.0E-07	2.6E+06	5.4E-10	3.9E+02	3.6E-06	3.9E+02	3.6E-06	1.7E+03	8.2E-07	5.8E+06	2.4E-10	3.9E+02	3.6E-06
VOC	Cyclohexane	110-82-7	ID	61	3	7.00E-04	8.40E-04	3.50E-04	2.00E-02																	
VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	61				8.50E-04	2.60E-02		1.2E+00		1.5E+01		5.9E+03		1.2E+00		1.2E+00		1.3E+01		1.3E+04		1.2E+00	
VOC	Dibromochloromethane	124-48-1	C	61				3.40E-04	9.10E-03		2.1E+01		8.0E+01		1.6E+05		5.0E+02		3.9E+00		2.4E+01		1.3E+05		1.1E+02	
VOC	1,2-Dibromoethane	106-93-4	B2	61				2.70E-04	1.50E-02		3.6E+00		5.8E+00		1.8E+04		4.3E-01		6.7E-01		1.7E+00		1.4E+04		2.5E-01	
VOC	1,2-Dichlorobenzene	95-50-1	D	61	1	4.80E-04	4.80E-04	3.00E-04	1.30E-02		2.1E+02	2.3E-06	4.6E+04	1.0E-08	4.4E+07	1.1E-11	2.1E+02	2.3E-06	2.1E+02	2.3E-06	3.9E+04	1.2E-08	1.0E+08	4.8E-12	2.1E+02	2.3E-06
VOC	1,3-Dichlorobenzene	541-73-1	D	61	1	6.00E-04	6.00E-04	2.80E-04	1.30E-02								1.7E+02	3.5E-06							1.7E+02	3.5E-06
VOC	1,4-Dichlorobenzene	106-46-7	C	61				2.50E-04	1.30E-02		1.0E+02		2.6E+02		5.7E+05		1.9E+03		1.9E+01		7.7E+01		4.5E+05		4.0E+02	
VOC	Dichlorodifluoromethane	75-71-8		61				3.70E-04	3.30E-02		1.7E+03		6.3E+04		1.5E+09		1.0E+03		9.0E+02		5.3E+04		3.3E+09		1.0E+03	
VOC	1,1-Dichloroethane	75-34-3	C	61	5	5.30E-04	1.80E-02	2.30E-04	1.60E-02		4.3E+02	4.2E-05	2.5E+03	7.2E-06	1.5E+07	1.2E-09	8.9E+02	2.0E-05	2.3E+02	7.8E-05	2.1E+03	8.6E-06	3.3E+07	5.5E-10	8.9E+02	2.0E-05
VOC	1,2-Dichloroethane	107-06-2	B2	61				3.30E-04	9.50E-03		1.1E+01		2.1E+01		1.5E+05		4.2E+02		2.1E+00		6.2E+00		1.2E+05		9.1E+01	
VOC	1,1-Dichloroethene	75-35-4	C	61	1	1.00E-03	1.00E-03	4.00E-04	2.30E-02		3.3E-01	3.0E-03	3.7E+00	2.7E-04	7.8E+04	1.3E-08	5.7E+02	1.8E-06	6.2E-02	1.6E-02	1.1E+00	9.1E-04	6.2E+04	1.6E-08	2.0E+02	5.0E-06
VOC	cis-1,2-Dichloroethene	156-59-2	D	61	8	2.10E-03	2.10E-01	2.60E-04	7.30E-04		4.1E+01	5.1E-03	2.1E+02	1.0E-03	1.0E+06	2.1E-07	6.4E+02	3.3E-04	2.2E+01	9.5E-03	1.8E+02	1.2E-03	2.3E+06	9.1E-08	6.4E+02	3.3E-04
VOC	trans-1,2-Dichloroethene	156-60-5		61				3.00E-04	2.40E-02		4.3E+01		3.3E+02		2.1E+06		1.4E+03		2.3E+01		2.8E+02		4.7E+06		1.4E+03	
VOC	1,2-Dichloropropane	78-87-5	B2	61				2.60E-04	1.40E-02		7.4E+00		3.0E+01		1.2E+05		5.5E+02		4.0E+00		2.5E+01		2.7E+05		1.4E+02	
VOC	1,3-Dichloropropene (total)	542-75-6	B2	61				2.80E-04	1.20E-02		5.4E+00		6.0E+01		5.9E+05		2.4E+02		1.0E+00		1.8E+01		7.8E+05		1.0E+01	
VOC	Ethyl Benzene	100-41-4	D	61	4	3.50E-04	2.60E-03	2.70E-04	1.20E-02		1.4E+02	1.9E-05	2.4E+03	1.1E-06	1.3E+07	2.0E-10	1.4E+02	1.9E-05	8.7E+01	3.0E-05	7.2E+02	3.6E-06	1.0E+07	2.6E-10	1.4E+02	1.9E-05
VOC	2-Hexanone	591-78-6		61				7.50E-04	7.00E-02		1.8E+03		1.3E+03		1.2E+06		2.5E+03		9.9E+02		1.1E+03		2.7E+06		2.5E+03	
VOC	Methyl Acetate	79-20-9		61				8.20E-04	5.60E-02																	
VOC	Methyl tert-butyl ether	1634-04-4		61				2.30E-04	1.60E-02		5.9E+03		3.0E+04		8.8E+07		5.9E+03		5.9E+03		2.5E+04		2.0E+08		1.5E+03	
VOC	4-Methyl-2-pentanone	108-10-1	ID	61	2	9.00E-04	2.00E-03	6.90E-04	4.70E-02		2.7E+03	7.4E-07	5.3E+04	3.8E-08	6.0E+07	3.3E-11	2.7E+03	7.4E-07	2.7E+03	7.4E-07	4.5E+04	4.4E-08	1.4E+08	1.4E-11	2.7E+03	7.4E-07
VOC	Methylcyclohexane	108-87-2		61	4	6.20E-04	1.20E-03	2.80E-04	2.20E-02																	
VOC	Methylene Chloride	75-09-2	B2	61	17	2.30E-03	1.40E-02	8.20E-04	5.10E-02		2.4E+02	5.8E-05	7.0E+02	2.0E-05	8.3E+06	1.7E-09	2.3E+03	6.1E-06	4.5E+01	3.1E-04	2.1E+02	6.7E-05	6.6E+06	2.1E-09	1.3E+03	1.1E-05
VOC	Styrene	100-42-5		60				2.40E-04	1.20E-02		5.2E+02		3.3E+03		6.9E+06		5.2E+02		2.5E+02		9.7E+02		5.5E+06		4.0E+02	
VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	61				3.20E-04	1.30E-02		2.3E+01		3.4E+01		6.8E+04		2.4E+02		4.3E+00		1.0E+01		5.4E+04		5.3E+01	
VOC	Tetrachloroethene	127-18-4	C-B2	61	5	4.90E-04	1.90E-03	3.40E-04	1.40E-02		6.0E+01	3.2E-05	6.0E+02	3.2E-06	6.8E+06	2.8E-10	8.8E+01	2.2E-05	1.1E+01	1.7E-04	1.8E+02	1.1E-05	5.4E+06	3.5E-10	8.8E+01	2.2E-05
VOC	Toluene	108-88-3	D	61	28	3.40E-04	5.60E-03	2.90E-04	1.10E-02		2.5E+02	2.2E-05	3.3E+03	1.7E-06	1.2E+07	4.7E-10	2.5E+02	2.2E-05	2.5E+02	2.2E-05	2.8E+03	2.0E-06	2.7E+07	2.1E-10	2.5E+02	2.2E-05
VOC	1,2,4-Trichlorobenzene	120-82-1	D	61				2.60E-04	1.80E-02		1.1E+03		3.4E+04		1.1E+07		1.1E+03		1.1E+03		2.8E+04		2.5E+07		9.9E+02	
VOC	1,1,1-Trichloroethane	71-55-6	D	61	2	3.60E-03	1.70E-02	3.20E-04	1.40E-02		4.6E+02	3.7E-05	4.5E+03	3.8E-06	2.9E+07	5.9E-10	4.6E+02	3.7E-05	2.5E+02	6.8E-05	3.8E+03	4.5E-06	6.7E+07	2.5E-10	4.6E+02	3.7E-05
VOC	1,1,2-Trichloroethane	79-00-5	C	61				2.70E-04	1.90E-02		2.4E+01		5.7E+01		2.5E+05		8.4E+02		4.6E+00		1.7E+01		1.9E+05		1.8E+02	
VOC	Trichloroethene	79-01-6	C-B2	61	11	5.50E-04	4.40E+00	3.40E-04	6.45E-04		3.7E+01	1.2E-01	2.6E+02	1.7E-02	2.3E+06	1.9E-06	5.0E+02	8.8E-03	7.1E+00	6.2E-01	7.8E+01	5.6E-02	1.8E+06	2.4E-06	5.0E+02	8.8E-03
VOC	Trichlorofluoromethane	75-69-4		61				3.00E-04	2.80E-02		5.6E+02		1.1E+05		1.7E+09		5.6E+02		5.6E+02		9.2E+04		3.8E+09		5.6E+02	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		61				4.90E-04	4.60E-02		5.5E+02		2.1E+05		2.3E+09		5.5E+02		5.5E+02		1.8E+05		5.1E+09		5.5E+02	
VOC	Vinyl Chloride	75-01-4	A	61	2	1.70E-03	1.80E-03	3.50E-04	3.00E-02		2.8E+00	6.4E-04	2.9E+01	6.2E-05	8.9E+05	2.0E-09	3.4E+01	5.3E-05	2.7E-01	6.7E-03	4.2E+00	4.3E-04	3.5E+05	5.1E-09	3.8E+00	4.7E-04
VOC	Xylenes (total)	1330-20-7	ID	61	5	1.30E-03	1.20E-02	8.20E-04	4.00E-02		1.5E+02	8.0E-05	5.4E+04	2.2E-07	1.3E+08	9.2E-11	1.5E+02	8.0E-05	1.5E+02	8.0E-05	4.6E+04	2.6E-07	2.9E+08	4.1E-11	1.5E+02	8.0E-05
SVOC	Acenaphthene	83-32-9		61	14	3.40E-02	8.00E+00	1.50E-02	1.10E+00		3.5E+05	2.3E-05	9.7E+04	8.2E-05	6.2E+06	1.3E-06	1.3E+05	6.2E-05	1.9E+05	4.2E-05	8.1E+04	9.9E-05	1.4E+07	5.7E-07	4.1E+04	2.0E-04
SVOC	Acenaphthylene	208-96-8	D	61				2.00E-02	1.10E+00		3.0E+03		2.7E+03		1.0E+06		5.2E+03		1.6E+03		2.2E+03		2.3E+06		1.6E+03	
SVOC	Acetophenone	98-86-2	D	61				1.90E-02	1.10E+00		1.1E+03		5.2E+04		1.4E+07		1.1E+03		1.1E+03		4.4E+04		3.3E+07		1.1E+03	
SVOC	Anthracene	120-12-7	D	61	25	3.30E-02	7.70E+00	1.90E-02	1.00E+00		1.0E+06	7.7E-06	1.6E+06	4.8E-06	2.9E+07	2.7E-07	7.3E+05	1.1E-05	1.0E+06	7.7E-06	1.4E+06	5.5E-06	6.7E+07	1.1E-07	2.3E+05	3.3E-05
SVOC	Atrazine	1912-24-9		61				1.90E-02	1.20E+00								3.3E+02								7.1E+01	
SVOC	Benzaldehyde	100-52-7		61				1.50E-02	1.20E+00																	
SVOC	Benzo(a)anthracene	56-55-3	B2	61	21	1.90E-02	1.50E+01	1.90E-02	9.80E-01								8.0E+01	1.9E-01							2.0E+01	7.5E-01
SVOC	Benzo(a)pyrene	50-32-8	B2	67	23	1.80E-02	1.20E+01	1.70E-02	1.00E+00						1.9E+03	6.3E-03	8.0E+00	**1.5E+00**					1.5E+03	8.0E-03	2.0E+00	**6.0E+00**
SVOC	Benzo(b)fluoranthene	205-99-2	B2	61	20	2.20E-02	1.70E+01	2.20E-02	1.20E+00								8.0E+01	2.1E-01							2.0E+01	8.5E-01
SVOC	Benzo(g,h,i)perylene	191-24-2	D	61	20	1.90E-02	7.70E+00	1.80E-02	1.30E+00						3.5E+05	2.2E-05	7.0E+03	1.1E-03					8.0E+05	9.6E-06	2.5E+03	3.1E-03
SVOC	Benzo(k)fluoranthene	207-08-9	B2	61	16	2.30E-02	1.10E+01	1.80E-02	1.00E+00								8.0E+02	1.4E-02							2.0E+02	5.5E-02
SVOC	Biphenyl	92-52-4	D	61	4	7.90E-02	9.20E-01	2.00E-02	1.20E+00																	
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	47				1.80E-02	1.40E+00																	
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	59				1.90E-02	1.00E+00		4.4E+01		1.3E+01		1.2E+04		5.8E+01		8.3E+00		3.8E+00		9.4E+03		1.3E+01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	61	14	2.30E-02	9.60E-01	1.40E-02	1.30E+00						8.9E+05	1.1E-06	1.0E+04	9.6E-05					7.0E+05	1.4E-06	2.8E+03	3.4E-04
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	61				1.70E-02	1.10E+00																	
SVOC	Butylbenzylphthalate	85-68-7	C	51	8	3.05E-02	2.60E+00	1.90E-02	1.20E+00						2.1E+07	1.2E-07	3.1E+02	8.4E-03					4.7E+07	5.5E-08	3.1E+02	8.4E-03
SVOC	Caprolactam	105-60-2		61				2.20E-02	1.50E+00						2.9E+05		3.1E+05						6.7E+05		5.3E+04	
SVOC	Carbazole	86-74-8	B2	61	12	4.60E-02	1.90E+00	2.10E-02	1.30E+00								2.4E+03	7.9E-04							5.3E+02	3.6E-03
SVOC	4-Chloro-3-methylphenol	59-50-7		61				1.90E-02	1.10E+00								1.5E+04								4.5E+03	
SVOC	4-Chloroaniline	106-47-8		61				6.50E-03	1.10E+00																	
SVOC	2-Chloronaphthalene	91-58-7		61				1.90E-02	1.10E+00								1.8E+05								5.6E+04	
SVOC	2-Chlorophenol	95-57-8		61				1.90E-02	1.00E+00								4.5E+03								1.4E+03	
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		61				1.90E-02	1.10E+00																	
SVOC	Chrysene	218-01-9	B2	61	22	2.10E-02	1.60E+01	1.90E-02	9.80E-01								8.0E+03	2.0E-03							2.0E+03	8.0E-03
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	61	11	4.10E-02	2.50E+00	2.00E-02	1.20E+00								8.0E+00	3.1E-01							2.0E+00	**1.3E+00**
SVOC	Dibenzofuran	132-64-9	D	61	9	2.00E-02	9.40E+00	1.90E-02	1.10E+00																	
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	61				9.90E-03	1.00E+00						8.2E+03		3.0E+01						6.5E+03		6.6E+00	
SVOC	2,4-Dichlorophenol	120-83-2		47				1.70E-02	9.20E-01						2.3E+06		1.8E+03						5.1E+06		6.6E+02	
SVOC	Diethylphthalate	84-66-2	D	61				2.10E-02	1.20E+00						1.5E+06		7.4E+02						3.3E+06		7.4E+02	
SVOC	2,4-Dimethylphenol	105-67-9		61	1	1.40E-01	1.40E-01	2.00E-02	1.80E+00						2.1E+06	6.7E-08	3.6E+04	3.9E-06					4.7E+06	3.0E-08	1.1E+04	1.3E-05

TABLE 4-29
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI P-09 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	Dimethylphthalate	131-11-3	D	61				1.90E-02	1.10E+00						1.5E+06		7.9E+02						3.3E+06		7.9E+02	
SVOC	Di-n-butylphthalate	84-74-2	D	61				2.40E-02	1.30E+00						1.5E+06		7.6E+02						3.3E+06		7.6E+02	
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		61				5.30E-02	4.20E+00								2.6E+02								7.9E+01	
SVOC	2,4-Dinitrophenol	51-28-5		61				5.20E-02	5.80E+00																	
SVOC	2,4-Dinitrotoluene	121-14-2	B2	61				1.90E-02	1.20E+00						2.0E+04		2.2E+02						1.6E+04		4.8E+01	
SVOC	2,6-Dinitrotoluene	606-20-2	B2	61				1.70E-02	1.00E+00																	
SVOC	Di-n-octylphthalate	117-84-0		61				1.90E-02	3.50E+00								2.0E+04								6.9E+03	
SVOC	Fluoranthene	206-44-0	D	61	35	2.20E-02	4.60E+01	1.80E-02	1.30E+00		1.0E+06	4.6E-05	8.9E+05	5.2E-05	4.1E+06	1.1E-05	1.3E+05	3.5E-04	1.0E+06	4.6E-05	7.4E+05	6.2E-05	9.3E+06	4.9E-06	4.6E+04	1.0E-03
SVOC	Fluorene	86-73-7	D	61	24	3.60E-02	5.50E+00	1.70E-02	1.20E+00		1.0E+06	5.5E-06	1.5E+05	3.7E-05	4.1E+06	1.3E-06	8.7E+04	6.3E-05	5.8E+05	9.5E-06	1.3E+05	4.2E-05	9.3E+06	5.9E-07	2.7E+04	2.0E-04
SVOC	Hexachlorobenzene	118-74-1	B2	61				1.90E-02	1.20E+00		2.2E+02		5.6E+01		8.5E+03		3.7E+01		4.1E+01		1.7E+01		6.8E+03		8.9E+00	
SVOC	Hexachlorobutadiene	87-68-3	C	59				1.80E-02	9.80E-01		3.5E+02		4.6E+02		1.8E+05		3.5E+02		1.3E+02		1.3E+02		1.4E+05		1.0E+02	
SVOC	Hexachlorocyclopentadiene	77-47-4	E	61				1.10E-02	8.70E-01		5.6E+01		6.0E+01		5.9E+03		7.2E+02		3.0E+01		5.0E+01		1.3E+04		7.2E+02	
SVOC	Hexachloroethane	67-72-1	C	59				1.90E-02	1.00E+00		7.9E+01		6.6E+02		1.0E+05		7.3E+02		4.0E+01		5.5E+02		2.3E+05		2.3E+02	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	61	18	2.40E-02	7.50E+00	2.10E-02	1.30E+00								8.0E+01	9.4E-02							2.0E+01	3.8E-01
SVOC	Isophorone	78-59-1	C	61				2.00E-02	1.20E+00						8.2E+06		2.4E+03						1.2E+07		2.4E+03	
SVOC	2-Methylnaphthalene	91-57-6	ID	60	11	2.60E-02	1.10E+00	1.90E-02	1.00E+00								2.6E+04	4.2E-05							8.1E+03	1.4E-04
SVOC	Methylphenol (total)	1319-77-3		61	1	2.32E-01	2.32E-01	1.60E-02	1.20E+00						2.9E+06	8.0E-08	3.6E+04	6.4E-06					6.7E+06	3.5E-08	1.1E+04	2.1E-05
SVOC	Naphthalene	91-20-3	C	50	8	2.50E-02	2.60E+00	1.90E-02	1.10E+00		4.7E+02	5.5E-03	3.5E+02	7.4E-03	8.8E+04	3.0E-05	5.2E+04	5.0E-05	2.5E+02	1.0E-02	3.0E+02	8.7E-03	2.0E+05	1.3E-05	1.6E+04	1.6E-04
SVOC	2-Nitroaniline	88-74-4		61				1.40E-02	1.10E+00																	
SVOC	3-Nitroaniline	99-09-2	C	61				1.30E-02	1.20E+00																	
SVOC	4-Nitroaniline	100-01-6	C	61				1.90E-02	1.00E+00																	
SVOC	Nitrobenzene	98-95-3	D	48				1.90E-02	1.30E+00		1.7E+02		6.4E+01		2.1E+04		3.4E+02		9.1E+01		5.4E+01		4.7E+04		1.0E+02	
SVOC	2-Nitrophenol	88-75-5		60				1.70E-02	1.20E+00								2.0E+03								6.3E+02	
SVOC	4-Nitrophenol	100-02-7		61				5.90E-02	6.40E+00																	
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	61				2.10E-02	1.20E+00								7.8E+03								1.7E+03	
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	61				1.70E-02	1.10E+00						2.0E+03		5.4E+00						1.6E+03		1.2E+00	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	61				2.00E-02	1.50E+00																	
SVOC	Pentachlorophenol	87-86-5	B2	61				6.60E-02	5.00E+00						1.3E+05		3.2E+02						1.0E+05		9.0E+01	
SVOC	Phenanthrene	85-01-8	D	61	36	2.40E-02	6.40E+01	2.20E-02	4.70E-01		5.1E+03	1.3E-02	1.9E+02	3.4E-01	2.9E+03	2.2E-02	5.2E+03	1.2E-02	2.8E+03	2.3E-02	1.6E+02	4.0E-01	6.7E+03	9.6E-03	1.6E+03	4.0E-02
SVOC	Phenol	108-95-2	ID	61				1.90E-02	1.00E+00						1.8E+07		1.2E+04						4.0E+07		1.2E+04	
SVOC	Pyrene	129-00-0	D	61	39	2.30E-02	3.40E+01	1.90E-02	9.70E-01		1.0E+06	3.4E-05	7.8E+05	4.4E-05	2.9E+06	1.2E-05	8.4E+04	4.0E-04	1.0E+06	3.4E-05	6.5E+05	5.2E-05	6.7E+06	5.1E-06	2.9E+04	1.2E-03
SVOC	2,4,5-Trichlorophenol	95-95-4		61				1.70E-02	1.20E+00						1.0E+07		7.3E+04						2.3E+07		2.3E+04	
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	61				1.80E-02	1.10E+00						1.3E+06		3.3E+03						1.0E+06		7.1E+02	
P/PCB	PCBs (total)	1336-36-3	B2	62	25	1.52E-02	1.47E+01	3.10E-03	3.40E-02		1.6E+04	9.2E-04	8.1E+02	1.8E-02	6.5E+03	2.3E-03	1.6E+01	9.2E-01	3.0E+03	4.9E-03	2.4E+02	6.1E-02	5.2E+03	2.8E-03	4.0E+00	**3.7E+00**
INORG	Antimony	7440-36-0		49	46	1.47E-01	1.17E+00	1.27E-01	1.31E-01						5.9E+03	2.0E-04	6.7E+02	1.7E-03					1.3E+04	9.0E-05	1.8E+02	6.5E-03
INORG	Arsenic	7440-38-2	A	61	61	2.13E+00	7.67E+00			1.3E+01					9.1E+02		3.7E+01						7.2E+02		7.6E+00	
INORG	Barium	7440-39-3	D	61	61	9.31E+00	1.96E+02			1.1E+02					1.5E+05	5.7E-04	1.3E+05	6.6E-04					3.3E+05	2.6E-04	3.7E+04	2.3E-03
INORG	Beryllium	7440-41-7	B1	61	47	5.25E-02	5.76E-01	3.61E-02	3.94E-02	1.5E+00					5.9E+02		1.6E+03						1.3E+03		4.1E+02	
INORG	Cadmium	7440-43-9	B1	61	54	5.26E-02	6.26E-01	8.90E-03	9.10E-03	1.2E+00					2.2E+03		2.1E+03						1.7E+03		5.5E+02	
INORG	Chromium (total)	7440-47-3		61	61	4.98E+00	4.86E+01			4.9E+01					2.4E+02		9.2E+03						2.6E+02		2.5E+03	
INORG	Cobalt	7440-48-4	B1	61	61	1.82E+00	8.64E+00			1.7E+01					5.9E+03		9.0E+03						1.3E+04		2.6E+03	
INORG	Copper	7440-50-8	D	61	61	5.63E+00	1.40E+02			3.2E+01					5.9E+04	1.8E-03	7.3E+04	1.5E-03					1.3E+05	8.3E-04	2.0E+04	5.4E-03
INORG	Lead	7439-92-1	B2	61	61	3.40E+00	4.49E+01			4.9E+01					4.4E+04		9.0E+02						1.0E+05		4.0E+02	
INORG	Manganese	7439-96-5	D	61	61	1.45E+02	5.37E+02			5.1E+02					1.5E+03	1.8E-02	9.0E+04	3.0E-04					3.3E+03	8.1E-03	2.5E+04	1.1E-03
INORG	Mercury	7439-97-6	D	61	18	1.89E-02	1.96E-01	1.70E-02	1.93E-02	1.3E-01	8.9E+01	7.4E-04	6.2E+01	1.1E-03	8.8E+03	7.4E-06	5.8E+02	1.1E-04	4.8E+01	1.4E-03	5.2E+01	1.3E-03	2.0E+04	3.3E-06	1.6E+02	4.1E-04
INORG	Nickel	7440-02-0	A	61	61	5.36E+00	2.34E+01			3.0E+01					1.6E+04		1.5E+05						1.3E+04		4.0E+04	
INORG	Selenium	7782-49-2	D	51	13	2.56E-01	9.37E-01	2.28E-01	2.64E-01	4.1E-01					5.9E+04	8.9E-06	9.6E+03	5.5E-05					1.3E+05	4.1E-06	2.6E+03	2.0E-04
INORG	Silver	7440-22-4	D	51				4.40E-02	6.14E-02						2.9E+03		9.0E+03						6.7E+03		2.5E+03	
INORG	Thallium	7440-28-0		61	40	3.51E-01	9.53E-01	2.40E-01	3.44E-01								1.3E+02	7.3E-03							3.5E+01	2.7E-02
INORG	Vanadium	7440-62-2		61	61	5.47E+00	2.33E+01			3.3E+01							5.5E+03								7.5E+02	
INORG	Zinc	7440-66-6	D	61	61	2.00E+01	1.78E+02			1.9E+02							6.3E+05								1.7E+05	

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-30
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI P-09 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	6	5	2.40E-03	7.10E-01	6.60E-04	6.60E-04	1.0E+06	7.1E-07	3.1E+04	2.3E-05	7.3E-01	9.7E-01
Shallow	VOC	Benzene	71-43-2	T	A	6				2.00E-04	4.10E-03	3.5E+01		1.1E+01		5.0E-03	
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	3				2.00E-04	1.10E-03	3.7E+01		1.4E+01		1.0E-01	
Shallow	VOC	Bromoform	75-25-2	T	B2	6				3.20E-04	4.10E-03	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	6				1.60E-04	3.30E-03	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	6	4	2.50E-03	1.10E-01	3.60E-04	5.90E-04	2.4E+05	4.6E-07	2.4E+05	4.6E-07	1.3E+01	8.5E-03
Shallow	VOC	Carbon Disulfide	75-15-0	T		6	2	3.00E-04	3.40E-04	2.10E-04	2.70E-03	5.5E+02	6.2E-07	1.2E+03	2.8E-07	8.0E-01	4.3E-04
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	6				1.80E-04	4.10E-03	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	6				1.60E-04	4.20E-03	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		6				2.20E-04	3.20E-03	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	6				2.10E-04	3.90E-03	1.8E+02		1.5E+02		1.0E-01	
Shallow	VOC	Chloromethane	74-87-3	T	D	6				2.60E-04	5.40E-03	4.5E+01		4.9E+02		2.6E-01	
Shallow	VOC	Cumene	98-82-8	T	D	6				1.50E-04	4.30E-03	5.6E+01		5.6E+01		8.0E-01	
Shallow	VOC	Cyclohexane	110-82-7	T	ID	6				3.30E-04	3.70E-03						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	6				5.30E-04	9.10E-03	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	6				2.50E-04	4.10E-03	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	6				2.20E-04	3.80E-03	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	6				1.50E-04	4.20E-03	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	6				2.00E-04	4.20E-03			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	6				1.60E-04	4.20E-03	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		6				2.30E-04	5.40E-03	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	5	4	5.40E-04	1.10E-03	1.50E-03	1.50E-03	2.3E+03	4.8E-07	2.4E+03	4.6E-07	8.8E-01	1.3E-03
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	6				2.20E-04	3.10E-03	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	6				2.20E-04	3.40E-03	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	4				2.50E-04	3.90E-03	2.1E+02		2.0E+02		7.0E-02	
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		6				2.40E-04	3.70E-03	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	6				1.80E-04	4.60E-03	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	6				1.50E-04	3.90E-03	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	6				1.90E-04	4.60E-03	1.7E+02		1.7E+02		7.0E-01	
Shallow	VOC	2-Hexanone	591-78-6	T		6				3.10E-04	6.40E-03	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		6				5.40E-04	6.00E-03						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		6				2.10E-04	3.00E-03	4.7E+04		6.1E+02		2.4E-01	
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	6	4	9.80E-04	2.90E-02	2.60E-04	3.40E-04	2.0E+04	1.5E-06	1.3E+04	2.2E-06	1.8E+00	1.6E-02
Shallow	VOC	Methylcyclohexane	108-87-2	T		6				2.40E-04	4.70E-03						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	6				2.80E-04	3.20E-03	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	Styrene	100-42-5	T		4				1.60E-04	3.90E-03	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	6				2.30E-04	4.00E-03	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	6				1.20E-04	4.70E-03	1.7E+02		1.2E+01		5.0E-03	
Shallow	VOC	Toluene	108-88-3	T	D	6				1.70E-04	4.30E-03	5.3E+02		5.3E+02		1.0E+00	
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	6				1.50E-04	4.40E-03	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	6				1.80E-04	4.30E-03	1.3E+03		1.3E+03		2.0E-01	
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	6				2.10E-04	4.00E-03	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	6				2.20E-04	4.70E-03	9.7E+01		2.2E+01		5.0E-03	
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		6				2.50E-04	6.00E-03	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		6				2.30E-04	3.60E-03	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	4				2.60E-04	4.00E-03	1.3E+01		1.0E+00		2.0E-03	
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	6				4.40E-04	4.90E-03	1.9E+02		1.9E+02		1.0E+01	
Shallow	SVOC	Acenaphthene	83-32-9	T		6				6.90E-04	3.40E-02	4.2E+00		4.2E+00		1.3E+00	
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	6				4.10E-04	2.00E-02	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	6				6.50E-04	3.20E-02	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	6				5.90E-04	3.00E-02	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		6				3.50E-04	1.80E-02			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		6				5.90E-04	3.00E-02						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	6				6.80E-04	3.40E-02			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	6				5.30E-04	2.60E-02			2.0E-03		5.0E-03	

TABLE 4-30
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI P-09 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	6				7.00E-04	3.60E-02			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	6				7.00E-04	3.50E-02			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	6				6.40E-04	3.20E-02			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	6				6.50E-04	3.20E-02						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	6				1.00E-03	5.00E-02						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	6				1.70E-03	8.50E-02	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	6				2.00E-04	1.00E-02			3.2E-01		6.0E-03	
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	6				7.80E-04	3.90E-02						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	6				2.30E-04	1.20E-02			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		6				4.50E-04	2.20E-02			3.9E+05		5.8E+00	
Shallow	SVOC	Carbazole	86-74-8	T	B2	6	2	9.90E-04	3.20E-02	6.10E-04	3.00E-02			7.4E+00	4.3E-03	8.5E-02	3.8E-01
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		6				5.50E-04	2.80E-02			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		3				9.00E-04	4.50E-02						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		6				7.30E-04	3.60E-02			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		6				1.30E-03	6.50E-02			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		6				6.60E-04	3.30E-02						
Shallow	SVOC	Chrysene	218-01-9	T	B2	6				6.70E-04	3.40E-02			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	6				6.80E-04	3.40E-02			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	6				6.60E-04	3.30E-02						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	3				4.70E-04	2.40E-02			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		6				7.00E-04	3.50E-02			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	6				2.50E-04	1.20E-02			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		6	2	3.00E-01	6.00E-01	1.00E-03	2.50E-03			5.2E+02	1.2E-03	3.7E-01	**1.6E+00**
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	6				2.00E-04	1.00E-02			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	6				3.70E-04	1.80E-02			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		6				2.10E-03	1.00E-01			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		6				3.30E-03	1.60E-01						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	6				4.60E-04	2.30E-02			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	6				7.10E-04	3.60E-02						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		6				6.90E-04	3.40E-02			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	6				7.10E-04	3.60E-02	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	6	1	1.65E-03	1.65E-03	7.50E-04	3.80E-02	2.0E+00	8.3E-04	2.0E+00	8.3E-04	8.8E-01	1.9E-03
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	6				7.70E-04	3.80E-02	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	6				1.50E-03	7.50E-02	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	1				1.10E-03	1.10E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	6				1.60E-03	8.00E-02	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	6				6.90E-04	3.40E-02			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	6				8.60E-04	4.30E-02			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	6				9.30E-04	4.60E-02			2.5E+01		2.6E-01	
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		6	4	2.15E-03	1.28E+00	9.00E-04	2.20E-03			8.1E+02	1.6E-03	3.7E-01	**3.5E+00**
Shallow	SVOC	Naphthalene	91-20-3	T	C	6	2	7.50E-02	9.90E-02	1.30E-03	3.25E-03	3.1E+01	3.2E-03	3.1E+01	3.2E-03	5.2E-01	1.9E-01
Shallow	SVOC	2-Nitroaniline	88-74-4	T		6				4.90E-04	2.40E-02						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	3				4.80E-04	2.40E-02						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	6				5.90E-04	3.00E-02						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	6				1.30E-03	6.50E-02	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		6				9.50E-04	4.80E-02			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		6				3.50E-03	1.80E-01						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	6				6.40E-04	3.20E-02			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	6				1.10E-03	5.50E-02			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	6				1.80E-03	9.00E-02						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	6	1	3.90E-03	3.90E-03	2.60E-03	1.30E-01			2.0E-01	2.0E-02	1.0E-03	**3.9E+00**
Shallow	SVOC	Phenanthrene	85-01-8	T	D	6	1	2.35E-03	2.35E-03	6.80E-04	3.40E-02	1.0E+00	2.4E-03	1.0E+00	2.4E-03	5.2E-02	4.5E-02
Shallow	SVOC	Phenol	108-95-2	T	ID	6	4	3.30E-03	1.60E+00	1.30E-03	3.20E-03			2.9E+04	5.5E-05	4.4E+00	3.6E-01
Shallow	SVOC	Pyrene	129-00-0	T	D	6				6.30E-04	3.20E-02	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		6				8.60E-04	4.30E-02			1.7E+02		7.3E-01	

TABLE 4-30
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI P-09 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	6				7.10E-04	3.60E-02			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	6	1	3.69E-04	3.69E-04	8.20E-05	8.20E-05	4.5E-02	8.2E-03	3.3E-03	1.1E-01	5.0E-04	7.4E-01
Shallow	INORG	Antimony	7440-36-0	T		6	2	9.40E-03	1.31E-02	3.10E-03	3.40E-03			6.8E+01	1.9E-04	6.0E-03	**2.2E+00**
Shallow	INORG	Arsenic	7440-38-2	T	A	6	5	3.20E-03	4.49E-02	2.10E-03	2.10E-03			4.3E+00	1.0E-02	5.0E-02	9.0E-01
Shallow	INORG	Barium	7440-39-3	T	D	6	6	3.10E-03	5.16E-02					1.4E+04	3.7E-06	2.0E+00	2.6E-02
Shallow	INORG	Beryllium	7440-41-7	T	B1	6				4.70E-04	6.00E-04			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	T	B1	6				2.80E-04	3.60E-04			1.9E+02		5.0E-03	
Shallow	INORG	Chromium (total)	7440-47-3	T		6	1	5.30E-03	5.30E-03	1.00E-03	1.50E-03			4.6E+02	1.2E-05	1.0E-01	5.3E-02
Shallow	INORG	Cobalt	7440-48-4	T	B1	6	2	1.20E-03	1.60E-03	7.40E-04	1.10E-03			2.4E+03	6.7E-07	4.0E-02	4.0E-02
Shallow	INORG	Copper	7440-50-8	T	D	6	2	4.35E-03	6.70E-03	1.70E-03	1.80E-03			7.4E+03	9.1E-07	1.4E+00	4.8E-03
Shallow	INORG	Lead	7439-92-1	T	B2	6	1	2.85E-03	2.85E-03	1.60E-03	2.30E-03					4.0E-03	7.1E-01
Shallow	INORG	Manganese	7439-96-5	T	D	6	4	3.80E-03	4.36E-02	6.60E-04	6.60E-04			9.1E+03	4.8E-06	8.6E-01	5.1E-02
Shallow	INORG	Mercury	7439-97-6	T	D	6				6.70E-05	8.70E-05	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Nickel	7440-02-0	T	A	6	5	5.60E-03	1.28E-01	2.90E-03	2.90E-03			7.4E+04	1.7E-06	1.0E-01	**1.3E+00**
Shallow	INORG	Selenium	7782-49-2	T	D	6	3	4.40E-03	6.07E-02	3.90E-03	4.70E-03			9.7E+02	6.3E-05	5.0E-02	**1.2E+00**
Shallow	INORG	Silver	7440-22-4	T	D	6				9.80E-04	1.10E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	T		6				1.50E-05	3.30E-05			1.3E+01		2.0E-03	
Shallow	INORG	Vanadium	7440-62-2	T		6	4	8.70E-03	5.78E-01	6.70E-04	9.60E-04			9.7E+02	6.0E-04	4.5E-03	**1.3E+02**
Shallow	INORG	Zinc	7440-66-6	T	D	6	1	2.02E-02	2.02E-02	1.30E-02	1.40E-02			1.1E+05	1.8E-07	2.4E+00	8.4E-03

Notes:

Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-31
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI P-10 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	Acenaphthene	83-32-9		12	2	7.70E-02	1.80E-01	1.50E-02	4.00E-02		3.5E+05	5.1E-07	9.7E+04	1.9E-06	6.2E+06	2.9E-08	1.3E+05	1.4E-06	1.9E+05	9.5E-07	8.1E+04	2.2E-06	1.4E+07	1.3E-08	4.1E+04	4.4E-06
SVOC	Acenaphthylene	208-96-8	D	12				2.05E-02	5.40E-02		3.0E+03		2.7E+03		1.0E+06		5.2E+03		1.6E+03		2.2E+03		2.3E+06		1.6E+03	
SVOC	Acetophenone	98-86-2	D	12				2.20E-02	5.70E-02		1.1E+03		5.2E+04		1.4E+07		1.1E+03		1.1E+03		4.4E+04		3.3E+07		1.1E+03	
SVOC	Anthracene	120-12-7	D	12	3	6.70E-02	8.00E-01	1.80E-02	4.80E-02		1.0E+06	8.0E-07	1.6E+06	5.0E-07	2.9E+07	2.8E-08	7.3E+05	1.1E-06	1.0E+06	8.0E-07	1.4E+06	5.7E-07	6.7E+07	1.2E-08	2.3E+05	3.5E-06
SVOC	Atrazine	1912-24-9		12				2.40E-02	6.20E-02								3.3E+02								7.1E+01	
SVOC	Benzaldehyde	100-52-7		12				1.50E-02	4.00E-02																	
SVOC	Benzo(a)anthracene	56-55-3	B2	12	6	3.30E-02	4.90E-01	2.50E-02	6.50E-02								8.0E+01	6.1E-03							2.0E+01	2.5E-02
SVOC	Benzo(a)pyrene	50-32-8	B2	12	5	4.30E-02	3.60E-01	1.70E-02	4.20E-02						1.9E+03	1.9E-04	8.0E+00	4.5E-02					1.5E+03	2.4E-04	2.0E+00	1.8E-01
SVOC	Benzo(b)fluoranthene	205-99-2	B2	12	5	5.30E-02	3.90E-01	2.20E-02	5.70E-02								8.0E+01	4.9E-03							2.0E+01	2.0E-02
SVOC	`	191-24-2	D	12	5	3.00E-02	2.00E-01	1.80E-02	4.50E-02						3.5E+05	5.7E-07	7.0E+03	2.9E-05					8.0E+05	2.5E-07	2.5E+03	8.0E-05
SVOC	Benzo(k)fluoranthene	207-08-9	B2	12	5	3.10E-02	3.00E-01	1.80E-02	4.50E-02								8.0E+02	3.8E-04							2.0E+02	1.5E-03
SVOC	Biphenyl	92-52-4	D	12	5	3.90E-02	9.30E-02	2.00E-02	5.10E-02																	
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	8				2.80E-02	7.40E-02																	
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	8				1.90E-02	5.10E-02		4.4E+01		1.3E+01		1.2E+04		5.8E+01		8.3E+00		3.8E+00		9.4E+03		1.3E+01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	12	1	1.00E-01	1.00E-01	1.40E-02	3.70E-02						8.9E+05	1.1E-07	1.0E+04	1.0E-05					7.0E+05	1.4E-07	2.8E+03	3.6E-05
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	12				1.60E-02	4.20E-02																	
SVOC	Butylbenzylphthalate	85-68-7	C	12	1	4.70E-01	4.70E-01	2.30E-02	5.90E-02						2.1E+07	2.2E-08	3.1E+02	1.5E-03					4.7E+07	1.0E-08	3.1E+02	1.5E-03
SVOC	Caprolactam	105-60-2		12				3.00E-02	7.90E-02						2.9E+05		3.1E+05						6.7E+05		5.3E+04	
SVOC	Carbazole	86-74-8	B2	12	3	6.70E-02	7.20E-02	2.05E-02	5.40E-02								2.4E+03	3.0E-05							5.3E+02	1.4E-04
SVOC	4-Chloro-3-methylphenol	59-50-7		12				2.05E-02	5.40E-02								1.5E+04								4.5E+03	
SVOC	4-Chloroaniline	106-47-8		12				2.20E-02	5.70E-02																	
SVOC	2-Chloronaphthalene	91-58-7		12				1.80E-02	4.80E-02								1.8E+05								5.6E+04	
SVOC	2-Chlorophenol	95-57-8		12				1.90E-02	5.10E-02								4.5E+03								1.4E+03	
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		12				1.80E-02	4.80E-02																	
SVOC	Chrysene	218-01-9	B2	12	6	4.90E-02	4.60E-01	2.40E-02	6.20E-02								8.0E+03	5.8E-05							2.0E+03	2.3E-04
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	12	2	3.40E-02	7.40E-02	1.90E-02	5.10E-02								8.0E+00	9.3E-03							2.0E+00	3.7E-02
SVOC	Dibenzofuran	132-64-9	D	12	1	4.10E-02	4.10E-02	1.80E-02	4.80E-02																	
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	12				1.90E-02	5.10E-02						8.2E+03		3.0E+01						6.5E+03		6.6E+00	
SVOC	2,4-Dichlorophenol	120-83-2		8				1.70E-02	4.50E-02						2.3E+06		1.8E+03						5.1E+06		6.6E+02	
SVOC	Diethylphthalate	84-66-2	D	12				2.05E-02	5.40E-02						1.5E+06		7.4E+02						3.3E+06		7.4E+02	
SVOC	2,4-Dimethylphenol	105-67-9		12				1.90E-02	5.10E-02						2.1E+06		3.6E+04						4.7E+06		1.1E+04	
SVOC	Dimethylphthalate	131-11-3	D	12				1.80E-02	4.80E-02						1.5E+06		7.9E+02						3.3E+06		7.9E+02	
SVOC	Di-n-butylphthalate	84-74-2	D	12				2.50E-02	6.50E-02						1.5E+06		7.6E+02						3.3E+06		7.6E+02	
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		12				5.20E-02	1.40E-01								2.6E+02								7.9E+01	
SVOC	2,4-Dinitrophenol	51-28-5		12				5.10E-02	1.30E-01																	
SVOC	2,4-Dinitrotoluene	121-14-2	B2	12				2.40E-02	6.20E-02						2.0E+04		2.2E+02						1.6E+04		4.8E+01	
SVOC	2,6-Dinitrotoluene	606-20-2	B2	12				1.60E-02	4.20E-02																	
SVOC	Di-n-octylphthalate	117-84-0		12				6.90E-02	1.80E-01								2.0E+04								6.9E+03	
SVOC	Fluoranthene	206-44-0	D	12	8	2.40E-02	1.20E+00	1.80E-02	1.80E-02		1.0E+06	1.2E-06	8.9E+05	1.3E-06	4.1E+06	2.9E-07	1.3E+05	9.2E-06	1.0E+06	1.2E-06	7.4E+05	1.6E-06	9.3E+06	1.3E-07	4.6E+04	2.6E-05
SVOC	Fluorene	86-73-7	D	12	2	7.20E-02	1.50E+00	1.60E-02	4.20E-02		1.0E+06	1.5E-06	1.5E+05	1.0E-05	4.1E+06	3.7E-07	8.7E+04	1.7E-05	5.8E+05	2.6E-06	1.3E+05	1.2E-05	9.3E+06	1.6E-07	2.7E+04	5.6E-05
SVOC	Hexachlorobenzene	118-74-1	B2	12				2.40E-02	6.20E-02		2.2E+02		5.6E+01		8.5E+03		3.7E+01		4.1E+01		1.7E+01		6.8E+03		8.9E+00	
SVOC	Hexachlorobutadiene	87-68-3	C	8				1.70E-02	4.50E-02		3.5E+02		4.6E+02		1.8E+05		3.5E+02		1.3E+02		1.3E+02		1.4E+05		1.0E+02	
SVOC	Hexachlorocyclopentadiene	77-47-4	E	12				1.10E-02	2.80E-02		5.6E+01		6.0E+01		5.9E+03		7.2E+02		3.0E+01		5.0E+01		1.3E+04		7.2E+02	
SVOC	Hexachloroethane	67-72-1	C	8				1.80E-02	4.80E-02		7.9E+01		6.6E+02		1.0E+05		7.3E+02		4.0E+01		5.5E+02		2.3E+05		2.3E+02	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	12	5	2.23E-02	2.10E-01	2.10E-02	5.40E-02								8.0E+01	2.6E-03							2.0E+01	1.1E-02
SVOC	Isophorone	78-59-1	C	12				2.40E-02	6.20E-02						8.2E+06		2.4E+03						1.2E+07		2.4E+03	
SVOC	2-Methylnaphthalene	91-57-6	ID	12	6	1.35E-02	4.40E-01	1.90E-02	4.80E-02								2.6E+04	1.7E-05							8.1E+03	5.4E-05
SVOC	Methylphenol (total)	1319-77-3		12				2.30E-02	5.90E-02						2.9E+06		3.6E+04						6.7E+06		1.1E+04	
SVOC	Naphthalene	91-20-3	C	9	3	2.30E-02	5.90E-02	1.80E-02	4.80E-02		4.7E+02	1.3E-04	3.5E+02	1.7E-04	8.8E+04	6.7E-07	5.2E+04	1.1E-06	2.5E+02	2.4E-04	3.0E+02	2.0E-04	2.0E+05	3.0E-07	1.6E+04	3.7E-06
SVOC	2-Nitroaniline	88-74-4		12				1.40E-02	3.70E-02																	
SVOC	3-Nitroaniline	99-09-2	C	12				2.40E-02	6.20E-02																	
SVOC	4-Nitroaniline	100-01-6	C	12				1.80E-02	4.80E-02																	
SVOC	Nitrobenzene	98-95-3	D	8				2.60E-02	6.80E-02		1.7E+02		6.4E+01		2.1E+04		3.4E+02		9.1E+01		5.4E+01		4.7E+04		1.0E+02	
SVOC	2-Nitrophenol	88-75-5		12				2.30E-02	5.90E-02								2.0E+03								6.3E+02	
SVOC	4-Nitrophenol	100-02-7		12				5.70E-02	1.50E-01																	
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	12				2.05E-02	5.40E-02								7.8E+03								1.7E+03	
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	12				1.60E-02	4.20E-02						2.0E+03		5.4E+00						1.6E+03		1.2E+00	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	12				2.90E-02	7.60E-02																	
SVOC	Pentachlorophenol	87-86-5	B2	12				6.50E-02	1.70E-01						1.3E+05		3.2E+02						1.0E+05		9.0E+01	
SVOC	Phenanthrene	85-01-8	D	12	7	2.70E-02	4.90E+00	2.30E-02	5.90E-02		5.1E+03	9.6E-04	1.9E+02	2.6E-02	2.9E+03	1.7E-03	5.2E+03	9.4E-04	2.8E+03	1.8E-03	1.6E+02	3.1E-02	6.7E+03	7.3E-04	1.6E+03	3.1E-03
SVOC	Phenol	108-95-2	ID	12				1.90E-02	5.10E-02						1.8E+07		1.2E+04						4.0E+07		1.2E+04	
SVOC	Pyrene	129-00-0	D	12	6	3.30E-02	8.30E-01	2.30E-02	5.90E-02		1.0E+06	8.3E-07	7.8E+05	1.1E-06	2.9E+06	2.9E-07	8.4E+04	9.9E-06	1.0E+06	8.3E-07	6.5E+05	1.3E-06	6.7E+06	1.2E-07	2.9E+04	2.9E-05
SVOC	2,4,5-Trichlorophenol	95-95-4		12				1.60E-02	4.20E-02						1.0E+07		7.3E+04						2.3E+07		2.3E+04	
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	12				2.05E-02	5.40E-02						1.3E+06		3.3E+03						1.0E+06		7.1E+02	
P/PCB	PCBs (total)	1336-36-3	B2	12	2	5.13E-02	7.28E-01	2.40E-02	2.60E-02		1.6E+04	4.5E-05	8.1E+02	9.0E-04	6.5E+03	1.1E-04	1.6E+01	4.5E-02	3.0E+03	2.4E-04	2.4E+02	3.0E-03	5.2E+03	1.4E-04	4.0E+00	1.8E-01

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-32
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI P-11 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
VOC	Acetone	67-64-1	ID	23	16	3.50E-03	9.20E-02	2.60E-03	4.60E-02		1.1E+05	8.4E-07	1.6E+05	5.8E-07	1.7E+08	5.4E-10	7.3E+04	1.3E-06	1.1E+05	8.4E-07	1.3E+05	7.1E-07	3.9E+08	2.4E-10	2.3E+04	4.0E-06
VOC	Benzene	71-43-2	A	23	2	7.70E-04	1.70E-03	2.70E-04	5.70E-03		8.4E+00	2.0E-04	4.5E+01	3.8E-05	4.7E+05	3.6E-09	4.0E+02	4.3E-06	1.6E+00	1.1E-03	1.3E+01	1.3E-04	3.8E+05	4.5E-09	1.8E+02	9.4E-06
VOC	Bromodichloromethane	75-27-4	B2	23				4.30E-04	7.90E-03		6.4E+00		3.1E+01		1.1E+05		4.9E+02		1.2E+00		9.1E+00		8.4E+04		1.1E+02	
VOC	Bromoform	75-25-2	B2	23				5.70E-04	1.10E-02		7.7E+02		3.1E+03		3.6E+06		8.7E+02		1.5E+02		9.0E+02		2.8E+06		8.2E+02	
VOC	Bromomethane	74-83-9	D	23				1.20E-03	4.10E-02		1.6E+00		1.3E+01		1.5E+05		1.0E+03		8.6E-01		1.1E+01		3.3E+05		3.2E+02	
VOC	2-Butanone	78-93-3	ID	23	4	1.40E-03	1.50E-02	1.20E-03	5.00E-02		2.7E+04	5.6E-07	3.5E+04	4.3E-07	2.9E+07	5.2E-10	2.7E+04	5.6E-07	2.7E+04	5.6E-07	2.9E+04	5.2E-07	6.7E+07	2.2E-10	2.7E+04	5.6E-07
VOC	Carbon Disulfide	75-15-0		23	2	2.50E-04	3.40E-04	2.20E-04	4.40E-03		1.4E+02	2.4E-06	1.6E+03	2.1E-07	2.1E+07	1.6E-11	2.8E+02	1.2E-06	7.6E+01	4.5E-06	1.3E+03	2.6E-07	4.7E+07	7.2E-12	2.8E+02	1.2E-06
VOC	Carbon Tetrachloride	56-23-5	B2	23				3.90E-04	1.40E-02		9.9E-01		1.2E+01		1.7E+05		3.9E+02		1.9E-01		3.5E+00		1.3E+05		9.6E+01	
VOC	Chlorobenzene	108-90-7	D	23				3.10E-04	5.60E-03		2.2E+02		9.2E+02		2.1E+06		2.6E+02		1.2E+02		7.7E+02		4.7E+06		2.6E+02	
VOC	Chloroethane	75-00-3		23				7.50E-04	4.50E-02		9.5E+02		3.6E+04		2.9E+08		9.5E+02		9.5E+02		3.0E+04		6.7E+08		9.5E+02	
VOC	Chloroform	67-66-3	B2	23				4.20E-04	1.20E-02		3.8E+01		1.5E+02		1.6E+06		1.5E+03		7.2E+00		4.5E+01		1.3E+06		1.2E+03	
VOC	Chloromethane	74-87-3	D	23				3.80E-04	1.40E-02		1.0E+01		1.2E+02		2.6E+06		1.1E+03		2.3E+00		4.0E+01		4.9E+06		1.1E+03	
VOC	Cumene	98-82-8	D	23				4.40E-04	8.20E-03		3.9E+02		2.0E+03		2.6E+06		3.9E+02		3.9E+02		1.7E+03		5.8E+06		3.9E+02	
VOC	Cyclohexane	110-82-7	ID	23				3.70E-04	6.00E-03																	
VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	23				9.10E-04	2.20E-02		1.2E+00		1.5E+01		5.9E+03		1.2E+00		1.2E+00		1.3E+01		1.3E+04		1.2E+00	
VOC	Dibromochloromethane	124-48-1	C	23				5.00E-04	1.10E-02		2.1E+01		8.0E+01		1.6E+05		5.0E+02		3.9E+00		2.4E+01		1.3E+05		1.1E+02	
VOC	1,2-Dibromoethane	106-93-4	B2	23				2.90E-04	7.30E-03		3.6E+00		5.8E+00		1.8E+04		4.3E-01		6.7E-01		1.7E+00		1.4E+04		2.5E-01	
VOC	1,2-Dichlorobenzene	95-50-1	D	23				3.50E-04	6.70E-03		2.1E+02		4.6E+04		4.4E+07		2.1E+02		2.1E+02		3.9E+04		1.0E+08		2.1E+02	
VOC	1,3-Dichlorobenzene	541-73-1	D	23				5.40E-04	8.00E-03								1.7E+02								1.7E+02	
VOC	1,4-Dichlorobenzene	106-46-7	C	23				3.80E-04	8.30E-03		1.0E+02		2.6E+02		5.7E+05		1.9E+03		1.9E+01		7.7E+01		4.5E+05		4.0E+02	
VOC	Dichlorodifluoromethane	75-71-8		23				7.00E-04	2.20E-02		1.7E+03		6.3E+04		1.5E+09		1.0E+03		9.0E+02		5.3E+04		3.3E+09		1.0E+03	
VOC	1,1-Dichloroethane	75-34-3	C	23				2.50E-04	1.10E-02		4.3E+02		2.5E+03		1.5E+07		8.9E+02		2.3E+02		2.1E+03		3.3E+07		8.9E+02	
VOC	1,2-Dichloroethane	107-06-2	B2	23				3.50E-04	1.30E-02		1.1E+01		2.1E+01		1.5E+05		4.2E+02		2.1E+00		6.2E+00		1.2E+05		9.1E+01	
VOC	1,1-Dichloroethene	75-35-4	C	23				4.30E-04	7.60E-03		3.3E-01		3.7E+00		7.8E+04		5.7E+02		6.2E-02		1.1E+00		6.2E+04		2.0E+02	
VOC	cis-1,2-Dichloroethene	156-59-2	D	23				2.70E-04	7.50E-03		4.1E+01		2.1E+02		1.0E+06		6.4E+02		2.2E+01		1.8E+02		2.3E+06		6.4E+02	
VOC	trans-1,2-Dichloroethene	156-60-5		23				3.10E-04	9.70E-03		4.3E+01		3.3E+02		2.1E+06		1.4E+03		2.3E+01		2.8E+02		4.7E+06		1.4E+03	
VOC	1,2-Dichloropropane	78-87-5	B2	23				2.70E-04	9.10E-03		7.4E+00		3.0E+01		1.2E+05		5.5E+02		4.0E+00		2.5E+01		2.7E+05		1.4E+02	
VOC	1,3-Dichloropropene (total)	542-75-6	B2	23				4.00E-04	7.40E-03		5.4E+00		6.0E+01		5.9E+05		2.4E+02		1.0E+00		1.8E+01		7.8E+05		1.0E+01	
VOC	Ethyl Benzene	100-41-4	D	23	1	9.20E-04	9.20E-04	4.90E-04	6.30E-03		1.4E+02	6.6E-06	2.4E+03	3.8E-07	1.3E+07	7.1E-11	1.4E+02	6.6E-06	8.7E+01	1.1E-05	7.2E+02	1.3E-06	1.0E+07	9.2E-11	1.4E+02	6.6E-06
VOC	2-Hexanone	591-78-6		23				1.10E-03	1.50E-02		1.8E+03		1.3E+03		1.2E+06		2.5E+03		9.9E+02		1.1E+03		2.7E+06		2.5E+03	
VOC	Methyl Acetate	79-20-9		23	4	1.30E-03	1.10E-01	1.10E-03	1.60E-03																	
VOC	Methyl tert-butyl ether	1634-04-4		23				2.50E-04	7.90E-03		5.9E+03		3.0E+04		8.8E+07		5.9E+03		5.9E+03		2.5E+04		2.0E+08		1.5E+03	
VOC	4-Methyl-2-pentanone	108-10-1	ID	23	3	1.30E-03	3.00E-03	7.30E-04	2.30E-02		2.7E+03	1.1E-06	5.3E+04	5.7E-08	6.0E+07	5.0E-11	2.7E+03	1.1E-06	2.7E+03	1.1E-06	4.5E+04	6.7E-08	1.4E+08	2.1E-11	2.7E+03	1.1E-06
VOC	Methylcyclohexane	108-87-2		23	2	6.90E-04	7.70E-04	3.70E-04	8.60E-03																	
VOC	Methylene Chloride	75-09-2	B2	23	1	2.40E-03	2.40E-03	1.40E-03	1.50E-02		2.4E+02	1.0E-05	7.0E+02	3.4E-06	8.3E+06	2.9E-10	2.3E+03	1.0E-06	4.5E+01	5.3E-05	2.1E+02	1.1E-05	6.6E+06	3.6E-10	1.3E+03	1.8E-06
VOC	Styrene	100-42-5		23				2.60E-04	7.00E-03		5.2E+02		3.3E+03		6.9E+06		5.2E+02		2.5E+02		9.7E+02		5.5E+06		4.0E+02	
VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	18				3.40E-04	9.70E-03		2.3E+01		3.4E+01		6.8E+04		2.4E+02		4.3E+00		1.0E+01		5.4E+04		5.3E+01	
VOC	Tetrachloroethene	127-18-4	C-B2	23	1	5.70E-04	5.70E-04	4.20E-04	1.10E-02		6.0E+01	9.5E-06	6.0E+02	9.5E-07	6.8E+06	8.4E-11	8.8E+01	6.5E-06	1.1E+01	5.2E-05	1.8E+02	3.2E-06	5.4E+06	1.1E-10	8.8E+01	6.5E-06
VOC	Toluene	108-88-3	D	23	4	3.70E-04	1.80E-02	2.90E-04	4.20E-04		2.5E+02	7.2E-05	3.3E+03	5.5E-06	1.2E+07	1.5E-09	2.5E+02	7.2E-05	2.5E+02	7.2E-05	2.8E+03	6.4E-06	2.7E+07	6.7E-10	2.5E+02	7.2E-05
VOC	1,2,4-Trichlorobenzene	120-82-1	D	23				4.90E-04	1.10E-02		1.1E+03		3.4E+04		1.1E+07		1.1E+03		1.1E+03		2.8E+04		2.5E+07		9.9E+02	
VOC	1,1,1-Trichloroethane	71-55-6	D	23				3.40E-04	8.60E-03		4.6E+02		4.5E+03		2.9E+07		4.6E+02		2.5E+02		3.8E+03		6.7E+07		4.6E+02	
VOC	1,1,2-Trichloroethane	79-00-5	C	23				2.90E-04	7.60E-03		2.4E+01		5.7E+01		2.5E+05		8.4E+02		4.6E+00		1.7E+01		1.9E+05		1.8E+02	
VOC	Trichloroethene	79-01-6	C-B2	23	1	1.10E+00	1.10E+00	5.20E-04	7.60E-04		3.7E+01	3.0E-02	2.6E+02	4.2E-03	2.3E+06	4.8E-07	5.0E+02	2.2E-03	7.1E+00	1.5E-01	7.8E+01	1.4E-02	1.8E+06	6.1E-07	5.0E+02	2.2E-03
VOC	Trichlorofluoromethane	75-69-4		23				3.10E-04	8.50E-03		5.6E+02		1.1E+05		1.7E+09		5.6E+02		5.6E+02		9.2E+04		3.8E+09		5.6E+02	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		23				1.20E-03	2.80E-02		5.5E+02		2.1E+05		2.3E+09		5.5E+02		5.5E+02		1.8E+05		5.1E+09		5.5E+02	
VOC	Vinyl Chloride	75-01-4	A	23				3.70E-04	1.10E-02		2.8E+00		2.9E+01		8.9E+05		3.4E+01		2.7E-01		4.2E+00		3.5E+05		3.8E+00	
VOC	Xylenes (total)	1330-20-7	ID	23				9.90E-04	1.80E-02		1.5E+02		5.4E+04		1.3E+08		1.5E+02		1.5E+02		4.6E+04		2.9E+08		1.5E+02	
SVOC	Acenaphthene	83-32-9		23	4	4.50E-02	3.60E-01	1.50E-02	4.40E-01		3.5E+05	1.0E-06	9.7E+04	3.7E-06	6.2E+06	5.8E-08	1.3E+05	2.8E-06	1.9E+05	1.9E-06	8.1E+04	4.4E-06	1.4E+07	2.6E-08	4.1E+04	8.8E-06
SVOC	Acenaphthylene	208-96-8	D	23				2.00E-02	6.00E-01		3.0E+03		2.7E+03		1.0E+06		5.2E+03		1.6E+03		2.2E+03		2.3E+06		1.6E+03	
SVOC	Acetophenone	98-86-2	D	23				2.10E-02	6.30E-01		1.1E+03		5.2E+04		1.4E+07		1.1E+03		1.1E+03		4.4E+04		3.3E+07		1.1E+03	
SVOC	Anthracene	120-12-7	D	23	4	9.80E-02	2.30E+00	1.80E-02	2.00E-02		1.0E+06	2.3E-06	1.6E+06	1.4E-06	2.9E+07	7.9E-08	7.3E+05	3.2E-06	1.0E+06	2.3E-06	1.4E+06	1.6E-06	6.7E+07	3.4E-08	2.3E+05	1.0E-05
SVOC	Atrazine	1912-24-9		23				2.30E-02	6.90E-01								3.3E+02								7.1E+01	
SVOC	Benzaldehyde	100-52-7		23				1.50E-02	4.40E-01																	
SVOC	Benzo(a)anthracene	56-55-3	B2	23	6	7.00E-02	2.80E+00	2.40E-02	2.80E-02								8.0E+01	3.5E-02							2.0E+01	1.4E-01
SVOC	Benzo(a)pyrene	50-32-8	B2	23	6	1.70E-02	1.20E+00	1.60E-02	1.80E-02						1.9E+03	6.3E-04	8.0E+00	1.5E-01					1.5E+03	8.0E-04	2.0E+00	6.0E-01
SVOC	Benzo(b)fluoranthene	205-99-2	B2	23	5	2.60E-02	1.60E+00	2.10E-02	2.40E-02								8.0E+01	2.0E-02							2.0E+01	8.0E-02
SVOC	Benzo(g,h,i)perylene	191-24-2	D	23	5	2.20E-02	8.60E-01	1.70E-02	1.90E-02						3.5E+05	2.5E-06	7.0E+03	1.2E-04					8.0E+05	1.1E-06	2.5E+03	3.4E-04
SVOC	Benzo(k)fluoranthene	207-08-9	B2	23	4	1.30E-01	7.90E-01	1.70E-02	1.90E-02								8.0E+02	9.9E-04							2.0E+02	4.0E-03
SVOC	Biphenyl	92-52-4	D	23	3	7.90E-02	9.10E-02	1.90E-02	5.60E-01																	
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	11				2.70E-02	7.50E-02																	
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	14				1.90E-02	5.20E-02		4.4E+01		1.3E+01		1.2E+04		5.8E+01		8.3E+00		3.8E+00		9.4E+03		1.3E+01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	23	4	8.90E-02	2.20E-01	1.40E-02	4.10E-01						8.9E+05	2.5E-07	1.0E+04	2.2E-05					7.0E+05	3.1E-07	2.8E+03	7.9E-05
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	23				1.60E-02	4.70E-01																	
SVOC	Butylbenzylphthalate	85-68-7	C	20	3	3.80E-02	4.20E+01	2.20E-02	2.50E-02						2.1E+07	2.0E-06	3.1E+02	1.4E-01					4.7E+07	8.9E-07	3.1E+02	1.4E-01
SVOC	Caprolactam	105-60-2		23				2.90E-02	8.80E-01						2.9E+05		3.1E+05						6.7E+05		5.3E+04	
SVOC	Carbazole	86-74-8	B2	23	5	5.10E-02	2.20E+00	2.00E-02	2.30E-02								2.4E+03	9.2E-04							5.3E+02	4.2E-03
SVOC	4-Chloro-3-methylphenol	59-50-7		23				2.00E-02	6.00E-01								1.5E+04								4.5E+03	
SVOC	4-Chloroaniline	106-47-8		23				2.10E-02	6.30E-01																	
SVOC	2-Chloronaphthalene	91-58-7		23				1.80E-02	5.30E-01								1.8E+05								5.6E+04	
SVOC	2-Chlorophenol	95-57-8		23				1.90E-02	5.60E-01								4.5E+03								1.4E+03	
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		23				1.80E-02	5.30E-01																	
SVOC	Chrysene	218-01-9	B2	23	5	3.40E-02	1.40E+00	2.30E-02	2.60E-02								8.0E+03	1.8E-04							2.0E+03	7.0E-04
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	23	3	4.50E-02	1.90E-01	1.90E-02	5.60E-01								8.0E+00	2.4E-02							2.0E+00	9.5E-02
SVOC	Dibenzofuran	132-64-9	D	23	4	2.70E-02	2.10E-01	1.80E-02	5.30E-01																	
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	23				1.90E-02	5.60E-01						8.2E+03		3.0E+01						6.5E+03		6.6E+00	
SVOC	2,4-Dichlorophenol	120-83-2		11				1.70E-02	4.60E-02						2.3E+06		1.8E+03						5.1E+06		6.6E+02	
SVOC	Diethylphthalate	84-66-2	D	23				2.00E-02	6.00E-01						1.5E+06		7.4E+02						3.3E+06		7.4E+02	
SVOC	2,4-Dimethylphenol	105-67-9		23				1.90E-02	5.60E-01						2.1E+06		3.6E+04						4.7E+06		1.1E+04	

TABLE 4-32
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI P-11 (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	Dimethylphthalate	131-11-3	D	23				1.80E-02	5.30E-01						1.5E+06		7.9E+02						3.3E+06		7.9E+02	
SVOC	Di-n-butylphthalate	84-74-2	D	23	1	1.60E+00	1.60E+00	2.40E-02	6.60E-02						1.5E+06	1.1E-06	7.6E+02	2.1E-03					3.3E+06	4.8E-07	7.6E+02	2.1E-03
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		23				5.00E-02	1.50E+00								2.6E+02								7.9E+01	
SVOC	2,4-Dinitrophenol	51-28-5		23				4.90E-02	1.50E+00																	
SVOC	2,4-Dinitrotoluene	121-14-2	B2	23				2.30E-02	6.90E-01						2.0E+04		2.2E+02						1.6E+04		4.8E+01	
SVOC	2,6-Dinitrotoluene	606-20-2	B2	23				1.60E-02	4.70E-01																	
SVOC	Di-n-octylphthalate	117-84-0		23				6.70E-02	2.00E+00								2.0E+04								6.9E+03	
SVOC	Fluoranthene	206-44-0	D	23	5	2.60E-02	2.90E+00	1.70E-02	1.90E-02		1.0E+06	2.9E-06	8.9E+05	3.3E-06	4.1E+06	7.1E-07	1.3E+05	2.2E-05	1.0E+06	2.9E-06	7.4E+05	3.9E-06	9.3E+06	3.1E-07	4.6E+04	6.3E-05
SVOC	Fluorene	86-73-7	D	23	5	4.00E-02	2.60E+00	1.60E-02	1.80E-02		1.0E+06	2.6E-06	1.5E+05	1.7E-05	4.1E+06	6.3E-07	8.7E+04	3.0E-05	5.8E+05	4.5E-06	1.3E+05	2.0E-05	9.3E+06	2.8E-07	2.7E+04	9.6E-05
SVOC	Hexachlorobenzene	118-74-1	B2	23				2.30E-02	6.90E-01		2.2E+02		5.6E+01		8.5E+03		3.7E+01		4.1E+01		1.7E+01		6.8E+03		8.9E+00	
SVOC	Hexachlorobutadiene	87-68-3	C	14				1.70E-02	4.60E-02		3.5E+02		4.6E+02		1.8E+05		3.5E+02		1.3E+02		1.3E+02		1.4E+05		1.0E+02	
SVOC	Hexachlorocyclopentadiene	77-47-4	E	23				1.00E-02	3.10E-01		5.6E+01		6.0E+01		5.9E+03		7.2E+02		3.0E+01		5.0E+01		1.3E+04		7.2E+02	
SVOC	Hexachloroethane	67-72-1	C	14				1.80E-02	4.90E-02		7.9E+01		6.6E+02		1.0E+05		7.3E+02		4.0E+01		5.5E+02		2.3E+05		2.3E+02	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	23	4	1.50E-01	8.40E-01	2.00E-02	2.30E-02								8.0E+01	1.1E-02							2.0E+01	4.2E-02
SVOC	Isophorone	78-59-1	C	23				2.30E-02	6.90E-01						8.2E+06		2.4E+03						1.2E+07		2.4E+03	
SVOC	2-Methylnaphthalene	91-57-6	ID	23	8	3.90E-02	1.60E+00	1.80E-02	2.00E-02								2.6E+04	6.2E-05							8.1E+03	2.0E-04
SVOC	Methylphenol (total)	1319-77-3		23				2.20E-02	6.60E-01						2.9E+06		3.6E+04						6.7E+06		1.1E+04	
SVOC	Naphthalene	91-20-3	C	13	5	2.30E-02	5.30E-01	1.80E-02	2.00E-02		4.7E+02	1.1E-03	3.5E+02	1.5E-03	8.8E+04	6.0E-06	5.2E+04	1.0E-05	2.5E+02	2.1E-03	3.0E+02	1.8E-03	2.0E+05	2.7E-06	1.6E+04	3.3E-05
SVOC	2-Nitroaniline	88-74-4		23				1.40E-02	4.10E-01																	
SVOC	3-Nitroaniline	99-09-2	C	23				2.30E-02	6.90E-01																	
SVOC	4-Nitroaniline	100-01-6	C	23				1.80E-02	5.30E-01																	
SVOC	Nitrobenzene	98-95-3	D	11				2.50E-02	6.90E-02		1.7E+02		6.4E+01		2.1E+04		3.4E+02		9.1E+01		5.4E+01		4.7E+04		1.0E+02	
SVOC	2-Nitrophenol	88-75-5		23				2.20E-02	6.60E-01								2.0E+03								6.3E+02	
SVOC	4-Nitrophenol	100-02-7		23				5.50E-02	1.70E+00																	
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	23				2.00E-02	6.00E-01								7.8E+03								1.7E+03	
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	23				1.60E-02	4.70E-01						2.0E+03		5.4E+00						1.6E+03		1.2E+00	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	23				2.80E-02	8.50E-01																	
SVOC	Pentachlorophenol	87-86-5	B2	23				6.20E-02	1.90E+00						1.3E+05		3.2E+02						1.0E+05		9.0E+01	
SVOC	Phenanthrene	85-01-8	D	23	6	3.70E-02	3.00E+00	2.20E-02	2.50E-02		5.1E+03	5.9E-04	1.9E+02	1.6E-02	2.9E+03	1.0E-03	5.2E+03	5.8E-04	2.8E+03	1.1E-03	1.6E+02	1.9E-02	6.7E+03	4.5E-04	1.6E+03	1.9E-03
SVOC	Phenol	108-95-2	ID	23				1.90E-02	5.60E-01						1.8E+07		1.2E+04						4.0E+07		1.2E+04	
SVOC	Pyrene	129-00-0	D	23	4	5.70E-01	2.90E+00	2.20E-02	2.50E-02		1.0E+06	2.9E-06	7.8E+05	3.7E-06	2.9E+06	1.0E-06	8.4E+04	3.5E-05	1.0E+06	2.9E-06	6.5E+05	4.5E-06	6.7E+06	4.3E-07	2.9E+04	1.0E-04
SVOC	2,4,5-Trichlorophenol	95-95-4		23				1.60E-02	4.70E-01						1.0E+07		7.3E+04						2.3E+07		2.3E+04	
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	23				2.00E-02	6.00E-01						1.3E+06		3.3E+03						1.0E+06		7.1E+02	
P/PCB	PCBs (total)	1336-36-3	B2	23	3	5.00E-02	5.68E+00	2.30E-02	2.80E-02		1.6E+04	3.6E-04	8.1E+02	7.0E-03	6.5E+03	8.7E-04	1.6E+01	3.6E-01	3.0E+03	1.9E-03	2.4E+02	2.4E-02	5.2E+03	1.1E-03	4.0E+00	**1.4E+00**
INORG	Antimony	7440-36-0		14	5	2.51E-01	5.36E-01	1.20E-01	1.37E-01						5.9E+03	9.1E-05	6.7E+02	8.0E-04					1.3E+04	4.1E-05	1.8E+02	3.0E-03
INORG	Arsenic	7440-38-2	A	23	23	2.49E+00	7.39E+00			1.3E+01					9.1E+02		3.7E+01						7.2E+02		7.6E+00	
INORG	Barium	7440-39-3	D	23	23	4.38E+00	1.92E+02			1.1E+02					1.5E+05	5.5E-04	1.3E+05	6.3E-04					3.3E+05	2.5E-04	3.7E+04	2.2E-03
INORG	Beryllium	7440-41-7	B1	23	23	9.48E-02	9.74E-01			1.5E+00					5.9E+02		1.6E+03						1.3E+03		4.1E+02	
INORG	Cadmium	7440-43-9	B1	23	15	1.39E-02	5.37E-01	8.70E-03	4.72E-02	1.2E+00					2.2E+03		2.1E+03						1.7E+03		5.5E+02	
INORG	Chromium (total)	7440-47-3		23	23	3.73E+00	7.34E+01			4.9E+01					2.4E+02	1.0E-01	9.2E+03	2.6E-03					2.6E+02	9.3E-02	2.5E+03	9.7E-03
INORG	Cobalt	7440-48-4	B1	23	23	1.72E+00	8.70E+00			1.7E+01					5.9E+03		9.0E+03						1.3E+04		2.6E+03	
INORG	Copper	7440-50-8	D	23	23	4.22E+00	5.56E+01			3.2E+01					5.9E+04	4.0E-04	7.3E+04	3.2E-04					1.3E+05	1.8E-04	2.0E+04	1.2E-03
INORG	Lead	7439-92-1	B2	23	23	2.29E+00	6.08E+01			4.9E+01					4.4E+04	2.6E-04	9.0E+02	1.3E-02					1.0E+05	1.2E-04	4.0E+02	2.9E-02
INORG	Manganese	7439-96-5	D	23	23	1.29E+02	3.26E+03			5.1E+02					1.5E+03	**1.8E+00**	9.0E+04	3.1E-02					3.3E+03	8.3E-01	2.5E+04	1.1E-01
INORG	Mercury	7439-97-6	D	23	10	1.86E-02	7.95E-02	1.67E-02	1.87E-02	1.3E-01	8.9E+01		6.2E+01		8.8E+03		5.8E+02		4.8E+01		5.2E+01		2.0E+04		1.6E+02	
INORG	Nickel	7440-02-0	A	23	23	4.62E+00	3.09E+01			3.0E+01					1.6E+04	5.0E-05	1.5E+05	5.3E-06					1.3E+04	6.1E-05	4.0E+04	2.0E-05
INORG	Selenium	7782-49-2	D	23	3	3.64E-01	7.08E-01	2.24E-01	1.27E+00	4.1E-01					5.9E+04	5.1E-06	9.6E+03	3.1E-05					1.3E+05	2.3E-06	2.6E+03	1.1E-04
INORG	Silver	7440-22-4	D	23				5.21E-02	2.95E-01						2.9E+03		9.0E+03						6.7E+03		2.5E+03	
INORG	Thallium	7440-28-0		23	3	7.67E-01	9.40E-01	3.02E-01	1.71E+00								1.3E+02	7.2E-03							3.5E+01	2.7E-02
INORG	Vanadium	7440-62-2		23	23	4.73E+00	2.14E+01			3.3E+01							5.5E+03								7.5E+02	
INORG	Zinc	7440-66-6	D	23	23	1.56E+01	1.71E+02			1.9E+02							6.3E+05								1.7E+05	

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-33
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI P-11 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	2	1	1.90E-02	1.90E-02	1.10E-03	1.10E-03	1.0E+06	1.9E-08	3.1E+04	6.1E-07	7.3E-01	2.6E-02
Shallow	VOC	Benzene	71-43-2	T	A	2				3.70E-04	1.50E-03	3.5E+01		1.1E+01		5.0E-03	
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	1				3.20E-04	3.20E-04	3.7E+01		1.4E+01		1.0E-01	
Shallow	VOC	Bromoform	75-25-2	T	B2	2				3.70E-04	1.50E-03	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	2				3.00E-04	1.25E-03	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	2				5.90E-04	2.50E-03	2.4E+05		2.4E+05		1.3E+01	
Shallow	VOC	Carbon Disulfide	75-15-0	T		2				2.40E-04	1.00E-03	5.5E+02		1.2E+03		8.0E-01	
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	2				3.70E-04	1.50E-03	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	2				3.80E-04	1.60E-03	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		2				2.90E-04	1.19E-03	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	2				3.50E-04	1.50E-03	1.8E+02		1.5E+02		1.0E-01	
Shallow	VOC	Chloromethane	74-87-3	T	D	2				4.90E-04	2.00E-03	4.5E+01		4.9E+02		2.6E-01	
Shallow	VOC	Cumene	98-82-8	T	D	2				3.90E-04	1.65E-03	5.6E+01		5.6E+01		8.0E-01	
Shallow	VOC	Cyclohexane	110-82-7	T	ID	2				3.30E-04	1.35E-03						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	2				8.20E-04	3.40E-03	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	2				3.70E-04	1.50E-03	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	2				3.40E-04	1.40E-03	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	2				3.80E-04	1.60E-03	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	2				3.80E-04	1.60E-03			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	2				3.80E-04	1.60E-03	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		2				4.90E-04	2.00E-03	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	2				3.00E-04	1.25E-03	2.3E+03		2.4E+03		8.8E-01	
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	2				2.80E-04	1.17E-03	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	2				3.10E-04	1.30E-03	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	1				3.50E-04	3.50E-04	2.1E+02		2.0E+02		7.0E-02	
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		2				3.30E-04	1.35E-03	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	2				4.10E-04	1.70E-03	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	2				3.50E-04	1.50E-03	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	1				1.70E-03	1.70E-03	1.7E+02		1.7E+02		7.0E-01	
Shallow	VOC	2-Hexanone	591-78-6	T		2				5.80E-04	2.40E-03	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		2				5.40E-04	2.25E-03						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		2				2.70E-04	1.15E-03	4.7E+04		6.1E+02		2.4E-01	
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	2	1	2.30E-03	2.30E-03	2.60E-04	2.60E-04	2.0E+04	1.2E-07	1.3E+04	1.8E-07	1.8E+00	1.3E-03
Shallow	VOC	Methylcyclohexane	108-87-2	T		2				4.20E-04	1.75E-03						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	2				2.90E-04	1.19E-03	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	2				3.60E-04	1.50E-03	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	1				1.75E-03	1.75E-03	1.7E+02		1.2E+01		5.0E-03	
Shallow	VOC	Toluene	108-88-3	T	D	2				3.90E-04	1.65E-03	5.3E+02		5.3E+02		1.0E+00	
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	2				4.00E-04	1.65E-03	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	2				3.90E-04	1.65E-03	1.3E+03		1.3E+03		2.0E-01	
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	2				3.60E-04	1.50E-03	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	2				4.20E-04	1.75E-03	9.7E+01		2.2E+01		5.0E-03	
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		2				5.40E-04	2.25E-03	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		2				3.20E-04	1.35E-03	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	1				3.60E-04	3.60E-04	1.3E+01		1.0E+00		2.0E-03	
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	2				4.40E-04	1.85E-03	1.9E+02		1.9E+02		1.0E+01	
Shallow	SVOC	Acenaphthene	83-32-9	T		2				6.90E-04	6.90E-03	4.2E+00		4.2E+00		1.3E+00	
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	2				4.10E-04	4.10E-03	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	2				6.50E-04	6.50E-03	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	2				5.90E-04	5.90E-03	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		2				3.50E-04	3.50E-03			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		2				5.90E-04	5.90E-03						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	2				6.80E-04	6.80E-03			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	2				5.30E-04	5.30E-03			2.0E-03		5.0E-03	
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	2				7.10E-04	7.10E-03			2.0E-03		2.0E-03	

TABLE 4-33
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI P-11 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	2				7.00E-04	7.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	2				6.40E-04	6.40E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	2				6.50E-04	6.50E-03						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	2				1.00E-03	1.00E-02						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	2				1.70E-03	1.70E-02	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	2				2.00E-04	2.00E-03			3.2E-01		6.0E-03	
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	2				7.80E-04	7.80E-03						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	2				2.30E-04	2.30E-03			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		2				4.50E-04	4.50E-03			3.9E+05		5.8E+00	
Shallow	SVOC	Carbazole	86-74-8	T	B2	2				6.10E-04	6.10E-03			7.4E+00		8.5E-02	
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		2				5.50E-04	5.50E-03			7.9E+01		1.5E-01	
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		2				7.30E-04	7.30E-03			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		2				1.30E-03	1.30E-02			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		2				6.60E-04	6.60E-03						
Shallow	SVOC	Chrysene	218-01-9	T	B2	2				6.70E-04	6.70E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	2				6.80E-04	6.80E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	2				6.60E-04	6.60E-03						
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		2				7.00E-04	7.00E-03			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	2				2.50E-04	2.50E-03			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		2				1.00E-03	1.00E-02			5.2E+02		3.7E-01	
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	2				2.00E-04	2.00E-03			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	2				3.70E-04	3.70E-03			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		2				2.10E-03	2.10E-02			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		2				3.30E-03	3.30E-02						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	2				4.60E-04	4.60E-03			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	2				7.10E-04	7.10E-03						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		2				6.90E-04	6.90E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	2				7.10E-04	7.10E-03	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	2				7.50E-04	7.50E-03	2.0E+00		2.0E+00		8.8E-01	
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	2				7.70E-04	7.70E-03	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	2				1.50E-03	1.50E-02	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	2				1.60E-03	1.60E-02	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	2				6.90E-04	6.90E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	2				8.60E-04	8.60E-03			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	2				9.30E-04	9.30E-03			2.5E+01		2.6E-01	
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		2				9.00E-04	9.00E-03			8.1E+02		3.7E-01	
Shallow	SVOC	Naphthalene	91-20-3	T	C	2				1.30E-03	1.30E-02	3.1E+01		3.1E+01		5.2E-01	
Shallow	SVOC	2-Nitroaniline	88-74-4	T		2				4.90E-04	4.90E-03						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	2				5.90E-04	5.90E-03						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	2				1.30E-03	1.30E-02	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		2				9.50E-04	9.50E-03			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		2				3.50E-03	3.50E-02						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	2				6.40E-04	6.40E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	2				1.10E-03	1.10E-02			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	2				1.80E-03	1.80E-02						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	1				2.60E-02	2.60E-02			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	2				6.80E-04	6.80E-03	1.0E+00		1.0E+00		5.2E-02	
Shallow	SVOC	Phenol	108-95-2	T	ID	2				1.30E-03	1.30E-02			2.9E+04		4.4E+00	
Shallow	SVOC	Pyrene	129-00-0	T	D	2				6.30E-04	6.30E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		2				8.60E-04	8.60E-03			1.7E+02		7.3E-01	
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	2				7.10E-04	7.10E-03			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	2				8.20E-05	8.20E-05	4.5E-02		3.3E-03		5.0E-04	
Shallow	INORG	Antimony	7440-36-0	T		2				3.40E-03	3.40E-03			6.8E+01		6.0E-03	
Shallow	INORG	Arsenic	7440-38-2	T	A	2	2	3.90E-03	2.36E-02					4.3E+00	5.5E-03	5.0E-02	4.7E-01
Shallow	INORG	Barium	7440-39-3	T	D	2	2	4.23E-02	3.97E-01					1.4E+04	2.8E-05	2.0E+00	2.0E-01

TABLE 4-33
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI P-11 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	INORG	Beryllium	7440-41-7	T	B1	2				6.00E-04	6.00E-04			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	T	B1	2				2.80E-04	2.80E-04			1.9E+02		5.0E-03	
Shallow	INORG	Chromium (total)	7440-47-3	T		2				1.50E-03	1.50E-03			4.6E+02		1.0E-01	
Shallow	INORG	Cobalt	7440-48-4	T	B1	2	1	5.35E-02	5.35E-02	7.40E-04	7.40E-04			2.4E+03	2.2E-05	4.0E-02	**1.3E+00**
Shallow	INORG	Copper	7440-50-8	T	D	2	1	9.10E-03	9.10E-03	1.70E-03	1.70E-03			7.4E+03	1.2E-06	1.4E+00	6.5E-03
Shallow	INORG	Lead	7439-92-1	T	B2	2				1.60E-03	1.60E-03					4.0E-03	
Shallow	INORG	Manganese	7439-96-5	T	D	2	2	3.11E-02	5.01E-01					9.1E+03	5.5E-05	8.6E-01	5.8E-01
Shallow	INORG	Mercury	7439-97-6	T	D	2				8.70E-05	8.70E-05	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Nickel	7440-02-0	T	A	2	1	9.75E-03	9.75E-03	2.90E-03	2.90E-03			7.4E+04	1.3E-07	1.0E-01	9.8E-02
Shallow	INORG	Selenium	7782-49-2	T	D	2				4.70E-03	4.70E-03			9.7E+02		5.0E-02	
Shallow	INORG	Silver	7440-22-4	T	D	2				9.80E-04	9.80E-04			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	T		2				3.30E-05	3.30E-05			1.3E+01		2.0E-03	
Shallow	INORG	Vanadium	7440-62-2	T		2	1	5.98E-04	5.98E-04	6.70E-04	6.70E-04			9.7E+02	6.2E-07	4.5E-03	1.3E-01
Shallow	INORG	Zinc	7440-66-6	T	D	2				1.40E-02	1.40E-02			1.1E+05		2.4E+00	

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-34
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR STORM WATER DETENTION FACILITY (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
VOC	Acetone	67-64-1	ID	7				2.90E-03	3.25E-03		1.1E+05		1.6E+05		1.7E+08		7.3E+04		1.1E+05		1.3E+05		3.9E+08		2.3E+04	
VOC	Benzene	71-43-2	A	7				3.10E-04	3.45E-04		8.4E+00		4.5E+01		4.7E+05		4.0E+02		1.6E+00		1.3E+01		3.8E+05		1.8E+02	
VOC	Bromodichloromethane	75-27-4	B2	7				4.90E-04	5.40E-04		6.4E+00		3.1E+01		1.1E+05		4.9E+02		1.2E+00		9.1E+00		8.4E+04		1.1E+02	
VOC	Bromoform	75-25-2	B2	7				6.50E-04	7.20E-04		7.7E+02		3.1E+03		3.6E+06		8.7E+02		1.5E+02		9.0E+02		2.8E+06		8.2E+02	
VOC	Bromomethane	74-83-9	D	7				1.40E-03	1.55E-03		1.6E+00		1.3E+01		1.5E+05		1.0E+03		8.6E-01		1.1E+01		3.3E+05		3.2E+02	
VOC	2-Butanone	78-93-3	ID	7				1.30E-03	1.45E-03		2.7E+04		3.5E+04		2.9E+07		2.7E+04		2.7E+04		2.9E+04		6.7E+07		2.7E+04	
VOC	Carbon Disulfide	75-15-0		7	1	9.70E-04	9.70E-04	2.50E-04	2.80E-04		1.4E+02	6.9E-06	1.6E+03	6.1E-07	2.1E+07	4.6E-11	2.8E+02	3.5E-06	7.6E+01	1.3E-05	1.3E+03	7.5E-07	4.7E+07	2.1E-11	2.8E+02	3.5E-06
VOC	Carbon Tetrachloride	56-23-5	B2	7				4.40E-04	4.90E-04		9.9E-01		1.2E+01		1.7E+05		3.9E+02		1.9E-01		3.5E+00		1.3E+05		9.6E+01	
VOC	Chlorobenzene	108-90-7	D	7				3.60E-04	3.95E-04		2.2E+02		9.2E+02		2.1E+06		2.6E+02		1.2E+02		7.7E+02		4.7E+06		2.6E+02	
VOC	Chloroethane	75-00-3		7				8.60E-04	9.50E-04		9.5E+02		3.6E+04		2.9E+08		9.5E+02		9.5E+02		3.0E+04		6.7E+08		9.5E+02	
VOC	Chloroform	67-66-3	B2	7				4.80E-04	5.30E-04		3.8E+01		1.5E+02		1.6E+06		1.5E+03		7.2E+00		4.5E+01		1.3E+06		1.2E+03	
VOC	Chloromethane	74-87-3	D	7				4.30E-04	4.80E-04		1.0E+01		1.2E+02		2.6E+06		1.1E+03		2.3E+00		4.0E+01		4.9E+06		1.1E+03	
VOC	Cumene	98-82-8	D	7				5.00E-04	5.50E-04		3.9E+02		2.0E+03		2.6E+06		3.9E+02		3.9E+02		1.7E+03		5.8E+06		3.9E+02	
VOC	Cyclohexane	110-82-7	ID	7				4.20E-04	4.70E-04																	
VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	7				1.00E-03	1.15E-03		1.2E+00		1.5E+01		5.9E+03		1.2E+00		1.2E+00		1.3E+01		1.3E+04		1.2E+00	
VOC	Dibromochloromethane	124-48-1	C	7				5.80E-04	6.40E-04		2.1E+01		8.0E+01		1.6E+05		5.0E+02		3.9E+00		2.4E+01		1.3E+05		1.1E+02	
VOC	1,2-Dibromoethane	106-93-4	B2	7				3.30E-04	3.65E-04		3.6E+00		5.8E+00		1.8E+04		4.3E-01		6.7E-01		1.7E+00		1.4E+04		2.5E-01	
VOC	1,2-Dichlorobenzene	95-50-1	D	7				4.10E-04	4.50E-04		2.1E+02		4.6E+04		4.4E+07		2.1E+02		2.1E+02		3.9E+04		1.0E+08		2.1E+02	
VOC	1,3-Dichlorobenzene	541-73-1	D	7				6.10E-04	6.80E-04								1.7E+02								1.7E+02	
VOC	1,4-Dichlorobenzene	106-46-7	C	7				4.30E-04	4.80E-04		1.0E+02		2.6E+02		5.7E+05		1.9E+03		1.9E+01		7.7E+01		4.5E+05		4.0E+02	
VOC	Dichlorodifluoromethane	75-71-8		7				8.00E-04	8.85E-04		1.7E+03		6.3E+04		1.5E+09		1.0E+03		9.0E+02		5.3E+04		3.3E+09		1.0E+03	
VOC	1,1-Dichloroethane	75-34-3	C	7				2.80E-04	3.15E-04		4.3E+02		2.5E+03		1.5E+07		8.9E+02		2.3E+02		2.1E+03		3.3E+07		8.9E+02	
VOC	1,2-Dichloroethane	107-06-2	B2	7				4.00E-04	4.40E-04		1.1E+01		2.1E+01		1.5E+05		4.2E+02		2.1E+00		6.2E+00		1.2E+05		9.1E+01	
VOC	1,1-Dichloroethene	75-35-4	C	7				4.90E-04	5.40E-04		3.3E-01		3.7E+00		7.8E+04		5.7E+02		6.2E-02		1.1E+00		6.2E+04		2.0E+02	
VOC	cis-1,2-Dichloroethene	156-59-2	D	7				3.10E-04	3.45E-04		4.1E+01		2.1E+02		1.0E+06		6.4E+02		2.2E+01		1.8E+02		2.3E+06		6.4E+02	
VOC	trans-1,2-Dichloroethene	156-60-5		7				3.60E-04	3.95E-04		4.3E+01		3.3E+02		2.1E+06		1.4E+03		2.3E+01		2.8E+02		4.7E+06		1.4E+03	
VOC	1,2-Dichloropropane	78-87-5	B2	7				3.10E-04	3.45E-04		7.4E+00		3.0E+01		1.2E+05		5.5E+02		4.0E+00		2.5E+01		2.7E+05		1.4E+02	
VOC	1,3-Dichloropropene (total)	542-75-6	B2	7				4.60E-04	5.10E-04		5.4E+00		6.0E+01		5.9E+05		2.4E+02		1.0E+00		1.8E+01		7.8E+05		1.0E+01	
VOC	Ethyl Benzene	100-41-4	D	7				5.70E-04	6.30E-04		1.4E+02		2.4E+03		1.3E+07		1.4E+02		8.7E+01		7.2E+02		1.0E+07		1.4E+02	
VOC	2-Hexanone	591-78-6		7				1.20E-03	1.35E-03		1.8E+03		1.3E+03		1.2E+06		2.5E+03		9.9E+02		1.1E+03		2.7E+06		2.5E+03	
VOC	Methyl Acetate	79-20-9		7				1.20E-03	1.35E-03																	
VOC	Methyl tert-butyl ether	1634-04-4		7				2.80E-04	3.15E-04		5.9E+03		3.0E+04		8.8E+07		5.9E+03		5.9E+03		2.5E+04		2.0E+08		1.5E+03	
VOC	4-Methyl-2-pentanone	108-10-1	ID	7				8.40E-04	9.25E-04		2.7E+03		5.3E+04		6.0E+07		2.7E+03		2.7E+03		4.5E+04		1.4E+08		2.7E+03	
VOC	Methylcyclohexane	108-87-2		7				4.20E-04	4.70E-04																	
VOC	Methylene Chloride	75-09-2	B2	7	2	4.60E-03	2.50E-02	1.60E-03	1.80E-03		2.4E+02	1.0E-04	7.0E+02	3.6E-05	8.3E+06	3.0E-09	2.3E+03	1.1E-05	4.5E+01	5.6E-04	2.1E+02	1.2E-04	6.6E+06	3.8E-09	1.3E+03	1.9E-05
VOC	Styrene	100-42-5		7				3.00E-04	3.35E-04		5.2E+02		3.3E+03		6.9E+06		5.2E+02		2.5E+02		9.7E+02		5.5E+06		4.0E+02	
VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	7				3.90E-04	4.30E-04		2.3E+01		3.4E+01		6.8E+04		2.4E+02		4.3E+00		1.0E+01		5.4E+04		5.3E+01	
VOC	Tetrachloroethene	127-18-4	C-B2	7				4.80E-04	5.30E-04		6.0E+01		6.0E+02		6.8E+06		8.8E+01		1.1E+01		1.8E+02		5.4E+06		8.8E+01	
VOC	Toluene	108-88-3	D	7	4	3.90E-04	1.80E-03	3.40E-04	3.60E-04		2.5E+02	7.2E-06	3.3E+03	5.5E-07	1.2E+07	1.5E-10	2.5E+02	7.2E-06	2.5E+02	7.2E-06	2.8E+03	6.4E-07	2.7E+07	6.7E-11	2.5E+02	7.2E-06
VOC	1,2,4-Trichlorobenzene	120-82-1	D	7				5.60E-04	6.20E-04		1.1E+03		3.4E+04		1.1E+07		1.1E+03		1.1E+03		2.8E+04		2.5E+07		9.9E+02	
VOC	1,1,1-Trichloroethane	71-55-6	D	7				3.90E-04	4.30E-04		4.6E+02		4.5E+03		2.9E+07		4.6E+02		2.5E+02		3.8E+03		6.7E+07		4.6E+02	
VOC	1,1,2-Trichloroethane	79-00-5	C	7				3.30E-04	3.65E-04		2.4E+01		5.7E+01		2.5E+05		8.4E+02		4.6E+00		1.7E+01		1.9E+05		1.8E+02	
VOC	Trichloroethene	79-01-6	C-B2	7	1	1.70E-03	1.70E-03	5.90E-04	6.60E-04		3.7E+01	4.6E-05	2.6E+02	6.5E-06	2.3E+06	7.4E-10	5.0E+02	3.4E-06	7.1E+00	2.4E-04	7.8E+01	2.2E-05	1.8E+06	9.4E-10	5.0E+02	3.4E-06
VOC	Trichlorofluoromethane	75-69-4		7				3.60E-04	3.95E-04		5.6E+02		1.1E+05		1.7E+09		5.6E+02		5.6E+02		9.2E+04		3.8E+09		5.6E+02	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		7				1.30E-03	1.45E-03		5.5E+02		2.1E+05		2.3E+09		5.5E+02		5.5E+02		1.8E+05		5.1E+09		5.5E+02	
VOC	Vinyl Chloride	75-01-4	A	7				4.20E-04	4.70E-04		2.8E+00		2.9E+01		8.9E+05		3.4E+01		2.7E-01		4.2E+00		3.5E+05		3.8E+00	
VOC	Xylenes (total)	1330-20-7	ID	7	3	1.20E-03	1.70E-03	1.20E-03	1.20E-03		1.5E+02	1.1E-05	5.4E+04	3.1E-08	1.3E+08	1.3E-11	1.5E+02	1.1E-05	1.5E+02	1.1E-05	4.6E+04	3.7E-08	2.9E+08	5.9E-12	1.5E+02	1.1E-05
SVOC	Acenaphthene	83-32-9		7				1.40E-02	1.60E-02		3.5E+05		9.7E+04		6.2E+06		1.3E+05		1.9E+05		8.1E+04		1.4E+07		4.1E+04	
SVOC	Acenaphthylene	208-96-8	D	7				2.00E-02	2.20E-02		3.0E+03		2.7E+03		1.0E+06		5.2E+03		1.6E+03		2.2E+03		2.3E+06		1.6E+03	
SVOC	Acetophenone	98-86-2	D	7				2.10E-02	2.30E-02		1.1E+03		5.2E+04		1.4E+07		1.1E+03		1.1E+03		4.4E+04		3.3E+07		1.1E+03	
SVOC	Anthracene	120-12-7	D	7	1	6.80E-02	6.80E-02	1.80E-02	2.00E-02		1.0E+06	6.8E-08	1.6E+06	4.3E-08	2.9E+07	2.3E-09	7.3E+05	9.3E-08	1.0E+06	6.8E-08	1.4E+06	4.9E-08	6.7E+07	1.0E-09	2.3E+05	3.0E-07
SVOC	Atrazine	1912-24-9		7				2.30E-02	2.60E-02								3.3E+02								7.1E+01	
SVOC	Benzaldehyde	100-52-7		7				1.40E-02	1.60E-02																	
SVOC	Benzo(a)anthracene	56-55-3	B2	7	2	8.15E-02	1.50E-01	2.40E-02	2.70E-02								8.0E+01	1.9E-03							2.0E+01	7.5E-03
SVOC	Benzo(a)pyrene	50-32-8	B2	7	1	1.40E-01	1.40E-01	1.50E-02	1.80E-02						1.9E+03	7.4E-05	8.0E+00	1.8E-02					1.5E+03	9.3E-05	2.0E+00	7.0E-02
SVOC	Benzo(b)fluoranthene	205-99-2	B2	7	1	1.80E-01	1.80E-01	2.10E-02	2.30E-02								8.0E+01	2.3E-03							2.0E+01	9.0E-03
SVOC	Benzo(g,h,i)perylene	191-24-2	D	7	1	1.10E-01	1.10E-01	1.70E-02	1.90E-02						3.5E+05	3.1E-07	7.0E+03	1.6E-05					8.0E+05	1.4E-07	2.5E+03	4.4E-05
SVOC	Benzo(k)fluoranthene	207-08-9	B2	7	1	8.40E-02	8.40E-02	1.70E-02	1.90E-02								8.0E+02	1.1E-04							2.0E+02	4.2E-04
SVOC	Biphenyl	92-52-4	D	7				1.90E-02	2.10E-02																	
SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	7				2.70E-02	3.00E-02																	
SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	7				1.90E-02	2.10E-02		4.4E+01		1.3E+01		1.2E+04		5.8E+01		8.3E+00		3.8E+00		9.4E+03		1.3E+01	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	7				1.30E-02	1.50E-02						8.9E+05		1.0E+04						7.0E+05		2.8E+03	
SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	7				1.50E-02	1.80E-02																	
SVOC	Butylbenzylphthalate	85-68-7	C	7				2.20E-02	2.50E-02						2.1E+07		3.1E+02						4.7E+07		3.1E+02	
SVOC	Caprolactam	105-60-2		7				2.90E-02	3.30E-02						2.9E+05		3.1E+05						6.7E+05		5.3E+04	
SVOC	Carbazole	86-74-8	B2	7	1	4.20E-02	4.20E-02	2.00E-02	2.20E-02								2.4E+03	1.8E-05							5.3E+02	7.9E-05
SVOC	4-Chloro-3-methylphenol	59-50-7		7				2.00E-02	2.20E-02								1.5E+04								4.5E+03	
SVOC	4-Chloroaniline	106-47-8		7				2.10E-02	2.30E-02																	
SVOC	2-Chloronaphthalene	91-58-7		7				1.80E-02	2.00E-02								1.8E+05								5.6E+04	
SVOC	2-Chlorophenol	95-57-8		7				1.90E-02	2.10E-02								4.5E+03								1.4E+03	
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		7				1.80E-02	2.00E-02																	
SVOC	Chrysene	218-01-9	B2	7	2	2.83E-02	1.80E-01	2.30E-02	2.60E-02								8.0E+03	2.3E-05							2.0E+03	9.0E-05
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	7				1.90E-02	2.10E-02								8.0E+00								2.0E+00	
SVOC	Dibenzofuran	132-64-9	D	7				1.80E-02	2.00E-02																	
SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	7				1.90E-02	2.10E-02						8.2E+03		3.0E+01						6.5E+03		6.6E+00	
SVOC	2,4-Dichlorophenol	120-83-2		7				1.70E-02	1.90E-02						2.3E+06		1.8E+03						5.1E+06		6.6E+02	
SVOC	Diethylphthalate	84-66-2	D	7				2.00E-02	2.20E-02						1.5E+06		7.4E+02						3.3E+06		7.4E+02	
SVOC	2,4-Dimethylphenol	105-67-9		7				1.90E-02	2.10E-02						2.1E+06		3.6E+04						4.7E+06		1.1E+04	
SVOC	Dimethylphthalate	131-11-3	D	7				1.80E-02	2.00E-02						1.5E+06		7.9E+02						3.3E+06		7.9E+02	

TABLE 4-34
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR STORM WATER DETENTION FACILITY (SOIL)

Chem Group	Chemical	CASRN	Carc Class	No of Analyses	No of Detects	Min Detected (mg/kg)	Max Detected (mg/kg)	Min QL (mg/kg)	Max QL (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Soil Volatilization to Indoor Air Inhalation Criteria	Industrial Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Infinite Source Volatile Soil Inhalation Criteria	Industrial Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Industrial Particulate Soil Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Industrial Direct Contact Criteria	Residential Soil Volatilization to Indoor Air Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Soil Volatilization to Indoor Air Inhalation Criteria	Residential Infinite Source Volatile Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Infinite Source Volatile Soil Inhalation Criteria	Residential Particulate Soil Inhalation Criteria (mg/kg)	Ratio of Max Detect to Residential Particulate Soil Inhalation Criteria	Residential Direct Contact Criteria (mg/kg)	Ratio of Max Detect to Residential Direct Contact Criteria
SVOC	Di-n-butylphthalate	84-74-2	D	7				2.40E-02	2.70E-02						1.5E+06		7.6E+02						3.3E+06		7.6E+02	
SVOC	4,6-Dinitro-2-methylphenol	534-52-1		7				5.00E-02	5.60E-02								2.6E+02								7.9E+01	
SVOC	2,4-Dinitrophenol	51-28-5		7				4.80E-02	5.50E-02																	
SVOC	2,4-Dinitrotoluene	121-14-2	B2	7				2.30E-02	2.60E-02						2.0E+04		2.2E+02						1.6E+04		4.8E+01	
SVOC	2,6-Dinitrotoluene	606-20-2	B2	7				1.50E-02	1.80E-02																	
SVOC	Di-n-octylphthalate	117-84-0		7				6.60E-02	7.50E-02								2.0E+04								6.9E+03	
SVOC	Fluoranthene	206-44-0	D	7	3	2.95E-02	3.30E-01	1.70E-02	1.90E-02		1.0E+06	3.3E-07	8.9E+05	3.7E-07	4.1E+06	8.0E-08	1.3E+05	2.5E-06	1.0E+06	3.3E-07	7.4E+05	4.5E-07	9.3E+06	3.5E-08	4.6E+04	7.2E-06
SVOC	Fluorene	86-73-7	D	7				1.50E-02	1.80E-02		1.0E+06		1.5E+05		4.1E+06		8.7E+04		5.8E+05		1.3E+05		9.3E+06		2.7E+04	
SVOC	Hexachlorobenzene	118-74-1	B2	7				2.30E-02	2.60E-02		2.2E+02		5.6E+01		8.5E+03		3.7E+01		4.1E+01		1.7E+01		6.8E+03		8.9E+00	
SVOC	Hexachlorobutadiene	87-68-3	C	7				1.70E-02	1.90E-02		3.5E+02		4.6E+02		1.8E+05		3.5E+02		1.3E+02		1.3E+02		1.4E+05		1.0E+02	
SVOC	Hexachlorocyclopentadiene	77-47-4	E	7				1.00E-02	1.20E-02		5.6E+01		6.0E+01		5.9E+03		7.2E+02		3.0E+01		5.0E+01		1.3E+04		7.2E+02	
SVOC	Hexachloroethane	67-72-1	C	7				1.80E-02	2.00E-02		7.9E+01		6.6E+02		1.0E+05		7.3E+02		4.0E+01		5.5E+02		2.3E+05		2.3E+02	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	7	1	8.50E-02	8.50E-02	2.00E-02	2.20E-02								8.0E+01	1.1E-03							2.0E+01	4.3E-03
SVOC	Isophorone	78-59-1	C	7				2.30E-02	2.60E-02						8.2E+06		2.4E+03						1.2E+07		2.4E+03	
SVOC	2-Methylnaphthalene	91-57-6	ID	7				1.80E-02	2.00E-02								2.6E+04								8.1E+03	
SVOC	Methylphenol (total)	1319-77-3		7				2.20E-02	2.50E-02						2.9E+06		3.6E+04						6.7E+06		1.1E+04	
SVOC	Naphthalene	91-20-3	C	7				1.80E-02	2.00E-02		4.7E+02		3.5E+02		8.8E+04		5.2E+04		2.5E+02		3.0E+02		2.0E+05		1.6E+04	
SVOC	2-Nitroaniline	88-74-4		7				1.30E-02	1.50E-02																	
SVOC	3-Nitroaniline	99-09-2	C	7				2.30E-02	2.60E-02																	
SVOC	4-Nitroaniline	100-01-6	C	7				1.80E-02	2.00E-02																	
SVOC	Nitrobenzene	98-95-3	D	7				2.50E-02	2.80E-02		1.7E+02		6.4E+01		2.1E+04		3.4E+02		9.1E+01		5.4E+01		4.7E+04		1.0E+02	
SVOC	2-Nitrophenol	88-75-5		7				2.20E-02	2.50E-02								2.0E+03								6.3E+02	
SVOC	4-Nitrophenol	100-02-7		7				5.50E-02	6.20E-02																	
SVOC	N-Nitrosodiphenylamine	86-30-6	B2	7				2.00E-02	2.20E-02								7.8E+03								1.7E+03	
SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	7				1.50E-02	1.80E-02						2.0E+03		5.4E+00						1.6E+03		1.2E+00	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	7				2.80E-02	3.20E-02																	
SVOC	Pentachlorophenol	87-86-5	B2	7				6.20E-02	7.00E-02						1.3E+05		3.2E+02						1.0E+05		9.0E+01	
SVOC	Phenanthrene	85-01-8	D	7	2	4.20E-02	2.80E-01	2.20E-02	2.50E-02		5.1E+03	5.5E-05	1.9E+02	1.5E-03	2.9E+03	9.7E-05	5.2E+03	5.4E-05	2.8E+03	1.0E-04	1.6E+02	1.8E-03	6.7E+03	4.2E-05	1.6E+03	1.8E-04
SVOC	Phenol	108-95-2	ID	7				1.90E-02	2.10E-02						1.8E+07		1.2E+04						4.0E+07		1.2E+04	
SVOC	Pyrene	129-00-0	D	7	3	2.55E-02	2.90E-01	2.20E-02	2.50E-02		1.0E+06	2.9E-07	7.8E+05	3.7E-07	2.9E+06	1.0E-07	8.4E+04	3.5E-06	1.0E+06	2.9E-07	6.5E+05	4.5E-07	6.7E+06	4.3E-08	2.9E+04	1.0E-05
SVOC	2,4,5-Trichlorophenol	95-95-4		7				1.50E-02	1.80E-02						1.0E+07		7.3E+04						2.3E+07		2.3E+04	
SVOC	2,4,6-Trichlorophenol	88-06-2	B2	7				2.00E-02	2.20E-02						1.3E+06		3.3E+03						1.0E+06		7.1E+02	
P/PCB	PCBs (total)	1336-36-3	B2	7	3	4.10E-02	7.28E-02	2.10E-02	2.30E-02		1.6E+04	4.6E-06	8.1E+02	9.0E-05	6.5E+03	1.1E-05	1.6E+01	4.6E-03	3.0E+03	2.4E-05	2.4E+02	3.0E-04	5.2E+03	1.4E-05	4.0E+00	1.8E-02
INORG	Antimony	7440-36-0		7	1	3.04E-01	3.04E-01	1.19E-01	1.35E-01						5.9E+03	5.2E-05	6.7E+02	4.5E-04					1.3E+04	2.3E-05	1.8E+02	1.7E-03
INORG	Arsenic	7440-38-2	A	7	7	2.44E+00	9.30E+00			1.3E+01					9.1E+02		3.7E+01						7.2E+02		7.6E+00	
INORG	Barium	7440-39-3	D	7	7	7.10E+00	6.02E+01			1.1E+02					1.5E+05		1.3E+05						3.3E+05		3.7E+04	
INORG	Beryllium	7440-41-7	B1	7	4	9.96E-02	2.51E-01	3.51E-02	3.96E-02	1.5E+00					5.9E+02		1.6E+03						1.3E+03		4.1E+02	
INORG	Cadmium	7440-43-9	B1	7	7	7.28E-02	8.47E-01			1.2E+00					2.2E+03		2.1E+03						1.7E+03		5.5E+02	
INORG	Chromium (total)	7440-47-3		7	7	4.12E+00	2.06E+01			4.9E+01					2.4E+02		9.2E+03						2.6E+02		2.5E+03	
INORG	Cobalt	7440-48-4	B1	7	7	2.41E+00	7.46E+00			1.7E+01					5.9E+03		9.0E+03						1.3E+04		2.6E+03	
INORG	Copper	7440-50-8	D	7	7	6.45E+00	2.72E+01			3.2E+01					5.9E+04		7.3E+04						1.3E+05		2.0E+04	
INORG	Lead	7439-92-1	B2	7	7	3.08E+00	3.60E+02			4.9E+01					4.4E+04	7.1E-03	9.0E+02	3.5E-01					1.0E+05	3.1E-03	4.0E+02	7.8E-01
INORG	Manganese	7439-96-5	D	7	7	1.36E+02	6.94E+02			5.1E+02					1.5E+03	1.2E-01	9.0E+04	2.0E-03					3.3E+03	5.6E-02	2.5E+04	7.3E-03
INORG	Mercury	7439-97-6	D	7	3	5.64E-02	4.65E-01	1.65E-02	1.87E-02	1.3E-01	8.9E+01	3.8E-03	6.2E+01	5.4E-03	8.8E+03	3.8E-05	5.8E+02	5.8E-04	4.8E+01	7.0E-03	5.2E+01	6.4E-03	2.0E+04	1.7E-05	1.6E+02	2.1E-03
INORG	Nickel	7440-02-0	A	7	7	4.72E+00	9.57E+01			3.0E+01					1.6E+04	4.1E-03	1.5E+05	4.4E-04					1.3E+04	5.0E-03	4.0E+04	1.6E-03
INORG	Selenium	7782-49-2	D	7				2.22E-01	2.51E-01	4.1E-01					5.9E+04		9.6E+03						1.3E+05		2.6E+03	
INORG	Silver	7440-22-4	D	7				5.16E-02	5.85E-02						2.9E+03		9.0E+03						6.7E+03		2.5E+03	
INORG	Thallium	7440-28-0		7				2.99E-01	3.39E-01								1.3E+02								3.5E+01	
INORG	Vanadium	7440-62-2		7	7	6.79E+00	2.17E+01			3.3E+01							5.5E+03								7.5E+02	
INORG	Zinc	7440-66-6	D	7	7	1.76E+01	7.38E+01			1.9E+02							6.3E+05								1.7E+05	

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-35
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR STORM WATER DETENTION FACILITY (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	10	3	2.10E-03	5.50E-03	1.10E-03	1.10E-03	1.0E+06	5.5E-09	3.1E+04	1.8E-07	7.3E-01	7.5E-03
Shallow	VOC	Benzene	71-43-2	T	A	10	1	4.50E-04	4.50E-04	3.70E-04	3.70E-04	3.5E+01	1.3E-05	1.1E+01	4.1E-05	5.0E-03	9.0E-02
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	10				3.20E-04	3.20E-04	3.7E+01		1.4E+01		1.0E-01	
Shallow	VOC	Bromoform	75-25-2	T	B2	10				3.70E-04	3.70E-04	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	10				3.00E-04	3.00E-04	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	10	1	1.30E-03	1.30E-03	5.90E-04	5.90E-04	2.4E+05	5.4E-09	2.4E+05	5.4E-09	1.3E+01	1.0E-04
Shallow	VOC	Carbon Disulfide	75-15-0	T		10	6	1.80E-04	2.30E-03	2.40E-04	2.40E-04	5.5E+02	4.2E-06	1.2E+03	1.9E-06	8.0E-01	2.9E-03
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	10				3.70E-04	3.70E-04	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	10				3.80E-04	3.80E-04	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		10				2.90E-04	2.90E-04	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	10				3.50E-04	3.50E-04	1.8E+02		1.5E+02		1.0E-01	
Shallow	VOC	Chloromethane	74-87-3	T	D	10				4.90E-04	4.90E-04	4.5E+01		4.9E+02		2.6E-01	
Shallow	VOC	Cumene	98-82-8	T	D	10				3.90E-04	3.90E-04	5.6E+01		5.6E+01		8.0E-01	
Shallow	VOC	Cyclohexane	110-82-7	T	ID	10				3.30E-04	3.30E-04						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	10				8.20E-04	8.20E-04	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	10				3.70E-04	3.70E-04	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	10				3.40E-04	3.40E-04	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	10				3.80E-04	3.80E-04	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	10				3.80E-04	3.80E-04			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	10				3.80E-04	3.80E-04	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		10				4.90E-04	4.90E-04	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	10	1	5.40E-04	5.40E-04	3.00E-04	3.00E-04	2.3E+03	2.3E-07	2.4E+03	2.3E-07	8.8E-01	6.1E-04
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	10				2.80E-04	2.80E-04	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	10				3.10E-04	3.10E-04	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	10				3.50E-04	3.50E-04	2.1E+02		2.0E+02		7.0E-02	
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		10				3.30E-04	3.30E-04	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	10				4.10E-04	4.10E-04	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	10				3.50E-04	3.50E-04	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	10				4.10E-04	4.10E-04	1.7E+02		1.7E+02		7.0E-01	
Shallow	VOC	2-Hexanone	591-78-6	T		10				5.80E-04	5.80E-04	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		10				5.40E-04	5.40E-04						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		10				2.70E-04	2.70E-04	4.7E+04		6.1E+02		2.4E-01	
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	9	6	7.80E-04	3.30E-03	2.60E-04	2.60E-04	2.0E+04	1.7E-07	1.3E+04	2.5E-07	1.8E+00	1.8E-03
Shallow	VOC	Methylcyclohexane	108-87-2	T		10				4.20E-04	4.20E-04						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	10				2.90E-04	2.90E-04	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	Styrene	100-42-5	T		10				3.50E-04	3.50E-04	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	10				3.60E-04	3.60E-04	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	10				4.20E-04	4.20E-04	1.7E+02		1.2E+01		5.0E-03	
Shallow	VOC	Toluene	108-88-3	T	D	10	8	4.70E-04	9.50E-04	3.90E-04	3.90E-04	5.3E+02	1.8E-06	5.3E+02	1.8E-06	1.0E+00	9.5E-04
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	10				4.00E-04	4.00E-04	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	10				3.90E-04	3.90E-04	1.3E+03		1.3E+03		2.0E-01	
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	10				3.60E-04	3.60E-04	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	10				4.20E-04	4.20E-04	9.7E+01		2.2E+01		5.0E-03	
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		10				5.40E-04	5.40E-04	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		10				3.20E-04	3.20E-04	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	10				3.60E-04	3.60E-04	1.3E+01		1.0E+00		2.0E-03	
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	10	6	5.20E-04	1.50E-03	4.40E-04	4.40E-04	1.9E+02	7.9E-06	1.9E+02	7.9E-06	1.0E+01	1.5E-04
Shallow	SVOC	Acenaphthene	83-32-9	T		10	3	8.60E-04	1.35E-03	8.00E-04	2.00E-03	4.2E+00	3.2E-04	4.2E+00	3.2E-04	1.3E+00	1.0E-03
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	10				7.10E-04	1.80E-03	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	10				2.60E-03	6.50E-03	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	10	1	7.40E-04	7.40E-04	6.80E-04	1.70E-03	4.3E-02	1.7E-02	4.3E-02	1.7E-02	4.3E-02	1.7E-02
Shallow	SVOC	Atrazine	1912-24-9	T		10				2.50E-03	6.20E-03			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		10				2.80E-03	7.00E-03						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	10				7.00E-04	1.80E-03			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	10				7.30E-04	1.80E-03			2.0E-03		5.0E-03	
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	10				9.40E-04	2.40E-03			2.0E-03		2.0E-03	

TABLE 4-35
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR STORM WATER DETENTION FACILITY (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	10				8.50E-04	2.10E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	10				8.40E-04	2.10E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	10				2.60E-03	6.50E-03						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	10				8.70E-04	2.20E-03						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	10				9.70E-04	2.40E-03	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	10				2.70E-03	6.80E-03			3.2E-01		6.0E-03	
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	10				8.80E-04	2.20E-03						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	10				8.80E-04	2.20E-03			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		10				2.50E-03	6.20E-03			3.9E+05		5.8E+00	
Shallow	SVOC	Carbazole	86-74-8	T	B2	10	5	1.00E-03	4.70E-03	8.20E-04	2.00E-03			7.4E+00	6.4E-04	8.5E-02	5.5E-02
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		10				9.90E-04	2.50E-03			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		10				6.10E-04	1.50E-03						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		10				8.50E-04	2.10E-03			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		10				1.00E-03	2.50E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		10				7.90E-04	2.00E-03						
Shallow	SVOC	Chrysene	218-01-9	T	B2	10				7.50E-04	1.90E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	10				7.90E-04	2.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	10				1.10E-03	2.80E-03						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	10				9.30E-04	2.30E-03			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		10				8.50E-04	2.10E-03			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	10	4	8.00E-04	2.30E-03	6.50E-04	1.60E-03			1.1E+03	2.1E-06	5.5E+00	4.2E-04
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		10	7	1.30E-03	1.50E-02	8.50E-04	8.50E-04			5.2E+02	2.9E-05	3.7E-01	4.1E-02
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	10				7.60E-04	1.90E-03			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	10	1	7.70E-04	7.70E-04	6.70E-04	1.70E-03			1.1E+01	7.0E-05	8.8E-01	8.8E-04
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		10				1.30E-03	3.20E-03			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		10				3.00E-03	7.50E-03						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	10				7.90E-04	2.00E-03			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	10				5.70E-04	1.40E-03						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		10				1.10E-03	2.80E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	10	1	9.15E-04	9.15E-04	8.10E-04	2.00E-03	2.1E-01	4.4E-03	2.1E-01	4.4E-03	2.1E-01	4.4E-03
Shallow	SVOC	Fluorene	86-73-7	T	D	10	2	1.65E-03	1.70E-03	1.00E-03	2.50E-03	2.0E+00	8.5E-04	2.0E+00	8.5E-04	8.8E-01	1.9E-03
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	10				7.40E-04	1.80E-03	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	10				7.30E-04	1.80E-03	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	10				1.10E-03	2.80E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	10				7.40E-04	1.80E-03	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	10				6.30E-04	1.60E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	10				6.30E-04	1.60E-03			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	10	2	7.20E-04	7.30E-04	6.40E-04	1.60E-03			2.5E+01	2.9E-05	2.6E-01	2.8E-03
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		10	7	2.45E-03	1.75E-02	1.30E-03	1.30E-03			8.1E+02	2.2E-05	3.7E-01	4.7E-02
Shallow	SVOC	Naphthalene	91-20-3	T	C	10	6	7.60E-04	3.60E-03	7.50E-04	1.90E-03	3.1E+01	1.2E-04	3.1E+01	1.2E-04	5.2E-01	6.9E-03
Shallow	SVOC	2-Nitroaniline	88-74-4	T		10				7.00E-04	1.80E-03						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	10				7.10E-04	1.80E-03						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	10				1.30E-03	3.20E-03						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	10				8.10E-04	2.00E-03	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		10				2.10E-03	5.20E-03			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		10				1.90E-03	4.80E-03						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	10				1.40E-03	3.50E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	10				6.70E-04	1.70E-03			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	10				7.80E-04	2.00E-03						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	10				2.40E-03	6.00E-03			2.0E-01		1.0E-03	

TABLE 4-35
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR STORM WATER DETENTION FACILITY (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Phenanthrene	85-01-8	T	D	10	4	9.10E-04	2.25E-03	8.20E-04	2.00E-03	1.0E+00	2.3E-03	1.0E+00	2.3E-03	5.2E-02	4.3E-02
Shallow	SVOC	Phenol	108-95-2	T	ID	10	5	2.70E-03	9.40E-02	2.60E-03	2.60E-03			2.9E+04	3.2E-06	4.4E+00	2.1E-02
Shallow	SVOC	Pyrene	129-00-0	T	D	10				1.10E-03	2.80E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		10				1.20E-03	3.00E-03			1.7E+02		7.3E-01	
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	10				1.70E-03	4.20E-03			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	10	9	1.28E-04	1.40E-03	8.20E-05	8.20E-05	4.5E-02	3.1E-02	3.3E-03	4.2E-01	5.0E-04	**2.8E+00**
Shallow	INORG	Antimony	7440-36-0	D		8	3	8.20E-03	2.23E-02	3.40E-03	3.40E-03			6.8E+01	3.3E-04	6.0E-03	**3.7E+00**
Shallow	INORG	Antimony	7440-36-0	T		9	2	6.70E-03	1.29E-02	3.40E-03	3.40E-03			6.8E+01	1.9E-04	6.0E-03	**2.2E+00**
Shallow	INORG	Arsenic	7440-38-2	D	A	8	7	3.60E-03	1.64E-02	2.10E-03	2.10E-03			4.3E+00	3.8E-03	5.0E-02	3.3E-01
Shallow	INORG	Arsenic	7440-38-2	T	A	9	9	3.40E-03	3.06E-02					4.3E+00	7.1E-03	5.0E-02	6.1E-01
Shallow	INORG	Barium	7440-39-3	D	D	8	8	6.01E-02	3.84E-01					1.4E+04	2.7E-05	2.0E+00	1.9E-01
Shallow	INORG	Barium	7440-39-3	T	D	9	9	1.87E-02	4.13E-01					1.4E+04	3.0E-05	2.0E+00	2.1E-01
Shallow	INORG	Beryllium	7440-41-7	D	B1	8	2	6.10E-04	6.20E-04	6.00E-04	6.00E-04			2.9E+02	2.1E-06	4.0E-03	1.6E-01
Shallow	INORG	Beryllium	7440-41-7	T	B1	9	3	6.90E-04	9.00E-04	6.00E-04	6.00E-04			2.9E+02	3.1E-06	4.0E-03	2.3E-01
Shallow	INORG	Cadmium	7440-43-9	D	B1	8	5	3.80E-04	4.90E-04	2.80E-04	2.80E-04			1.9E+02	2.6E-06	5.0E-03	9.8E-02
Shallow	INORG	Cadmium	7440-43-9	T	B1	9	9	3.80E-04	6.70E-03					1.9E+02	3.5E-05	5.0E-03	**1.3E+00**
Shallow	INORG	Chromium (total)	7440-47-3	D		8				1.50E-03	1.50E-03			4.6E+02		1.0E-01	
Shallow	INORG	Chromium (total)	7440-47-3	T		9	5	4.70E-03	9.00E-02	1.50E-03	1.50E-03			4.6E+02	2.0E-04	1.0E-01	9.0E-01
Shallow	INORG	Cobalt	7440-48-4	D	B1	8	1	1.40E-03	1.40E-03	7.40E-04	7.40E-04			2.4E+03	5.8E-07	4.0E-02	3.5E-02
Shallow	INORG	Cobalt	7440-48-4	T	B1	9	6	9.80E-04	2.80E-02	7.40E-04	7.40E-04			2.4E+03	1.2E-05	4.0E-02	7.0E-01
Shallow	INORG	Copper	7440-50-8	D	D	8	1	8.50E-03	8.50E-03	1.70E-03	1.70E-03			7.4E+03	1.1E-06	1.4E+00	6.1E-03
Shallow	INORG	Copper	7440-50-8	T	D	9	1	1.56E-01	1.56E-01	1.70E-03	1.70E-03			7.4E+03	2.1E-05	1.4E+00	1.1E-01
Shallow	INORG	Lead	7439-92-1	D	B2	8				1.60E-03	1.60E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	9	6	1.70E-03	1.64E-01	1.60E-03	1.60E-03					4.0E-03	**4.1E+01**
Shallow	INORG	Manganese	7439-96-5	D	D	8	4	2.52E-02	1.02E+00	6.80E-04	6.80E-04			9.1E+03	1.1E-04	8.6E-01	**1.2E+00**
Shallow	INORG	Manganese	7439-96-5	T	D	9	6	5.82E-02	1.64E+00	6.80E-04	6.80E-04			9.1E+03	1.8E-04	8.6E-01	**1.9E+00**
Shallow	INORG	Mercury	7439-97-6	D	D	8				8.70E-05	8.70E-05	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Mercury	7439-97-6	T	D	9	2	1.60E-04	9.30E-04	8.70E-05	8.70E-05	5.6E-02	1.7E-02	5.6E-02	1.7E-02	2.0E-03	4.7E-01
Shallow	INORG	Nickel	7440-02-0	D	A	8	7	3.40E-03	1.45E-02	2.90E-03	2.90E-03			7.4E+04	2.0E-07	1.0E-01	1.5E-01
Shallow	INORG	Nickel	7440-02-0	T	A	9	9	3.00E-03	9.84E-02					7.4E+04	1.3E-06	1.0E-01	9.8E-01
Shallow	INORG	Selenium	7782-49-2	D	D	8				4.70E-03	4.70E-03			9.7E+02		5.0E-02	
Shallow	INORG	Selenium	7782-49-2	T	D	9				4.70E-03	4.70E-03			9.7E+02		5.0E-02	
Shallow	INORG	Silver	7440-22-4	D	D	8				9.80E-04	9.80E-04			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	9				9.80E-04	9.80E-04			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		8				3.30E-05	3.30E-05			1.3E+01		2.0E-03	
Shallow	INORG	Thallium	7440-28-0	T		9	1	2.50E-04	2.50E-04	3.30E-05	3.30E-05			1.3E+01	1.9E-05	2.0E-03	1.3E-01
Shallow	INORG	Vanadium	7440-62-2	D		8	7	9.90E-04	1.16E-02	6.70E-04	6.70E-04			9.7E+02	1.2E-05	4.5E-03	**2.6E+00**
Shallow	INORG	Vanadium	7440-62-2	T		9	9	1.40E-03	8.70E-02					9.7E+02	9.0E-05	4.5E-03	**1.9E+01**
Shallow	INORG	Zinc	7440-66-6	D	D	8	1	3.59E-02	3.59E-02	1.40E-02	1.40E-02			1.1E+05	3.3E-07	2.4E+00	1.5E-02
Shallow	INORG	Zinc	7440-66-6	T	D	9	2	2.23E-01	3.95E-01	1.40E-02	1.40E-02			1.1E+05	3.6E-06	2.4E+00	1.6E-01

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-36
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-08 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	2				5.10E-04	1.00E-02	1.0E+06		3.1E+04		7.3E-01	
Shallow	VOC	Benzene	71-43-2	T	A	2				1.60E-04	1.00E-03	3.5E+01		1.1E+01		5.0E-03	
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	2				1.70E-04	1.00E-03	3.7E+01		1.4E+01		1.0E-01	
Shallow	VOC	Bromoform	75-25-2	T	B2	2				1.80E-04	1.00E-03	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	2				2.00E-04	1.00E-03	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	2				4.10E-04	1.00E-02	2.4E+05		2.4E+05		1.3E+01	
Shallow	VOC	Carbon Disulfide	75-15-0	T		2				2.00E-04	1.00E-03	5.5E+02		1.2E+03		8.0E-01	
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	2				1.20E-04	1.00E-03	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	2				1.40E-04	1.00E-03	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		2				2.60E-04	1.00E-03	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	2	2	9.60E-04	2.80E-03			1.8E+02	1.6E-05	1.5E+02	1.9E-05	1.0E-01	2.8E-02
Shallow	VOC	Chloromethane	74-87-3	T	D	2				1.30E-04	1.00E-03	4.5E+01		4.9E+02		2.6E-01	
Shallow	VOC	Cumene	98-82-8	T	D	2				1.20E-04	1.00E-03	5.6E+01		5.6E+01		8.0E-01	
Shallow	VOC	Cyclohexane	110-82-7	T	ID	2				1.30E-04	1.00E-03						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	2				6.20E-04	2.00E-03	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	2				2.60E-04	1.00E-03	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	2				2.20E-04	1.00E-03	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	2				1.10E-04	1.00E-03	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	2				1.50E-04	1.00E-03			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	2				1.70E-04	1.00E-03	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		2				2.60E-04	2.00E-03	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	2				1.60E-04	1.00E-03	2.3E+03		2.4E+03		8.8E-01	
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	2				2.10E-04	1.00E-03	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	2				2.40E-04	1.00E-03	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	2				2.20E-04	5.00E-04	2.1E+02		2.0E+02		7.0E-02	
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		2				1.50E-04	5.00E-04	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	2				1.70E-04	1.00E-03	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	2				2.70E-04	1.00E-03	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	2				1.20E-04	1.00E-03	1.7E+02		1.7E+02		7.0E-01	
Shallow	VOC	2-Hexanone	591-78-6	T		2				4.60E-04	1.00E-02	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		2				4.10E-04	1.00E-02						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		2				1.30E-04	5.00E-03	4.7E+04		6.1E+02		2.4E-01	
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	2				2.30E-04	1.00E-02	2.0E+04		1.3E+04		1.8E+00	
Shallow	VOC	Methylcyclohexane	108-87-2	T		2				1.50E-04	1.00E-03						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	2				3.40E-04	1.00E-03	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	Styrene	100-42-5	T		2				1.50E-04	1.00E-03	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	2				2.50E-04	1.00E-03	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	2				2.30E-04	1.00E-03	1.7E+02		1.2E+01		5.0E-03	
Shallow	VOC	Toluene	108-88-3	T	D	2				1.80E-04	1.00E-03	5.3E+02		5.3E+02		1.0E+00	
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	2				1.70E-04	1.00E-03	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	2				1.50E-04	1.00E-03	1.3E+03		1.3E+03		2.0E-01	
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	2				3.00E-04	1.00E-03	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	2				1.40E-04	1.00E-03	9.7E+01		2.2E+01		5.0E-03	
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		2				2.80E-04	1.00E-03	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		2				3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	2				1.50E-04	1.00E-03	1.3E+01		1.0E+00		2.0E-03	
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	2				3.30E-04	1.00E-03	1.9E+02		1.9E+02		1.0E+01	
Shallow	SVOC	Acenaphthene	83-32-9	T		2				8.00E-04	5.00E-03	4.2E+00		4.2E+00		1.3E+00	
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	2				7.10E-04	5.00E-03	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	2				2.60E-03	1.00E-02	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	2				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		2				2.50E-03	5.00E-03			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		2				2.80E-03	1.00E-02						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	2				7.00E-04	5.00E-03			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	2				7.30E-04	5.00E-03			2.0E-03		5.0E-03	
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	2				9.40E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	2				8.50E-04	5.00E-03			5.0E-03		5.0E-03	

TABLE 4-36
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-08 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	2				8.40E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	2				2.60E-03	1.00E-02						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	2				8.70E-04	5.00E-03						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	2				9.70E-04	5.00E-03	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	2				2.70E-03	5.00E-03			3.2E-01		6.0E-03	
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	2				8.80E-04	5.00E-03						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	2				8.80E-04	5.00E-03			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		2				2.50E-03	1.00E-02			3.9E+05		5.8E+00	
Shallow	SVOC	Carbazole	86-74-8	T	B2	2				8.20E-04	1.00E-02			7.4E+00		8.5E-02	
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		2				9.90E-04	5.00E-03			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		2				6.10E-04	1.00E-02						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		2				8.50E-04	5.00E-03			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		2				1.00E-03	5.00E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		2				7.90E-04	5.00E-03						
Shallow	SVOC	Chrysene	218-01-9	T	B2	2				7.50E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	2				7.90E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	2				1.10E-03	5.00E-03						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	2				9.30E-04	2.00E-02			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		2				8.50E-04	1.00E-02			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	2				6.50E-04	5.00E-03			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		2				8.50E-04	5.00E-03			5.2E+02		3.7E-01	
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	2				7.60E-04	5.00E-03			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	2				6.70E-04	5.00E-03			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		2				1.30E-03	2.00E-02			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		2				3.00E-03	2.00E-02						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	2				7.90E-04	5.00E-03			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	2				5.70E-04	5.00E-03						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		2				1.10E-03	5.00E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	2				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	2				1.00E-03	5.00E-03	2.0E+00		2.0E+00		8.8E-01	
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	2				7.40E-04	5.00E-03	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	2				7.30E-04	5.00E-03	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	2				1.10E-03	5.00E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	2				7.40E-04	5.00E-03	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	2				6.30E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	2				6.30E-04	5.00E-03			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	2				6.40E-04	5.00E-03			2.5E+01		2.6E-01	
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		2				1.30E-03	5.00E-03			8.1E+02		3.7E-01	
Shallow	SVOC	Naphthalene	91-20-3	T	C	2				7.50E-04	5.00E-03	3.1E+01		3.1E+01		5.2E-01	
Shallow	SVOC	2-Nitroaniline	88-74-4	T		2				7.00E-04	2.00E-02						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	2				7.10E-04	2.00E-02						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	2				1.30E-03	2.00E-02						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	2				8.10E-04	5.00E-03	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		2				2.10E-03	5.00E-03			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		2				1.90E-03	2.00E-02						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	2				1.40E-03	5.00E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	2				6.70E-04	5.00E-03			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	2				7.80E-04	5.00E-03						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	2				2.40E-03	5.00E-03			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	2				8.20E-04	5.00E-03	1.0E+00		1.0E+00		5.2E-02	
Shallow	SVOC	Phenol	108-95-2	T	ID	2				2.60E-03	5.00E-03			2.9E+04		4.4E+00	
Shallow	SVOC	Pyrene	129-00-0	T	D	2				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		2				1.20E-03	5.00E-03			1.7E+02		7.3E-01	
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	2				1.70E-03	5.00E-03			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	D	B2	1				4.00E-04	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	2				8.20E-05	4.00E-04	4.5E-02		3.3E-03		5.0E-04	

TABLE 4-36
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-08 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	INORG	Antimony	7440-36-0	D		2				2.20E-03	2.50E-02			6.8E+01		6.0E-03	
Shallow	INORG	Antimony	7440-36-0	T		2				2.20E-03	2.50E-02			6.8E+01		6.0E-03	
Shallow	INORG	Arsenic	7440-38-2	D	A	2				3.90E-03	1.00E-02			4.3E+00		5.0E-02	
Shallow	INORG	Arsenic	7440-38-2	T	A	2				3.90E-03	1.00E-02			4.3E+00		5.0E-02	
Shallow	INORG	Barium	7440-39-3	D	D	2	2	5.46E-02	5.75E-02					1.4E+04	4.1E-06	2.0E+00	2.9E-02
Shallow	INORG	Barium	7440-39-3	T	D	2	2	5.49E-02	5.82E-02					1.4E+04	4.2E-06	2.0E+00	2.9E-02
Shallow	INORG	Beryllium	7440-41-7	D	B1	2				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Beryllium	7440-41-7	T	B1	2				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	D	B1	2	1	3.20E-04	3.20E-04	5.00E-03	5.00E-03			1.9E+02	1.7E-06	5.0E-03	6.4E-02
Shallow	INORG	Cadmium	7440-43-9	T	B1	2				2.80E-04	5.00E-03			1.9E+02		5.0E-03	
Shallow	INORG	Chromium (total)	7440-47-3	D		2				1.40E-03	1.00E-02			4.6E+02		1.0E-01	
Shallow	INORG	Chromium (total)	7440-47-3	T		2				1.40E-03	1.00E-02			4.6E+02		1.0E-01	
Shallow	INORG	Cobalt	7440-48-4	D	B1	2	2	1.40E-03	2.80E-03					2.4E+03	1.2E-06	4.0E-02	7.0E-02
Shallow	INORG	Cobalt	7440-48-4	T	B1	2	1	3.00E-03	3.00E-03	1.30E-03	1.30E-03			2.4E+03	1.3E-06	4.0E-02	7.5E-02
Shallow	INORG	Copper	7440-50-8	D	D	2				4.20E-03	5.00E-03			7.4E+03		1.4E+00	
Shallow	INORG	Copper	7440-50-8	T	D	2				4.20E-03	5.00E-03			7.4E+03		1.4E+00	
Shallow	INORG	Lead	7439-92-1	D	B2	2				2.50E-03	3.00E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	2				2.50E-03	3.00E-03					4.0E-03	
Shallow	INORG	Manganese	7439-96-5	D	D	2	1	3.60E-01	3.60E-01	9.00E-04	9.00E-04			9.1E+03	4.0E-05	8.6E-01	4.2E-01
Shallow	INORG	Manganese	7439-96-5	T	D	2	2	1.06E-01	3.64E-01					9.1E+03	4.0E-05	8.6E-01	4.2E-01
Shallow	INORG	Mercury	7439-97-6	D	D	2				6.90E-05	2.00E-04	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Mercury	7439-97-6	T	D	2				6.90E-05	2.00E-04	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Nickel	7440-02-0	D	A	2	2	6.20E-03	6.70E-03					7.4E+04	9.1E-08	1.0E-01	6.7E-02
Shallow	INORG	Nickel	7440-02-0	T	A	2	2	5.00E-03	7.70E-03					7.4E+04	1.0E-07	1.0E-01	7.7E-02
Shallow	INORG	Selenium	7782-49-2	D	D	2				4.50E-03	5.00E-03			9.7E+02		5.0E-02	
Shallow	INORG	Selenium	7782-49-2	T	D	2				4.50E-03	5.00E-03			9.7E+02		5.0E-02	
Shallow	INORG	Silver	7440-22-4	D	D	2				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	2				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		2	2	4.10E-05	5.40E-03					1.3E+01	4.2E-04	2.0E-03	**2.7E+00**
Shallow	INORG	Thallium	7440-28-0	T		2	1	4.30E-05	4.30E-05	1.00E-02	1.00E-02			1.3E+01	3.3E-06	2.0E-03	2.2E-02
Shallow	INORG	Vanadium	7440-62-2	D		2				8.20E-04	1.00E-02			9.7E+02		4.5E-03	
Shallow	INORG	Vanadium	7440-62-2	T		2				8.20E-04	1.00E-02			9.7E+02		4.5E-03	
Shallow	INORG	Zinc	7440-66-6	D	D	2	1	1.33E-02	1.33E-02	1.20E-02	1.20E-02			1.1E+05	1.2E-07	2.4E+00	5.5E-03
Shallow	INORG	Zinc	7440-66-6	T	D	2	1	2.12E-02	2.12E-02	1.20E-02	1.20E-02			1.1E+05	1.9E-07	2.4E+00	8.8E-03

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-37
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-12 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	8	1	7.05E-04	7.05E-04	5.10E-04	2.80E-03	1.0E+06	7.1E-10	3.1E+04	2.3E-08	7.3E-01	9.7E-04
Shallow	VOC	Benzene	71-43-2	T	A	8				1.60E-04	9.20E-04	3.5E+01		1.1E+01		5.0E-03	
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	8				1.70E-04	8.00E-04	3.7E+01		1.4E+01		1.0E-01	
Shallow	VOC	Bromoform	75-25-2	T	B2	8				1.80E-04	9.20E-04	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	6				2.00E-04	6.00E-04	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	8				4.10E-04	1.50E-03	2.4E+05		2.4E+05		1.3E+01	
Shallow	VOC	Carbon Disulfide	75-15-0	T		8				2.00E-04	6.00E-04	5.5E+02		1.2E+03		8.0E-01	
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	8				1.20E-04	9.20E-04	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	8				1.40E-04	9.50E-04	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		8				2.60E-04	7.20E-04	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	8	1	1.60E-04	1.60E-04	1.40E-04	8.80E-04	1.8E+02	8.9E-07	1.5E+02	1.1E-06	1.0E-01	1.6E-03
Shallow	VOC	Chloromethane	74-87-3	T	D	8				1.30E-04	1.20E-03	4.5E+01		4.9E+02		2.6E-01	
Shallow	VOC	Cumene	98-82-8	T	D	8				1.20E-04	9.80E-04	5.6E+01		5.6E+01		8.0E-01	
Shallow	VOC	Cyclohexane	110-82-7	T	ID	8				1.30E-04	8.20E-04						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	8				6.20E-04	2.00E-03	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	8				2.60E-04	9.20E-04	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	8				2.20E-04	8.50E-04	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	8				1.10E-04	9.50E-04	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	8				1.50E-04	9.50E-04			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	8				1.70E-04	9.50E-04	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		8				2.60E-04	1.20E-03	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	8	8	5.05E-04	2.50E-02			2.3E+03	1.1E-05	2.4E+03	1.0E-05	8.8E-01	2.8E-02
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	8				2.10E-04	7.00E-04	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	8	5	1.21E-03	5.80E-03	2.40E-04	3.10E-04	1.3E+00	4.5E-03	1.1E+01	5.3E-04	7.0E-03	8.3E-01
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	8	2	1.30E-03	1.60E-03	2.20E-04	4.40E-04	2.1E+02	7.6E-06	2.0E+02	8.0E-06	7.0E-02	2.3E-02
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		8				1.50E-04	8.20E-04	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	8				1.70E-04	1.00E-03	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	8				2.70E-04	8.80E-04	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	8				1.20E-04	1.00E-03	1.7E+02		1.7E+02		7.0E-01	
Shallow	VOC	2-Hexanone	591-78-6	T		8				4.60E-04	1.40E-03	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		8				4.10E-04	1.40E-03						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		8				1.30E-04	6.80E-04	4.7E+04		6.1E+02		2.4E-01	
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	6				2.30E-04	5.20E-04	2.0E+04		1.3E+04		1.8E+00	
Shallow	VOC	Methylcyclohexane	108-87-2	T		8				1.50E-04	1.00E-03						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	8				2.90E-04	7.20E-04	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	Styrene	100-42-5	T		8				1.50E-04	8.80E-04	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	8				2.50E-04	9.00E-04	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	8				2.30E-04	1.00E-03	1.7E+02		1.2E+01		5.0E-03	
Shallow	VOC	Toluene	108-88-3	T	D	8	1	4.70E-04	4.70E-04	1.80E-04	9.80E-04	5.3E+02	8.9E-07	5.3E+02	8.9E-07	1.0E+00	4.7E-04
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	8				1.70E-04	1.00E-03	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	8	8	1.38E-04	7.30E-02			1.3E+03	5.6E-05	1.3E+03	5.6E-05	2.0E-01	3.7E-01
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	8				3.00E-04	9.00E-04	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	8	1	1.40E-04	1.40E-04	1.40E-04	1.00E-03	9.7E+01	1.4E-06	2.2E+01	6.4E-06	5.0E-03	2.8E-02
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		8				2.80E-04	1.40E-03	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		8				3.20E-04	8.00E-04	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	8				1.50E-04	9.00E-04	1.3E+01		1.0E+00		2.0E-03	
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	8	1	3.48E-04	3.48E-04	3.30E-04	1.10E-03	1.9E+02	1.8E-06	1.9E+02	1.8E-06	1.0E+01	3.5E-05
Shallow	SVOC	Acenaphthene	83-32-9	T		7				8.00E-04	8.00E-04	4.2E+00		4.2E+00		1.3E+00	
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	7				7.10E-04	7.10E-04	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	7				2.60E-03	2.60E-03	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	7				6.80E-04	6.80E-04	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		7				2.50E-03	2.50E-03			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		7				2.80E-03	2.80E-03						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	7				7.00E-04	7.00E-04			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	7				7.30E-04	7.30E-04			2.0E-03		5.0E-03	

TABLE 4-37
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-12 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	7				9.40E-04	9.40E-04			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	7				8.50E-04	8.50E-04			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	7				8.40E-04	8.40E-04			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	7				2.60E-03	2.60E-03						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	7				8.70E-04	8.70E-04						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	7				9.70E-04	9.70E-04	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	7				2.70E-03	2.70E-03			3.2E-01		6.0E-03	
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	7				8.80E-04	8.80E-04						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	7				8.80E-04	8.80E-04			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		7				2.50E-03	2.50E-03			3.9E+05		5.8E+00	
Shallow	SVOC	Carbazole	86-74-8	T	B2	7				8.20E-04	8.20E-04			7.4E+00		8.5E-02	
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		7				9.90E-04	9.90E-04			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		5				6.10E-04	6.10E-04						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		7				8.50E-04	8.50E-04			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		7				1.00E-03	1.00E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		7				7.90E-04	7.90E-04						
Shallow	SVOC	Chrysene	218-01-9	T	B2	7				7.50E-04	7.50E-04			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	7				7.90E-04	7.90E-04			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	7				1.10E-03	1.10E-03						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	7				9.30E-04	9.30E-04			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		7				8.50E-04	8.50E-04			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	7				6.50E-04	6.50E-04			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		7				8.50E-04	8.50E-04			5.2E+02		3.7E-01	
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	7				7.60E-04	7.60E-04			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	7				6.70E-04	6.70E-04			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		7				1.30E-03	1.30E-03			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		7				3.00E-03	3.00E-03						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	7				7.90E-04	7.90E-04			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	7				5.70E-04	5.70E-04						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		7				1.10E-03	1.10E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	7				8.10E-04	8.10E-04	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	7				1.00E-03	1.00E-03	2.0E+00		2.0E+00		8.8E-01	
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	7				7.40E-04	7.40E-04	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	7				7.30E-04	7.30E-04	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	7				1.10E-03	1.10E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	7				7.40E-04	7.40E-04	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	7				6.30E-04	6.30E-04			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	7				6.30E-04	6.30E-04			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	7				6.40E-04	6.40E-04			2.5E+01		2.6E-01	
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		7				1.30E-03	1.30E-03			8.1E+02		3.7E-01	
Shallow	SVOC	Naphthalene	91-20-3	T	C	7				7.50E-04	7.50E-04	3.1E+01		3.1E+01		5.2E-01	
Shallow	SVOC	2-Nitroaniline	88-74-4	T		7				7.00E-04	7.00E-04						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	7				7.10E-04	7.10E-04						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	7				1.30E-03	1.30E-03						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	7				8.10E-04	8.10E-04	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		7				2.10E-03	2.10E-03			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		7				1.90E-03	1.90E-03						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	7				1.40E-03	1.40E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	7				6.70E-04	6.70E-04			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	7				7.80E-04	7.80E-04						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	7				2.40E-03	2.40E-03			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	7				8.20E-04	8.20E-04	1.0E+00		1.0E+00		5.2E-02	
Shallow	SVOC	Phenol	108-95-2	T	ID	7				2.60E-03	2.60E-03			2.9E+04		4.4E+00	
Shallow	SVOC	Pyrene	129-00-0	T	D	7				1.10E-03	1.10E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		7				1.20E-03	1.20E-03			1.7E+02		7.3E-01	

TABLE 4-37
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-12 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	7				1.70E-03	1.70E-03			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	D	B2	2				8.20E-05	8.20E-05	4.5E-02		3.3E-03		5.0E-04	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	8				8.20E-05	8.20E-05	4.5E-02		3.3E-03		5.0E-04	
Shallow	INORG	Antimony	7440-36-0	D		3				2.20E-03	2.20E-03			6.8E+01		6.0E-03	
Shallow	INORG	Antimony	7440-36-0	T		7	1	2.20E-03	2.20E-03	2.20E-03	3.40E-03			6.8E+01	3.2E-05	6.0E-03	3.7E-01
Shallow	INORG	Arsenic	7440-38-2	D	A	3				3.90E-03	3.90E-03			4.3E+00		5.0E-02	
Shallow	INORG	Arsenic	7440-38-2	T	A	7				2.10E-03	3.90E-03			4.3E+00		5.0E-02	
Shallow	INORG	Barium	7440-39-3	D	D	3	3	3.70E-02	8.63E-02					1.4E+04	6.2E-06	2.0E+00	4.3E-02
Shallow	INORG	Barium	7440-39-3	T	D	7	7	2.46E-02	8.63E-02					1.4E+04	6.2E-06	2.0E+00	4.3E-02
Shallow	INORG	Beryllium	7440-41-7	D	B1	3	1	4.70E-04	4.70E-04	5.40E-04	5.40E-04			2.9E+02	1.6E-06	4.0E-03	1.2E-01
Shallow	INORG	Beryllium	7440-41-7	T	B1	7				5.40E-04	6.00E-04			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	D	B1	3				2.80E-04	2.80E-04			1.9E+02		5.0E-03	
Shallow	INORG	Cadmium	7440-43-9	T	B1	7	1	3.50E-04	3.50E-04	2.80E-04	2.80E-04			1.9E+02	1.8E-06	5.0E-03	7.0E-02
Shallow	INORG	Chromium (total)	7440-47-3	D		3				1.40E-03	1.40E-03			4.6E+02		1.0E-01	
Shallow	INORG	Chromium (total)	7440-47-3	T		7				1.40E-03	1.50E-03			4.6E+02		1.0E-01	
Shallow	INORG	Cobalt	7440-48-4	D	B1	3	2	2.40E-03	2.88E-03	1.30E-03	1.30E-03			2.4E+03	1.2E-06	4.0E-02	7.2E-02
Shallow	INORG	Cobalt	7440-48-4	T	B1	7	6	9.30E-04	2.93E-03	1.30E-03	1.30E-03			2.4E+03	1.2E-06	4.0E-02	7.3E-02
Shallow	INORG	Copper	7440-50-8	D	D	3				4.20E-03	4.20E-03			7.4E+03		1.4E+00	
Shallow	INORG	Copper	7440-50-8	T	D	7				1.70E-03	4.20E-03			7.4E+03		1.4E+00	
Shallow	INORG	Lead	7439-92-1	D	B2	3				2.50E-03	2.50E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	7				1.60E-03	2.50E-03					4.0E-03	
Shallow	INORG	Manganese	7439-96-5	D	D	3	3	1.08E+00	1.46E+00					9.1E+03	1.6E-04	8.6E-01	**1.7E+00**
Shallow	INORG	Manganese	7439-96-5	T	D	7	7	1.01E+00	1.34E+00					9.1E+03	1.5E-04	8.6E-01	**1.6E+00**
Shallow	INORG	Mercury	7439-97-6	D	D	3				6.90E-05	6.90E-05	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Mercury	7439-97-6	T	D	7				6.90E-05	8.70E-05	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Nickel	7440-02-0	D	A	3	3	3.40E-03	6.50E-03					7.4E+04	8.8E-08	1.0E-01	6.5E-02
Shallow	INORG	Nickel	7440-02-0	T	A	7	4	3.20E-03	6.80E-03	2.20E-03	2.90E-03			7.4E+04	9.2E-08	1.0E-01	6.8E-02
Shallow	INORG	Selenium	7782-49-2	D	D	3				4.50E-03	4.50E-03			9.7E+02		5.0E-02	
Shallow	INORG	Selenium	7782-49-2	T	D	7	1	3.43E-03	3.43E-03	4.50E-03	4.70E-03			9.7E+02	3.5E-06	5.0E-02	6.9E-02
Shallow	INORG	Silver	7440-22-4	D	D	3				1.50E-03	1.50E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	7				9.80E-04	1.50E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		3	2	2.90E-05	4.30E-05	5.00E-03	5.00E-03			1.3E+01	3.3E-06	2.0E-03	2.2E-02
Shallow	INORG	Thallium	7440-28-0	T		7	2	1.90E-05	5.05E-05	3.30E-05	5.00E-03			1.3E+01	3.9E-06	2.0E-03	2.5E-02
Shallow	INORG	Vanadium	7440-62-2	D		3				8.20E-04	8.20E-04			9.7E+02		4.5E-03	
Shallow	INORG	Vanadium	7440-62-2	T		7				6.70E-04	8.20E-04			9.7E+02		4.5E-03	
Shallow	INORG	Zinc	7440-66-6	D	D	3				1.20E-02	1.20E-02			1.1E+05		2.4E+00	
Shallow	INORG	Zinc	7440-66-6	T	D	7	1	1.79E-02	1.79E-02	1.20E-02	1.40E-02			1.1E+05	1.6E-07	2.4E+00	7.4E-03

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Phenol were used as surrogates for Phenols (total).
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-38
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-15 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	2				5.10E-04	1.00E-02	1.0E+06		3.1E+04		7.3E-01	
Shallow	VOC	Benzene	71-43-2	T	A	2				1.60E-04	1.00E-03	3.5E+01		1.1E+01		5.0E-03	
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	2				1.70E-04	1.00E-03	3.7E+01		1.4E+01		1.0E-01	
Shallow	VOC	Bromoform	75-25-2	T	B2	2				1.80E-04	1.00E-03	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	2				2.00E-04	1.00E-03	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	2				4.10E-04	1.00E-02	2.4E+05		2.4E+05		1.3E+01	
Shallow	VOC	Carbon Disulfide	75-15-0	T		2				2.00E-04	1.00E-03	5.5E+02		1.2E+03		8.0E-01	
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	2				1.20E-04	1.00E-03	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	2				1.40E-04	1.00E-03	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		2				2.60E-04	1.00E-03	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	2	1	5.40E-04	5.40E-04	1.40E-04	1.40E-04	1.8E+02	3.0E-06	1.5E+02	3.6E-06	1.0E-01	5.4E-03
Shallow	VOC	Chloromethane	74-87-3	T	D	2	1	4.10E-04	4.10E-04	1.30E-04	1.30E-04	4.5E+01	9.1E-06	4.9E+02	8.4E-07	2.6E-01	1.6E-03
Shallow	VOC	Cumene	98-82-8	T	D	2				1.20E-04	1.00E-03	5.6E+01		5.6E+01		8.0E-01	
Shallow	VOC	Cyclohexane	110-82-7	T	ID	2				1.30E-04	1.00E-03						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	2				6.20E-04	2.00E-03	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	2				2.60E-04	1.00E-03	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	2				2.20E-04	1.00E-03	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	2				1.10E-04	1.00E-03	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	2				1.50E-04	1.00E-03			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	2				1.70E-04	1.00E-03	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		2				2.60E-04	2.00E-03	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	2	2	2.00E-03	7.60E-03			2.3E+03	3.3E-06	2.4E+03	3.2E-06	8.8E-01	8.6E-03
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	2				2.10E-04	1.00E-03	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	2				2.40E-04	1.00E-03	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	2				2.20E-04	5.00E-04	2.1E+02		2.0E+02		7.0E-02	
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		2				1.50E-04	5.00E-04	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	2				1.70E-04	1.00E-03	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	2				2.70E-04	1.00E-03	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	2				1.20E-04	1.00E-03	1.7E+02		1.7E+02		7.0E-01	
Shallow	VOC	2-Hexanone	591-78-6	T		2				4.60E-04	1.00E-02	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		2				4.10E-04	1.00E-02						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		2				1.30E-04	5.00E-03	4.7E+04		6.1E+02		2.4E-01	
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	2				2.30E-04	1.00E-02	2.0E+04		1.3E+04		1.8E+00	
Shallow	VOC	Methylcyclohexane	108-87-2	T		2				1.50E-04	1.00E-03						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	2				3.40E-04	1.00E-03	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	Styrene	100-42-5	T		2				1.50E-04	1.00E-03	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	2				2.50E-04	1.00E-03	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	2	1	2.80E-04	2.80E-04	2.30E-04	2.30E-04	1.7E+02	1.6E-06	1.2E+01	2.3E-05	5.0E-03	5.6E-02
Shallow	VOC	Toluene	108-88-3	T	D	2	2	2.90E-04	3.60E-04			5.3E+02	6.8E-07	5.3E+02	6.8E-07	1.0E+00	3.6E-04
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	2				1.70E-04	1.00E-03	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	2	1	6.10E-04	6.10E-04	1.00E-03	1.00E-03	1.3E+03	4.7E-07	1.3E+03	4.7E-07	2.0E-01	3.1E-03
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	2				3.00E-04	1.00E-03	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	2				1.40E-04	1.00E-03	9.7E+01		2.2E+01		5.0E-03	
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		2				2.80E-04	1.00E-03	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		2				3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	2				1.50E-04	1.00E-03	1.3E+01		1.0E+00		2.0E-03	
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	2	1	6.40E-04	6.40E-04	1.00E-03	1.00E-03	1.9E+02	3.4E-06	1.9E+02	3.4E-06	1.0E+01	6.4E-05
Shallow	SVOC	Acenaphthene	83-32-9	T		2				8.00E-04	5.00E-03	4.2E+00		4.2E+00		1.3E+00	
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	2				7.10E-04	5.00E-03	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	2				2.60E-03	1.00E-02	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	2				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		2				2.50E-03	5.00E-03			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		2				2.80E-03	1.00E-02						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	2				7.00E-04	5.00E-03			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	2				7.30E-04	5.00E-03			2.0E-03		5.0E-03	

TABLE 4-38
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-15 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	2				9.40E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	2				8.50E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	2				8.40E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	2				2.60E-03	1.00E-02						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	2				8.70E-04	5.00E-03						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	2				9.70E-04	5.00E-03	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	2				2.70E-03	5.00E-03			3.2E-01		6.0E-03	
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	2				8.80E-04	5.00E-03						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	2				8.80E-04	5.00E-03			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		2				2.50E-03	1.00E-02			3.9E+05		5.8E+00	
Shallow	SVOC	Carbazole	86-74-8	T	B2	2				8.20E-04	1.00E-02			7.4E+00		8.5E-02	
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		2				9.90E-04	5.00E-03			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		2				6.10E-04	1.00E-02						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		2				8.50E-04	5.00E-03			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		2				1.00E-03	5.00E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		2				7.90E-04	5.00E-03						
Shallow	SVOC	Chrysene	218-01-9	T	B2	2				7.50E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	2				7.90E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	2				1.10E-03	5.00E-03						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	2				9.30E-04	2.00E-02			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		2				8.50E-04	1.00E-02			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	2				6.50E-04	5.00E-03			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		2				8.50E-04	5.00E-03			5.2E+02		3.7E-01	
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	2				7.60E-04	5.00E-03			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	2				6.70E-04	5.00E-03			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		2				1.30E-03	2.00E-02			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		2				3.00E-03	2.00E-02						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	2				7.90E-04	5.00E-03			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	2				5.70E-04	5.00E-03						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		2				1.10E-03	5.00E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	2				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	2				1.00E-03	5.00E-03	2.0E+00		2.0E+00		8.8E-01	
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	2				7.40E-04	5.00E-03	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	2				7.30E-04	5.00E-03	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	2				1.10E-03	5.00E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	2				7.40E-04	5.00E-03	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	2				6.30E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	2				6.30E-04	5.00E-03			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	2				6.40E-04	5.00E-03			2.5E+01		2.6E-01	
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		2				1.30E-03	5.00E-03			8.1E+02		3.7E-01	
Shallow	SVOC	Naphthalene	91-20-3	T	C	2				7.50E-04	5.00E-03	3.1E+01		3.1E+01		5.2E-01	
Shallow	SVOC	2-Nitroaniline	88-74-4	T		2				7.00E-04	2.00E-02						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	2				7.10E-04	2.00E-02						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	2				1.30E-03	2.00E-02						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	2				8.10E-04	5.00E-03	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		2				2.10E-03	5.00E-03			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		2				1.90E-03	2.00E-02						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	2				1.40E-03	5.00E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	2				6.70E-04	5.00E-03			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	2				7.80E-04	5.00E-03						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	2				2.40E-03	5.00E-03			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	2				8.20E-04	5.00E-03	1.0E+00		1.0E+00		5.2E-02	
Shallow	SVOC	Phenol	108-95-2	T	ID	2				2.60E-03	5.00E-03			2.9E+04		4.4E+00	
Shallow	SVOC	Pyrene	129-00-0	T	D	2				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		2				1.20E-03	5.00E-03			1.7E+02		7.3E-01	

TABLE 4-38
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI F-15 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	2				1.70E-03	5.00E-03			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	D	B2	1				4.00E-04	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	2				8.20E-05	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	INORG	Antimony	7440-36-0	D		2				2.20E-03	2.50E-02			6.8E+01		6.0E-03	
Shallow	INORG	Antimony	7440-36-0	T		2				2.20E-03	2.50E-02			6.8E+01		6.0E-03	
Shallow	INORG	Arsenic	7440-38-2	D	A	2				3.90E-03	1.00E-02			4.3E+00		5.0E-02	
Shallow	INORG	Arsenic	7440-38-2	T	A	2				3.90E-03	1.00E-02			4.3E+00		5.0E-02	
Shallow	INORG	Barium	7440-39-3	D	D	2	2	1.78E-02	2.14E-02					1.4E+04	1.5E-06	2.0E+00	1.1E-02
Shallow	INORG	Barium	7440-39-3	T	D	2	2	1.81E-02	2.15E-02					1.4E+04	1.5E-06	2.0E+00	1.1E-02
Shallow	INORG	Beryllium	7440-41-7	D	B1	2				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Beryllium	7440-41-7	T	B1	2				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	D	B1	2				2.80E-04	5.00E-03			1.9E+02		5.0E-03	
Shallow	INORG	Cadmium	7440-43-9	T	B1	2	1	4.10E-04	4.10E-04	5.00E-03	5.00E-03			1.9E+02	2.2E-06	5.0E-03	8.2E-02
Shallow	INORG	Chromium (total)	7440-47-3	D		2				1.40E-03	1.00E-02			4.6E+02		1.0E-01	
Shallow	INORG	Chromium (total)	7440-47-3	T		2				1.40E-03	1.00E-02			4.6E+02		1.0E-01	
Shallow	INORG	Cobalt	7440-48-4	D	B1	2				1.30E-03	2.00E-02			2.4E+03		4.0E-02	
Shallow	INORG	Cobalt	7440-48-4	T	B1	2	2	1.60E-03	1.70E-03					2.4E+03	7.1E-07	4.0E-02	4.3E-02
Shallow	INORG	Copper	7440-50-8	D	D	2				4.20E-03	5.00E-03			7.4E+03		1.4E+00	
Shallow	INORG	Copper	7440-50-8	T	D	2				4.20E-03	5.00E-03			7.4E+03		1.4E+00	
Shallow	INORG	Lead	7439-92-1	D	B2	2				2.50E-03	3.00E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	2				2.50E-03	3.00E-03					4.0E-03	
Shallow	INORG	Manganese	7439-96-5	D	D	2	2	3.99E-01	6.33E-01					9.1E+03	7.0E-05	8.6E-01	7.4E-01
Shallow	INORG	Manganese	7439-96-5	T	D	2	2	3.93E-01	6.57E-01					9.1E+03	7.2E-05	8.6E-01	7.6E-01
Shallow	INORG	Mercury	7439-97-6	D	D	2				6.90E-05	2.00E-04	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Mercury	7439-97-6	T	D	2				6.90E-05	2.00E-04	5.6E-02		5.6E-02		2.0E-03	
Shallow	INORG	Nickel	7440-02-0	D	A	2	1	6.60E-03	6.60E-03	2.00E-02	2.00E-02			7.4E+04	8.9E-08	1.0E-01	6.6E-02
Shallow	INORG	Nickel	7440-02-0	T	A	2	2	2.80E-03	7.40E-03					7.4E+04	1.0E-07	1.0E-01	7.4E-02
Shallow	INORG	Selenium	7782-49-2	D	D	2				4.50E-03	5.00E-03			9.7E+02		5.0E-02	
Shallow	INORG	Selenium	7782-49-2	T	D	2				4.50E-03	5.00E-03			9.7E+02		5.0E-02	
Shallow	INORG	Silver	7440-22-4	D	D	2				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	2				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		2	1	6.40E-05	6.40E-05	1.00E-02	1.00E-02			1.3E+01	4.9E-06	2.0E-03	3.2E-02
Shallow	INORG	Thallium	7440-28-0	T		2	1	5.40E-05	5.40E-05	1.00E-02	1.00E-02			1.3E+01	4.2E-06	2.0E-03	2.7E-02
Shallow	INORG	Vanadium	7440-62-2	D		2				8.20E-04	1.00E-02			9.7E+02		4.5E-03	
Shallow	INORG	Vanadium	7440-62-2	T		2				8.20E-04	1.00E-02			9.7E+02		4.5E-03	
Shallow	INORG	Zinc	7440-66-6	D	D	2				1.20E-02	2.00E-02			1.1E+05		2.4E+00	
Shallow	INORG	Zinc	7440-66-6	T	D	2				1.20E-02	2.00E-02			1.1E+05		2.4E+00	

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-39
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-05 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	8				5.10E-04	2.00E-02	1.0E+06		3.1E+04		7.3E-01	
Shallow	VOC	Benzene	71-43-2	T	A	8	2	3.50E-04	4.90E-04	1.60E-04	2.00E-03	3.5E+01	1.4E-05	1.1E+01	4.5E-05	5.0E-03	9.8E-02
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	8	1	4.60E-04	4.60E-04	1.70E-04	2.00E-03	3.7E+01	1.2E-05	1.4E+01	3.3E-05	1.0E-01	4.6E-03
Shallow	VOC	Bromoform	75-25-2	T	B2	8				1.80E-04	2.00E-03	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	8				2.00E-04	2.00E-03	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	8	2	1.78E-03	4.90E-03	4.10E-04	2.00E-02	2.4E+05	2.0E-08	2.4E+05	2.0E-08	1.3E+01	3.8E-04
Shallow	VOC	Carbon Disulfide	75-15-0	T		8				2.00E-04	2.00E-03	5.5E+02		1.2E+03		8.0E-01	
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	8				1.20E-04	2.00E-03	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	8				1.40E-04	2.00E-03	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		8	2	3.60E-02	5.00E-02	2.60E-04	1.43E-03	5.7E+03	8.8E-06	4.4E+02	1.1E-04	4.3E-01	1.2E-01
Shallow	VOC	Chloroform	67-66-3	T	B2	8	4	5.50E-04	2.10E-03	1.40E-04	7.70E-04	1.8E+02	1.2E-05	1.5E+02	1.4E-05	1.0E-01	2.1E-02
Shallow	VOC	Chloromethane	74-87-3	T	D	8	2	3.00E-04	4.75E-04	1.30E-04	2.00E-03	4.5E+01	1.1E-05	4.9E+02	9.7E-07	2.6E-01	1.8E-03
Shallow	VOC	Cumene	98-82-8	T	D	8				1.20E-04	2.00E-03	5.6E+01		5.6E+01		8.0E-01	
Shallow	VOC	Cyclohexane	110-82-7	T	ID	8				1.30E-04	2.00E-03						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	8				6.20E-04	4.00E-03	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	8				2.60E-04	2.00E-03	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	8				2.20E-04	2.00E-03	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	8				1.10E-04	2.00E-03	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	8				1.50E-04	2.00E-03			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	8				1.70E-04	2.00E-03	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		8				2.60E-04	4.00E-03	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	8	2	2.00E-02	3.00E-02	1.60E-04	1.00E-03	2.3E+03	1.3E-05	2.4E+03	1.3E-05	8.8E-01	3.4E-02
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	8				2.10E-04	2.00E-03	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	8	1	7.80E-04	7.80E-04	2.40E-04	1.32E-03	1.3E+00	6.0E-04	1.1E+01	7.1E-05	7.0E-03	1.1E-01
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	8	3	3.20E-04	1.10E-03	2.20E-04	1.21E-03	2.1E+02	5.2E-06	2.0E+02	5.5E-06	7.0E-02	1.6E-02
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		8				1.50E-04	1.00E-03	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	8				1.70E-04	2.00E-03	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	8				2.70E-04	2.00E-03	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	8				1.20E-04	2.00E-03	1.7E+02		1.7E+02		7.0E-01	
Shallow	VOC	2-Hexanone	591-78-6	T		8				4.60E-04	2.00E-02	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		8				4.10E-04	2.00E-02						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		8				1.30E-04	1.00E-02	4.7E+04		6.1E+02		2.4E-01	
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	8	3	5.00E-04	1.60E-03	2.30E-04	2.00E-02	2.0E+04	8.0E-08	1.3E+04	1.2E-07	1.8E+00	8.9E-04
Shallow	VOC	Methylcyclohexane	108-87-2	T		8				1.50E-04	2.00E-03						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	8	1	7.70E-04	7.70E-04	3.40E-04	1.87E-03	1.4E+03	5.5E-07	2.2E+02	3.5E-06	5.0E-03	1.5E-01
Shallow	VOC	Styrene	100-42-5	T		8				1.50E-04	2.00E-03	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	8				2.50E-04	2.00E-03	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	8				2.30E-04	2.00E-03	1.7E+02		1.2E+01		5.0E-03	
Shallow	VOC	Toluene	108-88-3	T	D	8	3	2.60E-04	6.05E-04	1.80E-04	1.00E-03	5.3E+02	1.1E-06	5.3E+02	1.1E-06	1.0E+00	6.1E-04
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	8				1.70E-04	2.00E-03	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	8	1	5.65E-04	5.65E-04	1.50E-04	2.00E-03	1.3E+03	4.3E-07	1.3E+03	4.3E-07	2.0E-01	2.8E-03
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	8				3.00E-04	2.00E-03	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	8				1.40E-04	2.00E-03	9.7E+01		2.2E+01		5.0E-03	
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		8				2.80E-04	2.00E-03	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		8				3.20E-04	2.00E-03	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	8	2	2.20E-04	2.70E-04	1.50E-04	2.00E-03	1.3E+01	2.1E-05	1.0E+00	2.7E-04	2.0E-03	1.4E-01
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	8	1	4.30E-04	4.30E-04	3.30E-04	2.00E-03	1.9E+02	2.3E-06	1.9E+02	2.3E-06	1.0E+01	4.3E-05
Shallow	SVOC	Acenaphthene	83-32-9	T		8				8.00E-04	5.00E-03	4.2E+00		4.2E+00		1.3E+00	
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	8				7.10E-04	5.00E-03	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	8				2.60E-03	1.00E-02	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	8	2	1.15E-03	1.20E-03	6.80E-04	5.00E-03	4.3E-02	2.8E-02	4.3E-02	2.8E-02	4.3E-02	2.8E-02
Shallow	SVOC	Atrazine	1912-24-9	T		8				2.50E-03	6.20E-03			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		8				2.80E-03	1.00E-02						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	8				7.00E-04	5.00E-03			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	8				7.30E-04	5.00E-03			2.0E-03		5.0E-03	

TABLE 4-39
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-05 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	8				9.40E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	8				8.50E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	8				8.40E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	8				2.60E-03	1.00E-02						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	8				8.70E-04	5.00E-03						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	8				9.70E-04	5.00E-03	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	8				2.70E-03	6.80E-03			3.2E-01		6.0E-03	
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	8				8.80E-04	5.00E-03						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	8				8.80E-04	5.00E-03			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		8				2.50E-03	1.00E-02			3.9E+05		5.8E+00	
Shallow	SVOC	Carbazole	86-74-8	T	B2	8	2	1.30E-03	1.55E-03	8.20E-04	1.00E-02			7.4E+00	2.1E-04	8.5E-02	1.8E-02
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		8				9.90E-04	5.00E-03			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		8				6.10E-04	1.00E-02						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		8				8.50E-04	5.00E-03			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		8				1.00E-03	5.00E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		8				7.90E-04	5.00E-03						
Shallow	SVOC	Chrysene	218-01-9	T	B2	8				7.50E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	8				7.90E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	8				1.10E-03	5.00E-03						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	8				9.30E-04	2.00E-02			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		8				8.50E-04	1.00E-02			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	8				6.50E-04	5.00E-03			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		8				8.50E-04	5.00E-03			5.2E+02		3.7E-01	
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	8				7.60E-04	5.00E-03			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	8				6.70E-04	5.00E-03			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		8				1.30E-03	2.00E-02			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		8				3.00E-03	2.00E-02						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	8				7.90E-04	5.00E-03			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	8				5.70E-04	5.00E-03						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		8				1.10E-03	5.00E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	8				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	8	2	2.80E-03	6.80E-03	1.00E-03	5.00E-03	2.0E+00	3.4E-03	2.0E+00	3.4E-03	8.8E-01	7.7E-03
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	8				7.40E-04	5.00E-03	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	8				7.30E-04	5.00E-03	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	8				1.10E-03	5.00E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	8				7.40E-04	5.00E-03	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	8				6.30E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	8				6.30E-04	5.00E-03			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	8				6.40E-04	5.00E-03			2.5E+01		2.6E-01	
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		8				1.30E-03	5.00E-03			8.1E+02		3.7E-01	
Shallow	SVOC	Naphthalene	91-20-3	T	C	8	1	2.50E-03	2.50E-03	7.50E-04	5.00E-03	3.1E+01	8.1E-05	3.1E+01	8.1E-05	5.2E-01	4.8E-03
Shallow	SVOC	2-Nitroaniline	88-74-4	T		8				7.00E-04	2.00E-02						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	8				7.10E-04	2.00E-02						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	8				1.30E-03	2.00E-02						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	8				8.10E-04	5.00E-03	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		8				2.10E-03	5.20E-03			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		8				1.90E-03	2.00E-02						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	8				1.40E-03	5.00E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	8				6.70E-04	5.00E-03			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	8				7.80E-04	5.00E-03						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	8				2.40E-03	6.00E-03			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	8	1	2.30E-03	2.30E-03	8.20E-04	5.00E-03	1.0E+00	2.3E-03	1.0E+00	2.3E-03	5.2E-02	4.4E-02
Shallow	SVOC	Phenol	108-95-2	T	ID	8				2.60E-03	6.50E-03			2.9E+04		4.4E+00	
Shallow	SVOC	Pyrene	129-00-0	T	D	8				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		8				1.20E-03	5.00E-03			1.7E+02		7.3E-01	

TABLE 4-39
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI W-05 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	8				1.70E-03	5.00E-03			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	D	B2	4				8.20E-05	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	8				8.20E-05	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	INORG	Antimony	7440-36-0	D		8	2	8.30E-03	9.80E-03	2.20E-03	2.50E-02			6.8E+01	1.4E-04	6.0E-03	**1.6E+00**
Shallow	INORG	Antimony	7440-36-0	T		8	2	9.25E-03	1.07E-02	2.20E-03	2.50E-02			6.8E+01	1.6E-04	6.0E-03	**1.8E+00**
Shallow	INORG	Arsenic	7440-38-2	D	A	8	4	5.10E-03	4.73E-02	3.90E-03	1.00E-02			4.3E+00	1.1E-02	5.0E-02	9.5E-01
Shallow	INORG	Arsenic	7440-38-2	T	A	8	4	5.70E-03	5.85E-02	3.90E-03	1.00E-02			4.3E+00	1.4E-02	5.0E-02	**1.2E+00**
Shallow	INORG	Barium	7440-39-3	D	D	8	8	3.06E-02	3.00E-01					1.4E+04	2.1E-05	2.0E+00	1.5E-01
Shallow	INORG	Barium	7440-39-3	T	D	8	8	3.25E-02	2.85E-01					1.4E+04	2.0E-05	2.0E+00	1.4E-01
Shallow	INORG	Beryllium	7440-41-7	D	B1	8				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Beryllium	7440-41-7	T	B1	8	1	5.60E-04	5.60E-04	5.40E-04	1.00E-03			2.9E+02	1.9E-06	4.0E-03	1.4E-01
Shallow	INORG	Cadmium	7440-43-9	D	B1	8	3	2.20E-04	3.90E-04	2.80E-04	5.00E-03			1.9E+02	2.1E-06	5.0E-03	7.8E-02
Shallow	INORG	Cadmium	7440-43-9	T	B1	8	3	2.90E-04	4.70E-04	2.80E-04	5.00E-03			1.9E+02	2.5E-06	5.0E-03	9.4E-02
Shallow	INORG	Chromium (total)	7440-47-3	D		8	2	9.60E-03	1.72E-02	1.40E-03	1.00E-02			4.6E+02	3.7E-05	1.0E-01	1.7E-01
Shallow	INORG	Chromium (total)	7440-47-3	T		8	2	1.04E-02	1.72E-02	1.40E-03	1.00E-02			4.6E+02	3.7E-05	1.0E-01	1.7E-01
Shallow	INORG	Cobalt	7440-48-4	D	B1	8	4	3.00E-03	5.80E-03	1.30E-03	2.00E-02			2.4E+03	2.4E-06	4.0E-02	1.5E-01
Shallow	INORG	Cobalt	7440-48-4	T	B1	8	4	1.70E-03	5.50E-03	1.30E-03	2.00E-02			2.4E+03	2.3E-06	4.0E-02	1.4E-01
Shallow	INORG	Copper	7440-50-8	D	D	8	2	1.05E-02	4.26E-02	4.20E-03	5.00E-03			7.4E+03	5.8E-06	1.4E+00	3.0E-02
Shallow	INORG	Copper	7440-50-8	T	D	8	2	1.37E-02	4.74E-02	4.20E-03	5.00E-03			7.4E+03	6.4E-06	1.4E+00	3.4E-02
Shallow	INORG	Lead	7439-92-1	D	B2	8				2.50E-03	3.00E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	8				2.50E-03	3.00E-03					4.0E-03	
Shallow	INORG	Manganese	7439-96-5	D	D	8	8	1.38E-03	8.15E-01					9.1E+03	9.0E-05	8.6E-01	9.5E-01
Shallow	INORG	Manganese	7439-96-5	T	D	8	8	2.48E-03	7.66E-01					9.1E+03	8.4E-05	8.6E-01	8.9E-01
Shallow	INORG	Mercury	7439-97-6	D	D	8	2	8.20E-05	2.20E-04	6.90E-05	2.00E-04	5.6E-02	3.9E-03	5.6E-02	3.9E-03	2.0E-03	1.1E-01
Shallow	INORG	Mercury	7439-97-6	T	D	8	1	3.00E-04	3.00E-04	6.90E-05	2.00E-04	5.6E-02	5.4E-03	5.6E-02	5.4E-03	2.0E-03	1.5E-01
Shallow	INORG	Nickel	7440-02-0	D	A	8	6	2.70E-03	1.63E-02	2.20E-03	2.00E-02			7.4E+04	2.2E-07	1.0E-01	1.6E-01
Shallow	INORG	Nickel	7440-02-0	T	A	8	6	2.90E-03	1.62E-02	2.20E-03	2.00E-02			7.4E+04	2.2E-07	1.0E-01	1.6E-01
Shallow	INORG	Selenium	7782-49-2	D	D	8	2	2.78E-02	4.78E-02	4.50E-03	5.00E-03			9.7E+02	4.9E-05	5.0E-02	9.6E-01
Shallow	INORG	Selenium	7782-49-2	T	D	8	2	2.88E-02	4.89E-02	4.50E-03	5.00E-03			9.7E+02	5.0E-05	5.0E-02	9.8E-01
Shallow	INORG	Silver	7440-22-4	D	D	8				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	8				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		8	5	3.25E-05	9.00E-03	1.80E-05	5.00E-03			1.3E+01	6.9E-04	2.0E-03	**4.5E+00**
Shallow	INORG	Thallium	7440-28-0	T		8	3	3.60E-05	7.10E-03	1.80E-05	1.00E-02			1.3E+01	5.5E-04	2.0E-03	**3.6E+00**
Shallow	INORG	Vanadium	7440-62-2	D		8	3	1.00E-03	7.32E-02	8.20E-04	1.00E-02			9.7E+02	7.5E-05	4.5E-03	**1.6E+01**
Shallow	INORG	Vanadium	7440-62-2	T		8	4	8.30E-04	7.66E-02	8.20E-04	1.00E-02			9.7E+02	7.9E-05	4.5E-03	**1.7E+01**
Shallow	INORG	Zinc	7440-66-6	D	D	8	1	1.28E-02	1.28E-02	1.20E-02	2.00E-02			1.1E+05	1.2E-07	2.4E+00	5.3E-03
Shallow	INORG	Zinc	7440-66-6	T	D	8	2	1.33E-02	1.85E-02	1.20E-02	2.00E-02			1.1E+05	1.7E-07	2.4E+00	7.7E-03

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-40
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-07 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	8	4	3.50E-03	4.20E+01	5.10E-04	5.10E-03	1.0E+06	4.2E-05	3.1E+04	1.4E-03	7.3E-01	**5.8E+01**
Shallow	VOC	Benzene	71-43-2	T	A	8	2	2.40E-04	4.10E-04	1.60E-04	1.30E-01	3.5E+01	1.2E-05	1.1E+01	3.7E-05	5.0E-03	8.2E-02
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	8				1.70E-04	1.40E-01	3.7E+01		1.4E+01		1.0E-01	
Shallow	VOC	Bromoform	75-25-2	T	B2	8				1.80E-04	1.50E-01	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	8				2.00E-04	1.70E-01	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	8	1	4.70E-03	4.70E-03	4.10E-04	3.40E-01	2.4E+05	2.0E-08	2.4E+05	2.0E-08	1.3E+01	3.6E-04
Shallow	VOC	Carbon Disulfide	75-15-0	T		8				2.00E-04	1.70E-01	5.5E+02		1.2E+03		8.0E-01	
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	8				1.20E-04	1.00E-01	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	8				1.40E-04	1.20E-01	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		8				2.60E-04	2.20E-01	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	8				1.40E-04	1.20E-01	1.8E+02		1.5E+02		1.0E-01	
Shallow	VOC	Chloromethane	74-87-3	T	D	8	1	3.70E-04	3.70E-04	1.30E-04	1.10E-01	4.5E+01	8.2E-06	4.9E+02	7.6E-07	2.6E-01	1.4E-03
Shallow	VOC	Cumene	98-82-8	T	D	8				1.20E-04	1.00E-01	5.6E+01		5.6E+01		8.0E-01	
Shallow	VOC	Cyclohexane	110-82-7	T	ID	8	1	2.50E-04	2.50E-04	1.30E-04	1.10E-01						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	8				6.20E-04	5.20E-01	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	8				2.60E-04	2.20E-01	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	8				2.20E-04	1.80E-01	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	8				1.10E-04	9.20E-02	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	8				1.50E-04	1.20E-01			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	8				1.70E-04	1.40E-01	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		8				2.60E-04	2.20E-01	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	8				1.60E-04	1.30E-01	2.3E+03		2.4E+03		8.8E-01	
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	8				2.10E-04	1.70E-01	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	8				2.40E-04	2.00E-01	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	8				2.20E-04	1.80E-01	2.1E+02		2.0E+02		7.0E-02	
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		8				1.50E-04	1.20E-01	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	8				1.70E-04	1.40E-01	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	8				2.70E-04	2.20E-01	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	8	1	2.30E-04	2.30E-04	1.20E-04	1.00E-01	1.7E+02	1.4E-06	1.7E+02	1.4E-06	7.0E-01	3.3E-04
Shallow	VOC	2-Hexanone	591-78-6	T		8				4.60E-04	3.80E-01	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		8				4.10E-04	3.40E-01						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		8				1.30E-04	1.10E-01	4.7E+04		6.1E+02		2.4E-01	
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	8				2.30E-04	1.90E-01	2.0E+04		1.3E+04		1.8E+00	
Shallow	VOC	Methylcyclohexane	108-87-2	T		8	1	4.60E-04	4.60E-04	1.50E-04	1.20E-01						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	8				3.40E-04	2.80E-01	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	Styrene	100-42-5	T		8				1.50E-04	1.20E-01	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	8				2.50E-04	2.10E-01	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	8	1	3.60E-03	3.60E-03	2.30E-04	1.90E-01	1.7E+02	2.1E-05	1.2E+01	3.0E-04	5.0E-03	7.2E-01
Shallow	VOC	Toluene	108-88-3	T	D	8	2	3.50E-04	1.80E-03	1.80E-04	1.50E-01	5.3E+02	3.4E-06	5.3E+02	3.4E-06	1.0E+00	1.8E-03
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	8				1.70E-04	1.40E-01	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	8				1.50E-04	1.20E-01	1.3E+03		1.3E+03		2.0E-01	
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	8				3.00E-04	2.50E-01	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	8				1.40E-04	1.20E-01	9.7E+01		2.2E+01		5.0E-03	
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		8				2.80E-04	2.30E-01	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		8				3.20E-04	2.70E-01	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	8				1.50E-04	1.20E-01	1.3E+01		1.0E+00		2.0E-03	
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	8	1	1.20E-03	1.20E-03	3.30E-04	2.70E-01	1.9E+02	6.3E-06	1.9E+02	6.3E-06	1.0E+01	1.2E-04
Shallow	SVOC	Acenaphthene	83-32-9	T		8				8.00E-04	5.00E-03	4.2E+00		4.2E+00		1.3E+00	
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	8				7.10E-04	5.00E-03	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	8				2.60E-03	1.00E-02	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	8				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		8				2.50E-03	5.00E-03			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		8				2.80E-03	1.00E-02						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	8				7.00E-04	5.00E-03			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	8				7.30E-04	5.00E-03			2.0E-03		5.0E-03	

TABLE 4-40
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-07 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	8				9.40E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	8				8.50E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	8				8.40E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	8				2.60E-03	1.00E-02						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	8				8.70E-04	5.00E-03						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	8				9.70E-04	5.00E-03	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	8				2.70E-03	5.00E-03			3.2E-01		6.0E-03	
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	8				8.80E-04	5.00E-03						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	8				8.80E-04	5.00E-03			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		8	1	1.20E-01	1.20E-01	2.50E-03	1.00E-02			3.9E+05	3.1E-07	5.8E+00	2.1E-02
Shallow	SVOC	Carbazole	86-74-8	T	B2	8				8.20E-04	1.00E-02			7.4E+00		8.5E-02	
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		8				9.90E-04	5.00E-03			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		8				6.10E-04	1.00E-02						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		8				8.50E-04	5.00E-03			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		8				1.00E-03	5.00E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		8				7.90E-04	5.00E-03						
Shallow	SVOC	Chrysene	218-01-9	T	B2	8				7.50E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	8				7.90E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	8				1.10E-03	5.00E-03						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	8				9.30E-04	2.00E-02			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		8				8.50E-04	1.00E-02			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	8				6.50E-04	5.00E-03			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		8				8.50E-04	5.00E-03			5.2E+02		3.7E-01	
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	8				7.60E-04	5.00E-03			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	8				6.70E-04	5.00E-03			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		8				1.30E-03	2.00E-02			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		8				3.00E-03	2.00E-02						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	8				7.90E-04	5.00E-03			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	8				5.70E-04	5.00E-03						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		8				1.10E-03	5.00E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	8				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	8				1.00E-03	5.00E-03	2.0E+00		2.0E+00		8.8E-01	
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	8				7.40E-04	5.00E-03	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	8				7.30E-04	5.00E-03	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	8				1.10E-03	5.00E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	8				7.40E-04	5.00E-03	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	8				6.30E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	8				6.30E-04	5.00E-03			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	8				6.40E-04	5.00E-03			2.5E+01		2.6E-01	
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		8				1.30E-03	5.00E-03			8.1E+02		3.7E-01	
Shallow	SVOC	Naphthalene	91-20-3	T	C	8				7.50E-04	5.00E-03	3.1E+01		3.1E+01		5.2E-01	
Shallow	SVOC	2-Nitroaniline	88-74-4	T		8				7.00E-04	2.00E-02						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	8				7.10E-04	2.00E-02						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	8				1.30E-03	2.00E-02						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	8				8.10E-04	5.00E-03	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		8				2.10E-03	5.00E-03			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		8				1.90E-03	2.00E-02						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	8				1.40E-03	5.00E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	8				6.70E-04	5.00E-03			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	8				7.80E-04	5.00E-03						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	8				2.40E-03	5.00E-03			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	8				8.20E-04	5.00E-03	1.0E+00		1.0E+00		5.2E-02	
Shallow	SVOC	Phenol	108-95-2	T	ID	8				2.60E-03	5.00E-03			2.9E+04		4.4E+00	
Shallow	SVOC	Pyrene	129-00-0	T	D	8				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		8				1.20E-03	5.00E-03			1.7E+02		7.3E-01	

TABLE 4-40
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR AOI M-07 (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	8				1.70E-03	5.00E-03			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	D	B2	4				8.20E-05	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	8				8.20E-05	8.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	INORG	Antimony	7440-36-0	D		8				2.20E-03	2.50E-02			6.8E+01		6.0E-03	
Shallow	INORG	Antimony	7440-36-0	T		8	1	2.70E-03	2.70E-03	2.20E-03	2.50E-02			6.8E+01	4.0E-05	6.0E-03	4.5E-01
Shallow	INORG	Arsenic	7440-38-2	D	A	8	2	4.20E-03	6.10E-03	3.90E-03	1.00E-02			4.3E+00	1.4E-03	5.0E-02	1.2E-01
Shallow	INORG	Arsenic	7440-38-2	T	A	8	4	4.00E-03	1.46E-02	3.90E-03	1.00E-02			4.3E+00	3.4E-03	5.0E-02	2.9E-01
Shallow	INORG	Barium	7440-39-3	D	D	8	8	1.47E-01	3.15E-01					1.4E+04	2.3E-05	2.0E+00	1.6E-01
Shallow	INORG	Barium	7440-39-3	T	D	8	8	1.47E-01	3.86E-01					1.4E+04	2.8E-05	2.0E+00	1.9E-01
Shallow	INORG	Beryllium	7440-41-7	D	B1	8				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Beryllium	7440-41-7	T	B1	8	1	7.20E-04	7.20E-04	5.40E-04	1.00E-03			2.9E+02	2.5E-06	4.0E-03	1.8E-01
Shallow	INORG	Cadmium	7440-43-9	D	B1	8	5	4.00E-04	6.80E-04	2.80E-04	2.80E-04			1.9E+02	3.6E-06	5.0E-03	1.4E-01
Shallow	INORG	Cadmium	7440-43-9	T	B1	8	7	3.50E-04	1.40E-03	2.80E-04	2.80E-04			1.9E+02	7.4E-06	5.0E-03	2.8E-01
Shallow	INORG	Chromium (total)	7440-47-3	D		8	1	1.40E-03	1.40E-03	1.40E-03	1.00E-02			4.6E+02	3.0E-06	1.0E-01	1.4E-02
Shallow	INORG	Chromium (total)	7440-47-3	T		8	3	8.50E-03	1.39E-01	1.40E-03	1.00E-02			4.6E+02	3.0E-04	1.0E-01	**1.4E+00**
Shallow	INORG	Cobalt	7440-48-4	D	B1	8	4	3.70E-03	1.36E-02	1.30E-03	2.00E-02			2.4E+03	5.7E-06	4.0E-02	3.4E-01
Shallow	INORG	Cobalt	7440-48-4	T	B1	8	5	1.40E-03	2.28E-02	1.30E-03	2.00E-02			2.4E+03	9.5E-06	4.0E-02	5.7E-01
Shallow	INORG	Copper	7440-50-8	D	D	8	1	5.60E-03	5.60E-03	4.20E-03	5.00E-03			7.4E+03	7.6E-07	1.4E+00	4.0E-03
Shallow	INORG	Copper	7440-50-8	T	D	8	3	1.20E-02	5.11E-02	4.20E-03	5.00E-03			7.4E+03	6.9E-06	1.4E+00	3.7E-02
Shallow	INORG	Lead	7439-92-1	D	B2	8				2.50E-03	3.00E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	8	2	1.22E-02	2.38E-02	2.50E-03	3.00E-03					4.0E-03	**6.0E+00**
Shallow	INORG	Manganese	7439-96-5	D	D	8	8	8.62E-02	1.72E+00					9.1E+03	1.9E-04	8.6E-01	**2.0E+00**
Shallow	INORG	Manganese	7439-96-5	T	D	8	8	8.47E-02	1.53E+00					9.1E+03	1.7E-04	8.6E-01	**1.8E+00**
Shallow	INORG	Mercury	7439-97-6	D	D	8	1	9.40E-05	9.40E-05	6.90E-05	2.00E-04	5.6E-02	1.7E-03	5.6E-02	1.7E-03	2.0E-03	4.7E-02
Shallow	INORG	Mercury	7439-97-6	T	D	8	2	6.90E-05	3.40E-04	6.90E-05	2.00E-04	5.6E-02	6.1E-03	5.6E-02	6.1E-03	2.0E-03	1.7E-01
Shallow	INORG	Nickel	7440-02-0	D	A	8	7	4.00E-03	7.04E-02	2.20E-03	2.20E-03			7.4E+04	9.5E-07	1.0E-01	7.0E-01
Shallow	INORG	Nickel	7440-02-0	T	A	8	7	3.40E-03	9.41E-02	2.20E-03	2.20E-03			7.4E+04	1.3E-06	1.0E-01	9.4E-01
Shallow	INORG	Selenium	7782-49-2	D	D	8				4.50E-03	5.00E-03			9.7E+02		5.0E-02	
Shallow	INORG	Selenium	7782-49-2	T	D	8				4.50E-03	5.00E-03			9.7E+02		5.0E-02	
Shallow	INORG	Silver	7440-22-4	D	D	8				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	8				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		8	8	2.10E-05	1.43E-02					1.3E+01	1.1E-03	2.0E-03	**7.2E+00**
Shallow	INORG	Thallium	7440-28-0	T		8	6	6.40E-05	1.56E-02	1.80E-05	5.00E-03			1.3E+01	1.2E-03	2.0E-03	**7.8E+00**
Shallow	INORG	Vanadium	7440-62-2	D		8				8.20E-04	1.00E-02			9.7E+02		4.5E-03	
Shallow	INORG	Vanadium	7440-62-2	T		8	3	1.17E-02	5.90E-02	8.20E-04	1.00E-02			9.7E+02	6.1E-05	4.5E-03	**1.3E+01**
Shallow	INORG	Zinc	7440-66-6	D	D	8	5	1.57E-02	1.46E-01	1.20E-02	2.00E-02			1.1E+05	1.3E-06	2.4E+00	6.1E-02
Shallow	INORG	Zinc	7440-66-6	T	D	8	4	3.46E-02	1.46E-01	1.20E-02	2.00E-02			1.1E+05	1.3E-06	2.4E+00	6.1E-02

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-41
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR PONTIAC SCHOOL BOARD (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	4				5.10E-04	1.00E-03	1.0E+06		3.1E+04		7.3E-01	
Shallow	VOC	Benzene	71-43-2	T	A	4	2	1.20E-03	1.40E-03	1.60E-04	1.60E-04	3.5E+01	4.0E-05	1.1E+01	1.3E-04	5.0E-03	2.8E-01
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	4				1.70E-04	3.40E-04	3.7E+01		1.4E+01		1.0E-01	
Shallow	VOC	Bromoform	75-25-2	T	B2	4				1.80E-04	3.60E-04	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	4				2.00E-04	4.00E-04	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	4	1	4.00E-03	4.00E-03	4.10E-04	8.20E-04	2.4E+05	1.7E-08	2.4E+05	1.7E-08	1.3E+01	3.1E-04
Shallow	VOC	Carbon Disulfide	75-15-0	T		4	1	8.30E-04	8.30E-04	2.00E-04	4.00E-04	5.5E+02	1.5E-06	1.2E+03	6.9E-07	8.0E-01	1.0E-03
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	4				1.20E-04	2.40E-04	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	4				1.40E-04	2.80E-04	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		4				2.60E-04	5.20E-04	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	4				1.40E-04	2.80E-04	1.8E+02		1.5E+02		1.0E-01	
Shallow	VOC	Chloromethane	74-87-3	T	D	4				1.30E-04	2.60E-04	4.5E+01		4.9E+02		2.6E-01	
Shallow	VOC	Cumene	98-82-8	T	D	4	3	1.70E-04	3.20E-04	1.20E-04	1.20E-04	5.6E+01	5.7E-06	5.6E+01	5.7E-06	8.0E-01	4.0E-04
Shallow	VOC	Cyclohexane	110-82-7	T	ID	4	4	2.00E-04	4.40E-04								
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	4				6.20E-04	1.20E-03	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	4				2.60E-04	5.20E-04	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	4				2.20E-04	4.40E-04	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	4				1.10E-04	2.20E-04	1.6E+02		1.6E+02		6.0E-01	
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	4				1.50E-04	3.00E-04			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	4				1.70E-04	3.40E-04	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		4				2.60E-04	5.20E-04	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	4				1.60E-04	3.20E-04	2.3E+03		2.4E+03		8.8E-01	
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	4				2.10E-04	4.20E-04	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	4				2.40E-04	4.80E-04	1.3E+00		1.1E+01		7.0E-03	
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	4				2.20E-04	4.40E-04	2.1E+02		2.0E+02		7.0E-02	
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		4				1.50E-04	3.00E-04	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	4				1.70E-04	3.40E-04	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	4				2.70E-04	5.40E-04	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	4	2	5.70E-04	7.40E-04	1.20E-04	1.20E-04	1.7E+02	4.4E-06	1.7E+02	4.4E-06	7.0E-01	1.1E-03
Shallow	VOC	2-Hexanone	591-78-6	T		4				4.60E-04	9.20E-04	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		4				4.10E-04	8.20E-04						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		4				1.30E-04	2.60E-04	4.7E+04		6.1E+02		2.4E-01	
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	4				2.30E-04	4.60E-04	2.0E+04		1.3E+04		1.8E+00	
Shallow	VOC	Methylcyclohexane	108-87-2	T		4	4	1.60E-04	4.70E-04								
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	4				3.40E-04	6.80E-04	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	Styrene	100-42-5	T		4				1.50E-04	3.00E-04	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	4				2.50E-04	5.00E-04	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	4				2.30E-04	4.60E-04	1.7E+02		1.2E+01		5.0E-03	
Shallow	VOC	Toluene	108-88-3	T	D	4	2	1.20E-03	2.40E-03	1.80E-04	1.80E-04	5.3E+02	4.5E-06	5.3E+02	4.5E-06	1.0E+00	2.4E-03
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	4				1.70E-04	3.40E-04	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	4				1.50E-04	3.00E-04	1.3E+03		1.3E+03		2.0E-01	
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	4				3.00E-04	6.00E-04	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	4				1.40E-04	2.80E-04	9.7E+01		2.2E+01		5.0E-03	
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		4				2.80E-04	5.60E-04	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		4				3.20E-04	6.40E-04	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	4				1.50E-04	3.00E-04	1.3E+01		1.0E+00		2.0E-03	
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	4	3	4.90E-04	9.50E-03	3.30E-04	3.30E-04	1.9E+02	5.0E-05	1.9E+02	5.0E-05	1.0E+01	9.5E-04
Shallow	SVOC	Acenaphthene	83-32-9	T		4	1	1.50E-03	1.50E-03	8.00E-04	8.00E-04	4.2E+00	3.6E-04	4.2E+00	3.6E-04	1.3E+00	1.2E-03
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	4				7.10E-04	7.10E-04	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	4				2.60E-03	2.60E-03	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	4				6.80E-04	6.80E-04	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		4				2.50E-03	2.50E-03			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		4				2.80E-03	2.80E-03						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	4				7.00E-04	7.00E-04			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	4				7.30E-04	7.30E-04			2.0E-03		5.0E-03	

TABLE 4-41
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR PONTIAC SCHOOL BOARD (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	4				9.40E-04	9.40E-04			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	4				8.50E-04	8.50E-04			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	4				8.40E-04	8.40E-04			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	4				2.60E-03	2.60E-03						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	4				8.70E-04	8.70E-04						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	4				9.70E-04	9.70E-04	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	4				2.70E-03	2.70E-03			3.2E-01		6.0E-03	
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	4				8.80E-04	8.80E-04						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	4				8.80E-04	8.80E-04			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		4				2.50E-03	2.50E-03			3.9E+05		5.8E+00	
Shallow	SVOC	Carbazole	86-74-8	T	B2	4	2	1.10E-03	1.40E-03	8.20E-04	8.20E-04			7.4E+00	1.9E-04	8.5E-02	1.6E-02
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		4				9.90E-04	9.90E-04			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		2				6.10E-04	6.10E-04						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		4				8.50E-04	8.50E-04			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		4				1.00E-03	1.00E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		4				7.90E-04	7.90E-04						
Shallow	SVOC	Chrysene	218-01-9	T	B2	4				7.50E-04	7.50E-04			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	4				7.90E-04	7.90E-04			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	4				1.10E-03	1.10E-03						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	4				9.30E-04	9.30E-04			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		4				8.50E-04	8.50E-04			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	4				6.50E-04	6.50E-04			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		4				8.50E-04	8.50E-04			5.2E+02		3.7E-01	
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	4				7.60E-04	7.60E-04			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	4				6.70E-04	6.70E-04			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		4				1.30E-03	1.30E-03			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		4				3.00E-03	3.00E-03						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	4				7.90E-04	7.90E-04			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	4				5.70E-04	5.70E-04						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		4				1.10E-03	1.10E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	4				8.10E-04	8.10E-04	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	4				1.00E-03	1.00E-03	2.0E+00		2.0E+00		8.8E-01	
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	4				7.40E-04	7.40E-04	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	4				7.30E-04	7.30E-04	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	4				1.10E-03	1.10E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	4				7.40E-04	7.40E-04	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	4				6.30E-04	6.30E-04			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	4				6.30E-04	6.30E-04			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	4	1	8.90E-04	8.90E-04	6.40E-04	6.40E-04			2.5E+01	3.6E-05	2.6E-01	3.4E-03
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		4	2	3.75E-03	4.55E-03	1.30E-03	1.30E-03			8.1E+02	5.6E-06	3.7E-01	1.2E-02
Shallow	SVOC	Naphthalene	91-20-3	T	C	4	2	5.30E-03	6.80E-03	7.50E-04	7.50E-04	3.1E+01	2.2E-04	3.1E+01	2.2E-04	5.2E-01	1.3E-02
Shallow	SVOC	2-Nitroaniline	88-74-4	T		4				7.00E-04	7.00E-04						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	4				7.10E-04	7.10E-04						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	4				1.30E-03	1.30E-03						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	4				8.10E-04	8.10E-04	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		4				2.10E-03	2.10E-03			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		4				1.90E-03	1.90E-03						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	4				1.40E-03	1.40E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	4				6.70E-04	6.70E-04			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	4				7.80E-04	7.80E-04						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	4				2.40E-03	2.40E-03			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	4	1	1.10E-03	1.10E-03	8.20E-04	8.20E-04	1.0E+00	1.1E-03	1.0E+00	1.1E-03	5.2E-02	2.1E-02
Shallow	SVOC	Phenol	108-95-2	T	ID	4	2	6.10E-02	6.70E-02	2.60E-03	2.60E-03			2.9E+04	2.3E-06	4.4E+00	1.5E-02
Shallow	SVOC	Pyrene	129-00-0	T	D	4				1.10E-03	1.10E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		4				1.20E-03	1.20E-03			1.7E+02		7.3E-01	

TABLE 4-41
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR PONTIAC SCHOOL BOARD (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	4				1.70E-03	1.70E-03			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	D	B2	2				8.20E-05	8.20E-05	4.5E-02		3.3E-03		5.0E-04	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	4				8.20E-05	8.20E-05	4.5E-02		3.3E-03		5.0E-04	
Shallow	INORG	Antimony	7440-36-0	D		4	1	2.70E-03	2.70E-03	2.20E-03	2.20E-03			6.8E+01	4.0E-05	6.0E-03	4.5E-01
Shallow	INORG	Antimony	7440-36-0	T		4				2.20E-03	2.20E-03			6.8E+01		6.0E-03	
Shallow	INORG	Arsenic	7440-38-2	D	A	4	4	4.50E-03	1.51E-02					4.3E+00	3.5E-03	5.0E-02	3.0E-01
Shallow	INORG	Arsenic	7440-38-2	T	A	4	3	6.00E-03	1.42E-02	3.90E-03	3.90E-03			4.3E+00	3.3E-03	5.0E-02	2.8E-01
Shallow	INORG	Barium	7440-39-3	D	D	4	4	5.55E-01	9.09E-01					1.4E+04	6.5E-05	2.0E+00	4.5E-01
Shallow	INORG	Barium	7440-39-3	T	D	4	4	5.66E-01	8.79E-01					1.4E+04	6.3E-05	2.0E+00	4.4E-01
Shallow	INORG	Beryllium	7440-41-7	D	B1	4				5.40E-04	5.40E-04			2.9E+02		4.0E-03	
Shallow	INORG	Beryllium	7440-41-7	T	B1	4				5.40E-04	5.40E-04			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	D	B1	4				2.80E-04	2.80E-04			1.9E+02		5.0E-03	
Shallow	INORG	Cadmium	7440-43-9	T	B1	4				2.80E-04	2.80E-04			1.9E+02		5.0E-03	
Shallow	INORG	Chromium (total)	7440-47-3	D		4				1.40E-03	1.40E-03			4.6E+02		1.0E-01	
Shallow	INORG	Chromium (total)	7440-47-3	T		4				1.40E-03	1.40E-03			4.6E+02		1.0E-01	
Shallow	INORG	Cobalt	7440-48-4	D	B1	4				1.30E-03	1.30E-03			2.4E+03		4.0E-02	
Shallow	INORG	Cobalt	7440-48-4	T	B1	4				1.30E-03	1.30E-03			2.4E+03		4.0E-02	
Shallow	INORG	Copper	7440-50-8	D	D	4				4.20E-03	4.20E-03			7.4E+03		1.4E+00	
Shallow	INORG	Copper	7440-50-8	T	D	4				4.20E-03	4.20E-03			7.4E+03		1.4E+00	
Shallow	INORG	Lead	7439-92-1	D	B2	4				2.50E-03	2.50E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	4				2.50E-03	2.50E-03					4.0E-03	
Shallow	INORG	Manganese	7439-96-5	D	D	4	2	3.43E-01	4.14E-01	9.00E-04	9.00E-04			9.1E+03	4.5E-05	8.6E-01	4.8E-01
Shallow	INORG	Manganese	7439-96-5	T	D	4	4	4.50E-03	3.97E-01					9.1E+03	4.4E-05	8.6E-01	4.6E-01
Shallow	INORG	Mercury	7439-97-6	D	D	4	1	2.50E-04	2.50E-04	6.90E-05	6.90E-05	5.6E-02	4.5E-03	5.6E-02	4.5E-03	2.0E-03	1.3E-01
Shallow	INORG	Mercury	7439-97-6	T	D	4	2	9.20E-05	1.10E-04	6.90E-05	6.90E-05	5.6E-02	2.0E-03	5.6E-02	2.0E-03	2.0E-03	5.5E-02
Shallow	INORG	Nickel	7440-02-0	D	A	4	2	4.30E-03	1.56E-02	2.20E-03	2.20E-03			7.4E+04	2.1E-07	1.0E-01	1.6E-01
Shallow	INORG	Nickel	7440-02-0	T	A	4	2	3.90E-03	1.55E-02	2.20E-03	2.20E-03			7.4E+04	2.1E-07	1.0E-01	1.6E-01
Shallow	INORG	Selenium	7782-49-2	D	D	4				4.50E-03	4.50E-03			9.7E+02		5.0E-02	
Shallow	INORG	Selenium	7782-49-2	T	D	4				4.50E-03	4.50E-03			9.7E+02		5.0E-02	
Shallow	INORG	Silver	7440-22-4	D	D	4				1.50E-03	1.50E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	4				1.50E-03	1.50E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		4				1.80E-05	5.00E-03			1.3E+01		2.0E-03	
Shallow	INORG	Thallium	7440-28-0	T		4				1.80E-05	5.00E-03			1.3E+01		2.0E-03	
Shallow	INORG	Vanadium	7440-62-2	D		4	1	2.50E-03	2.50E-03	8.20E-04	8.20E-04			9.7E+02	2.6E-06	4.5E-03	5.6E-01
Shallow	INORG	Vanadium	7440-62-2	T		4	1	2.40E-03	2.40E-03	8.20E-04	8.20E-04			9.7E+02	2.5E-06	4.5E-03	5.3E-01
Shallow	INORG	Zinc	7440-66-6	D	D	4				1.20E-02	1.20E-02			1.1E+05		2.4E+00	
Shallow	INORG	Zinc	7440-66-6	T	D	4	3	1.33E-02	1.97E-02	1.20E-02	1.20E-02			1.1E+05	1.8E-07	2.4E+00	8.2E-03

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-42a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR SITE-WIDE HYDROGEOLOGIC INVESTIGATION (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	VOC	Acetone	67-64-1	T	ID	24	6	1.50E-02	7.80E-02	5.10E-04	1.00E-02	1.0E+06	7.8E-08	3.1E+04	2.5E-06	7.3E-01	1.1E-01
Shallow	VOC	Benzene	71-43-2	T	A	24				1.60E-04	1.00E-03	3.5E+01		1.1E+01		5.0E-03	
Shallow	VOC	Bromodichloromethane	75-27-4	T	B2	24	2	1.80E-04	4.20E-04	1.70E-04	1.00E-03	3.7E+01	1.1E-05	1.4E+01	3.0E-05	1.0E-01	4.2E-03
Shallow	VOC	Bromoform	75-25-2	T	B2	24				1.80E-04	1.00E-03	3.1E+03		1.4E+02		1.0E-01	
Shallow	VOC	Bromomethane	74-83-9	T	D	23				2.00E-04	1.00E-03	9.0E+00		7.0E+01		1.0E-02	
Shallow	VOC	2-Butanone	78-93-3	T	ID	24	1	5.00E-04	5.00E-04	4.10E-04	1.00E-02	2.4E+05	2.1E-09	2.4E+05	2.1E-09	1.3E+01	3.8E-05
Shallow	VOC	Carbon Disulfide	75-15-0	T		24				2.00E-04	1.00E-03	5.5E+02		1.2E+03		8.0E-01	
Shallow	VOC	Carbon Tetrachloride	56-23-5	T	B2	24				1.20E-04	1.00E-03	2.4E+00		4.6E+00		5.0E-03	
Shallow	VOC	Chlorobenzene	108-90-7	T	D	24				1.40E-04	1.00E-03	4.7E+02		8.6E+01		1.0E-01	
Shallow	VOC	Chloroethane	75-00-3	T		24				2.60E-04	1.00E-03	5.7E+03		4.4E+02		4.3E-01	
Shallow	VOC	Chloroform	67-66-3	T	B2	24	6	1.40E-04	1.70E-03	1.40E-04	1.00E-03	1.8E+02	9.4E-06	1.5E+02	1.1E-05	1.0E-01	1.7E-02
Shallow	VOC	Chloromethane	74-87-3	T	D	24	3	1.30E-04	3.35E-04	1.30E-04	1.00E-03	4.5E+01	7.4E-06	4.9E+02	6.8E-07	2.6E-01	1.3E-03
Shallow	VOC	Cumene	98-82-8	T	D	24				1.20E-04	1.00E-03	5.6E+01		5.6E+01		8.0E-01	
Shallow	VOC	Cyclohexane	110-82-7	T	ID	24				1.30E-04	1.00E-03						
Shallow	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	24				6.20E-04	2.00E-03	1.2E+00		3.9E-01		2.0E-04	
Shallow	VOC	Dibromochloromethane	124-48-1	T	C	24				2.60E-04	1.00E-03	1.1E+02		1.8E+01		1.0E-01	
Shallow	VOC	1,2-Dibromoethane	106-93-4	T	B2	24				2.20E-04	1.00E-03	1.5E+01		2.5E-02		1.0E-03	
Shallow	VOC	1,2-Dichlorobenzene	95-50-1	T	D	24	1	2.20E-04	2.20E-04	1.10E-04	1.00E-03	1.6E+02	1.4E-06	1.6E+02	1.4E-06	6.0E-01	3.7E-04
Shallow	VOC	1,3-Dichlorobenzene	541-73-1	T	D	24				1.50E-04	1.00E-03			2.0E+00		6.6E-03	
Shallow	VOC	1,4-Dichlorobenzene	106-46-7	T	C	24				1.70E-04	1.00E-03	7.4E+01		6.4E+00		7.5E-02	
Shallow	VOC	Dichlorodifluoromethane	75-71-8	T		24				2.60E-04	2.00E-03	3.0E+02		3.0E+02		1.7E+00	
Shallow	VOC	1,1-Dichloroethane	75-34-3	T	C	24	2	8.50E-04	1.00E-03	1.60E-04	1.00E-03	2.3E+03	4.3E-07	2.4E+03	4.2E-07	8.8E-01	1.1E-03
Shallow	VOC	1,2-Dichloroethane	107-06-2	T	B2	24				2.10E-04	1.00E-03	5.9E+01		1.9E+01		5.0E-03	
Shallow	VOC	1,1-Dichloroethene	75-35-4	T	C	24	2	8.10E-04	9.70E-04	2.40E-04	1.00E-03	1.3E+00	7.5E-04	1.1E+01	8.8E-05	7.0E-03	1.4E-01
Shallow	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	24				2.20E-04	5.00E-04	2.1E+02		2.0E+02		7.0E-02	
Shallow	VOC	trans-1,2-Dichloroethene	156-60-5	T		24				1.50E-04	5.00E-04	2.0E+02		2.2E+02		1.0E-01	
Shallow	VOC	1,2-Dichloropropane	78-87-5	T	B2	24				1.70E-04	1.00E-03	3.6E+01		1.6E+01		5.0E-03	
Shallow	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	24				2.70E-04	1.00E-03	2.6E+01		5.5E+00		8.5E-03	
Shallow	VOC	Ethyl Benzene	100-41-4	T	D	24	1	1.80E-04	1.80E-04	1.20E-04	1.00E-03	1.7E+02	1.1E-06	1.7E+02	1.1E-06	7.0E-01	2.6E-04
Shallow	VOC	2-Hexanone	591-78-6	T		24				4.60E-04	1.00E-02	8.7E+03		5.2E+03		1.0E+00	
Shallow	VOC	Methyl Acetate	79-20-9	T		24				4.10E-04	1.00E-02						
Shallow	VOC	Methyl tert-butyl ether	1634-04-4	T		24				1.30E-04	5.00E-03	4.7E+04		6.1E+02		2.4E-01	
Shallow	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	23				2.30E-04	1.00E-02	2.0E+04		1.3E+04		1.8E+00	
Shallow	VOC	Methylcyclohexane	108-87-2	T		24				1.50E-04	1.00E-03						
Shallow	VOC	Methylene Chloride	75-09-2	T	B2	24				2.90E-04	1.00E-03	1.4E+03		2.2E+02		5.0E-03	
Shallow	VOC	Styrene	100-42-5	T		24				1.50E-04	1.00E-03	3.1E+02		9.7E+00		1.0E-01	
Shallow	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	24				2.50E-04	1.00E-03	7.7E+01		4.7E+00		8.5E-03	
Shallow	VOC	Tetrachloroethene	127-18-4	T	C-B2	24	2	4.60E-04	5.50E-04	2.30E-04	1.00E-03	1.7E+02	3.2E-06	1.2E+01	4.6E-05	5.0E-03	1.1E-01
Shallow	VOC	Toluene	108-88-3	T	D	24	5	1.90E-04	8.10E-04	1.80E-04	1.00E-03	5.3E+02	1.5E-06	5.3E+02	1.5E-06	1.0E+00	8.1E-04
Shallow	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	24				1.70E-04	1.00E-03	3.0E+02		1.9E+01		7.0E-02	
Shallow	VOC	1,1,1-Trichloroethane	71-55-6	T	D	24	5	5.25E-04	7.00E-03	1.50E-04	1.00E-03	1.3E+03	5.4E-06	1.3E+03	5.4E-06	2.0E-01	3.5E-02
Shallow	VOC	1,1,2-Trichloroethane	79-00-5	T	C	24				3.00E-04	1.00E-03	1.1E+02		2.1E+01		5.0E-03	
Shallow	VOC	Trichloroethene	79-01-6	T	C-B2	24	2	7.10E-04	1.10E-03	1.40E-04	1.00E-03	9.7E+01	1.1E-05	2.2E+01	5.0E-05	5.0E-03	2.2E-01
Shallow	VOC	Trichlorofluoromethane	75-69-4	T		24				2.80E-04	1.00E-03	1.1E+03		1.1E+03		2.6E+00	
Shallow	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		24				3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
Shallow	VOC	Vinyl Chloride	75-01-4	T	A	24				1.50E-04	1.00E-03	1.3E+01		1.0E+00		2.0E-03	
Shallow	VOC	Xylenes (total)	1330-20-7	T	ID	24	1	9.90E-04	9.90E-04	3.30E-04	1.00E-03	1.9E+02	5.2E-06	1.9E+02	5.2E-06	1.0E+01	9.9E-05
Shallow	SVOC	Acenaphthene	83-32-9	T		24				8.00E-04	5.00E-03	4.2E+00		4.2E+00		1.3E+00	
Shallow	SVOC	Acenaphthylene	208-96-8	T	D	24				7.10E-04	5.00E-03	3.9E+00		3.9E+00		5.2E-02	
Shallow	SVOC	Acetophenone	98-86-2	T	D	24				2.60E-03	1.00E-02	6.1E+03		6.1E+03		1.5E+00	
Shallow	SVOC	Anthracene	120-12-7	T	D	24				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
Shallow	SVOC	Atrazine	1912-24-9	T		24				2.50E-03	5.00E-03			5.4E+00		3.0E-03	
Shallow	SVOC	Benzaldehyde	100-52-7	T		24				2.80E-03	1.00E-02						
Shallow	SVOC	Benzo(a)anthracene	56-55-3	T	B2	24				7.00E-04	5.00E-03			9.4E-03		2.1E-03	
Shallow	SVOC	Benzo(a)pyrene	50-32-8	T	B2	24				7.30E-04	5.00E-03			2.0E-03		5.0E-03	

TABLE 4-42a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR SITE-WIDE HYDROGEOLOGIC INVESTIGATION (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	24				9.40E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	24				8.50E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	24				8.40E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Biphenyl	92-52-4	T	D	24				2.60E-03	1.00E-02						
Shallow	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	24				8.70E-04	5.00E-03						
Shallow	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	24				9.70E-04	5.00E-03	2.1E+02		5.7E+00		2.0E-03	
Shallow	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	24				2.70E-03	5.00E-03			3.2E-01		6.0E-03	
Shallow	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	24				8.80E-04	5.00E-03						
Shallow	SVOC	Butylbenzylphthalate	85-68-7	T	C	24				8.80E-04	5.00E-03			2.7E+00		1.2E+00	
Shallow	SVOC	Caprolactam	105-60-2	T		24				2.50E-03	1.00E-02			3.9E+05		5.8E+00	
Shallow	SVOC	Carbazole	86-74-8	T	B2	24				8.20E-04	1.00E-02			7.4E+00		8.5E-02	
Shallow	SVOC	4-Chloro-3-methylphenol	59-50-7	T		24				9.90E-04	5.00E-03			7.9E+01		1.5E-01	
Shallow	SVOC	4-Chloroaniline	106-47-8	T		20				6.10E-04	1.00E-02						
Shallow	SVOC	2-Chloronaphthalene	91-58-7	T		24				8.50E-04	5.00E-03			6.7E+00		1.8E+00	
Shallow	SVOC	2-Chlorophenol	95-57-8	T		24				1.00E-03	5.00E-03			9.4E+01		4.5E-02	
Shallow	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		24				7.90E-04	5.00E-03						
Shallow	SVOC	Chrysene	218-01-9	T	B2	24				7.50E-04	5.00E-03			5.0E-03		5.0E-03	
Shallow	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	24				7.90E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Dibenzofuran	132-64-9	T	D	24				1.10E-03	5.00E-03						
Shallow	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	20				9.30E-04	2.00E-02			1.8E-01		1.1E-03	
Shallow	SVOC	2,4-Dichlorophenol	120-83-2	T		24				8.50E-04	1.00E-02			4.8E+01		7.3E-02	
Shallow	SVOC	Diethylphthalate	84-66-2	T	D	24				6.50E-04	5.00E-03			1.1E+03		5.5E+00	
Shallow	SVOC	2,4-Dimethylphenol	105-67-9	T		24				8.50E-04	5.00E-03			5.2E+02		3.7E-01	
Shallow	SVOC	Dimethylphthalate	131-11-3	T	D	24				7.60E-04	5.00E-03			4.2E+03		7.3E+01	
Shallow	SVOC	Di-n-butylphthalate	84-74-2	T	D	24				6.70E-04	5.00E-03			1.1E+01		8.8E-01	
Shallow	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		24				1.30E-03	2.00E-02			9.5E+00		2.0E-02	
Shallow	SVOC	2,4-Dinitrophenol	51-28-5	T		24				3.00E-03	2.00E-02						
Shallow	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	24				7.90E-04	5.00E-03			8.6E+00		7.7E-03	
Shallow	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	24				5.70E-04	5.00E-03						
Shallow	SVOC	Di-n-octylphthalate	117-84-0	T		24				1.10E-03	5.00E-03			4.0E-01		1.3E-01	
Shallow	SVOC	Fluoranthene	206-44-0	T	D	24				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
Shallow	SVOC	Fluorene	86-73-7	T	D	24				1.00E-03	5.00E-03	2.0E+00		2.0E+00		8.8E-01	
Shallow	SVOC	Hexachlorobenzene	118-74-1	T	B2	24				7.40E-04	5.00E-03	3.0E+00		4.6E-03		1.0E-03	
Shallow	SVOC	Hexachlorobutadiene	87-68-3	T	C	24				7.30E-04	5.00E-03	3.2E+00		4.0E-01		1.5E-02	
Shallow	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	24				1.10E-03	5.00E-03	4.2E-01		1.6E+00		5.0E-02	
Shallow	SVOC	Hexachloroethane	67-72-1	T	C	24				7.40E-04	5.00E-03	5.0E+01		1.9E+00		7.3E-03	
Shallow	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	24				6.30E-04	5.00E-03			2.0E-03		2.0E-03	
Shallow	SVOC	Isophorone	78-59-1	T	C	24				6.30E-04	5.00E-03			9.9E+02		7.7E-01	
Shallow	SVOC	2-Methylnaphthalene	91-57-6	T	ID	24				6.40E-04	5.00E-03			2.5E+01		2.6E-01	
Shallow	SVOC	Methylphenol (total)	1319-77-3	T		24				1.30E-03	5.00E-03			8.1E+02		3.7E-01	
Shallow	SVOC	Naphthalene	91-20-3	T	C	24				7.50E-04	5.00E-03	3.1E+01		3.1E+01		5.2E-01	
Shallow	SVOC	2-Nitroaniline	88-74-4	T		24				7.00E-04	2.00E-02						
Shallow	SVOC	3-Nitroaniline	99-09-2	T	C	20				7.10E-04	2.00E-02						
Shallow	SVOC	4-Nitroaniline	100-01-6	T	C	24				1.30E-03	2.00E-02						
Shallow	SVOC	Nitrobenzene	98-95-3	T	D	24				8.10E-04	5.00E-03	5.5E+02		1.1E+01		3.4E-03	
Shallow	SVOC	2-Nitrophenol	88-75-5	T		24				2.10E-03	5.00E-03			7.9E+01		2.0E-02	
Shallow	SVOC	4-Nitrophenol	100-02-7	T		24				1.90E-03	2.00E-02						
Shallow	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	24				1.40E-03	5.00E-03			3.5E+01		2.7E-01	
Shallow	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	24				6.70E-04	5.00E-03			3.6E-01		5.0E-03	
Shallow	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	24				7.80E-04	5.00E-03						
Shallow	SVOC	Pentachlorophenol	87-86-5	T	B2	24				2.40E-03	5.00E-03			2.0E-01		1.0E-03	
Shallow	SVOC	Phenanthrene	85-01-8	T	D	24				8.20E-04	5.00E-03	1.0E+00		1.0E+00		5.2E-02	
Shallow	SVOC	Phenol	108-95-2	T	ID	24				2.60E-03	5.00E-03			2.9E+04		4.4E+00	
Shallow	SVOC	Pyrene	129-00-0	T	D	24				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
Shallow	SVOC	2,4,5-Trichlorophenol	95-95-4	T		24				1.20E-03	5.00E-03			1.7E+02		7.3E-01	

TABLE 4-42a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR SITE-WIDE HYDROGEOLOGIC INVESTIGATION (SHALLOW GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial GW Volatilization to Indoor Air (mg/L)	Ratio of Max Detect to Industrial GW Volatilization to Indoor Air	Groundwater Contact Criteria (mg/L)	Ratio of Max Detect to Groundwater Contact Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria
Shallow	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	24				1.70E-03	5.00E-03			1.0E+01		1.2E-01	
Shallow	P/PCB	PCBs (total)	1336-36-3	D	B2	4				8.20E-05	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	P/PCB	PCBs (total)	1336-36-3	T	B2	9				8.20E-05	4.00E-04	4.5E-02		3.3E-03		5.0E-04	
Shallow	INORG	Antimony	7440-36-0	D		22	1	2.60E-03	2.60E-03	2.20E-03	2.50E-02			6.8E+01	3.8E-05	6.0E-03	4.3E-01
Shallow	INORG	Antimony	7440-36-0	T		24				2.20E-03	2.50E-02			6.8E+01		6.0E-03	
Shallow	INORG	Arsenic	7440-38-2	D	A	22	6	3.90E-03	7.80E-03	3.90E-03	1.00E-02			4.3E+00	1.8E-03	5.0E-02	1.6E-01
Shallow	INORG	Arsenic	7440-38-2	T	A	24	6	2.10E-03	9.60E-03	2.10E-03	1.00E-02			4.3E+00	2.2E-03	5.0E-02	1.9E-01
Shallow	INORG	Barium	7440-39-3	D	D	22	22	5.33E-02	9.29E-01					1.4E+04	6.6E-05	2.0E+00	4.6E-01
Shallow	INORG	Barium	7440-39-3	T	D	24	24	5.04E-02	9.29E-01					1.4E+04	6.6E-05	2.0E+00	4.6E-01
Shallow	INORG	Beryllium	7440-41-7	D	B1	22				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Beryllium	7440-41-7	T	B1	24				5.40E-04	1.00E-03			2.9E+02		4.0E-03	
Shallow	INORG	Cadmium	7440-43-9	D	B1	22	9	2.90E-04	1.47E-03	2.80E-04	5.00E-03			1.9E+02	7.7E-06	5.0E-03	2.9E-01
Shallow	INORG	Cadmium	7440-43-9	T	B1	24	6	3.50E-04	1.45E-03	2.80E-04	5.00E-03			1.9E+02	7.6E-06	5.0E-03	2.9E-01
Shallow	INORG	Chromium (total)	7440-47-3	D		22	4	1.80E-03	2.70E-03	1.40E-03	1.00E-02			4.6E+02	5.9E-06	1.0E-01	2.7E-02
Shallow	INORG	Chromium (total)	7440-47-3	T		24	6	1.40E-03	2.50E-03	1.40E-03	1.00E-02			4.6E+02	5.4E-06	1.0E-01	2.5E-02
Shallow	INORG	Cobalt	7440-48-4	D	B1	22	5	1.30E-03	4.60E-03	1.30E-03	2.00E-02			2.4E+03	1.9E-06	4.0E-02	1.2E-01
Shallow	INORG	Cobalt	7440-48-4	T	B1	24	4	1.40E-03	4.10E-03	7.40E-04	2.00E-02			2.4E+03	1.7E-06	4.0E-02	1.0E-01
Shallow	INORG	Copper	7440-50-8	D	D	22	4	4.40E-03	6.00E-03	4.20E-03	5.00E-03			7.4E+03	8.1E-07	1.4E+00	4.3E-03
Shallow	INORG	Copper	7440-50-8	T	D	24	2	4.70E-03	4.70E-03	1.70E-03	5.00E-03			7.4E+03	6.4E-07	1.4E+00	3.4E-03
Shallow	INORG	Lead	7439-92-1	D	B2	22				2.50E-03	3.00E-03					4.0E-03	
Shallow	INORG	Lead	7439-92-1	T	B2	24	1	3.50E-03	3.50E-03	1.60E-03	3.00E-03					4.0E-03	8.8E-01
Shallow	INORG	Manganese	7439-96-5	D	D	22	22	1.60E-03	6.17E-01					9.1E+03	6.8E-05	8.6E-01	7.2E-01
Shallow	INORG	Manganese	7439-96-5	T	D	24	24	9.30E-04	6.37E-01					9.1E+03	7.0E-05	8.6E-01	7.4E-01
Shallow	INORG	Mercury	7439-97-6	D	D	22	2	9.40E-05	1.00E-04	6.90E-05	2.00E-04	5.6E-02	1.8E-03	5.6E-02	1.8E-03	2.0E-03	5.0E-02
Shallow	INORG	Mercury	7439-97-6	T	D	24	2	7.50E-05	9.00E-05	6.90E-05	2.00E-04	5.6E-02	1.6E-03	5.6E-02	1.6E-03	2.0E-03	4.5E-02
Shallow	INORG	Nickel	7440-02-0	D	A	22	11	2.40E-03	1.08E-02	2.20E-03	2.00E-02			7.4E+04	1.5E-07	1.0E-01	1.1E-01
Shallow	INORG	Nickel	7440-02-0	T	A	24	13	2.20E-03	1.06E-02	2.20E-03	2.00E-02			7.4E+04	1.4E-07	1.0E-01	1.1E-01
Shallow	INORG	Selenium	7782-49-2	D	D	22				4.50E-03	5.00E-03			9.7E+02		5.0E-02	
Shallow	INORG	Selenium	7782-49-2	T	D	24	2	5.10E-03	6.00E-03	4.50E-03	5.00E-03			9.7E+02	6.2E-06	5.0E-02	1.2E-01
Shallow	INORG	Silver	7440-22-4	D	D	22				1.50E-03	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Silver	7440-22-4	T	D	24				9.80E-04	5.00E-03			1.5E+03		3.4E-02	
Shallow	INORG	Thallium	7440-28-0	D		22	13	3.10E-05	1.50E-02	1.80E-05	1.00E-02			1.3E+01	1.2E-03	2.0E-03	**7.5E+00**
Shallow	INORG	Thallium	7440-28-0	T		24	12	1.80E-05	1.59E-02	1.80E-05	1.00E-02			1.3E+01	1.2E-03	2.0E-03	**8.0E+00**
Shallow	INORG	Vanadium	7440-62-2	D		22	4	1.40E-03	6.50E-03	8.20E-04	1.00E-02			9.7E+02	6.7E-06	4.5E-03	**1.4E+00**
Shallow	INORG	Vanadium	7440-62-2	T		24	4	1.10E-03	6.40E-03	6.70E-04	1.00E-02			9.7E+02	6.6E-06	4.5E-03	**1.4E+00**
Shallow	INORG	Zinc	7440-66-6	D	D	22	3	1.73E-02	2.90E-02	1.20E-02	2.00E-02			1.1E+05	2.6E-07	2.4E+00	1.2E-02
Shallow	INORG	Zinc	7440-66-6	T	D	24	7	1.30E-02	3.46E-02	1.20E-02	2.00E-02			1.1E+05	3.1E-07	2.4E+00	1.4E-02

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-42b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR SITE-WIDE HYDROGEOLOGIC INVESTIGATION (DEEP AND INTERMEDIATE GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detect to Residential Drinking Water Criteria
Deep	VOC	Acetone	67-64-1	T	ID	12	9	2.40E-02	7.10E+00	5.10E-04	3.40E-03	2.1E+00	**3.4E+00**	7.3E-01	**9.7E+00**
Deep	VOC	Benzene	71-43-2	T	A	12	2	2.60E-04	1.60E-03	1.60E-04	8.30E-02	5.0E-03	3.2E-01	5.0E-03	3.2E-01
Deep	VOC	Bromodichloromethane	75-27-4	T	B2	12				1.70E-04	8.30E-02	1.0E-01		1.0E-01	
Deep	VOC	Bromoform	75-25-2	T	B2	12				1.80E-04	8.30E-02	1.0E-01		1.0E-01	
Deep	VOC	Bromomethane	74-83-9	T	D	12				2.00E-04	8.30E-02	2.9E-02		1.0E-02	
Deep	VOC	2-Butanone	78-93-3	T	ID	12				4.10E-04	8.30E-01	3.8E+01		1.3E+01	
Deep	VOC	Carbon Disulfide	75-15-0	T		12				2.00E-04	8.30E-02	2.3E+00		8.0E-01	
Deep	VOC	Carbon Tetrachloride	56-23-5	T	B2	12				1.20E-04	8.30E-02	5.0E-03		5.0E-03	
Deep	VOC	Chlorobenzene	108-90-7	T	D	12				1.40E-04	8.30E-02	1.0E-01		1.0E-01	
Deep	VOC	Chloroethane	75-00-3	T		12				2.60E-04	8.30E-02	1.7E+00		4.3E-01	
Deep	VOC	Chloroform	67-66-3	T	B2	12	1	3.55E-04	3.55E-04	1.40E-04	8.30E-02	1.0E-01	3.6E-03	1.0E-01	3.6E-03
Deep	VOC	Chloromethane	74-87-3	T	D	12				1.30E-04	8.30E-02	1.1E+00		2.6E-01	
Deep	VOC	Cumene	98-82-8	T	D	12				1.20E-04	8.30E-02	2.3E+00		8.0E-01	
Deep	VOC	Cyclohexane	110-82-7	T	ID	12				1.30E-04	8.30E-02				
Deep	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	12				6.20E-04	1.70E-01	2.0E-04		2.0E-04	
Deep	VOC	Dibromochloromethane	124-48-1	T	C	12				2.60E-04	8.30E-02	1.0E-01		1.0E-01	
Deep	VOC	1,2-Dibromoethane	106-93-4	T	B2	12				2.20E-04	8.30E-02	1.0E-03		1.0E-03	
Deep	VOC	1,2-Dichlorobenzene	95-50-1	T	D	12				1.10E-04	8.30E-02	6.0E-01		6.0E-01	
Deep	VOC	1,3-Dichlorobenzene	541-73-1	T	D	12				1.50E-04	8.30E-02	1.9E-02		6.6E-03	
Deep	VOC	1,4-Dichlorobenzene	106-46-7	T	C	12				1.70E-04	8.30E-02	7.5E-02		7.5E-02	
Deep	VOC	Dichlorodifluoromethane	75-71-8	T		12				2.60E-04	1.70E-01	4.8E+00		1.7E+00	
Deep	VOC	1,1-Dichloroethane	75-34-3	T	C	12				1.60E-04	8.30E-02	2.5E+00		8.8E-01	
Deep	VOC	1,2-Dichloroethane	107-06-2	T	B2	12				2.10E-04	8.30E-02	5.0E-03		5.0E-03	
Deep	VOC	1,1-Dichloroethene	75-35-4	T	C	12				2.40E-04	8.30E-02	7.0E-03		7.0E-03	
Deep	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	12				2.20E-04	4.20E-02	7.0E-02		7.0E-02	
Deep	VOC	trans-1,2-Dichloroethene	156-60-5	T		12				1.50E-04	4.20E-02	1.0E-01		1.0E-01	
Deep	VOC	1,2-Dichloropropane	78-87-5	T	B2	12				1.70E-04	8.30E-02	5.0E-03		5.0E-03	
Deep	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	12				2.70E-04	8.30E-02	3.5E-02		8.5E-03	
Deep	VOC	Ethyl Benzene	100-41-4	T	D	12				1.20E-04	8.30E-02	7.0E-01		7.0E-01	
Deep	VOC	2-Hexanone	591-78-6	T		12				4.60E-04	8.30E-01	2.9E+00		1.0E+00	
Deep	VOC	Methyl Acetate	79-20-9	T		12				4.10E-04	8.30E-01				
Deep	VOC	Methyl tert-butyl ether	1634-04-4	T		12				1.30E-04	4.20E-01	6.9E-01		2.4E-01	
Deep	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	12				2.30E-04	8.30E-01	5.2E+00		1.8E+00	
Deep	VOC	Methylcyclohexane	108-87-2	T		12				1.50E-04	8.30E-02				
Deep	VOC	Methylene Chloride	75-09-2	T	B2	12				2.90E-04	8.30E-02	5.0E-03		5.0E-03	
Deep	VOC	Styrene	100-42-5	T		12				1.50E-04	8.30E-02	1.0E-01		1.0E-01	
Deep	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	12				2.50E-04	8.30E-02	3.5E-02		8.5E-03	
Deep	VOC	Tetrachloroethene	127-18-4	T	C-B2	12				2.30E-04	8.30E-02	5.0E-03		5.0E-03	
Deep	VOC	Toluene	108-88-3	T	D	12	3	4.30E-04	1.00E-03	1.80E-04	8.30E-02	1.0E+00	1.0E-03	1.0E+00	1.0E-03
Deep	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	12				1.70E-04	8.30E-02	7.0E-02		7.0E-02	
Deep	VOC	1,1,1-Trichloroethane	71-55-6	T	D	12				1.50E-04	8.30E-02	2.0E-01		2.0E-01	
Deep	VOC	1,1,2-Trichloroethane	79-00-5	T	C	12				3.00E-04	8.30E-02	5.0E-03		5.0E-03	
Deep	VOC	Trichloroethene	79-01-6	T	C-B2	12				1.40E-04	8.30E-02	5.0E-03		5.0E-03	
Deep	VOC	Trichlorofluoromethane	75-69-4	T		12				2.80E-04	8.30E-02	7.3E+00		2.6E+00	
Deep	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		12				3.20E-04	8.30E-02	1.7E+02		1.7E+02	
Deep	VOC	Vinyl Chloride	75-01-4	T	A	12				1.50E-04	8.30E-02	2.0E-03		2.0E-03	
Deep	VOC	Xylenes (total)	1330-20-7	T	ID	12	3	3.50E-04	6.10E-04	3.30E-04	8.30E-02	1.0E+01	6.1E-05	1.0E+01	6.1E-05
Deep	SVOC	Acenaphthene	83-32-9	T		12				8.00E-04	5.00E-03	3.8E+00		1.3E+00	
Deep	SVOC	Acenaphthylene	208-96-8	T	D	12				7.10E-04	5.00E-03	1.5E-01		5.2E-02	
Deep	SVOC	Acetophenone	98-86-2	T	D	12				2.60E-03	1.00E-02	4.4E+00		1.5E+00	
Deep	SVOC	Anthracene	120-12-7	T	D	12				6.80E-04	5.00E-03	4.3E-02		4.3E-02	
Deep	SVOC	Atrazine	1912-24-9	T		12				2.50E-03	5.00E-03	3.0E-03		3.0E-03	
Deep	SVOC	Benzaldehyde	100-52-7	T		12				2.80E-03	1.00E-02				
Deep	SVOC	Benzo(a)anthracene	56-55-3	T	B2	12				7.00E-04	5.00E-03	8.5E-03		2.1E-03	
Deep	SVOC	Benzo(a)pyrene	50-32-8	T	B2	12				7.30E-04	5.00E-03	5.0E-03		5.0E-03	

TABLE 4-42b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR SITE-WIDE HYDROGEOLOGIC INVESTIGATION (DEEP AND INTERMEDIATE GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detect to Residential Drinking Water Criteria
Deep	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	12				9.40E-04	5.00E-03	2.0E-03		2.0E-03	
Deep	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	12				8.50E-04	5.00E-03	5.0E-03		5.0E-03	
Deep	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	12				8.40E-04	5.00E-03	5.0E-03		5.0E-03	
Deep	SVOC	Biphenyl	92-52-4	T	D	12				2.60E-03	1.00E-02				
Deep	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	12				8.70E-04	5.00E-03				
Deep	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	12				9.70E-04	5.00E-03	8.3E-03		2.0E-03	
Deep	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	12	1	3.90E-03	3.90E-03	2.70E-03	5.00E-03	6.0E-03	6.5E-01	6.0E-03	6.5E-01
Deep	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	12				8.80E-04	5.00E-03				
Deep	SVOC	Butylbenzylphthalate	85-68-7	T	C	12				8.80E-04	5.00E-03	2.7E+00		1.2E+00	
Deep	SVOC	Caprolactam	105-60-2	T		12	5	9.70E-03	5.40E-01	2.50E-03	1.00E-02	1.7E+01	3.2E-02	5.8E+00	9.3E-02
Deep	SVOC	Carbazole	86-74-8	T	B2	12				8.20E-04	1.00E-02	3.5E-01		8.5E-02	
Deep	SVOC	4-Chloro-3-methylphenol	59-50-7	T		12				9.90E-04	5.00E-03	4.2E-01		1.5E-01	
Deep	SVOC	4-Chloroaniline	106-47-8	T		12				6.10E-04	1.00E-02				
Deep	SVOC	2-Chloronaphthalene	91-58-7	T		12				8.50E-04	5.00E-03	5.2E+00		1.8E+00	
Deep	SVOC	2-Chlorophenol	95-57-8	T		12				1.00E-03	5.00E-03	1.3E-01		4.5E-02	
Deep	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		12				7.90E-04	5.00E-03				
Deep	SVOC	Chrysene	218-01-9	T	B2	12				7.50E-04	5.00E-03	5.0E-03		5.0E-03	
Deep	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	12				7.90E-04	5.00E-03	2.0E-03		2.0E-03	
Deep	SVOC	Dibenzofuran	132-64-9	T	D	12				1.10E-03	5.00E-03				
Deep	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	12				9.30E-04	2.00E-02	4.3E-03		1.1E-03	
Deep	SVOC	2,4-Dichlorophenol	120-83-2	T		12				8.50E-04	1.00E-02	2.1E-01		7.3E-02	
Deep	SVOC	Diethylphthalate	84-66-2	T	D	12				6.50E-04	5.00E-03	1.6E+01		5.5E+00	
Deep	SVOC	2,4-Dimethylphenol	105-67-9	T		12				8.50E-04	5.00E-03	1.0E+00		3.7E-01	
Deep	SVOC	Dimethylphthalate	131-11-3	T	D	12				7.60E-04	5.00E-03	2.1E+02		7.3E+01	
Deep	SVOC	Di-n-butylphthalate	84-74-2	T	D	12				6.70E-04	5.00E-03	2.5E+00		8.8E-01	
Deep	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		12				1.30E-03	2.00E-02	2.0E-02		2.0E-02	
Deep	SVOC	2,4-Dinitrophenol	51-28-5	T		12				3.00E-03	2.00E-02				
Deep	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	12				7.90E-04	5.00E-03	3.2E-02		7.7E-03	
Deep	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	12				5.70E-04	5.00E-03				
Deep	SVOC	Di-n-octylphthalate	117-84-0	T		12				1.10E-03	5.00E-03	3.8E-01		1.3E-01	
Deep	SVOC	Fluoranthene	206-44-0	T	D	12				8.10E-04	5.00E-03	2.1E-01		2.1E-01	
Deep	SVOC	Fluorene	86-73-7	T	D	12				1.00E-03	5.00E-03	2.0E+00		8.8E-01	
Deep	SVOC	Hexachlorobenzene	118-74-1	T	B2	12				7.40E-04	5.00E-03	1.0E-03		1.0E-03	
Deep	SVOC	Hexachlorobutadiene	87-68-3	T	C	12				7.30E-04	5.00E-03	4.2E-02		1.5E-02	
Deep	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	12				1.10E-03	5.00E-03	5.0E-02		5.0E-02	
Deep	SVOC	Hexachloroethane	67-72-1	T	C	12				7.40E-04	5.00E-03	2.1E-02		7.3E-03	
Deep	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	12				6.30E-04	5.00E-03	2.0E-03		2.0E-03	
Deep	SVOC	Isophorone	78-59-1	T	C	12	1	2.65E-03	2.65E-03	6.30E-04	5.00E-03	3.1E+00	8.5E-04	7.7E-01	3.4E-03
Deep	SVOC	2-Methylnaphthalene	91-57-6	T	ID	12				6.40E-04	5.00E-03	7.5E-01		2.6E-01	
Deep	SVOC	Methylphenol (total)	1319-77-3	T		12				1.30E-03	5.00E-03	1.0E+00		3.7E-01	
Deep	SVOC	Naphthalene	91-20-3	T	C	12				7.50E-04	5.00E-03	1.5E+00		5.2E-01	
Deep	SVOC	2-Nitroaniline	88-74-4	T		12				7.00E-04	2.00E-02				
Deep	SVOC	3-Nitroaniline	99-09-2	T	C	12				7.10E-04	2.00E-02				
Deep	SVOC	4-Nitroaniline	100-01-6	T	C	12				1.30E-03	2.00E-02				
Deep	SVOC	Nitrobenzene	98-95-3	T	D	12				8.10E-04	5.00E-03	9.6E-03		3.4E-03	
Deep	SVOC	2-Nitrophenol	88-75-5	T		12				2.10E-03	5.00E-03	5.8E-02		2.0E-02	
Deep	SVOC	4-Nitrophenol	100-02-7	T		12				1.90E-03	2.00E-02				
Deep	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	12				1.40E-03	5.00E-03	1.1E+00		2.7E-01	
Deep	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	12				6.70E-04	5.00E-03	5.0E-03		5.0E-03	
Deep	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	12				7.80E-04	5.00E-03				
Deep	SVOC	Pentachlorophenol	87-86-5	T	B2	12				2.40E-03	5.00E-03	1.0E-03		1.0E-03	
Deep	SVOC	Phenanthrene	85-01-8	T	D	12				8.20E-04	5.00E-03	1.5E-01		5.2E-02	
Deep	SVOC	Phenol	108-95-2	T	ID	12				2.60E-03	5.00E-03	1.3E+01		4.4E+00	
Deep	SVOC	Pyrene	129-00-0	T	D	12				1.10E-03	5.00E-03	1.4E-01		1.4E-01	
Deep	SVOC	2,4,5-Trichlorophenol	95-95-4	T		12				1.20E-03	5.00E-03	2.1E+00		7.3E-01	

TABLE 4-42b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR SITE-WIDE HYDROGEOLOGIC INVESTIGATION (DEEP AND INTERMEDIATE GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detect to Residential Drinking Water Criteria
Deep	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	12				1.70E-03	5.00E-03	4.7E-01		1.2E-01	
Deep	P/PCB	PCBs (total)	1336-36-3	T	B2	1				8.20E-05	8.20E-05	5.0E-04		5.0E-04	
Deep	INORG	Antimony	7440-36-0	D		10				2.20E-03	2.50E-02	6.0E-03		6.0E-03	
Deep	INORG	Antimony	7440-36-0	T		12				2.20E-03	2.50E-02	6.0E-03		6.0E-03	
Deep	INORG	Arsenic	7440-38-2	D	A	10	6	6.90E-03	1.88E-02	3.90E-03	1.00E-02	5.0E-02	3.8E-01	5.0E-02	3.8E-01
Deep	INORG	Arsenic	7440-38-2	T	A	12	8	4.70E-03	3.19E-02	3.90E-03	1.00E-02	5.0E-02	6.4E-01	5.0E-02	6.4E-01
Deep	INORG	Barium	7440-39-3	D	D	10	10	6.46E-02	3.24E-01			2.0E+00	1.6E-01	2.0E+00	1.6E-01
Deep	INORG	Barium	7440-39-3	T	D	12	12	4.88E-02	3.31E-01			2.0E+00	1.7E-01	2.0E+00	1.7E-01
Deep	INORG	Beryllium	7440-41-7	D	B1	10				5.40E-04	1.00E-03	4.0E-03		4.0E-03	
Deep	INORG	Beryllium	7440-41-7	T	B1	12				5.40E-04	1.00E-03	4.0E-03		4.0E-03	
Deep	INORG	Cadmium	7440-43-9	D	B1	10				2.80E-04	5.00E-03	5.0E-03		5.0E-03	
Deep	INORG	Cadmium	7440-43-9	T	B1	12	2	3.10E-04	3.30E-04	2.80E-04	5.00E-03	5.0E-03	6.6E-02	5.0E-03	6.6E-02
Deep	INORG	Chromium (total)	7440-47-3	D		10	1	1.50E-03	1.50E-03	1.40E-03	1.00E-02	1.0E-01	1.5E-02	1.0E-01	1.5E-02
Deep	INORG	Chromium (total)	7440-47-3	T		12	7	3.60E-03	1.13E-02	1.40E-03	1.00E-02	1.0E-01	1.1E-01	1.0E-01	1.1E-01
Deep	INORG	Cobalt	7440-48-4	D	B1	10				1.30E-03	2.00E-02	1.0E-01		4.0E-02	
Deep	INORG	Cobalt	7440-48-4	T	B1	12	2	1.30E-03	4.80E-03	7.40E-04	2.00E-02	1.0E-01	4.8E-02	4.0E-02	1.2E-01
Deep	INORG	Copper	7440-50-8	D	D	10				4.20E-03	5.00E-03	4.0E+00		1.4E+00	
Deep	INORG	Copper	7440-50-8	T	D	12	1	3.60E-03	3.60E-03	1.70E-03	5.00E-03	4.0E+00	9.0E-04	1.4E+00	2.6E-03
Deep	INORG	Lead	7439-92-1	D	B2	10				2.50E-03	3.00E-03	4.0E-03		4.0E-03	
Deep	INORG	Lead	7439-92-1	T	B2	12				1.60E-03	3.00E-03	4.0E-03		4.0E-03	
Deep	INORG	Manganese	7439-96-5	D	D	10	10	3.11E-02	2.32E-01			2.5E+00	9.3E-02	8.6E-01	2.7E-01
Deep	INORG	Manganese	7439-96-5	T	D	12	12	3.44E-02	2.52E-01			2.5E+00	1.0E-01	8.6E-01	2.9E-01
Deep	INORG	Mercury	7439-97-6	D	D	10				6.90E-05	2.00E-04	2.0E-03		2.0E-03	
Deep	INORG	Mercury	7439-97-6	T	D	12	1	8.80E-05	8.80E-05	6.90E-05	2.00E-04	2.0E-03	4.4E-02	2.0E-03	4.4E-02
Deep	INORG	Nickel	7440-02-0	D	A	10	3	2.40E-03	5.60E-03	2.20E-03	2.00E-02	1.0E-01	5.6E-02	1.0E-01	5.6E-02
Deep	INORG	Nickel	7440-02-0	T	A	12	8	2.90E-03	7.40E-03	2.20E-03	2.00E-02	1.0E-01	7.4E-02	1.0E-01	7.4E-02
Deep	INORG	Selenium	7782-49-2	D	D	10				4.50E-03	5.00E-03	5.0E-02		5.0E-02	
Deep	INORG	Selenium	7782-49-2	T	D	12				4.50E-03	5.00E-03	5.0E-02		5.0E-02	
Deep	INORG	Silver	7440-22-4	D	D	10				1.50E-03	5.00E-03	9.8E-02		3.4E-02	
Deep	INORG	Silver	7440-22-4	T	D	12				9.80E-04	5.00E-03	9.8E-02		3.4E-02	
Deep	INORG	Thallium	7440-28-0	D		11				1.80E-05	1.00E-02	2.0E-03		2.0E-03	
Deep	INORG	Thallium	7440-28-0	T		13				1.80E-05	1.00E-02	2.0E-03		2.0E-03	
Deep	INORG	Vanadium	7440-62-2	D		10				8.20E-04	1.00E-02	6.2E-02		4.5E-03	
Deep	INORG	Vanadium	7440-62-2	T		12				6.70E-04	1.00E-02	6.2E-02		4.5E-03	
Deep	INORG	Zinc	7440-66-6	D	D	10				1.20E-02	2.00E-02	5.0E+00		2.4E+00	
Deep	INORG	Zinc	7440-66-6	T	D	12	2	1.28E-02	2.76E-02	1.20E-02	2.00E-02	5.0E+00	5.5E-03	2.4E+00	1.2E-02
Intermediate	VOC	Acetone	67-64-1	T	ID	8	6	6.50E-01	1.30E+01	1.10E-03	3.60E-02	2.1E+00	**6.2E+00**	7.3E-01	**1.8E+01**
Intermediate	VOC	Benzene	71-43-2	T	A	8				3.70E-04	4.00E-02	5.0E-03		5.0E-03	
Intermediate	VOC	Bromodichloromethane	75-27-4	T	B2	8				3.20E-04	4.20E-02	1.0E-01		1.0E-01	
Intermediate	VOC	Bromoform	75-25-2	T	B2	8				3.70E-04	4.50E-02	1.0E-01		1.0E-01	
Intermediate	VOC	Bromomethane	74-83-9	T	D	7				3.00E-04	5.00E-02	2.9E-02		1.0E-02	
Intermediate	VOC	2-Butanone	78-93-3	T	ID	8				5.90E-04	1.40E-01	3.8E+01		1.3E+01	
Intermediate	VOC	Carbon Disulfide	75-15-0	T		8				2.40E-04	5.00E-02	2.3E+00		8.0E-01	
Intermediate	VOC	Carbon Tetrachloride	56-23-5	T	B2	8				3.70E-04	3.00E-02	5.0E-03		5.0E-03	
Intermediate	VOC	Chlorobenzene	108-90-7	T	D	8				3.80E-04	3.50E-02	1.0E-01		1.0E-01	
Intermediate	VOC	Chloroethane	75-00-3	T		8				2.90E-04	6.50E-02	1.7E+00		4.3E-01	
Intermediate	VOC	Chloroform	67-66-3	T	B2	8				3.50E-04	3.50E-02	1.0E-01		1.0E-01	
Intermediate	VOC	Chloromethane	74-87-3	T	D	8				4.90E-04	3.20E-02	1.1E+00		2.6E-01	
Intermediate	VOC	Cumene	98-82-8	T	D	8				3.90E-04	3.00E-02	2.3E+00		8.0E-01	
Intermediate	VOC	Cyclohexane	110-82-7	T	ID	8				3.30E-04	3.20E-02				
Intermediate	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	8				8.20E-04	1.60E-01	2.0E-04		2.0E-04	
Intermediate	VOC	Dibromochloromethane	124-48-1	T	C	8				3.70E-04	6.50E-02	1.0E-01		1.0E-01	
Intermediate	VOC	1,2-Dibromoethane	106-93-4	T	B2	8				3.40E-04	5.50E-02	1.0E-03		1.0E-03	
Intermediate	VOC	1,2-Dichlorobenzene	95-50-1	T	D	8				3.80E-04	2.80E-02	6.0E-01		6.0E-01	
Intermediate	VOC	1,3-Dichlorobenzene	541-73-1	T	D	8				3.80E-04	3.80E-02	1.9E-02		6.6E-03	

TABLE 4-42b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

DATA SUMMARY FOR SITE-WIDE HYDROGEOLOGIC INVESTIGATION (DEEP AND INTERMEDIATE GROUNDWATER)

Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detect to Residential Drinking Water Criteria
Intermediate	VOC	1,4-Dichlorobenzene	106-46-7	T	C	8				3.80E-04	4.20E-02	7.5E-02		7.5E-02	
Intermediate	VOC	Dichlorodifluoromethane	75-71-8	T		8				4.90E-04	6.50E-02	4.8E+00		1.7E+00	
Intermediate	VOC	1,1-Dichloroethane	75-34-3	T	C	8				3.00E-04	4.00E-02	2.5E+00		8.8E-01	
Intermediate	VOC	1,2-Dichloroethane	107-06-2	T	B2	8				2.80E-04	5.20E-02	5.0E-03		5.0E-03	
Intermediate	VOC	1,1-Dichloroethene	75-35-4	T	C	8				3.10E-04	6.00E-02	7.0E-03		7.0E-03	
Intermediate	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	8				3.50E-04	5.50E-02	7.0E-02		7.0E-02	
Intermediate	VOC	trans-1,2-Dichloroethene	156-60-5	T		8				3.30E-04	3.80E-02	1.0E-01		1.0E-01	
Intermediate	VOC	1,2-Dichloropropane	78-87-5	T	B2	8				4.10E-04	4.20E-02	5.0E-03		5.0E-03	
Intermediate	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	8				3.50E-04	6.80E-02	3.5E-02		8.5E-03	
Intermediate	VOC	Ethyl Benzene	100-41-4	T	D	8	1	6.50E-03	6.50E-03	4.10E-04	3.00E-02	7.0E-01	9.3E-03	7.0E-01	9.3E-03
Intermediate	VOC	2-Hexanone	591-78-6	T		8				5.80E-04	1.40E-01	2.9E+00		1.0E+00	
Intermediate	VOC	Methyl Acetate	79-20-9	T		8				5.40E-04	1.40E-01				
Intermediate	VOC	Methyl tert-butyl ether	1634-04-4	T		8				2.70E-04	7.10E-02	6.9E-01		2.4E-01	
Intermediate	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	7	1	8.50E-03	8.50E-03	2.60E-04	1.40E-01	5.2E+00	1.6E-03	1.8E+00	4.7E-03
Intermediate	VOC	Methylcyclohexane	108-87-2	T		8				4.20E-04	3.80E-02				
Intermediate	VOC	Methylene Chloride	75-09-2	T	B2	8				2.90E-04	8.50E-02	5.0E-03		5.0E-03	
Intermediate	VOC	Styrene	100-42-5	T		8				3.50E-04	3.80E-02	1.0E-01		1.0E-01	
Intermediate	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	8				3.60E-04	6.20E-02	3.5E-02		8.5E-03	
Intermediate	VOC	Tetrachloroethene	127-18-4	T	C-B2	8				4.20E-04	5.80E-02	5.0E-03		5.0E-03	
Intermediate	VOC	Toluene	108-88-3	T	D	8	1	1.90E-02	1.90E-02	3.90E-04	4.50E-02	1.0E+00	1.9E-02	1.0E+00	1.9E-02
Intermediate	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	8				4.00E-04	4.20E-02	7.0E-02		7.0E-02	
Intermediate	VOC	1,1,1-Trichloroethane	71-55-6	T	D	8				3.90E-04	3.80E-02	2.0E-01		2.0E-01	
Intermediate	VOC	1,1,2-Trichloroethane	79-00-5	T	C	8				3.60E-04	7.50E-02	5.0E-03		5.0E-03	
Intermediate	VOC	Trichloroethene	79-01-6	T	C-B2	8				4.20E-04	3.50E-02	5.0E-03		5.0E-03	
Intermediate	VOC	Trichlorofluoromethane	75-69-4	T		8				5.40E-04	7.00E-02	7.3E+00		2.6E+00	
Intermediate	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		8				3.20E-04	8.00E-02	1.7E+02		1.7E+02	
Intermediate	VOC	Vinyl Chloride	75-01-4	T	A	8				3.60E-04	3.80E-02	2.0E-03		2.0E-03	
Intermediate	VOC	Xylenes (total)	1330-20-7	T	ID	8	1	2.50E-02	2.50E-02	4.40E-04	8.20E-02	1.0E+01	2.5E-03	1.0E+01	2.5E-03
Intermediate	SVOC	Acenaphthene	83-32-9	T		8				8.00E-04	5.00E-03	3.8E+00		1.3E+00	
Intermediate	SVOC	Acenaphthylene	208-96-8	T	D	8				7.10E-04	5.00E-03	1.5E-01		5.2E-02	
Intermediate	SVOC	Acetophenone	98-86-2	T	D	8				2.60E-03	1.00E-02	4.4E+00		1.5E+00	
Intermediate	SVOC	Anthracene	120-12-7	T	D	8				6.80E-04	5.00E-03	4.3E-02		4.3E-02	
Intermediate	SVOC	Atrazine	1912-24-9	T		8				2.50E-03	5.00E-03	3.0E-03		3.0E-03	
Intermediate	SVOC	Benzaldehyde	100-52-7	T		8				2.80E-03	1.00E-02				
Intermediate	SVOC	Benzo(a)anthracene	56-55-3	T	B2	8				7.00E-04	5.00E-03	8.5E-03		2.1E-03	
Intermediate	SVOC	Benzo(a)pyrene	50-32-8	T	B2	8				7.30E-04	5.00E-03	5.0E-03		5.0E-03	
Intermediate	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	8				9.40E-04	5.00E-03	2.0E-03		2.0E-03	
Intermediate	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	8				8.50E-04	5.00E-03	5.0E-03		5.0E-03	
Intermediate	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	8				8.40E-04	5.00E-03	5.0E-03		5.0E-03	
Intermediate	SVOC	Biphenyl	92-52-4	T	D	8				2.60E-03	1.00E-02				
Intermediate	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	8				8.70E-04	5.00E-03				
Intermediate	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	8				9.70E-04	5.00E-03	8.3E-03		2.0E-03	
Intermediate	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	8				2.70E-03	5.00E-03	6.0E-03		6.0E-03	
Intermediate	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	8				8.80E-04	5.00E-03				
Intermediate	SVOC	Butylbenzylphthalate	85-68-7	T	C	8				8.80E-04	5.00E-03	2.7E+00		1.2E+00	
Intermediate	SVOC	Caprolactam	105-60-2	T		8	5	3.30E-03	8.20E-01	2.50E-03	2.50E-03	1.7E+01	4.8E-02	5.8E+00	1.4E-01
Intermediate	SVOC	Carbazole	86-74-8	T	B2	8				8.20E-04	1.00E-02	3.5E-01		8.5E-02	
Intermediate	SVOC	4-Chloro-3-methylphenol	59-50-7	T		8				9.90E-04	5.00E-03	4.2E-01		1.5E-01	
Intermediate	SVOC	4-Chloroaniline	106-47-8	T		8				6.10E-04	1.00E-02				
Intermediate	SVOC	2-Chloronaphthalene	91-58-7	T		8				8.50E-04	5.00E-03	5.2E+00		1.8E+00	
Intermediate	SVOC	2-Chlorophenol	95-57-8	T		8				1.00E-03	5.00E-03	1.3E-01		4.5E-02	
Intermediate	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		8				7.90E-04	5.00E-03				
Intermediate	SVOC	Chrysene	218-01-9	T	B2	8				7.50E-04	5.00E-03	5.0E-03		5.0E-03	
Intermediate	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	8				7.90E-04	5.00E-03	2.0E-03		2.0E-03	
Intermediate	SVOC	Dibenzofuran	132-64-9	T	D	8				1.10E-03	5.00E-03				

TABLE 4-42b
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RCRA FACILITY INVESTIGATION

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Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	No of Analyses	No of Detects	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detect to Industrial Drinking Water Criteria	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detect to Residential Drinking Water Criteria
Intermediate	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	8				9.30E-04	2.00E-02	4.3E-03		1.1E-03	
Intermediate	SVOC	2,4-Dichlorophenol	120-83-2	T		8				8.50E-04	1.00E-02	2.1E-01		7.3E-02	
Intermediate	SVOC	Diethylphthalate	84-66-2	T	D	8				6.50E-04	5.00E-03	1.6E+01		5.5E+00	
Intermediate	SVOC	2,4-Dimethylphenol	105-67-9	T		8				8.50E-04	5.00E-03	1.0E+00		3.7E-01	
Intermediate	SVOC	Dimethylphthalate	131-11-3	T	D	8				7.60E-04	5.00E-03	2.1E+02		7.3E+01	
Intermediate	SVOC	Di-n-butylphthalate	84-74-2	T	D	8				6.70E-04	5.00E-03	2.5E+00		8.8E-01	
Intermediate	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		8				1.30E-03	2.00E-02	2.0E-02		2.0E-02	
Intermediate	SVOC	2,4-Dinitrophenol	51-28-5	T		8				3.00E-03	2.00E-02				
Intermediate	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	8				7.90E-04	5.00E-03	3.2E-02		7.7E-03	
Intermediate	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	8				5.70E-04	5.00E-03				
Intermediate	SVOC	Di-n-octylphthalate	117-84-0	T		8				1.10E-03	5.00E-03	3.8E-01		1.3E-01	
Intermediate	SVOC	Fluoranthene	206-44-0	T	D	8				8.10E-04	5.00E-03	2.1E-01		2.1E-01	
Intermediate	SVOC	Fluorene	86-73-7	T	D	8				1.00E-03	5.00E-03	2.0E+00		8.8E-01	
Intermediate	SVOC	Hexachlorobenzene	118-74-1	T	B2	8				7.40E-04	5.00E-03	1.0E-03		1.0E-03	
Intermediate	SVOC	Hexachlorobutadiene	87-68-3	T	C	8				7.30E-04	5.00E-03	4.2E-02		1.5E-02	
Intermediate	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	7				1.10E-03	5.00E-03	5.0E-02		5.0E-02	
Intermediate	SVOC	Hexachloroethane	67-72-1	T	C	8				7.40E-04	5.00E-03	2.1E-02		7.3E-03	
Intermediate	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	8				6.30E-04	5.00E-03	2.0E-03		2.0E-03	
Intermediate	SVOC	Isophorone	78-59-1	T	C	8				6.30E-04	5.00E-03	3.1E+00		7.7E-01	
Intermediate	SVOC	2-Methylnaphthalene	91-57-6	T	ID	8				6.40E-04	5.00E-03	7.5E-01		2.6E-01	
Intermediate	SVOC	Methylphenol (total)	1319-77-3	T		8				1.30E-03	5.00E-03	1.0E+00		3.7E-01	
Intermediate	SVOC	Naphthalene	91-20-3	T	C	8				7.50E-04	5.00E-03	1.5E+00		5.2E-01	
Intermediate	SVOC	2-Nitroaniline	88-74-4	T		8				7.00E-04	2.00E-02				
Intermediate	SVOC	3-Nitroaniline	99-09-2	T	C	8				7.10E-04	2.00E-02				
Intermediate	SVOC	4-Nitroaniline	100-01-6	T	C	8				1.30E-03	2.00E-02				
Intermediate	SVOC	Nitrobenzene	98-95-3	T	D	8				8.10E-04	5.00E-03	9.6E-03		3.4E-03	
Intermediate	SVOC	2-Nitrophenol	88-75-5	T		8				2.10E-03	5.00E-03	5.8E-02		2.0E-02	
Intermediate	SVOC	4-Nitrophenol	100-02-7	T		8				1.90E-03	2.00E-02				
Intermediate	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	8				1.40E-03	5.00E-03	1.1E+00		2.7E-01	
Intermediate	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	8				6.70E-04	5.00E-03	5.0E-03		5.0E-03	
Intermediate	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	8				7.80E-04	5.00E-03				
Intermediate	SVOC	Pentachlorophenol	87-86-5	T	B2	8				2.40E-03	5.00E-03	1.0E-03		1.0E-03	
Intermediate	SVOC	Phenanthrene	85-01-8	T	D	8				8.20E-04	5.00E-03	1.5E-01		5.2E-02	
Intermediate	SVOC	Phenol	108-95-2	T	ID	8				2.60E-03	5.00E-03	1.3E+01		4.4E+00	
Intermediate	SVOC	Pyrene	129-00-0	T	D	8				1.10E-03	5.00E-03	1.4E-01		1.4E-01	
Intermediate	SVOC	2,4,5-Trichlorophenol	95-95-4	T		8				1.20E-03	5.00E-03	2.1E+00		7.3E-01	
Intermediate	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	8				1.70E-03	5.00E-03	4.7E-01		1.2E-01	
Intermediate	P/PCB	PCBs (total)	1336-36-3	T	B2	1				8.20E-05	8.20E-05	5.0E-04		5.0E-04	
Intermediate	INORG	Antimony	7440-36-0	D		6				2.20E-03	2.50E-02	6.0E-03		6.0E-03	
Intermediate	INORG	Antimony	7440-36-0	T		8				2.20E-03	2.50E-02	6.0E-03		6.0E-03	
Intermediate	INORG	Arsenic	7440-38-2	D	A	6	4	6.10E-03	2.74E-02	3.90E-03	3.90E-03	5.0E-02	5.5E-01	5.0E-02	5.5E-01
Intermediate	INORG	Arsenic	7440-38-2	T	A	8	4	7.40E-03	2.66E-02	2.10E-03	3.90E-03	5.0E-02	5.3E-01	5.0E-02	5.3E-01
Intermediate	INORG	Barium	7440-39-3	D	D	6	6	8.18E-02	3.04E-01			2.0E+00	1.5E-01	2.0E+00	1.5E-01
Intermediate	INORG	Barium	7440-39-3	T	D	8	8	1.01E-01	2.88E-01			2.0E+00	1.4E-01	2.0E+00	1.4E-01
Intermediate	INORG	Beryllium	7440-41-7	D	B1	6				5.40E-04	1.00E-03	4.0E-03		4.0E-03	
Intermediate	INORG	Beryllium	7440-41-7	T	B1	8				5.40E-04	1.00E-03	4.0E-03		4.0E-03	
Intermediate	INORG	Cadmium	7440-43-9	D	B1	6				2.80E-04	5.00E-03	5.0E-03		5.0E-03	
Intermediate	INORG	Cadmium	7440-43-9	T	B1	8	1	3.30E-04	3.30E-04	2.80E-04	5.00E-03	5.0E-03	6.6E-02	5.0E-03	6.6E-02
Intermediate	INORG	Chromium (total)	7440-47-3	D		6				1.40E-03	1.00E-02	1.0E-01		1.0E-01	
Intermediate	INORG	Chromium (total)	7440-47-3	T		8	6	1.90E-03	6.05E-02	1.40E-03	1.00E-02	1.0E-01	6.1E-01	1.0E-01	6.1E-01
Intermediate	INORG	Cobalt	7440-48-4	D	B1	6	2	1.90E-03	2.10E-03	1.30E-03	2.00E-02	1.0E-01	2.1E-02	4.0E-02	5.3E-02
Intermediate	INORG	Cobalt	7440-48-4	T	B1	8	5	1.80E-03	6.20E-03	1.30E-03	2.00E-02	1.0E-01	6.2E-02	4.0E-02	1.6E-01
Intermediate	INORG	Copper	7440-50-8	D	D	6				4.20E-03	5.00E-03	4.0E+00		1.4E+00	
Intermediate	INORG	Copper	7440-50-8	T	D	8	3	5.60E-03	9.90E-03	1.70E-03	4.20E-03	4.0E+00	2.5E-03	1.4E+00	7.1E-03
Intermediate	INORG	Lead	7439-92-1	D	B2	6				2.50E-03	3.00E-03	4.0E-03		4.0E-03	

TABLE 4-42b
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Intermediate	INORG	Lead	7439-92-1	T	B2	8	1	2.80E-03	2.80E-03	1.60E-03	3.00E-03	4.0E-03	7.0E-01	4.0E-03	7.0E-01
Intermediate	INORG	Manganese	7439-96-5	D	D	6	6	3.49E-02	2.19E-01			2.5E+00	8.8E-02	8.6E-01	2.5E-01
Intermediate	INORG	Manganese	7439-96-5	T	D	8	8	3.75E-02	3.52E-01			2.5E+00	1.4E-01	8.6E-01	4.1E-01
Intermediate	INORG	Mercury	7439-97-6	D	D	6				6.90E-05	2.00E-04	2.0E-03		2.0E-03	
Intermediate	INORG	Mercury	7439-97-6	T	D	8				6.90E-05	2.00E-04	2.0E-03		2.0E-03	
Intermediate	INORG	Nickel	7440-02-0	D	A	6	3	2.30E-03	2.32E-02	2.20E-03	2.00E-02	1.0E-01	2.3E-01	1.0E-01	2.3E-01
Intermediate	INORG	Nickel	7440-02-0	T	A	8	7	2.30E-03	5.90E-02	2.20E-03	2.20E-03	1.0E-01	5.9E-01	1.0E-01	5.9E-01
Intermediate	INORG	Selenium	7782-49-2	D	D	6				4.50E-03	5.00E-03	5.0E-02		5.0E-02	
Intermediate	INORG	Selenium	7782-49-2	T	D	8				4.50E-03	5.00E-03	5.0E-02		5.0E-02	
Intermediate	INORG	Silver	7440-22-4	D	D	6				1.50E-03	5.00E-03	9.8E-02		3.4E-02	
Intermediate	INORG	Silver	7440-22-4	T	D	8				9.80E-04	5.00E-03	9.8E-02		3.4E-02	
Intermediate	INORG	Thallium	7440-28-0	D		6	2	6.80E-04	6.10E-03	1.80E-05	1.00E-02	2.0E-03	**3.1E+00**	2.0E-03	**3.1E+00**
Intermediate	INORG	Thallium	7440-28-0	T		8	1	9.20E-05	9.20E-05	1.80E-05	1.00E-02	2.0E-03	4.6E-02	2.0E-03	4.6E-02
Intermediate	INORG	Vanadium	7440-62-2	D		6				8.20E-04	1.00E-02	6.2E-02		4.5E-03	
Intermediate	INORG	Vanadium	7440-62-2	T		8	2	2.20E-03	3.40E-03	6.70E-04	1.00E-02	6.2E-02	5.5E-02	4.5E-03	7.6E-01
Intermediate	INORG	Zinc	7440-66-6	D	D	6	1	1.56E-02	1.56E-02	1.20E-02	2.00E-02	5.0E+00	3.1E-03	2.4E+00	6.5E-03
Intermediate	INORG	Zinc	7440-66-6	T	D	8	4	1.34E-02	3.03E-02	1.20E-02	2.00E-02	5.0E+00	6.1E-03	2.4E+00	1.3E-02

Notes:
Screening Criteria is from Michigan DEQ Act 451, Part 201.
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to the Screening Criteria
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 4-43
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC MIGHIGAN

RCRA FACILITY INVESTIGATION

Well	Date (mm/dd/yy)	Depth to Water (feet bgs)	Depth to NAPL (feet bgs)	NAPL Thickness (feet)
LNAPL AREA NO. 1				
MWW1-05	11/11/02*	29.36	29.05	0.31
	10/27/03	30.66	29.56	1.1
LNAPL AREA NO. 3				
MWW8-08	10/28/03*	31.59	30.9	0.69
MWW8-14	10/28/03	30.25	30.21	0.04
MWW8-15	10/28/03	32.31	32.29	0.02
MWW8-16	10/28/03	29.99	29.39	0.6
RWW8-01	10/28/03	26.18	26.06	0.12
RWW8-02	10/28/03	31.5	29.93	1.57
LNAPL AREA NO. 4				
MWM2-04	01/02/02	16.08	16.02	0.06
	08/26/02**	16.49	16.48	0.01
MWM2-06	08/26/03	17.64	16.62	1.02
	11/11/02	17.52	16.81	0.71
	05/03/03	18.02	16.70	1.32
	06/12/03	16.92	16.68	0.24
	06/17/03	17.00	16.71	0.29
	06/23/03	17.53	16.98	0.55
	07/16/03	17.40	16.93	0.47
	08/01/03	17.55	17.01	0.54
	08/11/03	17.39	17.02	0.37
	08/27/03	17.44	17.03	0.41
LNAPL AREA NO. 5				
MWM4-06	07/24/03	5.99	5.54	0.45
	07/25/03	6.10	5.53	0.57
	07/28/03	9.15	5.48	3.67
	08/11/03	6.11	5.4	0.71
	08/27/03	6.16	5.41	0.75
MWM16-03	07/24/03	5.42	Globules in well	
	07/28/03	5.38	Oil sheen on water, petroleum odor	
	08/11/03	5.34	Globules present on probe	
	08/27/03	5.35	Globules in well	
LNAPL AREA NO. 6				
MWW9-02	07/31/03	33.7	--	--
	08/11/03	33.17	--	--
	08/27/03*	33.68	33.66	0.02
	10/27/03	33.92	33.67	0.25

Note:
* - LNAPL was observed for the first time on this date in this well.
** - LNAPL has not been detected at MWM2-04 since the August 2002 reading.

TABLE 5-1
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SMEAR ZONE SOIL SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Max Detected (mg/kg)	Calculated Max Smear Zone Soil Conc (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Criteria (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Indoor Air Criteria	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Industrial Particulate Inhalation Criteria (mg/kg)	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Conc to Industrial Direct Contact Criteria
M-02	VOC	Acetone	67-64-1	ID	1					1.1E+05		1.6E+05		1.7E+08		7.3E+04	
M-02	VOC	Benzene	71-43-2	A	1					8.4E+00		4.5E+01		4.7E+05		4.0E+02	
M-02	VOC	Bromodichloromethane	75-27-4	B2	1					6.4E+00		3.1E+01		1.1E+05		4.9E+02	
M-02	VOC	Bromoform	75-25-2	B2	1					7.7E+02		3.1E+03		3.6E+06		8.7E+02	
M-02	VOC	Bromomethane	74-83-9	D	1					1.6E+00		1.3E+01		1.5E+05		1.0E+03	
M-02	VOC	2-Butanone	78-93-3	ID	1					2.7E+04		3.5E+04		2.9E+07		2.7E+04	
M-02	VOC	Carbon Disulfide	75-15-0		1					1.4E+02		1.6E+03		2.1E+07		2.8E+02	
M-02	VOC	Carbon Tetrachloride	56-23-5	B2	1					9.9E-01		1.2E+01		1.7E+05		3.9E+02	
M-02	VOC	Chlorobenzene	108-90-7	D	1					2.2E+02		9.2E+02		2.1E+06		2.6E+02	
M-02	VOC	Chloroethane	75-00-3		1					9.5E+02		3.6E+04		2.9E+08		9.5E+02	
M-02	VOC	Chloroform	67-66-3	B2	1	1	4.20E-01	1.08E-01		3.8E+01	2.9E-03	1.5E+02	7.2E-04	1.6E+06	6.8E-08	1.5E+03	7.2E-05
M-02	VOC	Chloromethane	74-87-3	D	1					1.0E+01		1.2E+02		2.6E+06		1.1E+03	
M-02	VOC	Cumene	98-82-8	D	1	1	7.90E-01	2.04E-01		3.9E+02	5.2E-04	2.0E+03	1.0E-04	2.6E+06	7.8E-08	3.9E+02	5.2E-04
M-02	VOC	Cyclohexane	110-82-7	ID	1												
M-02	VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	1					1.2E+00		1.5E+01		5.9E+03		1.2E+00	
M-02	VOC	Dibromochloromethane	124-48-1	C	1					2.1E+01		8.0E+01		1.6E+05		5.0E+02	
M-02	VOC	1,2-Dibromoethane	106-93-4	B2	1					3.6E+00		5.8E+00		1.8E+04		4.3E-01	
M-02	VOC	1,2-Dichlorobenzene	95-50-1	D	1					2.1E+02		4.6E+04		4.4E+07		2.1E+02	
M-02	VOC	1,3-Dichlorobenzene	541-73-1	D	1											1.7E+02	
M-02	VOC	1,4-Dichlorobenzene	106-46-7	C	1					1.0E+02		2.6E+02		5.7E+05		1.9E+03	
M-02	VOC	Dichlorodifluoromethane	75-71-8		1					1.7E+03		6.3E+04		1.5E+09		1.0E+03	
M-02	VOC	1,1-Dichloroethane	75-34-3	C	1	1	2.10E+01	5.42E+00		4.3E+02	1.3E-02	2.5E+03	2.2E-03	1.5E+07	3.6E-07	8.9E+02	6.1E-03
M-02	VOC	1,2-Dichloroethane	107-06-2	B2	1					1.1E+01		2.1E+01		1.5E+05		4.2E+02	
M-02	VOC	1,1-Dichloroethene	75-35-4	C	1	1	2.40E+00	6.19E-01		3.3E-01	**1.9E+00**	3.7E+00	1.7E-01	7.8E+04	7.9E-06	5.7E+02	1.1E-03
M-02	VOC	cis-1,2-Dichloroethene	156-59-2	D	1					4.1E+01		2.1E+02		1.0E+06		6.4E+02	
M-02	VOC	trans-1,2-Dichloroethene	156-60-5		1					4.3E+01		3.3E+02		2.1E+06		1.4E+03	
M-02	VOC	1,2-Dichloropropane	78-87-5	B2	1					7.4E+00		3.0E+01		1.2E+05		5.5E+02	
M-02	VOC	1,3-Dichloropropene (total)	542-75-6	B2	1					5.4E+00		6.0E+01		5.9E+05		2.4E+02	
M-02	VOC	Ethyl Benzene	100-41-4	D	1	1	2.70E+00	6.97E-01		1.4E+02	5.0E-03	2.4E+03	2.9E-04	1.3E+07	5.4E-08	1.4E+02	5.0E-03
M-02	VOC	2-Hexanone	591-78-6		1					1.8E+03		1.3E+03		1.2E+06		2.5E+03	
M-02	VOC	Methyl Acetate	79-20-9		1												
M-02	VOC	Methyl tert-butyl ether	1634-04-4		1					5.9E+03		3.0E+04		8.8E+07		5.9E+03	
M-02	VOC	4-Methyl-2-pentanone	108-10-1	ID	1	1	3.40E-01	8.77E-02		2.7E+03	3.2E-05	5.3E+04	1.7E-06	6.0E+07	1.5E-09	2.7E+03	3.2E-05
M-02	VOC	Methylcyclohexane	108-87-2		1	1	2.70E-01	6.97E-02									
M-02	VOC	Methylene Chloride	75-09-2	B2	1	1	1.30E+00	3.35E-01		2.4E+02	1.4E-03	7.0E+02	4.8E-04	8.3E+06	4.0E-08	2.3E+03	1.5E-04
M-02	VOC	Styrene	100-42-5		1					5.2E+02		3.3E+03		6.9E+06		5.2E+02	
M-02	VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	1					2.3E+01		3.4E+01		6.8E+04		2.4E+02	
M-02	VOC	Tetrachloroethene	127-18-4	C-B2	1	1	1.10E+01	2.84E+00		6.0E+01	4.7E-02	6.0E+02	4.7E-03	6.8E+06	4.2E-07	8.8E+01	3.2E-02
M-02	VOC	Toluene	108-88-3	D	1	1	3.30E+00	8.51E-01		2.5E+02	3.4E-03	3.3E+03	2.6E-04	1.2E+07	7.1E-08	2.5E+02	3.4E-03
M-02	VOC	1,2,4-Trichlorobenzene	120-82-1	D	1					1.1E+03		3.4E+04		1.1E+07		1.1E+03	
M-02	VOC	1,1,1-Trichloroethane	71-55-6	D	1	1	4.40E+00	1.14E+00		4.6E+02	2.5E-03	4.5E+03	2.5E-04	2.9E+07	3.9E-08	4.6E+02	2.5E-03
M-02	VOC	1,1,2-Trichloroethane	79-00-5	C	1					2.4E+01		5.7E+01		2.5E+05		8.4E+02	
M-02	VOC	Trichloroethene	79-01-6	C-B2	1	1	1.40E+00	3.61E-01		3.7E+01	9.8E-03	2.6E+02	1.4E-03	2.3E+06	1.6E-07	5.0E+02	7.2E-04
M-02	VOC	Trichlorofluoromethane	75-69-4		1					5.6E+02		1.1E+05		1.7E+09		5.6E+02	
M-02	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		1					5.5E+02		2.1E+05		2.3E+09		5.5E+02	
M-02	VOC	Vinyl Chloride	75-01-4	A	1					2.8E+00		2.9E+01		8.9E+05		3.4E+01	
M-02	VOC	Xylenes (total)	1330-20-7	ID	1	1	1.00E+01	2.58E+00		1.5E+02	1.7E-02	5.4E+04	4.8E-05	1.3E+08	2.0E-08	1.5E+02	1.7E-02
M-02	SVOC	Acenaphthene	83-32-9		1					3.5E+05		9.7E+04		6.2E+06		1.3E+05	
M-02	SVOC	Acenaphthylene	208-96-8	D	1					3.0E+03		2.7E+03		1.0E+06		5.2E+03	
M-02	SVOC	Acetophenone	98-86-2	D	1					1.1E+03		5.2E+04		1.4E+07		1.1E+03	
M-02	SVOC	Anthracene	120-12-7	D	1	1	1.20E+02	3.10E+01		1.0E+06	3.1E-05	1.6E+06	1.9E-05	2.9E+07	1.1E-06	7.3E+05	4.2E-05
M-02	SVOC	Atrazine	1912-24-9		1											3.3E+02	
M-02	SVOC	Benzaldehyde	100-52-7		1												
M-02	SVOC	Benzo(a)anthracene	56-55-3	B2	1											8.0E+01	
M-02	SVOC	Benzo(a)pyrene	50-32-8	B2	1									1.9E+03		8.0E+00	

TABLE 5-1
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SMEAR ZONE SOIL SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Max Detected (mg/kg)	Calculated Max Smear Zone Soil Conc (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Criteria (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Indoor Air Criteria	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Industrial Particulate Inhalation Criteria (mg/kg)	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Conc to Industrial Direct Contact Criteria
M-02	SVOC	Benzo(b)fluoranthene	205-99-2	B2	1											8.0E+01	
M-02	SVOC	Benzo(g,h,i)perylene	191-24-2	D	1									3.5E+05		7.0E+03	
M-02	SVOC	Benzo(k)fluoranthene	207-08-9	B2	1											8.0E+02	
M-02	SVOC	Biphenyl	92-52-4	D	1												
M-02	SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	1												
M-02	SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	1					4.4E+01		1.3E+01		1.2E+04		5.8E+01	
M-02	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	1									8.9E+05		1.0E+04	
M-02	SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	1												
M-02	SVOC	Butylbenzylphthalate	85-68-7	C	1									2.1E+07		3.1E+02	
M-02	SVOC	Caprolactam	105-60-2		1									2.9E+05		3.1E+05	
M-02	SVOC	Carbazole	86-74-8	B2	1											2.4E+03	
M-02	SVOC	4-Chloro-3-methylphenol	59-50-7		1											1.5E+04	
M-02	SVOC	4-Chloroaniline	106-47-8		1												
M-02	SVOC	2-Chloronaphthalene	91-58-7		1											1.8E+05	
M-02	SVOC	2-Chlorophenol	95-57-8		1											4.5E+03	
M-02	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		1												
M-02	SVOC	Chrysene	218-01-9	B2	1											8.0E+03	
M-02	SVOC	Dibenz(a,h)anthracene	53-70-3	B2	1											8.0E+00	
M-02	SVOC	Dibenzofuran	132-64-9	D	1												
M-02	SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	1									8.2E+03		3.0E+01	
M-02	SVOC	2,4-Dichlorophenol	120-83-2		1									2.3E+06		1.8E+03	
M-02	SVOC	Diethylphthalate	84-66-2	D	1									1.5E+06		7.4E+02	
M-02	SVOC	2,4-Dimethylphenol	105-67-9		1									2.1E+06		3.6E+04	
M-02	SVOC	Dimethylphthalate	131-11-3	D	1									1.5E+06		7.9E+02	
M-02	SVOC	Di-n-butylphthalate	84-74-2	D	1									1.5E+06		7.6E+02	
M-02	SVOC	4,6-Dinitro-2-methylphenol	534-52-1		1											2.6E+02	
M-02	SVOC	2,4-Dinitrophenol	51-28-5		1												
M-02	SVOC	2,4-Dinitrotoluene	121-14-2	B2	1									2.0E+04		2.2E+02	
M-02	SVOC	2,6-Dinitrotoluene	606-20-2	B2	1												
M-02	SVOC	Di-n-octylphthalate	117-84-0		1											2.0E+04	
M-02	SVOC	Fluoranthene	206-44-0	D	1	1	1.30E+02	3.35E+01		1.0E+06	3.4E-05	8.9E+05	3.8E-05	4.1E+06	8.2E-06	1.3E+05	2.6E-04
M-02	SVOC	Fluorene	86-73-7	D	1	1	1.70E+02	4.39E+01		1.0E+06	4.4E-05	1.5E+05	2.9E-04	4.1E+06	1.1E-05	8.7E+04	5.0E-04
M-02	SVOC	Hexachlorobenzene	118-74-1	B2	1					2.2E+02		5.6E+01		8.5E+03		3.7E+01	
M-02	SVOC	Hexachlorobutadiene	87-68-3	C	1					3.5E+02		4.6E+02		1.8E+05		3.5E+02	
M-02	SVOC	Hexachlorocyclopentadiene	77-47-4	E	1					5.6E+01		6.0E+01		5.9E+03		7.2E+02	
M-02	SVOC	Hexachloroethane	67-72-1	C	1					7.9E+01		6.6E+02		1.0E+05		7.3E+02	
M-02	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1											8.0E+01	
M-02	SVOC	Isophorone	78-59-1	C	1									8.2E+06		2.4E+03	
M-02	SVOC	2-Methylnaphthalene	91-57-6	ID	1	1	5.90E+01	1.52E+01								2.6E+04	5.9E-04
M-02	SVOC	Methylphenol (total)	1319-77-3		1									2.9E+06		3.6E+04	
M-02	SVOC	Naphthalene	91-20-3	C	1					4.7E+02		3.5E+02		8.8E+04		5.2E+04	
M-02	SVOC	2-Nitroaniline	88-74-4		1												
M-02	SVOC	3-Nitroaniline	99-09-2	C	1												
M-02	SVOC	4-Nitroaniline	100-01-6	C	1												
M-02	SVOC	Nitrobenzene	98-95-3	D	1					1.7E+02		6.4E+01		2.1E+04		3.4E+02	
M-02	SVOC	2-Nitrophenol	88-75-5		1											2.0E+03	
M-02	SVOC	4-Nitrophenol	100-02-7		1												
M-02	SVOC	N-Nitrosodiphenylamine	86-30-6	B2	1											7.8E+03	
M-02	SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	1									2.0E+03		5.4E+00	
M-02	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	1												
M-02	SVOC	Pentachlorophenol	87-86-5	B2	1									1.3E+05		3.2E+02	
M-02	SVOC	Phenanthrene	85-01-8	D	1	1	6.60E+02	1.70E+02		5.1E+03	3.3E-02	1.9E+02	9.0E-01	2.9E+03	5.9E-02	5.2E+03	3.3E-02
M-02	SVOC	Phenol	108-95-2	ID	1									1.8E+07		1.2E+04	
M-02	SVOC	Pyrene	129-00-0	D	1	1	1.70E+02	4.39E+01		1.0E+06	4.4E-05	7.8E+05	5.6E-05	2.9E+06	1.5E-05	8.4E+04	5.2E-04
M-02	SVOC	2,4,5-Trichlorophenol	95-95-4		1									1.0E+07		7.3E+04	

TABLE 5-1
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SMEAR ZONE SOIL SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Max Detected (mg/kg)	Calculated Max Smear Zone Soil Conc (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Criteria (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Indoor Air Criteria	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Industrial Particulate Inhalation Criteria (mg/kg)	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Conc to Industrial Direct Contact Criteria
M-02	SVOC	2,4,6-Trichlorophenol	88-06-2	B2	1									1.3E+06		3.3E+03	
M-02	P/PCB	PCBs (total)	1336-36-3	B2	1	1	1.70E+02	4.39E+01		1.6E+04	2.7E-03	8.1E+02	5.4E-02	6.5E+03	6.8E-03	1.6E+01	**2.7E+00**
M-02	INORG	Antimony	7440-36-0		1	1	4.80E-01	1.24E-01						5.9E+03	2.1E-05	6.7E+02	1.8E-04
M-02	INORG	Arsenic	7440-38-2	A	1	1	6.50E+00	1.68E+00	1.3E+01					9.1E+02		3.7E+01	
M-02	INORG	Barium	7440-39-3	D	1				1.1E+02					1.5E+05		1.3E+05	
M-02	INORG	Beryllium	7440-41-7	B1	1				1.5E+00					5.9E+02		1.6E+03	
M-02	INORG	Cadmium	7440-43-9	B1	1				1.2E+00					2.2E+03		2.1E+03	
M-02	INORG	Chromium (total)	7440-47-3		1	1	2.70E+00	6.97E-01	4.9E+01					2.4E+02		9.2E+03	
M-02	INORG	Cobalt	7440-48-4	B1	1	1	8.40E-02	2.17E-02	1.7E+01					5.9E+03		9.0E+03	
M-02	INORG	Copper	7440-50-8	D	1	1	3.20E+00	8.26E-01	3.2E+01					5.9E+04		7.3E+04	
M-02	INORG	Cyanide (total)	57-12-5	D	1	1	1.20E-01	3.10E-02						2.5E+02	1.2E-04	2.5E+02	1.2E-04
M-02	INORG	Lead	7439-92-1	B2	1	1	8.30E-01	2.14E-01	4.9E+01					4.4E+04		9.0E+02	
M-02	INORG	Manganese	7439-96-5	D	1				5.1E+02					1.5E+03		9.0E+04	
M-02	INORG	Mercury	7439-97-6	D	1				1.3E-01	8.9E+01		6.2E+01		8.8E+03		5.8E+02	
M-02	INORG	Nickel	7440-02-0	A	1	1	9.17E+01	2.37E+01	3.0E+01					1.6E+04		1.5E+05	
M-02	INORG	Selenium	7782-49-2	D	1				4.1E-01					5.9E+04		9.6E+03	
M-02	INORG	Silver	7440-22-4	D	1	1	1.10E-01	2.84E-02						2.9E+03	9.8E-06	9.0E+03	3.2E-06
M-02	INORG	Thallium	7440-28-0		1											1.3E+02	
M-02	INORG	Vanadium	7440-62-2		1				3.3E+01							5.5E+03	
M-02	INORG	Zinc	7440-66-6	D	1	1	1.90E+00	4.90E-01	1.9E+02							6.3E+05	
M-16	VOC	Acetone	67-64-1	ID	1					1.1E+05		1.6E+05		1.7E+08		7.3E+04	
M-16	VOC	Benzene	71-43-2	A	1	1	1.40E-01	3.61E-02		8.4E+00	4.3E-03	4.5E+01	8.0E-04	4.7E+05	7.7E-08	4.0E+02	9.0E-05
M-16	VOC	Bromodichloromethane	75-27-4	B2	1					6.4E+00		3.1E+01		1.1E+05		4.9E+02	
M-16	VOC	Bromoform	75-25-2	B2	1					7.7E+02		3.1E+03		3.6E+06		8.7E+02	
M-16	VOC	Bromomethane	74-83-9	D	1					1.6E+00		1.3E+01		1.5E+05		1.0E+03	
M-16	VOC	2-Butanone	78-93-3	ID	1					2.7E+04		3.5E+04		2.9E+07		2.7E+04	
M-16	VOC	Carbon Disulfide	75-15-0		1					1.4E+02		1.6E+03		2.1E+07		2.8E+02	
M-16	VOC	Carbon Tetrachloride	56-23-5	B2	1					9.9E-01		1.2E+01		1.7E+05		3.9E+02	
M-16	VOC	Chlorobenzene	108-90-7	D	1					2.2E+02		9.2E+02		2.1E+06		2.6E+02	
M-16	VOC	Chloroethane	75-00-3		1					9.5E+02		3.6E+04		2.9E+08		9.5E+02	
M-16	VOC	Chloroform	67-66-3	B2	1					3.8E+01		1.5E+02		1.6E+06		1.5E+03	
M-16	VOC	Chloromethane	74-87-3	D	1					1.0E+01		1.2E+02		2.6E+06		1.1E+03	
M-16	VOC	Cumene	98-82-8	D	1	1	6.10E-01	1.57E-01		3.9E+02	4.0E-04	2.0E+03	7.9E-05	2.6E+06	6.1E-08	3.9E+02	4.0E-04
M-16	VOC	Cyclohexane	110-82-7	ID	1	1	7.30E-01	1.88E-01									
M-16	VOC	1,2-Dibromo-3-chloropropane	96-12-8	B2	1					1.2E+00		1.5E+01		5.9E+03		1.2E+00	
M-16	VOC	Dibromochloromethane	124-48-1	C	1					2.1E+01		8.0E+01		1.6E+05		5.0E+02	
M-16	VOC	1,2-Dibromoethane	106-93-4	B2	1					3.6E+00		5.8E+00		1.8E+04		4.3E-01	
M-16	VOC	1,2-Dichlorobenzene	95-50-1	D	1					2.1E+02		4.6E+04		4.4E+07		2.1E+02	
M-16	VOC	1,3-Dichlorobenzene	541-73-1	D	1											1.7E+02	
M-16	VOC	1,4-Dichlorobenzene	106-46-7	C	1					1.0E+02		2.6E+02		5.7E+05		1.9E+03	
M-16	VOC	Dichlorodifluoromethane	75-71-8		1					1.7E+03		6.3E+04		1.5E+09		1.0E+03	
M-16	VOC	1,1-Dichloroethane	75-34-3	C	1					4.3E+02		2.5E+03		1.5E+07		8.9E+02	
M-16	VOC	1,2-Dichloroethane	107-06-2	B2	1					1.1E+01		2.1E+01		1.5E+05		4.2E+02	
M-16	VOC	1,1-Dichloroethene	75-35-4	C	1					3.3E-01		3.7E+00		7.8E+04		5.7E+02	
M-16	VOC	cis-1,2-Dichloroethene	156-59-2	D	1	1	3.00E-01	7.74E-02		4.1E+01	1.9E-03	2.1E+02	3.7E-04	1.0E+06	7.7E-08	6.4E+02	1.2E-04
M-16	VOC	trans-1,2-Dichloroethene	156-60-5		1					4.3E+01		3.3E+02		2.1E+06		1.4E+03	
M-16	VOC	1,2-Dichloropropane	78-87-5	B2	1					7.4E+00		3.0E+01		1.2E+05		5.5E+02	
M-16	VOC	1,3-Dichloropropene (total)	542-75-6	B2	1					5.4E+00		6.0E+01		5.9E+05		2.4E+02	
M-16	VOC	Ethyl Benzene	100-41-4	D	1	1	7.10E+00	1.83E+00		1.4E+02	1.3E-02	2.4E+03	7.6E-04	1.3E+07	1.4E-07	1.4E+02	1.3E-02
M-16	VOC	2-Hexanone	591-78-6		1					1.8E+03		1.3E+03		1.2E+06		2.5E+03	
M-16	VOC	Methyl Acetate	79-20-9		1	1	4.80E-01	1.24E-01									
M-16	VOC	Methyl tert-butyl ether	1634-04-4		1					5.9E+03		3.0E+04		8.8E+07		5.9E+03	
M-16	VOC	4-Methyl-2-pentanone	108-10-1	ID	1					2.7E+03		5.3E+04		6.0E+07		2.7E+03	
M-16	VOC	Methylcyclohexane	108-87-2		1	1	1.90E+00	4.90E-01									
M-16	VOC	Methylene Chloride	75-09-2	B2	1					2.4E+02		7.0E+02		8.3E+06		2.3E+03	

TABLE 5-1
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SMEAR ZONE SOIL SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Max Detected (mg/kg)	Calculated Max Smear Zone Soil Conc (mg/kg)	Site Specific Background (mg/kg)	Industrial Soil Volatilization to Indoor Air Criteria (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Indoor Air Criteria	Industrial Soil Volatilization to Ambient Air Criteria (mg/kg)	Ratio of Max Conc to Industrial Soil Volatilization to Ambient Air Criteria	Industrial Particulate Inhalation Criteria (mg/kg)	Ratio of Max Conc to Industrial Particulate Inhalation Criteria	Industrial Direct Contact Criteria (mg/kg)	Ratio of Max Conc to Industrial Direct Contact Criteria
M-16	VOC	Styrene	100-42-5		1					5.2E+02		3.3E+03		6.9E+06		5.2E+02	
M-16	VOC	1,1,2,2-Tetrachloroethane	79-34-5	C	1					2.3E+01		3.4E+01		6.8E+04		2.4E+02	
M-16	VOC	Tetrachloroethene	127-18-4	C-B2	1	1	2.20E-01	5.68E-02		6.0E+01	9.5E-04	6.0E+02	9.5E-05	6.8E+06	8.3E-09	8.8E+01	6.5E-04
M-16	VOC	Toluene	108-88-3	D	1	1	1.20E+01	3.10E+00		2.5E+02	1.2E-02	3.3E+03	9.4E-04	1.2E+07	2.6E-07	2.5E+02	1.2E-02
M-16	VOC	1,2,4-Trichlorobenzene	120-82-1	D	1					1.1E+03		3.4E+04		1.1E+07		1.1E+03	
M-16	VOC	1,1,1-Trichloroethane	71-55-6	D	1					4.6E+02		4.5E+03		2.9E+07		4.6E+02	
M-16	VOC	1,1,2-Trichloroethane	79-00-5	C	1					2.4E+01		5.7E+01		2.5E+05		8.4E+02	
M-16	VOC	Trichloroethene	79-01-6	C-B2	1	1	5.30E-01	1.37E-01		3.7E+01	3.7E-03	2.6E+02	5.3E-04	2.3E+06	5.9E-08	5.0E+02	2.7E-04
M-16	VOC	Trichlorofluoromethane	75-69-4		1					5.6E+02		1.1E+05		1.7E+09		5.6E+02	
M-16	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		1					5.5E+02		2.1E+05		2.3E+09		5.5E+02	
M-16	VOC	Vinyl Chloride	75-01-4	A	1					2.8E+00		2.9E+01		8.9E+05		3.4E+01	
M-16	VOC	Xylenes (total)	1330-20-7	ID	1	1	3.90E+01	1.01E+01		1.5E+02	6.7E-02	5.4E+04	1.9E-04	1.3E+08	7.7E-08	1.5E+02	6.7E-02
M-16	SVOC	Acenaphthene	83-32-9		1					3.5E+05		9.7E+04		6.2E+06		1.3E+05	
M-16	SVOC	Acenaphthylene	208-96-8	D	1					3.0E+03		2.7E+03		1.0E+06		5.2E+03	
M-16	SVOC	Acetophenone	98-86-2	D	1					1.1E+03		5.2E+04		1.4E+07		1.1E+03	
M-16	SVOC	Anthracene	120-12-7	D	1					1.0E+06		1.6E+06		2.9E+07		7.3E+05	
M-16	SVOC	Atrazine	1912-24-9		1											3.3E+02	
M-16	SVOC	Benzaldehyde	100-52-7		1												
M-16	SVOC	Benzo(a)anthracene	56-55-3	B2	1											8.0E+01	
M-16	SVOC	Benzo(a)pyrene	50-32-8	B2	1									1.9E+03		8.0E+00	
M-16	SVOC	Benzo(b)fluoranthene	205-99-2	B2	1											8.0E+01	
M-16	SVOC	Benzo(g,h,i)perylene	191-24-2	D	1									3.5E+05		7.0E+03	
M-16	SVOC	Benzo(k)fluoranthene	207-08-9	B2	1											8.0E+02	
M-16	SVOC	Biphenyl	92-52-4	D	1												
M-16	SVOC	bis(2-Chloroethoxy)methane	111-91-1	D	1												
M-16	SVOC	bis(2-Chloroethyl) ether	111-44-4	B2	1					4.4E+01		1.3E+01		1.2E+04		5.8E+01	
M-16	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	1	1	5.30E+02	1.37E+02						8.9E+05	1.5E-04	1.0E+04	1.4E-02
M-16	SVOC	4-Bromophenyl-phenyl ether	101-55-3	D	1												
M-16	SVOC	Butylbenzylphthalate	85-68-7	C	1	1	4.00E+02	1.03E+02						2.1E+07	4.9E-06	3.1E+02	3.3E-01
M-16	SVOC	Caprolactam	105-60-2		1									2.9E+05		3.1E+05	
M-16	SVOC	Carbazole	86-74-8	B2	1											2.4E+03	
M-16	SVOC	4-Chloro-3-methylphenol	59-50-7		1											1.5E+04	
M-16	SVOC	4-Chloroaniline	106-47-8		1												
M-16	SVOC	2-Chloronaphthalene	91-58-7		1											1.8E+05	
M-16	SVOC	2-Chlorophenol	95-57-8		1											4.5E+03	
M-16	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3		1												
M-16	SVOC	Chrysene	218-01-9	B2	1											8.0E+03	
M-16	SVOC	Dibenz(a,h)anthracene	53-70-3	B2	1											8.0E+00	
M-16	SVOC	Dibenzofuran	132-64-9	D	1												
M-16	SVOC	3,3'-Dichlorobenzidine	91-94-1	B2	1									8.2E+03		3.0E+01	
M-16	SVOC	2,4-Dichlorophenol	120-83-2		1									2.3E+06		1.8E+03	
M-16	SVOC	Diethylphthalate	84-66-2	D	1									1.5E+06		7.4E+02	
M-16	SVOC	2,4-Dimethylphenol	105-67-9		1									2.1E+06		3.6E+04	
M-16	SVOC	Dimethylphthalate	131-11-3	D	1									1.5E+06		7.9E+02	
M-16	SVOC	Di-n-butylphthalate	84-74-2	D	1									1.5E+06		7.6E+02	
M-16	SVOC	4,6-Dinitro-2-methylphenol	534-52-1		1											2.6E+02	
M-16	SVOC	2,4-Dinitrophenol	51-28-5		1												
M-16	SVOC	2,4-Dinitrotoluene	121-14-2	B2	1									2.0E+04		2.2E+02	
M-16	SVOC	2,6-Dinitrotoluene	606-20-2	B2	1												
M-16	SVOC	Di-n-octylphthalate	117-84-0		1											2.0E+04	
M-16	SVOC	Fluoranthene	206-44-0	D	1					1.0E+06		8.9E+05		4.1E+06		1.3E+05	
M-16	SVOC	Fluorene	86-73-7	D	1	1	1.40E+02	3.61E+01		1.0E+06	3.6E-05	1.5E+05	2.4E-04	4.1E+06	8.8E-06	8.7E+04	4.2E-04
M-16	SVOC	Hexachlorobenzene	118-74-1	B2	1					2.2E+02		5.6E+01		8.5E+03		3.7E+01	
M-16	SVOC	Hexachlorobutadiene	87-68-3	C	1					3.5E+02		4.6E+02		1.8E+05		3.5E+02	
M-16	SVOC	Hexachlorocyclopentadiene	77-47-4	E	1					5.6E+01		6.0E+01		5.9E+03		7.2E+02	

TABLE 5-1
GENERAL MOTORS CORPORATION
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RCRA FACILITY INVESTIGATION

SMEAR ZONE SOIL SCREENING RESULTS

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M-16	SVOC	Hexachloroethane	67-72-1	C	1					7.9E+01		6.6E+02		1.0E+05		7.3E+02	
M-16	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1											8.0E+01	
M-16	SVOC	Isophorone	78-59-1	C	1									8.2E+06		2.4E+03	
M-16	SVOC	2-Methylnaphthalene	91-57-6	ID	1											2.6E+04	
M-16	SVOC	Methylphenol (total)	1319-77-3		1									2.9E+06		3.6E+04	
M-16	SVOC	Naphthalene	91-20-3	C	1					4.7E+02		3.5E+02		8.8E+04		5.2E+04	
M-16	SVOC	2-Nitroaniline	88-74-4		1												
M-16	SVOC	3-Nitroaniline	99-09-2	C	1												
M-16	SVOC	4-Nitroaniline	100-01-6	C	1												
M-16	SVOC	Nitrobenzene	98-95-3	D	1					1.7E+02		6.4E+01		2.1E+04		3.4E+02	
M-16	SVOC	2-Nitrophenol	88-75-5		1											2.0E+03	
M-16	SVOC	4-Nitrophenol	100-02-7		1												
M-16	SVOC	N-Nitrosodiphenylamine	86-30-6	B2	1											7.8E+03	
M-16	SVOC	N-Nitroso-di-n-propylamine	621-64-7	B2	1									2.0E+03		5.4E+00	
M-16	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	C	1												
M-16	SVOC	Pentachlorophenol	87-86-5	B2	1									1.3E+05		3.2E+02	
M-16	SVOC	Phenanthrene	85-01-8	D	1	1	2.50E+02	6.45E+01		5.1E+03	1.3E-02	1.9E+02	3.4E-01	2.9E+03	2.2E-02	5.2E+03	1.2E-02
M-16	SVOC	Phenol	108-95-2	ID	1									1.8E+07		1.2E+04	
M-16	SVOC	Pyrene	129-00-0	D	1					1.0E+06		7.8E+05		2.9E+06		8.4E+04	
M-16	SVOC	2,4,5-Trichlorophenol	95-95-4		1									1.0E+07		7.3E+04	
M-16	SVOC	2,4,6-Trichlorophenol	88-06-2	B2	1									1.3E+06		3.3E+03	
M-16	P/PCB	PCBs (total)	1336-36-3	B2	1	1	8.32E+01	2.15E+01		1.6E+04	1.3E-03	8.1E+02	2.6E-02	6.5E+03	3.3E-03	1.6E+01	**1.3E+00**
M-16	INORG	Antimony	7440-36-0		1	1	2.70E-01	6.97E-02						5.9E+03	1.2E-05	6.7E+02	1.0E-04
M-16	INORG	Arsenic	7440-38-2	A	1	1	1.11E+01	2.86E+00	1.3E+01					9.1E+02		3.7E+01	
M-16	INORG	Barium	7440-39-3	D	1				1.1E+02					1.5E+05		1.3E+05	
M-16	INORG	Beryllium	7440-41-7	B1	1				1.5E+00					5.9E+02		1.6E+03	
M-16	INORG	Cadmium	7440-43-9	B1	1	1	8.90E-02	2.30E-02	1.2E+00					2.2E+03		2.1E+03	
M-16	INORG	Chromium (total)	7440-47-3		1	1	2.90E+00	7.48E-01	4.9E+01					2.4E+02		9.2E+03	
M-16	INORG	Cobalt	7440-48-4	B1	1	1	1.90E-01	4.90E-02	1.7E+01					5.9E+03		9.0E+03	
M-16	INORG	Copper	7440-50-8	D	1	1	4.10E+00	1.06E+00	3.2E+01					5.9E+04		7.3E+04	
M-16	INORG	Lead	7439-92-1	B2	1	1	1.40E+01	3.61E+00	4.9E+01					4.4E+04		9.0E+02	
M-16	INORG	Manganese	7439-96-5	D	1				5.1E+02					1.5E+03		9.0E+04	
M-16	INORG	Mercury	7439-97-6	D	1				1.3E-01	8.9E+01		6.2E+01		8.8E+03		5.8E+02	
M-16	INORG	Nickel	7440-02-0	A	1	1	1.30E+00	3.35E-01	3.0E+01					1.6E+04		1.5E+05	
M-16	INORG	Selenium	7782-49-2	D	1				4.1E-01					5.9E+04		9.6E+03	
M-16	INORG	Silver	7440-22-4	D	1									2.9E+03		9.0E+03	
M-16	INORG	Thallium	7440-28-0		1											1.3E+02	
M-16	INORG	Vanadium	7440-62-2		1	1	3.10E+00	8.00E-01	3.3E+01							5.5E+03	
M-16	INORG	Zinc	7440-66-6	D	1	1	2.79E+01	7.20E+00	1.9E+02							6.3E+05	

Notes:
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to Polychlorinated biphenyls (PCBs) for cancer effects and Aroclor 1254 for noncancer effects.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.

Chem Group - Chemical Group
Carc Class - EPA Weight-of-Evidence Cancer Classification

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-07	VOC	Acetone	67-64-1	T	ID	4				5.10E-04	1.00E-02	7.3E-01		1.0E+06		3.1E+04	
F-07	VOC	Benzene	71-43-2	T	A	4				1.60E-04	1.00E-03	5.0E-03		3.5E+01		1.1E+01	
F-07	VOC	Bromodichloromethane	75-27-4	T	B2	4	2	2.00E-03	2.20E-03	1.70E-04	1.00E-03	1.0E-01	2.2E-02	3.7E+01	5.9E-05	1.4E+01	1.6E-04
F-07	VOC	Bromoform	75-25-2	T	B2	4				1.80E-04	1.00E-03	1.0E-01		3.1E+03		1.4E+02	
F-07	VOC	Bromomethane	74-83-9	T	D	4				2.00E-04	1.00E-03	1.0E-02		9.0E+00		7.0E+01	
F-07	VOC	2-Butanone	78-93-3	T	ID	4				4.10E-04	1.00E-02	1.3E+01		2.4E+05		2.4E+05	
F-07	VOC	Carbon Disulfide	75-15-0	T		4	1	4.70E-04	4.70E-04	2.00E-04	1.00E-03	8.0E-01	5.9E-04	5.5E+02	8.5E-07	1.2E+03	3.9E-07
F-07	VOC	Carbon Tetrachloride	56-23-5	T	B2	4				1.20E-04	1.00E-03	5.0E-03		2.4E+00		4.6E+00	
F-07	VOC	Chlorobenzene	108-90-7	T	D	4				1.40E-04	1.00E-03	1.0E-01		4.7E+02		8.6E+01	
F-07	VOC	Chloroethane	75-00-3	T		4	2	3.30E-03	4.70E-03	2.60E-04	1.00E-03	4.3E-01	1.1E-02	5.7E+03	8.2E-07	4.4E+02	1.1E-05
F-07	VOC	Chloroform	67-66-3	T	B2	4	3	2.90E-04	9.50E-03	1.40E-04	1.40E-04	1.0E-01	9.5E-02	1.8E+02	5.3E-05	1.5E+02	6.3E-05
F-07	VOC	Chloromethane	74-87-3	T	D	4	1	2.80E-04	2.80E-04	1.30E-04	1.00E-03	2.6E-01	1.1E-03	4.5E+01	6.2E-06	4.9E+02	5.7E-07
F-07	VOC	Cumene	98-82-8	T	D	4				1.20E-04	1.00E-03	8.0E-01		5.6E+01		5.6E+01	
F-07	VOC	Cyclohexane	110-82-7	T	ID	4				1.30E-04	1.00E-03						
F-07	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	4				6.20E-04	2.00E-03	2.0E-04		1.2E+00		3.9E-01	
F-07	VOC	Dibromochloromethane	124-48-1	T	C	4				2.60E-04	1.00E-03	1.0E-01		1.1E+02		1.8E+01	
F-07	VOC	1,2-Dibromoethane	106-93-4	T	B2	4				2.20E-04	1.00E-03	1.0E-03		1.5E+01		2.5E-02	
F-07	VOC	1,2-Dichlorobenzene	95-50-1	T	D	4				1.10E-04	1.00E-03	6.0E-01		1.6E+02		1.6E+02	
F-07	VOC	1,3-Dichlorobenzene	541-73-1	T	D	4				1.50E-04	1.00E-03	6.6E-03				2.0E+00	
F-07	VOC	1,4-Dichlorobenzene	106-46-7	T	C	4				1.70E-04	1.00E-03	7.5E-02		7.4E+01		6.4E+00	
F-07	VOC	Dichlorodifluoromethane	75-71-8	T		4				2.60E-04	2.00E-03	1.7E+00		3.0E+02		3.0E+02	
F-07	VOC	1,1-Dichloroethane	75-34-3	T	C	4	4	6.00E-03	2.30E-02			8.8E-01	2.6E-02	2.3E+03	1.0E-05	2.4E+03	9.6E-06
F-07	VOC	1,2-Dichloroethane	107-06-2	T	B2	4				2.10E-04	1.00E-03	5.0E-03		5.9E+01		1.9E+01	
F-07	VOC	1,1-Dichloroethene	75-35-4	T	C	7	6	1.10E-03	2.00E-02	2.20E-04	2.20E-04	7.0E-03	**2.9E+00**	1.3E+00	1.5E-02	1.1E+01	1.8E-03
F-07	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	4	4	2.30E-04	5.60E-04			7.0E-02	8.0E-03	2.1E+02	2.7E-06	2.0E+02	2.8E-06
F-07	VOC	trans-1,2-Dichloroethene	156-60-5	T		4				1.50E-04	5.00E-04	1.0E-01		2.0E+02		2.2E+02	
F-07	VOC	1,2-Dichloropropane	78-87-5	T	B2	4				1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01	
F-07	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	4				2.70E-04	1.00E-03	8.5E-03		2.6E+01		5.5E+00	
F-07	VOC	Ethyl Benzene	100-41-4	T	D	4				1.20E-04	1.00E-03	7.0E-01		1.7E+02		1.7E+02	
F-07	VOC	2-Hexanone	591-78-6	T		4				4.60E-04	1.00E-02	1.0E+00		8.7E+03		5.2E+03	
F-07	VOC	Methyl Acetate	79-20-9	T		4				4.10E-04	1.00E-02						
F-07	VOC	Methyl tert-butyl ether	1634-04-4	T		4				1.30E-04	5.00E-03	2.4E-01		4.7E+04		6.1E+02	
F-07	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	4				2.30E-04	1.00E-02	1.8E+00		2.0E+04		1.3E+04	
F-07	VOC	Methylcyclohexane	108-87-2	T		4				1.50E-04	1.00E-03						
F-07	VOC	Methylene Chloride	75-09-2	T	B2	4				3.40E-04	1.00E-03	5.0E-03		1.4E+03		2.2E+02	
F-07	VOC	Styrene	100-42-5	T		4				1.50E-04	1.00E-03	1.0E-01		3.1E+02		9.7E+00	
F-07	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	4				2.50E-04	1.00E-03	8.5E-03		7.7E+01		4.7E+00	
F-07	VOC	Tetrachloroethene	127-18-4	T	C-B2	7	6	5.60E-04	6.30E-03	1.20E-04	1.20E-04	5.0E-03	**1.3E+00**	1.7E+02	3.7E-05	1.2E+01	5.3E-04
F-07	VOC	Toluene	108-88-3	T	D	4	3	2.00E-04	2.60E-04	1.80E-04	1.80E-04	1.0E+00	2.6E-04	5.3E+02	4.9E-07	5.3E+02	4.9E-07
F-07	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	4				1.70E-04	1.00E-03	7.0E-02		3.0E+02		1.9E+01	
F-07	VOC	1,1,1-Trichloroethane	71-55-6	T	D	4	4	6.30E-03	1.00E-02			2.0E-01	5.0E-02	1.3E+03	7.7E-06	1.3E+03	7.7E-06
F-07	VOC	1,1,2-Trichloroethane	79-00-5	T	C	4				3.00E-04	1.00E-03	5.0E-03		1.1E+02		2.1E+01	
F-07	VOC	Trichloroethene	79-01-6	T	C-B2	4	2	3.90E-04	4.20E-04	1.40E-04	1.00E-03	5.0E-03	8.4E-02	9.7E+01	4.3E-06	2.2E+01	1.9E-05
F-07	VOC	Trichlorofluoromethane	75-69-4	T		4				2.80E-04	1.00E-03	2.6E+00		1.1E+03		1.1E+03	
F-07	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		4				3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
F-07	VOC	Vinyl Chloride	75-01-4	T	A	4				1.50E-04	1.00E-03	2.0E-03		1.3E+01		1.0E+00	
F-07	VOC	Xylenes (total)	1330-20-7	T	ID	4				3.30E-04	1.00E-03	1.0E+01		1.9E+02		1.9E+02	
F-07	SVOC	Acenaphthene	83-32-9	T		4				8.00E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00	
F-07	SVOC	Acenaphthylene	208-96-8	T	D	4				7.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00	
F-07	SVOC	Acetophenone	98-86-2	T	D	4				2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
F-07	SVOC	Anthracene	120-12-7	T	D	4				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
F-07	SVOC	Atrazine	1912-24-9	T		4				2.50E-03	5.00E-03	3.0E-03				5.4E+00	
F-07	SVOC	Benzaldehyde	100-52-7	T		4				2.80E-03	1.00E-02						
F-07	SVOC	Benzo(a)anthracene	56-55-3	T	B2	4				7.00E-04	5.00E-03	2.1E-03				9.4E-03	
F-07	SVOC	Benzo(a)pyrene	50-32-8	T	B2	4				7.30E-04	5.00E-03	5.0E-03				2.0E-03	
F-07	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	4				9.40E-04	5.00E-03	2.0E-03				2.0E-03	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-07	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	4				8.50E-04	5.00E-03	5.0E-03				5.0E-03	
F-07	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	4				8.40E-04	5.00E-03	5.0E-03				5.0E-03	
F-07	SVOC	Biphenyl	92-52-4	T	D	4				2.60E-03	1.00E-02						
F-07	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	4				8.70E-04	5.00E-03						
F-07	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	4				9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00	
F-07	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	4				2.70E-03	5.00E-03	6.0E-03				3.2E-01	
F-07	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	4				8.80E-04	5.00E-03						
F-07	SVOC	Butylbenzylphthalate	85-68-7	T	C	4				8.80E-04	5.00E-03	1.2E+00				2.7E+00	
F-07	SVOC	Caprolactam	105-60-2	T		4	1	4.10E-03	4.10E-03	2.50E-03	1.00E-02	5.8E+00	7.1E-04			3.9E+05	1.1E-08
F-07	SVOC	Carbazole	86-74-8	T	B2	4				8.20E-04	1.00E-02	8.5E-02				7.4E+00	
F-07	SVOC	4-Chloro-3-methylphenol	59-50-7	T		4				9.90E-04	5.00E-03	1.5E-01				7.9E+01	
F-07	SVOC	4-Chloroaniline	106-47-8	T		4				6.10E-04	1.00E-02						
F-07	SVOC	2-Chloronaphthalene	91-58-7	T		4				8.50E-04	5.00E-03	1.8E+00				6.7E+00	
F-07	SVOC	2-Chlorophenol	95-57-8	T		4				1.00E-03	5.00E-03	4.5E-02				9.4E+01	
F-07	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		4				7.90E-04	5.00E-03						
F-07	SVOC	Chrysene	218-01-9	T	B2	4				7.50E-04	5.00E-03	5.0E-03				5.0E-03	
F-07	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	4				7.90E-04	5.00E-03	2.0E-03				2.0E-03	
F-07	SVOC	Dibenzofuran	132-64-9	T	D	4				1.10E-03	5.00E-03						
F-07	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	4				9.30E-04	2.00E-02	1.1E-03				1.8E-01	
F-07	SVOC	2,4-Dichlorophenol	120-83-2	T		4				8.50E-04	1.00E-02	7.3E-02				4.8E+01	
F-07	SVOC	Diethylphthalate	84-66-2	T	D	4				6.50E-04	5.00E-03	5.5E+00				1.1E+03	
F-07	SVOC	2,4-Dimethylphenol	105-67-9	T		4				8.50E-04	5.00E-03	3.7E-01				5.2E+02	
F-07	SVOC	Dimethylphthalate	131-11-3	T	D	4				7.60E-04	5.00E-03	7.3E+01				4.2E+03	
F-07	SVOC	Di-n-butylphthalate	84-74-2	T	D	4				6.70E-04	5.00E-03	8.8E-01				1.1E+01	
F-07	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		4				1.30E-03	2.00E-02	2.0E-02				9.5E+00	
F-07	SVOC	2,4-Dinitrophenol	51-28-5	T		4				3.00E-03	2.00E-02						
F-07	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	4				7.90E-04	5.00E-03	7.7E-03				8.6E+00	
F-07	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	4				5.70E-04	5.00E-03						
F-07	SVOC	Di-n-octylphthalate	117-84-0	T		4				1.10E-03	5.00E-03	1.3E-01				4.0E-01	
F-07	SVOC	Fluoranthene	206-44-0	T	D	4				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
F-07	SVOC	Fluorene	86-73-7	T	D	4				1.00E-03	5.00E-03	8.8E-01		2.0E+00		2.0E+00	
F-07	SVOC	Hexachlorobenzene	118-74-1	T	B2	4				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
F-07	SVOC	Hexachlorobutadiene	87-68-3	T	C	4				7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
F-07	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	4				1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
F-07	SVOC	Hexachloroethane	67-72-1	T	C	4				7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
F-07	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	4				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
F-07	SVOC	Isophorone	78-59-1	T	C	4				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
F-07	SVOC	2-Methylnaphthalene	91-57-6	T	ID	4				6.40E-04	5.00E-03	2.6E-01				2.5E+01	
F-07	SVOC	Methylphenol (total)	1319-77-3	T		4				1.30E-03	5.00E-03	3.7E-01				8.1E+02	
F-07	SVOC	Naphthalene	91-20-3	T	C	4				7.50E-04	5.00E-03	5.2E-01		3.1E+01		3.1E+01	
F-07	SVOC	2-Nitroaniline	88-74-4	T		4				7.00E-04	2.00E-02						
F-07	SVOC	3-Nitroaniline	99-09-2	T	C	4				7.10E-04	2.00E-02						
F-07	SVOC	4-Nitroaniline	100-01-6	T	C	4				1.30E-03	2.00E-02						
F-07	SVOC	Nitrobenzene	98-95-3	T	D	4				8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
F-07	SVOC	2-Nitrophenol	88-75-5	T		4				2.10E-03	5.00E-03	2.0E-02				7.9E+01	
F-07	SVOC	4-Nitrophenol	100-02-7	T		4				1.90E-03	2.00E-02						
F-07	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	4				1.40E-03	5.00E-03	2.7E-01				3.5E+01	
F-07	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	4				6.70E-04	5.00E-03	5.0E-03				3.6E-01	
F-07	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	4				7.80E-04	5.00E-03						
F-07	SVOC	Pentachlorophenol	87-86-5	T	B2	4				2.40E-03	5.00E-03	1.0E-03				2.0E-01	
F-07	SVOC	Phenanthrene	85-01-8	T	D	4				8.20E-04	5.00E-03	5.2E-02		1.0E+00		1.0E+00	
F-07	SVOC	Phenol	108-95-2	T	ID	4				2.60E-03	5.00E-03	4.4E+00				2.9E+04	
F-07	SVOC	Pyrene	129-00-0	T	D	4				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
F-07	SVOC	2,4,5-Trichlorophenol	95-95-4	T		4				1.20E-03	5.00E-03	7.3E-01				1.7E+02	
F-07	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	4				1.70E-03	5.00E-03	1.2E-01				1.0E+01	
F-07	P/PCB	PCBs (total)	1336-36-3	D	B2	2				4.00E-04	4.00E-04	5.0E-04		4.5E-02		3.3E-03	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-07	P/PCB	PCBs (total)	1336-36-3	T	B2	4				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
F-07	INORG	Antimony	7440-36-0	D		4	1	3.00E-03	3.00E-03	2.20E-03	2.50E-02	6.0E-03	5.0E-01			6.8E+01	4.4E-05
F-07	INORG	Antimony	7440-36-0	T		4				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
F-07	INORG	Arsenic	7440-38-2	D	A	4	2	1.24E-02	4.16E-02	3.90E-03	1.00E-02	5.0E-02	8.3E-01			4.3E+00	9.7E-03
F-07	INORG	Arsenic	7440-38-2	T	A	4	2	2.36E-02	3.00E-02	3.90E-03	1.00E-02	5.0E-02	6.0E-01			4.3E+00	7.0E-03
F-07	INORG	Barium	7440-39-3	D	D	4	4	1.85E-02	6.46E-02			2.0E+00	3.2E-02			1.4E+04	4.6E-06
F-07	INORG	Barium	7440-39-3	T	D	4	4	1.73E-02	5.72E-02			2.0E+00	2.9E-02			1.4E+04	4.1E-06
F-07	INORG	Beryllium	7440-41-7	D	B1	4				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
F-07	INORG	Beryllium	7440-41-7	T	B1	4				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
F-07	INORG	Cadmium	7440-43-9	D	B1	4				2.80E-04	5.00E-03	5.0E-03				1.9E+02	
F-07	INORG	Cadmium	7440-43-9	T	B1	4	1	3.80E-04	3.80E-04	2.80E-04	5.00E-03	5.0E-03	7.6E-02			1.9E+02	2.0E-06
F-07	INORG	Chromium (total)	7440-47-3	D		4				1.40E-03	1.00E-02	1.0E-01				4.6E+02	
F-07	INORG	Chromium (total)	7440-47-3	T		4	2	1.50E-03	2.90E-03	1.40E-03	1.00E-02	1.0E-01	2.9E-02			4.6E+02	6.3E-06
F-07	INORG	Cobalt	7440-48-4	D	B1	4				1.30E-03	2.00E-02	4.0E-02				2.4E+03	
F-07	INORG	Cobalt	7440-48-4	T	B1	4				1.30E-03	2.00E-02	4.0E-02				2.4E+03	
F-07	INORG	Copper	7440-50-8	D	D	4	1	1.54E-02	1.54E-02	4.20E-03	5.00E-03	1.4E+00	1.1E-02			7.4E+03	2.1E-06
F-07	INORG	Copper	7440-50-8	T	D	4	1	1.79E-02	1.79E-02	4.20E-03	5.00E-03	1.4E+00	1.3E-02			7.4E+03	2.4E-06
F-07	INORG	Lead	7439-92-1	D	B2	4				2.50E-03	3.00E-03	4.0E-03					
F-07	INORG	Lead	7439-92-1	T	B2	4	1	3.00E-03	3.00E-03	2.50E-03	3.00E-03	4.0E-03	7.5E-01				
F-07	INORG	Manganese	7439-96-5	D	D	4	4	1.10E-03	2.69E-01			8.6E-01	3.1E-01			9.1E+03	3.0E-05
F-07	INORG	Manganese	7439-96-5	T	D	4	4	1.50E-03	2.34E-01			8.6E-01	2.7E-01			9.1E+03	2.6E-05
F-07	INORG	Mercury	7439-97-6	D	D	4				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
F-07	INORG	Mercury	7439-97-6	T	D	4	1	1.70E-04	1.70E-04	6.90E-05	2.00E-04	2.0E-03	8.5E-02	5.6E-02	3.0E-03	5.6E-02	3.0E-03
F-07	INORG	Nickel	7440-02-0	D	A	4	2	2.70E-03	3.60E-03	2.20E-03	2.00E-02	1.0E-01	3.6E-02			7.4E+04	4.9E-08
F-07	INORG	Nickel	7440-02-0	T	A	4	2	4.10E-03	4.90E-03	2.20E-03	2.00E-02	1.0E-01	4.9E-02			7.4E+04	6.6E-08
F-07	INORG	Selenium	7782-49-2	D	D	4				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
F-07	INORG	Selenium	7782-49-2	T	D	4				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
F-07	INORG	Silver	7440-22-4	D	D	4				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
F-07	INORG	Silver	7440-22-4	T	D	4				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
F-07	INORG	Thallium	7440-28-0	D		4	1	2.50E-05	2.50E-05	1.80E-05	1.00E-02	2.0E-03	1.3E-02			1.3E+01	1.9E-06
F-07	INORG	Thallium	7440-28-0	T		4	1	2.50E-05	2.50E-05	1.80E-05	1.00E-02	2.0E-03	1.3E-02			1.3E+01	1.9E-06
F-07	INORG	Vanadium	7440-62-2	D		4	3	8.40E-04	2.47E-02	8.20E-04	8.20E-04	4.5E-03	**5.5E+00**			9.7E+02	2.5E-05
F-07	INORG	Vanadium	7440-62-2	T		4	2	7.80E-03	1.71E-02	8.20E-04	1.00E-02	4.5E-03	**3.8E+00**			9.7E+02	1.8E-05
F-07	INORG	Zinc	7440-66-6	D	D	4	2	1.58E-02	2.08E-02	1.20E-02	2.00E-02	2.4E+00	8.7E-03			1.1E+05	1.9E-07
F-07	INORG	Zinc	7440-66-6	T	D	4	3	1.24E-02	1.69E-01	2.00E-02	2.00E-02	2.4E+00	7.0E-02			1.1E+05	1.5E-06
F-08	VOC	Acetone	67-64-1	T	ID	2				5.10E-04	1.00E-02	7.3E-01		1.0E+06		3.1E+04	
F-08	VOC	Benzene	71-43-2	T	A	2				1.60E-04	1.00E-03	5.0E-03		3.5E+01		1.1E+01	
F-08	VOC	Bromodichloromethane	75-27-4	T	B2	2				1.70E-04	1.00E-03	1.0E-01		3.7E+01		1.4E+01	
F-08	VOC	Bromoform	75-25-2	T	B2	2				1.80E-04	1.00E-03	1.0E-01		3.1E+03		1.4E+02	
F-08	VOC	Bromomethane	74-83-9	T	D	2				2.00E-04	1.00E-03	1.0E-02		9.0E+00		7.0E+01	
F-08	VOC	2-Butanone	78-93-3	T	ID	2				4.10E-04	1.00E-02	1.3E+01		2.4E+05		2.4E+05	
F-08	VOC	Carbon Disulfide	75-15-0	T		2				2.00E-04	1.00E-03	8.0E-01		5.5E+02		1.2E+03	
F-08	VOC	Carbon Tetrachloride	56-23-5	T	B2	2				1.20E-04	1.00E-03	5.0E-03		2.4E+00		4.6E+00	
F-08	VOC	Chlorobenzene	108-90-7	T	D	2				1.40E-04	1.00E-03	1.0E-01		4.7E+02		8.6E+01	
F-08	VOC	Chloroethane	75-00-3	T		2				2.60E-04	1.00E-03	4.3E-01		5.7E+03		4.4E+02	
F-08	VOC	Chloroform	67-66-3	T	B2	2	2	9.60E-04	2.80E-03			1.0E-01	2.8E-02	1.8E+02	1.6E-05	1.5E+02	1.9E-05
F-08	VOC	Chloromethane	74-87-3	T	D	2				1.30E-04	1.00E-03	2.6E-01		4.5E+01		4.9E+02	
F-08	VOC	Cumene	98-82-8	T	D	2				1.20E-04	1.00E-03	8.0E-01		5.6E+01		5.6E+01	
F-08	VOC	Cyclohexane	110-82-7	T	ID	2				1.30E-04	1.00E-03						
F-08	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	2				6.20E-04	2.00E-03	2.0E-04		1.2E+00		3.9E-01	
F-08	VOC	Dibromochloromethane	124-48-1	T	C	2				2.60E-04	1.00E-03	1.0E-01		1.1E+02		1.8E+01	
F-08	VOC	1,2-Dibromoethane	106-93-4	T	B2	2				2.20E-04	1.00E-03	1.0E-03		1.5E+01		2.5E-02	
F-08	VOC	1,2-Dichlorobenzene	95-50-1	T	D	2				1.10E-04	1.00E-03	6.0E-01		1.6E+02		1.6E+02	
F-08	VOC	1,3-Dichlorobenzene	541-73-1	T	D	2				1.50E-04	1.00E-03	6.6E-03				2.0E+00	
F-08	VOC	1,4-Dichlorobenzene	106-46-7	T	C	2				1.70E-04	1.00E-03	7.5E-02		7.4E+01		6.4E+00	
F-08	VOC	Dichlorodifluoromethane	75-71-8	T		2				2.60E-04	2.00E-03	1.7E+00		3.0E+02		3.0E+02	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-08	VOC	1,1-Dichloroethane	75-34-3	T	C	2				1.60E-04	1.00E-03	8.8E-01		2.3E+03		2.4E+03	
F-08	VOC	1,2-Dichloroethane	107-06-2	T	B2	2				2.10E-04	1.00E-03	5.0E-03		5.9E+01		1.9E+01	
F-08	VOC	1,1-Dichloroethene	75-35-4	T	C	2				2.40E-04	1.00E-03	7.0E-03		1.3E+00		1.1E+01	
F-08	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	2				2.20E-04	5.00E-04	7.0E-02		2.1E+02		2.0E+02	
F-08	VOC	trans-1,2-Dichloroethene	156-60-5	T		2				1.50E-04	5.00E-04	1.0E-01		2.0E+02		2.2E+02	
F-08	VOC	1,2-Dichloropropane	78-87-5	T	B2	2				1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01	
F-08	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	2				2.70E-04	1.00E-03	8.5E-03		2.6E+01		5.5E+00	
F-08	VOC	Ethyl Benzene	100-41-4	T	D	2				1.20E-04	1.00E-03	7.0E-01		1.7E+02		1.7E+02	
F-08	VOC	2-Hexanone	591-78-6	T		2				4.60E-04	1.00E-02	1.0E+00		8.7E+03		5.2E+03	
F-08	VOC	Methyl Acetate	79-20-9	T		2				4.10E-04	1.00E-02						
F-08	VOC	Methyl tert-butyl ether	1634-04-4	T		2				1.30E-04	5.00E-03	2.4E-01		4.7E+04		6.1E+02	
F-08	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	2				2.30E-04	1.00E-02	1.8E+00		2.0E+04		1.3E+04	
F-08	VOC	Methylcyclohexane	108-87-2	T		2				1.50E-04	1.00E-03						
F-08	VOC	Methylene Chloride	75-09-2	T	B2	2				3.40E-04	1.00E-03	5.0E-03		1.4E+03		2.2E+02	
F-08	VOC	Styrene	100-42-5	T		2				1.50E-04	1.00E-03	1.0E-01		3.1E+02		9.7E+00	
F-08	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	2				2.50E-04	1.00E-03	8.5E-03		7.7E+01		4.7E+00	
F-08	VOC	Tetrachloroethene	127-18-4	T	C-B2	2				2.30E-04	1.00E-03	5.0E-03		1.7E+02		1.2E+01	
F-08	VOC	Toluene	108-88-3	T	D	2				1.80E-04	1.00E-03	1.0E+00		5.3E+02		5.3E+02	
F-08	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	2				1.70E-04	1.00E-03	7.0E-02		3.0E+02		1.9E+01	
F-08	VOC	1,1,1-Trichloroethane	71-55-6	T	D	2				1.50E-04	1.00E-03	2.0E-01		1.3E+03		1.3E+03	
F-08	VOC	1,1,2-Trichloroethane	79-00-5	T	C	2				3.00E-04	1.00E-03	5.0E-03		1.1E+02		2.1E+01	
F-08	VOC	Trichloroethene	79-01-6	T	C-B2	2				1.40E-04	1.00E-03	5.0E-03		9.7E+01		2.2E+01	
F-08	VOC	Trichlorofluoromethane	75-69-4	T		2				2.80E-04	1.00E-03	2.6E+00		1.1E+03		1.1E+03	
F-08	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		2				3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
F-08	VOC	Vinyl Chloride	75-01-4	T	A	2				1.50E-04	1.00E-03	2.0E-03		1.3E+01		1.0E+00	
F-08	VOC	Xylenes (total)	1330-20-7	T	ID	2				3.30E-04	1.00E-03	1.0E+01		1.9E+02		1.9E+02	
F-08	SVOC	Acenaphthene	83-32-9	T		2				8.00E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00	
F-08	SVOC	Acenaphthylene	208-96-8	T	D	2				7.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00	
F-08	SVOC	Acetophenone	98-86-2	T	D	2				2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
F-08	SVOC	Anthracene	120-12-7	T	D	2				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
F-08	SVOC	Atrazine	1912-24-9	T		2				2.50E-03	5.00E-03	3.0E-03				5.4E+00	
F-08	SVOC	Benzaldehyde	100-52-7	T		2				2.80E-03	1.00E-02						
F-08	SVOC	Benzo(a)anthracene	56-55-3	T	B2	2				7.00E-04	5.00E-03	2.1E-03				9.4E-03	
F-08	SVOC	Benzo(a)pyrene	50-32-8	T	B2	2				7.30E-04	5.00E-03	5.0E-03				2.0E-03	
F-08	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	2				9.40E-04	5.00E-03	2.0E-03				2.0E-03	
F-08	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	2				8.50E-04	5.00E-03	5.0E-03				5.0E-03	
F-08	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	2				8.40E-04	5.00E-03	5.0E-03				5.0E-03	
F-08	SVOC	Biphenyl	92-52-4	T	D	2				2.60E-03	1.00E-02						
F-08	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	2				8.70E-04	5.00E-03						
F-08	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	2				9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00	
F-08	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	2				2.70E-03	5.00E-03	6.0E-03				3.2E-01	
F-08	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	2				8.80E-04	5.00E-03						
F-08	SVOC	Butylbenzylphthalate	85-68-7	T	C	2				8.80E-04	5.00E-03	1.2E+00				2.7E+00	
F-08	SVOC	Caprolactam	105-60-2	T		2				2.50E-03	1.00E-02	5.8E+00				3.9E+05	
F-08	SVOC	Carbazole	86-74-8	T	B2	2				8.20E-04	1.00E-02	8.5E-02				7.4E+00	
F-08	SVOC	4-Chloro-3-methylphenol	59-50-7	T		2				9.90E-04	5.00E-03	1.5E-01				7.9E+01	
F-08	SVOC	4-Chloroaniline	106-47-8	T		2				6.10E-04	1.00E-02						
F-08	SVOC	2-Chloronaphthalene	91-58-7	T		2				8.50E-04	5.00E-03	1.8E+00				6.7E+00	
F-08	SVOC	2-Chlorophenol	95-57-8	T		2				1.00E-03	5.00E-03	4.5E-02				9.4E+01	
F-08	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		2				7.90E-04	5.00E-03						
F-08	SVOC	Chrysene	218-01-9	T	B2	2				7.50E-04	5.00E-03	5.0E-03				5.0E-03	
F-08	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	2				7.90E-04	5.00E-03	2.0E-03				2.0E-03	
F-08	SVOC	Dibenzofuran	132-64-9	T	D	2				1.10E-03	5.00E-03						
F-08	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	2				9.30E-04	2.00E-02	1.1E-03				1.8E-01	
F-08	SVOC	2,4-Dichlorophenol	120-83-2	T		2				8.50E-04	1.00E-02	7.3E-02				4.8E+01	
F-08	SVOC	Diethylphthalate	84-66-2	T	D	2				6.50E-04	5.00E-03	5.5E+00				1.1E+03	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-08	SVOC	2,4-Dimethylphenol	105-67-9	T		2				8.50E-04	5.00E-03	3.7E-01				5.2E+02	
F-08	SVOC	Dimethylphthalate	131-11-3	T	D	2				7.60E-04	5.00E-03	7.3E+01				4.2E+03	
F-08	SVOC	Di-n-butylphthalate	84-74-2	T	D	2				6.70E-04	5.00E-03	8.8E-01				1.1E+01	
F-08	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		2				1.30E-03	2.00E-02	2.0E-02				9.5E+00	
F-08	SVOC	2,4-Dinitrophenol	51-28-5	T		2				3.00E-03	2.00E-02						
F-08	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	2				7.90E-04	5.00E-03	7.7E-03				8.6E+00	
F-08	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	2				5.70E-04	5.00E-03						
F-08	SVOC	Di-n-octylphthalate	117-84-0	T		2				1.10E-03	5.00E-03	1.3E-01				4.0E-01	
F-08	SVOC	Fluoranthene	206-44-0	T	D	2				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
F-08	SVOC	Fluorene	86-73-7	T	D	2				1.00E-03	5.00E-03	8.8E-01		2.0E+00		2.0E+00	
F-08	SVOC	Hexachlorobenzene	118-74-1	T	B2	2				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
F-08	SVOC	Hexachlorobutadiene	87-68-3	T	C	2				7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
F-08	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	2				1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
F-08	SVOC	Hexachloroethane	67-72-1	T	C	2				7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
F-08	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	2				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
F-08	SVOC	Isophorone	78-59-1	T	C	2				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
F-08	SVOC	2-Methylnaphthalene	91-57-6	T	ID	2				6.40E-04	5.00E-03	2.6E-01				2.5E+01	
F-08	SVOC	Methylphenol (total)	1319-77-3	T		2				1.30E-03	5.00E-03	3.7E-01				8.1E+02	
F-08	SVOC	Naphthalene	91-20-3	T	C	2				7.50E-04	5.00E-03	5.2E-01		3.1E+01		3.1E+01	
F-08	SVOC	2-Nitroaniline	88-74-4	T		2				7.00E-04	2.00E-02						
F-08	SVOC	3-Nitroaniline	99-09-2	T	C	2				7.10E-04	2.00E-02						
F-08	SVOC	4-Nitroaniline	100-01-6	T	C	2				1.30E-03	2.00E-02						
F-08	SVOC	Nitrobenzene	98-95-3	T	D	2				8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
F-08	SVOC	2-Nitrophenol	88-75-5	T		2				2.10E-03	5.00E-03	2.0E-02				7.9E+01	
F-08	SVOC	4-Nitrophenol	100-02-7	T		2				1.90E-03	2.00E-02						
F-08	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	2				1.40E-03	5.00E-03	2.7E-01				3.5E+01	
F-08	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	2				6.70E-04	5.00E-03	5.0E-03				3.6E-01	
F-08	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	2				7.80E-04	5.00E-03						
F-08	SVOC	Pentachlorophenol	87-86-5	T	B2	2				2.40E-03	5.00E-03	1.0E-03				2.0E-01	
F-08	SVOC	Phenanthrene	85-01-8	T	D	2				8.20E-04	5.00E-03	5.2E-02		1.0E+00		1.0E+00	
F-08	SVOC	Phenol	108-95-2	T	ID	2				2.60E-03	5.00E-03	4.4E+00				2.9E+04	
F-08	SVOC	Pyrene	129-00-0	T	D	2				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
F-08	SVOC	2,4,5-Trichlorophenol	95-95-4	T		2				1.20E-03	5.00E-03	7.3E-01				1.7E+02	
F-08	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	2				1.70E-03	5.00E-03	1.2E-01				1.0E+01	
F-08	P/PCB	PCBs (total)	1336-36-3	D	B2	1				4.00E-04	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
F-08	P/PCB	PCBs (total)	1336-36-3	T	B2	2				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
F-08	INORG	Antimony	7440-36-0	D		2				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
F-08	INORG	Antimony	7440-36-0	T		2				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
F-08	INORG	Arsenic	7440-38-2	D	A	2				3.90E-03	1.00E-02	5.0E-02				4.3E+00	
F-08	INORG	Arsenic	7440-38-2	T	A	2				3.90E-03	1.00E-02	5.0E-02				4.3E+00	
F-08	INORG	Barium	7440-39-3	D	D	2	2	5.46E-02	5.75E-02			2.0E+00	2.9E-02			1.4E+04	4.1E-06
F-08	INORG	Barium	7440-39-3	T	D	2	2	5.49E-02	5.82E-02			2.0E+00	2.9E-02			1.4E+04	4.2E-06
F-08	INORG	Beryllium	7440-41-7	D	B1	2				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
F-08	INORG	Beryllium	7440-41-7	T	B1	2				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
F-08	INORG	Cadmium	7440-43-9	D	B1	2	1	3.20E-04	3.20E-04	5.00E-03	5.00E-03	5.0E-03	6.4E-02			1.9E+02	1.7E-06
F-08	INORG	Cadmium	7440-43-9	T	B1	2				2.80E-04	5.00E-03	5.0E-03				1.9E+02	
F-08	INORG	Chromium (total)	7440-47-3	D		2				1.40E-03	1.00E-02	1.0E-01				4.6E+02	
F-08	INORG	Chromium (total)	7440-47-3	T		2				1.40E-03	1.00E-02	1.0E-01				4.6E+02	
F-08	INORG	Cobalt	7440-48-4	D	B1	2	2	1.40E-03	2.80E-03			4.0E-02	7.0E-02			2.4E+03	1.2E-06
F-08	INORG	Cobalt	7440-48-4	T	B1	2	1	3.00E-03	3.00E-03	1.30E-03	1.30E-03	4.0E-02	7.5E-02			2.4E+03	1.3E-06
F-08	INORG	Copper	7440-50-8	D	D	2				4.20E-03	5.00E-03	1.4E+00				7.4E+03	
F-08	INORG	Copper	7440-50-8	T	D	2				4.20E-03	5.00E-03	1.4E+00				7.4E+03	
F-08	INORG	Lead	7439-92-1	D	B2	2				2.50E-03	3.00E-03	4.0E-03					
F-08	INORG	Lead	7439-92-1	T	B2	2				2.50E-03	3.00E-03	4.0E-03					
F-08	INORG	Manganese	7439-96-5	D	D	2	1	3.60E-01	3.60E-01	9.00E-04	9.00E-04	8.6E-01	4.2E-01			9.1E+03	4.0E-05
F-08	INORG	Manganese	7439-96-5	T	D	2	2	1.06E-01	3.64E-01			8.6E-01	4.2E-01			9.1E+03	4.0E-05

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-08	INORG	Mercury	7439-97-6	D	D	2				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
F-08	INORG	Mercury	7439-97-6	T	D	2				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
F-08	INORG	Nickel	7440-02-0	D	A	2	2	6.20E-03	6.70E-03			1.0E-01	6.7E-02			7.4E+04	9.1E-08
F-08	INORG	Nickel	7440-02-0	T	A	2	2	5.00E-03	7.70E-03			1.0E-01	7.7E-02			7.4E+04	1.0E-07
F-08	INORG	Selenium	7782-49-2	D	D	2				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
F-08	INORG	Selenium	7782-49-2	T	D	2				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
F-08	INORG	Silver	7440-22-4	D	D	2				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
F-08	INORG	Silver	7440-22-4	T	D	2				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
F-08	INORG	Thallium	7440-28-0	D		2	2	4.10E-05	5.40E-03			2.0E-03	**2.7E+00**			1.3E+01	4.2E-04
F-08	INORG	Thallium	7440-28-0	T		2	1	4.30E-05	4.30E-05	1.00E-02	1.00E-02	2.0E-03	2.2E-02			1.3E+01	3.3E-06
F-08	INORG	Vanadium	7440-62-2	D		2				8.20E-04	1.00E-02	4.5E-03				9.7E+02	
F-08	INORG	Vanadium	7440-62-2	T		2				8.20E-04	1.00E-02	4.5E-03				9.7E+02	
F-08	INORG	Zinc	7440-66-6	D	D	2	1	1.33E-02	1.33E-02	1.20E-02	1.20E-02	2.4E+00	5.5E-03			1.1E+05	1.2E-07
F-08	INORG	Zinc	7440-66-6	T	D	2	1	2.12E-02	2.12E-02	1.20E-02	1.20E-02	2.4E+00	8.8E-03			1.1E+05	1.9E-07
F-12	VOC	Acetone	67-64-1	T	ID	8	1	7.05E-04	7.05E-04	5.10E-04	2.80E-03	7.3E-01	9.7E-04	1.0E+06	7.1E-10	3.1E+04	2.3E-08
F-12	VOC	Benzene	71-43-2	T	A	8				1.60E-04	9.20E-04	5.0E-03		3.5E+01		1.1E+01	
F-12	VOC	Bromodichloromethane	75-27-4	T	B2	8				1.70E-04	8.00E-04	1.0E-01		3.7E+01		1.4E+01	
F-12	VOC	Bromoform	75-25-2	T	B2	8				1.80E-04	9.20E-04	1.0E-01		3.1E+03		1.4E+02	
F-12	VOC	Bromomethane	74-83-9	T	D	6				2.00E-04	6.00E-04	1.0E-02		9.0E+00		7.0E+01	
F-12	VOC	2-Butanone	78-93-3	T	ID	8				4.10E-04	1.50E-03	1.3E+01		2.4E+05		2.4E+05	
F-12	VOC	Carbon Disulfide	75-15-0	T		8				2.00E-04	6.00E-04	8.0E-01		5.5E+02		1.2E+03	
F-12	VOC	Carbon Tetrachloride	56-23-5	T	B2	8				1.20E-04	9.20E-04	5.0E-03		2.4E+00		4.6E+00	
F-12	VOC	Chlorobenzene	108-90-7	T	D	8				1.40E-04	9.50E-04	1.0E-01		4.7E+02		8.6E+01	
F-12	VOC	Chloroethane	75-00-3	T		8				2.60E-04	7.20E-04	4.3E-01		5.7E+03		4.4E+02	
F-12	VOC	Chloroform	67-66-3	T	B2	8	1	1.60E-04	1.60E-04	1.40E-04	8.80E-04	1.0E-01	1.6E-03	1.8E+02	8.9E-07	1.5E+02	1.1E-06
F-12	VOC	Chloromethane	74-87-3	T	D	8				1.30E-04	1.20E-03	2.6E-01		4.5E+01		4.9E+02	
F-12	VOC	Cumene	98-82-8	T	D	8				1.20E-04	9.80E-04	8.0E-01		5.6E+01		5.6E+01	
F-12	VOC	Cyclohexane	110-82-7	T	ID	8				1.30E-04	8.20E-04						
F-12	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	8				6.20E-04	2.00E-03	2.0E-04		1.2E+00		3.9E-01	
F-12	VOC	Dibromochloromethane	124-48-1	T	C	8				2.60E-04	9.20E-04	1.0E-01		1.1E+02		1.8E+01	
F-12	VOC	1,2-Dibromoethane	106-93-4	T	B2	8				2.20E-04	8.50E-04	1.0E-03		1.5E+01		2.5E-02	
F-12	VOC	1,2-Dichlorobenzene	95-50-1	T	D	8				1.10E-04	9.50E-04	6.0E-01		1.6E+02		1.6E+02	
F-12	VOC	1,3-Dichlorobenzene	541-73-1	T	D	8				1.50E-04	9.50E-04	6.6E-03				2.0E+00	
F-12	VOC	1,4-Dichlorobenzene	106-46-7	T	C	8				1.70E-04	9.50E-04	7.5E-02		7.4E+01		6.4E+00	
F-12	VOC	Dichlorodifluoromethane	75-71-8	T		8				2.60E-04	1.20E-03	1.7E+00		3.0E+02		3.0E+02	
F-12	VOC	1,1-Dichloroethane	75-34-3	T	C	8	8	5.05E-04	2.50E-02			8.8E-01	2.8E-02	2.3E+03	1.1E-05	2.4E+03	1.0E-05
F-12	VOC	1,2-Dichloroethane	107-06-2	T	B2	8				2.10E-04	7.00E-04	5.0E-03		5.9E+01		1.9E+01	
F-12	VOC	1,1-Dichloroethene	75-35-4	T	C	8	5	1.21E-03	5.80E-03	2.40E-04	3.10E-04	7.0E-03	8.3E-01	1.3E+00	4.5E-03	1.1E+01	5.3E-04
F-12	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	8	2	1.30E-03	1.60E-03	2.20E-04	4.40E-04	7.0E-02	2.3E-02	2.1E+02	7.6E-06	2.0E+02	8.0E-06
F-12	VOC	trans-1,2-Dichloroethene	156-60-5	T		8				1.50E-04	8.20E-04	1.0E-01		2.0E+02		2.2E+02	
F-12	VOC	1,2-Dichloropropane	78-87-5	T	B2	8				1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01	
F-12	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	8				2.70E-04	8.80E-04	8.5E-03		2.6E+01		5.5E+00	
F-12	VOC	Ethyl Benzene	100-41-4	T	D	8				1.20E-04	1.00E-03	7.0E-01		1.7E+02		1.7E+02	
F-12	VOC	2-Hexanone	591-78-6	T		8				4.60E-04	1.40E-03	1.0E+00		8.7E+03		5.2E+03	
F-12	VOC	Methyl Acetate	79-20-9	T		8				4.10E-04	1.40E-03						
F-12	VOC	Methyl tert-butyl ether	1634-04-4	T		8				1.30E-04	6.80E-04	2.4E-01		4.7E+04		6.1E+02	
F-12	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	6				2.30E-04	5.20E-04	1.8E+00		2.0E+04		1.3E+04	
F-12	VOC	Methylcyclohexane	108-87-2	T		8				1.50E-04	1.00E-03						
F-12	VOC	Methylene Chloride	75-09-2	T	B2	8				2.90E-04	7.20E-04	5.0E-03		1.4E+03		2.2E+02	
F-12	VOC	Styrene	100-42-5	T		8				1.50E-04	8.80E-04	1.0E-01		3.1E+02		9.7E+00	
F-12	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	8				2.50E-04	9.00E-04	8.5E-03		7.7E+01		4.7E+00	
F-12	VOC	Tetrachloroethene	127-18-4	T	C-B2	8				2.30E-04	1.00E-03	5.0E-03		1.7E+02		1.2E+01	
F-12	VOC	Toluene	108-88-3	T	D	8	1	4.70E-04	4.70E-04	1.80E-04	9.80E-04	1.0E+00	4.7E-04	5.3E+02	8.9E-07	5.3E+02	8.9E-07
F-12	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	8				1.70E-04	1.00E-03	7.0E-02		3.0E+02		1.9E+01	
F-12	VOC	1,1,1-Trichloroethane	71-55-6	T	D	8	8	1.38E-04	7.30E-02			2.0E-01	3.7E-01	1.3E+03	5.6E-05	1.3E+03	5.6E-05
F-12	VOC	1,1,2-Trichloroethane	79-00-5	T	C	8				3.00E-04	9.00E-04	5.0E-03		1.1E+02		2.1E+01	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-12	VOC	Trichloroethene	79-01-6	T	C-B2	8	1	1.40E-04	1.40E-04	1.40E-04	1.00E-03	5.0E-03	2.8E-02	9.7E+01	1.4E-06	2.2E+01	6.4E-06
F-12	VOC	Trichlorofluoromethane	75-69-4	T		8				2.80E-04	1.40E-03	2.6E+00		1.1E+03		1.1E+03	
F-12	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		8				3.20E-04	8.00E-04	1.7E+02		1.7E+02		1.7E+02	
F-12	VOC	Vinyl Chloride	75-01-4	T	A	8				1.50E-04	9.00E-04	2.0E-03		1.3E+01		1.0E+00	
F-12	VOC	Xylenes (total)	1330-20-7	T	ID	8	1	3.48E-04	3.48E-04	3.30E-04	1.10E-03	1.0E+01	3.5E-05	1.9E+02	1.8E-06	1.9E+02	1.8E-06
F-12	SVOC	Acenaphthene	83-32-9	T		7				8.00E-04	8.00E-04	1.3E+00		4.2E+00		4.2E+00	
F-12	SVOC	Acenaphthylene	208-96-8	T	D	7				7.10E-04	7.10E-04	5.2E-02		3.9E+00		3.9E+00	
F-12	SVOC	Acetophenone	98-86-2	T	D	7				2.60E-03	2.60E-03	1.5E+00		6.1E+03		6.1E+03	
F-12	SVOC	Anthracene	120-12-7	T	D	7				6.80E-04	6.80E-04	4.3E-02		4.3E-02		4.3E-02	
F-12	SVOC	Atrazine	1912-24-9	T		7				2.50E-03	2.50E-03	3.0E-03				5.4E+00	
F-12	SVOC	Benzaldehyde	100-52-7	T		7				2.80E-03	2.80E-03						
F-12	SVOC	Benzo(a)anthracene	56-55-3	T	B2	7				7.00E-04	7.00E-04	2.1E-03				9.4E-03	
F-12	SVOC	Benzo(a)pyrene	50-32-8	T	B2	7				7.30E-04	7.30E-04	5.0E-03				2.0E-03	
F-12	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	7				9.40E-04	9.40E-04	2.0E-03				2.0E-03	
F-12	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	7				8.50E-04	8.50E-04	5.0E-03				5.0E-03	
F-12	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	7				8.40E-04	8.40E-04	5.0E-03				5.0E-03	
F-12	SVOC	Biphenyl	92-52-4	T	D	7				2.60E-03	2.60E-03						
F-12	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	7				8.70E-04	8.70E-04						
F-12	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	7				9.70E-04	9.70E-04	2.0E-03		2.1E+02		5.7E+00	
F-12	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	7				2.70E-03	2.70E-03	6.0E-03				3.2E-01	
F-12	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	7				8.80E-04	8.80E-04						
F-12	SVOC	Butylbenzylphthalate	85-68-7	T	C	7				8.80E-04	8.80E-04	1.2E+00				2.7E+00	
F-12	SVOC	Caprolactam	105-60-2	T		7				2.50E-03	2.50E-03	5.8E+00				3.9E+05	
F-12	SVOC	Carbazole	86-74-8	T	B2	7				8.20E-04	8.20E-04	8.5E-02				7.4E+00	
F-12	SVOC	4-Chloro-3-methylphenol	59-50-7	T		7				9.90E-04	9.90E-04	1.5E-01				7.9E+01	
F-12	SVOC	4-Chloroaniline	106-47-8	T		5				6.10E-04	6.10E-04						
F-12	SVOC	2-Chloronaphthalene	91-58-7	T		7				8.50E-04	8.50E-04	1.8E+00				6.7E+00	
F-12	SVOC	2-Chlorophenol	95-57-8	T		7				1.00E-03	1.00E-03	4.5E-02				9.4E+01	
F-12	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		7				7.90E-04	7.90E-04						
F-12	SVOC	Chrysene	218-01-9	T	B2	7				7.50E-04	7.50E-04	5.0E-03				5.0E-03	
F-12	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	7				7.90E-04	7.90E-04	2.0E-03				2.0E-03	
F-12	SVOC	Dibenzofuran	132-64-9	T	D	7				1.10E-03	1.10E-03						
F-12	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	7				9.30E-04	9.30E-04	1.1E-03				1.8E-01	
F-12	SVOC	2,4-Dichlorophenol	120-83-2	T		7				8.50E-04	8.50E-04	7.3E-02				4.8E+01	
F-12	SVOC	Diethylphthalate	84-66-2	T	D	7				6.50E-04	6.50E-04	5.5E+00				1.1E+03	
F-12	SVOC	2,4-Dimethylphenol	105-67-9	T		7				8.50E-04	8.50E-04	3.7E-01				5.2E+02	
F-12	SVOC	Dimethylphthalate	131-11-3	T	D	7				7.60E-04	7.60E-04	7.3E+01				4.2E+03	
F-12	SVOC	Di-n-butylphthalate	84-74-2	T	D	7				6.70E-04	6.70E-04	8.8E-01				1.1E+01	
F-12	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		7				1.30E-03	1.30E-03	2.0E-02				9.5E+00	
F-12	SVOC	2,4-Dinitrophenol	51-28-5	T		7				3.00E-03	3.00E-03						
F-12	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	7				7.90E-04	7.90E-04	7.7E-03				8.6E+00	
F-12	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	7				5.70E-04	5.70E-04						
F-12	SVOC	Di-n-octylphthalate	117-84-0	T		7				1.10E-03	1.10E-03	1.3E-01				4.0E-01	
F-12	SVOC	Fluoranthene	206-44-0	T	D	7				8.10E-04	8.10E-04	2.1E-01		2.1E-01		2.1E-01	
F-12	SVOC	Fluorene	86-73-7	T	D	7				1.00E-03	1.00E-03	8.8E-01		2.0E+00		2.0E+00	
F-12	SVOC	Hexachlorobenzene	118-74-1	T	B2	7				7.40E-04	7.40E-04	1.0E-03		3.0E+00		4.6E-03	
F-12	SVOC	Hexachlorobutadiene	87-68-3	T	C	7				7.30E-04	7.30E-04	1.5E-02		3.2E+00		4.0E-01	
F-12	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	7				1.10E-03	1.10E-03	5.0E-02		4.2E-01		1.6E+00	
F-12	SVOC	Hexachloroethane	67-72-1	T	C	7				7.40E-04	7.40E-04	7.3E-03		5.0E+01		1.9E+00	
F-12	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	7				6.30E-04	6.30E-04	2.0E-03				2.0E-03	
F-12	SVOC	Isophorone	78-59-1	T	C	7				6.30E-04	6.30E-04	7.7E-01				9.9E+02	
F-12	SVOC	2-Methylnaphthalene	91-57-6	T	ID	7				6.40E-04	6.40E-04	2.6E-01				2.5E+01	
F-12	SVOC	Methylphenol (total)	1319-77-3	T		7				1.30E-03	1.30E-03	3.7E-01				8.1E+02	
F-12	SVOC	Naphthalene	91-20-3	T	C	7				7.50E-04	7.50E-04	5.2E-01		3.1E+01		3.1E+01	
F-12	SVOC	2-Nitroaniline	88-74-4	T		7				7.00E-04	7.00E-04						
F-12	SVOC	3-Nitroaniline	99-09-2	T	C	7				7.10E-04	7.10E-04						

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-12	SVOC	4-Nitroaniline	100-01-6	T	C	7				1.30E-03	1.30E-03						
F-12	SVOC	Nitrobenzene	98-95-3	T	D	7				8.10E-04	8.10E-04	3.4E-03		5.5E+02		1.1E+01	
F-12	SVOC	2-Nitrophenol	88-75-5	T		7				2.10E-03	2.10E-03	2.0E-02				7.9E+01	
F-12	SVOC	4-Nitrophenol	100-02-7	T		7				1.90E-03	1.90E-03						
F-12	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	7				1.40E-03	1.40E-03	2.7E-01				3.5E+01	
F-12	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	7				6.70E-04	6.70E-04	5.0E-03				3.6E-01	
F-12	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	7				7.80E-04	7.80E-04						
F-12	SVOC	Pentachlorophenol	87-86-5	T	B2	7				2.40E-03	2.40E-03	1.0E-03				2.0E-01	
F-12	SVOC	Phenanthrene	85-01-8	T	D	7				8.20E-04	8.20E-04	5.2E-02		1.0E+00		1.0E+00	
F-12	SVOC	Phenol	108-95-2	T	ID	7				2.60E-03	2.60E-03	4.4E+00				2.9E+04	
F-12	SVOC	Pyrene	129-00-0	T	D	7				1.10E-03	1.10E-03	1.4E-01		1.4E-01		1.4E-01	
F-12	SVOC	2,4,5-Trichlorophenol	95-95-4	T		7				1.20E-03	1.20E-03	7.3E-01				1.7E+02	
F-12	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	7				1.70E-03	1.70E-03	1.2E-01				1.0E+01	
F-12	P/PCB	PCBs (total)	1336-36-3	D	B2	2				8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
F-12	P/PCB	PCBs (total)	1336-36-3	T	B2	8				8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
F-12	INORG	Antimony	7440-36-0	D		3				2.20E-03	2.20E-03	6.0E-03				6.8E+01	
F-12	INORG	Antimony	7440-36-0	T		7	1	2.20E-03	2.20E-03	2.20E-03	3.40E-03	6.0E-03	3.7E-01			6.8E+01	3.2E-05
F-12	INORG	Arsenic	7440-38-2	D	A	3				3.90E-03	3.90E-03	5.0E-02				4.3E+00	
F-12	INORG	Arsenic	7440-38-2	T	A	7				2.10E-03	3.90E-03	5.0E-02				4.3E+00	
F-12	INORG	Barium	7440-39-3	D	D	3	3	3.70E-02	8.63E-02			2.0E+00	4.3E-02			1.4E+04	6.2E-06
F-12	INORG	Barium	7440-39-3	T	D	7	7	2.46E-02	8.63E-02			2.0E+00	4.3E-02			1.4E+04	6.2E-06
F-12	INORG	Beryllium	7440-41-7	D	B1	3	1	4.70E-04	4.70E-04	5.40E-04	5.40E-04	4.0E-03	1.2E-01			2.9E+02	1.6E-06
F-12	INORG	Beryllium	7440-41-7	T	B1	7				5.40E-04	6.00E-04	4.0E-03				2.9E+02	
F-12	INORG	Cadmium	7440-43-9	D	B1	3				2.80E-04	2.80E-04	5.0E-03				1.9E+02	
F-12	INORG	Cadmium	7440-43-9	T	B1	7	1	3.50E-04	3.50E-04	2.80E-04	2.80E-04	5.0E-03	7.0E-02			1.9E+02	1.8E-06
F-12	INORG	Chromium (total)	7440-47-3	D		3				1.40E-03	1.40E-03	1.0E-01				4.6E+02	
F-12	INORG	Chromium (total)	7440-47-3	T		7				1.40E-03	1.50E-03	1.0E-01				4.6E+02	
F-12	INORG	Cobalt	7440-48-4	D	B1	3	2	2.40E-03	2.88E-03	1.30E-03	1.30E-03	4.0E-02	7.2E-02			2.4E+03	1.2E-06
F-12	INORG	Cobalt	7440-48-4	T	B1	7	6	9.30E-04	2.93E-03	1.30E-03	1.30E-03	4.0E-02	7.3E-02			2.4E+03	1.2E-06
F-12	INORG	Copper	7440-50-8	D	D	3				4.20E-03	4.20E-03	1.4E+00				7.4E+03	
F-12	INORG	Copper	7440-50-8	T	D	7				1.70E-03	4.20E-03	1.4E+00				7.4E+03	
F-12	INORG	Lead	7439-92-1	D	B2	3				2.50E-03	2.50E-03	4.0E-03					
F-12	INORG	Lead	7439-92-1	T	B2	7				1.60E-03	2.50E-03	4.0E-03					
F-12	INORG	Manganese	7439-96-5	D	D	3	3	1.08E+00	1.46E+00			8.6E-01	**1.7E+00**			9.1E+03	1.6E-04
F-12	INORG	Manganese	7439-96-5	T	D	7	7	1.01E+00	1.34E+00			8.6E-01	**1.6E+00**			9.1E+03	1.5E-04
F-12	INORG	Mercury	7439-97-6	D	D	3				6.90E-05	6.90E-05	2.0E-03		5.6E-02		5.6E-02	
F-12	INORG	Mercury	7439-97-6	T	D	7				6.90E-05	8.70E-05	2.0E-03		5.6E-02		5.6E-02	
F-12	INORG	Nickel	7440-02-0	D	A	3	3	3.40E-03	6.50E-03			1.0E-01	6.5E-02			7.4E+04	8.8E-08
F-12	INORG	Nickel	7440-02-0	T	A	7	4	3.20E-03	6.80E-03	2.20E-03	2.90E-03	1.0E-01	6.8E-02			7.4E+04	9.2E-08
F-12	INORG	Selenium	7782-49-2	D	D	3				4.50E-03	4.50E-03	5.0E-02				9.7E+02	
F-12	INORG	Selenium	7782-49-2	T	D	7	1	3.43E-03	3.43E-03	4.50E-03	4.70E-03	5.0E-02	6.9E-02			9.7E+02	3.5E-06
F-12	INORG	Silver	7440-22-4	D	D	3				1.50E-03	1.50E-03	3.4E-02				1.5E+03	
F-12	INORG	Silver	7440-22-4	T	D	7				9.80E-04	1.50E-03	3.4E-02				1.5E+03	
F-12	INORG	Thallium	7440-28-0	D		3	2	2.90E-05	4.30E-05	5.00E-03	5.00E-03	2.0E-03	2.2E-02			1.3E+01	3.3E-06
F-12	INORG	Thallium	7440-28-0	T		7	2	1.90E-05	5.05E-05	3.30E-05	5.00E-03	2.0E-03	2.5E-02			1.3E+01	3.9E-06
F-12	INORG	Vanadium	7440-62-2	D		3				8.20E-04	8.20E-04	4.5E-03				9.7E+02	
F-12	INORG	Vanadium	7440-62-2	T		7				6.70E-04	8.20E-04	4.5E-03				9.7E+02	
F-12	INORG	Zinc	7440-66-6	D	D	3				1.20E-02	1.20E-02	2.4E+00				1.1E+05	
F-12	INORG	Zinc	7440-66-6	T	D	7	1	1.79E-02	1.79E-02	1.20E-02	1.40E-02	2.4E+00	7.4E-03			1.1E+05	1.6E-07
F-15	VOC	Acetone	67-64-1	T	ID	2				5.10E-04	1.00E-02	7.3E-01		1.0E+06		3.1E+04	
F-15	VOC	Benzene	71-43-2	T	A	2				1.60E-04	1.00E-03	5.0E-03		3.5E+01		1.1E+01	
F-15	VOC	Bromodichloromethane	75-27-4	T	B2	2				1.70E-04	1.00E-03	1.0E-01		3.7E+01		1.4E+01	
F-15	VOC	Bromoform	75-25-2	T	B2	2				1.80E-04	1.00E-03	1.0E-01		3.1E+03		1.4E+02	
F-15	VOC	Bromomethane	74-83-9	T	D	2				2.00E-04	1.00E-03	1.0E-02		9.0E+00		7.0E+01	
F-15	VOC	2-Butanone	78-93-3	T	ID	2				4.10E-04	1.00E-02	1.3E+01		2.4E+05		2.4E+05	
F-15	VOC	Carbon Disulfide	75-15-0	T		2				2.00E-04	1.00E-03	8.0E-01		5.5E+02		1.2E+03	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-15	VOC	Carbon Tetrachloride	56-23-5	T	B2	2				1.20E-04	1.00E-03	5.0E-03		2.4E+00		4.6E+00	
F-15	VOC	Chlorobenzene	108-90-7	T	D	2				1.40E-04	1.00E-03	1.0E-01		4.7E+02		8.6E+01	
F-15	VOC	Chloroethane	75-00-3	T		2				2.60E-04	1.00E-03	4.3E-01		5.7E+03		4.4E+02	
F-15	VOC	Chloroform	67-66-3	T	B2	2	1	5.40E-04	5.40E-04	1.40E-04	1.40E-04	1.0E-01	5.4E-03	1.8E+02	3.0E-06	1.5E+02	3.6E-06
F-15	VOC	Chloromethane	74-87-3	T	D	2	1	4.10E-04	4.10E-04	1.30E-04	1.30E-04	2.6E-01	1.6E-03	4.5E+01	9.1E-06	4.9E+02	8.4E-07
F-15	VOC	Cumene	98-82-8	T	D	2				1.20E-04	1.00E-03	8.0E-01		5.6E+01		5.6E+01	
F-15	VOC	Cyclohexane	110-82-7	T	ID	2				1.30E-04	1.00E-03						
F-15	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	2				6.20E-04	2.00E-03	2.0E-04		1.2E+00		3.9E-01	
F-15	VOC	Dibromochloromethane	124-48-1	T	C	2				2.60E-04	1.00E-03	1.0E-01		1.1E+02		1.8E+01	
F-15	VOC	1,2-Dibromoethane	106-93-4	T	B2	2				2.20E-04	1.00E-03	1.0E-03		1.5E+01		2.5E-02	
F-15	VOC	1,2-Dichlorobenzene	95-50-1	T	D	2				1.10E-04	1.00E-03	6.0E-01		1.6E+02		1.6E+02	
F-15	VOC	1,3-Dichlorobenzene	541-73-1	T	D	2				1.50E-04	1.00E-03	6.6E-03				2.0E+00	
F-15	VOC	1,4-Dichlorobenzene	106-46-7	T	C	2				1.70E-04	1.00E-03	7.5E-02		7.4E+01		6.4E+00	
F-15	VOC	Dichlorodifluoromethane	75-71-8	T		2				2.60E-04	2.00E-03	1.7E+00		3.0E+02		3.0E+02	
F-15	VOC	1,1-Dichloroethane	75-34-3	T	C	2	2	2.00E-03	7.60E-03			8.8E-01	8.6E-03	2.3E+03	3.3E-06	2.4E+03	3.2E-06
F-15	VOC	1,2-Dichloroethane	107-06-2	T	B2	2				2.10E-04	1.00E-03	5.0E-03		5.9E+01		1.9E+01	
F-15	VOC	1,1-Dichloroethene	75-35-4	T	C	2				2.40E-04	1.00E-03	7.0E-03		1.3E+00		1.1E+01	
F-15	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	2				2.20E-04	5.00E-04	7.0E-02		2.1E+02		2.0E+02	
F-15	VOC	trans-1,2-Dichloroethene	156-60-5	T		2				1.50E-04	5.00E-04	1.0E-01		2.0E+02		2.2E+02	
F-15	VOC	1,2-Dichloropropane	78-87-5	T	B2	2				1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01	
F-15	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	2				2.70E-04	1.00E-03	8.5E-03		2.6E+01		5.5E+00	
F-15	VOC	Ethyl Benzene	100-41-4	T	D	2				1.20E-04	1.00E-03	7.0E-01		1.7E+02		1.7E+02	
F-15	VOC	2-Hexanone	591-78-6	T		2				4.60E-04	1.00E-02	1.0E+00		8.7E+03		5.2E+03	
F-15	VOC	Methyl Acetate	79-20-9	T		2				4.10E-04	1.00E-02						
F-15	VOC	Methyl tert-butyl ether	1634-04-4	T		2				1.30E-04	5.00E-03	2.4E-01		4.7E+04		6.1E+02	
F-15	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	2				2.30E-04	1.00E-02	1.8E+00		2.0E+04		1.3E+04	
F-15	VOC	Methylcyclohexane	108-87-2	T		2				1.50E-04	1.00E-03						
F-15	VOC	Methylene Chloride	75-09-2	T	B2	2				3.40E-04	1.00E-03	5.0E-03		1.4E+03		2.2E+02	
F-15	VOC	Styrene	100-42-5	T		2				1.50E-04	1.00E-03	1.0E-01		3.1E+02		9.7E+00	
F-15	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	2				2.50E-04	1.00E-03	8.5E-03		7.7E+01		4.7E+00	
F-15	VOC	Tetrachloroethene	127-18-4	T	C-B2	2	1	2.80E-04	2.80E-04	2.30E-04	2.30E-04	5.0E-03	5.6E-02	1.7E+02	1.6E-06	1.2E+01	2.3E-05
F-15	VOC	Toluene	108-88-3	T	D	2	2	2.90E-04	3.60E-04			1.0E+00	3.6E-04	5.3E+02	6.8E-07	5.3E+02	6.8E-07
F-15	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	2				1.70E-04	1.00E-03	7.0E-02		3.0E+02		1.9E+01	
F-15	VOC	1,1,1-Trichloroethane	71-55-6	T	D	2	1	6.10E-04	6.10E-04	1.00E-03	1.00E-03	2.0E-01	3.1E-03	1.3E+03	4.7E-07	1.3E+03	4.7E-07
F-15	VOC	1,1,2-Trichloroethane	79-00-5	T	C	2				3.00E-04	1.00E-03	5.0E-03		1.1E+02		2.1E+01	
F-15	VOC	Trichloroethene	79-01-6	T	C-B2	2				1.40E-04	1.00E-03	5.0E-03		9.7E+01		2.2E+01	
F-15	VOC	Trichlorofluoromethane	75-69-4	T		2				2.80E-04	1.00E-03	2.6E+00		1.1E+03		1.1E+03	
F-15	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		2				3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
F-15	VOC	Vinyl Chloride	75-01-4	T	A	2				1.50E-04	1.00E-03	2.0E-03		1.3E+01		1.0E+00	
F-15	VOC	Xylenes (total)	1330-20-7	T	ID	2	1	6.40E-04	6.40E-04	1.00E-03	1.00E-03	1.0E+01	6.4E-05	1.9E+02	3.4E-06	1.9E+02	3.4E-06
F-15	SVOC	Acenaphthene	83-32-9	T		2				8.00E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00	
F-15	SVOC	Acenaphthylene	208-96-8	T	D	2				7.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00	
F-15	SVOC	Acetophenone	98-86-2	T	D	2				2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
F-15	SVOC	Anthracene	120-12-7	T	D	2				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
F-15	SVOC	Atrazine	1912-24-9	T		2				2.50E-03	5.00E-03	3.0E-03				5.4E+00	
F-15	SVOC	Benzaldehyde	100-52-7	T		2				2.80E-03	1.00E-02						
F-15	SVOC	Benzo(a)anthracene	56-55-3	T	B2	2				7.00E-04	5.00E-03	2.1E-03				9.4E-03	
F-15	SVOC	Benzo(a)pyrene	50-32-8	T	B2	2				7.30E-04	5.00E-03	5.0E-03				2.0E-03	
F-15	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	2				9.40E-04	5.00E-03	2.0E-03				2.0E-03	
F-15	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	2				8.50E-04	5.00E-03	5.0E-03				5.0E-03	
F-15	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	2				8.40E-04	5.00E-03	5.0E-03				5.0E-03	
F-15	SVOC	Biphenyl	92-52-4	T	D	2				2.60E-03	1.00E-02						
F-15	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	2				8.70E-04	5.00E-03						
F-15	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	2				9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00	
F-15	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	2				2.70E-03	5.00E-03	6.0E-03				3.2E-01	
F-15	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	2				8.80E-04	5.00E-03						

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-15	SVOC	Butylbenzylphthalate	85-68-7	T	C	2				8.80E-04	5.00E-03	1.2E+00				2.7E+00	
F-15	SVOC	Caprolactam	105-60-2	T		2				2.50E-03	1.00E-02	5.8E+00				3.9E+05	
F-15	SVOC	Carbazole	86-74-8	T	B2	2				8.20E-04	1.00E-02	8.5E-02				7.4E+00	
F-15	SVOC	4-Chloro-3-methylphenol	59-50-7	T		2				9.90E-04	5.00E-03	1.5E-01				7.9E+01	
F-15	SVOC	4-Chloroaniline	106-47-8	T		2				6.10E-04	1.00E-02						
F-15	SVOC	2-Chloronaphthalene	91-58-7	T		2				8.50E-04	5.00E-03	1.8E+00				6.7E+00	
F-15	SVOC	2-Chlorophenol	95-57-8	T		2				1.00E-03	5.00E-03	4.5E-02				9.4E+01	
F-15	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		2				7.90E-04	5.00E-03						
F-15	SVOC	Chrysene	218-01-9	T	B2	2				7.50E-04	5.00E-03	5.0E-03				5.0E-03	
F-15	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	2				7.90E-04	5.00E-03	2.0E-03				2.0E-03	
F-15	SVOC	Dibenzofuran	132-64-9	T	D	2				1.10E-03	5.00E-03						
F-15	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	2				9.30E-04	2.00E-02	1.1E-03				1.8E-01	
F-15	SVOC	2,4-Dichlorophenol	120-83-2	T		2				8.50E-04	1.00E-02	7.3E-02				4.8E+01	
F-15	SVOC	Diethylphthalate	84-66-2	T	D	2				6.50E-04	5.00E-03	5.5E+00				1.1E+03	
F-15	SVOC	2,4-Dimethylphenol	105-67-9	T		2				8.50E-04	5.00E-03	3.7E-01				5.2E+02	
F-15	SVOC	Dimethylphthalate	131-11-3	T	D	2				7.60E-04	5.00E-03	7.3E+01				4.2E+03	
F-15	SVOC	Di-n-butylphthalate	84-74-2	T	D	2				6.70E-04	5.00E-03	8.8E-01				1.1E+01	
F-15	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		2				1.30E-03	2.00E-02	2.0E-02				9.5E+00	
F-15	SVOC	2,4-Dinitrophenol	51-28-5	T		2				3.00E-03	2.00E-02						
F-15	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	2				7.90E-04	5.00E-03	7.7E-03				8.6E+00	
F-15	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	2				5.70E-04	5.00E-03						
F-15	SVOC	Di-n-octylphthalate	117-84-0	T		2				1.10E-03	5.00E-03	1.3E-01				4.0E-01	
F-15	SVOC	Fluoranthene	206-44-0	T	D	2				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
F-15	SVOC	Fluorene	86-73-7	T	D	2				1.00E-03	5.00E-03	8.8E-01		2.0E+00		2.0E+00	
F-15	SVOC	Hexachlorobenzene	118-74-1	T	B2	2				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
F-15	SVOC	Hexachlorobutadiene	87-68-3	T	C	2				7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
F-15	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	2				1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
F-15	SVOC	Hexachloroethane	67-72-1	T	C	2				7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
F-15	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	2				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
F-15	SVOC	Isophorone	78-59-1	T	C	2				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
F-15	SVOC	2-Methylnaphthalene	91-57-6	T	ID	2				6.40E-04	5.00E-03	2.6E-01				2.5E+01	
F-15	SVOC	Methylphenol (total)	1319-77-3	T		2				1.30E-03	5.00E-03	3.7E-01				8.1E+02	
F-15	SVOC	Naphthalene	91-20-3	T	C	2				7.50E-04	5.00E-03	5.2E-01		3.1E+01		3.1E+01	
F-15	SVOC	2-Nitroaniline	88-74-4	T		2				7.00E-04	2.00E-02						
F-15	SVOC	3-Nitroaniline	99-09-2	T	C	2				7.10E-04	2.00E-02						
F-15	SVOC	4-Nitroaniline	100-01-6	T	C	2				1.30E-03	2.00E-02						
F-15	SVOC	Nitrobenzene	98-95-3	T	D	2				8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
F-15	SVOC	2-Nitrophenol	88-75-5	T		2				2.10E-03	5.00E-03	2.0E-02				7.9E+01	
F-15	SVOC	4-Nitrophenol	100-02-7	T		2				1.90E-03	2.00E-02						
F-15	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	2				1.40E-03	5.00E-03	2.7E-01				3.5E+01	
F-15	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	2				6.70E-04	5.00E-03	5.0E-03				3.6E-01	
F-15	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	2				7.80E-04	5.00E-03						
F-15	SVOC	Pentachlorophenol	87-86-5	T	B2	2				2.40E-03	5.00E-03	1.0E-03				2.0E-01	
F-15	SVOC	Phenanthrene	85-01-8	T	D	2				8.20E-04	5.00E-03	5.2E-02		1.0E+00		1.0E+00	
F-15	SVOC	Phenol	108-95-2	T	ID	2				2.60E-03	5.00E-03	4.4E+00				2.9E+04	
F-15	SVOC	Pyrene	129-00-0	T	D	2				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
F-15	SVOC	2,4,5-Trichlorophenol	95-95-4	T		2				1.20E-03	5.00E-03	7.3E-01				1.7E+02	
F-15	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	2				1.70E-03	5.00E-03	1.2E-01				1.0E+01	
F-15	P/PCB	PCBs (total)	1336-36-3	D	B2	1				4.00E-04	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
F-15	P/PCB	PCBs (total)	1336-36-3	T	B2	2				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
F-15	INORG	Antimony	7440-36-0	D		2				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
F-15	INORG	Antimony	7440-36-0	T		2				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
F-15	INORG	Arsenic	7440-38-2	D	A	2				3.90E-03	1.00E-02	5.0E-02				4.3E+00	
F-15	INORG	Arsenic	7440-38-2	T	A	2				3.90E-03	1.00E-02	5.0E-02				4.3E+00	
F-15	INORG	Barium	7440-39-3	D	D	2	2	1.78E-02	2.14E-02			2.0E+00	1.1E-02			1.4E+04	1.5E-06
F-15	INORG	Barium	7440-39-3	T	D	2	2	1.81E-02	2.15E-02			2.0E+00	1.1E-02			1.4E+04	1.5E-06

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
F-15	INORG	Beryllium	7440-41-7	D	B1	2				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
F-15	INORG	Beryllium	7440-41-7	T	B1	2				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
F-15	INORG	Cadmium	7440-43-9	D	B1	2				2.80E-04	5.00E-03	5.0E-03				1.9E+02	
F-15	INORG	Cadmium	7440-43-9	T	B1	2	1	4.10E-04	4.10E-04	5.00E-03	5.00E-03	5.0E-03	8.2E-02			1.9E+02	2.2E-06
F-15	INORG	Chromium (total)	7440-47-3	D		2				1.40E-03	1.00E-02	1.0E-01				4.6E+02	
F-15	INORG	Chromium (total)	7440-47-3	T		2				1.40E-03	1.00E-02	1.0E-01				4.6E+02	
F-15	INORG	Cobalt	7440-48-4	D	B1	2				1.30E-03	2.00E-02	4.0E-02				2.4E+03	
F-15	INORG	Cobalt	7440-48-4	T	B1	2	2	1.60E-03	1.70E-03			4.0E-02	4.3E-02			2.4E+03	7.1E-07
F-15	INORG	Copper	7440-50-8	D	D	2				4.20E-03	5.00E-03	1.4E+00				7.4E+03	
F-15	INORG	Copper	7440-50-8	T	D	2				4.20E-03	5.00E-03	1.4E+00				7.4E+03	
F-15	INORG	Lead	7439-92-1	D	B2	2				2.50E-03	3.00E-03	4.0E-03					
F-15	INORG	Lead	7439-92-1	T	B2	2				2.50E-03	3.00E-03	4.0E-03					
F-15	INORG	Manganese	7439-96-5	D	D	2	2	3.99E-01	6.33E-01			8.6E-01	7.4E-01			9.1E+03	7.0E-05
F-15	INORG	Manganese	7439-96-5	T	D	2	2	3.93E-01	6.57E-01			8.6E-01	7.6E-01			9.1E+03	7.2E-05
F-15	INORG	Mercury	7439-97-6	D	D	2				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
F-15	INORG	Mercury	7439-97-6	T	D	2				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
F-15	INORG	Nickel	7440-02-0	D	A	2	1	6.60E-03	6.60E-03	2.00E-02	2.00E-02	1.0E-01	6.6E-02			7.4E+04	8.9E-08
F-15	INORG	Nickel	7440-02-0	T	A	2	2	2.80E-03	7.40E-03			1.0E-01	7.4E-02			7.4E+04	1.0E-07
F-15	INORG	Selenium	7782-49-2	D	D	2				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
F-15	INORG	Selenium	7782-49-2	T	D	2				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
F-15	INORG	Silver	7440-22-4	D	D	2				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
F-15	INORG	Silver	7440-22-4	T	D	2				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
F-15	INORG	Thallium	7440-28-0	D		2	1	6.40E-05	6.40E-05	1.00E-02	1.00E-02	2.0E-03	3.2E-02			1.3E+01	4.9E-06
F-15	INORG	Thallium	7440-28-0	T		2	1	5.40E-05	5.40E-05	1.00E-02	1.00E-02	2.0E-03	2.7E-02			1.3E+01	4.2E-06
F-15	INORG	Vanadium	7440-62-2	D		2				8.20E-04	1.00E-02	4.5E-03				9.7E+02	
F-15	INORG	Vanadium	7440-62-2	T		2				8.20E-04	1.00E-02	4.5E-03				9.7E+02	
F-15	INORG	Zinc	7440-66-6	D	D	2				1.20E-02	2.00E-02	2.4E+00				1.1E+05	
F-15	INORG	Zinc	7440-66-6	T	D	2				1.20E-02	2.00E-02	2.4E+00				1.1E+05	
M-01	VOC	Acetone	67-64-1	T	ID	6				5.10E-04	1.00E-02	7.3E-01		1.0E+06		3.1E+04	
M-01	VOC	Benzene	71-43-2	T	A	6				1.60E-04	1.00E-03	5.0E-03		3.5E+01		1.1E+01	
M-01	VOC	Bromodichloromethane	75-27-4	T	B2	6	1	1.90E-04	1.90E-04	1.70E-04	1.00E-03	1.0E-01	1.9E-03	3.7E+01	5.1E-06	1.4E+01	1.4E-05
M-01	VOC	Bromoform	75-25-2	T	B2	6				1.80E-04	1.00E-03	1.0E-01		3.1E+03		1.4E+02	
M-01	VOC	Bromomethane	74-83-9	T	D	6				2.00E-04	1.00E-03	1.0E-02		9.0E+00		7.0E+01	
M-01	VOC	2-Butanone	78-93-3	T	ID	6				4.10E-04	1.00E-02	1.3E+01		2.4E+05		2.4E+05	
M-01	VOC	Carbon Disulfide	75-15-0	T		6				2.00E-04	1.00E-03	8.0E-01		5.5E+02		1.2E+03	
M-01	VOC	Carbon Tetrachloride	56-23-5	T	B2	6				1.20E-04	1.00E-03	5.0E-03		2.4E+00		4.6E+00	
M-01	VOC	Chlorobenzene	108-90-7	T	D	6				1.40E-04	1.00E-03	1.0E-01		4.7E+02		8.6E+01	
M-01	VOC	Chloroethane	75-00-3	T		6				2.60E-04	1.00E-03	4.3E-01		5.7E+03		4.4E+02	
M-01	VOC	Chloroform	67-66-3	T	B2	6	3	4.20E-04	6.70E-04	1.40E-04	1.40E-04	1.0E-01	6.7E-03	1.8E+02	3.7E-06	1.5E+02	4.5E-06
M-01	VOC	Chloromethane	74-87-3	T	D	6				1.30E-04	1.00E-03	2.6E-01		4.5E+01		4.9E+02	
M-01	VOC	Cumene	98-82-8	T	D	6				1.20E-04	1.00E-03	8.0E-01		5.6E+01		5.6E+01	
M-01	VOC	Cyclohexane	110-82-7	T	ID	6				1.30E-04	1.00E-03						
M-01	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	6				6.20E-04	2.00E-03	2.0E-04		1.2E+00		3.9E-01	
M-01	VOC	Dibromochloromethane	124-48-1	T	C	6				2.60E-04	1.00E-03	1.0E-01		1.1E+02		1.8E+01	
M-01	VOC	1,2-Dibromoethane	106-93-4	T	B2	6				2.20E-04	1.00E-03	1.0E-03		1.5E+01		2.5E-02	
M-01	VOC	1,2-Dichlorobenzene	95-50-1	T	D	6				1.10E-04	1.00E-03	6.0E-01		1.6E+02		1.6E+02	
M-01	VOC	1,3-Dichlorobenzene	541-73-1	T	D	6				1.50E-04	1.00E-03	6.6E-03				2.0E+00	
M-01	VOC	1,4-Dichlorobenzene	106-46-7	T	C	6				1.70E-04	1.00E-03	7.5E-02		7.4E+01		6.4E+00	
M-01	VOC	Dichlorodifluoromethane	75-71-8	T		6	4	6.70E-04	2.40E-02	2.60E-04	2.60E-04	1.7E+00	1.4E-02	3.0E+02	8.0E-05	3.0E+02	8.0E-05
M-01	VOC	1,1-Dichloroethane	75-34-3	T	C	6				1.60E-04	1.00E-03	8.8E-01		2.3E+03		2.4E+03	
M-01	VOC	1,2-Dichloroethane	107-06-2	T	B2	6				2.10E-04	1.00E-03	5.0E-03		5.9E+01		1.9E+01	
M-01	VOC	1,1-Dichloroethene	75-35-4	T	C	6				2.40E-04	1.00E-03	7.0E-03		1.3E+00		1.1E+01	
M-01	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	6				2.20E-04	5.00E-04	7.0E-02		2.1E+02		2.0E+02	
M-01	VOC	trans-1,2-Dichloroethene	156-60-5	T		6				1.50E-04	5.00E-04	1.0E-01		2.0E+02		2.2E+02	
M-01	VOC	1,2-Dichloropropane	78-87-5	T	B2	6				1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01	
M-01	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	6				2.70E-04	1.00E-03	8.5E-03		2.6E+01		5.5E+00	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-01	VOC	Ethyl Benzene	100-41-4	T	D	6				1.20E-04	1.00E-03	7.0E-01		1.7E+02		1.7E+02	
M-01	VOC	2-Hexanone	591-78-6	T		6				4.60E-04	1.00E-02	1.0E+00		8.7E+03		5.2E+03	
M-01	VOC	Methyl Acetate	79-20-9	T		6				4.10E-04	1.00E-02						
M-01	VOC	Methyl tert-butyl ether	1634-04-4	T		6				1.30E-04	5.00E-03	2.4E-01		4.7E+04		6.1E+02	
M-01	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	6				2.30E-04	1.00E-02	1.8E+00		2.0E+04		1.3E+04	
M-01	VOC	Methylcyclohexane	108-87-2	T		6				1.50E-04	1.00E-03						
M-01	VOC	Methylene Chloride	75-09-2	T	B2	6				3.40E-04	1.00E-03	5.0E-03		1.4E+03		2.2E+02	
M-01	VOC	Styrene	100-42-5	T		6				1.50E-04	1.00E-03	1.0E-01		3.1E+02		9.7E+00	
M-01	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	6				2.50E-04	1.00E-03	8.5E-03		7.7E+01		4.7E+00	
M-01	VOC	Tetrachloroethene	127-18-4	T	C-B2	6	2	3.80E-04	4.10E-04	2.30E-04	1.00E-03	5.0E-03	8.2E-02	1.7E+02	2.4E-06	1.2E+01	3.4E-05
M-01	VOC	Toluene	108-88-3	T	D	6	1	4.40E-04	4.40E-04	1.80E-04	1.00E-03	1.0E+00	4.4E-04	5.3E+02	8.3E-07	5.3E+02	8.3E-07
M-01	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	6				1.70E-04	1.00E-03	7.0E-02		3.0E+02		1.9E+01	
M-01	VOC	1,1,1-Trichloroethane	71-55-6	T	D	6	3	5.30E-04	1.00E-03	1.50E-04	1.00E-03	2.0E-01	5.0E-03	1.3E+03	7.7E-07	1.3E+03	7.7E-07
M-01	VOC	1,1,2-Trichloroethane	79-00-5	T	C	6				3.00E-04	1.00E-03	5.0E-03		1.1E+02		2.1E+01	
M-01	VOC	Trichloroethene	79-01-6	T	C-B2	6				1.40E-04	1.00E-03	5.0E-03		9.7E+01		2.2E+01	
M-01	VOC	Trichlorofluoromethane	75-69-4	T		6				2.80E-04	1.00E-03	2.6E+00		1.1E+03		1.1E+03	
M-01	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		6				3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
M-01	VOC	Vinyl Chloride	75-01-4	T	A	6				1.50E-04	1.00E-03	2.0E-03		1.3E+01		1.0E+00	
M-01	VOC	Xylenes (total)	1330-20-7	T	ID	6	1	3.70E-04	3.70E-04	3.30E-04	1.00E-03	1.0E+01	3.7E-05	1.9E+02	1.9E-06	1.9E+02	1.9E-06
M-01	SVOC	Acenaphthene	83-32-9	T		6				8.00E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00	
M-01	SVOC	Acenaphthylene	208-96-8	T	D	6				7.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00	
M-01	SVOC	Acetophenone	98-86-2	T	D	6				2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
M-01	SVOC	Anthracene	120-12-7	T	D	6				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
M-01	SVOC	Atrazine	1912-24-9	T		6				2.50E-03	5.00E-03	3.0E-03				5.4E+00	
M-01	SVOC	Benzaldehyde	100-52-7	T		6				2.80E-03	1.00E-02						
M-01	SVOC	Benzo(a)anthracene	56-55-3	T	B2	6				7.00E-04	5.00E-03	2.1E-03				9.4E-03	
M-01	SVOC	Benzo(a)pyrene	50-32-8	T	B2	6				7.30E-04	5.00E-03	5.0E-03				2.0E-03	
M-01	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	6				9.40E-04	5.00E-03	2.0E-03				2.0E-03	
M-01	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	6				8.50E-04	5.00E-03	5.0E-03				5.0E-03	
M-01	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	6				8.40E-04	5.00E-03	5.0E-03				5.0E-03	
M-01	SVOC	Biphenyl	92-52-4	T	D	6				2.60E-03	1.00E-02						
M-01	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	6				8.70E-04	5.00E-03						
M-01	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	6				9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00	
M-01	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	6				2.70E-03	5.00E-03	6.0E-03				3.2E-01	
M-01	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	6				8.80E-04	5.00E-03						
M-01	SVOC	Butylbenzylphthalate	85-68-7	T	C	6				8.80E-04	5.00E-03	1.2E+00				2.7E+00	
M-01	SVOC	Caprolactam	105-60-2	T		6				2.50E-03	1.00E-02	5.8E+00				3.9E+05	
M-01	SVOC	Carbazole	86-74-8	T	B2	6				8.20E-04	1.00E-02	8.5E-02				7.4E+00	
M-01	SVOC	4-Chloro-3-methylphenol	59-50-7	T		6				9.90E-04	5.00E-03	1.5E-01				7.9E+01	
M-01	SVOC	4-Chloroaniline	106-47-8	T		3				6.10E-04	1.00E-02						
M-01	SVOC	2-Chloronaphthalene	91-58-7	T		6				8.50E-04	5.00E-03	1.8E+00				6.7E+00	
M-01	SVOC	2-Chlorophenol	95-57-8	T		6				1.00E-03	5.00E-03	4.5E-02				9.4E+01	
M-01	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		6				7.90E-04	5.00E-03						
M-01	SVOC	Chrysene	218-01-9	T	B2	6				7.50E-04	5.00E-03	5.0E-03				5.0E-03	
M-01	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	6				7.90E-04	5.00E-03	2.0E-03				2.0E-03	
M-01	SVOC	Dibenzofuran	132-64-9	T	D	6				1.10E-03	5.00E-03						
M-01	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	3				9.30E-04	2.00E-02	1.1E-03				1.8E-01	
M-01	SVOC	2,4-Dichlorophenol	120-83-2	T		6				8.50E-04	1.00E-02	7.3E-02				4.8E+01	
M-01	SVOC	Diethylphthalate	84-66-2	T	D	6				6.50E-04	5.00E-03	5.5E+00				1.1E+03	
M-01	SVOC	2,4-Dimethylphenol	105-67-9	T		6				8.50E-04	5.00E-03	3.7E-01				5.2E+02	
M-01	SVOC	Dimethylphthalate	131-11-3	T	D	6				7.60E-04	5.00E-03	7.3E+01				4.2E+03	
M-01	SVOC	Di-n-butylphthalate	84-74-2	T	D	6				6.70E-04	5.00E-03	8.8E-01				1.1E+01	
M-01	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		6				1.30E-03	2.00E-02	2.0E-02				9.5E+00	
M-01	SVOC	2,4-Dinitrophenol	51-28-5	T		6				3.00E-03	2.00E-02						
M-01	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	6				7.90E-04	5.00E-03	7.7E-03				8.6E+00	
M-01	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	6				5.70E-04	5.00E-03						

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-01	SVOC	Di-n-octylphthalate	117-84-0	T		6				1.10E-03	5.00E-03	1.3E-01				4.0E-01	
M-01	SVOC	Fluoranthene	206-44-0	T	D	6				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
M-01	SVOC	Fluorene	86-73-7	T	D	6				1.00E-03	5.00E-03	8.8E-01		2.0E+00		2.0E+00	
M-01	SVOC	Hexachlorobenzene	118-74-1	T	B2	6				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
M-01	SVOC	Hexachlorobutadiene	87-68-3	T	C	6				7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
M-01	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	6				1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
M-01	SVOC	Hexachloroethane	67-72-1	T	C	6				7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
M-01	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	6				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
M-01	SVOC	Isophorone	78-59-1	T	C	6				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
M-01	SVOC	2-Methylnaphthalene	91-57-6	T	ID	6				6.40E-04	5.00E-03	2.6E-01				2.5E+01	
M-01	SVOC	Methylphenol (total)	1319-77-3	T		6				1.30E-03	5.00E-03	3.7E-01				8.1E+02	
M-01	SVOC	Naphthalene	91-20-3	T	C	6				7.50E-04	5.00E-03	5.2E-01		3.1E+01		3.1E+01	
M-01	SVOC	2-Nitroaniline	88-74-4	T		6				7.00E-04	2.00E-02						
M-01	SVOC	3-Nitroaniline	99-09-2	T	C	3				7.10E-04	2.00E-02						
M-01	SVOC	4-Nitroaniline	100-01-6	T	C	6				1.30E-03	2.00E-02						
M-01	SVOC	Nitrobenzene	98-95-3	T	D	6				8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
M-01	SVOC	2-Nitrophenol	88-75-5	T		6				2.10E-03	5.00E-03	2.0E-02				7.9E+01	
M-01	SVOC	4-Nitrophenol	100-02-7	T		6				1.90E-03	2.00E-02						
M-01	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	6				1.40E-03	5.00E-03	2.7E-01				3.5E+01	
M-01	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	6				6.70E-04	5.00E-03	5.0E-03				3.6E-01	
M-01	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	6				7.80E-04	5.00E-03						
M-01	SVOC	Pentachlorophenol	87-86-5	T	B2	6				2.40E-03	5.00E-03	1.0E-03				2.0E-01	
M-01	SVOC	Phenanthrene	85-01-8	T	D	6				8.20E-04	5.00E-03	5.2E-02		1.0E+00		1.0E+00	
M-01	SVOC	Phenol	108-95-2	T	ID	6				2.60E-03	5.00E-03	4.4E+00				2.9E+04	
M-01	SVOC	Pyrene	129-00-0	T	D	6				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
M-01	SVOC	2,4,5-Trichlorophenol	95-95-4	T		6				1.20E-03	5.00E-03	7.3E-01				1.7E+02	
M-01	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	6				1.70E-03	5.00E-03	1.2E-01				1.0E+01	
M-01	P/PCB	PCBs (total)	1336-36-3	D	B2	3				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
M-01	P/PCB	PCBs (total)	1336-36-3	T	B2	6				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
M-01	INORG	Antimony	7440-36-0	D		6	2	4.20E-03	6.00E-03	2.20E-03	2.50E-02	6.0E-03	1.0E+00			6.8E+01	8.8E-05
M-01	INORG	Antimony	7440-36-0	T		6	2	5.00E-03	7.70E-03	2.20E-03	2.50E-02	6.0E-03	**1.3E+00**			6.8E+01	1.1E-04
M-01	INORG	Arsenic	7440-38-2	D	A	6	3	4.20E-03	6.40E-03	3.90E-03	1.00E-02	5.0E-02	1.3E-01			4.3E+00	1.5E-03
M-01	INORG	Arsenic	7440-38-2	T	A	6	5	4.70E-03	7.00E-03	1.00E-02	1.00E-02	5.0E-02	1.4E-01			4.3E+00	1.6E-03
M-01	INORG	Barium	7440-39-3	D	D	6	6	1.41E-02	1.77E-01			2.0E+00	8.9E-02			1.4E+04	1.3E-05
M-01	INORG	Barium	7440-39-3	T	D	6	6	1.36E-02	1.72E-01			2.0E+00	8.6E-02			1.4E+04	1.2E-05
M-01	INORG	Beryllium	7440-41-7	D	B1	6				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
M-01	INORG	Beryllium	7440-41-7	T	B1	6				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
M-01	INORG	Cadmium	7440-43-9	D	B1	6				2.80E-04	5.00E-03	5.0E-03				1.9E+02	
M-01	INORG	Cadmium	7440-43-9	T	B1	6	1	3.80E-04	3.80E-04	2.80E-04	5.00E-03	5.0E-03	7.6E-02			1.9E+02	2.0E-06
M-01	INORG	Chromium (total)	7440-47-3	D		4	1	3.64E-02	3.64E-02	1.40E-03	1.00E-02	1.0E-01	3.6E-01			4.6E+02	7.9E-05
M-01	INORG	Chromium III	16065-83-1	D	D	2	1	3.87E-02	3.87E-02	1.40E-03	1.40E-03	3.8E+01	1.0E-03			2.9E+05	1.3E-07
M-01	INORG	Chromium III	16065-83-1	T	D	6	2		4.85E-02	1.40E-03	1.00E-02	3.8E+01	1.3E-03			2.9E+05	1.7E-07
M-01	INORG	Chromium VI	18540-29-9	D	A	2				6.90E-03	6.90E-03	1.0E-01				4.6E+02	
M-01	INORG	Chromium VI	18540-29-9	T	A	6	1	3.38E-02	3.38E-02	6.90E-03	2.00E-02	1.0E-01	3.4E-01			4.6E+02	7.3E-05
M-01	INORG	Cobalt	7440-48-4	D	B1	6	4	2.20E-03	2.90E-03	1.30E-03	1.30E-03	4.0E-02	7.3E-02			2.4E+03	1.2E-06
M-01	INORG	Cobalt	7440-48-4	T	B1	6	4	2.20E-03	2.80E-03	1.30E-03	1.30E-03	4.0E-02	7.0E-02			2.4E+03	1.2E-06
M-01	INORG	Copper	7440-50-8	D	D	6				4.20E-03	5.00E-03	1.4E+00				7.4E+03	
M-01	INORG	Copper	7440-50-8	T	D	6				4.20E-03	5.00E-03	1.4E+00				7.4E+03	
M-01	INORG	Cyanide (total)	57-12-5	T	D	11	7	5.50E-03	1.30E+00	1.70E-03	1.80E-03	2.0E-01	**6.5E+00**			5.7E+01	2.3E-02
M-01	INORG	Lead	7439-92-1	D	B2	6				2.50E-03	3.00E-03	4.0E-03					
M-01	INORG	Lead	7439-92-1	T	B2	6				2.50E-03	3.00E-03	4.0E-03					
M-01	INORG	Manganese	7439-96-5	D	D	6	5	9.40E-04	5.46E-01	9.00E-04	9.00E-04	8.6E-01	6.3E-01			9.1E+03	6.0E-05
M-01	INORG	Manganese	7439-96-5	T	D	6	5	2.63E-02	5.48E-01	9.00E-04	9.00E-04	8.6E-01	6.4E-01			9.1E+03	6.0E-05
M-01	INORG	Mercury	7439-97-6	D	D	6				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
M-01	INORG	Mercury	7439-97-6	T	D	6				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
M-01	INORG	Nickel	7440-02-0	D	A	6	2	2.40E-03	3.00E-03	2.20E-03	2.20E-03	1.0E-01	3.0E-02			7.4E+04	4.1E-08

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-01	INORG	Nickel	7440-02-0	T	A	6	1	3.70E-03	3.70E-03	2.20E-03	2.00E-02	1.0E-01	3.7E-02			7.4E+04	5.0E-08
M-01	INORG	Selenium	7782-49-2	D	D	6	2	5.00E-03	5.60E-03	4.50E-03	5.00E-03	5.0E-02	1.1E-01			9.7E+02	5.8E-06
M-01	INORG	Selenium	7782-49-2	T	D	6	2	4.50E-03	6.50E-03	4.50E-03	5.00E-03	5.0E-02	1.3E-01			9.7E+02	6.7E-06
M-01	INORG	Silver	7440-22-4	D	D	6				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
M-01	INORG	Silver	7440-22-4	T	D	6				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
M-01	INORG	Thallium	7440-28-0	D		6	3	2.60E-05	5.40E-05	5.00E-03	1.00E-02	2.0E-03	2.7E-02			1.3E+01	4.2E-06
M-01	INORG	Thallium	7440-28-0	T		6	1	4.50E-05	4.50E-05	1.80E-05	1.00E-02	2.0E-03	2.3E-02			1.3E+01	3.5E-06
M-01	INORG	Vanadium	7440-62-2	D		6	2	1.00E-03	1.70E-03	8.20E-04	1.00E-02	4.5E-03	3.8E-01			9.7E+02	1.8E-06
M-01	INORG	Vanadium	7440-62-2	T		6	1	2.80E-03	2.80E-03	8.20E-04	1.00E-02	4.5E-03	6.2E-01			9.7E+02	2.9E-06
M-01	INORG	Zinc	7440-66-6	D	D	6	1	1.89E-02	1.89E-02	1.20E-02	2.00E-02	2.4E+00	7.9E-03			1.1E+05	1.7E-07
M-01	INORG	Zinc	7440-66-6	T	D	6				1.20E-02	2.00E-02	2.4E+00				1.1E+05	
M-02	VOC	Acetone	67-64-1	T	ID	36	16	8.25E-04	3.40E+00	5.10E-04	6.90E-02	7.3E-01	**4.7E+00**	1.0E+06	3.4E-06	3.1E+04	1.1E-04
M-02	VOC	Benzene	71-43-2	T	A	36				1.60E-04	2.50E-02	5.0E-03		3.5E+01		1.1E+01	
M-02	VOC	Bromodichloromethane	75-27-4	T	B2	36	2	4.80E-04	7.20E-04	1.70E-04	2.50E-02	1.0E-01	7.2E-03	3.7E+01	1.9E-05	1.4E+01	5.1E-05
M-02	VOC	Bromoform	75-25-2	T	B2	36				1.80E-04	2.50E-02	1.0E-01		3.1E+03		1.4E+02	
M-02	VOC	Bromomethane	74-83-9	T	D	36				2.00E-04	2.50E-02	1.0E-02		9.0E+00		7.0E+01	
M-02	VOC	2-Butanone	78-93-3	T	ID	36				4.10E-04	2.50E-01	1.3E+01		2.4E+05		2.4E+05	
M-02	VOC	Carbon Disulfide	75-15-0	T		36				2.00E-04	2.50E-02	8.0E-01		5.5E+02		1.2E+03	
M-02	VOC	Carbon Tetrachloride	56-23-5	T	B2	36				1.20E-04	2.50E-02	5.0E-03		2.4E+00		4.6E+00	
M-02	VOC	Chlorobenzene	108-90-7	T	D	36				1.40E-04	2.50E-02	1.0E-01		4.7E+02		8.6E+01	
M-02	VOC	Chloroethane	75-00-3	T		36	7	2.70E-03	5.80E-02	2.60E-04	1.80E-02	4.3E-01	1.3E-01	5.7E+03	1.0E-05	4.4E+02	1.3E-04
M-02	VOC	Chloroform	67-66-3	T	B2	36	11	2.00E-04	5.80E-03	1.40E-04	2.20E-02	1.0E-01	5.8E-02	1.8E+02	3.2E-05	1.5E+02	3.9E-05
M-02	VOC	Chloromethane	74-87-3	T	D	36	1	1.60E-04	1.60E-04	1.30E-04	3.10E-02	2.6E-01	6.2E-04	4.5E+01	3.6E-06	4.9E+02	3.3E-07
M-02	VOC	Cumene	98-82-8	T	D	36				1.20E-04	2.50E-02	8.0E-01		5.6E+01		5.6E+01	
M-02	VOC	Cyclohexane	110-82-7	T	ID	36				1.30E-04	2.50E-02						
M-02	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	36				6.20E-04	5.10E-02	2.0E-04		1.2E+00		3.9E-01	
M-02	VOC	Dibromochloromethane	124-48-1	T	C	36				2.60E-04	2.50E-02	1.0E-01		1.1E+02		1.8E+01	
M-02	VOC	1,2-Dibromoethane	106-93-4	T	B2	36				2.20E-04	2.50E-02	1.0E-03		1.5E+01		2.5E-02	
M-02	VOC	1,2-Dichlorobenzene	95-50-1	T	D	36				1.10E-04	2.50E-02	6.0E-01		1.6E+02		1.6E+02	
M-02	VOC	1,3-Dichlorobenzene	541-73-1	T	D	36				1.50E-04	2.50E-02	6.6E-03				2.0E+00	
M-02	VOC	1,4-Dichlorobenzene	106-46-7	T	C	36				1.70E-04	2.50E-02	7.5E-02		7.4E+01		6.4E+00	
M-02	VOC	Dichlorodifluoromethane	75-71-8	T		36				2.60E-04	5.00E-02	1.7E+00		3.0E+02		3.0E+02	
M-02	VOC	1,1-Dichloroethane	75-34-3	T	C	36	34	4.80E-04	1.90E+00	3.20E-03	1.10E-02	8.8E-01	**2.2E+00**	2.3E+03	8.3E-04	2.4E+03	7.9E-04
M-02	VOC	1,2-Dichloroethane	107-06-2	T	B2	36	6	6.20E-04	1.00E-02	2.10E-04	2.50E-02	5.0E-03	**2.0E+00**	5.9E+01	1.7E-04	1.9E+01	5.3E-04
M-02	VOC	1,1-Dichloroethene	75-35-4	T	C	36	25	3.30E-04	9.10E-02	2.40E-04	1.60E-02	7.0E-03	**1.3E+01**	1.3E+00	7.0E-02	1.1E+01	8.3E-03
M-02	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	36	9	5.80E-04	7.15E-02	2.20E-04	2.20E-02	7.0E-02	1.0E+00	2.1E+02	3.4E-04	2.0E+02	3.6E-04
M-02	VOC	trans-1,2-Dichloroethene	156-60-5	T		36	3	5.45E-04	3.20E-03	1.50E-04	2.10E-02	1.0E-01	3.2E-02	2.0E+02	1.6E-05	2.2E+02	1.5E-05
M-02	VOC	1,2-Dichloropropane	78-87-5	T	B2	36				1.70E-04	2.60E-02	5.0E-03		3.6E+01		1.6E+01	
M-02	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	36				2.70E-04	2.50E-02	8.5E-03		2.6E+01		5.5E+00	
M-02	VOC	Ethyl Benzene	100-41-4	T	D	29				1.20E-04	2.50E-02	7.0E-01		1.7E+02		1.7E+02	
M-02	VOC	2-Hexanone	591-78-6	T		36				4.60E-04	2.50E-01	1.0E+00		8.7E+03		5.2E+03	
M-02	VOC	Methyl Acetate	79-20-9	T		36				4.10E-04	2.50E-01						
M-02	VOC	Methyl tert-butyl ether	1634-04-4	T		36				1.30E-04	1.20E-01	2.4E-01		4.7E+04		6.1E+02	
M-02	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	36	3	1.00E-03	3.20E-02	2.30E-04	2.50E-01	1.8E+00	1.8E-02	2.0E+04	1.6E-06	1.3E+04	2.5E-06
M-02	VOC	Methylcyclohexane	108-87-2	T		36				1.50E-04	2.60E-02						
M-02	VOC	Methylene Chloride	75-09-2	T	B2	36	10	3.75E-04	2.40E-02	2.90E-04	2.50E-02	5.0E-03	**4.8E+00**	1.4E+03	1.7E-05	2.2E+02	1.1E-04
M-02	VOC	Styrene	100-42-5	T		36				1.50E-04	2.50E-02	1.0E-01		3.1E+02		9.7E+00	
M-02	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	36				2.50E-04	2.50E-02	8.5E-03		7.7E+01		4.7E+00	
M-02	VOC	Tetrachloroethene	127-18-4	T	C-B2	36	6	7.20E-04	7.50E-03	2.30E-04	2.60E-02	5.0E-03	**1.5E+00**	1.7E+02	4.4E-05	1.2E+01	6.3E-04
M-02	VOC	Toluene	108-88-3	T	D	36	1	2.00E-03	2.00E-03	1.80E-04	2.50E-02	1.0E+00	2.0E-03	5.3E+02	3.8E-06	5.3E+02	3.8E-06
M-02	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	36				1.70E-04	2.50E-02	7.0E-02		3.0E+02		1.9E+01	
M-02	VOC	1,1,1-Trichloroethane	71-55-6	T	D	36	27	4.50E-04	6.00E-01	1.50E-04	1.00E-02	2.0E-01	**3.0E+00**	1.3E+03	4.6E-04	1.3E+03	4.6E-04
M-02	VOC	1,1,2-Trichloroethane	79-00-5	T	C	36	3	1.00E-02	2.00E-02	3.00E-04	2.20E-02	5.0E-03	**4.0E+00**	1.1E+02	1.8E-04	2.1E+01	9.5E-04
M-02	VOC	Trichloroethene	79-01-6	T	C-B2	36	10	1.40E-03	5.60E-02	1.40E-04	2.60E-02	5.0E-03	**1.1E+01**	9.7E+01	5.8E-04	2.2E+01	2.5E-03
M-02	VOC	Trichlorofluoromethane	75-69-4	T		36				2.80E-04	3.40E-02	2.6E+00		1.1E+03		1.1E+03	
M-02	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		36	1	6.30E-04	6.30E-04	3.20E-04	2.50E-02	1.7E+02	3.7E-06	1.7E+02	3.7E-06	1.7E+02	3.7E-06

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-02	VOC	Vinyl Chloride	75-01-4	T	A	36	8	3.80E-04	2.10E-02	1.50E-04	2.50E-02	2.0E-03	**1.1E+01**	1.3E+01	1.6E-03	1.0E+00	2.1E-02
M-02	VOC	Xylenes (total)	1330-20-7	T	ID	36				3.30E-04	2.80E-02	1.0E+01		1.9E+02		1.9E+02	
M-02	SVOC	Acenaphthene	83-32-9	T		32	1	8.40E-04	8.40E-04	6.90E-04	5.00E-03	1.3E+00	6.5E-04	4.2E+00	2.0E-04	4.2E+00	2.0E-04
M-02	SVOC	Acenaphthylene	208-96-8	T	D	32				4.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00	
M-02	SVOC	Acetophenone	98-86-2	T	D	32				6.50E-04	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
M-02	SVOC	Anthracene	120-12-7	T	D	32	1	7.80E-04	7.80E-04	5.90E-04	5.00E-03	4.3E-02	1.8E-02	4.3E-02	1.8E-02	4.3E-02	1.8E-02
M-02	SVOC	Atrazine	1912-24-9	T		32				3.50E-04	5.00E-03	3.0E-03				5.4E+00	
M-02	SVOC	Benzaldehyde	100-52-7	T		32				5.90E-04	1.00E-02						
M-02	SVOC	Benzo(a)anthracene	56-55-3	T	B2	32				6.80E-04	5.00E-03	2.1E-03				9.4E-03	
M-02	SVOC	Benzo(a)pyrene	50-32-8	T	B2	32				5.30E-04	5.00E-03	5.0E-03				2.0E-03	
M-02	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	32				7.10E-04	5.00E-03	2.0E-03				2.0E-03	
M-02	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	32				7.00E-04	5.00E-03	5.0E-03				5.0E-03	
M-02	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	32				6.40E-04	5.00E-03	5.0E-03				5.0E-03	
M-02	SVOC	Biphenyl	92-52-4	T	D	32				6.50E-04	1.00E-02						
M-02	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	32				8.70E-04	5.00E-03						
M-02	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	32				9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00	
M-02	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	32	5	1.10E-03	2.40E-02	2.00E-04	5.00E-03	6.0E-03	**4.0E+00**			3.2E-01	7.5E-02
M-02	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	32				7.80E-04	5.00E-03						
M-02	SVOC	Butylbenzylphthalate	85-68-7	T	C	32				2.30E-04	5.00E-03	1.2E+00				2.7E+00	
M-02	SVOC	Caprolactam	105-60-2	T		32	1	4.90E-04	4.90E-04	4.50E-04	1.00E-02	5.8E+00	8.4E-05			3.9E+05	1.3E-09
M-02	SVOC	Carbazole	86-74-8	T	B2	32				6.10E-04	1.00E-02	8.5E-02				7.4E+00	
M-02	SVOC	4-Chloro-3-methylphenol	59-50-7	T		32				5.50E-04	5.00E-03	1.5E-01				7.9E+01	
M-02	SVOC	4-Chloroaniline	106-47-8	T		30				6.10E-04	1.00E-02						
M-02	SVOC	2-Chloronaphthalene	91-58-7	T		32				7.30E-04	5.00E-03	1.8E+00				6.7E+00	
M-02	SVOC	2-Chlorophenol	95-57-8	T		32				1.00E-03	5.00E-03	4.5E-02				9.4E+01	
M-02	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		32				6.60E-04	5.00E-03						
M-02	SVOC	Chrysene	218-01-9	T	B2	32				6.70E-04	5.00E-03	5.0E-03				5.0E-03	
M-02	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	32				6.80E-04	5.00E-03	2.0E-03				2.0E-03	
M-02	SVOC	Dibenzofuran	132-64-9	T	D	32				6.60E-04	5.00E-03						
M-02	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	29				4.70E-04	2.00E-02	1.1E-03				1.8E-01	
M-02	SVOC	2,4-Dichlorophenol	120-83-2	T		32				7.00E-04	1.00E-02	7.3E-02				4.8E+01	
M-02	SVOC	Diethylphthalate	84-66-2	T	D	32	3	5.50E-04	2.40E-03	2.50E-04	5.00E-03	5.5E+00	4.4E-04			1.1E+03	2.2E-06
M-02	SVOC	2,4-Dimethylphenol	105-67-9	T		32	3	1.00E-03	1.30E-03	8.50E-04	5.00E-03	3.7E-01	3.5E-03			5.2E+02	2.5E-06
M-02	SVOC	Dimethylphthalate	131-11-3	T	D	32				2.00E-04	5.00E-03	7.3E+01				4.2E+03	
M-02	SVOC	Di-n-butylphthalate	84-74-2	T	D	32	5	4.40E-04	1.10E-03	3.70E-04	5.00E-03	8.8E-01	1.3E-03			1.1E+01	1.0E-04
M-02	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		32				1.30E-03	2.00E-02	2.0E-02				9.5E+00	
M-02	SVOC	2,4-Dinitrophenol	51-28-5	T		32				3.00E-03	2.00E-02						
M-02	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	32				4.60E-04	5.00E-03	7.7E-03				8.6E+00	
M-02	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	32				5.70E-04	5.00E-03						
M-02	SVOC	Di-n-octylphthalate	117-84-0	T		32				6.90E-04	5.00E-03	1.3E-01				4.0E-01	
M-02	SVOC	Fluoranthene	206-44-0	T	D	32				7.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
M-02	SVOC	Fluorene	86-73-7	T	D	32	6	1.20E-03	4.40E-03	7.50E-04	5.00E-03	8.8E-01	5.0E-03	2.0E+00	2.2E-03	2.0E+00	2.2E-03
M-02	SVOC	Hexachlorobenzene	118-74-1	T	B2	32				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
M-02	SVOC	Hexachlorobutadiene	87-68-3	T	C	32				7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
M-02	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	32				1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
M-02	SVOC	Hexachloroethane	67-72-1	T	C	32				7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
M-02	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	32				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
M-02	SVOC	Isophorone	78-59-1	T	C	32				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
M-02	SVOC	2-Methylnaphthalene	91-57-6	T	ID	32	4	1.10E-03	2.10E-03	6.40E-04	5.00E-03	2.6E-01	8.1E-03			2.5E+01	8.4E-05
M-02	SVOC	Methylphenol (total)	1319-77-3	T		32				9.00E-04	5.00E-03	3.7E-01				8.1E+02	
M-02	SVOC	Naphthalene	91-20-3	T	C	32	4	1.30E-03	1.60E-03	7.50E-04	5.00E-03	5.2E-01	3.1E-03	3.1E+01	5.2E-05	3.1E+01	5.2E-05
M-02	SVOC	2-Nitroaniline	88-74-4	T		32				4.90E-04	2.00E-02						
M-02	SVOC	3-Nitroaniline	99-09-2	T	C	29				4.80E-04	2.00E-02						
M-02	SVOC	4-Nitroaniline	100-01-6	T	C	31				5.90E-04	2.00E-02						
M-02	SVOC	Nitrobenzene	98-95-3	T	D	32				8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
M-02	SVOC	2-Nitrophenol	88-75-5	T		32				9.50E-04	5.00E-03	2.0E-02				7.9E+01	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-02	SVOC	4-Nitrophenol	100-02-7	T		32				1.90E-03	2.00E-02						
M-02	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	32				6.40E-04	5.00E-03	2.7E-01				3.5E+01	
M-02	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	32				6.70E-04	5.00E-03	5.0E-03				3.6E-01	
M-02	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	32				7.80E-04	5.00E-03						
M-02	SVOC	Pentachlorophenol	87-86-5	T	B2	32				2.40E-03	5.00E-03	1.0E-03				2.0E-01	
M-02	SVOC	Phenanthrene	85-01-8	T	D	32	7	9.10E-04	7.50E-03	6.80E-04	5.00E-03	5.2E-02	1.4E-01	1.0E+00	7.5E-03	1.0E+00	7.5E-03
M-02	SVOC	Phenol	108-95-2	T	ID	32				1.30E-03	5.00E-03	4.4E+00				2.9E+04	
M-02	SVOC	Pyrene	129-00-0	T	D	32				6.30E-04	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
M-02	SVOC	2,4,5-Trichlorophenol	95-95-4	T		32				8.60E-04	5.00E-03	7.3E-01				1.7E+02	
M-02	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	32				7.10E-04	5.00E-03	1.2E-01				1.0E+01	
M-02	P/PCB	PCBs (total)	1336-36-3	D	B2	5				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
M-02	P/PCB	PCBs (total)	1336-36-3	T	B2	32	1	4.12E-04	4.12E-04	8.20E-05	4.00E-04	5.0E-04	8.2E-01	4.5E-02	9.1E-03	3.3E-03	1.2E-01
M-02	INORG	Antimony	7440-36-0	D		10	2	3.40E-03	3.90E-03	2.20E-03	2.20E-03	6.0E-03	6.5E-01			6.8E+01	5.7E-05
M-02	INORG	Antimony	7440-36-0	T		32	2	2.30E-03	2.50E-03	2.20E-03	3.40E-03	6.0E-03	4.2E-01			6.8E+01	3.7E-05
M-02	INORG	Arsenic	7440-38-2	D	A	10	2	1.27E-02	3.07E-02	3.90E-03	3.90E-03	5.0E-02	6.1E-01			4.3E+00	7.1E-03
M-02	INORG	Arsenic	7440-38-2	T	A	32	17	1.83E-03	3.81E-02	2.10E-03	3.90E-03	5.0E-02	7.6E-01			4.3E+00	8.9E-03
M-02	INORG	Barium	7440-39-3	D	D	10	10	2.05E-02	2.09E-01			2.0E+00	1.0E-01			1.4E+04	1.5E-05
M-02	INORG	Barium	7440-39-3	T	D	32	32	1.62E-02	2.58E-01			2.0E+00	1.3E-01			1.4E+04	1.8E-05
M-02	INORG	Beryllium	7440-41-7	D	B1	10				5.40E-04	5.40E-04	4.0E-03				2.9E+02	
M-02	INORG	Beryllium	7440-41-7	T	B1	32				5.40E-04	6.00E-04	4.0E-03				2.9E+02	
M-02	INORG	Cadmium	7440-43-9	D	B1	10	2	2.20E-04	3.30E-04	2.80E-04	2.80E-04	5.0E-03	6.6E-02			1.9E+02	1.7E-06
M-02	INORG	Cadmium	7440-43-9	T	B1	32	8	2.80E-04	3.80E-04	2.80E-04	2.80E-04	5.0E-03	7.6E-02			1.9E+02	2.0E-06
M-02	INORG	Chromium (total)	7440-47-3	D		6				1.40E-03	1.40E-03	1.0E-01				4.6E+02	
M-02	INORG	Chromium (total)	7440-47-3	T		24	6	1.28E-03	3.20E-03	1.50E-03	1.50E-03	1.0E-01	3.2E-02			4.6E+02	7.0E-06
M-02	INORG	Chromium III	16065-83-1	D	D	4	1	3.45E-03	3.45E-03	1.40E-03	1.40E-03	3.8E+01	9.1E-05			2.9E+05	1.2E-08
M-02	INORG	Chromium III	16065-83-1	T	D	8				1.40E-03	1.40E-03	3.8E+01				2.9E+05	
M-02	INORG	Chromium VI	18540-29-9	D	A	4	1	7.90E-03	7.90E-03	6.90E-03	6.90E-03	1.0E-01	7.9E-02			4.6E+02	1.7E-05
M-02	INORG	Chromium VI	18540-29-9	T	A	8				6.90E-03	6.90E-03	1.0E-01				4.6E+02	
M-02	INORG	Cobalt	7440-48-4	D	B1	10	7	1.50E-03	1.87E-02	1.30E-03	1.30E-03	4.0E-02	4.7E-01			2.4E+03	7.8E-06
M-02	INORG	Cobalt	7440-48-4	T	B1	32	27	8.00E-04	3.05E-02	7.40E-04	1.30E-03	4.0E-02	7.6E-01			2.4E+03	1.3E-05
M-02	INORG	Copper	7440-50-8	D	D	10	5	4.80E-03	1.68E-02	4.20E-03	4.20E-03	1.4E+00	1.2E-02			7.4E+03	2.3E-06
M-02	INORG	Copper	7440-50-8	T	D	32	5	4.60E-03	2.51E-01	1.70E-03	4.20E-03	1.4E+00	1.8E-01			7.4E+03	3.4E-05
M-02	INORG	Cyanide (total)	57-12-5	T	D	11	7	3.18E-03	5.50E-01	1.70E-03	1.70E-03	2.0E-01	**2.8E+00**			5.7E+01	9.6E-03
M-02	INORG	Lead	7439-92-1	D	B2	10				2.50E-03	2.50E-03	4.0E-03					
M-02	INORG	Lead	7439-92-1	T	B2	32	1	2.20E-02	2.20E-02	1.60E-03	2.50E-03	4.0E-03	**5.5E+00**				
M-02	INORG	Manganese	7439-96-5	D	D	10	10	3.70E-03	1.17E+00			8.6E-01	**1.4E+00**			9.1E+03	1.3E-04
M-02	INORG	Manganese	7439-96-5	T	D	32	31	3.60E-03	1.21E+00	6.80E-04	6.80E-04	8.6E-01	**1.4E+00**			9.1E+03	1.3E-04
M-02	INORG	Mercury	7439-97-6	D	D	10	1	7.70E-05	7.70E-05	6.90E-05	2.00E-04	2.0E-03	3.9E-02	5.6E-02	1.4E-03	5.6E-02	1.4E-03
M-02	INORG	Mercury	7439-97-6	T	D	32	2	7.70E-05	1.00E-04	6.90E-05	2.00E-04	2.0E-03	5.0E-02	5.6E-02	1.8E-03	5.6E-02	1.8E-03
M-02	INORG	Nickel	7440-02-0	D	A	10	10	2.70E-03	1.68E-01			1.0E-01	**1.7E+00**			7.4E+04	2.3E-06
M-02	INORG	Nickel	7440-02-0	T	A	32	31	3.20E-03	1.06E+01	2.90E-03	2.90E-03	1.0E-01	**1.1E+02**			7.4E+04	1.4E-04
M-02	INORG	Selenium	7782-49-2	D	D	10	1	5.70E-03	5.70E-03	4.50E-03	4.50E-03	5.0E-02	1.1E-01			9.7E+02	5.9E-06
M-02	INORG	Selenium	7782-49-2	T	D	32	2	5.00E-03	5.40E-03	4.50E-03	4.70E-03	5.0E-02	1.1E-01			9.7E+02	5.6E-06
M-02	INORG	Silver	7440-22-4	D	D	10				1.50E-03	1.50E-03	3.4E-02				1.5E+03	
M-02	INORG	Silver	7440-22-4	T	D	32	2	7.95E-04	1.00E-03	9.80E-04	1.50E-03	3.4E-02	2.9E-02			1.5E+03	6.7E-07
M-02	INORG	Thallium	7440-28-0	D		10	4	4.80E-05	5.60E-03	1.80E-05	5.00E-03	2.0E-03	**2.8E+00**			1.3E+01	4.3E-04
M-02	INORG	Thallium	7440-28-0	T		32	4	2.00E-05	5.50E-03	1.80E-05	5.00E-03	2.0E-03	**2.8E+00**			1.3E+01	4.2E-04
M-02	INORG	Vanadium	7440-62-2	D		10	4	1.90E-03	5.80E-03	8.20E-04	8.20E-04	4.5E-03	**1.3E+00**			9.7E+02	6.0E-06
M-02	INORG	Vanadium	7440-62-2	T		32	9	1.00E-03	1.16E-02	6.70E-04	8.20E-04	4.5E-03	**2.6E+00**			9.7E+02	1.2E-05
M-02	INORG	Zinc	7440-66-6	D	D	10	3	1.51E-02	8.48E-02	1.20E-02	1.20E-02	2.4E+00	3.5E-02			1.1E+05	7.7E-07
M-02	INORG	Zinc	7440-66-6	T	D	32	4	1.52E-02	5.54E-01	1.20E-02	1.40E-02	2.4E+00	2.3E-01			1.1E+05	5.0E-06
M-04	VOC	Acetone	67-64-1	T	ID	13	3	2.10E-03	1.70E-01	5.10E-04	3.70E-02	7.3E-01	2.3E-01	1.0E+06	1.7E-07	3.1E+04	5.5E-06
M-04	VOC	Benzene	71-43-2	T	A	19	6	3.30E-04	9.80E-01	1.60E-04	4.00E-04	5.0E-03	**2.0E+02**	3.5E+01	2.8E-02	1.1E+01	8.9E-02
M-04	VOC	Bromodichloromethane	75-27-4	T	B2	13	1	3.00E-04	3.00E-04	1.70E-04	1.10E-02	1.0E-01	3.0E-03	3.7E+01	8.1E-06	1.4E+01	2.1E-05
M-04	VOC	Bromoform	75-25-2	T	B2	13				1.80E-04	1.20E-02	1.0E-01		3.1E+03		1.4E+02	
M-04	VOC	Bromomethane	74-83-9	T	D	13				2.00E-04	1.00E-02	1.0E-02		9.0E+00		7.0E+01	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-04	VOC	2-Butanone	78-93-3	T	ID	13				4.10E-04	2.00E-02	1.3E+01		2.4E+05		2.4E+05	
M-04	VOC	Carbon Disulfide	75-15-0	T		13	1	2.10E-03	2.10E-03	2.00E-04	8.00E-03	8.0E-01	2.6E-03	5.5E+02	3.8E-06	1.2E+03	1.8E-06
M-04	VOC	Carbon Tetrachloride	56-23-5	T	B2	13				1.20E-04	1.20E-02	5.0E-03		2.4E+00		4.6E+00	
M-04	VOC	Chlorobenzene	108-90-7	T	D	13				1.40E-04	1.30E-02	1.0E-01		4.7E+02		8.6E+01	
M-04	VOC	Chloroethane	75-00-3	T		13				2.60E-04	9.70E-03	4.3E-01		5.7E+03		4.4E+02	
M-04	VOC	Chloroform	67-66-3	T	B2	13	3	8.90E-04	1.30E-03	1.40E-04	1.20E-02	1.0E-01	1.3E-02	1.8E+02	7.2E-06	1.5E+02	8.7E-06
M-04	VOC	Chloromethane	74-87-3	T	D	13				1.30E-04	1.60E-02	2.6E-01		4.5E+01		4.9E+02	
M-04	VOC	Cumene	98-82-8	T	D	13	4	2.70E-04	1.90E-02	1.20E-04	1.30E-02	8.0E-01	2.4E-02	5.6E+01	3.4E-04	5.6E+01	3.4E-04
M-04	VOC	Cyclohexane	110-82-7	T	ID	13	3	1.30E-01	3.00E-01	1.30E-04	3.30E-04						
M-04	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	13				6.20E-04	2.70E-02	2.0E-04		1.2E+00		3.9E-01	
M-04	VOC	Dibromochloromethane	124-48-1	T	C	13				2.60E-04	1.20E-02	1.0E-01		1.1E+02		1.8E+01	
M-04	VOC	1,2-Dibromoethane	106-93-4	T	B2	13				2.20E-04	1.10E-02	1.0E-03		1.5E+01		2.5E-02	
M-04	VOC	1,2-Dichlorobenzene	95-50-1	T	D	13	1	2.10E-04	2.10E-04	1.10E-04	1.30E-02	6.0E-01	3.5E-04	1.6E+02	1.3E-06	1.6E+02	1.3E-06
M-04	VOC	1,3-Dichlorobenzene	541-73-1	T	D	13				1.50E-04	1.30E-02	6.6E-03				2.0E+00	
M-04	VOC	1,4-Dichlorobenzene	106-46-7	T	C	13	1	1.90E-04	1.90E-04	1.70E-04	1.30E-02	7.5E-02	2.5E-03	7.4E+01	2.6E-06	6.4E+00	3.0E-05
M-04	VOC	Dichlorodifluoromethane	75-71-8	T		13				2.60E-04	1.60E-02	1.7E+00		3.0E+02		3.0E+02	
M-04	VOC	1,1-Dichloroethane	75-34-3	T	C	13				1.60E-04	1.00E-02	8.8E-01		2.3E+03		2.4E+03	
M-04	VOC	1,2-Dichloroethane	107-06-2	T	B2	13				2.10E-04	9.30E-03	5.0E-03		5.9E+01		1.9E+01	
M-04	VOC	1,1-Dichloroethene	75-35-4	T	C	13				2.40E-04	1.00E-02	7.0E-03		1.3E+00		1.1E+01	
M-04	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	13				2.20E-04	1.20E-02	7.0E-02		2.1E+02		2.0E+02	
M-04	VOC	trans-1,2-Dichloroethene	156-60-5	T		13				1.50E-04	1.10E-02	1.0E-01		2.0E+02		2.2E+02	
M-04	VOC	1,2-Dichloropropane	78-87-5	T	B2	13				1.70E-04	1.40E-02	5.0E-03		3.6E+01		1.6E+01	
M-04	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	13				2.70E-04	1.20E-02	8.5E-03		2.6E+01		5.5E+00	
M-04	VOC	Ethyl Benzene	100-41-4	T	D	19	7	2.70E-04	1.50E+00	1.20E-04	4.10E-04	7.0E-01	**2.1E+00**	1.7E+02	8.8E-03	1.7E+02	8.8E-03
M-04	VOC	2-Hexanone	591-78-6	T		13				4.60E-04	1.90E-02	1.0E+00		8.7E+03		5.2E+03	
M-04	VOC	Methyl Acetate	79-20-9	T		13				4.10E-04	1.80E-02						
M-04	VOC	Methyl tert-butyl ether	1634-04-4	T		13	1	1.20E-03	1.20E-03	1.30E-04	9.00E-03	2.4E-01	5.0E-03	4.7E+04	2.6E-08	6.1E+02	2.0E-06
M-04	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	13				2.30E-04	8.70E-03	1.8E+00		2.0E+04		1.3E+04	
M-04	VOC	Methylcyclohexane	108-87-2	T		13	3	1.80E-02	6.30E-02	1.50E-04	4.20E-04						
M-04	VOC	Methylene Chloride	75-09-2	T	B2	8	2	3.50E-04	1.40E-03	3.40E-04	1.10E-02	5.0E-03	2.8E-01	1.4E+03	1.0E-06	2.2E+02	6.4E-06
M-04	VOC	Styrene	100-42-5	T		13				1.50E-04	1.20E-02	1.0E-01		3.1E+02		9.7E+00	
M-04	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	13				2.50E-04	1.20E-02	8.5E-03		7.7E+01		4.7E+00	
M-04	VOC	Tetrachloroethene	127-18-4	T	C-B2	13				2.30E-04	1.40E-02	5.0E-03		1.7E+02		1.2E+01	
M-04	VOC	Toluene	108-88-3	T	D	19	6	3.10E-04	5.70E-02	1.70E-04	4.50E-04	1.0E+00	5.7E-02	5.3E+02	1.1E-04	5.3E+02	1.1E-04
M-04	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	13	1	2.40E-04	2.40E-04	1.70E-04	1.30E-02	7.0E-02	3.4E-03	3.0E+02	8.0E-07	1.9E+01	1.3E-05
M-04	VOC	1,1,1-Trichloroethane	71-55-6	T	D	13				1.50E-04	1.30E-02	2.0E-01		1.3E+03		1.3E+03	
M-04	VOC	1,1,2-Trichloroethane	79-00-5	T	C	13				3.00E-04	1.20E-02	5.0E-03		1.1E+02		2.1E+01	
M-04	VOC	Trichloroethene	79-01-6	T	C-B2	13				1.40E-04	1.40E-02	5.0E-03		9.7E+01		2.2E+01	
M-04	VOC	Trichlorofluoromethane	75-69-4	T		13				2.80E-04	1.80E-02	2.6E+00		1.1E+03		1.1E+03	
M-04	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		13				3.20E-04	1.10E-02	1.7E+02		1.7E+02		1.7E+02	
M-04	VOC	Vinyl Chloride	75-01-4	T	A	13				1.50E-04	1.20E-02	2.0E-03		1.3E+01		1.0E+00	
M-04	VOC	Xylenes (total)	1330-20-7	T	ID	19	4	3.00E-01	1.40E+00	3.30E-04	8.20E-04	1.0E+01	1.4E-01	1.9E+02	7.4E-03	1.9E+02	7.4E-03
M-04	INORG	Lead	7439-92-1	D	B2	8				2.50E-03	2.50E-03	4.0E-03					
M-04	INORG	Lead	7439-92-1	T	B2	10				1.60E-03	2.50E-03	4.0E-03					
M-05	P/PCB	PCBs (total)	1336-36-3	D	B2	2				8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
M-05	P/PCB	PCBs (total)	1336-36-3	T	B2	9	4	4.19E-04	1.64E-03	8.20E-05	8.20E-05	5.0E-04	**3.3E+00**	4.5E-02	3.6E-02	3.3E-03	5.0E-01
M-05	INORG	Antimony	7440-36-0	D		4	1	4.30E-03	4.30E-03	2.20E-03	2.20E-03	6.0E-03	7.2E-01			6.8E+01	6.3E-05
M-05	INORG	Antimony	7440-36-0	T		4	1	3.50E-03	3.50E-03	2.20E-03	2.20E-03	6.0E-03	5.8E-01			6.8E+01	5.1E-05
M-05	INORG	Arsenic	7440-38-2	D	A	4	2	2.49E-02	2.67E-02	3.90E-03	3.90E-03	5.0E-02	5.3E-01			4.3E+00	6.2E-03
M-05	INORG	Arsenic	7440-38-2	T	A	4	3	4.10E-03	2.73E-02	3.90E-03	3.90E-03	5.0E-02	5.5E-01			4.3E+00	6.3E-03
M-05	INORG	Barium	7440-39-3	D	D	4	4	1.28E+00	4.72E+00			2.0E+00	**2.4E+00**			1.4E+04	3.4E-04
M-05	INORG	Barium	7440-39-3	T	D	9	9	2.05E-01	4.80E+00			2.0E+00	**2.4E+00**			1.4E+04	3.4E-04
M-05	INORG	Beryllium	7440-41-7	D	B1	4				5.40E-04	5.40E-04	4.0E-03				2.9E+02	
M-05	INORG	Beryllium	7440-41-7	T	B1	4				5.40E-04	5.40E-04	4.0E-03				2.9E+02	
M-05	INORG	Cadmium	7440-43-9	D	B1	4	3	3.00E-04	6.60E-04	2.80E-04	2.80E-04	5.0E-03	1.3E-01			1.9E+02	3.5E-06
M-05	INORG	Cadmium	7440-43-9	T	B1	4	3	3.60E-04	7.10E-04	2.80E-04	2.80E-04	5.0E-03	1.4E-01			1.9E+02	3.7E-06

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-05	INORG	Chromium (total)	7440-47-3	D		4	3	1.80E-03	2.20E-03	1.40E-03	1.40E-03	1.0E-01	2.2E-02			4.6E+02	4.8E-06
M-05	INORG	Chromium (total)	7440-47-3	T		4	3	2.50E-03	2.05E-02	1.40E-03	1.40E-03	1.0E-01	2.1E-01			4.6E+02	4.5E-05
M-05	INORG	Cobalt	7440-48-4	D	B1	4	1	8.00E-03	8.00E-03	1.30E-03	1.30E-03	4.0E-02	2.0E-01			2.4E+03	3.3E-06
M-05	INORG	Cobalt	7440-48-4	T	B1	4	1	7.90E-03	7.90E-03	1.30E-03	1.30E-03	4.0E-02	2.0E-01			2.4E+03	3.3E-06
M-05	INORG	Copper	7440-50-8	D	D	4				4.20E-03	4.20E-03	1.4E+00				7.4E+03	
M-05	INORG	Copper	7440-50-8	T	D	4	1	5.20E-03	5.20E-03	4.20E-03	4.20E-03	1.4E+00	3.7E-03			7.4E+03	7.0E-07
M-05	INORG	Lead	7439-92-1	D	B2	4				2.50E-03	2.50E-03	4.0E-03					
M-05	INORG	Lead	7439-92-1	T	B2	4				2.50E-03	2.50E-03	4.0E-03					
M-05	INORG	Manganese	7439-96-5	D	D	4	4	9.53E-01	3.57E+00			8.6E-01	**4.2E+00**			9.1E+03	3.9E-04
M-05	INORG	Manganese	7439-96-5	T	D	9	9	1.25E-01	3.63E+00			8.6E-01	**4.2E+00**			9.1E+03	4.0E-04
M-05	INORG	Mercury	7439-97-6	D	D	4				6.90E-05	6.90E-05	2.0E-03		5.6E-02		5.6E-02	
M-05	INORG	Mercury	7439-97-6	T	D	4				6.90E-05	6.90E-05	2.0E-03		5.6E-02		5.6E-02	
M-05	INORG	Nickel	7440-02-0	D	A	4	2	1.06E-02	1.60E-02	2.20E-03	2.20E-03	1.0E-01	1.6E-01			7.4E+04	2.2E-07
M-05	INORG	Nickel	7440-02-0	T	A	4	2	1.69E-02	1.75E-02	2.20E-03	2.20E-03	1.0E-01	1.8E-01			7.4E+04	2.4E-07
M-05	INORG	Selenium	7782-49-2	D	D	4				4.50E-03	4.50E-03	5.0E-02				9.7E+02	
M-05	INORG	Selenium	7782-49-2	T	D	4				4.50E-03	4.50E-03	5.0E-02				9.7E+02	
M-05	INORG	Silver	7440-22-4	D	D	4				1.50E-03	1.50E-03	3.4E-02				1.5E+03	
M-05	INORG	Silver	7440-22-4	T	D	4				1.50E-03	1.50E-03	3.4E-02				1.5E+03	
M-05	INORG	Thallium	7440-28-0	D		4	2	5.00E-03	5.90E-03	1.80E-05	1.80E-05	2.0E-03	**3.0E+00**			1.3E+01	4.5E-04
M-05	INORG	Thallium	7440-28-0	T		4	1	3.00E-05	3.00E-05	1.80E-05	5.00E-03	2.0E-03	1.5E-02			1.3E+01	2.3E-06
M-05	INORG	Vanadium	7440-62-2	D		4	2	8.00E-03	1.00E-02	8.20E-04	8.20E-04	4.5E-03	**2.2E+00**			9.7E+02	1.0E-05
M-05	INORG	Vanadium	7440-62-2	T		4	2	7.80E-03	1.04E-02	8.20E-04	8.20E-04	4.5E-03	**2.3E+00**			9.7E+02	1.1E-05
M-05	INORG	Zinc	7440-66-6	D	D	4	1	1.33E-02	1.33E-02	1.20E-02	1.20E-02	2.4E+00	5.5E-03			1.1E+05	1.2E-07
M-05	INORG	Zinc	7440-66-6	T	D	4				1.20E-02	1.20E-02	2.4E+00				1.1E+05	
M-05	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	D	B2	2				5.02E-09	6.62E-09	3.0E-08				1.0E-08	
M-05	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	T	B2	2				5.85E-09	9.14E-09	3.0E-08				1.0E-08	
M-07	VOC	Acetone	67-64-1	T	ID	8	4	3.50E-03	4.20E+01	5.10E-04	5.10E-03	7.3E-01	**5.8E+01**	1.0E+06	4.2E-05	3.1E+04	1.4E-03
M-07	VOC	Benzene	71-43-2	T	A	8	2	2.40E-04	4.10E-04	1.60E-04	1.30E-01	5.0E-03	8.2E-02	3.5E+01	1.2E-05	1.1E+01	3.7E-05
M-07	VOC	Bromodichloromethane	75-27-4	T	B2	8				1.70E-04	1.40E-01	1.0E-01		3.7E+01		1.4E+01	
M-07	VOC	Bromoform	75-25-2	T	B2	8				1.80E-04	1.50E-01	1.0E-01		3.1E+03		1.4E+02	
M-07	VOC	Bromomethane	74-83-9	T	D	8				2.00E-04	1.70E-01	1.0E-02		9.0E+00		7.0E+01	
M-07	VOC	2-Butanone	78-93-3	T	ID	8	1	4.70E-03	4.70E-03	4.10E-04	3.40E-01	1.3E+01	3.6E-04	2.4E+05	2.0E-08	2.4E+05	2.0E-08
M-07	VOC	Carbon Disulfide	75-15-0	T		8				2.00E-04	1.70E-01	8.0E-01		5.5E+02		1.2E+03	
M-07	VOC	Carbon Tetrachloride	56-23-5	T	B2	8				1.20E-04	1.00E-01	5.0E-03		2.4E+00		4.6E+00	
M-07	VOC	Chlorobenzene	108-90-7	T	D	8				1.40E-04	1.20E-01	1.0E-01		4.7E+02		8.6E+01	
M-07	VOC	Chloroethane	75-00-3	T		8				2.60E-04	2.20E-01	4.3E-01		5.7E+03		4.4E+02	
M-07	VOC	Chloroform	67-66-3	T	B2	8				1.40E-04	1.20E-01	1.0E-01		1.8E+02		1.5E+02	
M-07	VOC	Chloromethane	74-87-3	T	D	8	1	3.70E-04	3.70E-04	1.30E-04	1.10E-01	2.6E-01	1.4E-03	4.5E+01	8.2E-06	4.9E+02	7.6E-07
M-07	VOC	Cumene	98-82-8	T	D	8				1.20E-04	1.00E-01	8.0E-01		5.6E+01		5.6E+01	
M-07	VOC	Cyclohexane	110-82-7	T	ID	8	1	2.50E-04	2.50E-04	1.30E-04	1.10E-01						
M-07	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	8				6.20E-04	5.20E-01	2.0E-04		1.2E+00		3.9E-01	
M-07	VOC	Dibromochloromethane	124-48-1	T	C	8				2.60E-04	2.20E-01	1.0E-01		1.1E+02		1.8E+01	
M-07	VOC	1,2-Dibromoethane	106-93-4	T	B2	8				2.20E-04	1.80E-01	1.0E-03		1.5E+01		2.5E-02	
M-07	VOC	1,2-Dichlorobenzene	95-50-1	T	D	8				1.10E-04	9.20E-02	6.0E-01		1.6E+02		1.6E+02	
M-07	VOC	1,3-Dichlorobenzene	541-73-1	T	D	8				1.50E-04	1.20E-01	6.6E-03				2.0E+00	
M-07	VOC	1,4-Dichlorobenzene	106-46-7	T	C	8				1.70E-04	1.40E-01	7.5E-02		7.4E+01		6.4E+00	
M-07	VOC	Dichlorodifluoromethane	75-71-8	T		8				2.60E-04	2.20E-01	1.7E+00		3.0E+02		3.0E+02	
M-07	VOC	1,1-Dichloroethane	75-34-3	T	C	8				1.60E-04	1.30E-01	8.8E-01		2.3E+03		2.4E+03	
M-07	VOC	1,2-Dichloroethane	107-06-2	T	B2	8				2.10E-04	1.70E-01	5.0E-03		5.9E+01		1.9E+01	
M-07	VOC	1,1-Dichloroethene	75-35-4	T	C	8				2.40E-04	2.00E-01	7.0E-03		1.3E+00		1.1E+01	
M-07	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	8				2.20E-04	1.80E-01	7.0E-02		2.1E+02		2.0E+02	
M-07	VOC	trans-1,2-Dichloroethene	156-60-5	T		8				1.50E-04	1.20E-01	1.0E-01		2.0E+02		2.2E+02	
M-07	VOC	1,2-Dichloropropane	78-87-5	T	B2	8				1.70E-04	1.40E-01	5.0E-03		3.6E+01		1.6E+01	
M-07	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	8				2.70E-04	2.20E-01	8.5E-03		2.6E+01		5.5E+00	
M-07	VOC	Ethyl Benzene	100-41-4	T	D	8	1	2.30E-04	2.30E-04	1.20E-04	1.00E-01	7.0E-01	3.3E-04	1.7E+02	1.4E-06	1.7E+02	1.4E-06
M-07	VOC	2-Hexanone	591-78-6	T		8				4.60E-04	3.80E-01	1.0E+00		8.7E+03		5.2E+03	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-07	VOC	Methyl Acetate	79-20-9	T		8				4.10E-04	3.40E-01						
M-07	VOC	Methyl tert-butyl ether	1634-04-4	T		8				1.30E-04	1.10E-01	2.4E-01		4.7E+04		6.1E+02	
M-07	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	8				2.30E-04	1.90E-01	1.8E+00		2.0E+04		1.3E+04	
M-07	VOC	Methylcyclohexane	108-87-2	T		8	1	4.60E-04	4.60E-04	1.50E-04	1.20E-01						
M-07	VOC	Methylene Chloride	75-09-2	T	B2	8				3.40E-04	2.80E-01	5.0E-03		1.4E+03		2.2E+02	
M-07	VOC	Styrene	100-42-5	T		8				1.50E-04	1.20E-01	1.0E-01		3.1E+02		9.7E+00	
M-07	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	8				2.50E-04	2.10E-01	8.5E-03		7.7E+01		4.7E+00	
M-07	VOC	Tetrachloroethene	127-18-4	T	C-B2	8	1	3.60E-03	3.60E-03	2.30E-04	1.90E-01	5.0E-03	7.2E-01	1.7E+02	2.1E-05	1.2E+01	3.0E-04
M-07	VOC	Toluene	108-88-3	T	D	8	2	3.50E-04	1.80E-03	1.80E-04	1.50E-01	1.0E+00	1.8E-03	5.3E+02	3.4E-06	5.3E+02	3.4E-06
M-07	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	8				1.70E-04	1.40E-01	7.0E-02		3.0E+02		1.9E+01	
M-07	VOC	1,1,1-Trichloroethane	71-55-6	T	D	8				1.50E-04	1.20E-01	2.0E-01		1.3E+03		1.3E+03	
M-07	VOC	1,1,2-Trichloroethane	79-00-5	T	C	8				3.00E-04	2.50E-01	5.0E-03		1.1E+02		2.1E+01	
M-07	VOC	Trichloroethene	79-01-6	T	C-B2	8				1.40E-04	1.20E-01	5.0E-03		9.7E+01		2.2E+01	
M-07	VOC	Trichlorofluoromethane	75-69-4	T		8				2.80E-04	2.30E-01	2.6E+00		1.1E+03		1.1E+03	
M-07	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		8				3.20E-04	2.70E-01	1.7E+02		1.7E+02		1.7E+02	
M-07	VOC	Vinyl Chloride	75-01-4	T	A	8				1.50E-04	1.20E-01	2.0E-03		1.3E+01		1.0E+00	
M-07	VOC	Xylenes (total)	1330-20-7	T	ID	8	1	1.20E-03	1.20E-03	3.30E-04	2.70E-01	1.0E+01	1.2E-04	1.9E+02	6.3E-06	1.9E+02	6.3E-06
M-07	SVOC	Acenaphthene	83-32-9	T		8				8.00E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00	
M-07	SVOC	Acenaphthylene	208-96-8	T	D	8				7.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00	
M-07	SVOC	Acetophenone	98-86-2	T	D	8				2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
M-07	SVOC	Anthracene	120-12-7	T	D	8				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
M-07	SVOC	Atrazine	1912-24-9	T		8				2.50E-03	5.00E-03	3.0E-03				5.4E+00	
M-07	SVOC	Benzaldehyde	100-52-7	T		8				2.80E-03	1.00E-02						
M-07	SVOC	Benzo(a)anthracene	56-55-3	T	B2	8				7.00E-04	5.00E-03	2.1E-03				9.4E-03	
M-07	SVOC	Benzo(a)pyrene	50-32-8	T	B2	8				7.30E-04	5.00E-03	5.0E-03				2.0E-03	
M-07	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	8				9.40E-04	5.00E-03	2.0E-03				2.0E-03	
M-07	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	8				8.50E-04	5.00E-03	5.0E-03				5.0E-03	
M-07	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	8				8.40E-04	5.00E-03	5.0E-03				5.0E-03	
M-07	SVOC	Biphenyl	92-52-4	T	D	8				2.60E-03	1.00E-02						
M-07	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	8				8.70E-04	5.00E-03						
M-07	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	8				9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00	
M-07	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	8				2.70E-03	5.00E-03	6.0E-03				3.2E-01	
M-07	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	8				8.80E-04	5.00E-03						
M-07	SVOC	Butylbenzylphthalate	85-68-7	T	C	8				8.80E-04	5.00E-03	1.2E+00				2.7E+00	
M-07	SVOC	Caprolactam	105-60-2	T		8	1	1.20E-01	1.20E-01	2.50E-03	1.00E-02	5.8E+00	2.1E-02			3.9E+05	3.1E-07
M-07	SVOC	Carbazole	86-74-8	T	B2	8				8.20E-04	1.00E-02	8.5E-02				7.4E+00	
M-07	SVOC	4-Chloro-3-methylphenol	59-50-7	T		8				9.90E-04	5.00E-03	1.5E-01				7.9E+01	
M-07	SVOC	4-Chloroaniline	106-47-8	T		8				6.10E-04	1.00E-02						
M-07	SVOC	2-Chloronaphthalene	91-58-7	T		8				8.50E-04	5.00E-03	1.8E+00				6.7E+00	
M-07	SVOC	2-Chlorophenol	95-57-8	T		8				1.00E-03	5.00E-03	4.5E-02				9.4E+01	
M-07	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		8				7.90E-04	5.00E-03						
M-07	SVOC	Chrysene	218-01-9	T	B2	8				7.50E-04	5.00E-03	5.0E-03				5.0E-03	
M-07	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	8				7.90E-04	5.00E-03	2.0E-03				2.0E-03	
M-07	SVOC	Dibenzofuran	132-64-9	T	D	8				1.10E-03	5.00E-03						
M-07	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	8				9.30E-04	2.00E-02	1.1E-03				1.8E-01	
M-07	SVOC	2,4-Dichlorophenol	120-83-2	T		8				8.50E-04	1.00E-02	7.3E-02				4.8E+01	
M-07	SVOC	Diethylphthalate	84-66-2	T	D	8				6.50E-04	5.00E-03	5.5E+00				1.1E+03	
M-07	SVOC	2,4-Dimethylphenol	105-67-9	T		8				8.50E-04	5.00E-03	3.7E-01				5.2E+02	
M-07	SVOC	Dimethylphthalate	131-11-3	T	D	8				7.60E-04	5.00E-03	7.3E+01				4.2E+03	
M-07	SVOC	Di-n-butylphthalate	84-74-2	T	D	8				6.70E-04	5.00E-03	8.8E-01				1.1E+01	
M-07	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		8				1.30E-03	2.00E-02	2.0E-02				9.5E+00	
M-07	SVOC	2,4-Dinitrophenol	51-28-5	T		8				3.00E-03	2.00E-02						
M-07	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	8				7.90E-04	5.00E-03	7.7E-03				8.6E+00	
M-07	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	8				5.70E-04	5.00E-03						
M-07	SVOC	Di-n-octylphthalate	117-84-0	T		8				1.10E-03	5.00E-03	1.3E-01				4.0E-01	
M-07	SVOC	Fluoranthene	206-44-0	T	D	8				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-07	SVOC	Fluorene	86-73-7	T	D	8				1.00E-03	5.00E-03	8.8E-01		2.0E+00		2.0E+00	
M-07	SVOC	Hexachlorobenzene	118-74-1	T	B2	8				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
M-07	SVOC	Hexachlorobutadiene	87-68-3	T	C	8				7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
M-07	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	8				1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
M-07	SVOC	Hexachloroethane	67-72-1	T	C	8				7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
M-07	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	8				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
M-07	SVOC	Isophorone	78-59-1	T	C	8				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
M-07	SVOC	2-Methylnaphthalene	91-57-6	T	ID	8				6.40E-04	5.00E-03	2.6E-01				2.5E+01	
M-07	SVOC	Methylphenol (total)	1319-77-3	T		8				1.30E-03	5.00E-03	3.7E-01				8.1E+02	
M-07	SVOC	Naphthalene	91-20-3	T	C	8				7.50E-04	5.00E-03	5.2E-01		3.1E+01		3.1E+01	
M-07	SVOC	2-Nitroaniline	88-74-4	T		8				7.00E-04	2.00E-02						
M-07	SVOC	3-Nitroaniline	99-09-2	T	C	8				7.10E-04	2.00E-02						
M-07	SVOC	4-Nitroaniline	100-01-6	T	C	8				1.30E-03	2.00E-02						
M-07	SVOC	Nitrobenzene	98-95-3	T	D	8				8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
M-07	SVOC	2-Nitrophenol	88-75-5	T		8				2.10E-03	5.00E-03	2.0E-02				7.9E+01	
M-07	SVOC	4-Nitrophenol	100-02-7	T		8				1.90E-03	2.00E-02						
M-07	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	8				1.40E-03	5.00E-03	2.7E-01				3.5E+01	
M-07	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	8				6.70E-04	5.00E-03	5.0E-03				3.6E-01	
M-07	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	8				7.80E-04	5.00E-03						
M-07	SVOC	Pentachlorophenol	87-86-5	T	B2	8				2.40E-03	5.00E-03	1.0E-03				2.0E-01	
M-07	SVOC	Phenanthrene	85-01-8	T	D	8				8.20E-04	5.00E-03	5.2E-02		1.0E+00		1.0E+00	
M-07	SVOC	Phenol	108-95-2	T	ID	8				2.60E-03	5.00E-03	4.4E+00				2.9E+04	
M-07	SVOC	Pyrene	129-00-0	T	D	8				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
M-07	SVOC	2,4,5-Trichlorophenol	95-95-4	T		8				1.20E-03	5.00E-03	7.3E-01				1.7E+02	
M-07	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	8				1.70E-03	5.00E-03	1.2E-01				1.0E+01	
M-07	P/PCB	PCBs (total)	1336-36-3	D	B2	4				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
M-07	P/PCB	PCBs (total)	1336-36-3	T	B2	8				8.20E-05	8.00E-04	5.0E-04		4.5E-02		3.3E-03	
M-07	INORG	Antimony	7440-36-0	D		8				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
M-07	INORG	Antimony	7440-36-0	T		8	1	2.70E-03	2.70E-03	2.20E-03	2.50E-02	6.0E-03	4.5E-01			6.8E+01	4.0E-05
M-07	INORG	Arsenic	7440-38-2	D	A	8	2	4.20E-03	6.10E-03	3.90E-03	1.00E-02	5.0E-02	1.2E-01			4.3E+00	1.4E-03
M-07	INORG	Arsenic	7440-38-2	T	A	8	4	4.00E-03	1.46E-02	3.90E-03	1.00E-02	5.0E-02	2.9E-01			4.3E+00	3.4E-03
M-07	INORG	Barium	7440-39-3	D	D	8	8	1.47E-01	3.15E-01			2.0E+00	1.6E-01			1.4E+04	2.3E-05
M-07	INORG	Barium	7440-39-3	T	D	8	8	1.47E-01	3.86E-01			2.0E+00	1.9E-01			1.4E+04	2.8E-05
M-07	INORG	Beryllium	7440-41-7	D	B1	8				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
M-07	INORG	Beryllium	7440-41-7	T	B1	8	1	7.20E-04	7.20E-04	5.40E-04	1.00E-03	4.0E-03	1.8E-01			2.9E+02	2.5E-06
M-07	INORG	Cadmium	7440-43-9	D	B1	8	5	4.00E-04	6.80E-04	2.80E-04	2.80E-04	5.0E-03	1.4E-01			1.9E+02	3.6E-06
M-07	INORG	Cadmium	7440-43-9	T	B1	8	7	3.50E-04	1.40E-03	2.80E-04	2.80E-04	5.0E-03	2.8E-01			1.9E+02	7.4E-06
M-07	INORG	Chromium (total)	7440-47-3	D		8	1	1.40E-03	1.40E-03	1.40E-03	1.00E-02	1.0E-01	1.4E-02			4.6E+02	3.0E-06
M-07	INORG	Chromium (total)	7440-47-3	T		8	3	8.50E-03	1.39E-01	1.40E-03	1.00E-02	1.0E-01	**1.4E+00**			4.6E+02	3.0E-04
M-07	INORG	Cobalt	7440-48-4	D	B1	8	4	3.70E-03	1.36E-02	1.30E-03	2.00E-02	4.0E-02	3.4E-01			2.4E+03	5.7E-06
M-07	INORG	Cobalt	7440-48-4	T	B1	8	5	1.40E-03	2.28E-02	1.30E-03	2.00E-02	4.0E-02	5.7E-01			2.4E+03	9.5E-06
M-07	INORG	Copper	7440-50-8	D	D	8	1	5.60E-03	5.60E-03	4.20E-03	5.00E-03	1.4E+00	4.0E-03			7.4E+03	7.6E-07
M-07	INORG	Copper	7440-50-8	T	D	8	3	1.20E-02	5.11E-02	4.20E-03	5.00E-03	1.4E+00	3.7E-02			7.4E+03	6.9E-06
M-07	INORG	Lead	7439-92-1	D	B2	8				2.50E-03	3.00E-03	4.0E-03					
M-07	INORG	Lead	7439-92-1	T	B2	8	2	1.22E-02	2.38E-02	2.50E-03	3.00E-03	4.0E-03	**6.0E+00**				
M-07	INORG	Manganese	7439-96-5	D	D	8	8	8.62E-02	1.72E+00			8.6E-01	**2.0E+00**			9.1E+03	1.9E-04
M-07	INORG	Manganese	7439-96-5	T	D	8	8	8.47E-02	1.53E+00			8.6E-01	**1.8E+00**			9.1E+03	1.7E-04
M-07	INORG	Mercury	7439-97-6	D	D	8	1	9.40E-05	9.40E-05	6.90E-05	2.00E-04	2.0E-03	4.7E-02	5.6E-02	1.7E-03	5.6E-02	1.7E-03
M-07	INORG	Mercury	7439-97-6	T	D	8	2	6.90E-05	3.40E-04	6.90E-05	2.00E-04	2.0E-03	1.7E-01	5.6E-02	6.1E-03	5.6E-02	6.1E-03
M-07	INORG	Nickel	7440-02-0	D	A	8	7	4.00E-03	7.04E-02	2.20E-03	2.20E-03	1.0E-01	7.0E-01			7.4E+04	9.5E-07
M-07	INORG	Nickel	7440-02-0	T	A	8	7	3.40E-03	9.41E-02	2.20E-03	2.20E-03	1.0E-01	9.4E-01			7.4E+04	1.3E-06
M-07	INORG	Selenium	7782-49-2	D	D	8				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
M-07	INORG	Selenium	7782-49-2	T	D	8				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
M-07	INORG	Silver	7440-22-4	D	D	8				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
M-07	INORG	Silver	7440-22-4	T	D	8				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
M-07	INORG	Thallium	7440-28-0	D		8	8	2.10E-05	1.43E-02			2.0E-03	**7.2E+00**			1.3E+01	1.1E-03

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-07	INORG	Thallium	7440-28-0	T		8	6	6.40E-05	1.56E-02	1.80E-05	5.00E-03	2.0E-03	**7.8E+00**			1.3E+01	1.2E-03
M-07	INORG	Vanadium	7440-62-2	D		8				8.20E-04	1.00E-02	4.5E-03				9.7E+02	
M-07	INORG	Vanadium	7440-62-2	T		8	3	1.17E-02	5.90E-02	8.20E-04	1.00E-02	4.5E-03	**1.3E+01**			9.7E+02	6.1E-05
M-07	INORG	Zinc	7440-66-6	D	D	8	5	1.57E-02	1.46E-01	1.20E-02	2.00E-02	2.4E+00	6.1E-02			1.1E+05	1.3E-06
M-07	INORG	Zinc	7440-66-6	T	D	8	4	3.46E-02	1.46E-01	1.20E-02	2.00E-02	2.4E+00	6.1E-02			1.1E+05	1.3E-06
M-09	VOC	Acetone	67-64-1	T	ID	2	1	2.00E-02	2.00E-02	1.10E-03	1.10E-03	7.3E-01	2.7E-02	1.0E+06	2.0E-08	3.1E+04	6.5E-07
M-09	VOC	Benzene	71-43-2	T	A	2				1.60E-04	3.70E-04	5.0E-03		3.5E+01		1.1E+01	
M-09	VOC	Bromodichloromethane	75-27-4	T	B2	2	1	3.90E-04	3.90E-04	3.20E-04	3.20E-04	1.0E-01	3.9E-03	3.7E+01	1.1E-05	1.4E+01	2.8E-05
M-09	VOC	Bromoform	75-25-2	T	B2	2				1.80E-04	3.70E-04	1.0E-01		3.1E+03		1.4E+02	
M-09	VOC	Bromomethane	74-83-9	T	D	2				2.00E-04	3.00E-04	1.0E-02		9.0E+00		7.0E+01	
M-09	VOC	2-Butanone	78-93-3	T	ID	2	1	1.90E-03	1.90E-03	5.90E-04	5.90E-04	1.3E+01	1.5E-04	2.4E+05	7.9E-09	2.4E+05	7.9E-09
M-09	VOC	Carbon Disulfide	75-15-0	T		2	2	2.50E-04	4.10E-04			8.0E-01	5.1E-04	5.5E+02	7.5E-07	1.2E+03	3.4E-07
M-09	VOC	Carbon Tetrachloride	56-23-5	T	B2	2				1.20E-04	3.70E-04	5.0E-03		2.4E+00		4.6E+00	
M-09	VOC	Chlorobenzene	108-90-7	T	D	2				1.40E-04	3.80E-04	1.0E-01		4.7E+02		8.6E+01	
M-09	VOC	Chloroethane	75-00-3	T		2				2.60E-04	2.90E-04	4.3E-01		5.7E+03		4.4E+02	
M-09	VOC	Chloroform	67-66-3	T	B2	2	1	2.40E-03	2.40E-03	3.50E-04	3.50E-04	1.0E-01	2.4E-02	1.8E+02	1.3E-05	1.5E+02	1.6E-05
M-09	VOC	Chloromethane	74-87-3	T	D	2				1.30E-04	4.90E-04	2.6E-01		4.5E+01		4.9E+02	
M-09	VOC	Cumene	98-82-8	T	D	2				1.20E-04	3.90E-04	8.0E-01		5.6E+01		5.6E+01	
M-09	VOC	Cyclohexane	110-82-7	T	ID	2				1.30E-04	3.30E-04						
M-09	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	2				6.20E-04	8.20E-04	2.0E-04		1.2E+00		3.9E-01	
M-09	VOC	Dibromochloromethane	124-48-1	T	C	2				2.60E-04	3.70E-04	1.0E-01		1.1E+02		1.8E+01	
M-09	VOC	1,2-Dibromoethane	106-93-4	T	B2	2				2.20E-04	3.40E-04	1.0E-03		1.5E+01		2.5E-02	
M-09	VOC	1,2-Dichlorobenzene	95-50-1	T	D	2				1.10E-04	3.80E-04	6.0E-01		1.6E+02		1.6E+02	
M-09	VOC	1,3-Dichlorobenzene	541-73-1	T	D	2				1.50E-04	3.80E-04	6.6E-03				2.0E+00	
M-09	VOC	1,4-Dichlorobenzene	106-46-7	T	C	2				1.70E-04	3.80E-04	7.5E-02		7.4E+01		6.4E+00	
M-09	VOC	Dichlorodifluoromethane	75-71-8	T		2				2.60E-04	4.90E-04	1.7E+00		3.0E+02		3.0E+02	
M-09	VOC	1,1-Dichloroethane	75-34-3	T	C	2				1.60E-04	3.00E-04	8.8E-01		2.3E+03		2.4E+03	
M-09	VOC	1,2-Dichloroethane	107-06-2	T	B2	2				2.10E-04	2.80E-04	5.0E-03		5.9E+01		1.9E+01	
M-09	VOC	1,1-Dichloroethene	75-35-4	T	C	2				2.40E-04	3.10E-04	7.0E-03		1.3E+00		1.1E+01	
M-09	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	2				2.20E-04	3.50E-04	7.0E-02		2.1E+02		2.0E+02	
M-09	VOC	trans-1,2-Dichloroethene	156-60-5	T		2				1.50E-04	3.30E-04	1.0E-01		2.0E+02		2.2E+02	
M-09	VOC	1,2-Dichloropropane	78-87-5	T	B2	2				1.70E-04	4.10E-04	5.0E-03		3.6E+01		1.6E+01	
M-09	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	1				3.50E-04	3.50E-04	8.5E-03		2.6E+01		5.5E+00	
M-09	VOC	Ethyl Benzene	100-41-4	T	D	2				1.20E-04	4.10E-04	7.0E-01		1.7E+02		1.7E+02	
M-09	VOC	2-Hexanone	591-78-6	T		2				4.60E-04	5.80E-04	1.0E+00		8.7E+03		5.2E+03	
M-09	VOC	Methyl Acetate	79-20-9	T		2				4.10E-04	5.40E-04						
M-09	VOC	Methyl tert-butyl ether	1634-04-4	T		2	1	8.10E-04	8.10E-04	2.70E-04	2.70E-04	2.4E-01	3.4E-03	4.7E+04	1.7E-08	6.1E+02	1.3E-06
M-09	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	1				2.60E-04	2.60E-04	1.8E+00		2.0E+04		1.3E+04	
M-09	VOC	Methylcyclohexane	108-87-2	T		2				1.50E-04	4.20E-04						
M-09	VOC	Methylene Chloride	75-09-2	T	B2	1				3.40E-04	3.40E-04	5.0E-03		1.4E+03		2.2E+02	
M-09	VOC	Styrene	100-42-5	T		2				1.50E-04	3.50E-04	1.0E-01		3.1E+02		9.7E+00	
M-09	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	2				2.50E-04	3.60E-04	8.5E-03		7.7E+01		4.7E+00	
M-09	VOC	Tetrachloroethene	127-18-4	T	C-B2	1				4.20E-04	4.20E-04	5.0E-03		1.7E+02		1.2E+01	
M-09	VOC	Toluene	108-88-3	T	D	2				1.80E-04	3.90E-04	1.0E+00		5.3E+02		5.3E+02	
M-09	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	2				1.70E-04	4.00E-04	7.0E-02		3.0E+02		1.9E+01	
M-09	VOC	1,1,1-Trichloroethane	71-55-6	T	D	2				1.50E-04	3.90E-04	2.0E-01		1.3E+03		1.3E+03	
M-09	VOC	1,1,2-Trichloroethane	79-00-5	T	C	2				3.00E-04	3.60E-04	5.0E-03		1.1E+02		2.1E+01	
M-09	VOC	Trichloroethene	79-01-6	T	C-B2	2				1.40E-04	4.20E-04	5.0E-03		9.7E+01		2.2E+01	
M-09	VOC	Trichlorofluoromethane	75-69-4	T		2				2.80E-04	5.40E-04	2.6E+00		1.1E+03		1.1E+03	
M-09	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		2				3.20E-04	3.20E-04	1.7E+02		1.7E+02		1.7E+02	
M-09	VOC	Vinyl Chloride	75-01-4	T	A	2				1.50E-04	3.60E-04	2.0E-03		1.3E+01		1.0E+00	
M-09	VOC	Xylenes (total)	1330-20-7	T	ID	2				3.30E-04	4.40E-04	1.0E+01		1.9E+02		1.9E+02	
M-09	SVOC	Acenaphthene	83-32-9	T		2				8.00E-04	8.00E-04	1.3E+00		4.2E+00		4.2E+00	
M-09	SVOC	Acenaphthylene	208-96-8	T	D	2				7.10E-04	7.10E-04	5.2E-02		3.9E+00		3.9E+00	
M-09	SVOC	Acetophenone	98-86-2	T	D	2				2.60E-03	2.60E-03	1.5E+00		6.1E+03		6.1E+03	
M-09	SVOC	Anthracene	120-12-7	T	D	2				6.80E-04	6.80E-04	4.3E-02		4.3E-02		4.3E-02	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-09	SVOC	Atrazine	1912-24-9	T		2				2.50E-03	2.50E-03	3.0E-03				5.4E+00	
M-09	SVOC	Benzaldehyde	100-52-7	T		2				2.80E-03	2.80E-03						
M-09	SVOC	Benzo(a)anthracene	56-55-3	T	B2	2				7.00E-04	7.00E-04	2.1E-03				9.4E-03	
M-09	SVOC	Benzo(a)pyrene	50-32-8	T	B2	2				7.30E-04	7.30E-04	5.0E-03				2.0E-03	
M-09	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	2				9.40E-04	9.40E-04	2.0E-03				2.0E-03	
M-09	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	2				8.50E-04	8.50E-04	5.0E-03				5.0E-03	
M-09	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	2				8.40E-04	8.40E-04	5.0E-03				5.0E-03	
M-09	SVOC	Biphenyl	92-52-4	T	D	2				2.60E-03	2.60E-03						
M-09	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	2				8.70E-04	8.70E-04						
M-09	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	2				9.70E-04	9.70E-04	2.0E-03		2.1E+02		5.7E+00	
M-09	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	2				2.70E-03	2.70E-03	6.0E-03				3.2E-01	
M-09	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	2				8.80E-04	8.80E-04						
M-09	SVOC	Butylbenzylphthalate	85-68-7	T	C	2				8.80E-04	8.80E-04	1.2E+00				2.7E+00	
M-09	SVOC	Caprolactam	105-60-2	T		2				2.50E-03	2.50E-03	5.8E+00				3.9E+05	
M-09	SVOC	Carbazole	86-74-8	T	B2	2				8.20E-04	8.20E-04	8.5E-02				7.4E+00	
M-09	SVOC	4-Chloro-3-methylphenol	59-50-7	T		2				9.90E-04	9.90E-04	1.5E-01				7.9E+01	
M-09	SVOC	4-Chloroaniline	106-47-8	T		2				6.10E-04	6.10E-04						
M-09	SVOC	2-Chloronaphthalene	91-58-7	T		2				8.50E-04	8.50E-04	1.8E+00				6.7E+00	
M-09	SVOC	2-Chlorophenol	95-57-8	T		2				1.00E-03	1.00E-03	4.5E-02				9.4E+01	
M-09	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		2				7.90E-04	7.90E-04						
M-09	SVOC	Chrysene	218-01-9	T	B2	2				7.50E-04	7.50E-04	5.0E-03				5.0E-03	
M-09	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	2				7.90E-04	7.90E-04	2.0E-03				2.0E-03	
M-09	SVOC	Dibenzofuran	132-64-9	T	D	2				1.10E-03	1.10E-03						
M-09	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	2				9.30E-04	9.30E-04	1.1E-03				1.8E-01	
M-09	SVOC	2,4-Dichlorophenol	120-83-2	T		2				8.50E-04	8.50E-04	7.3E-02				4.8E+01	
M-09	SVOC	Diethylphthalate	84-66-2	T	D	2				6.50E-04	6.50E-04	5.5E+00				1.1E+03	
M-09	SVOC	2,4-Dimethylphenol	105-67-9	T		2				8.50E-04	8.50E-04	3.7E-01				5.2E+02	
M-09	SVOC	Dimethylphthalate	131-11-3	T	D	2				7.60E-04	7.60E-04	7.3E+01				4.2E+03	
M-09	SVOC	Di-n-butylphthalate	84-74-2	T	D	2				6.70E-04	6.70E-04	8.8E-01				1.1E+01	
M-09	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		2				1.30E-03	1.30E-03	2.0E-02				9.5E+00	
M-09	SVOC	2,4-Dinitrophenol	51-28-5	T		2				3.00E-03	3.00E-03						
M-09	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	2				7.90E-04	7.90E-04	7.7E-03				8.6E+00	
M-09	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	2				5.70E-04	5.70E-04						
M-09	SVOC	Di-n-octylphthalate	117-84-0	T		2				1.10E-03	1.10E-03	1.3E-01				4.0E-01	
M-09	SVOC	Fluoranthene	206-44-0	T	D	2				8.10E-04	8.10E-04	2.1E-01		2.1E-01		2.1E-01	
M-09	SVOC	Fluorene	86-73-7	T	D	2				1.00E-03	1.00E-03	8.8E-01		2.0E+00		2.0E+00	
M-09	SVOC	Hexachlorobenzene	118-74-1	T	B2	2				7.40E-04	7.40E-04	1.0E-03		3.0E+00		4.6E-03	
M-09	SVOC	Hexachlorobutadiene	87-68-3	T	C	2				7.30E-04	7.30E-04	1.5E-02		3.2E+00		4.0E-01	
M-09	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	1				1.10E-03	1.10E-03	5.0E-02		4.2E-01		1.6E+00	
M-09	SVOC	Hexachloroethane	67-72-1	T	C	2				7.40E-04	7.40E-04	7.3E-03		5.0E+01		1.9E+00	
M-09	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	2				6.30E-04	6.30E-04	2.0E-03				2.0E-03	
M-09	SVOC	Isophorone	78-59-1	T	C	2				6.30E-04	6.30E-04	7.7E-01				9.9E+02	
M-09	SVOC	2-Methylnaphthalene	91-57-6	T	ID	2				6.40E-04	6.40E-04	2.6E-01				2.5E+01	
M-09	SVOC	Methylphenol (total)	1319-77-3	T		2				1.30E-03	1.30E-03	3.7E-01				8.1E+02	
M-09	SVOC	Naphthalene	91-20-3	T	C	2				7.50E-04	7.50E-04	5.2E-01		3.1E+01		3.1E+01	
M-09	SVOC	2-Nitroaniline	88-74-4	T		2				7.00E-04	7.00E-04						
M-09	SVOC	3-Nitroaniline	99-09-2	T	C	2				7.10E-04	7.10E-04						
M-09	SVOC	4-Nitroaniline	100-01-6	T	C	2				1.30E-03	1.30E-03						
M-09	SVOC	Nitrobenzene	98-95-3	T	D	2				8.10E-04	8.10E-04	3.4E-03		5.5E+02		1.1E+01	
M-09	SVOC	2-Nitrophenol	88-75-5	T		2				2.10E-03	2.10E-03	2.0E-02				7.9E+01	
M-09	SVOC	4-Nitrophenol	100-02-7	T		2				1.90E-03	1.90E-03						
M-09	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	2				1.40E-03	1.40E-03	2.7E-01				3.5E+01	
M-09	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	2				6.70E-04	6.70E-04	5.0E-03				3.6E-01	
M-09	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	2				7.80E-04	7.80E-04						
M-09	SVOC	Pentachlorophenol	87-86-5	T	B2	2				2.40E-03	2.40E-03	1.0E-03				2.0E-01	
M-09	SVOC	Phenanthrene	85-01-8	T	D	2				8.20E-04	8.20E-04	5.2E-02		1.0E+00		1.0E+00	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-09	SVOC	Phenol	108-95-2	T	ID	2				2.60E-03	2.60E-03	4.4E+00				2.9E+04	
M-09	SVOC	Pyrene	129-00-0	T	D	2				1.10E-03	1.10E-03	1.4E-01		1.4E-01		1.4E-01	
M-09	SVOC	2,4,5-Trichlorophenol	95-95-4	T		2				1.20E-03	1.20E-03	7.3E-01				1.7E+02	
M-09	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	2				1.70E-03	1.70E-03	1.2E-01				1.0E+01	
M-09	P/PCB	PCBs (total)	1336-36-3	T	B2	2				8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
M-09	INORG	Antimony	7440-36-0	D		1				2.20E-03	2.20E-03	6.0E-03				6.8E+01	
M-09	INORG	Antimony	7440-36-0	T		2	1	3.30E-03	3.30E-03	3.40E-03	3.40E-03	6.0E-03	5.5E-01			6.8E+01	4.9E-05
M-09	INORG	Arsenic	7440-38-2	D	A	1	1	5.70E-03	5.70E-03			5.0E-02	1.1E-01			4.3E+00	1.3E-03
M-09	INORG	Arsenic	7440-38-2	T	A	2	1	4.20E-03	4.20E-03	2.10E-03	2.10E-03	5.0E-02	8.4E-02			4.3E+00	9.8E-04
M-09	INORG	Barium	7440-39-3	D	D	1	1	5.48E-01	5.48E-01			2.0E+00	2.7E-01			1.4E+04	3.9E-05
M-09	INORG	Barium	7440-39-3	T	D	2	2	5.04E-01	5.69E-01			2.0E+00	2.8E-01			1.4E+04	4.1E-05
M-09	INORG	Beryllium	7440-41-7	D	B1	1				5.40E-04	5.40E-04	4.0E-03				2.9E+02	
M-09	INORG	Beryllium	7440-41-7	T	B1	2				5.40E-04	6.00E-04	4.0E-03				2.9E+02	
M-09	INORG	Cadmium	7440-43-9	D	B1	1				2.80E-04	2.80E-04	5.0E-03				1.9E+02	
M-09	INORG	Cadmium	7440-43-9	T	B1	2	1	2.90E-04	2.90E-04	2.80E-04	2.80E-04	5.0E-03	5.8E-02			1.9E+02	1.5E-06
M-09	INORG	Chromium (total)	7440-47-3	D		1	1	2.80E-03	2.80E-03			1.0E-01	2.8E-02			4.6E+02	6.1E-06
M-09	INORG	Chromium (total)	7440-47-3	T		2	1	3.00E-03	3.00E-03	1.50E-03	1.50E-03	1.0E-01	3.0E-02			4.6E+02	6.5E-06
M-09	INORG	Cobalt	7440-48-4	D	B1	1	1	2.20E-03	2.20E-03			4.0E-02	5.5E-02			2.4E+03	9.2E-07
M-09	INORG	Cobalt	7440-48-4	T	B1	2	2	2.20E-03	2.40E-03			4.0E-02	6.0E-02			2.4E+03	1.0E-06
M-09	INORG	Copper	7440-50-8	D	D	1				4.20E-03	4.20E-03	1.4E+00				7.4E+03	
M-09	INORG	Copper	7440-50-8	T	D	2				1.70E-03	4.20E-03	1.4E+00				7.4E+03	
M-09	INORG	Lead	7439-92-1	D	B2	1				2.50E-03	2.50E-03	4.0E-03					
M-09	INORG	Lead	7439-92-1	T	B2	2				1.60E-03	2.50E-03	4.0E-03					
M-09	INORG	Manganese	7439-96-5	D	D	1				9.00E-04	9.00E-04	8.6E-01				9.1E+03	
M-09	INORG	Manganese	7439-96-5	T	D	2	1	4.30E-03	4.30E-03	9.00E-04	9.00E-04	8.6E-01	5.0E-03			9.1E+03	4.7E-07
M-09	INORG	Mercury	7439-97-6	D	D	1				6.90E-05	6.90E-05	2.0E-03		5.6E-02		5.6E-02	
M-09	INORG	Mercury	7439-97-6	T	D	2				6.90E-05	8.70E-05	2.0E-03		5.6E-02		5.6E-02	
M-09	INORG	Nickel	7440-02-0	D	A	1	1	4.10E-03	4.10E-03			1.0E-01	4.1E-02			7.4E+04	5.5E-08
M-09	INORG	Nickel	7440-02-0	T	A	2	2	3.50E-03	7.30E-03			1.0E-01	7.3E-02			7.4E+04	9.9E-08
M-09	INORG	Selenium	7782-49-2	D	D	1				4.50E-03	4.50E-03	5.0E-02				9.7E+02	
M-09	INORG	Selenium	7782-49-2	T	D	2				4.50E-03	4.70E-03	5.0E-02				9.7E+02	
M-09	INORG	Silver	7440-22-4	D	D	1				1.50E-03	1.50E-03	3.4E-02				1.5E+03	
M-09	INORG	Silver	7440-22-4	T	D	2				9.80E-04	1.50E-03	3.4E-02				1.5E+03	
M-09	INORG	Thallium	7440-28-0	D		1	1	5.10E-05	5.10E-05			2.0E-03	2.6E-02			1.3E+01	3.9E-06
M-09	INORG	Thallium	7440-28-0	T		2	1	7.20E-05	7.20E-05	3.30E-05	3.30E-05	2.0E-03	3.6E-02			1.3E+01	5.5E-06
M-09	INORG	Vanadium	7440-62-2	D		1	1	3.70E-03	3.70E-03			4.5E-03	8.2E-01			9.7E+02	3.8E-06
M-09	INORG	Vanadium	7440-62-2	T		2	2	1.00E-03	4.10E-03			4.5E-03	9.1E-01			9.7E+02	4.2E-06
M-09	INORG	Zinc	7440-66-6	D	D	1	1	1.39E-02	1.39E-02			2.4E+00	5.8E-03			1.1E+05	1.3E-07
M-09	INORG	Zinc	7440-66-6	T	D	2	1	8.23E-02	8.23E-02	1.20E-02	1.20E-02	2.4E+00	3.4E-02			1.1E+05	7.5E-07
M-16	VOC	Acetone	67-64-1	T	ID	4	1	6.95E-03	6.95E-03	5.10E-04	1.00E-02	7.3E-01	9.5E-03	1.0E+06	7.0E-09	3.1E+04	2.2E-07
M-16	VOC	Benzene	71-43-2	T	A	4				1.60E-04	1.00E-03	5.0E-03		3.5E+01		1.1E+01	
M-16	VOC	Bromodichloromethane	75-27-4	T	B2	4	1	2.15E-04	2.15E-04	1.70E-04	1.00E-03	1.0E-01	2.2E-03	3.7E+01	5.8E-06	1.4E+01	1.5E-05
M-16	VOC	Bromoform	75-25-2	T	B2	4				1.80E-04	1.00E-03	1.0E-01		3.1E+03		1.4E+02	
M-16	VOC	Bromomethane	74-83-9	T	D	3				2.00E-04	1.00E-03	1.0E-02		9.0E+00		7.0E+01	
M-16	VOC	2-Butanone	78-93-3	T	ID	4				4.10E-04	1.00E-02	1.3E+01		2.4E+05		2.4E+05	
M-16	VOC	Carbon Disulfide	75-15-0	T		4				2.00E-04	1.00E-03	8.0E-01		5.5E+02		1.2E+03	
M-16	VOC	Carbon Tetrachloride	56-23-5	T	B2	4				1.20E-04	1.00E-03	5.0E-03		2.4E+00		4.6E+00	
M-16	VOC	Chlorobenzene	108-90-7	T	D	4				1.40E-04	1.00E-03	1.0E-01		4.7E+02		8.6E+01	
M-16	VOC	Chloroethane	75-00-3	T		4				2.60E-04	1.00E-03	4.3E-01		5.7E+03		4.4E+02	
M-16	VOC	Chloroform	67-66-3	T	B2	4	2	2.00E-04	6.55E-04	1.40E-04	3.50E-04	1.0E-01	6.6E-03	1.8E+02	3.6E-06	1.5E+02	4.4E-06
M-16	VOC	Chloromethane	74-87-3	T	D	4				1.30E-04	1.00E-03	2.6E-01		4.5E+01		4.9E+02	
M-16	VOC	Cumene	98-82-8	T	D	4				1.20E-04	1.00E-03	8.0E-01		5.6E+01		5.6E+01	
M-16	VOC	Cyclohexane	110-82-7	T	ID	4				1.30E-04	1.00E-03						
M-16	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	4				6.20E-04	2.00E-03	2.0E-04		1.2E+00		3.9E-01	
M-16	VOC	Dibromochloromethane	124-48-1	T	C	4				2.60E-04	1.00E-03	1.0E-01		1.1E+02		1.8E+01	
M-16	VOC	1,2-Dibromoethane	106-93-4	T	B2	4				2.20E-04	1.00E-03	1.0E-03		1.5E+01		2.5E-02	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-16	VOC	1,2-Dichlorobenzene	95-50-1	T	D	4				1.10E-04	1.00E-03	6.0E-01		1.6E+02		1.6E+02	
M-16	VOC	1,3-Dichlorobenzene	541-73-1	T	D	4				1.50E-04	1.00E-03	6.6E-03				2.0E+00	
M-16	VOC	1,4-Dichlorobenzene	106-46-7	T	C	4				1.70E-04	1.00E-03	7.5E-02		7.4E+01		6.4E+00	
M-16	VOC	Dichlorodifluoromethane	75-71-8	T		4				2.60E-04	2.00E-03	1.7E+00		3.0E+02		3.0E+02	
M-16	VOC	1,1-Dichloroethane	75-34-3	T	C	4				1.60E-04	1.00E-03	8.8E-01		2.3E+03		2.4E+03	
M-16	VOC	1,2-Dichloroethane	107-06-2	T	B2	4				2.10E-04	1.00E-03	5.0E-03		5.9E+01		1.9E+01	
M-16	VOC	1,1-Dichloroethene	75-35-4	T	C	4				2.40E-04	1.00E-03	7.0E-03		1.3E+00		1.1E+01	
M-16	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	4				2.20E-04	5.00E-04	7.0E-02		2.1E+02		2.0E+02	
M-16	VOC	trans-1,2-Dichloroethene	156-60-5	T		4				1.50E-04	5.00E-04	1.0E-01		2.0E+02		2.2E+02	
M-16	VOC	1,2-Dichloropropane	78-87-5	T	B2	4				1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01	
M-16	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	4				2.70E-04	1.00E-03	8.5E-03		2.6E+01		5.5E+00	
M-16	VOC	Ethyl Benzene	100-41-4	T	D	4				1.20E-04	1.00E-03	7.0E-01		1.7E+02		1.7E+02	
M-16	VOC	2-Hexanone	591-78-6	T		4				4.60E-04	1.00E-02	1.0E+00		8.7E+03		5.2E+03	
M-16	VOC	Methyl Acetate	79-20-9	T		4				4.10E-04	1.00E-02						
M-16	VOC	Methyl tert-butyl ether	1634-04-4	T		4	1	7.15E-03	7.15E-03	1.30E-04	5.00E-03	2.4E-01	3.0E-02	4.7E+04	1.5E-07	6.1E+02	1.2E-05
M-16	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	3				2.30E-04	1.00E-02	1.8E+00		2.0E+04		1.3E+04	
M-16	VOC	Methylcyclohexane	108-87-2	T		4				1.50E-04	1.00E-03						
M-16	VOC	Methylene Chloride	75-09-2	T	B2	4				2.90E-04	1.00E-03	5.0E-03		1.4E+03		2.2E+02	
M-16	VOC	Styrene	100-42-5	T		4				1.50E-04	1.00E-03	1.0E-01		3.1E+02		9.7E+00	
M-16	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	4				2.50E-04	1.00E-03	8.5E-03		7.7E+01		4.7E+00	
M-16	VOC	Tetrachloroethene	127-18-4	T	C-B2	4				2.30E-04	1.00E-03	5.0E-03		1.7E+02		1.2E+01	
M-16	VOC	Toluene	108-88-3	T	D	4	1	1.90E-04	1.90E-04	1.80E-04	1.00E-03	1.0E+00	1.9E-04	5.3E+02	3.6E-07	5.3E+02	3.6E-07
M-16	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	4				1.70E-04	1.00E-03	7.0E-02		3.0E+02		1.9E+01	
M-16	VOC	1,1,1-Trichloroethane	71-55-6	T	D	4	2	2.90E-03	3.00E-03	1.50E-04	1.00E-03	2.0E-01	1.5E-02	1.3E+03	2.3E-06	1.3E+03	2.3E-06
M-16	VOC	1,1,2-Trichloroethane	79-00-5	T	C	4				3.00E-04	1.00E-03	5.0E-03		1.1E+02		2.1E+01	
M-16	VOC	Trichloroethene	79-01-6	T	C-B2	4				1.40E-04	1.00E-03	5.0E-03		9.7E+01		2.2E+01	
M-16	VOC	Trichlorofluoromethane	75-69-4	T		4				2.80E-04	1.00E-03	2.6E+00		1.1E+03		1.1E+03	
M-16	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		4				3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
M-16	VOC	Vinyl Chloride	75-01-4	T	A	5	3	1.40E-02	2.30E-02	1.50E-04	3.60E-04	2.0E-03	**1.2E+01**	1.3E+01	1.8E-03	1.0E+00	2.3E-02
M-16	VOC	Xylenes (total)	1330-20-7	T	ID	4				3.30E-04	1.00E-03	1.0E+01		1.9E+02		1.9E+02	
M-16	SVOC	Acenaphthene	83-32-9	T		4				8.00E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00	
M-16	SVOC	Acenaphthylene	208-96-8	T	D	4				7.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00	
M-16	SVOC	Acetophenone	98-86-2	T	D	4				2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
M-16	SVOC	Anthracene	120-12-7	T	D	4				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
M-16	SVOC	Atrazine	1912-24-9	T		4				2.50E-03	5.00E-03	3.0E-03				5.4E+00	
M-16	SVOC	Benzaldehyde	100-52-7	T		4				2.80E-03	1.00E-02						
M-16	SVOC	Benzo(a)anthracene	56-55-3	T	B2	4				7.00E-04	5.00E-03	2.1E-03				9.4E-03	
M-16	SVOC	Benzo(a)pyrene	50-32-8	T	B2	4				7.30E-04	5.00E-03	5.0E-03				2.0E-03	
M-16	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	4				9.40E-04	5.00E-03	2.0E-03				2.0E-03	
M-16	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	4				8.50E-04	5.00E-03	5.0E-03				5.0E-03	
M-16	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	4				8.40E-04	5.00E-03	5.0E-03				5.0E-03	
M-16	SVOC	Biphenyl	92-52-4	T	D	4				2.60E-03	1.00E-02						
M-16	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	4				8.70E-04	5.00E-03						
M-16	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	4				9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00	
M-16	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	4	3	2.03E-03	5.50E-03	2.70E-03	2.70E-03	6.0E-03	9.2E-01			3.2E-01	1.7E-02
M-16	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	4				8.80E-04	5.00E-03						
M-16	SVOC	Butylbenzylphthalate	85-68-7	T	C	4				8.80E-04	5.00E-03	1.2E+00				2.7E+00	
M-16	SVOC	Caprolactam	105-60-2	T		4				2.50E-03	1.00E-02	5.8E+00				3.9E+05	
M-16	SVOC	Carbazole	86-74-8	T	B2	4				8.20E-04	1.00E-02	8.5E-02				7.4E+00	
M-16	SVOC	4-Chloro-3-methylphenol	59-50-7	T		4				9.90E-04	5.00E-03	1.5E-01				7.9E+01	
M-16	SVOC	4-Chloroaniline	106-47-8	T		4				6.10E-04	1.00E-02						
M-16	SVOC	2-Chloronaphthalene	91-58-7	T		4				8.50E-04	5.00E-03	1.8E+00				6.7E+00	
M-16	SVOC	2-Chlorophenol	95-57-8	T		4				1.00E-03	5.00E-03	4.5E-02				9.4E+01	
M-16	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		4				7.90E-04	5.00E-03						
M-16	SVOC	Chrysene	218-01-9	T	B2	4				7.50E-04	5.00E-03	5.0E-03				5.0E-03	
M-16	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	4				7.90E-04	5.00E-03	2.0E-03				2.0E-03	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-16	SVOC	Dibenzofuran	132-64-9	T	D	4				1.10E-03	5.00E-03						
M-16	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	4				9.30E-04	2.00E-02	1.1E-03				1.8E-01	
M-16	SVOC	2,4-Dichlorophenol	120-83-2	T		4				8.50E-04	1.00E-02	7.3E-02				4.8E+01	
M-16	SVOC	Diethylphthalate	84-66-2	T	D	4				6.50E-04	5.00E-03	5.5E+00				1.1E+03	
M-16	SVOC	2,4-Dimethylphenol	105-67-9	T		4				8.50E-04	5.00E-03	3.7E-01				5.2E+02	
M-16	SVOC	Dimethylphthalate	131-11-3	T	D	4				7.60E-04	5.00E-03	7.3E+01				4.2E+03	
M-16	SVOC	Di-n-butylphthalate	84-74-2	T	D	4				6.70E-04	5.00E-03	8.8E-01				1.1E+01	
M-16	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		4				1.30E-03	2.00E-02	2.0E-02				9.5E+00	
M-16	SVOC	2,4-Dinitrophenol	51-28-5	T		4				3.00E-03	2.00E-02						
M-16	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	4				7.90E-04	5.00E-03	7.7E-03				8.6E+00	
M-16	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	4				5.70E-04	5.00E-03						
M-16	SVOC	Di-n-octylphthalate	117-84-0	T		4				1.10E-03	5.00E-03	1.3E-01				4.0E-01	
M-16	SVOC	Fluoranthene	206-44-0	T	D	4				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
M-16	SVOC	Fluorene	86-73-7	T	D	4				1.00E-03	5.00E-03	8.8E-01		2.0E+00		2.0E+00	
M-16	SVOC	Hexachlorobenzene	118-74-1	T	B2	4				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
M-16	SVOC	Hexachlorobutadiene	87-68-3	T	C	4				7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
M-16	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	4				1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
M-16	SVOC	Hexachloroethane	67-72-1	T	C	4				7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
M-16	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	4				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
M-16	SVOC	Isophorone	78-59-1	T	C	4				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
M-16	SVOC	2-Methylnaphthalene	91-57-6	T	ID	4				6.40E-04	5.00E-03	2.6E-01				2.5E+01	
M-16	SVOC	Methylphenol (total)	1319-77-3	T		4				1.30E-03	5.00E-03	3.7E-01				8.1E+02	
M-16	SVOC	Naphthalene	91-20-3	T	C	4				7.50E-04	5.00E-03	5.2E-01		3.1E+01		3.1E+01	
M-16	SVOC	2-Nitroaniline	88-74-4	T		4				7.00E-04	2.00E-02						
M-16	SVOC	3-Nitroaniline	99-09-2	T	C	4				7.10E-04	2.00E-02						
M-16	SVOC	4-Nitroaniline	100-01-6	T	C	4				1.30E-03	2.00E-02						
M-16	SVOC	Nitrobenzene	98-95-3	T	D	4				8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
M-16	SVOC	2-Nitrophenol	88-75-5	T		4				2.10E-03	5.00E-03	2.0E-02				7.9E+01	
M-16	SVOC	4-Nitrophenol	100-02-7	T		4				1.90E-03	2.00E-02						
M-16	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	4				1.40E-03	5.00E-03	2.7E-01				3.5E+01	
M-16	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	4				6.70E-04	5.00E-03	5.0E-03				3.6E-01	
M-16	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	4				7.80E-04	5.00E-03						
M-16	SVOC	Pentachlorophenol	87-86-5	T	B2	4				2.40E-03	5.00E-03	1.0E-03				2.0E-01	
M-16	SVOC	Phenanthrene	85-01-8	T	D	4				8.20E-04	5.00E-03	5.2E-02		1.0E+00		1.0E+00	
M-16	SVOC	Phenol	108-95-2	T	ID	4				2.60E-03	5.00E-03	4.4E+00				2.9E+04	
M-16	SVOC	Pyrene	129-00-0	T	D	4				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
M-16	SVOC	2,4,5-Trichlorophenol	95-95-4	T		4				1.20E-03	5.00E-03	7.3E-01				1.7E+02	
M-16	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	4				1.70E-03	5.00E-03	1.2E-01				1.0E+01	
M-16	P/PCB	PCBs (total)	1336-36-3	D	B2	1				4.00E-04	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
M-16	P/PCB	PCBs (total)	1336-36-3	T	B2	4				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
M-16	INORG	Antimony	7440-36-0	D		3				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
M-16	INORG	Antimony	7440-36-0	T		4				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
M-16	INORG	Arsenic	7440-38-2	D	A	3	1	8.30E-03	8.30E-03	3.90E-03	1.00E-02	5.0E-02	1.7E-01			4.3E+00	1.9E-03
M-16	INORG	Arsenic	7440-38-2	T	A	4	1	8.80E-03	8.80E-03	2.10E-03	1.00E-02	5.0E-02	1.8E-01			4.3E+00	2.0E-03
M-16	INORG	Barium	7440-39-3	D	D	3	3	4.58E-02	2.12E-01			2.0E+00	1.1E-01			1.4E+04	1.5E-05
M-16	INORG	Barium	7440-39-3	T	D	4	4	3.60E-02	2.15E-01			2.0E+00	1.1E-01			1.4E+04	1.5E-05
M-16	INORG	Beryllium	7440-41-7	D	B1	3				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
M-16	INORG	Beryllium	7440-41-7	T	B1	4				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
M-16	INORG	Cadmium	7440-43-9	D	B1	3				2.80E-04	5.00E-03	5.0E-03				1.9E+02	
M-16	INORG	Cadmium	7440-43-9	T	B1	4				2.80E-04	5.00E-03	5.0E-03				1.9E+02	
M-16	INORG	Chromium (total)	7440-47-3	D		3				1.40E-03	1.00E-02	1.0E-01				4.6E+02	
M-16	INORG	Chromium (total)	7440-47-3	T		4	2	1.40E-03	1.60E-03	1.40E-03	1.00E-02	1.0E-01	1.6E-02			4.6E+02	3.5E-06
M-16	INORG	Cobalt	7440-48-4	D	B1	3	1	2.60E-03	2.60E-03	1.30E-03	2.00E-02	4.0E-02	6.5E-02			2.4E+03	1.1E-06
M-16	INORG	Cobalt	7440-48-4	T	B1	4	2	9.75E-04	2.65E-03	7.40E-04	2.00E-02	4.0E-02	6.6E-02			2.4E+03	1.1E-06
M-16	INORG	Copper	7440-50-8	D	D	3				4.20E-03	5.00E-03	1.4E+00				7.4E+03	
M-16	INORG	Copper	7440-50-8	T	D	4				1.70E-03	5.00E-03	1.4E+00				7.4E+03	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-16	INORG	Lead	7439-92-1	D	B2	3				2.50E-03	3.00E-03	4.0E-03					
M-16	INORG	Lead	7439-92-1	T	B2	4				1.60E-03	3.00E-03	4.0E-03					
M-16	INORG	Manganese	7439-96-5	D	D	3	3	9.66E-02	1.05E+00			8.6E-01	**1.2E+00**			9.1E+03	1.2E-04
M-16	INORG	Manganese	7439-96-5	T	D	4	3	9.65E-02	1.09E+00	6.80E-04	6.80E-04	8.6E-01	**1.3E+00**			9.1E+03	1.2E-04
M-16	INORG	Mercury	7439-97-6	D	D	3				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
M-16	INORG	Mercury	7439-97-6	T	D	4				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
M-16	INORG	Nickel	7440-02-0	D	A	3	1	3.10E-03	3.10E-03	2.20E-03	2.00E-02	1.0E-01	3.1E-02			7.4E+04	4.2E-08
M-16	INORG	Nickel	7440-02-0	T	A	4	1	4.70E-03	4.70E-03	2.20E-03	2.00E-02	1.0E-01	4.7E-02			7.4E+04	6.4E-08
M-16	INORG	Selenium	7782-49-2	D	D	3				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
M-16	INORG	Selenium	7782-49-2	T	D	4				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
M-16	INORG	Silver	7440-22-4	D	D	3				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
M-16	INORG	Silver	7440-22-4	T	D	4				9.80E-04	5.00E-03	3.4E-02				1.5E+03	
M-16	INORG	Thallium	7440-28-0	D		3				1.80E-05	1.00E-02	2.0E-03				1.3E+01	
M-16	INORG	Thallium	7440-28-0	T		4				1.80E-05	1.00E-02	2.0E-03				1.3E+01	
M-16	INORG	Vanadium	7440-62-2	D		3				8.20E-04	1.00E-02	4.5E-03				9.7E+02	
M-16	INORG	Vanadium	7440-62-2	T		4				6.70E-04	1.00E-02	4.5E-03				9.7E+02	
M-16	INORG	Zinc	7440-66-6	D	D	3	2	1.04E-02	1.56E-02	2.00E-02	2.00E-02	2.4E+00	6.5E-03			1.1E+05	1.4E-07
M-16	INORG	Zinc	7440-66-6	T	D	4	1	1.35E-02	1.35E-02	1.20E-02	2.00E-02	2.4E+00	5.6E-03			1.1E+05	1.2E-07
M-25	VOC	Acetone	67-64-1	T	ID	1				6.60E-04	6.60E-04	7.3E-01		1.0E+06		3.1E+04	
M-25	VOC	Benzene	71-43-2	T	A	1				2.00E-04	2.00E-04	5.0E-03		3.5E+01		1.1E+01	
M-25	VOC	Bromodichloromethane	75-27-4	T	B2	1				2.00E-04	2.00E-04	1.0E-01		3.7E+01		1.4E+01	
M-25	VOC	Bromoform	75-25-2	T	B2	1				3.20E-04	3.20E-04	1.0E-01		3.1E+03		1.4E+02	
M-25	VOC	Bromomethane	74-83-9	T	D	1				1.60E-04	1.60E-04	1.0E-02		9.0E+00		7.0E+01	
M-25	VOC	2-Butanone	78-93-3	T	ID	1				3.60E-04	3.60E-04	1.3E+01		2.4E+05		2.4E+05	
M-25	VOC	Carbon Disulfide	75-15-0	T		1	1	2.03E-04	2.03E-04			8.0E-01	2.5E-04	5.5E+02	3.7E-07	1.2E+03	1.7E-07
M-25	VOC	Carbon Tetrachloride	56-23-5	T	B2	1				1.80E-04	1.80E-04	5.0E-03		2.4E+00		4.6E+00	
M-25	VOC	Chlorobenzene	108-90-7	T	D	1				1.60E-04	1.60E-04	1.0E-01		4.7E+02		8.6E+01	
M-25	VOC	Chloroethane	75-00-3	T		1				2.20E-04	2.20E-04	4.3E-01		5.7E+03		4.4E+02	
M-25	VOC	Chloroform	67-66-3	T	B2	1				2.10E-04	2.10E-04	1.0E-01		1.8E+02		1.5E+02	
M-25	VOC	Chloromethane	74-87-3	T	D	1				2.60E-04	2.60E-04	2.6E-01		4.5E+01		4.9E+02	
M-25	VOC	Cumene	98-82-8	T	D	1				1.50E-04	1.50E-04	8.0E-01		5.6E+01		5.6E+01	
M-25	VOC	Cyclohexane	110-82-7	T	ID	1				3.40E-04	3.40E-04						
M-25	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	1				5.30E-04	5.30E-04	2.0E-04		1.2E+00		3.9E-01	
M-25	VOC	Dibromochloromethane	124-48-1	T	C	1				2.50E-04	2.50E-04	1.0E-01		1.1E+02		1.8E+01	
M-25	VOC	1,2-Dibromoethane	106-93-4	T	B2	1				2.20E-04	2.20E-04	1.0E-03		1.5E+01		2.5E-02	
M-25	VOC	1,2-Dichlorobenzene	95-50-1	T	D	1				1.50E-04	1.50E-04	6.0E-01		1.6E+02		1.6E+02	
M-25	VOC	1,3-Dichlorobenzene	541-73-1	T	D	1				2.00E-04	2.00E-04	6.6E-03				2.0E+00	
M-25	VOC	1,4-Dichlorobenzene	106-46-7	T	C	1				1.60E-04	1.60E-04	7.5E-02		7.4E+01		6.4E+00	
M-25	VOC	Dichlorodifluoromethane	75-71-8	T		1				2.30E-04	2.30E-04	1.7E+00		3.0E+02		3.0E+02	
M-25	VOC	1,1-Dichloroethane	75-34-3	T	C	1				2.60E-04	2.60E-04	8.8E-01		2.3E+03		2.4E+03	
M-25	VOC	1,2-Dichloroethane	107-06-2	T	B2	1				2.20E-04	2.20E-04	5.0E-03		5.9E+01		1.9E+01	
M-25	VOC	1,1-Dichloroethene	75-35-4	T	C	1				2.20E-04	2.20E-04	7.0E-03		1.3E+00		1.1E+01	
M-25	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	1				2.50E-04	2.50E-04	7.0E-02		2.1E+02		2.0E+02	
M-25	VOC	trans-1,2-Dichloroethene	156-60-5	T		1				2.40E-04	2.40E-04	1.0E-01		2.0E+02		2.2E+02	
M-25	VOC	1,2-Dichloropropane	78-87-5	T	B2	1				1.80E-04	1.80E-04	5.0E-03		3.6E+01		1.6E+01	
M-25	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	1				1.70E-04	1.70E-04	8.5E-03		2.6E+01		5.5E+00	
M-25	VOC	Methyl Acetate	79-20-9	T		1				6.80E-04	6.80E-04						
M-25	VOC	Methyl tert-butyl ether	1634-04-4	T		1				2.10E-04	2.10E-04	2.4E-01		4.7E+04		6.1E+02	
M-25	VOC	Methylcyclohexane	108-87-2	T		1				2.40E-04	2.40E-04						
M-25	VOC	Methylene Chloride	75-09-2	T	B2	1				2.80E-04	2.80E-04	5.0E-03		1.4E+03		2.2E+02	
M-25	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	1				2.30E-04	2.30E-04	8.5E-03		7.7E+01		4.7E+00	
M-25	VOC	Tetrachloroethene	127-18-4	T	C-B2	1				1.20E-04	1.20E-04	5.0E-03		1.7E+02		1.2E+01	
M-25	VOC	Toluene	108-88-3	T	D	1				1.70E-04	1.70E-04	1.0E+00		5.3E+02		5.3E+02	
M-25	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	1				1.50E-04	1.50E-04	7.0E-02		3.0E+02		1.9E+01	
M-25	VOC	1,1,1-Trichloroethane	71-55-6	T	D	1				1.80E-04	1.80E-04	2.0E-01		1.3E+03		1.3E+03	
M-25	VOC	1,1,2-Trichloroethane	79-00-5	T	C	1				2.10E-04	2.10E-04	5.0E-03		1.1E+02		2.1E+01	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-25	VOC	Trichloroethene	79-01-6	T	C-B2	1				2.20E-04	2.20E-04	5.0E-03		9.7E+01		2.2E+01	
M-25	VOC	Trichlorofluoromethane	75-69-4	T		1				2.50E-04	2.50E-04	2.6E+00		1.1E+03		1.1E+03	
M-25	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		1				2.30E-04	2.30E-04	1.7E+02		1.7E+02		1.7E+02	
M-25	SVOC	Acenaphthene	83-32-9	T		1				6.90E-04	6.90E-04	1.3E+00		4.2E+00		4.2E+00	
M-25	SVOC	Acenaphthylene	208-96-8	T	D	1				4.10E-04	4.10E-04	5.2E-02		3.9E+00		3.9E+00	
M-25	SVOC	Acetophenone	98-86-2	T	D	1				6.50E-04	6.50E-04	1.5E+00		6.1E+03		6.1E+03	
M-25	SVOC	Anthracene	120-12-7	T	D	1				5.90E-04	5.90E-04	4.3E-02		4.3E-02		4.3E-02	
M-25	SVOC	Atrazine	1912-24-9	T		1				3.50E-04	3.50E-04	3.0E-03				5.4E+00	
M-25	SVOC	Benzaldehyde	100-52-7	T		1				5.90E-04	5.90E-04						
M-25	SVOC	Benzo(a)anthracene	56-55-3	T	B2	1				6.80E-04	6.80E-04	2.1E-03				9.4E-03	
M-25	SVOC	Benzo(a)pyrene	50-32-8	T	B2	1				5.30E-04	5.30E-04	5.0E-03				2.0E-03	
M-25	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	1				7.10E-04	7.10E-04	2.0E-03				2.0E-03	
M-25	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	1				7.00E-04	7.00E-04	5.0E-03				5.0E-03	
M-25	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	1				6.40E-04	6.40E-04	5.0E-03				5.0E-03	
M-25	SVOC	Biphenyl	92-52-4	T	D	1				6.50E-04	6.50E-04						
M-25	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	1				1.00E-03	1.00E-03						
M-25	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	1				1.70E-03	1.70E-03	2.0E-03		2.1E+02		5.7E+00	
M-25	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	1				2.00E-04	2.00E-04	6.0E-03				3.2E-01	
M-25	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	1				7.80E-04	7.80E-04						
M-25	SVOC	Butylbenzylphthalate	85-68-7	T	C	1				2.30E-04	2.30E-04	1.2E+00				2.7E+00	
M-25	SVOC	Caprolactam	105-60-2	T		1	1	8.13E-04	8.13E-04			5.8E+00	1.4E-04			3.9E+05	2.1E-09
M-25	SVOC	Carbazole	86-74-8	T	B2	1				6.10E-04	6.10E-04	8.5E-02				7.4E+00	
M-25	SVOC	4-Chloro-3-methylphenol	59-50-7	T		1				5.50E-04	5.50E-04	1.5E-01				7.9E+01	
M-25	SVOC	4-Chloroaniline	106-47-8	T		1				9.00E-04	9.00E-04						
M-25	SVOC	2-Chloronaphthalene	91-58-7	T		1				7.30E-04	7.30E-04	1.8E+00				6.7E+00	
M-25	SVOC	2-Chlorophenol	95-57-8	T		1				1.30E-03	1.30E-03	4.5E-02				9.4E+01	
M-25	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		1				6.60E-04	6.60E-04						
M-25	SVOC	Chrysene	218-01-9	T	B2	1				6.70E-04	6.70E-04	5.0E-03				5.0E-03	
M-25	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	1				6.80E-04	6.80E-04	2.0E-03				2.0E-03	
M-25	SVOC	Dibenzofuran	132-64-9	T	D	1				6.60E-04	6.60E-04						
M-25	SVOC	2,4-Dichlorophenol	120-83-2	T		1				7.00E-04	7.00E-04	7.3E-02				4.8E+01	
M-25	SVOC	Diethylphthalate	84-66-2	T	D	1				2.50E-04	2.50E-04	5.5E+00				1.1E+03	
M-25	SVOC	2,4-Dimethylphenol	105-67-9	T		1				1.00E-03	1.00E-03	3.7E-01				5.2E+02	
M-25	SVOC	Dimethylphthalate	131-11-3	T	D	1				2.00E-04	2.00E-04	7.3E+01				4.2E+03	
M-25	SVOC	Di-n-butylphthalate	84-74-2	T	D	1				3.70E-04	3.70E-04	8.8E-01				1.1E+01	
M-25	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		1				2.10E-03	2.10E-03	2.0E-02				9.5E+00	
M-25	SVOC	2,4-Dinitrophenol	51-28-5	T		1				3.30E-03	3.30E-03						
M-25	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	1				4.60E-04	4.60E-04	7.7E-03				8.6E+00	
M-25	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	1				7.10E-04	7.10E-04						
M-25	SVOC	Di-n-octylphthalate	117-84-0	T		1				6.90E-04	6.90E-04	1.3E-01				4.0E-01	
M-25	SVOC	Fluoranthene	206-44-0	T	D	1				7.10E-04	7.10E-04	2.1E-01		2.1E-01		2.1E-01	
M-25	SVOC	Fluorene	86-73-7	T	D	1				7.50E-04	7.50E-04	8.8E-01		2.0E+00		2.0E+00	
M-25	SVOC	Hexachlorobenzene	118-74-1	T	B2	1				7.70E-04	7.70E-04	1.0E-03		3.0E+00		4.6E-03	
M-25	SVOC	Hexachlorobutadiene	87-68-3	T	C	1				1.50E-03	1.50E-03	1.5E-02		3.2E+00		4.0E-01	
M-25	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	1				1.10E-03	1.10E-03	5.0E-02		4.2E-01		1.6E+00	
M-25	SVOC	Hexachloroethane	67-72-1	T	C	1				1.60E-03	1.60E-03	7.3E-03		5.0E+01		1.9E+00	
M-25	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	1				6.90E-04	6.90E-04	2.0E-03				2.0E-03	
M-25	SVOC	Isophorone	78-59-1	T	C	1				8.60E-04	8.60E-04	7.7E-01				9.9E+02	
M-25	SVOC	2-Methylnaphthalene	91-57-6	T	ID	1				9.30E-04	9.30E-04	2.6E-01				2.5E+01	
M-25	SVOC	Methylphenol (total)	1319-77-3	T		1				9.00E-04	9.00E-04	3.7E-01				8.1E+02	
M-25	SVOC	Naphthalene	91-20-3	T	C	1				1.30E-03	1.30E-03	5.2E-01		3.1E+01		3.1E+01	
M-25	SVOC	2-Nitroaniline	88-74-4	T		1				4.90E-04	4.90E-04						
M-25	SVOC	3-Nitroaniline	99-09-2	T	C	1				4.80E-04	4.80E-04						
M-25	SVOC	4-Nitroaniline	100-01-6	T	C	1				5.90E-04	5.90E-04						
M-25	SVOC	Nitrobenzene	98-95-3	T	D	1				1.30E-03	1.30E-03	3.4E-03		5.5E+02		1.1E+01	
M-25	SVOC	2-Nitrophenol	88-75-5	T		1				9.50E-04	9.50E-04	2.0E-02				7.9E+01	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
M-25	SVOC	4-Nitrophenol	100-02-7	T		1				3.50E-03	3.50E-03						
M-25	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	1				6.40E-04	6.40E-04	2.7E-01				3.5E+01	
M-25	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	1				1.10E-03	1.10E-03	5.0E-03				3.6E-01	
M-25	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	1				1.80E-03	1.80E-03						
M-25	SVOC	Pentachlorophenol	87-86-5	T	B2	1				2.60E-03	2.60E-03	1.0E-03				2.0E-01	
M-25	SVOC	Phenanthrene	85-01-8	T	D	1				6.80E-04	6.80E-04	5.2E-02		1.0E+00		1.0E+00	
M-25	SVOC	Phenol	108-95-2	T	ID	1				1.30E-03	1.30E-03	4.4E+00				2.9E+04	
M-25	SVOC	Pyrene	129-00-0	T	D	1				6.30E-04	6.30E-04	1.4E-01		1.4E-01		1.4E-01	
M-25	SVOC	2,4,5-Trichlorophenol	95-95-4	T		1				8.60E-04	8.60E-04	7.3E-01				1.7E+02	
M-25	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	1				7.10E-04	7.10E-04	1.2E-01				1.0E+01	
M-25	P/PCB	PCBs (total)	1336-36-3	T	B2	1				8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
M-25	INORG	Antimony	7440-36-0	T		1				3.10E-03	3.10E-03	6.0E-03				6.8E+01	
M-25	INORG	Arsenic	7440-38-2	T	A	1	1	4.80E-03	4.80E-03			5.0E-02	9.6E-02			4.3E+00	1.1E-03
M-25	INORG	Barium	7440-39-3	T	D	1	1	8.95E-02	8.95E-02			2.0E+00	4.5E-02			1.4E+04	6.4E-06
M-25	INORG	Beryllium	7440-41-7	T	B1	1				4.70E-04	4.70E-04	4.0E-03				2.9E+02	
M-25	INORG	Cadmium	7440-43-9	T	B1	1				3.60E-04	3.60E-04	5.0E-03				1.9E+02	
M-25	INORG	Chromium (total)	7440-47-3	T		1	1	1.05E-03	1.05E-03			1.0E-01	1.1E-02			4.6E+02	2.3E-06
M-25	INORG	Cobalt	7440-48-4	T	B1	1	1	3.20E-03	3.20E-03			4.0E-02	8.0E-02			2.4E+03	1.3E-06
M-25	INORG	Copper	7440-50-8	T	D	1				1.80E-03	1.80E-03	1.4E+00				7.4E+03	
M-25	INORG	Lead	7439-92-1	T	B2	1				2.30E-03	2.30E-03	4.0E-03					
M-25	INORG	Manganese	7439-96-5	T	D	1	1	5.54E-01	5.54E-01			8.6E-01	6.4E-01			9.1E+03	6.1E-05
M-25	INORG	Mercury	7439-97-6	T	D	1				6.70E-05	6.70E-05	2.0E-03		5.6E-02		5.6E-02	
M-25	INORG	Nickel	7440-02-0	T	A	1	1	7.50E-03	7.50E-03			1.0E-01	7.5E-02			7.4E+04	1.0E-07
M-25	INORG	Selenium	7782-49-2	T	D	1				3.90E-03	3.90E-03	5.0E-02				9.7E+02	
M-25	INORG	Silver	7440-22-4	T	D	1				1.10E-03	1.10E-03	3.4E-02				1.5E+03	
M-25	INORG	Thallium	7440-28-0	T		1	1	1.01E-04	1.01E-04			2.0E-03	5.1E-02			1.3E+01	7.8E-06
M-25	INORG	Vanadium	7440-62-2	T		1				9.60E-04	9.60E-04	4.5E-03				9.7E+02	
M-25	INORG	Zinc	7440-66-6	T	D	1				1.30E-02	1.30E-02	2.4E+00				1.1E+05	
P-06	VOC	Acetone	67-64-1	T	ID	14	2	1.20E-02	2.10E-02	5.10E-04	8.50E-02	7.3E-01	2.9E-02	1.0E+06	2.1E-08	3.1E+04	6.8E-07
P-06	VOC	Benzene	71-43-2	T	A	19	14	3.10E-04	1.20E+00	1.60E-04	3.70E-04	5.0E-03	**2.4E+02**	3.5E+01	3.4E-02	1.1E+01	1.1E-01
P-06	VOC	Bromodichloromethane	75-27-4	T	B2	14	1	3.40E-04	3.40E-04	1.70E-04	2.80E-02	1.0E-01	3.4E-03	3.7E+01	9.2E-06	1.4E+01	2.4E-05
P-06	VOC	Bromoform	75-25-2	T	B2	14				1.80E-04	3.00E-02	1.0E-01		3.1E+03		1.4E+02	
P-06	VOC	Bromomethane	74-83-9	T	D	10				2.00E-04	3.30E-02	1.0E-02		9.0E+00		7.0E+01	
P-06	VOC	2-Butanone	78-93-3	T	ID	14	2	5.90E-04	2.00E-03	4.10E-04	6.80E-02	1.3E+01	1.5E-04	2.4E+05	8.3E-09	2.4E+05	8.3E-09
P-06	VOC	Carbon Disulfide	75-15-0	T		14				2.00E-04	3.30E-02	8.0E-01		5.5E+02		1.2E+03	
P-06	VOC	Carbon Tetrachloride	56-23-5	T	B2	14				1.20E-04	2.30E-02	5.0E-03		2.4E+00		4.6E+00	
P-06	VOC	Chlorobenzene	108-90-7	T	D	14				1.40E-04	2.40E-02	1.0E-01		4.7E+02		8.6E+01	
P-06	VOC	Chloroethane	75-00-3	T		14				2.60E-04	4.30E-02	4.3E-01		5.7E+03		4.4E+02	
P-06	VOC	Chloroform	67-66-3	T	B2	14	4	6.50E-04	1.50E-03	1.40E-04	2.30E-02	1.0E-01	1.5E-02	1.8E+02	8.3E-06	1.5E+02	1.0E-05
P-06	VOC	Chloromethane	74-87-3	T	D	14	1	1.80E-04	1.80E-04	1.30E-04	3.10E-02	2.6E-01	6.9E-04	4.5E+01	4.0E-06	4.9E+02	3.7E-07
P-06	VOC	Cumene	98-82-8	T	D	14	2	3.30E-02	3.90E-02	1.20E-04	2.00E-02	8.0E-01	4.9E-02	5.6E+01	7.0E-04	5.6E+01	7.0E-04
P-06	VOC	Cyclohexane	110-82-7	T	ID	14	5	4.20E-04	1.10E-01	1.30E-04	3.30E-04						
P-06	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	14				6.20E-04	1.00E-01	2.0E-04		1.2E+00		3.9E-01	
P-06	VOC	Dibromochloromethane	124-48-1	T	C	14				2.60E-04	4.30E-02	1.0E-01		1.1E+02		1.8E+01	
P-06	VOC	1,2-Dibromoethane	106-93-4	T	B2	14				2.20E-04	3.70E-02	1.0E-03		1.5E+01		2.5E-02	
P-06	VOC	1,2-Dichlorobenzene	95-50-1	T	D	14				1.10E-04	2.40E-02	6.0E-01		1.6E+02		1.6E+02	
P-06	VOC	1,3-Dichlorobenzene	541-73-1	T	D	14				1.50E-04	2.50E-02	6.6E-03				2.0E+00	
P-06	VOC	1,4-Dichlorobenzene	106-46-7	T	C	14				1.70E-04	2.80E-02	7.5E-02		7.4E+01		6.4E+00	
P-06	VOC	Dichlorodifluoromethane	75-71-8	T		14				2.60E-04	4.30E-02	1.7E+00		3.0E+02		3.0E+02	
P-06	VOC	1,1-Dichloroethane	75-34-3	T	C	14	1	5.10E-04	5.10E-04	1.60E-04	2.70E-02	8.8E-01	5.8E-04	2.3E+03	2.2E-07	2.4E+03	2.1E-07
P-06	VOC	1,2-Dichloroethane	107-06-2	T	B2	14				2.10E-04	3.50E-02	5.0E-03		5.9E+01		1.9E+01	
P-06	VOC	1,1-Dichloroethene	75-35-4	T	C	14				2.40E-04	4.00E-02	7.0E-03		1.3E+00		1.1E+01	
P-06	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	14				2.20E-04	3.70E-02	7.0E-02		2.1E+02		2.0E+02	
P-06	VOC	trans-1,2-Dichloroethene	156-60-5	T		14				1.50E-04	2.50E-02	1.0E-01		2.0E+02		2.2E+02	
P-06	VOC	1,2-Dichloropropane	78-87-5	T	B2	14				1.70E-04	2.80E-02	5.0E-03		3.6E+01		1.6E+01	
P-06	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	14				2.70E-04	4.50E-02	8.5E-03		2.6E+01		5.5E+00	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
P-06	VOC	Ethyl Benzene	100-41-4	T	D	19	10	1.50E-04	1.60E+00	1.20E-04	4.10E-04	7.0E-01	**2.3E+00**	1.7E+02	9.4E-03	1.7E+02	9.4E-03
P-06	VOC	2-Hexanone	591-78-6	T		14				4.60E-04	7.70E-02	1.0E+00		8.7E+03		5.2E+03	
P-06	VOC	Methyl Acetate	79-20-9	T		14				4.10E-04	6.80E-02						
P-06	VOC	Methyl tert-butyl ether	1634-04-4	T		14	2	5.40E-04	2.10E-03	1.30E-04	2.20E-02	2.4E-01	8.8E-03	4.7E+04	4.5E-08	6.1E+02	3.4E-06
P-06	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	9	1	7.90E-04	7.90E-04	2.30E-04	3.80E-02	1.8E+00	4.4E-04	2.0E+04	4.0E-08	1.3E+04	6.1E-08
P-06	VOC	Methylcyclohexane	108-87-2	T		14	2	4.90E-02	7.80E-02	1.50E-04	2.50E-02						
P-06	VOC	Methylene Chloride	75-09-2	T	B2	13				2.90E-04	5.70E-02	5.0E-03		1.4E+03		2.2E+02	
P-06	VOC	Styrene	100-42-5	T		14				1.50E-04	2.50E-02	1.0E-01		3.1E+02		9.7E+00	
P-06	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	14				2.50E-04	4.20E-02	8.5E-03		7.7E+01		4.7E+00	
P-06	VOC	Tetrachloroethene	127-18-4	T	C-B2	14				2.30E-04	3.80E-02	5.0E-03		1.7E+02		1.2E+01	
P-06	VOC	Toluene	108-88-3	T	D	19	10	1.90E-04	5.40E+00	1.80E-04	3.90E-04	1.0E+00	**5.4E+00**	5.3E+02	1.0E-02	5.3E+02	1.0E-02
P-06	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	14				1.70E-04	2.80E-02	7.0E-02		3.0E+02		1.9E+01	
P-06	VOC	1,1,1-Trichloroethane	71-55-6	T	D	14				1.50E-04	2.50E-02	2.0E-01		1.3E+03		1.3E+03	
P-06	VOC	1,1,2-Trichloroethane	79-00-5	T	C	14				3.00E-04	5.00E-02	5.0E-03		1.1E+02		2.1E+01	
P-06	VOC	Trichloroethene	79-01-6	T	C-B2	14				1.40E-04	2.60E-02	5.0E-03		9.7E+01		2.2E+01	
P-06	VOC	Trichlorofluoromethane	75-69-4	T		14				2.80E-04	4.70E-02	2.6E+00		1.1E+03		1.1E+03	
P-06	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		14				3.20E-04	5.30E-02	1.7E+02		1.7E+02		1.7E+02	
P-06	VOC	Vinyl Chloride	75-01-4	T	A	14				1.50E-04	2.50E-02	2.0E-03		1.3E+01		1.0E+00	
P-06	VOC	Xylenes (total)	1330-20-7	T	ID	19	6	3.70E-04	4.20E+00	3.30E-04	1.30E-03	1.0E+01	4.2E-01	1.9E+02	2.2E-02	1.9E+02	2.2E-02
P-06	SVOC	Acenaphthene	83-32-9	T		10				8.00E-04	4.00E-03	1.3E+00		4.2E+00		4.2E+00	
P-06	SVOC	Acenaphthylene	208-96-8	T	D	10				7.10E-04	3.60E-03	5.2E-02		3.9E+00		3.9E+00	
P-06	SVOC	Acetophenone	98-86-2	T	D	10				2.60E-03	1.30E-02	1.5E+00		6.1E+03		6.1E+03	
P-06	SVOC	Anthracene	120-12-7	T	D	10				6.80E-04	3.40E-03	4.3E-02		4.3E-02		4.3E-02	
P-06	SVOC	Atrazine	1912-24-9	T		10				2.50E-03	1.20E-02	3.0E-03				5.4E+00	
P-06	SVOC	Benzaldehyde	100-52-7	T		10				2.80E-03	1.40E-02						
P-06	SVOC	Benzo(a)anthracene	56-55-3	T	B2	10				7.00E-04	3.50E-03	2.1E-03				9.4E-03	
P-06	SVOC	Benzo(a)pyrene	50-32-8	T	B2	10				7.30E-04	3.60E-03	5.0E-03				2.0E-03	
P-06	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	10				9.40E-04	4.70E-03	2.0E-03				2.0E-03	
P-06	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	10				8.50E-04	4.20E-03	5.0E-03				5.0E-03	
P-06	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	10				8.40E-04	4.20E-03	5.0E-03				5.0E-03	
P-06	SVOC	Biphenyl	92-52-4	T	D	10				2.60E-03	1.30E-02						
P-06	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	10				8.70E-04	4.40E-03						
P-06	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	10				9.70E-04	4.80E-03	2.0E-03		2.1E+02		5.7E+00	
P-06	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	10				2.70E-03	1.40E-02	6.0E-03				3.2E-01	
P-06	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	10				8.80E-04	4.40E-03						
P-06	SVOC	Butylbenzylphthalate	85-68-7	T	C	10				8.80E-04	4.40E-03	1.2E+00				2.7E+00	
P-06	SVOC	Caprolactam	105-60-2	T		10	1	1.20E-02	1.20E-02	2.50E-03	1.20E-02	5.8E+00	2.1E-03			3.9E+05	3.1E-08
P-06	SVOC	Carbazole	86-74-8	T	B2	10				8.20E-04	4.10E-03	8.5E-02				7.4E+00	
P-06	SVOC	4-Chloro-3-methylphenol	59-50-7	T		10				9.90E-04	5.00E-03	1.5E-01				7.9E+01	
P-06	SVOC	4-Chloroaniline	106-47-8	T		10				6.10E-04	3.00E-03						
P-06	SVOC	2-Chloronaphthalene	91-58-7	T		10				8.50E-04	4.20E-03	1.8E+00				6.7E+00	
P-06	SVOC	2-Chlorophenol	95-57-8	T		10				1.00E-03	5.00E-03	4.5E-02				9.4E+01	
P-06	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		10				7.90E-04	4.00E-03						
P-06	SVOC	Chrysene	218-01-9	T	B2	10				7.50E-04	3.80E-03	5.0E-03				5.0E-03	
P-06	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	10				7.90E-04	4.00E-03	2.0E-03				2.0E-03	
P-06	SVOC	Dibenzofuran	132-64-9	T	D	10				1.10E-03	5.50E-03						
P-06	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	10				9.30E-04	4.60E-03	1.1E-03				1.8E-01	
P-06	SVOC	2,4-Dichlorophenol	120-83-2	T		10				8.50E-04	4.20E-03	7.3E-02				4.8E+01	
P-06	SVOC	Diethylphthalate	84-66-2	T	D	10				6.50E-04	3.20E-03	5.5E+00				1.1E+03	
P-06	SVOC	2,4-Dimethylphenol	105-67-9	T		10	2	3.50E-03	2.80E-02	8.50E-04	8.50E-04	3.7E-01	7.6E-02			5.2E+02	5.4E-05
P-06	SVOC	Dimethylphthalate	131-11-3	T	D	10				7.60E-04	3.80E-03	7.3E+01				4.2E+03	
P-06	SVOC	Di-n-butylphthalate	84-74-2	T	D	10				6.70E-04	3.40E-03	8.8E-01				1.1E+01	
P-06	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		10				1.30E-03	6.50E-03	2.0E-02				9.5E+00	
P-06	SVOC	2,4-Dinitrophenol	51-28-5	T		10				3.00E-03	1.50E-02						
P-06	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	10				7.90E-04	4.00E-03	7.7E-03				8.6E+00	
P-06	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	10				5.70E-04	2.80E-03						

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
P-06	SVOC	Di-n-octylphthalate	117-84-0	T		10				1.10E-03	5.50E-03	1.3E-01				4.0E-01	
P-06	SVOC	Fluoranthene	206-44-0	T	D	10				8.10E-04	4.00E-03	2.1E-01		2.1E-01		2.1E-01	
P-06	SVOC	Fluorene	86-73-7	T	D	10				1.00E-03	5.00E-03	8.8E-01		2.0E+00		2.0E+00	
P-06	SVOC	Hexachlorobenzene	118-74-1	T	B2	10				7.40E-04	3.70E-03	1.0E-03		3.0E+00		4.6E-03	
P-06	SVOC	Hexachlorobutadiene	87-68-3	T	C	10				7.30E-04	3.60E-03	1.5E-02		3.2E+00		4.0E-01	
P-06	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	9				1.10E-03	5.50E-03	5.0E-02		4.2E-01		1.6E+00	
P-06	SVOC	Hexachloroethane	67-72-1	T	C	10				7.40E-04	3.70E-03	7.3E-03		5.0E+01		1.9E+00	
P-06	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	10				6.30E-04	3.20E-03	2.0E-03				2.0E-03	
P-06	SVOC	Isophorone	78-59-1	T	C	10				6.30E-04	3.20E-03	7.7E-01				9.9E+02	
P-06	SVOC	2-Methylnaphthalene	91-57-6	T	ID	10	2	9.90E-03	1.60E-02	6.40E-04	6.40E-04	2.6E-01	6.2E-02			2.5E+01	6.4E-04
P-06	SVOC	Methylphenol (total)	1319-77-3	T		10	1	2.95E-01	2.95E-01	1.30E-03	3.20E-03	3.7E-01	8.0E-01			8.1E+02	3.6E-04
P-06	SVOC	Naphthalene	91-20-3	T	C	10	2	8.60E-02	9.30E-02	7.50E-04	7.50E-04	5.2E-01	1.8E-01	3.1E+01	3.0E-03	3.1E+01	3.0E-03
P-06	SVOC	2-Nitroaniline	88-74-4	T		10				7.00E-04	3.50E-03						
P-06	SVOC	3-Nitroaniline	99-09-2	T	C	10				7.10E-04	3.60E-03						
P-06	SVOC	4-Nitroaniline	100-01-6	T	C	10				1.30E-03	6.50E-03						
P-06	SVOC	Nitrobenzene	98-95-3	T	D	10				8.10E-04	4.00E-03	3.4E-03		5.5E+02		1.1E+01	
P-06	SVOC	2-Nitrophenol	88-75-5	T		10				2.10E-03	1.00E-02	2.0E-02				7.9E+01	
P-06	SVOC	4-Nitrophenol	100-02-7	T		10				1.90E-03	9.50E-03						
P-06	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	10				1.40E-03	7.00E-03	2.7E-01				3.5E+01	
P-06	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	10				6.70E-04	3.40E-03	5.0E-03				3.6E-01	
P-06	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	10				7.80E-04	3.90E-03						
P-06	SVOC	Pentachlorophenol	87-86-5	T	B2	10				2.40E-03	1.20E-02	1.0E-03				2.0E-01	
P-06	SVOC	Phenanthrene	85-01-8	T	D	10				8.20E-04	4.10E-03	5.2E-02		1.0E+00		1.0E+00	
P-06	SVOC	Phenol	108-95-2	T	ID	10	1	3.60E-02	3.60E-02	2.60E-03	6.50E-03	4.4E+00	8.2E-03			2.9E+04	1.2E-06
P-06	SVOC	Pyrene	129-00-0	T	D	10				1.10E-03	5.50E-03	1.4E-01		1.4E-01		1.4E-01	
P-06	SVOC	2,4,5-Trichlorophenol	95-95-4	T		10				1.20E-03	6.00E-03	7.3E-01				1.7E+02	
P-06	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	10				1.70E-03	8.50E-03	1.2E-01				1.0E+01	
P-06	INORG	Antimony	7440-36-0	D		1				2.20E-03	2.20E-03	6.0E-03				6.8E+01	
P-06	INORG	Antimony	7440-36-0	T		1				2.20E-03	2.20E-03	6.0E-03				6.8E+01	
P-06	INORG	Arsenic	7440-38-2	D	A	1				3.90E-03	3.90E-03	5.0E-02				4.3E+00	
P-06	INORG	Arsenic	7440-38-2	T	A	1				3.90E-03	3.90E-03	5.0E-02				4.3E+00	
P-06	INORG	Barium	7440-39-3	D	D	1	1	9.78E-01	9.78E-01			2.0E+00	4.9E-01			1.4E+04	7.0E-05
P-06	INORG	Barium	7440-39-3	T	D	1	1	9.94E-01	9.94E-01			2.0E+00	5.0E-01			1.4E+04	7.1E-05
P-06	INORG	Beryllium	7440-41-7	D	B1	1				5.40E-04	5.40E-04	4.0E-03				2.9E+02	
P-06	INORG	Beryllium	7440-41-7	T	B1	1				5.40E-04	5.40E-04	4.0E-03				2.9E+02	
P-06	INORG	Cadmium	7440-43-9	D	B1	1	1	3.80E-04	3.80E-04			5.0E-03	7.6E-02			1.9E+02	2.0E-06
P-06	INORG	Cadmium	7440-43-9	T	B1	1	1	3.80E-04	3.80E-04			5.0E-03	7.6E-02			1.9E+02	2.0E-06
P-06	INORG	Chromium (total)	7440-47-3	D		1				1.40E-03	1.40E-03	1.0E-01				4.6E+02	
P-06	INORG	Chromium (total)	7440-47-3	T		1				1.40E-03	1.40E-03	1.0E-01				4.6E+02	
P-06	INORG	Cobalt	7440-48-4	D	B1	1	1	8.30E-03	8.30E-03			4.0E-02	2.1E-01			2.4E+03	3.5E-06
P-06	INORG	Cobalt	7440-48-4	T	B1	1	1	8.00E-03	8.00E-03			4.0E-02	2.0E-01			2.4E+03	3.3E-06
P-06	INORG	Copper	7440-50-8	D	D	1				4.20E-03	4.20E-03	1.4E+00				7.4E+03	
P-06	INORG	Copper	7440-50-8	T	D	1				4.20E-03	4.20E-03	1.4E+00				7.4E+03	
P-06	INORG	Lead	7439-92-1	D	B2	9				2.50E-03	2.50E-03	4.0E-03					
P-06	INORG	Lead	7439-92-1	T	B2	10				1.60E-03	2.50E-03	4.0E-03					
P-06	INORG	Manganese	7439-96-5	D	D	1	1	7.22E-01	7.22E-01			8.6E-01	8.4E-01			9.1E+03	7.9E-05
P-06	INORG	Manganese	7439-96-5	T	D	1	1	7.41E-01	7.41E-01			8.6E-01	8.6E-01			9.1E+03	8.1E-05
P-06	INORG	Mercury	7439-97-6	D	D	1				6.90E-05	6.90E-05	2.0E-03		5.6E-02		5.6E-02	
P-06	INORG	Mercury	7439-97-6	T	D	1				6.90E-05	6.90E-05	2.0E-03		5.6E-02		5.6E-02	
P-06	INORG	Nickel	7440-02-0	D	A	1	1	1.30E-02	1.30E-02			1.0E-01	1.3E-01			7.4E+04	1.8E-07
P-06	INORG	Nickel	7440-02-0	T	A	1	1	1.32E-02	1.32E-02			1.0E-01	1.3E-01			7.4E+04	1.8E-07
P-06	INORG	Selenium	7782-49-2	D	D	1				4.50E-03	4.50E-03	5.0E-02				9.7E+02	
P-06	INORG	Selenium	7782-49-2	T	D	1				4.50E-03	4.50E-03	5.0E-02				9.7E+02	
P-06	INORG	Silver	7440-22-4	D	D	1				1.50E-03	1.50E-03	3.4E-02				1.5E+03	
P-06	INORG	Silver	7440-22-4	T	D	1				1.50E-03	1.50E-03	3.4E-02				1.5E+03	
P-06	INORG	Thallium	7440-28-0	D		1	1	1.50E-04	1.50E-04			2.0E-03	7.5E-02			1.3E+01	1.2E-05

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
P-06	INORG	Thallium	7440-28-0	T		1	1	1.70E-04	1.70E-04			2.0E-03	8.5E-02			1.3E+01	1.3E-05
P-06	INORG	Vanadium	7440-62-2	D		1				8.20E-04	8.20E-04	4.5E-03				9.7E+02	
P-06	INORG	Vanadium	7440-62-2	T		1				8.20E-04	8.20E-04	4.5E-03				9.7E+02	
P-06	INORG	Zinc	7440-66-6	D	D	1	1	1.25E-02	1.25E-02			2.4E+00	5.2E-03			1.1E+05	1.1E-07
P-06	INORG	Zinc	7440-66-6	T	D	1				1.20E-02	1.20E-02	2.4E+00				1.1E+05	
P-09	VOC	Acetone	67-64-1	T	ID	6	5	2.40E-03	7.10E-01	6.60E-04	6.60E-04	7.3E-01	9.7E-01	1.0E+06	7.1E-07	3.1E+04	2.3E-05
P-09	VOC	Benzene	71-43-2	T	A	6				2.00E-04	4.10E-03	5.0E-03		3.5E+01		1.1E+01	
P-09	VOC	Bromodichloromethane	75-27-4	T	B2	3				2.00E-04	1.10E-03	1.0E-01		3.7E+01		1.4E+01	
P-09	VOC	Bromoform	75-25-2	T	B2	6				3.20E-04	4.10E-03	1.0E-01		3.1E+03		1.4E+02	
P-09	VOC	Bromomethane	74-83-9	T	D	6				1.60E-04	3.30E-03	1.0E-02		9.0E+00		7.0E+01	
P-09	VOC	2-Butanone	78-93-3	T	ID	6	4	2.50E-03	1.10E-01	3.60E-04	5.90E-04	1.3E+01	8.5E-03	2.4E+05	4.6E-07	2.4E+05	4.6E-07
P-09	VOC	Carbon Disulfide	75-15-0	T		6	2	3.00E-04	3.40E-04	2.10E-04	2.70E-03	8.0E-01	4.3E-04	5.5E+02	6.2E-07	1.2E+03	2.8E-07
P-09	VOC	Carbon Tetrachloride	56-23-5	T	B2	6				1.80E-04	4.10E-03	5.0E-03		2.4E+00		4.6E+00	
P-09	VOC	Chlorobenzene	108-90-7	T	D	6				1.60E-04	4.20E-03	1.0E-01		4.7E+02		8.6E+01	
P-09	VOC	Chloroethane	75-00-3	T		6				2.20E-04	3.20E-03	4.3E-01		5.7E+03		4.4E+02	
P-09	VOC	Chloroform	67-66-3	T	B2	6				2.10E-04	3.90E-03	1.0E-01		1.8E+02		1.5E+02	
P-09	VOC	Chloromethane	74-87-3	T	D	6				2.60E-04	5.40E-03	2.6E-01		4.5E+01		4.9E+02	
P-09	VOC	Cumene	98-82-8	T	D	6				1.50E-04	4.30E-03	8.0E-01		5.6E+01		5.6E+01	
P-09	VOC	Cyclohexane	110-82-7	T	ID	6				3.30E-04	3.70E-03						
P-09	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	6				5.30E-04	9.10E-03	2.0E-04		1.2E+00		3.9E-01	
P-09	VOC	Dibromochloromethane	124-48-1	T	C	6				2.50E-04	4.10E-03	1.0E-01		1.1E+02		1.8E+01	
P-09	VOC	1,2-Dibromoethane	106-93-4	T	B2	6				2.20E-04	3.80E-03	1.0E-03		1.5E+01		2.5E-02	
P-09	VOC	1,2-Dichlorobenzene	95-50-1	T	D	6				1.50E-04	4.20E-03	6.0E-01		1.6E+02		1.6E+02	
P-09	VOC	1,3-Dichlorobenzene	541-73-1	T	D	6				2.00E-04	4.20E-03	6.6E-03				2.0E+00	
P-09	VOC	1,4-Dichlorobenzene	106-46-7	T	C	6				1.60E-04	4.20E-03	7.5E-02		7.4E+01		6.4E+00	
P-09	VOC	Dichlorodifluoromethane	75-71-8	T		6				2.30E-04	5.40E-03	1.7E+00		3.0E+02		3.0E+02	
P-09	VOC	1,1-Dichloroethane	75-34-3	T	C	5	4	5.40E-04	1.10E-03	1.50E-03	1.50E-03	8.8E-01	1.3E-03	2.3E+03	4.8E-07	2.4E+03	4.6E-07
P-09	VOC	1,2-Dichloroethane	107-06-2	T	B2	6				2.20E-04	3.10E-03	5.0E-03		5.9E+01		1.9E+01	
P-09	VOC	1,1-Dichloroethene	75-35-4	T	C	6				2.20E-04	3.40E-03	7.0E-03		1.3E+00		1.1E+01	
P-09	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	4				2.50E-04	3.90E-03	7.0E-02		2.1E+02		2.0E+02	
P-09	VOC	trans-1,2-Dichloroethene	156-60-5	T		6				2.40E-04	3.70E-03	1.0E-01		2.0E+02		2.2E+02	
P-09	VOC	1,2-Dichloropropane	78-87-5	T	B2	6				1.80E-04	4.60E-03	5.0E-03		3.6E+01		1.6E+01	
P-09	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	6				1.50E-04	3.90E-03	8.5E-03		2.6E+01		5.5E+00	
P-09	VOC	Ethyl Benzene	100-41-4	T	D	6				1.90E-04	4.60E-03	7.0E-01		1.7E+02		1.7E+02	
P-09	VOC	2-Hexanone	591-78-6	T		6				3.10E-04	6.40E-03	1.0E+00		8.7E+03		5.2E+03	
P-09	VOC	Methyl Acetate	79-20-9	T		6				5.40E-04	6.00E-03						
P-09	VOC	Methyl tert-butyl ether	1634-04-4	T		6				2.10E-04	3.00E-03	2.4E-01		4.7E+04		6.1E+02	
P-09	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	6	4	9.80E-04	2.90E-02	2.60E-04	3.40E-04	1.8E+00	1.6E-02	2.0E+04	1.5E-06	1.3E+04	2.2E-06
P-09	VOC	Methylcyclohexane	108-87-2	T		6				2.40E-04	4.70E-03						
P-09	VOC	Methylene Chloride	75-09-2	T	B2	6				2.80E-04	3.20E-03	5.0E-03		1.4E+03		2.2E+02	
P-09	VOC	Styrene	100-42-5	T		4				1.60E-04	3.90E-03	1.0E-01		3.1E+02		9.7E+00	
P-09	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	6				2.30E-04	4.00E-03	8.5E-03		7.7E+01		4.7E+00	
P-09	VOC	Tetrachloroethene	127-18-4	T	C-B2	6				1.20E-04	4.70E-03	5.0E-03		1.7E+02		1.2E+01	
P-09	VOC	Toluene	108-88-3	T	D	6				1.70E-04	4.30E-03	1.0E+00		5.3E+02		5.3E+02	
P-09	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	6				1.50E-04	4.40E-03	7.0E-02		3.0E+02		1.9E+01	
P-09	VOC	1,1,1-Trichloroethane	71-55-6	T	D	6				1.80E-04	4.30E-03	2.0E-01		1.3E+03		1.3E+03	
P-09	VOC	1,1,2-Trichloroethane	79-00-5	T	C	6				2.10E-04	4.00E-03	5.0E-03		1.1E+02		2.1E+01	
P-09	VOC	Trichloroethene	79-01-6	T	C-B2	6				2.20E-04	4.70E-03	5.0E-03		9.7E+01		2.2E+01	
P-09	VOC	Trichlorofluoromethane	75-69-4	T		6				2.50E-04	6.00E-03	2.6E+00		1.1E+03		1.1E+03	
P-09	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		6				2.30E-04	3.60E-03	1.7E+02		1.7E+02		1.7E+02	
P-09	VOC	Vinyl Chloride	75-01-4	T	A	4				2.60E-04	4.00E-03	2.0E-03		1.3E+01		1.0E+00	
P-09	VOC	Xylenes (total)	1330-20-7	T	ID	6				4.40E-04	4.90E-03	1.0E+01		1.9E+02		1.9E+02	
P-09	SVOC	Acenaphthene	83-32-9	T		6				6.90E-04	3.40E-02	1.3E+00		4.2E+00		4.2E+00	
P-09	SVOC	Acenaphthylene	208-96-8	T	D	6				4.10E-04	2.00E-02	5.2E-02		3.9E+00		3.9E+00	
P-09	SVOC	Acetophenone	98-86-2	T	D	6				6.50E-04	3.20E-02	1.5E+00		6.1E+03		6.1E+03	
P-09	SVOC	Anthracene	120-12-7	T	D	6				5.90E-04	3.00E-02	4.3E-02		4.3E-02		4.3E-02	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
P-09	SVOC	Atrazine	1912-24-9	T		6				3.50E-04	1.80E-02	3.0E-03				5.4E+00	
P-09	SVOC	Benzaldehyde	100-52-7	T		6				5.90E-04	3.00E-02						
P-09	SVOC	Benzo(a)anthracene	56-55-3	T	B2	6				6.80E-04	3.40E-02	2.1E-03				9.4E-03	
P-09	SVOC	Benzo(a)pyrene	50-32-8	T	B2	6				5.30E-04	2.60E-02	5.0E-03				2.0E-03	
P-09	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	6				7.00E-04	3.60E-02	2.0E-03				2.0E-03	
P-09	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	6				7.00E-04	3.50E-02	5.0E-03				5.0E-03	
P-09	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	6				6.40E-04	3.20E-02	5.0E-03				5.0E-03	
P-09	SVOC	Biphenyl	92-52-4	T	D	6				6.50E-04	3.20E-02						
P-09	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	6				1.00E-03	5.00E-02						
P-09	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	6				1.70E-03	8.50E-02	2.0E-03		2.1E+02		5.7E+00	
P-09	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	6				2.00E-04	1.00E-02	6.0E-03				3.2E-01	
P-09	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	6				7.80E-04	3.90E-02						
P-09	SVOC	Butylbenzylphthalate	85-68-7	T	C	6				2.30E-04	1.20E-02	1.2E+00				2.7E+00	
P-09	SVOC	Caprolactam	105-60-2	T		6				4.50E-04	2.20E-02	5.8E+00				3.9E+05	
P-09	SVOC	Carbazole	86-74-8	T	B2	6	2	9.90E-04	3.20E-02	6.10E-04	3.00E-02	8.5E-02	3.8E-01			7.4E+00	4.3E-03
P-09	SVOC	4-Chloro-3-methylphenol	59-50-7	T		6				5.50E-04	2.80E-02	1.5E-01				7.9E+01	
P-09	SVOC	4-Chloroaniline	106-47-8	T		3				9.00E-04	4.50E-02						
P-09	SVOC	2-Chloronaphthalene	91-58-7	T		6				7.30E-04	3.60E-02	1.8E+00				6.7E+00	
P-09	SVOC	2-Chlorophenol	95-57-8	T		6				1.30E-03	6.50E-02	4.5E-02				9.4E+01	
P-09	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		6				6.60E-04	3.30E-02						
P-09	SVOC	Chrysene	218-01-9	T	B2	6				6.70E-04	3.40E-02	5.0E-03				5.0E-03	
P-09	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	6				6.80E-04	3.40E-02	2.0E-03				2.0E-03	
P-09	SVOC	Dibenzofuran	132-64-9	T	D	6				6.60E-04	3.30E-02						
P-09	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	3				4.70E-04	2.40E-02	1.1E-03				1.8E-01	
P-09	SVOC	2,4-Dichlorophenol	120-83-2	T		6				7.00E-04	3.50E-02	7.3E-02				4.8E+01	
P-09	SVOC	Diethylphthalate	84-66-2	T	D	6				2.50E-04	1.20E-02	5.5E+00				1.1E+03	
P-09	SVOC	2,4-Dimethylphenol	105-67-9	T		6	2	3.00E-01	6.00E-01	1.00E-03	2.50E-03	3.7E-01	**1.6E+00**			5.2E+02	1.2E-03
P-09	SVOC	Dimethylphthalate	131-11-3	T	D	6				2.00E-04	1.00E-02	7.3E+01				4.2E+03	
P-09	SVOC	Di-n-butylphthalate	84-74-2	T	D	6				3.70E-04	1.80E-02	8.8E-01				1.1E+01	
P-09	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		6				2.10E-03	1.00E-01	2.0E-02				9.5E+00	
P-09	SVOC	2,4-Dinitrophenol	51-28-5	T		6				3.30E-03	1.60E-01						
P-09	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	6				4.60E-04	2.30E-02	7.7E-03				8.6E+00	
P-09	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	6				7.10E-04	3.60E-02						
P-09	SVOC	Di-n-octylphthalate	117-84-0	T		6				6.90E-04	3.40E-02	1.3E-01				4.0E-01	
P-09	SVOC	Fluoranthene	206-44-0	T	D	6				7.10E-04	3.60E-02	2.1E-01		2.1E-01		2.1E-01	
P-09	SVOC	Fluorene	86-73-7	T	D	6	1	1.65E-03	1.65E-03	7.50E-04	3.80E-02	8.8E-01	1.9E-03	2.0E+00	8.3E-04	2.0E+00	8.3E-04
P-09	SVOC	Hexachlorobenzene	118-74-1	T	B2	6				7.70E-04	3.80E-02	1.0E-03		3.0E+00		4.6E-03	
P-09	SVOC	Hexachlorobutadiene	87-68-3	T	C	6				1.50E-03	7.50E-02	1.5E-02		3.2E+00		4.0E-01	
P-09	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	1				1.10E-03	1.10E-03	5.0E-02		4.2E-01		1.6E+00	
P-09	SVOC	Hexachloroethane	67-72-1	T	C	6				1.60E-03	8.00E-02	7.3E-03		5.0E+01		1.9E+00	
P-09	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	6				6.90E-04	3.40E-02	2.0E-03				2.0E-03	
P-09	SVOC	Isophorone	78-59-1	T	C	6				8.60E-04	4.30E-02	7.7E-01				9.9E+02	
P-09	SVOC	2-Methylnaphthalene	91-57-6	T	ID	6				9.30E-04	4.60E-02	2.6E-01				2.5E+01	
P-09	SVOC	Methylphenol (total)	1319-77-3	T		6	4	2.15E-03	1.28E+00	9.00E-04	2.20E-03	3.7E-01	**3.5E+00**			8.1E+02	1.6E-03
P-09	SVOC	Naphthalene	91-20-3	T	C	6	2	7.50E-02	9.90E-02	1.30E-03	3.25E-03	5.2E-01	1.9E-01	3.1E+01	3.2E-03	3.1E+01	3.2E-03
P-09	SVOC	2-Nitroaniline	88-74-4	T		6				4.90E-04	2.40E-02						
P-09	SVOC	3-Nitroaniline	99-09-2	T	C	3				4.80E-04	2.40E-02						
P-09	SVOC	4-Nitroaniline	100-01-6	T	C	6				5.90E-04	3.00E-02						
P-09	SVOC	Nitrobenzene	98-95-3	T	D	6				1.30E-03	6.50E-02	3.4E-03		5.5E+02		1.1E+01	
P-09	SVOC	2-Nitrophenol	88-75-5	T		6				9.50E-04	4.80E-02	2.0E-02				7.9E+01	
P-09	SVOC	4-Nitrophenol	100-02-7	T		6				3.50E-03	1.80E-01						
P-09	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	6				6.40E-04	3.20E-02	2.7E-01				3.5E+01	
P-09	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	6				1.10E-03	5.50E-02	5.0E-03				3.6E-01	
P-09	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	6				1.80E-03	9.00E-02						
P-09	SVOC	Pentachlorophenol	87-86-5	T	B2	6	1	3.90E-03	3.90E-03	2.60E-03	1.30E-01	1.0E-03	**3.9E+00**			2.0E-01	2.0E-02
P-09	SVOC	Phenanthrene	85-01-8	T	D	6	1	2.35E-03	2.35E-03	6.80E-04	3.40E-02	5.2E-02	4.5E-02	1.0E+00	2.4E-03	1.0E+00	2.4E-03

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
P-09	SVOC	Phenol	108-95-2	T	ID	6	4	3.30E-03	1.60E+00	1.30E-03	3.20E-03	4.4E+00	3.6E-01			2.9E+04	5.5E-05
P-09	SVOC	Pyrene	129-00-0	T	D	6				6.30E-04	3.20E-02	1.4E-01		1.4E-01		1.4E-01	
P-09	SVOC	2,4,5-Trichlorophenol	95-95-4	T		6				8.60E-04	4.30E-02	7.3E-01				1.7E+02	
P-09	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	6				7.10E-04	3.60E-02	1.2E-01				1.0E+01	
P-09	P/PCB	PCBs (total)	1336-36-3	T	B2	6	1	3.69E-04	3.69E-04	8.20E-05	8.20E-05	5.0E-04	7.4E-01	4.5E-02	8.2E-03	3.3E-03	1.1E-01
P-09	INORG	Antimony	7440-36-0	T		6	2	9.40E-03	1.31E-02	3.10E-03	3.40E-03	6.0E-03	**2.2E+00**			6.8E+01	1.9E-04
P-09	INORG	Arsenic	7440-38-2	T	A	6	5	3.20E-03	4.49E-02	2.10E-03	2.10E-03	5.0E-02	9.0E-01			4.3E+00	1.0E-02
P-09	INORG	Barium	7440-39-3	T	D	6	6	3.10E-03	5.16E-02			2.0E+00	2.6E-02			1.4E+04	3.7E-06
P-09	INORG	Beryllium	7440-41-7	T	B1	6				4.70E-04	6.00E-04	4.0E-03				2.9E+02	
P-09	INORG	Cadmium	7440-43-9	T	B1	6				2.80E-04	3.60E-04	5.0E-03				1.9E+02	
P-09	INORG	Chromium (total)	7440-47-3	T		6	1	5.30E-03	5.30E-03	1.00E-03	1.50E-03	1.0E-01	5.3E-02			4.6E+02	1.2E-05
P-09	INORG	Cobalt	7440-48-4	T	B1	6	2	1.20E-03	1.60E-03	7.40E-04	1.10E-03	4.0E-02	4.0E-02			2.4E+03	6.7E-07
P-09	INORG	Copper	7440-50-8	T	D	6	2	4.35E-03	6.70E-03	1.70E-03	1.80E-03	1.4E+00	4.8E-03			7.4E+03	9.1E-07
P-09	INORG	Lead	7439-92-1	T	B2	6	1	2.85E-03	2.85E-03	1.60E-03	2.30E-03	4.0E-03	7.1E-01				
P-09	INORG	Manganese	7439-96-5	T	D	6	4	3.80E-03	4.36E-02	6.60E-04	6.60E-04	8.6E-01	5.1E-02			9.1E+03	4.8E-06
P-09	INORG	Mercury	7439-97-6	T	D	6				6.70E-05	8.70E-05	2.0E-03		5.6E-02		5.6E-02	
P-09	INORG	Nickel	7440-02-0	T	A	6	5	5.60E-03	1.28E-01	2.90E-03	2.90E-03	1.0E-01	**1.3E+00**			7.4E+04	1.7E-06
P-09	INORG	Selenium	7782-49-2	T	D	6	3	4.40E-03	6.07E-02	3.90E-03	4.70E-03	5.0E-02	**1.2E+00**			9.7E+02	6.3E-05
P-09	INORG	Silver	7440-22-4	T	D	6				9.80E-04	1.10E-03	3.4E-02				1.5E+03	
P-09	INORG	Thallium	7440-28-0	T		6				1.50E-05	3.30E-05	2.0E-03				1.3E+01	
P-09	INORG	Vanadium	7440-62-2	T		6	4	8.70E-03	5.78E-01	6.70E-04	9.60E-04	4.5E-03	**1.3E+02**			9.7E+02	6.0E-04
P-09	INORG	Zinc	7440-66-6	T	D	6	1	2.02E-02	2.02E-02	1.30E-02	1.40E-02	2.4E+00	8.4E-03			1.1E+05	1.8E-07
P-11	VOC	Acetone	67-64-1	T	ID	2	1	1.90E-02	1.90E-02	1.10E-03	1.10E-03	7.3E-01	2.6E-02	1.0E+06	1.9E-08	3.1E+04	6.1E-07
P-11	VOC	Benzene	71-43-2	T	A	2				3.70E-04	1.50E-03	5.0E-03		3.5E+01		1.1E+01	
P-11	VOC	Bromodichloromethane	75-27-4	T	B2	1				3.20E-04	3.20E-04	1.0E-01		3.7E+01		1.4E+01	
P-11	VOC	Bromoform	75-25-2	T	B2	2				3.70E-04	1.50E-03	1.0E-01		3.1E+03		1.4E+02	
P-11	VOC	Bromomethane	74-83-9	T	D	2				3.00E-04	1.25E-03	1.0E-02		9.0E+00		7.0E+01	
P-11	VOC	2-Butanone	78-93-3	T	ID	2				5.90E-04	2.50E-03	1.3E+01		2.4E+05		2.4E+05	
P-11	VOC	Carbon Disulfide	75-15-0	T		2				2.40E-04	1.00E-03	8.0E-01		5.5E+02		1.2E+03	
P-11	VOC	Carbon Tetrachloride	56-23-5	T	B2	2				3.70E-04	1.50E-03	5.0E-03		2.4E+00		4.6E+00	
P-11	VOC	Chlorobenzene	108-90-7	T	D	2				3.80E-04	1.60E-03	1.0E-01		4.7E+02		8.6E+01	
P-11	VOC	Chloroethane	75-00-3	T		2				2.90E-04	1.19E-03	4.3E-01		5.7E+03		4.4E+02	
P-11	VOC	Chloroform	67-66-3	T	B2	2				3.50E-04	1.50E-03	1.0E-01		1.8E+02		1.5E+02	
P-11	VOC	Chloromethane	74-87-3	T	D	2				4.90E-04	2.00E-03	2.6E-01		4.5E+01		4.9E+02	
P-11	VOC	Cumene	98-82-8	T	D	2				3.90E-04	1.65E-03	8.0E-01		5.6E+01		5.6E+01	
P-11	VOC	Cyclohexane	110-82-7	T	ID	2				3.30E-04	1.35E-03						
P-11	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	2				8.20E-04	3.40E-03	2.0E-04		1.2E+00		3.9E-01	
P-11	VOC	Dibromochloromethane	124-48-1	T	C	2				3.70E-04	1.50E-03	1.0E-01		1.1E+02		1.8E+01	
P-11	VOC	1,2-Dibromoethane	106-93-4	T	B2	2				3.40E-04	1.40E-03	1.0E-03		1.5E+01		2.5E-02	
P-11	VOC	1,2-Dichlorobenzene	95-50-1	T	D	2				3.80E-04	1.60E-03	6.0E-01		1.6E+02		1.6E+02	
P-11	VOC	1,3-Dichlorobenzene	541-73-1	T	D	2				3.80E-04	1.60E-03	6.6E-03				2.0E+00	
P-11	VOC	1,4-Dichlorobenzene	106-46-7	T	C	2				3.80E-04	1.60E-03	7.5E-02		7.4E+01		6.4E+00	
P-11	VOC	Dichlorodifluoromethane	75-71-8	T		2				4.90E-04	2.00E-03	1.7E+00		3.0E+02		3.0E+02	
P-11	VOC	1,1-Dichloroethane	75-34-3	T	C	2				3.00E-04	1.25E-03	8.8E-01		2.3E+03		2.4E+03	
P-11	VOC	1,2-Dichloroethane	107-06-2	T	B2	2				2.80E-04	1.17E-03	5.0E-03		5.9E+01		1.9E+01	
P-11	VOC	1,1-Dichloroethene	75-35-4	T	C	2				3.10E-04	1.30E-03	7.0E-03		1.3E+00		1.1E+01	
P-11	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	1				3.50E-04	3.50E-04	7.0E-02		2.1E+02		2.0E+02	
P-11	VOC	trans-1,2-Dichloroethene	156-60-5	T		2				3.30E-04	1.35E-03	1.0E-01		2.0E+02		2.2E+02	
P-11	VOC	1,2-Dichloropropane	78-87-5	T	B2	2				4.10E-04	1.70E-03	5.0E-03		3.6E+01		1.6E+01	
P-11	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	2				3.50E-04	1.50E-03	8.5E-03		2.6E+01		5.5E+00	
P-11	VOC	Ethyl Benzene	100-41-4	T	D	1				1.70E-03	1.70E-03	7.0E-01		1.7E+02		1.7E+02	
P-11	VOC	2-Hexanone	591-78-6	T		2				5.80E-04	2.40E-03	1.0E+00		8.7E+03		5.2E+03	
P-11	VOC	Methyl Acetate	79-20-9	T		2				5.40E-04	2.25E-03						
P-11	VOC	Methyl tert-butyl ether	1634-04-4	T		2				2.70E-04	1.15E-03	2.4E-01		4.7E+04		6.1E+02	
P-11	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	2	1	2.30E-03	2.30E-03	2.60E-04	2.60E-04	1.8E+00	1.3E-03	2.0E+04	1.2E-07	1.3E+04	1.8E-07
P-11	VOC	Methylcyclohexane	108-87-2	T		2				4.20E-04	1.75E-03						

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
P-11	VOC	Methylene Chloride	75-09-2	T	B2	2				2.90E-04	1.19E-03	5.0E-03		1.4E+03		2.2E+02	
P-11	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	2				3.60E-04	1.50E-03	8.5E-03		7.7E+01		4.7E+00	
P-11	VOC	Tetrachloroethene	127-18-4	T	C-B2	1				1.75E-03	1.75E-03	5.0E-03		1.7E+02		1.2E+01	
P-11	VOC	Toluene	108-88-3	T	D	2				3.90E-04	1.65E-03	1.0E+00		5.3E+02		5.3E+02	
P-11	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	2				4.00E-04	1.65E-03	7.0E-02		3.0E+02		1.9E+01	
P-11	VOC	1,1,1-Trichloroethane	71-55-6	T	D	2				3.90E-04	1.65E-03	2.0E-01		1.3E+03		1.3E+03	
P-11	VOC	1,1,2-Trichloroethane	79-00-5	T	C	2				3.60E-04	1.50E-03	5.0E-03		1.1E+02		2.1E+01	
P-11	VOC	Trichloroethene	79-01-6	T	C-B2	2				4.20E-04	1.75E-03	5.0E-03		9.7E+01		2.2E+01	
P-11	VOC	Trichlorofluoromethane	75-69-4	T		2				5.40E-04	2.25E-03	2.6E+00		1.1E+03		1.1E+03	
P-11	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		2				3.20E-04	1.35E-03	1.7E+02		1.7E+02		1.7E+02	
P-11	VOC	Vinyl Chloride	75-01-4	T	A	1				3.60E-04	3.60E-04	2.0E-03		1.3E+01		1.0E+00	
P-11	VOC	Xylenes (total)	1330-20-7	T	ID	2				4.40E-04	1.85E-03	1.0E+01		1.9E+02		1.9E+02	
P-11	SVOC	Acenaphthene	83-32-9	T		2				6.90E-04	6.90E-03	1.3E+00		4.2E+00		4.2E+00	
P-11	SVOC	Acenaphthylene	208-96-8	T	D	2				4.10E-04	4.10E-03	5.2E-02		3.9E+00		3.9E+00	
P-11	SVOC	Acetophenone	98-86-2	T	D	2				6.50E-04	6.50E-03	1.5E+00		6.1E+03		6.1E+03	
P-11	SVOC	Anthracene	120-12-7	T	D	2				5.90E-04	5.90E-03	4.3E-02		4.3E-02		4.3E-02	
P-11	SVOC	Atrazine	1912-24-9	T		2				3.50E-04	3.50E-03	3.0E-03				5.4E+00	
P-11	SVOC	Benzaldehyde	100-52-7	T		2				5.90E-04	5.90E-03						
P-11	SVOC	Benzo(a)anthracene	56-55-3	T	B2	2				6.80E-04	6.80E-03	2.1E-03				9.4E-03	
P-11	SVOC	Benzo(a)pyrene	50-32-8	T	B2	2				5.30E-04	5.30E-03	5.0E-03				2.0E-03	
P-11	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	2				7.10E-04	7.10E-03	2.0E-03				2.0E-03	
P-11	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	2				7.00E-04	7.00E-03	5.0E-03				5.0E-03	
P-11	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	2				6.40E-04	6.40E-03	5.0E-03				5.0E-03	
P-11	SVOC	Biphenyl	92-52-4	T	D	2				6.50E-04	6.50E-03						
P-11	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	2				1.00E-03	1.00E-02						
P-11	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	2				1.70E-03	1.70E-02	2.0E-03		2.1E+02		5.7E+00	
P-11	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	2				2.00E-04	2.00E-03	6.0E-03				3.2E-01	
P-11	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	2				7.80E-04	7.80E-03						
P-11	SVOC	Butylbenzylphthalate	85-68-7	T	C	2				2.30E-04	2.30E-03	1.2E+00				2.7E+00	
P-11	SVOC	Caprolactam	105-60-2	T		2				4.50E-04	4.50E-03	5.8E+00				3.9E+05	
P-11	SVOC	Carbazole	86-74-8	T	B2	2				6.10E-04	6.10E-03	8.5E-02				7.4E+00	
P-11	SVOC	4-Chloro-3-methylphenol	59-50-7	T		2				5.50E-04	5.50E-03	1.5E-01				7.9E+01	
P-11	SVOC	2-Chloronaphthalene	91-58-7	T		2				7.30E-04	7.30E-03	1.8E+00				6.7E+00	
P-11	SVOC	2-Chlorophenol	95-57-8	T		2				1.30E-03	1.30E-02	4.5E-02				9.4E+01	
P-11	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		2				6.60E-04	6.60E-03						
P-11	SVOC	Chrysene	218-01-9	T	B2	2				6.70E-04	6.70E-03	5.0E-03				5.0E-03	
P-11	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	2				6.80E-04	6.80E-03	2.0E-03				2.0E-03	
P-11	SVOC	Dibenzofuran	132-64-9	T	D	2				6.60E-04	6.60E-03						
P-11	SVOC	2,4-Dichlorophenol	120-83-2	T		2				7.00E-04	7.00E-03	7.3E-02				4.8E+01	
P-11	SVOC	Diethylphthalate	84-66-2	T	D	2				2.50E-04	2.50E-03	5.5E+00				1.1E+03	
P-11	SVOC	2,4-Dimethylphenol	105-67-9	T		2				1.00E-03	1.00E-02	3.7E-01				5.2E+02	
P-11	SVOC	Dimethylphthalate	131-11-3	T	D	2				2.00E-04	2.00E-03	7.3E+01				4.2E+03	
P-11	SVOC	Di-n-butylphthalate	84-74-2	T	D	2				3.70E-04	3.70E-03	8.8E-01				1.1E+01	
P-11	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		2				2.10E-03	2.10E-02	2.0E-02				9.5E+00	
P-11	SVOC	2,4-Dinitrophenol	51-28-5	T		2				3.30E-03	3.30E-02						
P-11	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	2				4.60E-04	4.60E-03	7.7E-03				8.6E+00	
P-11	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	2				7.10E-04	7.10E-03						
P-11	SVOC	Di-n-octylphthalate	117-84-0	T		2				6.90E-04	6.90E-03	1.3E-01				4.0E-01	
P-11	SVOC	Fluoranthene	206-44-0	T	D	2				7.10E-04	7.10E-03	2.1E-01		2.1E-01		2.1E-01	
P-11	SVOC	Fluorene	86-73-7	T	D	2				7.50E-04	7.50E-03	8.8E-01		2.0E+00		2.0E+00	
P-11	SVOC	Hexachlorobenzene	118-74-1	T	B2	2				7.70E-04	7.70E-03	1.0E-03		3.0E+00		4.6E-03	
P-11	SVOC	Hexachlorobutadiene	87-68-3	T	C	2				1.50E-03	1.50E-02	1.5E-02		3.2E+00		4.0E-01	
P-11	SVOC	Hexachloroethane	67-72-1	T	C	2				1.60E-03	1.60E-02	7.3E-03		5.0E+01		1.9E+00	
P-11	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	2				6.90E-04	6.90E-03	2.0E-03				2.0E-03	
P-11	SVOC	Isophorone	78-59-1	T	C	2				8.60E-04	8.60E-03	7.7E-01				9.9E+02	
P-11	SVOC	2-Methylnaphthalene	91-57-6	T	ID	2				9.30E-04	9.30E-03	2.6E-01				2.5E+01	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
P-11	SVOC	Methylphenol (total)	1319-77-3	T		2				9.00E-04	9.00E-03	3.7E-01				8.1E+02	
P-11	SVOC	Naphthalene	91-20-3	T	C	2				1.30E-03	1.30E-02	5.2E-01		3.1E+01		3.1E+01	
P-11	SVOC	2-Nitroaniline	88-74-4	T		2				4.90E-04	4.90E-03						
P-11	SVOC	4-Nitroaniline	100-01-6	T	C	2				5.90E-04	5.90E-03						
P-11	SVOC	Nitrobenzene	98-95-3	T	D	2				1.30E-03	1.30E-02	3.4E-03		5.5E+02		1.1E+01	
P-11	SVOC	2-Nitrophenol	88-75-5	T		2				9.50E-04	9.50E-03	2.0E-02				7.9E+01	
P-11	SVOC	4-Nitrophenol	100-02-7	T		2				3.50E-03	3.50E-02						
P-11	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	2				6.40E-04	6.40E-03	2.7E-01				3.5E+01	
P-11	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	2				1.10E-03	1.10E-02	5.0E-03				3.6E-01	
P-11	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	2				1.80E-03	1.80E-02						
P-11	SVOC	Pentachlorophenol	87-86-5	T	B2	1				2.60E-02	2.60E-02	1.0E-03				2.0E-01	
P-11	SVOC	Phenanthrene	85-01-8	T	D	2				6.80E-04	6.80E-03	5.2E-02		1.0E+00		1.0E+00	
P-11	SVOC	Phenol	108-95-2	T	ID	2				1.30E-03	1.30E-02	4.4E+00				2.9E+04	
P-11	SVOC	Pyrene	129-00-0	T	D	2				6.30E-04	6.30E-03	1.4E-01		1.4E-01		1.4E-01	
P-11	SVOC	2,4,5-Trichlorophenol	95-95-4	T		2				8.60E-04	8.60E-03	7.3E-01				1.7E+02	
P-11	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	2				7.10E-04	7.10E-03	1.2E-01				1.0E+01	
P-11	P/PCB	PCBs (total)	1336-36-3	T	B2	2				8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
P-11	INORG	Antimony	7440-36-0	T		2				3.40E-03	3.40E-03	6.0E-03				6.8E+01	
P-11	INORG	Arsenic	7440-38-2	T	A	2	2	3.90E-03	2.36E-02			5.0E-02	4.7E-01			4.3E+00	5.5E-03
P-11	INORG	Barium	7440-39-3	T	D	2	2	4.23E-02	3.97E-01			2.0E+00	2.0E-01			1.4E+04	2.8E-05
P-11	INORG	Beryllium	7440-41-7	T	B1	2				6.00E-04	6.00E-04	4.0E-03				2.9E+02	
P-11	INORG	Cadmium	7440-43-9	T	B1	2				2.80E-04	2.80E-04	5.0E-03				1.9E+02	
P-11	INORG	Chromium (total)	7440-47-3	T		2				1.50E-03	1.50E-03	1.0E-01				4.6E+02	
P-11	INORG	Cobalt	7440-48-4	T	B1	2	1	5.35E-02	5.35E-02	7.40E-04	7.40E-04	4.0E-02	**1.3E+00**			2.4E+03	2.2E-05
P-11	INORG	Copper	7440-50-8	T	D	2	1	9.10E-03	9.10E-03	1.70E-03	1.70E-03	1.4E+00	6.5E-03			7.4E+03	1.2E-06
P-11	INORG	Lead	7439-92-1	T	B2	2				1.60E-03	1.60E-03	4.0E-03					
P-11	INORG	Manganese	7439-96-5	T	D	2	2	3.11E-02	5.01E-01			8.6E-01	5.8E-01			9.1E+03	5.5E-05
P-11	INORG	Mercury	7439-97-6	T	D	2				8.70E-05	8.70E-05	2.0E-03		5.6E-02		5.6E-02	
P-11	INORG	Nickel	7440-02-0	T	A	2	1	9.75E-03	9.75E-03	2.90E-03	2.90E-03	1.0E-01	9.8E-02			7.4E+04	1.3E-07
P-11	INORG	Selenium	7782-49-2	T	D	2				4.70E-03	4.70E-03	5.0E-02				9.7E+02	
P-11	INORG	Silver	7440-22-4	T	D	2				9.80E-04	9.80E-04	3.4E-02				1.5E+03	
P-11	INORG	Thallium	7440-28-0	T		2				3.30E-05	3.30E-05	2.0E-03				1.3E+01	
P-11	INORG	Vanadium	7440-62-2	T		2	1	5.98E-04	5.98E-04	6.70E-04	6.70E-04	4.5E-03	1.3E-01			9.7E+02	6.2E-07
P-11	INORG	Zinc	7440-66-6	T	D	2				1.40E-02	1.40E-02	2.4E+00				1.1E+05	
PSB	VOC	Acetone	67-64-1	T	ID	4				5.10E-04	1.00E-03	7.3E-01		1.0E+06		3.1E+04	
PSB	VOC	Benzene	71-43-2	T	A	4	2	1.20E-03	1.40E-03	1.60E-04	1.60E-04	5.0E-03	2.8E-01	3.5E+01	4.0E-05	1.1E+01	1.3E-04
PSB	VOC	Bromodichloromethane	75-27-4	T	B2	4				1.70E-04	3.40E-04	1.0E-01		3.7E+01		1.4E+01	
PSB	VOC	Bromoform	75-25-2	T	B2	4				1.80E-04	3.60E-04	1.0E-01		3.1E+03		1.4E+02	
PSB	VOC	Bromomethane	74-83-9	T	D	4				2.00E-04	4.00E-04	1.0E-02		9.0E+00		7.0E+01	
PSB	VOC	2-Butanone	78-93-3	T	ID	4	1	4.00E-03	4.00E-03	4.10E-04	8.20E-04	1.3E+01	3.1E-04	2.4E+05	1.7E-08	2.4E+05	1.7E-08
PSB	VOC	Carbon Disulfide	75-15-0	T		4	1	8.30E-04	8.30E-04	2.00E-04	4.00E-04	8.0E-01	1.0E-03	5.5E+02	1.5E-06	1.2E+03	6.9E-07
PSB	VOC	Carbon Tetrachloride	56-23-5	T	B2	4				1.20E-04	2.40E-04	5.0E-03		2.4E+00		4.6E+00	
PSB	VOC	Chlorobenzene	108-90-7	T	D	4				1.40E-04	2.80E-04	1.0E-01		4.7E+02		8.6E+01	
PSB	VOC	Chloroethane	75-00-3	T		4				2.60E-04	5.20E-04	4.3E-01		5.7E+03		4.4E+02	
PSB	VOC	Chloroform	67-66-3	T	B2	4				1.40E-04	2.80E-04	1.0E-01		1.8E+02		1.5E+02	
PSB	VOC	Chloromethane	74-87-3	T	D	4				1.30E-04	2.60E-04	2.6E-01		4.5E+01		4.9E+02	
PSB	VOC	Cumene	98-82-8	T	D	4	3	1.70E-04	3.20E-04	1.20E-04	1.20E-04	8.0E-01	4.0E-04	5.6E+01	5.7E-06	5.6E+01	5.7E-06
PSB	VOC	Cyclohexane	110-82-7	T	ID	4	4	2.00E-04	4.40E-04								
PSB	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	4				6.20E-04	1.20E-03	2.0E-04		1.2E+00		3.9E-01	
PSB	VOC	Dibromochloromethane	124-48-1	T	C	4				2.60E-04	5.20E-04	1.0E-01		1.1E+02		1.8E+01	
PSB	VOC	1,2-Dibromoethane	106-93-4	T	B2	4				2.20E-04	4.40E-04	1.0E-03		1.5E+01		2.5E-02	
PSB	VOC	1,2-Dichlorobenzene	95-50-1	T	D	4				1.10E-04	2.20E-04	6.0E-01		1.6E+02		1.6E+02	
PSB	VOC	1,3-Dichlorobenzene	541-73-1	T	D	4				1.50E-04	3.00E-04	6.6E-03				2.0E+00	
PSB	VOC	1,4-Dichlorobenzene	106-46-7	T	C	4				1.70E-04	3.40E-04	7.5E-02		7.4E+01		6.4E+00	
PSB	VOC	Dichlorodifluoromethane	75-71-8	T		4				2.60E-04	5.20E-04	1.7E+00		3.0E+02		3.0E+02	
PSB	VOC	1,1-Dichloroethane	75-34-3	T	C	4				1.60E-04	3.20E-04	8.8E-01		2.3E+03		2.4E+03	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
PSB	VOC	1,2-Dichloroethane	107-06-2	T	B2	4				2.10E-04	4.20E-04	5.0E-03		5.9E+01		1.9E+01	
PSB	VOC	1,1-Dichloroethene	75-35-4	T	C	4				2.40E-04	4.80E-04	7.0E-03		1.3E+00		1.1E+01	
PSB	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	4				2.20E-04	4.40E-04	7.0E-02		2.1E+02		2.0E+02	
PSB	VOC	trans-1,2-Dichloroethene	156-60-5	T		4				1.50E-04	3.00E-04	1.0E-01		2.0E+02		2.2E+02	
PSB	VOC	1,2-Dichloropropane	78-87-5	T	B2	4				1.70E-04	3.40E-04	5.0E-03		3.6E+01		1.6E+01	
PSB	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	4				2.70E-04	5.40E-04	8.5E-03		2.6E+01		5.5E+00	
PSB	VOC	Ethyl Benzene	100-41-4	T	D	4	2	5.70E-04	7.40E-04	1.20E-04	1.20E-04	7.0E-01	1.1E-03	1.7E+02	4.4E-06	1.7E+02	4.4E-06
PSB	VOC	2-Hexanone	591-78-6	T		4				4.60E-04	9.20E-04	1.0E+00		8.7E+03		5.2E+03	
PSB	VOC	Methyl Acetate	79-20-9	T		4				4.10E-04	8.20E-04						
PSB	VOC	Methyl tert-butyl ether	1634-04-4	T		4				1.30E-04	2.60E-04	2.4E-01		4.7E+04		6.1E+02	
PSB	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	4				2.30E-04	4.60E-04	1.8E+00		2.0E+04		1.3E+04	
PSB	VOC	Methylcyclohexane	108-87-2	T		4	4	1.60E-04	4.70E-04								
PSB	VOC	Methylene Chloride	75-09-2	T	B2	4				3.40E-04	6.80E-04	5.0E-03		1.4E+03		2.2E+02	
PSB	VOC	Styrene	100-42-5	T		4				1.50E-04	3.00E-04	1.0E-01		3.1E+02		9.7E+00	
PSB	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	4				2.50E-04	5.00E-04	8.5E-03		7.7E+01		4.7E+00	
PSB	VOC	Tetrachloroethene	127-18-4	T	C-B2	4				2.30E-04	4.60E-04	5.0E-03		1.7E+02		1.2E+01	
PSB	VOC	Toluene	108-88-3	T	D	4	2	1.20E-03	2.40E-03	1.80E-04	1.80E-04	1.0E+00	2.4E-03	5.3E+02	4.5E-06	5.3E+02	4.5E-06
PSB	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	4				1.70E-04	3.40E-04	7.0E-02		3.0E+02		1.9E+01	
PSB	VOC	1,1,1-Trichloroethane	71-55-6	T	D	4				1.50E-04	3.00E-04	2.0E-01		1.3E+03		1.3E+03	
PSB	VOC	1,1,2-Trichloroethane	79-00-5	T	C	4				3.00E-04	6.00E-04	5.0E-03		1.1E+02		2.1E+01	
PSB	VOC	Trichloroethene	79-01-6	T	C-B2	4				1.40E-04	2.80E-04	5.0E-03		9.7E+01		2.2E+01	
PSB	VOC	Trichlorofluoromethane	75-69-4	T		4				2.80E-04	5.60E-04	2.6E+00		1.1E+03		1.1E+03	
PSB	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		4				3.20E-04	6.40E-04	1.7E+02		1.7E+02		1.7E+02	
PSB	VOC	Vinyl Chloride	75-01-4	T	A	4				1.50E-04	3.00E-04	2.0E-03		1.3E+01		1.0E+00	
PSB	VOC	Xylenes (total)	1330-20-7	T	ID	4	3	4.90E-04	9.50E-03	3.30E-04	3.30E-04	1.0E+01	9.5E-04	1.9E+02	5.0E-05	1.9E+02	5.0E-05
PSB	SVOC	Acenaphthene	83-32-9	T		4	1	1.50E-03	1.50E-03	8.00E-04	8.00E-04	1.3E+00	1.2E-03	4.2E+00	3.6E-04	4.2E+00	3.6E-04
PSB	SVOC	Acenaphthylene	208-96-8	T	D	4				7.10E-04	7.10E-04	5.2E-02		3.9E+00		3.9E+00	
PSB	SVOC	Acetophenone	98-86-2	T	D	4				2.60E-03	2.60E-03	1.5E+00		6.1E+03		6.1E+03	
PSB	SVOC	Anthracene	120-12-7	T	D	4				6.80E-04	6.80E-04	4.3E-02		4.3E-02		4.3E-02	
PSB	SVOC	Atrazine	1912-24-9	T		4				2.50E-03	2.50E-03	3.0E-03				5.4E+00	
PSB	SVOC	Benzaldehyde	100-52-7	T		4				2.80E-03	2.80E-03						
PSB	SVOC	Benzo(a)anthracene	56-55-3	T	B2	4				7.00E-04	7.00E-04	2.1E-03				9.4E-03	
PSB	SVOC	Benzo(a)pyrene	50-32-8	T	B2	4				7.30E-04	7.30E-04	5.0E-03				2.0E-03	
PSB	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	4				9.40E-04	9.40E-04	2.0E-03				2.0E-03	
PSB	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	4				8.50E-04	8.50E-04	5.0E-03				5.0E-03	
PSB	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	4				8.40E-04	8.40E-04	5.0E-03				5.0E-03	
PSB	SVOC	Biphenyl	92-52-4	T	D	4				2.60E-03	2.60E-03						
PSB	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	4				8.70E-04	8.70E-04						
PSB	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	4				9.70E-04	9.70E-04	2.0E-03		2.1E+02		5.7E+00	
PSB	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	4				2.70E-03	2.70E-03	6.0E-03				3.2E-01	
PSB	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	4				8.80E-04	8.80E-04						
PSB	SVOC	Butylbenzylphthalate	85-68-7	T	C	4				8.80E-04	8.80E-04	1.2E+00				2.7E+00	
PSB	SVOC	Caprolactam	105-60-2	T		4				2.50E-03	2.50E-03	5.8E+00				3.9E+05	
PSB	SVOC	Carbazole	86-74-8	T	B2	4	2	1.10E-03	1.40E-03	8.20E-04	8.20E-04	8.5E-02	1.6E-02			7.4E+00	1.9E-04
PSB	SVOC	4-Chloro-3-methylphenol	59-50-7	T		4				9.90E-04	9.90E-04	1.5E-01				7.9E+01	
PSB	SVOC	4-Chloroaniline	106-47-8	T		2				6.10E-04	6.10E-04						
PSB	SVOC	2-Chloronaphthalene	91-58-7	T		4				8.50E-04	8.50E-04	1.8E+00				6.7E+00	
PSB	SVOC	2-Chlorophenol	95-57-8	T		4				1.00E-03	1.00E-03	4.5E-02				9.4E+01	
PSB	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		4				7.90E-04	7.90E-04						
PSB	SVOC	Chrysene	218-01-9	T	B2	4				7.50E-04	7.50E-04	5.0E-03				5.0E-03	
PSB	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	4				7.90E-04	7.90E-04	2.0E-03				2.0E-03	
PSB	SVOC	Dibenzofuran	132-64-9	T	D	4				1.10E-03	1.10E-03						
PSB	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	4				9.30E-04	9.30E-04	1.1E-03				1.8E-01	
PSB	SVOC	2,4-Dichlorophenol	120-83-2	T		4				8.50E-04	8.50E-04	7.3E-02				4.8E+01	
PSB	SVOC	Diethylphthalate	84-66-2	T	D	4				6.50E-04	6.50E-04	5.5E+00				1.1E+03	
PSB	SVOC	2,4-Dimethylphenol	105-67-9	T		4				8.50E-04	8.50E-04	3.7E-01				5.2E+02	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
PSB	SVOC	Dimethylphthalate	131-11-3	T	D	4				7.60E-04	7.60E-04	7.3E+01				4.2E+03	
PSB	SVOC	Di-n-butylphthalate	84-74-2	T	D	4				6.70E-04	6.70E-04	8.8E-01				1.1E+01	
PSB	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		4				1.30E-03	1.30E-03	2.0E-02				9.5E+00	
PSB	SVOC	2,4-Dinitrophenol	51-28-5	T		4				3.00E-03	3.00E-03						
PSB	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	4				7.90E-04	7.90E-04	7.7E-03				8.6E+00	
PSB	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	4				5.70E-04	5.70E-04						
PSB	SVOC	Di-n-octylphthalate	117-84-0	T		4				1.10E-03	1.10E-03	1.3E-01				4.0E-01	
PSB	SVOC	Fluoranthene	206-44-0	T	D	4				8.10E-04	8.10E-04	2.1E-01		2.1E-01		2.1E-01	
PSB	SVOC	Fluorene	86-73-7	T	D	4				1.00E-03	1.00E-03	8.8E-01		2.0E+00		2.0E+00	
PSB	SVOC	Hexachlorobenzene	118-74-1	T	B2	4				7.40E-04	7.40E-04	1.0E-03		3.0E+00		4.6E-03	
PSB	SVOC	Hexachlorobutadiene	87-68-3	T	C	4				7.30E-04	7.30E-04	1.5E-02		3.2E+00		4.0E-01	
PSB	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	4				1.10E-03	1.10E-03	5.0E-02		4.2E-01		1.6E+00	
PSB	SVOC	Hexachloroethane	67-72-1	T	C	4				7.40E-04	7.40E-04	7.3E-03		5.0E+01		1.9E+00	
PSB	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	4				6.30E-04	6.30E-04	2.0E-03				2.0E-03	
PSB	SVOC	Isophorone	78-59-1	T	C	4				6.30E-04	6.30E-04	7.7E-01				9.9E+02	
PSB	SVOC	2-Methylnaphthalene	91-57-6	T	ID	4	1	8.90E-04	8.90E-04	6.40E-04	6.40E-04	2.6E-01	3.4E-03			2.5E+01	3.6E-05
PSB	SVOC	Methylphenol (total)	1319-77-3	T		4	2	3.75E-03	4.55E-03	1.30E-03	1.30E-03	3.7E-01	1.2E-02			8.1E+02	5.6E-06
PSB	SVOC	Naphthalene	91-20-3	T	C	4	2	5.30E-03	6.80E-03	7.50E-04	7.50E-04	5.2E-01	1.3E-02	3.1E+01	2.2E-04	3.1E+01	2.2E-04
PSB	SVOC	2-Nitroaniline	88-74-4	T		4				7.00E-04	7.00E-04						
PSB	SVOC	3-Nitroaniline	99-09-2	T	C	4				7.10E-04	7.10E-04						
PSB	SVOC	4-Nitroaniline	100-01-6	T	C	4				1.30E-03	1.30E-03						
PSB	SVOC	Nitrobenzene	98-95-3	T	D	4				8.10E-04	8.10E-04	3.4E-03		5.5E+02		1.1E+01	
PSB	SVOC	2-Nitrophenol	88-75-5	T		4				2.10E-03	2.10E-03	2.0E-02				7.9E+01	
PSB	SVOC	4-Nitrophenol	100-02-7	T		4				1.90E-03	1.90E-03						
PSB	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	4				1.40E-03	1.40E-03	2.7E-01				3.5E+01	
PSB	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	4				6.70E-04	6.70E-04	5.0E-03				3.6E-01	
PSB	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	4				7.80E-04	7.80E-04						
PSB	SVOC	Pentachlorophenol	87-86-5	T	B2	4				2.40E-03	2.40E-03	1.0E-03				2.0E-01	
PSB	SVOC	Phenanthrene	85-01-8	T	D	4	1	1.10E-03	1.10E-03	8.20E-04	8.20E-04	5.2E-02	2.1E-02	1.0E+00	1.1E-03	1.0E+00	1.1E-03
PSB	SVOC	Phenol	108-95-2	T	ID	4	2	6.10E-02	6.70E-02	2.60E-03	2.60E-03	4.4E+00	1.5E-02			2.9E+04	2.3E-06
PSB	SVOC	Pyrene	129-00-0	T	D	4				1.10E-03	1.10E-03	1.4E-01		1.4E-01		1.4E-01	
PSB	SVOC	2,4,5-Trichlorophenol	95-95-4	T		4				1.20E-03	1.20E-03	7.3E-01				1.7E+02	
PSB	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	4				1.70E-03	1.70E-03	1.2E-01				1.0E+01	
PSB	P/PCB	PCBs (total)	1336-36-3	D	B2	2				8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
PSB	P/PCB	PCBs (total)	1336-36-3	T	B2	4				8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
PSB	INORG	Antimony	7440-36-0	D		4	1	2.70E-03	2.70E-03	2.20E-03	2.20E-03	6.0E-03	4.5E-01			6.8E+01	4.0E-05
PSB	INORG	Antimony	7440-36-0	T		4				2.20E-03	2.20E-03	6.0E-03				6.8E+01	
PSB	INORG	Arsenic	7440-38-2	D	A	4	4	4.50E-03	1.51E-02			5.0E-02	3.0E-01			4.3E+00	3.5E-03
PSB	INORG	Arsenic	7440-38-2	T	A	4	3	6.00E-03	1.42E-02	3.90E-03	3.90E-03	5.0E-02	2.8E-01			4.3E+00	3.3E-03
PSB	INORG	Barium	7440-39-3	D	D	4	4	5.55E-01	9.09E-01			2.0E+00	4.5E-01			1.4E+04	6.5E-05
PSB	INORG	Barium	7440-39-3	T	D	4	4	5.66E-01	8.79E-01			2.0E+00	4.4E-01			1.4E+04	6.3E-05
PSB	INORG	Beryllium	7440-41-7	D	B1	4				5.40E-04	5.40E-04	4.0E-03				2.9E+02	
PSB	INORG	Beryllium	7440-41-7	T	B1	4				5.40E-04	5.40E-04	4.0E-03				2.9E+02	
PSB	INORG	Cadmium	7440-43-9	D	B1	4				2.80E-04	2.80E-04	5.0E-03				1.9E+02	
PSB	INORG	Cadmium	7440-43-9	T	B1	4				2.80E-04	2.80E-04	5.0E-03				1.9E+02	
PSB	INORG	Chromium (total)	7440-47-3	D		4				1.40E-03	1.40E-03	1.0E-01				4.6E+02	
PSB	INORG	Chromium (total)	7440-47-3	T		4				1.40E-03	1.40E-03	1.0E-01				4.6E+02	
PSB	INORG	Cobalt	7440-48-4	D	B1	4				1.30E-03	1.30E-03	4.0E-02				2.4E+03	
PSB	INORG	Cobalt	7440-48-4	T	B1	4				1.30E-03	1.30E-03	4.0E-02				2.4E+03	
PSB	INORG	Copper	7440-50-8	D	D	4				4.20E-03	4.20E-03	1.4E+00				7.4E+03	
PSB	INORG	Copper	7440-50-8	T	D	4				4.20E-03	4.20E-03	1.4E+00				7.4E+03	
PSB	INORG	Lead	7439-92-1	D	B2	4				2.50E-03	2.50E-03	4.0E-03					
PSB	INORG	Lead	7439-92-1	T	B2	4				2.50E-03	2.50E-03	4.0E-03					
PSB	INORG	Manganese	7439-96-5	D	D	4	2	3.43E-01	4.14E-01	9.00E-04	9.00E-04	8.6E-01	4.8E-01			9.1E+03	4.5E-05
PSB	INORG	Manganese	7439-96-5	T	D	4	4	4.50E-03	3.97E-01			8.6E-01	4.6E-01			9.1E+03	4.4E-05
PSB	INORG	Mercury	7439-97-6	D	D	4	1	2.50E-04	2.50E-04	6.90E-05	6.90E-05	2.0E-03	1.3E-01	5.6E-02	4.5E-03	5.6E-02	4.5E-03

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
PSB	INORG	Mercury	7439-97-6	T	D	4	2	9.20E-05	1.10E-04	6.90E-05	6.90E-05	2.0E-03	5.5E-02	5.6E-02	2.0E-03	5.6E-02	2.0E-03
PSB	INORG	Nickel	7440-02-0	D	A	4	2	4.30E-03	1.56E-02	2.20E-03	2.20E-03	1.0E-01	1.6E-01			7.4E+04	2.1E-07
PSB	INORG	Nickel	7440-02-0	T	A	4	2	3.90E-03	1.55E-02	2.20E-03	2.20E-03	1.0E-01	1.6E-01			7.4E+04	2.1E-07
PSB	INORG	Selenium	7782-49-2	D	D	4				4.50E-03	4.50E-03	5.0E-02				9.7E+02	
PSB	INORG	Selenium	7782-49-2	T	D	4				4.50E-03	4.50E-03	5.0E-02				9.7E+02	
PSB	INORG	Silver	7440-22-4	D	D	4				1.50E-03	1.50E-03	3.4E-02				1.5E+03	
PSB	INORG	Silver	7440-22-4	T	D	4				1.50E-03	1.50E-03	3.4E-02				1.5E+03	
PSB	INORG	Thallium	7440-28-0	D		4				1.80E-05	5.00E-03	2.0E-03				1.3E+01	
PSB	INORG	Thallium	7440-28-0	T		4				1.80E-05	5.00E-03	2.0E-03				1.3E+01	
PSB	INORG	Vanadium	7440-62-2	D		4	1	2.50E-03	2.50E-03	8.20E-04	8.20E-04	4.5E-03	5.6E-01			9.7E+02	2.6E-06
PSB	INORG	Vanadium	7440-62-2	T		4	1	2.40E-03	2.40E-03	8.20E-04	8.20E-04	4.5E-03	5.3E-01			9.7E+02	2.5E-06
PSB	INORG	Zinc	7440-66-6	D	D	4				1.20E-02	1.20E-02	2.4E+00				1.1E+05	
PSB	INORG	Zinc	7440-66-6	T	D	4	3	1.33E-02	1.97E-02	1.20E-02	1.20E-02	2.4E+00	8.2E-03			1.1E+05	1.8E-07
SWDF	VOC	Acetone	67-64-1	T	ID	10	3	2.10E-03	5.50E-03	1.10E-03	1.10E-03	7.3E-01	7.5E-03	1.0E+06	5.5E-09	3.1E+04	1.8E-07
SWDF	VOC	Benzene	71-43-2	T	A	10	1	4.50E-04	4.50E-04	3.70E-04	3.70E-04	5.0E-03	9.0E-02	3.5E+01	1.3E-05	1.1E+01	4.1E-05
SWDF	VOC	Bromodichloromethane	75-27-4	T	B2	10				3.20E-04	3.20E-04	1.0E-01		3.7E+01		1.4E+01	
SWDF	VOC	Bromoform	75-25-2	T	B2	10				3.70E-04	3.70E-04	1.0E-01		3.1E+03		1.4E+02	
SWDF	VOC	Bromomethane	74-83-9	T	D	10				3.00E-04	3.00E-04	1.0E-02		9.0E+00		7.0E+01	
SWDF	VOC	2-Butanone	78-93-3	T	ID	10	1	1.30E-03	1.30E-03	5.90E-04	5.90E-04	1.3E+01	1.0E-04	2.4E+05	5.4E-09	2.4E+05	5.4E-09
SWDF	VOC	Carbon Disulfide	75-15-0	T		10	6	1.80E-04	2.30E-03	2.40E-04	2.40E-04	8.0E-01	2.9E-03	5.5E+02	4.2E-06	1.2E+03	1.9E-06
SWDF	VOC	Carbon Tetrachloride	56-23-5	T	B2	10				3.70E-04	3.70E-04	5.0E-03		2.4E+00		4.6E+00	
SWDF	VOC	Chlorobenzene	108-90-7	T	D	10				3.80E-04	3.80E-04	1.0E-01		4.7E+02		8.6E+01	
SWDF	VOC	Chloroethane	75-00-3	T		10				2.90E-04	2.90E-04	4.3E-01		5.7E+03		4.4E+02	
SWDF	VOC	Chloroform	67-66-3	T	B2	10				3.50E-04	3.50E-04	1.0E-01		1.8E+02		1.5E+02	
SWDF	VOC	Chloromethane	74-87-3	T	D	10				4.90E-04	4.90E-04	2.6E-01		4.5E+01		4.9E+02	
SWDF	VOC	Cumene	98-82-8	T	D	10				3.90E-04	3.90E-04	8.0E-01		5.6E+01		5.6E+01	
SWDF	VOC	Cyclohexane	110-82-7	T	ID	10				3.30E-04	3.30E-04						
SWDF	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	10				8.20E-04	8.20E-04	2.0E-04		1.2E+00		3.9E-01	
SWDF	VOC	Dibromochloromethane	124-48-1	T	C	10				3.70E-04	3.70E-04	1.0E-01		1.1E+02		1.8E+01	
SWDF	VOC	1,2-Dibromoethane	106-93-4	T	B2	10				3.40E-04	3.40E-04	1.0E-03		1.5E+01		2.5E-02	
SWDF	VOC	1,2-Dichlorobenzene	95-50-1	T	D	10				3.80E-04	3.80E-04	6.0E-01		1.6E+02		1.6E+02	
SWDF	VOC	1,3-Dichlorobenzene	541-73-1	T	D	10				3.80E-04	3.80E-04	6.6E-03				2.0E+00	
SWDF	VOC	1,4-Dichlorobenzene	106-46-7	T	C	10				3.80E-04	3.80E-04	7.5E-02		7.4E+01		6.4E+00	
SWDF	VOC	Dichlorodifluoromethane	75-71-8	T		10				4.90E-04	4.90E-04	1.7E+00		3.0E+02		3.0E+02	
SWDF	VOC	1,1-Dichloroethane	75-34-3	T	C	10	1	5.40E-04	5.40E-04	3.00E-04	3.00E-04	8.8E-01	6.1E-04	2.3E+03	2.3E-07	2.4E+03	2.3E-07
SWDF	VOC	1,2-Dichloroethane	107-06-2	T	B2	10				2.80E-04	2.80E-04	5.0E-03		5.9E+01		1.9E+01	
SWDF	VOC	1,1-Dichloroethene	75-35-4	T	C	10				3.10E-04	3.10E-04	7.0E-03		1.3E+00		1.1E+01	
SWDF	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	10				3.50E-04	3.50E-04	7.0E-02		2.1E+02		2.0E+02	
SWDF	VOC	trans-1,2-Dichloroethene	156-60-5	T		10				3.30E-04	3.30E-04	1.0E-01		2.0E+02		2.2E+02	
SWDF	VOC	1,2-Dichloropropane	78-87-5	T	B2	10				4.10E-04	4.10E-04	5.0E-03		3.6E+01		1.6E+01	
SWDF	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	10				3.50E-04	3.50E-04	8.5E-03		2.6E+01		5.5E+00	
SWDF	VOC	Ethyl Benzene	100-41-4	T	D	10				4.10E-04	4.10E-04	7.0E-01		1.7E+02		1.7E+02	
SWDF	VOC	2-Hexanone	591-78-6	T		10				5.80E-04	5.80E-04	1.0E+00		8.7E+03		5.2E+03	
SWDF	VOC	Methyl Acetate	79-20-9	T		10				5.40E-04	5.40E-04						
SWDF	VOC	Methyl tert-butyl ether	1634-04-4	T		10				2.70E-04	2.70E-04	2.4E-01		4.7E+04		6.1E+02	
SWDF	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	9	6	7.80E-04	3.30E-03	2.60E-04	2.60E-04	1.8E+00	1.8E-03	2.0E+04	1.7E-07	1.3E+04	2.5E-07
SWDF	VOC	Methylcyclohexane	108-87-2	T		10				4.20E-04	4.20E-04						
SWDF	VOC	Methylene Chloride	75-09-2	T	B2	10				2.90E-04	2.90E-04	5.0E-03		1.4E+03		2.2E+02	
SWDF	VOC	Styrene	100-42-5	T		10				3.50E-04	3.50E-04	1.0E-01		3.1E+02		9.7E+00	
SWDF	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	10				3.60E-04	3.60E-04	8.5E-03		7.7E+01		4.7E+00	
SWDF	VOC	Tetrachloroethene	127-18-4	T	C-B2	10				4.20E-04	4.20E-04	5.0E-03		1.7E+02		1.2E+01	
SWDF	VOC	Toluene	108-88-3	T	D	10	8	4.70E-04	9.50E-04	3.90E-04	3.90E-04	1.0E+00	9.5E-04	5.3E+02	1.8E-06	5.3E+02	1.8E-06
SWDF	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	10				4.00E-04	4.00E-04	7.0E-02		3.0E+02		1.9E+01	
SWDF	VOC	1,1,1-Trichloroethane	71-55-6	T	D	10				3.90E-04	3.90E-04	2.0E-01		1.3E+03		1.3E+03	
SWDF	VOC	1,1,2-Trichloroethane	79-00-5	T	C	10				3.60E-04	3.60E-04	5.0E-03		1.1E+02		2.1E+01	
SWDF	VOC	Trichloroethene	79-01-6	T	C-B2	10				4.20E-04	4.20E-04	5.0E-03		9.7E+01		2.2E+01	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
SWDF	VOC	Trichlorofluoromethane	75-69-4	T		10				5.40E-04	5.40E-04	2.6E+00		1.1E+03		1.1E+03	
SWDF	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		10				3.20E-04	3.20E-04	1.7E+02		1.7E+02		1.7E+02	
SWDF	VOC	Vinyl Chloride	75-01-4	T	A	10				3.60E-04	3.60E-04	2.0E-03		1.3E+01		1.0E+00	
SWDF	VOC	Xylenes (total)	1330-20-7	T	ID	10	6	5.20E-04	1.50E-03	4.40E-04	4.40E-04	1.0E+01	1.5E-04	1.9E+02	7.9E-06	1.9E+02	7.9E-06
SWDF	SVOC	Acenaphthene	83-32-9	T		10	3	8.60E-04	1.35E-03	8.00E-04	2.00E-03	1.3E+00	1.0E-03	4.2E+00	3.2E-04	4.2E+00	3.2E-04
SWDF	SVOC	Acenaphthylene	208-96-8	T	D	10				7.10E-04	1.80E-03	5.2E-02		3.9E+00		3.9E+00	
SWDF	SVOC	Acetophenone	98-86-2	T	D	10				2.60E-03	6.50E-03	1.5E+00		6.1E+03		6.1E+03	
SWDF	SVOC	Anthracene	120-12-7	T	D	10	1	7.40E-04	7.40E-04	6.80E-04	1.70E-03	4.3E-02	1.7E-02	4.3E-02	1.7E-02	4.3E-02	1.7E-02
SWDF	SVOC	Atrazine	1912-24-9	T		10				2.50E-03	6.20E-03	3.0E-03				5.4E+00	
SWDF	SVOC	Benzaldehyde	100-52-7	T		10				2.80E-03	7.00E-03						
SWDF	SVOC	Benzo(a)anthracene	56-55-3	T	B2	10				7.00E-04	1.80E-03	2.1E-03				9.4E-03	
SWDF	SVOC	Benzo(a)pyrene	50-32-8	T	B2	10				7.30E-04	1.80E-03	5.0E-03				2.0E-03	
SWDF	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	10				9.40E-04	2.40E-03	2.0E-03				2.0E-03	
SWDF	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	10				8.50E-04	2.10E-03	5.0E-03				5.0E-03	
SWDF	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	10				8.40E-04	2.10E-03	5.0E-03				5.0E-03	
SWDF	SVOC	Biphenyl	92-52-4	T	D	10				2.60E-03	6.50E-03						
SWDF	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	10				8.70E-04	2.20E-03						
SWDF	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	10				9.70E-04	2.40E-03	2.0E-03		2.1E+02		5.7E+00	
SWDF	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	10				2.70E-03	6.80E-03	6.0E-03				3.2E-01	
SWDF	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	10				8.80E-04	2.20E-03						
SWDF	SVOC	Butylbenzylphthalate	85-68-7	T	C	10				8.80E-04	2.20E-03	1.2E+00				2.7E+00	
SWDF	SVOC	Caprolactam	105-60-2	T		10				2.50E-03	6.20E-03	5.8E+00				3.9E+05	
SWDF	SVOC	Carbazole	86-74-8	T	B2	10	5	1.00E-03	4.70E-03	8.20E-04	2.00E-03	8.5E-02	5.5E-02			7.4E+00	6.4E-04
SWDF	SVOC	4-Chloro-3-methylphenol	59-50-7	T		10				9.90E-04	2.50E-03	1.5E-01				7.9E+01	
SWDF	SVOC	4-Chloroaniline	106-47-8	T		10				6.10E-04	1.50E-03						
SWDF	SVOC	2-Chloronaphthalene	91-58-7	T		10				8.50E-04	2.10E-03	1.8E+00				6.7E+00	
SWDF	SVOC	2-Chlorophenol	95-57-8	T		10				1.00E-03	2.50E-03	4.5E-02				9.4E+01	
SWDF	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		10				7.90E-04	2.00E-03						
SWDF	SVOC	Chrysene	218-01-9	T	B2	10				7.50E-04	1.90E-03	5.0E-03				5.0E-03	
SWDF	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	10				7.90E-04	2.00E-03	2.0E-03				2.0E-03	
SWDF	SVOC	Dibenzofuran	132-64-9	T	D	10				1.10E-03	2.80E-03						
SWDF	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	10				9.30E-04	2.30E-03	1.1E-03				1.8E-01	
SWDF	SVOC	2,4-Dichlorophenol	120-83-2	T		10				8.50E-04	2.10E-03	7.3E-02				4.8E+01	
SWDF	SVOC	Diethylphthalate	84-66-2	T	D	10	4	8.00E-04	2.30E-03	6.50E-04	1.60E-03	5.5E+00	4.2E-04			1.1E+03	2.1E-06
SWDF	SVOC	2,4-Dimethylphenol	105-67-9	T		10	7	1.30E-03	1.50E-02	8.50E-04	8.50E-04	3.7E-01	4.1E-02			5.2E+02	2.9E-05
SWDF	SVOC	Dimethylphthalate	131-11-3	T	D	10				7.60E-04	1.90E-03	7.3E+01				4.2E+03	
SWDF	SVOC	Di-n-butylphthalate	84-74-2	T	D	10	1	7.70E-04	7.70E-04	6.70E-04	1.70E-03	8.8E-01	8.8E-04			1.1E+01	7.0E-05
SWDF	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		10				1.30E-03	3.20E-03	2.0E-02				9.5E+00	
SWDF	SVOC	2,4-Dinitrophenol	51-28-5	T		10				3.00E-03	7.50E-03						
SWDF	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	10				7.90E-04	2.00E-03	7.7E-03				8.6E+00	
SWDF	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	10				5.70E-04	1.40E-03						
SWDF	SVOC	Di-n-octylphthalate	117-84-0	T		10				1.10E-03	2.80E-03	1.3E-01				4.0E-01	
SWDF	SVOC	Fluoranthene	206-44-0	T	D	10	1	9.15E-04	9.15E-04	8.10E-04	2.00E-03	2.1E-01	4.4E-03	2.1E-01	4.4E-03	2.1E-01	4.4E-03
SWDF	SVOC	Fluorene	86-73-7	T	D	10	2	1.65E-03	1.70E-03	1.00E-03	2.50E-03	8.8E-01	1.9E-03	2.0E+00	8.5E-04	2.0E+00	8.5E-04
SWDF	SVOC	Hexachlorobenzene	118-74-1	T	B2	10				7.40E-04	1.80E-03	1.0E-03		3.0E+00		4.6E-03	
SWDF	SVOC	Hexachlorobutadiene	87-68-3	T	C	10				7.30E-04	1.80E-03	1.5E-02		3.2E+00		4.0E-01	
SWDF	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	10				1.10E-03	2.80E-03	5.0E-02		4.2E-01		1.6E+00	
SWDF	SVOC	Hexachloroethane	67-72-1	T	C	10				7.40E-04	1.80E-03	7.3E-03		5.0E+01		1.9E+00	
SWDF	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	10				6.30E-04	1.60E-03	2.0E-03				2.0E-03	
SWDF	SVOC	Isophorone	78-59-1	T	C	10				6.30E-04	1.60E-03	7.7E-01				9.9E+02	
SWDF	SVOC	2-Methylnaphthalene	91-57-6	T	ID	10	2	7.20E-04	7.30E-04	6.40E-04	1.60E-03	2.6E-01	2.8E-03			2.5E+01	2.9E-05
SWDF	SVOC	Methylphenol (total)	1319-77-3	T		10	7	2.45E-03	1.75E-02	1.30E-03	1.30E-03	3.7E-01	4.7E-02			8.1E+02	2.2E-05
SWDF	SVOC	Naphthalene	91-20-3	T	C	10	6	7.60E-04	3.60E-03	7.50E-04	1.90E-03	5.2E-01	6.9E-03	3.1E+01	1.2E-04	3.1E+01	1.2E-04
SWDF	SVOC	2-Nitroaniline	88-74-4	T		10				7.00E-04	1.80E-03						
SWDF	SVOC	3-Nitroaniline	99-09-2	T	C	10				7.10E-04	1.80E-03						
SWDF	SVOC	4-Nitroaniline	100-01-6	T	C	10				1.30E-03	3.20E-03						

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
SWDF	SVOC	Nitrobenzene	98-95-3	T	D	10				8.10E-04	2.00E-03	3.4E-03		5.5E+02		1.1E+01	
SWDF	SVOC	2-Nitrophenol	88-75-5	T		10				2.10E-03	5.20E-03	2.0E-02				7.9E+01	
SWDF	SVOC	4-Nitrophenol	100-02-7	T		10				1.90E-03	4.80E-03						
SWDF	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	10				1.40E-03	3.50E-03	2.7E-01				3.5E+01	
SWDF	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	10				6.70E-04	1.70E-03	5.0E-03				3.6E-01	
SWDF	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	10				7.80E-04	2.00E-03						
SWDF	SVOC	Pentachlorophenol	87-86-5	T	B2	10				2.40E-03	6.00E-03	1.0E-03				2.0E-01	
SWDF	SVOC	Phenanthrene	85-01-8	T	D	10	4	9.10E-04	2.25E-03	8.20E-04	2.00E-03	5.2E-02	4.3E-02	1.0E+00	2.3E-03	1.0E+00	2.3E-03
SWDF	SVOC	Phenol	108-95-2	T	ID	10	5	2.70E-03	9.40E-02	2.60E-03	2.60E-03	4.4E+00	2.1E-02			2.9E+04	3.2E-06
SWDF	SVOC	Pyrene	129-00-0	T	D	10				1.10E-03	2.80E-03	1.4E-01		1.4E-01		1.4E-01	
SWDF	SVOC	2,4,5-Trichlorophenol	95-95-4	T		10				1.20E-03	3.00E-03	7.3E-01				1.7E+02	
SWDF	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	10				1.70E-03	4.20E-03	1.2E-01				1.0E+01	
SWDF	P/PCB	PCBs (total)	1336-36-3	T	B2	10	9	1.28E-04	1.40E-03	8.20E-05	8.20E-05	5.0E-04	**2.8E+00**	4.5E-02	3.1E-02	3.3E-03	4.2E-01
SWDF	INORG	Antimony	7440-36-0	D		8	3	8.20E-03	2.23E-02	3.40E-03	3.40E-03	6.0E-03	**3.7E+00**			6.8E+01	3.3E-04
SWDF	INORG	Antimony	7440-36-0	T		9	2	6.70E-03	1.29E-02	3.40E-03	3.40E-03	6.0E-03	**2.2E+00**			6.8E+01	1.9E-04
SWDF	INORG	Arsenic	7440-38-2	D	A	8	7	3.60E-03	1.64E-02	2.10E-03	2.10E-03	5.0E-02	3.3E-01			4.3E+00	3.8E-03
SWDF	INORG	Arsenic	7440-38-2	T	A	9	9	3.40E-03	3.06E-02			5.0E-02	6.1E-01			4.3E+00	7.1E-03
SWDF	INORG	Barium	7440-39-3	D	D	8	8	6.01E-02	3.84E-01			2.0E+00	1.9E-01			1.4E+04	2.7E-05
SWDF	INORG	Barium	7440-39-3	T	D	9	9	1.87E-02	4.13E-01			2.0E+00	2.1E-01			1.4E+04	3.0E-05
SWDF	INORG	Beryllium	7440-41-7	D	B1	8	2	6.10E-04	6.20E-04	6.00E-04	6.00E-04	4.0E-03	1.6E-01			2.9E+02	2.1E-06
SWDF	INORG	Beryllium	7440-41-7	T	B1	9	3	6.90E-04	9.00E-04	6.00E-04	6.00E-04	4.0E-03	2.3E-01			2.9E+02	3.1E-06
SWDF	INORG	Cadmium	7440-43-9	D	B1	8	5	3.80E-04	4.90E-04	2.80E-04	2.80E-04	5.0E-03	9.8E-02			1.9E+02	2.6E-06
SWDF	INORG	Cadmium	7440-43-9	T	B1	9	9	3.80E-04	6.70E-03			5.0E-03	**1.3E+00**			1.9E+02	3.5E-05
SWDF	INORG	Chromium (total)	7440-47-3	D		8				1.50E-03	1.50E-03	1.0E-01				4.6E+02	
SWDF	INORG	Chromium (total)	7440-47-3	T		9	5	4.70E-03	9.00E-02	1.50E-03	1.50E-03	1.0E-01	9.0E-01			4.6E+02	2.0E-04
SWDF	INORG	Cobalt	7440-48-4	D	B1	8	1	1.40E-03	1.40E-03	7.40E-04	7.40E-04	4.0E-02	3.5E-02			2.4E+03	5.8E-07
SWDF	INORG	Cobalt	7440-48-4	T	B1	9	6	9.80E-04	2.80E-02	7.40E-04	7.40E-04	4.0E-02	7.0E-01			2.4E+03	1.2E-05
SWDF	INORG	Copper	7440-50-8	D	D	8	1	8.50E-03	8.50E-03	1.70E-03	1.70E-03	1.4E+00	6.1E-03			7.4E+03	1.1E-06
SWDF	INORG	Copper	7440-50-8	T	D	9	1	1.56E-01	1.56E-01	1.70E-03	1.70E-03	1.4E+00	1.1E-01			7.4E+03	2.1E-05
SWDF	INORG	Lead	7439-92-1	D	B2	8				1.60E-03	1.60E-03	4.0E-03					
SWDF	INORG	Lead	7439-92-1	T	B2	9	6	1.70E-03	1.64E-01	1.60E-03	1.60E-03	4.0E-03	**4.1E+01**				
SWDF	INORG	Manganese	7439-96-5	D	D	8	4	2.52E-02	1.02E+00	6.80E-04	6.80E-04	8.6E-01	**1.2E+00**			9.1E+03	1.1E-04
SWDF	INORG	Manganese	7439-96-5	T	D	9	6	5.82E-02	1.64E+00	6.80E-04	6.80E-04	8.6E-01	**1.9E+00**			9.1E+03	1.8E-04
SWDF	INORG	Mercury	7439-97-6	D	D	8				8.70E-05	8.70E-05	2.0E-03		5.6E-02		5.6E-02	
SWDF	INORG	Mercury	7439-97-6	T	D	9	2	1.60E-04	9.30E-04	8.70E-05	8.70E-05	2.0E-03	4.7E-01	5.6E-02	1.7E-02	5.6E-02	1.7E-02
SWDF	INORG	Nickel	7440-02-0	D	A	8	7	3.40E-03	1.45E-02	2.90E-03	2.90E-03	1.0E-01	1.5E-01			7.4E+04	2.0E-07
SWDF	INORG	Nickel	7440-02-0	T	A	9	9	3.00E-03	9.84E-02			1.0E-01	9.8E-01			7.4E+04	1.3E-06
SWDF	INORG	Selenium	7782-49-2	D	D	8				4.70E-03	4.70E-03	5.0E-02				9.7E+02	
SWDF	INORG	Selenium	7782-49-2	T	D	9				4.70E-03	4.70E-03	5.0E-02				9.7E+02	
SWDF	INORG	Silver	7440-22-4	D	D	8				9.80E-04	9.80E-04	3.4E-02				1.5E+03	
SWDF	INORG	Silver	7440-22-4	T	D	9				9.80E-04	9.80E-04	3.4E-02				1.5E+03	
SWDF	INORG	Thallium	7440-28-0	D		8				3.30E-05	3.30E-05	2.0E-03				1.3E+01	
SWDF	INORG	Thallium	7440-28-0	T		9	1	2.50E-04	2.50E-04	3.30E-05	3.30E-05	2.0E-03	1.3E-01			1.3E+01	1.9E-05
SWDF	INORG	Vanadium	7440-62-2	D		8	7	9.90E-04	1.16E-02	6.70E-04	6.70E-04	4.5E-03	**2.6E+00**			9.7E+02	1.2E-05
SWDF	INORG	Vanadium	7440-62-2	T		9	9	1.40E-03	8.70E-02			4.5E-03	**1.9E+01**			9.7E+02	9.0E-05
SWDF	INORG	Zinc	7440-66-6	D	D	8	1	3.59E-02	3.59E-02	1.40E-02	1.40E-02	2.4E+00	1.5E-02			1.1E+05	3.3E-07
SWDF	INORG	Zinc	7440-66-6	T	D	9	2	2.23E-01	3.95E-01	1.40E-02	1.40E-02	2.4E+00	1.6E-01			1.1E+05	3.6E-06
SWHI	VOC	Acetone	67-64-1	T	ID	24	6	1.50E-02	7.80E-02	5.10E-04	1.00E-02	7.3E-01	1.1E-01	1.0E+06	7.8E-08	3.1E+04	2.5E-06
SWHI	VOC	Benzene	71-43-2	T	A	24				1.60E-04	1.00E-03	5.0E-03		3.5E+01		1.1E+01	
SWHI	VOC	Bromodichloromethane	75-27-4	T	B2	24	2	1.80E-04	4.20E-04	1.70E-04	1.00E-03	1.0E-01	4.2E-03	3.7E+01	1.1E-05	1.4E+01	3.0E-05
SWHI	VOC	Bromoform	75-25-2	T	B2	24				1.80E-04	1.00E-03	1.0E-01		3.1E+03		1.4E+02	
SWHI	VOC	Bromomethane	74-83-9	T	D	23				2.00E-04	1.00E-03	1.0E-02		9.0E+00		7.0E+01	
SWHI	VOC	2-Butanone	78-93-3	T	ID	24	1	5.00E-04	5.00E-04	4.10E-04	1.00E-02	1.3E+01	3.8E-05	2.4E+05	2.1E-09	2.4E+05	2.1E-09
SWHI	VOC	Carbon Disulfide	75-15-0	T		24				2.00E-04	1.00E-03	8.0E-01		5.5E+02		1.2E+03	
SWHI	VOC	Carbon Tetrachloride	56-23-5	T	B2	24				1.20E-04	1.00E-03	5.0E-03		2.4E+00		4.6E+00	
SWHI	VOC	Chlorobenzene	108-90-7	T	D	24				1.40E-04	1.00E-03	1.0E-01		4.7E+02		8.6E+01	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
SWHI	VOC	Chloroethane	75-00-3	T		24				2.60E-04	1.00E-03	4.3E-01		5.7E+03		4.4E+02	
SWHI	VOC	Chloroform	67-66-3	T	B2	24	6	1.40E-04	1.70E-03	1.40E-04	1.00E-03	1.0E-01	1.7E-02	1.8E+02	9.4E-06	1.5E+02	1.1E-05
SWHI	VOC	Chloromethane	74-87-3	T	D	24	3	1.30E-04	3.35E-04	1.30E-04	1.00E-03	2.6E-01	1.3E-03	4.5E+01	7.4E-06	4.9E+02	6.8E-07
SWHI	VOC	Cumene	98-82-8	T	D	24				1.20E-04	1.00E-03	8.0E-01		5.6E+01		5.6E+01	
SWHI	VOC	Cyclohexane	110-82-7	T	ID	24				1.30E-04	1.00E-03						
SWHI	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	24				6.20E-04	2.00E-03	2.0E-04		1.2E+00		3.9E-01	
SWHI	VOC	Dibromochloromethane	124-48-1	T	C	24				2.60E-04	1.00E-03	1.0E-01		1.1E+02		1.8E+01	
SWHI	VOC	1,2-Dibromoethane	106-93-4	T	B2	24				2.20E-04	1.00E-03	1.0E-03		1.5E+01		2.5E-02	
SWHI	VOC	1,2-Dichlorobenzene	95-50-1	T	D	24	1	2.20E-04	2.20E-04	1.10E-04	1.00E-03	6.0E-01	3.7E-04	1.6E+02	1.4E-06	1.6E+02	1.4E-06
SWHI	VOC	1,3-Dichlorobenzene	541-73-1	T	D	24				1.50E-04	1.00E-03	6.6E-03				2.0E+00	
SWHI	VOC	1,4-Dichlorobenzene	106-46-7	T	C	24				1.70E-04	1.00E-03	7.5E-02		7.4E+01		6.4E+00	
SWHI	VOC	Dichlorodifluoromethane	75-71-8	T		24				2.60E-04	2.00E-03	1.7E+00		3.0E+02		3.0E+02	
SWHI	VOC	1,1-Dichloroethane	75-34-3	T	C	24	2	8.50E-04	1.00E-03	1.60E-04	1.00E-03	8.8E-01	1.1E-03	2.3E+03	4.3E-07	2.4E+03	4.2E-07
SWHI	VOC	1,2-Dichloroethane	107-06-2	T	B2	24				2.10E-04	1.00E-03	5.0E-03		5.9E+01		1.9E+01	
SWHI	VOC	1,1-Dichloroethene	75-35-4	T	C	24	2	8.10E-04	9.70E-04	2.40E-04	1.00E-03	7.0E-03	1.4E-01	1.3E+00	7.5E-04	1.1E+01	8.8E-05
SWHI	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	24				2.20E-04	5.00E-04	7.0E-02		2.1E+02		2.0E+02	
SWHI	VOC	trans-1,2-Dichloroethene	156-60-5	T		24				1.50E-04	5.00E-04	1.0E-01		2.0E+02		2.2E+02	
SWHI	VOC	1,2-Dichloropropane	78-87-5	T	B2	24				1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01	
SWHI	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	24				2.70E-04	1.00E-03	8.5E-03		2.6E+01		5.5E+00	
SWHI	VOC	Ethyl Benzene	100-41-4	T	D	24	1	1.80E-04	1.80E-04	1.20E-04	1.00E-03	7.0E-01	2.6E-04	1.7E+02	1.1E-06	1.7E+02	1.1E-06
SWHI	VOC	2-Hexanone	591-78-6	T		24				4.60E-04	1.00E-02	1.0E+00		8.7E+03		5.2E+03	
SWHI	VOC	Methyl Acetate	79-20-9	T		24				4.10E-04	1.00E-02						
SWHI	VOC	Methyl tert-butyl ether	1634-04-4	T		24				1.30E-04	5.00E-03	2.4E-01		4.7E+04		6.1E+02	
SWHI	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	23				2.30E-04	1.00E-02	1.8E+00		2.0E+04		1.3E+04	
SWHI	VOC	Methylcyclohexane	108-87-2	T		24				1.50E-04	1.00E-03						
SWHI	VOC	Methylene Chloride	75-09-2	T	B2	24				2.90E-04	1.00E-03	5.0E-03		1.4E+03		2.2E+02	
SWHI	VOC	Styrene	100-42-5	T		24				1.50E-04	1.00E-03	1.0E-01		3.1E+02		9.7E+00	
SWHI	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	24				2.50E-04	1.00E-03	8.5E-03		7.7E+01		4.7E+00	
SWHI	VOC	Tetrachloroethene	127-18-4	T	C-B2	24	2	4.60E-04	5.50E-04	2.30E-04	1.00E-03	5.0E-03	1.1E-01	1.7E+02	3.2E-06	1.2E+01	4.6E-05
SWHI	VOC	Toluene	108-88-3	T	D	24	5	1.90E-04	8.10E-04	1.80E-04	1.00E-03	1.0E+00	8.1E-04	5.3E+02	1.5E-06	5.3E+02	1.5E-06
SWHI	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	24				1.70E-04	1.00E-03	7.0E-02		3.0E+02		1.9E+01	
SWHI	VOC	1,1,1-Trichloroethane	71-55-6	T	D	24	5	5.25E-04	7.00E-03	1.50E-04	1.00E-03	2.0E-01	3.5E-02	1.3E+03	5.4E-06	1.3E+03	5.4E-06
SWHI	VOC	1,1,2-Trichloroethane	79-00-5	T	C	24				3.00E-04	1.00E-03	5.0E-03		1.1E+02		2.1E+01	
SWHI	VOC	Trichloroethene	79-01-6	T	C-B2	24	2	7.10E-04	1.10E-03	1.40E-04	1.00E-03	5.0E-03	2.2E-01	9.7E+01	1.1E-05	2.2E+01	5.0E-05
SWHI	VOC	Trichlorofluoromethane	75-69-4	T		24				2.80E-04	1.00E-03	2.6E+00		1.1E+03		1.1E+03	
SWHI	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		24				3.20E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
SWHI	VOC	Vinyl Chloride	75-01-4	T	A	24				1.50E-04	1.00E-03	2.0E-03		1.3E+01		1.0E+00	
SWHI	VOC	Xylenes (total)	1330-20-7	T	ID	24	1	9.90E-04	9.90E-04	3.30E-04	1.00E-03	1.0E+01	9.9E-05	1.9E+02	5.2E-06	1.9E+02	5.2E-06
SWHI	SVOC	Acenaphthene	83-32-9	T		24				8.00E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00	
SWHI	SVOC	Acenaphthylene	208-96-8	T	D	24				7.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00	
SWHI	SVOC	Acetophenone	98-86-2	T	D	24				2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
SWHI	SVOC	Anthracene	120-12-7	T	D	24				6.80E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
SWHI	SVOC	Atrazine	1912-24-9	T		24				2.50E-03	5.00E-03	3.0E-03				5.4E+00	
SWHI	SVOC	Benzaldehyde	100-52-7	T		24				2.80E-03	1.00E-02						
SWHI	SVOC	Benzo(a)anthracene	56-55-3	T	B2	24				7.00E-04	5.00E-03	2.1E-03				9.4E-03	
SWHI	SVOC	Benzo(a)pyrene	50-32-8	T	B2	24				7.30E-04	5.00E-03	5.0E-03				2.0E-03	
SWHI	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	24				9.40E-04	5.00E-03	2.0E-03				2.0E-03	
SWHI	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	24				8.50E-04	5.00E-03	5.0E-03				5.0E-03	
SWHI	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	24				8.40E-04	5.00E-03	5.0E-03				5.0E-03	
SWHI	SVOC	Biphenyl	92-52-4	T	D	24				2.60E-03	1.00E-02						
SWHI	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	24				8.70E-04	5.00E-03						
SWHI	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	24				9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00	
SWHI	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	24				2.70E-03	5.00E-03	6.0E-03				3.2E-01	
SWHI	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	24				8.80E-04	5.00E-03						
SWHI	SVOC	Butylbenzylphthalate	85-68-7	T	C	24				8.80E-04	5.00E-03	1.2E+00				2.7E+00	
SWHI	SVOC	Caprolactam	105-60-2	T		24				2.50E-03	1.00E-02	5.8E+00				3.9E+05	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
SWHI	SVOC	Carbazole	86-74-8	T	B2	24				8.20E-04	1.00E-02	8.5E-02				7.4E+00	
SWHI	SVOC	4-Chloro-3-methylphenol	59-50-7	T		24				9.90E-04	5.00E-03	1.5E-01				7.9E+01	
SWHI	SVOC	4-Chloroaniline	106-47-8	T		20				6.10E-04	1.00E-02						
SWHI	SVOC	2-Chloronaphthalene	91-58-7	T		24				8.50E-04	5.00E-03	1.8E+00				6.7E+00	
SWHI	SVOC	2-Chlorophenol	95-57-8	T		24				1.00E-03	5.00E-03	4.5E-02				9.4E+01	
SWHI	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		24				7.90E-04	5.00E-03						
SWHI	SVOC	Chrysene	218-01-9	T	B2	24				7.50E-04	5.00E-03	5.0E-03				5.0E-03	
SWHI	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	24				7.90E-04	5.00E-03	2.0E-03				2.0E-03	
SWHI	SVOC	Dibenzofuran	132-64-9	T	D	24				1.10E-03	5.00E-03						
SWHI	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	20				9.30E-04	2.00E-02	1.1E-03				1.8E-01	
SWHI	SVOC	2,4-Dichlorophenol	120-83-2	T		24				8.50E-04	1.00E-02	7.3E-02				4.8E+01	
SWHI	SVOC	Diethylphthalate	84-66-2	T	D	24				6.50E-04	5.00E-03	5.5E+00				1.1E+03	
SWHI	SVOC	2,4-Dimethylphenol	105-67-9	T		24				8.50E-04	5.00E-03	3.7E-01				5.2E+02	
SWHI	SVOC	Dimethylphthalate	131-11-3	T	D	24				7.60E-04	5.00E-03	7.3E+01				4.2E+03	
SWHI	SVOC	Di-n-butylphthalate	84-74-2	T	D	24				6.70E-04	5.00E-03	8.8E-01				1.1E+01	
SWHI	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		24				1.30E-03	2.00E-02	2.0E-02				9.5E+00	
SWHI	SVOC	2,4-Dinitrophenol	51-28-5	T		24				3.00E-03	2.00E-02						
SWHI	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	24				7.90E-04	5.00E-03	7.7E-03				8.6E+00	
SWHI	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	24				5.70E-04	5.00E-03						
SWHI	SVOC	Di-n-octylphthalate	117-84-0	T		24				1.10E-03	5.00E-03	1.3E-01				4.0E-01	
SWHI	SVOC	Fluoranthene	206-44-0	T	D	24				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
SWHI	SVOC	Fluorene	86-73-7	T	D	24				1.00E-03	5.00E-03	8.8E-01		2.0E+00		2.0E+00	
SWHI	SVOC	Hexachlorobenzene	118-74-1	T	B2	24				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
SWHI	SVOC	Hexachlorobutadiene	87-68-3	T	C	24				7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
SWHI	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	24				1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
SWHI	SVOC	Hexachloroethane	67-72-1	T	C	24				7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
SWHI	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	24				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
SWHI	SVOC	Isophorone	78-59-1	T	C	24				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
SWHI	SVOC	2-Methylnaphthalene	91-57-6	T	ID	24				6.40E-04	5.00E-03	2.6E-01				2.5E+01	
SWHI	SVOC	Methylphenol (total)	1319-77-3	T		24				1.30E-03	5.00E-03	3.7E-01				8.1E+02	
SWHI	SVOC	Naphthalene	91-20-3	T	C	24				7.50E-04	5.00E-03	5.2E-01		3.1E+01		3.1E+01	
SWHI	SVOC	2-Nitroaniline	88-74-4	T		24				7.00E-04	2.00E-02						
SWHI	SVOC	3-Nitroaniline	99-09-2	T	C	20				7.10E-04	2.00E-02						
SWHI	SVOC	4-Nitroaniline	100-01-6	T	C	24				1.30E-03	2.00E-02						
SWHI	SVOC	Nitrobenzene	98-95-3	T	D	24				8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
SWHI	SVOC	2-Nitrophenol	88-75-5	T		24				2.10E-03	5.00E-03	2.0E-02				7.9E+01	
SWHI	SVOC	4-Nitrophenol	100-02-7	T		24				1.90E-03	2.00E-02						
SWHI	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	24				1.40E-03	5.00E-03	2.7E-01				3.5E+01	
SWHI	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	24				6.70E-04	5.00E-03	5.0E-03				3.6E-01	
SWHI	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	24				7.80E-04	5.00E-03						
SWHI	SVOC	Pentachlorophenol	87-86-5	T	B2	24				2.40E-03	5.00E-03	1.0E-03				2.0E-01	
SWHI	SVOC	Phenanthrene	85-01-8	T	D	24				8.20E-04	5.00E-03	5.2E-02		1.0E+00		1.0E+00	
SWHI	SVOC	Phenol	108-95-2	T	ID	24				2.60E-03	5.00E-03	4.4E+00				2.9E+04	
SWHI	SVOC	Pyrene	129-00-0	T	D	24				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
SWHI	SVOC	2,4,5-Trichlorophenol	95-95-4	T		24				1.20E-03	5.00E-03	7.3E-01				1.7E+02	
SWHI	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	24				1.70E-03	5.00E-03	1.2E-01				1.0E+01	
SWHI	P/PCB	PCBs (total)	1336-36-3	D	B2	4				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
SWHI	P/PCB	PCBs (total)	1336-36-3	T	B2	9				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
SWHI	INORG	Antimony	7440-36-0	D		22	1	2.60E-03	2.60E-03	2.20E-03	2.50E-02	6.0E-03	4.3E-01			6.8E+01	3.8E-05
SWHI	INORG	Antimony	7440-36-0	T		24				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
SWHI	INORG	Arsenic	7440-38-2	D	A	22	6	3.90E-03	7.80E-03	3.90E-03	1.00E-02	5.0E-02	1.6E-01			4.3E+00	1.8E-03
SWHI	INORG	Arsenic	7440-38-2	T	A	24	6	2.10E-03	9.60E-03	2.10E-03	1.00E-02	5.0E-02	1.9E-01			4.3E+00	2.2E-03
SWHI	INORG	Barium	7440-39-3	D	D	22	22	5.33E-02	9.29E-01			2.0E+00	4.6E-01			1.4E+04	6.6E-05
SWHI	INORG	Barium	7440-39-3	T	D	24	24	5.04E-02	9.29E-01			2.0E+00	4.6E-01			1.4E+04	6.6E-05
SWHI	INORG	Beryllium	7440-41-7	D	B1	22				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
SWHI	INORG	Beryllium	7440-41-7	T	B1	24				5.40E-04	1.00E-03	4.0E-03				2.9E+02	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
SWHI	INORG	Cadmium	7440-43-9	D	B1	22	9	2.90E-04	1.47E-03	2.80E-04	5.00E-03	5.0E-03	2.9E-01			1.9E+02	7.7E-06
SWHI	INORG	Cadmium	7440-43-9	T	B1	24	6	3.50E-04	1.45E-03	2.80E-04	5.00E-03	5.0E-03	2.9E-01			1.9E+02	7.6E-06
SWHI	INORG	Chromium (total)	7440-47-3	D		22	4	1.80E-03	2.70E-03	1.40E-03	1.00E-02	1.0E-01	2.7E-02			4.6E+02	5.9E-06
SWHI	INORG	Chromium (total)	7440-47-3	T		24	6	1.40E-03	2.50E-03	1.40E-03	1.00E-02	1.0E-01	2.5E-02			4.6E+02	5.4E-06
SWHI	INORG	Cobalt	7440-48-4	D	B1	22	5	1.30E-03	4.60E-03	1.30E-03	2.00E-02	4.0E-02	1.2E-01			2.4E+03	1.9E-06
SWHI	INORG	Cobalt	7440-48-4	T	B1	24	4	1.40E-03	4.10E-03	7.40E-04	2.00E-02	4.0E-02	1.0E-01			2.4E+03	1.7E-06
SWHI	INORG	Copper	7440-50-8	D	D	22	4	4.40E-03	6.00E-03	4.20E-03	5.00E-03	1.4E+00	4.3E-03			7.4E+03	8.1E-07
SWHI	INORG	Copper	7440-50-8	T	D	24	2	4.70E-03	4.70E-03	1.70E-03	5.00E-03	1.4E+00	3.4E-03			7.4E+03	6.4E-07
SWHI	INORG	Lead	7439-92-1	D	B2	22				2.50E-03	3.00E-03	4.0E-03					
SWHI	INORG	Lead	7439-92-1	T	B2	24	1	3.50E-03	3.50E-03	1.60E-03	3.00E-03	4.0E-03	8.8E-01				
SWHI	INORG	Manganese	7439-96-5	D	D	22	22	1.60E-03	6.17E-01			8.6E-01	7.2E-01			9.1E+03	6.8E-05
SWHI	INORG	Manganese	7439-96-5	T	D	24	24	9.30E-04	6.37E-01			8.6E-01	7.4E-01			9.1E+03	7.0E-05
SWHI	INORG	Mercury	7439-97-6	D	D	22	2	9.40E-05	1.00E-04	6.90E-05	2.00E-04	2.0E-03	5.0E-02	5.6E-02	1.8E-03	5.6E-02	1.8E-03
SWHI	INORG	Mercury	7439-97-6	T	D	24	2	7.50E-05	9.00E-05	6.90E-05	2.00E-04	2.0E-03	4.5E-02	5.6E-02	1.6E-03	5.6E-02	1.6E-03
SWHI	INORG	Nickel	7440-02-0	D	A	22	11	2.40E-03	1.08E-02	2.20E-03	2.00E-02	1.0E-01	1.1E-01			7.4E+04	1.5E-07
SWHI	INORG	Nickel	7440-02-0	T	A	24	13	2.20E-03	1.06E-02	2.20E-03	2.00E-02	1.0E-01	1.1E-01			7.4E+04	1.4E-07
SWHI	INORG	Selenium	7782-49-2	D	D	22				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
SWHI	INORG	Selenium	7782-49-2	T	D	24	2	5.10E-03	6.00E-03	4.50E-03	5.00E-03	5.0E-02	1.2E-01			9.7E+02	6.2E-06
SWHI	INORG	Silver	7440-22-4	D	D	22				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
SWHI	INORG	Silver	7440-22-4	T	D	24				9.80E-04	5.00E-03	3.4E-02				1.5E+03	
SWHI	INORG	Thallium	7440-28-0	D		22	13	3.10E-05	1.50E-02	1.80E-05	1.00E-02	2.0E-03	**7.5E+00**			1.3E+01	1.2E-03
SWHI	INORG	Thallium	7440-28-0	T		24	12	1.80E-05	1.59E-02	1.80E-05	1.00E-02	2.0E-03	**8.0E+00**			1.3E+01	1.2E-03
SWHI	INORG	Vanadium	7440-62-2	D		22	4	1.40E-03	6.50E-03	8.20E-04	1.00E-02	4.5E-03	**1.4E+00**			9.7E+02	6.7E-06
SWHI	INORG	Vanadium	7440-62-2	T		24	4	1.10E-03	6.40E-03	6.70E-04	1.00E-02	4.5E-03	**1.4E+00**			9.7E+02	6.6E-06
SWHI	INORG	Zinc	7440-66-6	D	D	22	3	1.73E-02	2.90E-02	1.20E-02	2.00E-02	2.4E+00	1.2E-02			1.1E+05	2.6E-07
SWHI	INORG	Zinc	7440-66-6	T	D	24	7	1.30E-02	3.46E-02	1.20E-02	2.00E-02	2.4E+00	1.4E-02			1.1E+05	3.1E-07
W-01	VOC	Acetone	67-64-1	T	ID	38	10	6.80E-04	3.30E-02	5.10E-04	1.00E-02	7.3E-01	4.5E-02	1.0E+06	3.3E-08	3.1E+04	1.1E-06
W-01	VOC	Benzene	71-43-2	T	A	38	17	1.60E-04	9.10E-02	1.60E-04	1.00E-03	5.0E-03	**1.8E+01**	3.5E+01	2.6E-03	1.1E+01	8.3E-03
W-01	VOC	Bromodichloromethane	75-27-4	T	B2	38				1.70E-04	1.00E-03	1.0E-01		3.7E+01		1.4E+01	
W-01	VOC	Bromoform	75-25-2	T	B2	38				1.80E-04	1.00E-03	1.0E-01		3.1E+03		1.4E+02	
W-01	VOC	Bromomethane	74-83-9	T	D	37				2.00E-04	1.00E-03	1.0E-02		9.0E+00		7.0E+01	
W-01	VOC	2-Butanone	78-93-3	T	ID	38	16	4.30E-04	7.30E-03	4.10E-04	1.00E-02	1.3E+01	5.6E-04	2.4E+05	3.0E-08	2.4E+05	3.0E-08
W-01	VOC	Carbon Disulfide	75-15-0	T		38	1	1.30E-03	1.30E-03	2.00E-04	1.00E-03	8.0E-01	1.6E-03	5.5E+02	2.4E-06	1.2E+03	1.1E-06
W-01	VOC	Carbon Tetrachloride	56-23-5	T	B2	38				1.20E-04	1.00E-03	5.0E-03		2.4E+00		4.6E+00	
W-01	VOC	Chlorobenzene	108-90-7	T	D	38				1.40E-04	1.00E-03	1.0E-01		4.7E+02		8.6E+01	
W-01	VOC	Chloroethane	75-00-3	T		38	11	5.30E-04	4.50E-02	2.60E-04	1.00E-03	4.3E-01	1.0E-01	5.7E+03	7.9E-06	4.4E+02	1.0E-04
W-01	VOC	Chloroform	67-66-3	T	B2	38	1	8.10E-04	8.10E-04	1.40E-04	1.00E-03	1.0E-01	8.1E-03	1.8E+02	4.5E-06	1.5E+02	5.4E-06
W-01	VOC	Chloromethane	74-87-3	T	D	38	4	1.30E-04	1.70E-04	1.30E-04	1.00E-03	2.6E-01	6.5E-04	4.5E+01	3.8E-06	4.9E+02	3.5E-07
W-01	VOC	Cumene	98-82-8	T	D	38	12	1.70E-04	8.60E-03	1.20E-04	1.00E-03	8.0E-01	1.1E-02	5.6E+01	1.5E-04	5.6E+01	1.5E-04
W-01	VOC	Cyclohexane	110-82-7	T	ID	38	11	1.70E-04	1.90E-02	1.30E-04	1.00E-03						
W-01	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	38				6.20E-04	2.10E-03	2.0E-04		1.2E+00		3.9E-01	
W-01	VOC	Dibromochloromethane	124-48-1	T	C	38				2.60E-04	1.00E-03	1.0E-01		1.1E+02		1.8E+01	
W-01	VOC	1,2-Dibromoethane	106-93-4	T	B2	38				2.20E-04	1.00E-03	1.0E-03		1.5E+01		2.5E-02	
W-01	VOC	1,2-Dichlorobenzene	95-50-1	T	D	38	4	4.80E-04	2.00E-03	1.10E-04	1.00E-03	6.0E-01	3.3E-03	1.6E+02	1.3E-05	1.6E+02	1.3E-05
W-01	VOC	1,3-Dichlorobenzene	541-73-1	T	D	38				1.50E-04	1.00E-03	6.6E-03				2.0E+00	
W-01	VOC	1,4-Dichlorobenzene	106-46-7	T	C	38				1.70E-04	1.00E-03	7.5E-02		7.4E+01		6.4E+00	
W-01	VOC	Dichlorodifluoromethane	75-71-8	T		38				2.60E-04	2.00E-03	1.7E+00		3.0E+02		3.0E+02	
W-01	VOC	1,1-Dichloroethane	75-34-3	T	C	38	11	1.60E-04	2.30E-02	1.60E-04	1.00E-03	8.8E-01	2.6E-02	2.3E+03	1.0E-05	2.4E+03	9.6E-06
W-01	VOC	1,2-Dichloroethane	107-06-2	T	B2	38	1	4.50E-04	4.50E-04	2.10E-04	1.00E-03	5.0E-03	9.0E-02	5.9E+01	7.6E-06	1.9E+01	2.4E-05
W-01	VOC	1,1-Dichloroethene	75-35-4	T	C	38				2.40E-04	1.00E-03	7.0E-03		1.3E+00		1.1E+01	
W-01	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	38	7	4.50E-04	3.90E-03	2.20E-04	5.00E-04	7.0E-02	5.6E-02	2.1E+02	1.9E-05	2.0E+02	2.0E-05
W-01	VOC	trans-1,2-Dichloroethene	156-60-5	T		38	3	1.80E-04	2.10E-03	1.50E-04	5.00E-04	1.0E-01	2.1E-02	2.0E+02	1.1E-05	2.2E+02	9.5E-06
W-01	VOC	1,2-Dichloropropane	78-87-5	T	B2	38				1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01	
W-01	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	38				2.70E-04	1.00E-03	8.5E-03		2.6E+01		5.5E+00	
W-01	VOC	Ethyl Benzene	100-41-4	T	D	38	8	2.40E-04	1.90E-02	1.20E-04	1.00E-03	7.0E-01	2.7E-02	1.7E+02	1.1E-04	1.7E+02	1.1E-04
W-01	VOC	2-Hexanone	591-78-6	T		38				4.60E-04	1.00E-02	1.0E+00		8.7E+03		5.2E+03	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-01	VOC	Methyl Acetate	79-20-9	T		38				4.10E-04	1.00E-02						
W-01	VOC	Methyl tert-butyl ether	1634-04-4	T		38	3	8.40E-04	7.10E-03	1.30E-04	5.00E-03	2.4E-01	3.0E-02	4.7E+04	1.5E-07	6.1E+02	1.2E-05
W-01	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	37	4	2.88E-04	1.60E-03	2.30E-04	1.00E-02	1.8E+00	8.9E-04	2.0E+04	8.0E-08	1.3E+04	1.2E-07
W-01	VOC	Methylcyclohexane	108-87-2	T		38	11	3.30E-04	7.60E-03	1.50E-04	1.00E-03						
W-01	VOC	Methylene Chloride	75-09-2	T	B2	38	5	5.00E-04	7.00E-03	2.90E-04	1.00E-03	5.0E-03	**1.4E+00**	1.4E+03	5.0E-06	2.2E+02	3.2E-05
W-01	VOC	Styrene	100-42-5	T		38				1.50E-04	1.00E-03	1.0E-01		3.1E+02		9.7E+00	
W-01	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	38				2.50E-04	1.00E-03	8.5E-03		7.7E+01		4.7E+00	
W-01	VOC	Tetrachloroethene	127-18-4	T	C-B2	37	3	4.30E-04	2.60E-03	2.30E-04	1.00E-03	5.0E-03	5.2E-01	1.7E+02	1.5E-05	1.2E+01	2.2E-04
W-01	VOC	Toluene	108-88-3	T	D	38	14	2.50E-04	1.50E-02	1.80E-04	1.00E-03	1.0E+00	1.5E-02	5.3E+02	2.8E-05	5.3E+02	2.8E-05
W-01	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	38	1	9.20E-04	9.20E-04	1.70E-04	1.00E-03	7.0E-02	1.3E-02	3.0E+02	3.1E-06	1.9E+01	4.8E-05
W-01	VOC	1,1,1-Trichloroethane	71-55-6	T	D	38				1.50E-04	1.00E-03	2.0E-01		1.3E+03		1.3E+03	
W-01	VOC	1,1,2-Trichloroethane	79-00-5	T	C	38				3.00E-04	1.00E-03	5.0E-03		1.1E+02		2.1E+01	
W-01	VOC	Trichloroethene	79-01-6	T	C-B2	38	6	2.40E-04	1.40E-03	1.40E-04	1.00E-03	5.0E-03	2.8E-01	9.7E+01	1.4E-05	2.2E+01	6.4E-05
W-01	VOC	Trichlorofluoromethane	75-69-4	T		38	1	6.60E-04	6.60E-04	2.80E-04	1.00E-03	2.6E+00	2.5E-04	1.1E+03	6.0E-07	1.1E+03	6.0E-07
W-01	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		38				3.20E-04	1.10E-03	1.7E+02		1.7E+02		1.7E+02	
W-01	VOC	Vinyl Chloride	75-01-4	T	A	38	9	1.80E-04	1.80E-02	1.50E-04	1.00E-03	2.0E-03	**9.0E+00**	1.3E+01	1.4E-03	1.0E+00	1.8E-02
W-01	VOC	Xylenes (total)	1330-20-7	T	ID	38	10	6.90E-04	2.00E-01	3.30E-04	1.00E-03	1.0E+01	2.0E-02	1.9E+02	1.1E-03	1.9E+02	1.1E-03
W-01	SVOC	Acenaphthene	83-32-9	T		38	1	2.40E-03	2.40E-03	8.00E-04	2.50E-02	1.3E+00	1.8E-03	4.2E+00	5.7E-04	4.2E+00	5.7E-04
W-01	SVOC	Acenaphthylene	208-96-8	T	D	38				7.10E-04	2.50E-02	5.2E-02		3.9E+00		3.9E+00	
W-01	SVOC	Acetophenone	98-86-2	T	D	38	1	2.70E-03	2.70E-03	2.60E-03	5.00E-02	1.5E+00	1.8E-03	6.1E+03	4.4E-07	6.1E+03	4.4E-07
W-01	SVOC	Anthracene	120-12-7	T	D	38				6.80E-04	2.50E-02	4.3E-02		4.3E-02		4.3E-02	
W-01	SVOC	Atrazine	1912-24-9	T		38				2.50E-03	2.50E-02	3.0E-03				5.4E+00	
W-01	SVOC	Benzaldehyde	100-52-7	T		38				2.80E-03	5.00E-02						
W-01	SVOC	Benzo(a)anthracene	56-55-3	T	B2	38				7.00E-04	2.50E-02	2.1E-03				9.4E-03	
W-01	SVOC	Benzo(a)pyrene	50-32-8	T	B2	38				7.30E-04	2.50E-02	5.0E-03				2.0E-03	
W-01	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	38				9.40E-04	2.50E-02	2.0E-03				2.0E-03	
W-01	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	38				8.50E-04	2.50E-02	5.0E-03				5.0E-03	
W-01	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	38				8.40E-04	2.50E-02	5.0E-03				5.0E-03	
W-01	SVOC	Biphenyl	92-52-4	T	D	38				2.60E-03	5.00E-02						
W-01	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	38				8.70E-04	2.50E-02						
W-01	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	36				9.70E-04	2.50E-02	2.0E-03		2.1E+02		5.7E+00	
W-01	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	38	2	2.70E-03	4.10E-03	2.70E-03	2.50E-02	6.0E-03	6.8E-01			3.2E-01	1.3E-02
W-01	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	38				8.80E-04	2.50E-02						
W-01	SVOC	Butylbenzylphthalate	85-68-7	T	C	38				8.80E-04	2.50E-02	1.2E+00				2.7E+00	
W-01	SVOC	Caprolactam	105-60-2	T		38				2.50E-03	5.00E-02	5.8E+00				3.9E+05	
W-01	SVOC	Carbazole	86-74-8	T	B2	38	2	1.50E-03	2.80E-03	8.20E-04	5.00E-02	8.5E-02	3.3E-02			7.4E+00	3.8E-04
W-01	SVOC	4-Chloro-3-methylphenol	59-50-7	T		37				9.90E-04	2.50E-02	1.5E-01				7.9E+01	
W-01	SVOC	4-Chloroaniline	106-47-8	T		37				6.10E-04	5.00E-02						
W-01	SVOC	2-Chloronaphthalene	91-58-7	T		38				8.50E-04	2.50E-02	1.8E+00				6.7E+00	
W-01	SVOC	2-Chlorophenol	95-57-8	T		38				1.00E-03	2.50E-02	4.5E-02				9.4E+01	
W-01	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		38				7.90E-04	2.50E-02						
W-01	SVOC	Chrysene	218-01-9	T	B2	38				7.50E-04	2.50E-02	5.0E-03				5.0E-03	
W-01	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	38				7.90E-04	2.50E-02	2.0E-03				2.0E-03	
W-01	SVOC	Dibenzofuran	132-64-9	T	D	38	1	1.80E-03	1.80E-03	1.10E-03	2.50E-02						
W-01	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	36				9.30E-04	1.00E-01	1.1E-03				1.8E-01	
W-01	SVOC	2,4-Dichlorophenol	120-83-2	T		38				8.50E-04	5.00E-02	7.3E-02				4.8E+01	
W-01	SVOC	Diethylphthalate	84-66-2	T	D	38				6.50E-04	2.50E-02	5.5E+00				1.1E+03	
W-01	SVOC	2,4-Dimethylphenol	105-67-9	T		37	3	1.90E-03	1.10E-02	8.50E-04	2.50E-02	3.7E-01	3.0E-02			5.2E+02	2.1E-05
W-01	SVOC	Dimethylphthalate	131-11-3	T	D	38				7.60E-04	2.50E-02	7.3E+01				4.2E+03	
W-01	SVOC	Di-n-butylphthalate	84-74-2	T	D	38	3	1.35E-03	2.30E-03	6.70E-04	2.50E-02	8.8E-01	2.6E-03			1.1E+01	2.1E-04
W-01	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		38				1.30E-03	1.00E-01	2.0E-02				9.5E+00	
W-01	SVOC	2,4-Dinitrophenol	51-28-5	T		38				3.00E-03	1.00E-01						
W-01	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	38				7.90E-04	2.50E-02	7.7E-03				8.6E+00	
W-01	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	38				5.70E-04	2.50E-02						
W-01	SVOC	Di-n-octylphthalate	117-84-0	T		38				1.10E-03	2.50E-02	1.3E-01				4.0E-01	
W-01	SVOC	Fluoranthene	206-44-0	T	D	38	1	9.90E-04	9.90E-04	8.10E-04	2.50E-02	2.1E-01	4.7E-03	2.1E-01	4.7E-03	2.1E-01	4.7E-03

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-01	SVOC	Fluorene	86-73-7	T	D	38	1	2.20E-03	2.20E-03	1.00E-03	2.50E-02	8.8E-01	2.5E-03	2.0E+00	1.1E-03	2.0E+00	1.1E-03
W-01	SVOC	Hexachlorobenzene	118-74-1	T	B2	38				7.40E-04	2.50E-02	1.0E-03		3.0E+00		4.6E-03	
W-01	SVOC	Hexachlorobutadiene	87-68-3	T	C	36				7.30E-04	2.50E-02	1.5E-02		3.2E+00		4.0E-01	
W-01	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	35				1.10E-03	2.50E-02	5.0E-02		4.2E-01		1.6E+00	
W-01	SVOC	Hexachloroethane	67-72-1	T	C	38				7.40E-04	2.50E-02	7.3E-03		5.0E+01		1.9E+00	
W-01	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	38				6.30E-04	2.50E-02	2.0E-03				2.0E-03	
W-01	SVOC	Isophorone	78-59-1	T	C	38				6.30E-04	2.50E-02	7.7E-01				9.9E+02	
W-01	SVOC	2-Methylnaphthalene	91-57-6	T	ID	38	6	8.50E-04	6.10E-03	6.40E-04	2.50E-02	2.6E-01	2.3E-02			2.5E+01	2.4E-04
W-01	SVOC	Methylphenol (total)	1319-77-3	T		38	1	2.16E-02	2.16E-02	1.30E-03	2.50E-02	3.7E-01	5.8E-02			8.1E+02	2.7E-05
W-01	SVOC	Naphthalene	91-20-3	T	C	37	4	6.20E-03	1.30E-02	7.50E-04	2.50E-02	5.2E-01	2.5E-02	3.1E+01	4.2E-04	3.1E+01	4.2E-04
W-01	SVOC	2-Nitroaniline	88-74-4	T		38				7.00E-04	1.00E-01						
W-01	SVOC	3-Nitroaniline	99-09-2	T	C	37				7.10E-04	1.00E-01						
W-01	SVOC	4-Nitroaniline	100-01-6	T	C	37				1.30E-03	1.00E-01						
W-01	SVOC	Nitrobenzene	98-95-3	T	D	38				8.10E-04	2.50E-02	3.4E-03		5.5E+02		1.1E+01	
W-01	SVOC	2-Nitrophenol	88-75-5	T		38				2.10E-03	2.50E-02	2.0E-02				7.9E+01	
W-01	SVOC	4-Nitrophenol	100-02-7	T		38				1.90E-03	1.00E-01						
W-01	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	38				1.40E-03	2.50E-02	2.7E-01				3.5E+01	
W-01	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	38				6.70E-04	2.50E-02	5.0E-03				3.6E-01	
W-01	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	38				7.80E-04	2.50E-02						
W-01	SVOC	Pentachlorophenol	87-86-5	T	B2	38				2.40E-03	2.50E-02	1.0E-03				2.0E-01	
W-01	SVOC	Phenanthrene	85-01-8	T	D	38				8.20E-04	2.50E-02	5.2E-02		1.0E+00		1.0E+00	
W-01	SVOC	Phenol	108-95-2	T	ID	38	1	1.90E-02	1.90E-02	2.60E-03	2.50E-02	4.4E+00	4.3E-03			2.9E+04	6.6E-07
W-01	SVOC	Pyrene	129-00-0	T	D	38				1.10E-03	2.50E-02	1.4E-01		1.4E-01		1.4E-01	
W-01	SVOC	2,4,5-Trichlorophenol	95-95-4	T		38				1.20E-03	2.50E-02	7.3E-01				1.7E+02	
W-01	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	37				1.70E-03	2.50E-02	1.2E-01				1.0E+01	
W-01	P/PCB	PCBs (total)	1336-36-3	D	B2	12	1	5.22E-04	5.22E-04	8.20E-05	4.00E-04	5.0E-04	1.0E+00	4.5E-02	1.2E-02	3.3E-03	1.6E-01
W-01	P/PCB	PCBs (total)	1336-36-3	T	B2	41	8	3.67E-04	4.59E-03	8.20E-05	4.00E-04	5.0E-04	**9.2E+00**	4.5E-02	1.0E-01	3.3E-03	**1.4E+00**
W-01	INORG	Antimony	7440-36-0	D		28	4	5.80E-03	7.90E-03	2.20E-03	2.50E-02	6.0E-03	**1.3E+00**			6.8E+01	1.2E-04
W-01	INORG	Antimony	7440-36-0	T		38	5	2.60E-03	8.60E-03	2.20E-03	2.50E-02	6.0E-03	**1.4E+00**			6.8E+01	1.3E-04
W-01	INORG	Arsenic	7440-38-2	D	A	28	19	4.00E-03	2.69E-02	3.90E-03	1.00E-02	5.0E-02	5.4E-01			4.3E+00	6.3E-03
W-01	INORG	Arsenic	7440-38-2	T	A	38	26	2.10E-03	2.64E-02	2.10E-03	1.00E-02	5.0E-02	5.3E-01			4.3E+00	6.1E-03
W-01	INORG	Barium	7440-39-3	D	D	28	28	5.63E-02	4.07E+00			2.0E+00	**2.0E+00**			1.4E+04	2.9E-04
W-01	INORG	Barium	7440-39-3	T	D	38	38	3.50E-02	4.57E+00			2.0E+00	**2.3E+00**			1.4E+04	3.3E-04
W-01	INORG	Beryllium	7440-41-7	D	B1	28	1	7.50E-04	7.50E-04	5.40E-04	1.00E-03	4.0E-03	1.9E-01			2.9E+02	2.6E-06
W-01	INORG	Beryllium	7440-41-7	T	B1	38				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
W-01	INORG	Cadmium	7440-43-9	D	B1	28	4	3.00E-04	6.90E-04	2.80E-04	5.00E-03	5.0E-03	1.4E-01			1.9E+02	3.6E-06
W-01	INORG	Cadmium	7440-43-9	T	B1	38	7	2.20E-04	1.10E-03	2.80E-04	5.00E-03	5.0E-03	2.2E-01			1.9E+02	5.8E-06
W-01	INORG	Chromium (total)	7440-47-3	D		28	3	1.80E-03	8.50E-03	1.40E-03	1.00E-02	1.0E-01	8.5E-02			4.6E+02	1.8E-05
W-01	INORG	Chromium (total)	7440-47-3	T		38	5	1.40E-03	3.05E-02	1.40E-03	1.00E-02	1.0E-01	3.1E-01			4.6E+02	6.6E-05
W-01	INORG	Cobalt	7440-48-4	D	B1	28	9	1.30E-03	3.50E-03	1.30E-03	2.00E-02	4.0E-02	8.8E-02			2.4E+03	1.5E-06
W-01	INORG	Cobalt	7440-48-4	T	B1	38	13	7.60E-04	6.60E-03	7.40E-04	2.00E-02	4.0E-02	1.7E-01			2.4E+03	2.8E-06
W-01	INORG	Copper	7440-50-8	D	D	28	2	4.50E-03	5.60E-03	4.20E-03	5.00E-03	1.4E+00	4.0E-03			7.4E+03	7.6E-07
W-01	INORG	Copper	7440-50-8	T	D	38	7	2.30E-03	2.22E-02	1.70E-03	5.00E-03	1.4E+00	1.6E-02			7.4E+03	3.0E-06
W-01	INORG	Cyanide (total)	57-12-5	T	D	33	22	2.00E-03	1.75E-02	1.70E-03	1.00E-02	2.0E-01	8.8E-02			5.7E+01	3.1E-04
W-01	INORG	Lead	7439-92-1	D	B2	28				2.50E-03	3.00E-03	4.0E-03					
W-01	INORG	Lead	7439-92-1	T	B2	38	7	1.80E-03	2.71E-02	1.60E-03	3.00E-03	4.0E-03	**6.8E+00**				
W-01	INORG	Manganese	7439-96-5	D	D	28	27	4.72E-02	9.52E-01	9.00E-04	9.00E-04	8.6E-01	**1.1E+00**			9.1E+03	1.0E-04
W-01	INORG	Manganese	7439-96-5	T	D	38	38	1.30E-03	1.22E+00			8.6E-01	**1.4E+00**			9.1E+03	1.3E-04
W-01	INORG	Mercury	7439-97-6	D	D	28	6	8.00E-05	1.30E-04	6.90E-05	2.00E-04	2.0E-03	6.5E-02	5.6E-02	2.3E-03	5.6E-02	2.3E-03
W-01	INORG	Mercury	7439-97-6	T	D	38	6	6.73E-05	1.20E-04	6.90E-05	2.00E-04	2.0E-03	6.0E-02	5.6E-02	2.1E-03	5.6E-02	2.1E-03
W-01	INORG	Nickel	7440-02-0	D	A	28	19	2.40E-03	1.59E-02	2.20E-03	2.00E-02	1.0E-01	1.6E-01			7.4E+04	2.1E-07
W-01	INORG	Nickel	7440-02-0	T	A	38	21	2.60E-03	1.94E-02	2.20E-03	2.00E-02	1.0E-01	1.9E-01			7.4E+04	2.6E-07
W-01	INORG	Selenium	7782-49-2	D	D	28				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
W-01	INORG	Selenium	7782-49-2	T	D	38	1	4.90E-03	4.90E-03	4.50E-03	5.00E-03	5.0E-02	9.8E-02			9.7E+02	5.1E-06
W-01	INORG	Silver	7440-22-4	D	D	28				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
W-01	INORG	Silver	7440-22-4	T	D	38	1	1.50E-03	1.50E-03	9.80E-04	5.00E-03	3.4E-02	4.4E-02			1.5E+03	1.0E-06

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-01	INORG	Thallium	7440-28-0	D		28	6	4.30E-05	9.10E-03	1.80E-05	1.00E-02	2.0E-03	**4.6E+00**			1.3E+01	7.0E-04
W-01	INORG	Thallium	7440-28-0	T		38	4	1.80E-05	1.02E-02	1.80E-05	1.00E-02	2.0E-03	**5.1E+00**			1.3E+01	7.8E-04
W-01	INORG	Vanadium	7440-62-2	D		28	4	1.00E-03	2.45E-02	8.20E-04	1.00E-02	4.5E-03	**5.4E+00**			9.7E+02	2.5E-05
W-01	INORG	Vanadium	7440-62-2	T		38	8	8.40E-04	4.84E-02	6.70E-04	1.00E-02	4.5E-03	**1.1E+01**			9.7E+02	5.0E-05
W-01	INORG	Zinc	7440-66-6	D	D	28	2	1.56E-02	2.09E-02	1.20E-02	2.00E-02	2.4E+00	8.7E-03			1.1E+05	1.9E-07
W-01	INORG	Zinc	7440-66-6	T	D	38	6	1.85E-02	3.82E-02	1.20E-02	2.00E-02	2.4E+00	1.6E-02			1.1E+05	3.5E-07
W-01	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	D	B2	4	3	1.99E-09	3.03E-09	4.57E-09	4.57E-09	3.0E-08	1.0E-01			1.0E-08	3.0E-01
W-01	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	T	B2	31	15	1.63E-09	2.16E-08	2.34E-09	3.99E-08	3.0E-08	7.2E-01			1.0E-08	**2.2E+00**
W-05	VOC	Acetone	67-64-1	T	ID	8				5.10E-04	2.00E-02	7.3E-01		1.0E+06		3.1E+04	
W-05	VOC	Benzene	71-43-2	T	A	8	2	3.50E-04	4.90E-04	1.60E-04	2.00E-03	5.0E-03	9.8E-02	3.5E+01	1.4E-05	1.1E+01	4.5E-05
W-05	VOC	Bromodichloromethane	75-27-4	T	B2	8	1	4.60E-04	4.60E-04	1.70E-04	2.00E-03	1.0E-01	4.6E-03	3.7E+01	1.2E-05	1.4E+01	3.3E-05
W-05	VOC	Bromoform	75-25-2	T	B2	8				1.80E-04	2.00E-03	1.0E-01		3.1E+03		1.4E+02	
W-05	VOC	Bromomethane	74-83-9	T	D	8				2.00E-04	2.00E-03	1.0E-02		9.0E+00		7.0E+01	
W-05	VOC	2-Butanone	78-93-3	T	ID	8	2	1.78E-03	4.90E-03	4.10E-04	2.00E-02	1.3E+01	3.8E-04	2.4E+05	2.0E-08	2.4E+05	2.0E-08
W-05	VOC	Carbon Disulfide	75-15-0	T		8				2.00E-04	2.00E-03	8.0E-01		5.5E+02		1.2E+03	
W-05	VOC	Carbon Tetrachloride	56-23-5	T	B2	8				1.20E-04	2.00E-03	5.0E-03		2.4E+00		4.6E+00	
W-05	VOC	Chlorobenzene	108-90-7	T	D	8				1.40E-04	2.00E-03	1.0E-01		4.7E+02		8.6E+01	
W-05	VOC	Chloroethane	75-00-3	T		8	2	3.60E-02	5.00E-02	2.60E-04	1.43E-03	4.3E-01	1.2E-01	5.7E+03	8.8E-06	4.4E+02	1.1E-04
W-05	VOC	Chloroform	67-66-3	T	B2	8	4	5.50E-04	2.10E-03	1.40E-04	7.70E-04	1.0E-01	2.1E-02	1.8E+02	1.2E-05	1.5E+02	1.4E-05
W-05	VOC	Chloromethane	74-87-3	T	D	8	2	3.00E-04	4.75E-04	1.30E-04	2.00E-03	2.6E-01	1.8E-03	4.5E+01	1.1E-05	4.9E+02	9.7E-07
W-05	VOC	Cumene	98-82-8	T	D	8				1.20E-04	2.00E-03	8.0E-01		5.6E+01		5.6E+01	
W-05	VOC	Cyclohexane	110-82-7	T	ID	8				1.30E-04	2.00E-03						
W-05	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	8				6.20E-04	4.00E-03	2.0E-04		1.2E+00		3.9E-01	
W-05	VOC	Dibromochloromethane	124-48-1	T	C	8				2.60E-04	2.00E-03	1.0E-01		1.1E+02		1.8E+01	
W-05	VOC	1,2-Dibromoethane	106-93-4	T	B2	8				2.20E-04	2.00E-03	1.0E-03		1.5E+01		2.5E-02	
W-05	VOC	1,2-Dichlorobenzene	95-50-1	T	D	8				1.10E-04	2.00E-03	6.0E-01		1.6E+02		1.6E+02	
W-05	VOC	1,3-Dichlorobenzene	541-73-1	T	D	8				1.50E-04	2.00E-03	6.6E-03				2.0E+00	
W-05	VOC	1,4-Dichlorobenzene	106-46-7	T	C	8				1.70E-04	2.00E-03	7.5E-02		7.4E+01		6.4E+00	
W-05	VOC	Dichlorodifluoromethane	75-71-8	T		8				2.60E-04	4.00E-03	1.7E+00		3.0E+02		3.0E+02	
W-05	VOC	1,1-Dichloroethane	75-34-3	T	C	8	2	2.00E-02	3.00E-02	1.60E-04	1.00E-03	8.8E-01	3.4E-02	2.3E+03	1.3E-05	2.4E+03	1.3E-05
W-05	VOC	1,2-Dichloroethane	107-06-2	T	B2	8				2.10E-04	2.00E-03	5.0E-03		5.9E+01		1.9E+01	
W-05	VOC	1,1-Dichloroethene	75-35-4	T	C	8	1	7.80E-04	7.80E-04	2.40E-04	1.32E-03	7.0E-03	1.1E-01	1.3E+00	6.0E-04	1.1E+01	7.1E-05
W-05	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	8	3	3.20E-04	1.10E-03	2.20E-04	1.21E-03	7.0E-02	1.6E-02	2.1E+02	5.2E-06	2.0E+02	5.5E-06
W-05	VOC	trans-1,2-Dichloroethene	156-60-5	T		8				1.50E-04	1.00E-03	1.0E-01		2.0E+02		2.2E+02	
W-05	VOC	1,2-Dichloropropane	78-87-5	T	B2	8				1.70E-04	2.00E-03	5.0E-03		3.6E+01		1.6E+01	
W-05	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	8				2.70E-04	2.00E-03	8.5E-03		2.6E+01		5.5E+00	
W-05	VOC	Ethyl Benzene	100-41-4	T	D	8				1.20E-04	2.00E-03	7.0E-01		1.7E+02		1.7E+02	
W-05	VOC	2-Hexanone	591-78-6	T		8				4.60E-04	2.00E-02	1.0E+00		8.7E+03		5.2E+03	
W-05	VOC	Methyl Acetate	79-20-9	T		8				4.10E-04	2.00E-02						
W-05	VOC	Methyl tert-butyl ether	1634-04-4	T		8				1.30E-04	1.00E-02	2.4E-01		4.7E+04		6.1E+02	
W-05	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	8	3	5.00E-04	1.60E-03	2.30E-04	2.00E-02	1.8E+00	8.9E-04	2.0E+04	8.0E-08	1.3E+04	1.2E-07
W-05	VOC	Methylcyclohexane	108-87-2	T		8				1.50E-04	2.00E-03						
W-05	VOC	Methylene Chloride	75-09-2	T	B2	8	1	7.70E-04	7.70E-04	3.40E-04	1.87E-03	5.0E-03	1.5E-01	1.4E+03	5.5E-07	2.2E+02	3.5E-06
W-05	VOC	Styrene	100-42-5	T		8				1.50E-04	2.00E-03	1.0E-01		3.1E+02		9.7E+00	
W-05	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	8				2.50E-04	2.00E-03	8.5E-03		7.7E+01		4.7E+00	
W-05	VOC	Tetrachloroethene	127-18-4	T	C-B2	8				2.30E-04	2.00E-03	5.0E-03		1.7E+02		1.2E+01	
W-05	VOC	Toluene	108-88-3	T	D	8	3	2.60E-04	6.05E-04	1.80E-04	1.00E-03	1.0E+00	6.1E-04	5.3E+02	1.1E-06	5.3E+02	1.1E-06
W-05	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	8				1.70E-04	2.00E-03	7.0E-02		3.0E+02		1.9E+01	
W-05	VOC	1,1,1-Trichloroethane	71-55-6	T	D	8	1	5.65E-04	5.65E-04	1.50E-04	2.00E-03	2.0E-01	2.8E-03	1.3E+03	4.3E-07	1.3E+03	4.3E-07
W-05	VOC	1,1,2-Trichloroethane	79-00-5	T	C	8				3.00E-04	2.00E-03	5.0E-03		1.1E+02		2.1E+01	
W-05	VOC	Trichloroethene	79-01-6	T	C-B2	8				1.40E-04	2.00E-03	5.0E-03		9.7E+01		2.2E+01	
W-05	VOC	Trichlorofluoromethane	75-69-4	T		8				2.80E-04	2.00E-03	2.6E+00		1.1E+03		1.1E+03	
W-05	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		8				3.20E-04	2.00E-03	1.7E+02		1.7E+02		1.7E+02	
W-05	VOC	Vinyl Chloride	75-01-4	T	A	8	2	2.20E-04	2.70E-04	1.50E-04	2.00E-03	2.0E-03	1.4E-01	1.3E+01	2.1E-05	1.0E+00	2.7E-04
W-05	VOC	Xylenes (total)	1330-20-7	T	ID	8	1	4.30E-04	4.30E-04	3.30E-04	2.00E-03	1.0E+01	4.3E-05	1.9E+02	2.3E-06	1.9E+02	2.3E-06
W-05	SVOC	Acenaphthene	83-32-9	T		8				8.00E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-05	SVOC	Acenaphthylene	208-96-8	T	D	8				7.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00	
W-05	SVOC	Acetophenone	98-86-2	T	D	8				2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
W-05	SVOC	Anthracene	120-12-7	T	D	8	2	1.15E-03	1.20E-03	6.80E-04	5.00E-03	4.3E-02	2.8E-02	4.3E-02	2.8E-02	4.3E-02	2.8E-02
W-05	SVOC	Atrazine	1912-24-9	T		8				2.50E-03	6.20E-03	3.0E-03				5.4E+00	
W-05	SVOC	Benzaldehyde	100-52-7	T		8				2.80E-03	1.00E-02						
W-05	SVOC	Benzo(a)anthracene	56-55-3	T	B2	8				7.00E-04	5.00E-03	2.1E-03				9.4E-03	
W-05	SVOC	Benzo(a)pyrene	50-32-8	T	B2	8				7.30E-04	5.00E-03	5.0E-03				2.0E-03	
W-05	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	8				9.40E-04	5.00E-03	2.0E-03				2.0E-03	
W-05	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	8				8.50E-04	5.00E-03	5.0E-03				5.0E-03	
W-05	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	8				8.40E-04	5.00E-03	5.0E-03				5.0E-03	
W-05	SVOC	Biphenyl	92-52-4	T	D	8				2.60E-03	1.00E-02						
W-05	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	8				8.70E-04	5.00E-03						
W-05	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	8				9.70E-04	5.00E-03	2.0E-03		2.1E+02		5.7E+00	
W-05	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	8				2.70E-03	6.80E-03	6.0E-03				3.2E-01	
W-05	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	8				8.80E-04	5.00E-03						
W-05	SVOC	Butylbenzylphthalate	85-68-7	T	C	8				8.80E-04	5.00E-03	1.2E+00				2.7E+00	
W-05	SVOC	Caprolactam	105-60-2	T		8				2.50E-03	1.00E-02	5.8E+00				3.9E+05	
W-05	SVOC	Carbazole	86-74-8	T	B2	8	2	1.30E-03	1.55E-03	8.20E-04	1.00E-02	8.5E-02	1.8E-02			7.4E+00	2.1E-04
W-05	SVOC	4-Chloro-3-methylphenol	59-50-7	T		8				9.90E-04	5.00E-03	1.5E-01				7.9E+01	
W-05	SVOC	4-Chloroaniline	106-47-8	T		8				6.10E-04	1.00E-02						
W-05	SVOC	2-Chloronaphthalene	91-58-7	T		8				8.50E-04	5.00E-03	1.8E+00				6.7E+00	
W-05	SVOC	2-Chlorophenol	95-57-8	T		8				1.00E-03	5.00E-03	4.5E-02				9.4E+01	
W-05	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		8				7.90E-04	5.00E-03						
W-05	SVOC	Chrysene	218-01-9	T	B2	8				7.50E-04	5.00E-03	5.0E-03				5.0E-03	
W-05	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	8				7.90E-04	5.00E-03	2.0E-03				2.0E-03	
W-05	SVOC	Dibenzofuran	132-64-9	T	D	8				1.10E-03	5.00E-03						
W-05	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	8				9.30E-04	2.00E-02	1.1E-03				1.8E-01	
W-05	SVOC	2,4-Dichlorophenol	120-83-2	T		8				8.50E-04	1.00E-02	7.3E-02				4.8E+01	
W-05	SVOC	Diethylphthalate	84-66-2	T	D	8				6.50E-04	5.00E-03	5.5E+00				1.1E+03	
W-05	SVOC	2,4-Dimethylphenol	105-67-9	T		8				8.50E-04	5.00E-03	3.7E-01				5.2E+02	
W-05	SVOC	Dimethylphthalate	131-11-3	T	D	8				7.60E-04	5.00E-03	7.3E+01				4.2E+03	
W-05	SVOC	Di-n-butylphthalate	84-74-2	T	D	8				6.70E-04	5.00E-03	8.8E-01				1.1E+01	
W-05	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		8				1.30E-03	2.00E-02	2.0E-02				9.5E+00	
W-05	SVOC	2,4-Dinitrophenol	51-28-5	T		8				3.00E-03	2.00E-02						
W-05	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	8				7.90E-04	5.00E-03	7.7E-03				8.6E+00	
W-05	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	8				5.70E-04	5.00E-03						
W-05	SVOC	Di-n-octylphthalate	117-84-0	T		8				1.10E-03	5.00E-03	1.3E-01				4.0E-01	
W-05	SVOC	Fluoranthene	206-44-0	T	D	8				8.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
W-05	SVOC	Fluorene	86-73-7	T	D	8	2	2.80E-03	6.80E-03	1.00E-03	5.00E-03	8.8E-01	7.7E-03	2.0E+00	3.4E-03	2.0E+00	3.4E-03
W-05	SVOC	Hexachlorobenzene	118-74-1	T	B2	8				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
W-05	SVOC	Hexachlorobutadiene	87-68-3	T	C	8				7.30E-04	5.00E-03	1.5E-02		3.2E+00		4.0E-01	
W-05	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	8				1.10E-03	5.00E-03	5.0E-02		4.2E-01		1.6E+00	
W-05	SVOC	Hexachloroethane	67-72-1	T	C	8				7.40E-04	5.00E-03	7.3E-03		5.0E+01		1.9E+00	
W-05	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	8				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
W-05	SVOC	Isophorone	78-59-1	T	C	8				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
W-05	SVOC	2-Methylnaphthalene	91-57-6	T	ID	8				6.40E-04	5.00E-03	2.6E-01				2.5E+01	
W-05	SVOC	Methylphenol (total)	1319-77-3	T		8				1.30E-03	5.00E-03	3.7E-01				8.1E+02	
W-05	SVOC	Naphthalene	91-20-3	T	C	8	1	2.50E-03	2.50E-03	7.50E-04	5.00E-03	5.2E-01	4.8E-03	3.1E+01	8.1E-05	3.1E+01	8.1E-05
W-05	SVOC	2-Nitroaniline	88-74-4	T		8				7.00E-04	2.00E-02						
W-05	SVOC	3-Nitroaniline	99-09-2	T	C	8				7.10E-04	2.00E-02						
W-05	SVOC	4-Nitroaniline	100-01-6	T	C	8				1.30E-03	2.00E-02						
W-05	SVOC	Nitrobenzene	98-95-3	T	D	8				8.10E-04	5.00E-03	3.4E-03		5.5E+02		1.1E+01	
W-05	SVOC	2-Nitrophenol	88-75-5	T		8				2.10E-03	5.20E-03	2.0E-02				7.9E+01	
W-05	SVOC	4-Nitrophenol	100-02-7	T		8				1.90E-03	2.00E-02						
W-05	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	8				1.40E-03	5.00E-03	2.7E-01				3.5E+01	
W-05	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	8				6.70E-04	5.00E-03	5.0E-03				3.6E-01	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-05	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	8				7.80E-04	5.00E-03						
W-05	SVOC	Pentachlorophenol	87-86-5	T	B2	8				2.40E-03	6.00E-03	1.0E-03				2.0E-01	
W-05	SVOC	Phenanthrene	85-01-8	T	D	8	1	2.30E-03	2.30E-03	8.20E-04	5.00E-03	5.2E-02	4.4E-02	1.0E+00	2.3E-03	1.0E+00	2.3E-03
W-05	SVOC	Phenol	108-95-2	T	ID	8				2.60E-03	6.50E-03	4.4E+00				2.9E+04	
W-05	SVOC	Pyrene	129-00-0	T	D	8				1.10E-03	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
W-05	SVOC	2,4,5-Trichlorophenol	95-95-4	T		8				1.20E-03	5.00E-03	7.3E-01				1.7E+02	
W-05	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	8				1.70E-03	5.00E-03	1.2E-01				1.0E+01	
W-05	P/PCB	PCBs (total)	1336-36-3	D	B2	4				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
W-05	P/PCB	PCBs (total)	1336-36-3	T	B2	8				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
W-05	INORG	Antimony	7440-36-0	D		8	2	8.30E-03	9.80E-03	2.20E-03	2.50E-02	6.0E-03	**1.6E+00**			6.8E+01	1.4E-04
W-05	INORG	Antimony	7440-36-0	T		8	2	9.25E-03	1.07E-02	2.20E-03	2.50E-02	6.0E-03	**1.8E+00**			6.8E+01	1.6E-04
W-05	INORG	Arsenic	7440-38-2	D	A	8	4	5.10E-03	4.73E-02	3.90E-03	1.00E-02	5.0E-02	9.5E-01			4.3E+00	1.1E-02
W-05	INORG	Arsenic	7440-38-2	T	A	8	4	5.70E-03	5.85E-02	3.90E-03	1.00E-02	5.0E-02	**1.2E+00**			4.3E+00	1.4E-02
W-05	INORG	Barium	7440-39-3	D	D	8	8	3.06E-02	3.00E-01			2.0E+00	1.5E-01			1.4E+04	2.1E-05
W-05	INORG	Barium	7440-39-3	T	D	8	8	3.25E-02	2.85E-01			2.0E+00	1.4E-01			1.4E+04	2.0E-05
W-05	INORG	Beryllium	7440-41-7	D	B1	8				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
W-05	INORG	Beryllium	7440-41-7	T	B1	8	1	5.60E-04	5.60E-04	5.40E-04	1.00E-03	4.0E-03	1.4E-01			2.9E+02	1.9E-06
W-05	INORG	Cadmium	7440-43-9	D	B1	8	3	2.20E-04	3.90E-04	2.80E-04	5.00E-03	5.0E-03	7.8E-02			1.9E+02	2.1E-06
W-05	INORG	Cadmium	7440-43-9	T	B1	8	3	2.90E-04	4.70E-04	2.80E-04	5.00E-03	5.0E-03	9.4E-02			1.9E+02	2.5E-06
W-05	INORG	Chromium (total)	7440-47-3	D		8	2	9.60E-03	1.72E-02	1.40E-03	1.00E-02	1.0E-01	1.7E-01			4.6E+02	3.7E-05
W-05	INORG	Chromium (total)	7440-47-3	T		8	2	1.04E-02	1.72E-02	1.40E-03	1.00E-02	1.0E-01	1.7E-01			4.6E+02	3.7E-05
W-05	INORG	Cobalt	7440-48-4	D	B1	8	4	3.00E-03	5.80E-03	1.30E-03	2.00E-02	4.0E-02	1.5E-01			2.4E+03	2.4E-06
W-05	INORG	Cobalt	7440-48-4	T	B1	8	4	1.70E-03	5.50E-03	1.30E-03	2.00E-02	4.0E-02	1.4E-01			2.4E+03	2.3E-06
W-05	INORG	Copper	7440-50-8	D	D	8	2	1.05E-02	4.26E-02	4.20E-03	5.00E-03	1.4E+00	3.0E-02			7.4E+03	5.8E-06
W-05	INORG	Copper	7440-50-8	T	D	8	2	1.37E-02	4.74E-02	4.20E-03	5.00E-03	1.4E+00	3.4E-02			7.4E+03	6.4E-06
W-05	INORG	Lead	7439-92-1	D	B2	8				2.50E-03	3.00E-03	4.0E-03					
W-05	INORG	Lead	7439-92-1	T	B2	8				2.50E-03	3.00E-03	4.0E-03					
W-05	INORG	Manganese	7439-96-5	D	D	8	8	1.38E-03	8.15E-01			8.6E-01	9.5E-01			9.1E+03	9.0E-05
W-05	INORG	Manganese	7439-96-5	T	D	8	8	2.48E-03	7.66E-01			8.6E-01	8.9E-01			9.1E+03	8.4E-05
W-05	INORG	Mercury	7439-97-6	D	D	8	2	8.20E-05	2.20E-04	6.90E-05	2.00E-04	2.0E-03	1.1E-01	5.6E-02	3.9E-03	5.6E-02	3.9E-03
W-05	INORG	Mercury	7439-97-6	T	D	8	1	3.00E-04	3.00E-04	6.90E-05	2.00E-04	2.0E-03	1.5E-01	5.6E-02	5.4E-03	5.6E-02	5.4E-03
W-05	INORG	Nickel	7440-02-0	D	A	8	6	2.70E-03	1.63E-02	2.20E-03	2.00E-02	1.0E-01	1.6E-01			7.4E+04	2.2E-07
W-05	INORG	Nickel	7440-02-0	T	A	8	6	2.90E-03	1.62E-02	2.20E-03	2.00E-02	1.0E-01	1.6E-01			7.4E+04	2.2E-07
W-05	INORG	Selenium	7782-49-2	D	D	8	2	2.78E-02	4.78E-02	4.50E-03	5.00E-03	5.0E-02	9.6E-01			9.7E+02	4.9E-05
W-05	INORG	Selenium	7782-49-2	T	D	8	2	2.88E-02	4.89E-02	4.50E-03	5.00E-03	5.0E-02	9.8E-01			9.7E+02	5.0E-05
W-05	INORG	Silver	7440-22-4	D	D	8				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
W-05	INORG	Silver	7440-22-4	T	D	8				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
W-05	INORG	Thallium	7440-28-0	D		8	5	3.25E-05	9.00E-03	1.80E-05	5.00E-03	2.0E-03	**4.5E+00**			1.3E+01	6.9E-04
W-05	INORG	Thallium	7440-28-0	T		8	3	3.60E-05	7.10E-03	1.80E-05	1.00E-02	2.0E-03	**3.6E+00**			1.3E+01	5.5E-04
W-05	INORG	Vanadium	7440-62-2	D		8	3	1.00E-03	7.32E-02	8.20E-04	1.00E-02	4.5E-03	**1.6E+01**			9.7E+02	7.5E-05
W-05	INORG	Vanadium	7440-62-2	T		8	4	8.30E-04	7.66E-02	8.20E-04	1.00E-02	4.5E-03	**1.7E+01**			9.7E+02	7.9E-05
W-05	INORG	Zinc	7440-66-6	D	D	8	1	1.28E-02	1.28E-02	1.20E-02	2.00E-02	2.4E+00	5.3E-03			1.1E+05	1.2E-07
W-05	INORG	Zinc	7440-66-6	T	D	8	2	1.33E-02	1.85E-02	1.20E-02	2.00E-02	2.4E+00	7.7E-03			1.1E+05	1.7E-07
W-08	VOC	Acetone	67-64-1	T	ID	19	6	1.63E-03	1.60E-01	5.10E-04	1.10E-03	7.3E-01	2.2E-01	1.0E+06	1.6E-07	3.1E+04	5.2E-06
W-08	VOC	Benzene	71-43-2	T	A	19	7	1.80E-04	6.25E-04	1.60E-04	4.00E-03	5.0E-03	1.3E-01	3.5E+01	1.8E-05	1.1E+01	5.7E-05
W-08	VOC	Bromodichloromethane	75-27-4	T	B2	19				1.70E-04	4.00E-03	1.0E-01		3.7E+01		1.4E+01	
W-08	VOC	Bromoform	75-25-2	T	B2	19				1.80E-04	4.00E-03	1.0E-01		3.1E+03		1.4E+02	
W-08	VOC	Bromomethane	74-83-9	T	D	16				1.60E-04	4.00E-03	1.0E-02		9.0E+00		7.0E+01	
W-08	VOC	2-Butanone	78-93-3	T	ID	19	3	5.40E-04	4.40E-03	3.60E-04	4.00E-02	1.3E+01	3.4E-04	2.4E+05	1.8E-08	2.4E+05	1.8E-08
W-08	VOC	Carbon Disulfide	75-15-0	T		19	8	2.40E-04	1.10E-03	2.00E-04	4.00E-03	8.0E-01	1.4E-03	5.5E+02	2.0E-06	1.2E+03	9.2E-07
W-08	VOC	Carbon Tetrachloride	56-23-5	T	B2	19				1.20E-04	4.00E-03	5.0E-03		2.4E+00		4.6E+00	
W-08	VOC	Chlorobenzene	108-90-7	T	D	19				1.40E-04	4.00E-03	1.0E-01		4.7E+02		8.6E+01	
W-08	VOC	Chloroethane	75-00-3	T		19				2.20E-04	4.00E-03	4.3E-01		5.7E+03		4.4E+02	
W-08	VOC	Chloroform	67-66-3	T	B2	19	4	1.40E-04	2.40E-04	1.40E-04	4.00E-03	1.0E-01	2.4E-03	1.8E+02	1.3E-06	1.5E+02	1.6E-06
W-08	VOC	Chloromethane	74-87-3	T	D	19	1	2.60E-04	2.60E-04	1.30E-04	4.00E-03	2.6E-01	1.0E-03	4.5E+01	5.8E-06	4.9E+02	5.3E-07
W-08	VOC	Cumene	98-82-8	T	D	19	6	1.80E-04	1.70E-03	1.20E-04	4.00E-03	8.0E-01	2.1E-03	5.6E+01	3.0E-05	5.6E+01	3.0E-05

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-08	VOC	Cyclohexane	110-82-7	T	ID	19	1	2.20E-04	2.20E-04	1.30E-04	4.00E-03						
W-08	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	19				5.30E-04	8.00E-03	2.0E-04		1.2E+00		3.9E-01	
W-08	VOC	Dibromochloromethane	124-48-1	T	C	19				2.50E-04	4.00E-03	1.0E-01		1.1E+02		1.8E+01	
W-08	VOC	1,2-Dibromoethane	106-93-4	T	B2	19				2.20E-04	4.00E-03	1.0E-03		1.5E+01		2.5E-02	
W-08	VOC	1,2-Dichlorobenzene	95-50-1	T	D	19				1.10E-04	4.00E-03	6.0E-01		1.6E+02		1.6E+02	
W-08	VOC	1,3-Dichlorobenzene	541-73-1	T	D	19				1.50E-04	4.00E-03	6.6E-03				2.0E+00	
W-08	VOC	1,4-Dichlorobenzene	106-46-7	T	C	19				1.60E-04	4.00E-03	7.5E-02		7.4E+01		6.4E+00	
W-08	VOC	Dichlorodifluoromethane	75-71-8	T		19				2.30E-04	8.00E-03	1.7E+00		3.0E+02		3.0E+02	
W-08	VOC	1,1-Dichloroethane	75-34-3	T	C	19	6	1.90E-04	3.00E-03	1.60E-04	4.00E-03	8.8E-01	3.4E-03	2.3E+03	1.3E-06	2.4E+03	1.3E-06
W-08	VOC	1,2-Dichloroethane	107-06-2	T	B2	19				2.10E-04	4.00E-03	5.0E-03		5.9E+01		1.9E+01	
W-08	VOC	1,1-Dichloroethene	75-35-4	T	C	19				2.20E-04	4.00E-03	7.0E-03		1.3E+00		1.1E+01	
W-08	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	19	2	3.00E-04	2.30E-03	2.20E-04	2.00E-03	7.0E-02	3.3E-02	2.1E+02	1.1E-05	2.0E+02	1.2E-05
W-08	VOC	trans-1,2-Dichloroethene	156-60-5	T		19	1	6.30E-04	6.30E-04	1.50E-04	2.00E-03	1.0E-01	6.3E-03	2.0E+02	3.2E-06	2.2E+02	2.9E-06
W-08	VOC	1,2-Dichloropropane	78-87-5	T	B2	19				1.70E-04	4.00E-03	5.0E-03		3.6E+01		1.6E+01	
W-08	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	19				1.50E-04	4.00E-03	8.5E-03		2.6E+01		5.5E+00	
W-08	VOC	Ethyl Benzene	100-41-4	T	D	19	8	1.50E-04	7.00E-04	1.20E-04	4.00E-03	7.0E-01	1.0E-03	1.7E+02	4.1E-06	1.7E+02	4.1E-06
W-08	VOC	2-Hexanone	591-78-6	T		19				3.10E-04	4.00E-02	1.0E+00		8.7E+03		5.2E+03	
W-08	VOC	Methyl Acetate	79-20-9	T		19				4.10E-04	4.00E-02						
W-08	VOC	Methyl tert-butyl ether	1634-04-4	T		19				1.30E-04	2.00E-02	2.4E-01		4.7E+04		6.1E+02	
W-08	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	18	8	4.30E-04	4.90E-03	2.30E-04	4.00E-02	1.8E+00	2.7E-03	2.0E+04	2.5E-07	1.3E+04	3.8E-07
W-08	VOC	Methylcyclohexane	108-87-2	T		19	1	1.90E-04	1.90E-04	1.50E-04	4.00E-03						
W-08	VOC	Methylene Chloride	75-09-2	T	B2	18	1	5.00E-04	5.00E-04	2.80E-04	4.00E-03	5.0E-03	1.0E-01	1.4E+03	3.6E-07	2.2E+02	2.3E-06
W-08	VOC	Styrene	100-42-5	T		19				1.50E-04	4.00E-03	1.0E-01		3.1E+02		9.7E+00	
W-08	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	19				2.30E-04	4.00E-03	8.5E-03		7.7E+01		4.7E+00	
W-08	VOC	Tetrachloroethene	127-18-4	T	C-B2	19	1	8.90E-04	8.90E-04	1.20E-04	4.00E-03	5.0E-03	1.8E-01	1.7E+02	5.2E-06	1.2E+01	7.4E-05
W-08	VOC	Toluene	108-88-3	T	D	19	9	2.00E-04	2.00E-03	1.80E-04	4.00E-03	1.0E+00	2.0E-03	5.3E+02	3.8E-06	5.3E+02	3.8E-06
W-08	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	19				1.50E-04	4.00E-03	7.0E-02		3.0E+02		1.9E+01	
W-08	VOC	1,1,1-Trichloroethane	71-55-6	T	D	19				1.50E-04	4.00E-03	2.0E-01		1.3E+03		1.3E+03	
W-08	VOC	1,1,2-Trichloroethane	79-00-5	T	C	19				2.10E-04	4.00E-03	5.0E-03		1.1E+02		2.1E+01	
W-08	VOC	Trichloroethene	79-01-6	T	C-B2	19	2	2.00E-04	2.60E-03	1.40E-04	4.00E-03	5.0E-03	5.2E-01	9.7E+01	2.7E-05	2.2E+01	1.2E-04
W-08	VOC	Trichlorofluoromethane	75-69-4	T		19				2.50E-04	4.00E-03	2.6E+00		1.1E+03		1.1E+03	
W-08	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		19				2.30E-04	4.00E-03	1.7E+02		1.7E+02		1.7E+02	
W-08	VOC	Vinyl Chloride	75-01-4	T	A	19	1	3.10E-04	3.10E-04	1.50E-04	4.00E-03	2.0E-03	1.6E-01	1.3E+01	2.4E-05	1.0E+00	3.1E-04
W-08	VOC	Xylenes (total)	1330-20-7	T	ID	19	9	5.10E-04	2.80E-03	3.30E-04	4.00E-03	1.0E+01	2.8E-04	1.9E+02	1.5E-05	1.9E+02	1.5E-05
W-08	SVOC	Acenaphthene	83-32-9	T		19	2	2.20E-03	3.10E-03	8.00E-04	1.40E-01	1.3E+00	2.4E-03	4.2E+00	7.4E-04	4.2E+00	7.4E-04
W-08	SVOC	Acenaphthylene	208-96-8	T	D	19				7.10E-04	8.20E-02	5.2E-02		3.9E+00		3.9E+00	
W-08	SVOC	Acetophenone	98-86-2	T	D	19				2.60E-03	1.30E-01	1.5E+00		6.1E+03		6.1E+03	
W-08	SVOC	Anthracene	120-12-7	T	D	19	2	7.30E-04	7.90E-04	6.80E-04	1.20E-01	4.3E-02	1.8E-02	4.3E-02	1.8E-02	4.3E-02	1.8E-02
W-08	SVOC	Atrazine	1912-24-9	T		19				2.50E-03	7.00E-02	3.0E-03				5.4E+00	
W-08	SVOC	Benzaldehyde	100-52-7	T		19				2.80E-03	1.20E-01						
W-08	SVOC	Benzo(a)anthracene	56-55-3	T	B2	19				7.00E-04	1.40E-01	2.1E-03				9.4E-03	
W-08	SVOC	Benzo(a)pyrene	50-32-8	T	B2	19				7.30E-04	1.10E-01	5.0E-03				2.0E-03	
W-08	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	19				9.40E-04	1.40E-01	2.0E-03				2.0E-03	
W-08	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	19				8.50E-04	1.40E-01	5.0E-03				5.0E-03	
W-08	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	19				8.40E-04	1.30E-01	5.0E-03				5.0E-03	
W-08	SVOC	Biphenyl	92-52-4	T	D	19				2.60E-03	1.30E-01						
W-08	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	19				8.70E-04	2.00E-01						
W-08	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	19				9.70E-04	3.40E-01	2.0E-03		2.1E+02		5.7E+00	
W-08	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	19				2.70E-03	5.40E-02	6.0E-03				3.2E-01	
W-08	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	19				8.80E-04	1.60E-01						
W-08	SVOC	Butylbenzylphthalate	85-68-7	T	C	19				8.80E-04	4.60E-02	1.2E+00				2.7E+00	
W-08	SVOC	Caprolactam	105-60-2	T		19	1	5.50E+00	5.50E+00	2.50E-03	9.00E-02	5.8E+00	9.5E-01			3.9E+05	1.4E-05
W-08	SVOC	Carbazole	86-74-8	T	B2	19				8.20E-04	1.20E-01	8.5E-02				7.4E+00	
W-08	SVOC	4-Chloro-3-methylphenol	59-50-7	T		19				9.90E-04	1.10E-01	1.5E-01				7.9E+01	
W-08	SVOC	4-Chloroaniline	106-47-8	T		18				6.10E-04	1.80E-01						
W-08	SVOC	2-Chloronaphthalene	91-58-7	T		19				8.50E-04	1.50E-01	1.8E+00				6.7E+00	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-08	SVOC	2-Chlorophenol	95-57-8	T		19				1.00E-03	2.60E-01	4.5E-02				9.4E+01	
W-08	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		19				7.90E-04	1.30E-01						
W-08	SVOC	Chrysene	218-01-9	T	B2	19				7.50E-04	1.30E-01	5.0E-03				5.0E-03	
W-08	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	19				7.90E-04	1.40E-01	2.0E-03				2.0E-03	
W-08	SVOC	Dibenzofuran	132-64-9	T	D	19				1.10E-03	1.30E-01						
W-08	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	17				9.30E-04	9.40E-02	1.1E-03				1.8E-01	
W-08	SVOC	2,4-Dichlorophenol	120-83-2	T		19				8.50E-04	1.40E-01	7.3E-02				4.8E+01	
W-08	SVOC	Diethylphthalate	84-66-2	T	D	19				6.50E-04	5.00E-02	5.5E+00				1.1E+03	
W-08	SVOC	2,4-Dimethylphenol	105-67-9	T		19	1	2.50E+00	2.50E+00	8.50E-04	1.70E-02	3.7E-01	**6.8E+00**			5.2E+02	4.8E-03
W-08	SVOC	Dimethylphthalate	131-11-3	T	D	19				7.60E-04	4.00E-02	7.3E+01				4.2E+03	
W-08	SVOC	Di-n-butylphthalate	84-74-2	T	D	19				6.70E-04	7.40E-02	8.8E-01				1.1E+01	
W-08	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		19				1.30E-03	4.20E-01	2.0E-02				9.5E+00	
W-08	SVOC	2,4-Dinitrophenol	51-28-5	T		19				3.00E-03	6.60E-01						
W-08	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	19				7.90E-04	9.20E-02	7.7E-03				8.6E+00	
W-08	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	19				5.70E-04	1.40E-01						
W-08	SVOC	Di-n-octylphthalate	117-84-0	T		19				1.10E-03	1.40E-01	1.3E-01				4.0E-01	
W-08	SVOC	Fluoranthene	206-44-0	T	D	19				8.10E-04	1.40E-01	2.1E-01		2.1E-01		2.1E-01	
W-08	SVOC	Fluorene	86-73-7	T	D	19	8	1.50E-03	2.10E-02	1.00E-03	1.50E-01	8.8E-01	2.4E-02	2.0E+00	1.1E-02	2.0E+00	1.1E-02
W-08	SVOC	Hexachlorobenzene	118-74-1	T	B2	19				7.40E-04	1.50E-01	1.0E-03		3.0E+00		4.6E-03	
W-08	SVOC	Hexachlorobutadiene	87-68-3	T	C	19				7.30E-04	3.00E-01	1.5E-02		3.2E+00		4.0E-01	
W-08	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	17				1.10E-03	2.20E-01	5.0E-02		4.2E-01		1.6E+00	
W-08	SVOC	Hexachloroethane	67-72-1	T	C	19				7.40E-04	3.20E-01	7.3E-03		5.0E+01		1.9E+00	
W-08	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	19				6.30E-04	1.40E-01	2.0E-03				2.0E-03	
W-08	SVOC	Isophorone	78-59-1	T	C	19				6.30E-04	1.70E-01	7.7E-01				9.9E+02	
W-08	SVOC	2-Methylnaphthalene	91-57-6	T	ID	19	4	6.50E-04	5.10E-03	6.40E-04	1.90E-01	2.6E-01	2.0E-02			2.5E+01	2.0E-04
W-08	SVOC	Methylphenol (total)	1319-77-3	T		19	1	4.69E+00	4.69E+00	1.30E-03	2.60E-02	3.7E-01	**1.3E+01**			8.1E+02	5.8E-03
W-08	SVOC	Naphthalene	91-20-3	T	C	19	4	1.70E-03	2.60E-03	7.50E-04	2.60E-01	5.2E-01	5.0E-03	3.1E+01	8.4E-05	3.1E+01	8.4E-05
W-08	SVOC	2-Nitroaniline	88-74-4	T		19				7.00E-04	9.80E-02						
W-08	SVOC	3-Nitroaniline	99-09-2	T	C	18				7.10E-04	9.60E-02						
W-08	SVOC	4-Nitroaniline	100-01-6	T	C	19				1.30E-03	1.20E-01						
W-08	SVOC	Nitrobenzene	98-95-3	T	D	19				8.10E-04	2.60E-01	3.4E-03		5.5E+02		1.1E+01	
W-08	SVOC	2-Nitrophenol	88-75-5	T		19				2.10E-03	1.90E-01	2.0E-02				7.9E+01	
W-08	SVOC	4-Nitrophenol	100-02-7	T		19				1.90E-03	7.00E-01						
W-08	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	19				1.40E-03	1.30E-01	2.7E-01				3.5E+01	
W-08	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	19				6.70E-04	2.20E-01	5.0E-03				3.6E-01	
W-08	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	19				7.80E-04	3.60E-01						
W-08	SVOC	Pentachlorophenol	87-86-5	T	B2	19				2.40E-03	5.20E-01	1.0E-03				2.0E-01	
W-08	SVOC	Phenanthrene	85-01-8	T	D	19	9	1.00E-03	2.80E-02	8.20E-04	1.40E-01	5.2E-02	5.4E-01	1.0E+00	2.8E-02	1.0E+00	2.8E-02
W-08	SVOC	Phenol	108-95-2	T	ID	19	2	4.60E-02	1.20E+00	2.60E-03	5.20E-02	4.4E+00	2.7E-01			2.9E+04	4.1E-05
W-08	SVOC	Pyrene	129-00-0	T	D	19				1.10E-03	1.30E-01	1.4E-01		1.4E-01		1.4E-01	
W-08	SVOC	2,4,5-Trichlorophenol	95-95-4	T		19				1.20E-03	1.70E-01	7.3E-01				1.7E+02	
W-08	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	19				1.70E-03	1.40E-01	1.2E-01				1.0E+01	
W-08	P/PCB	PCBs (total)	1336-36-3	D	B2	5				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
W-08	P/PCB	PCBs (total)	1336-36-3	T	B2	19	1	7.36E-04	7.36E-04	8.20E-05	4.00E-04	5.0E-04	**1.5E+00**	4.5E-02	1.6E-02	3.3E-03	2.2E-01
W-08	INORG	Antimony	7440-36-0	D		14	3	2.50E-03	8.00E-03	2.20E-03	2.20E-03	6.0E-03	**1.3E+00**			6.8E+01	1.2E-04
W-08	INORG	Antimony	7440-36-0	T		19	3	2.80E-03	7.90E-03	2.20E-03	3.40E-03	6.0E-03	**1.3E+00**			6.8E+01	1.2E-04
W-08	INORG	Arsenic	7440-38-2	D	A	14	10	4.10E-03	3.41E-02	3.90E-03	1.00E-02	5.0E-02	6.8E-01			4.3E+00	7.9E-03
W-08	INORG	Arsenic	7440-38-2	T	A	19	15	4.10E-03	8.49E-02	3.90E-03	1.00E-02	5.0E-02	**1.7E+00**			4.3E+00	2.0E-02
W-08	INORG	Barium	7440-39-3	D	D	14	14	2.60E-02	3.01E-01			2.0E+00	1.5E-01			1.4E+04	2.2E-05
W-08	INORG	Barium	7440-39-3	T	D	19	18	2.65E-02	1.03E+00	8.20E-04	8.20E-04	2.0E+00	5.2E-01			1.4E+04	7.4E-05
W-08	INORG	Beryllium	7440-41-7	D	B1	14				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
W-08	INORG	Beryllium	7440-41-7	T	B1	19	2	6.20E-04	5.40E-03	4.70E-04	1.00E-03	4.0E-03	**1.4E+00**			2.9E+02	1.9E-05
W-08	INORG	Cadmium	7440-43-9	D	B1	14	3	2.80E-04	5.50E-04	2.80E-04	2.80E-04	5.0E-03	1.1E-01			1.9E+02	2.9E-06
W-08	INORG	Cadmium	7440-43-9	T	B1	19	7	2.90E-04	3.90E-03	2.80E-04	3.60E-04	5.0E-03	7.8E-01			1.9E+02	2.1E-05
W-08	INORG	Chromium (total)	7440-47-3	D		14	2	5.00E-03	4.76E-02	1.40E-03	1.00E-02	1.0E-01	4.8E-01			4.6E+02	1.0E-04
W-08	INORG	Chromium (total)	7440-47-3	T		19	6	1.15E-03	2.95E-01	1.00E-03	1.00E-02	1.0E-01	**3.0E+00**			4.6E+02	6.4E-04

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-08	INORG	Cobalt	7440-48-4	D	B1	14	5	1.40E-03	9.30E-03	1.30E-03	2.00E-02	4.0E-02	2.3E-01			2.4E+03	3.9E-06
W-08	INORG	Cobalt	7440-48-4	T	B1	19	6	1.90E-03	8.79E-02	7.40E-04	2.00E-02	4.0E-02	**2.2E+00**			2.4E+03	3.7E-05
W-08	INORG	Copper	7440-50-8	D	D	14	2	4.40E-03	5.20E-03	4.20E-03	5.00E-03	1.4E+00	3.7E-03			7.4E+03	7.0E-07
W-08	INORG	Copper	7440-50-8	T	D	19	3	6.60E-03	2.14E-01	1.70E-03	5.00E-03	1.4E+00	1.5E-01			7.4E+03	2.9E-05
W-08	INORG	Lead	7439-92-1	D	B2	14				2.50E-03	3.00E-03	4.0E-03					
W-08	INORG	Lead	7439-92-1	T	B2	19	3	5.70E-03	1.22E-01	1.60E-03	3.00E-03	4.0E-03	**3.1E+01**				
W-08	INORG	Manganese	7439-96-5	D	D	14	14	2.10E-03	3.24E+00			8.6E-01	**3.8E+00**			9.1E+03	3.6E-04
W-08	INORG	Manganese	7439-96-5	T	D	19	19	3.50E-03	5.41E+00			8.6E-01	**6.3E+00**			9.1E+03	5.9E-04
W-08	INORG	Mercury	7439-97-6	D	D	14	2	1.10E-04	1.90E-04	6.90E-05	2.00E-04	2.0E-03	9.5E-02	5.6E-02	3.4E-03	5.6E-02	3.4E-03
W-08	INORG	Mercury	7439-97-6	T	D	19	5	7.00E-05	2.60E-04	6.90E-05	2.00E-04	2.0E-03	1.3E-01	5.6E-02	4.6E-03	5.6E-02	4.6E-03
W-08	INORG	Nickel	7440-02-0	D	A	14	11	2.30E-03	1.56E-02	2.20E-03	2.20E-03	1.0E-01	1.6E-01			7.4E+04	2.1E-07
W-08	INORG	Nickel	7440-02-0	T	A	19	14	3.40E-03	3.07E-01	2.20E-03	2.00E-02	1.0E-01	**3.1E+00**			7.4E+04	4.1E-06
W-08	INORG	Selenium	7782-49-2	D	D	14				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
W-08	INORG	Selenium	7782-49-2	T	D	19				3.90E-03	5.00E-03	5.0E-02				9.7E+02	
W-08	INORG	Silver	7440-22-4	D	D	14				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
W-08	INORG	Silver	7440-22-4	T	D	19				9.80E-04	5.00E-03	3.4E-02				1.5E+03	
W-08	INORG	Thallium	7440-28-0	D		14	3	2.10E-05	7.40E-03	1.80E-05	5.00E-03	2.0E-03	**3.7E+00**			1.3E+01	5.7E-04
W-08	INORG	Thallium	7440-28-0	T		19	3	1.00E-03	6.10E-03	1.50E-05	1.00E-02	2.0E-03	**3.1E+00**			1.3E+01	4.7E-04
W-08	INORG	Vanadium	7440-62-2	D		14	4	6.40E-04	3.80E-03	8.20E-04	1.00E-02	4.5E-03	8.4E-01			9.7E+02	3.9E-06
W-08	INORG	Vanadium	7440-62-2	T		19	8	6.70E-04	2.39E-01	6.70E-04	1.00E-02	4.5E-03	**5.3E+01**			9.7E+02	2.5E-04
W-08	INORG	Zinc	7440-66-6	D	D	14	2	2.25E-02	3.21E-02	1.20E-02	2.00E-02	2.4E+00	1.3E-02			1.1E+05	2.9E-07
W-08	INORG	Zinc	7440-66-6	T	D	19	3	3.38E-02	6.31E-01	1.20E-02	2.00E-02	2.4E+00	2.6E-01			1.1E+05	5.7E-06
W-08	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	T	B2	4	4	1.95E-09	1.97E-08			3.0E-08	6.6E-01			1.0E-08	**2.0E+00**
W-09	VOC	Acetone	67-64-1	T	ID	6	2	1.50E-02	3.50E-02	5.10E-04	6.60E-04	7.3E-01	4.8E-02	1.0E+06	3.5E-08	3.1E+04	1.1E-06
W-09	VOC	Benzene	71-43-2	T	A	6	1	2.85E-04	2.85E-04	1.60E-04	1.00E-03	5.0E-03	5.7E-02	3.5E+01	8.1E-06	1.1E+01	2.6E-05
W-09	VOC	Bromodichloromethane	75-27-4	T	B2	6				1.70E-04	1.00E-03	1.0E-01		3.7E+01		1.4E+01	
W-09	VOC	Bromoform	75-25-2	T	B2	6				1.80E-04	1.00E-03	1.0E-01		3.1E+03		1.4E+02	
W-09	VOC	Bromomethane	74-83-9	T	D	6				1.60E-04	1.00E-03	1.0E-02		9.0E+00		7.0E+01	
W-09	VOC	2-Butanone	78-93-3	T	ID	6	1	2.05E-03	2.05E-03	3.60E-04	1.00E-02	1.3E+01	1.6E-04	2.4E+05	8.5E-09	2.4E+05	8.5E-09
W-09	VOC	Carbon Disulfide	75-15-0	T		6	1	1.40E-03	1.40E-03	2.00E-04	1.00E-03	8.0E-01	1.8E-03	5.5E+02	2.5E-06	1.2E+03	1.2E-06
W-09	VOC	Carbon Tetrachloride	56-23-5	T	B2	6				1.20E-04	1.00E-03	5.0E-03		2.4E+00		4.6E+00	
W-09	VOC	Chlorobenzene	108-90-7	T	D	6				1.40E-04	1.00E-03	1.0E-01		4.7E+02		8.6E+01	
W-09	VOC	Chloroethane	75-00-3	T		6				2.20E-04	1.00E-03	4.3E-01		5.7E+03		4.4E+02	
W-09	VOC	Chloroform	67-66-3	T	B2	6				1.40E-04	1.00E-03	1.0E-01		1.8E+02		1.5E+02	
W-09	VOC	Chloromethane	74-87-3	T	D	6				1.30E-04	1.00E-03	2.6E-01		4.5E+01		4.9E+02	
W-09	VOC	Cumene	98-82-8	T	D	6	1	2.55E-04	2.55E-04	1.20E-04	1.00E-03	8.0E-01	3.2E-04	5.6E+01	4.6E-06	5.6E+01	4.6E-06
W-09	VOC	Cyclohexane	110-82-7	T	ID	6	1	7.90E-04	7.90E-04	1.30E-04	1.00E-03						
W-09	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	6				5.30E-04	2.00E-03	2.0E-04		1.2E+00		3.9E-01	
W-09	VOC	Dibromochloromethane	124-48-1	T	C	6				2.50E-04	1.00E-03	1.0E-01		1.1E+02		1.8E+01	
W-09	VOC	1,2-Dibromoethane	106-93-4	T	B2	6				2.20E-04	1.00E-03	1.0E-03		1.5E+01		2.5E-02	
W-09	VOC	1,2-Dichlorobenzene	95-50-1	T	D	6				1.10E-04	1.00E-03	6.0E-01		1.6E+02		1.6E+02	
W-09	VOC	1,3-Dichlorobenzene	541-73-1	T	D	6				1.50E-04	1.00E-03	6.6E-03				2.0E+00	
W-09	VOC	1,4-Dichlorobenzene	106-46-7	T	C	6				1.60E-04	1.00E-03	7.5E-02		7.4E+01		6.4E+00	
W-09	VOC	Dichlorodifluoromethane	75-71-8	T		6				2.30E-04	2.00E-03	1.7E+00		3.0E+02		3.0E+02	
W-09	VOC	1,1-Dichloroethane	75-34-3	T	C	6				1.60E-04	1.00E-03	8.8E-01		2.3E+03		2.4E+03	
W-09	VOC	1,2-Dichloroethane	107-06-2	T	B2	6				2.10E-04	1.00E-03	5.0E-03		5.9E+01		1.9E+01	
W-09	VOC	1,1-Dichloroethene	75-35-4	T	C	6				2.20E-04	1.00E-03	7.0E-03		1.3E+00		1.1E+01	
W-09	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	6				2.20E-04	5.00E-04	7.0E-02		2.1E+02		2.0E+02	
W-09	VOC	trans-1,2-Dichloroethene	156-60-5	T		6				1.50E-04	5.00E-04	1.0E-01		2.0E+02		2.2E+02	
W-09	VOC	1,2-Dichloropropane	78-87-5	T	B2	6				1.70E-04	1.00E-03	5.0E-03		3.6E+01		1.6E+01	
W-09	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	6				1.50E-04	1.00E-03	8.5E-03		2.6E+01		5.5E+00	
W-09	VOC	Ethyl Benzene	100-41-4	T	D	6				1.20E-04	1.00E-03	7.0E-01		1.7E+02		1.7E+02	
W-09	VOC	2-Hexanone	591-78-6	T		6				3.10E-04	1.00E-02	1.0E+00		8.7E+03		5.2E+03	
W-09	VOC	Methyl Acetate	79-20-9	T		6				4.10E-04	1.00E-02						
W-09	VOC	Methyl tert-butyl ether	1634-04-4	T		6				1.30E-04	5.00E-03	2.4E-01		4.7E+04		6.1E+02	
W-09	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	4	1	2.55E-03	2.55E-03	2.30E-04	1.00E-02	1.8E+00	1.4E-03	2.0E+04	1.3E-07	1.3E+04	2.0E-07

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-09	VOC	Methylcyclohexane	108-87-2	T		6	1	8.55E-04	8.55E-04	1.50E-04	1.00E-03						
W-09	VOC	Methylene Chloride	75-09-2	T	B2	6				2.80E-04	1.00E-03	5.0E-03		1.4E+03		2.2E+02	
W-09	VOC	Styrene	100-42-5	T		6				1.50E-04	1.00E-03	1.0E-01		3.1E+02		9.7E+00	
W-09	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	6				2.30E-04	1.00E-03	8.5E-03		7.7E+01		4.7E+00	
W-09	VOC	Tetrachloroethene	127-18-4	T	C-B2	6				1.20E-04	1.00E-03	5.0E-03		1.7E+02		1.2E+01	
W-09	VOC	Toluene	108-88-3	T	D	6	1	2.75E-04	2.75E-04	1.70E-04	1.00E-03	1.0E+00	2.8E-04	5.3E+02	5.2E-07	5.3E+02	5.2E-07
W-09	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	6				1.50E-04	1.00E-03	7.0E-02		3.0E+02		1.9E+01	
W-09	VOC	1,1,1-Trichloroethane	71-55-6	T	D	6	1	2.50E-04	2.50E-04	1.80E-04	1.00E-03	2.0E-01	1.3E-03	1.3E+03	1.9E-07	1.3E+03	1.9E-07
W-09	VOC	1,1,2-Trichloroethane	79-00-5	T	C	6				2.10E-04	1.00E-03	5.0E-03		1.1E+02		2.1E+01	
W-09	VOC	Trichloroethene	79-01-6	T	C-B2	6				1.40E-04	1.00E-03	5.0E-03		9.7E+01		2.2E+01	
W-09	VOC	Trichlorofluoromethane	75-69-4	T		6	2	9.50E-04	2.20E-03	2.50E-04	2.50E-04	2.6E+00	8.5E-04	1.1E+03	2.0E-06	1.1E+03	2.0E-06
W-09	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		6				2.30E-04	1.00E-03	1.7E+02		1.7E+02		1.7E+02	
W-09	VOC	Vinyl Chloride	75-01-4	T	A	6				1.50E-04	1.00E-03	2.0E-03		1.3E+01		1.0E+00	
W-09	VOC	Xylenes (total)	1330-20-7	T	ID	6	1	1.25E-03	1.25E-03	3.30E-04	1.00E-03	1.0E+01	1.3E-04	1.9E+02	6.6E-06	1.9E+02	6.6E-06
W-09	SVOC	Acenaphthene	83-32-9	T		6				6.90E-04	5.00E-03	1.3E+00		4.2E+00		4.2E+00	
W-09	SVOC	Acenaphthylene	208-96-8	T	D	6				4.10E-04	5.00E-03	5.2E-02		3.9E+00		3.9E+00	
W-09	SVOC	Acetophenone	98-86-2	T	D	6				6.50E-04	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
W-09	SVOC	Anthracene	120-12-7	T	D	6				5.90E-04	5.00E-03	4.3E-02		4.3E-02		4.3E-02	
W-09	SVOC	Atrazine	1912-24-9	T		6				3.50E-04	5.00E-03	3.0E-03				5.4E+00	
W-09	SVOC	Benzaldehyde	100-52-7	T		6				5.90E-04	1.00E-02						
W-09	SVOC	Benzo(a)anthracene	56-55-3	T	B2	6				6.80E-04	5.00E-03	2.1E-03				9.4E-03	
W-09	SVOC	Benzo(a)pyrene	50-32-8	T	B2	6				5.30E-04	5.00E-03	5.0E-03				2.0E-03	
W-09	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	6				7.00E-04	5.00E-03	2.0E-03				2.0E-03	
W-09	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	6				7.00E-04	5.00E-03	5.0E-03				5.0E-03	
W-09	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	6				6.40E-04	5.00E-03	5.0E-03				5.0E-03	
W-09	SVOC	Biphenyl	92-52-4	T	D	6				6.50E-04	1.00E-02						
W-09	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	6				8.70E-04	5.00E-03						
W-09	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	6				9.70E-04	8.50E-03	2.0E-03		2.1E+02		5.7E+00	
W-09	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	6	1	5.80E-04	5.80E-04	2.00E-04	5.00E-03	6.0E-03	9.7E-02			3.2E-01	1.8E-03
W-09	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	6				7.80E-04	5.00E-03						
W-09	SVOC	Butylbenzylphthalate	85-68-7	T	C	6				2.30E-04	5.00E-03	1.2E+00				2.7E+00	
W-09	SVOC	Caprolactam	105-60-2	T		6				4.50E-04	1.00E-02	5.8E+00				3.9E+05	
W-09	SVOC	Carbazole	86-74-8	T	B2	6				6.10E-04	1.00E-02	8.5E-02				7.4E+00	
W-09	SVOC	4-Chloro-3-methylphenol	59-50-7	T		6				5.50E-04	5.00E-03	1.5E-01				7.9E+01	
W-09	SVOC	4-Chloroaniline	106-47-8	T		5				9.00E-04	1.00E-02						
W-09	SVOC	2-Chloronaphthalene	91-58-7	T		6				7.30E-04	5.00E-03	1.8E+00				6.7E+00	
W-09	SVOC	2-Chlorophenol	95-57-8	T		6				1.00E-03	6.50E-03	4.5E-02				9.4E+01	
W-09	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		6				6.60E-04	5.00E-03						
W-09	SVOC	Chrysene	218-01-9	T	B2	6				6.70E-04	5.00E-03	5.0E-03				5.0E-03	
W-09	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	6				6.80E-04	5.00E-03	2.0E-03				2.0E-03	
W-09	SVOC	Dibenzofuran	132-64-9	T	D	6				6.60E-04	5.00E-03						
W-09	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	5				4.70E-04	2.00E-02	1.1E-03				1.8E-01	
W-09	SVOC	2,4-Dichlorophenol	120-83-2	T		6				7.00E-04	1.00E-02	7.3E-02				4.8E+01	
W-09	SVOC	Diethylphthalate	84-66-2	T	D	6				2.50E-04	5.00E-03	5.5E+00				1.1E+03	
W-09	SVOC	2,4-Dimethylphenol	105-67-9	T		6	1	1.04E-02	1.04E-02	8.50E-04	5.00E-03	3.7E-01	2.8E-02			5.2E+02	2.0E-05
W-09	SVOC	Dimethylphthalate	131-11-3	T	D	6				2.00E-04	5.00E-03	7.3E+01				4.2E+03	
W-09	SVOC	Di-n-butylphthalate	84-74-2	T	D	6				3.70E-04	5.00E-03	8.8E-01				1.1E+01	
W-09	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		6				1.30E-03	2.00E-02	2.0E-02				9.5E+00	
W-09	SVOC	2,4-Dinitrophenol	51-28-5	T		6				3.00E-03	2.00E-02						
W-09	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	6				4.60E-04	5.00E-03	7.7E-03				8.6E+00	
W-09	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	6				5.70E-04	5.00E-03						
W-09	SVOC	Di-n-octylphthalate	117-84-0	T		6				6.90E-04	5.00E-03	1.3E-01				4.0E-01	
W-09	SVOC	Fluoranthene	206-44-0	T	D	6				7.10E-04	5.00E-03	2.1E-01		2.1E-01		2.1E-01	
W-09	SVOC	Fluorene	86-73-7	T	D	6				7.50E-04	5.00E-03	8.8E-01		2.0E+00		2.0E+00	
W-09	SVOC	Hexachlorobenzene	118-74-1	T	B2	6				7.40E-04	5.00E-03	1.0E-03		3.0E+00		4.6E-03	
W-09	SVOC	Hexachlorobutadiene	87-68-3	T	C	6				7.30E-04	7.50E-03	1.5E-02		3.2E+00		4.0E-01	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-09	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	6				1.10E-03	5.50E-03	5.0E-02		4.2E-01		1.6E+00	
W-09	SVOC	Hexachloroethane	67-72-1	T	C	6				7.40E-04	8.00E-03	7.3E-03		5.0E+01		1.9E+00	
W-09	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	6				6.30E-04	5.00E-03	2.0E-03				2.0E-03	
W-09	SVOC	Isophorone	78-59-1	T	C	6				6.30E-04	5.00E-03	7.7E-01				9.9E+02	
W-09	SVOC	2-Methylnaphthalene	91-57-6	T	ID	6				6.40E-04	5.00E-03	2.6E-01				2.5E+01	
W-09	SVOC	Methylphenol (total)	1319-77-3	T		6				9.00E-04	5.00E-03	3.7E-01				8.1E+02	
W-09	SVOC	Naphthalene	91-20-3	T	C	6				7.50E-04	6.50E-03	5.2E-01		3.1E+01		3.1E+01	
W-09	SVOC	2-Nitroaniline	88-74-4	T		6				4.90E-04	2.00E-02						
W-09	SVOC	3-Nitroaniline	99-09-2	T	C	5				4.80E-04	2.00E-02						
W-09	SVOC	4-Nitroaniline	100-01-6	T	C	6				5.90E-04	2.00E-02						
W-09	SVOC	Nitrobenzene	98-95-3	T	D	6				8.10E-04	6.50E-03	3.4E-03		5.5E+02		1.1E+01	
W-09	SVOC	2-Nitrophenol	88-75-5	T		6				9.50E-04	5.00E-03	2.0E-02				7.9E+01	
W-09	SVOC	4-Nitrophenol	100-02-7	T		6				1.90E-03	2.00E-02						
W-09	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	6				6.40E-04	5.00E-03	2.7E-01				3.5E+01	
W-09	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	6				6.70E-04	5.50E-03	5.0E-03				3.6E-01	
W-09	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	6				7.80E-04	9.00E-03						
W-09	SVOC	Pentachlorophenol	87-86-5	T	B2	6				2.40E-03	1.30E-02	1.0E-03				2.0E-01	
W-09	SVOC	Phenanthrene	85-01-8	T	D	6				6.80E-04	5.00E-03	5.2E-02		1.0E+00		1.0E+00	
W-09	SVOC	Phenol	108-95-2	T	ID	6				1.30E-03	6.50E-03	4.4E+00				2.9E+04	
W-09	SVOC	Pyrene	129-00-0	T	D	6				6.30E-04	5.00E-03	1.4E-01		1.4E-01		1.4E-01	
W-09	SVOC	2,4,5-Trichlorophenol	95-95-4	T		6				8.60E-04	5.00E-03	7.3E-01				1.7E+02	
W-09	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	6				7.10E-04	5.00E-03	1.2E-01				1.0E+01	
W-09	P/PCB	PCBs (total)	1336-36-3	D	B2	1				4.00E-04	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
W-09	P/PCB	PCBs (total)	1336-36-3	T	B2	6				8.20E-05	4.00E-04	5.0E-04		4.5E-02		3.3E-03	
W-09	INORG	Antimony	7440-36-0	D		2				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
W-09	INORG	Antimony	7440-36-0	T		6				2.20E-03	2.50E-02	6.0E-03				6.8E+01	
W-09	INORG	Arsenic	7440-38-2	D	A	2				3.90E-03	1.00E-02	5.0E-02				4.3E+00	
W-09	INORG	Arsenic	7440-38-2	T	A	6	3	3.70E-03	1.54E-02	2.90E-03	1.00E-02	5.0E-02	3.1E-01			4.3E+00	3.6E-03
W-09	INORG	Barium	7440-39-3	D	D	2	2	5.40E-02	1.47E-01			2.0E+00	7.4E-02			1.4E+04	1.1E-05
W-09	INORG	Barium	7440-39-3	T	D	6	6	1.73E-02	4.20E-01			2.0E+00	2.1E-01			1.4E+04	3.0E-05
W-09	INORG	Beryllium	7440-41-7	D	B1	2				5.40E-04	1.00E-03	4.0E-03				2.9E+02	
W-09	INORG	Beryllium	7440-41-7	T	B1	6				4.70E-04	1.00E-03	4.0E-03				2.9E+02	
W-09	INORG	Cadmium	7440-43-9	D	B1	2				2.80E-04	5.00E-03	5.0E-03				1.9E+02	
W-09	INORG	Cadmium	7440-43-9	T	B1	6				2.80E-04	5.00E-03	5.0E-03				1.9E+02	
W-09	INORG	Chromium (total)	7440-47-3	D		2	1	1.04E-02	1.04E-02	1.00E-02	1.00E-02	1.0E-01	1.0E-01			4.6E+02	2.3E-05
W-09	INORG	Chromium (total)	7440-47-3	T		6	2	1.12E-02	5.68E-02	1.00E-03	1.00E-02	1.0E-01	5.7E-01			4.6E+02	1.2E-04
W-09	INORG	Cobalt	7440-48-4	D	B1	2	1	1.40E-03	1.40E-03	1.30E-03	1.30E-03	4.0E-02	3.5E-02			2.4E+03	5.8E-07
W-09	INORG	Cobalt	7440-48-4	T	B1	6	3	2.35E-03	2.90E-03	1.10E-03	1.30E-03	4.0E-02	7.3E-02			2.4E+03	1.2E-06
W-09	INORG	Copper	7440-50-8	D	D	2				4.20E-03	5.00E-03	1.4E+00				7.4E+03	
W-09	INORG	Copper	7440-50-8	T	D	6	1	2.80E-03	2.80E-03	1.80E-03	5.00E-03	1.4E+00	2.0E-03			7.4E+03	3.8E-07
W-09	INORG	Lead	7439-92-1	D	B2	2				2.50E-03	3.00E-03	4.0E-03					
W-09	INORG	Lead	7439-92-1	T	B2	6	1	3.91E-02	3.91E-02	2.30E-03	3.00E-03	4.0E-03	**9.8E+00**				
W-09	INORG	Manganese	7439-96-5	D	D	2	2	1.98E-02	2.42E-01			8.6E-01	2.8E-01			9.1E+03	2.7E-05
W-09	INORG	Manganese	7439-96-5	T	D	6	6	1.65E-02	6.70E-01			8.6E-01	7.8E-01			9.1E+03	7.4E-05
W-09	INORG	Mercury	7439-97-6	D	D	2				6.90E-05	2.00E-04	2.0E-03		5.6E-02		5.6E-02	
W-09	INORG	Mercury	7439-97-6	T	D	6	1	8.60E-05	8.60E-05	6.70E-05	2.00E-04	2.0E-03	4.3E-02	5.6E-02	1.5E-03	5.6E-02	1.5E-03
W-09	INORG	Nickel	7440-02-0	D	A	2	1	2.20E-03	2.20E-03	2.20E-03	2.20E-03	1.0E-01	2.2E-02			7.4E+04	3.0E-08
W-09	INORG	Nickel	7440-02-0	T	A	6	3	3.80E-03	3.85E-02	2.10E-03	2.20E-03	1.0E-01	3.9E-01			7.4E+04	5.2E-07
W-09	INORG	Selenium	7782-49-2	D	D	2				4.50E-03	5.00E-03	5.0E-02				9.7E+02	
W-09	INORG	Selenium	7782-49-2	T	D	6				3.90E-03	5.00E-03	5.0E-02				9.7E+02	
W-09	INORG	Silver	7440-22-4	D	D	2				1.50E-03	5.00E-03	3.4E-02				1.5E+03	
W-09	INORG	Silver	7440-22-4	T	D	6				1.10E-03	5.00E-03	3.4E-02				1.5E+03	
W-09	INORG	Thallium	7440-28-0	D		2	2	3.80E-05	5.30E-03			2.0E-03	**2.7E+00**			1.3E+01	4.1E-04
W-09	INORG	Thallium	7440-28-0	T		6	1	1.24E-02	1.24E-02	1.50E-05	1.80E-05	2.0E-03	**6.2E+00**			1.3E+01	9.5E-04
W-09	INORG	Vanadium	7440-62-2	D		2				8.20E-04	1.00E-02	4.5E-03				9.7E+02	
W-09	INORG	Vanadium	7440-62-2	T		6	2	1.90E-03	4.50E-03	8.20E-04	1.00E-02	4.5E-03	1.0E+00			9.7E+02	4.6E-06

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-09	INORG	Zinc	7440-66-6	D	D	2				1.20E-02	2.00E-02	2.4E+00				1.1E+05	
W-09	INORG	Zinc	7440-66-6	T	D	6	1	5.44E-02	5.44E-02	1.20E-02	2.00E-02	2.4E+00	2.3E-02			1.1E+05	4.9E-07
W-10	VOC	Acetone	67-64-1	T	ID	10	1	3.10E-03	3.10E-03	5.10E-04	1.10E-03	7.3E-01	4.2E-03	1.0E+06	3.1E-09	3.1E+04	1.0E-07
W-10	VOC	Benzene	71-43-2	T	A	10	3	1.90E-04	5.80E-04	1.60E-04	3.70E-04	5.0E-03	1.2E-01	3.5E+01	1.7E-05	1.1E+01	5.3E-05
W-10	VOC	Bromodichloromethane	75-27-4	T	B2	10	1	3.00E-04	3.00E-04	1.70E-04	3.20E-04	1.0E-01	3.0E-03	3.7E+01	8.1E-06	1.4E+01	2.1E-05
W-10	VOC	Bromoform	75-25-2	T	B2	10				1.80E-04	3.70E-04	1.0E-01		3.1E+03		1.4E+02	
W-10	VOC	Bromomethane	74-83-9	T	D	10				2.00E-04	3.00E-04	1.0E-02		9.0E+00		7.0E+01	
W-10	VOC	2-Butanone	78-93-3	T	ID	10	1	1.00E-03	1.00E-03	4.10E-04	5.90E-04	1.3E+01	7.7E-05	2.4E+05	4.2E-09	2.4E+05	4.2E-09
W-10	VOC	Carbon Disulfide	75-15-0	T		10	1	2.00E-04	2.00E-04	2.00E-04	2.40E-04	8.0E-01	2.5E-04	5.5E+02	3.6E-07	1.2E+03	1.7E-07
W-10	VOC	Carbon Tetrachloride	56-23-5	T	B2	10				1.20E-04	3.70E-04	5.0E-03		2.4E+00		4.6E+00	
W-10	VOC	Chlorobenzene	108-90-7	T	D	10				1.40E-04	3.80E-04	1.0E-01		4.7E+02		8.6E+01	
W-10	VOC	Chloroethane	75-00-3	T		10				2.60E-04	2.90E-04	4.3E-01		5.7E+03		4.4E+02	
W-10	VOC	Chloroform	67-66-3	T	B2	10	3	2.00E-04	5.70E-04	1.40E-04	3.50E-04	1.0E-01	5.7E-03	1.8E+02	3.2E-06	1.5E+02	3.8E-06
W-10	VOC	Chloromethane	74-87-3	T	D	10				1.30E-04	4.90E-04	2.6E-01		4.5E+01		4.9E+02	
W-10	VOC	Cumene	98-82-8	T	D	10	1	3.00E-04	3.00E-04	1.20E-04	3.90E-04	8.0E-01	3.8E-04	5.6E+01	5.4E-06	5.6E+01	5.4E-06
W-10	VOC	Cyclohexane	110-82-7	T	ID	10				1.30E-04	3.30E-04						
W-10	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	10				6.20E-04	8.20E-04	2.0E-04		1.2E+00		3.9E-01	
W-10	VOC	Dibromochloromethane	124-48-1	T	C	10				2.60E-04	3.70E-04	1.0E-01		1.1E+02		1.8E+01	
W-10	VOC	1,2-Dibromoethane	106-93-4	T	B2	10				2.20E-04	3.40E-04	1.0E-03		1.5E+01		2.5E-02	
W-10	VOC	1,2-Dichlorobenzene	95-50-1	T	D	10				1.10E-04	3.80E-04	6.0E-01		1.6E+02		1.6E+02	
W-10	VOC	1,3-Dichlorobenzene	541-73-1	T	D	10				1.50E-04	3.80E-04	6.6E-03				2.0E+00	
W-10	VOC	1,4-Dichlorobenzene	106-46-7	T	C	10				1.70E-04	3.80E-04	7.5E-02		7.4E+01		6.4E+00	
W-10	VOC	Dichlorodifluoromethane	75-71-8	T		10				2.60E-04	4.90E-04	1.7E+00		3.0E+02		3.0E+02	
W-10	VOC	1,1-Dichloroethane	75-34-3	T	C	10	3	7.30E-04	1.20E-03	1.60E-04	3.00E-04	8.8E-01	1.4E-03	2.3E+03	5.2E-07	2.4E+03	5.0E-07
W-10	VOC	1,2-Dichloroethane	107-06-2	T	B2	10				2.10E-04	2.80E-04	5.0E-03		5.9E+01		1.9E+01	
W-10	VOC	1,1-Dichloroethene	75-35-4	T	C	10				2.40E-04	3.10E-04	7.0E-03		1.3E+00		1.1E+01	
W-10	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	10				2.20E-04	3.50E-04	7.0E-02		2.1E+02		2.0E+02	
W-10	VOC	trans-1,2-Dichloroethene	156-60-5	T		10				1.50E-04	3.30E-04	1.0E-01		2.0E+02		2.2E+02	
W-10	VOC	1,2-Dichloropropane	78-87-5	T	B2	10				1.70E-04	4.10E-04	5.0E-03		3.6E+01		1.6E+01	
W-10	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	10				2.70E-04	3.50E-04	8.5E-03		2.6E+01		5.5E+00	
W-10	VOC	Ethyl Benzene	100-41-4	T	D	10	4	1.50E-04	1.00E-03	1.20E-04	4.10E-04	7.0E-01	1.4E-03	1.7E+02	5.9E-06	1.7E+02	5.9E-06
W-10	VOC	2-Hexanone	591-78-6	T		10				4.60E-04	5.80E-04	1.0E+00		8.7E+03		5.2E+03	
W-10	VOC	Methyl Acetate	79-20-9	T		10				4.10E-04	5.40E-04						
W-10	VOC	Methyl tert-butyl ether	1634-04-4	T		10	4	6.70E-04	2.00E-02	1.30E-04	2.70E-04	2.4E-01	8.3E-02	4.7E+04	4.3E-07	6.1E+02	3.3E-05
W-10	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	10	1	2.40E-04	2.40E-04	2.30E-04	2.60E-04	1.8E+00	1.3E-04	2.0E+04	1.2E-08	1.3E+04	1.8E-08
W-10	VOC	Methylcyclohexane	108-87-2	T		10				1.50E-04	4.20E-04						
W-10	VOC	Methylene Chloride	75-09-2	T	B2	6				2.90E-04	3.40E-04	5.0E-03		1.4E+03		2.2E+02	
W-10	VOC	Styrene	100-42-5	T		10				1.50E-04	3.50E-04	1.0E-01		3.1E+02		9.7E+00	
W-10	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	10				2.50E-04	3.60E-04	8.5E-03		7.7E+01		4.7E+00	
W-10	VOC	Tetrachloroethene	127-18-4	T	C-B2	10				2.30E-04	4.20E-04	5.0E-03		1.7E+02		1.2E+01	
W-10	VOC	Toluene	108-88-3	T	D	10	4	5.90E-04	1.90E-03	1.80E-04	3.90E-04	1.0E+00	1.9E-03	5.3E+02	3.6E-06	5.3E+02	3.6E-06
W-10	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	10				1.70E-04	4.00E-04	7.0E-02		3.0E+02		1.9E+01	
W-10	VOC	1,1,1-Trichloroethane	71-55-6	T	D	10	2	4.10E-04	6.20E-04	1.50E-04	3.90E-04	2.0E-01	3.1E-03	1.3E+03	4.8E-07	1.3E+03	4.8E-07
W-10	VOC	1,1,2-Trichloroethane	79-00-5	T	C	10				3.00E-04	3.60E-04	5.0E-03		1.1E+02		2.1E+01	
W-10	VOC	Trichloroethene	79-01-6	T	C-B2	10				1.40E-04	4.20E-04	5.0E-03		9.7E+01		2.2E+01	
W-10	VOC	Trichlorofluoromethane	75-69-4	T		10				2.80E-04	5.40E-04	2.6E+00		1.1E+03		1.1E+03	
W-10	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		10				3.20E-04	3.20E-04	1.7E+02		1.7E+02		1.7E+02	
W-10	VOC	Vinyl Chloride	75-01-4	T	A	10				1.50E-04	3.60E-04	2.0E-03		1.3E+01		1.0E+00	
W-10	VOC	Xylenes (total)	1330-20-7	T	ID	10	4	5.80E-04	7.80E-03	3.30E-04	4.40E-04	1.0E+01	7.8E-04	1.9E+02	4.1E-05	1.9E+02	4.1E-05
W-10	SVOC	Acenaphthene	83-32-9	T		10				8.00E-04	3.20E-03	1.3E+00		4.2E+00		4.2E+00	
W-10	SVOC	Acenaphthylene	208-96-8	T	D	10				7.10E-04	2.80E-03	5.2E-02		3.9E+00		3.9E+00	
W-10	SVOC	Acetophenone	98-86-2	T	D	10				2.60E-03	1.00E-02	1.5E+00		6.1E+03		6.1E+03	
W-10	SVOC	Anthracene	120-12-7	T	D	10				6.80E-04	2.70E-03	4.3E-02		4.3E-02		4.3E-02	
W-10	SVOC	Atrazine	1912-24-9	T		10				2.50E-03	1.00E-02	3.0E-03				5.4E+00	
W-10	SVOC	Benzaldehyde	100-52-7	T		10				2.80E-03	1.10E-02						
W-10	SVOC	Benzo(a)anthracene	56-55-3	T	B2	10				7.00E-04	2.80E-03	2.1E-03				9.4E-03	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-10	SVOC	Benzo(a)pyrene	50-32-8	T	B2	10				7.30E-04	2.90E-03	5.0E-03				2.0E-03	
W-10	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	10				9.40E-04	3.80E-03	2.0E-03				2.0E-03	
W-10	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	10				8.50E-04	3.40E-03	5.0E-03				5.0E-03	
W-10	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	10				8.40E-04	3.40E-03	5.0E-03				5.0E-03	
W-10	SVOC	Biphenyl	92-52-4	T	D	10				2.60E-03	1.00E-02						
W-10	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	10				8.70E-04	3.50E-03						
W-10	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	10				9.70E-04	3.90E-03	2.0E-03		2.1E+02		5.7E+00	
W-10	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	10	1	1.50E-01	1.50E-01	2.70E-03	1.10E-02	6.0E-03	**2.5E+01**			3.2E-01	4.7E-01
W-10	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	10				8.80E-04	3.50E-03						
W-10	SVOC	Butylbenzylphthalate	85-68-7	T	C	10				8.80E-04	3.50E-03	1.2E+00				2.7E+00	
W-10	SVOC	Caprolactam	105-60-2	T		10				2.50E-03	1.00E-02	5.8E+00				3.9E+05	
W-10	SVOC	Carbazole	86-74-8	T	B2	10				8.20E-04	3.30E-03	8.5E-02				7.4E+00	
W-10	SVOC	4-Chloro-3-methylphenol	59-50-7	T		10				9.90E-04	4.00E-03	1.5E-01				7.9E+01	
W-10	SVOC	4-Chloroaniline	106-47-8	T		10				6.10E-04	2.40E-03						
W-10	SVOC	2-Chloronaphthalene	91-58-7	T		10				8.50E-04	3.40E-03	1.8E+00				6.7E+00	
W-10	SVOC	2-Chlorophenol	95-57-8	T		10				1.00E-03	4.00E-03	4.5E-02				9.4E+01	
W-10	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		10				7.90E-04	3.20E-03						
W-10	SVOC	Chrysene	218-01-9	T	B2	10				7.50E-04	3.00E-03	5.0E-03				5.0E-03	
W-10	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	10				7.90E-04	3.20E-03	2.0E-03				2.0E-03	
W-10	SVOC	Dibenzofuran	132-64-9	T	D	10				1.10E-03	4.40E-03						
W-10	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	10				9.30E-04	3.70E-03	1.1E-03				1.8E-01	
W-10	SVOC	2,4-Dichlorophenol	120-83-2	T		10				8.50E-04	3.40E-03	7.3E-02				4.8E+01	
W-10	SVOC	Diethylphthalate	84-66-2	T	D	10				6.50E-04	2.60E-03	5.5E+00				1.1E+03	
W-10	SVOC	2,4-Dimethylphenol	105-67-9	T		10				8.50E-04	3.40E-03	3.7E-01				5.2E+02	
W-10	SVOC	Dimethylphthalate	131-11-3	T	D	10				7.60E-04	3.00E-03	7.3E+01				4.2E+03	
W-10	SVOC	Di-n-butylphthalate	84-74-2	T	D	10				6.70E-04	2.70E-03	8.8E-01				1.1E+01	
W-10	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		10				1.30E-03	5.20E-03	2.0E-02				9.5E+00	
W-10	SVOC	2,4-Dinitrophenol	51-28-5	T		10				3.00E-03	1.20E-02						
W-10	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	10				7.90E-04	3.20E-03	7.7E-03				8.6E+00	
W-10	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	10				5.70E-04	2.30E-03						
W-10	SVOC	Di-n-octylphthalate	117-84-0	T		10				1.10E-03	4.40E-03	1.3E-01				4.0E-01	
W-10	SVOC	Fluoranthene	206-44-0	T	D	10	1	8.20E-04	8.20E-04	8.10E-04	3.20E-03	2.1E-01	3.9E-03	2.1E-01	3.9E-03	2.1E-01	3.9E-03
W-10	SVOC	Fluorene	86-73-7	T	D	10	1	1.90E-03	1.90E-03	1.00E-03	4.00E-03	8.8E-01	2.2E-03	2.0E+00	9.5E-04	2.0E+00	9.5E-04
W-10	SVOC	Hexachlorobenzene	118-74-1	T	B2	10				7.40E-04	3.00E-03	1.0E-03		3.0E+00		4.6E-03	
W-10	SVOC	Hexachlorobutadiene	87-68-3	T	C	10				7.30E-04	2.90E-03	1.5E-02		3.2E+00		4.0E-01	
W-10	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	6				1.10E-03	4.40E-03	5.0E-02		4.2E-01		1.6E+00	
W-10	SVOC	Hexachloroethane	67-72-1	T	C	10				7.40E-04	3.00E-03	7.3E-03		5.0E+01		1.9E+00	
W-10	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	10				6.30E-04	2.50E-03	2.0E-03				2.0E-03	
W-10	SVOC	Isophorone	78-59-1	T	C	10				6.30E-04	2.50E-03	7.7E-01				9.9E+02	
W-10	SVOC	2-Methylnaphthalene	91-57-6	T	ID	10	1	7.50E-03	7.50E-03	6.40E-04	6.40E-04	2.6E-01	2.9E-02			2.5E+01	3.0E-04
W-10	SVOC	Methylphenol (total)	1319-77-3	T		10				1.30E-03	5.20E-03	3.7E-01				8.1E+02	
W-10	SVOC	Naphthalene	91-20-3	T	C	10	1	6.90E-03	6.90E-03	7.50E-04	7.50E-04	5.2E-01	1.3E-02	3.1E+01	2.2E-04	3.1E+01	2.2E-04
W-10	SVOC	2-Nitroaniline	88-74-4	T		10				7.00E-04	2.80E-03						
W-10	SVOC	3-Nitroaniline	99-09-2	T	C	10				7.10E-04	2.80E-03						
W-10	SVOC	4-Nitroaniline	100-01-6	T	C	10				1.30E-03	5.20E-03						
W-10	SVOC	Nitrobenzene	98-95-3	T	D	10				8.10E-04	3.20E-03	3.4E-03		5.5E+02		1.1E+01	
W-10	SVOC	2-Nitrophenol	88-75-5	T		10				2.10E-03	8.40E-03	2.0E-02				7.9E+01	
W-10	SVOC	4-Nitrophenol	100-02-7	T		10				1.90E-03	7.60E-03						
W-10	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	10				1.40E-03	5.60E-03	2.7E-01				3.5E+01	
W-10	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	10				6.70E-04	2.70E-03	5.0E-03				3.6E-01	
W-10	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	10				7.80E-04	3.10E-03						
W-10	SVOC	Pentachlorophenol	87-86-5	T	B2	10				2.40E-03	9.60E-03	1.0E-03				2.0E-01	
W-10	SVOC	Phenanthrene	85-01-8	T	D	10				8.20E-04	3.30E-03	5.2E-02		1.0E+00		1.0E+00	
W-10	SVOC	Phenol	108-95-2	T	ID	10				2.60E-03	1.00E-02	4.4E+00				2.9E+04	
W-10	SVOC	Pyrene	129-00-0	T	D	10				1.10E-03	4.40E-03	1.4E-01		1.4E-01		1.4E-01	
W-10	SVOC	2,4,5-Trichlorophenol	95-95-4	T		10				1.20E-03	4.80E-03	7.3E-01				1.7E+02	

TABLE 5-2a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

SHALLOW GROUNDWATER SCREENING RESULTS

Area	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Groundwater Volatilization to Indoor Air Criteria (mg/L)	Ratio of Max Detected to Industrial Groundwater Volatilization to Indoor Air Criteria	Groundwater Contact Criteria (mg/L)	Ratio of Max Detected to Groundwater Contact Criteria
W-10	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	10				1.70E-03	6.80E-03	1.2E-01				1.0E+01	
W-10	P/PCB	PCBs (total)	1336-36-3	D	B2	1				8.20E-05	8.20E-05	5.0E-04		4.5E-02		3.3E-03	
W-10	P/PCB	PCBs (total)	1336-36-3	T	B2	10	2	4.09E-04	8.31E-04	8.20E-05	8.20E-05	5.0E-04	**1.7E+00**	4.5E-02	1.8E-02	3.3E-03	2.5E-01
W-10	INORG	Antimony	7440-36-0	D		5				2.20E-03	2.20E-03	6.0E-03				6.8E+01	
W-10	INORG	Antimony	7440-36-0	T		10	1	2.30E-03	2.30E-03	2.20E-03	3.40E-03	6.0E-03	3.8E-01			6.8E+01	3.4E-05
W-10	INORG	Arsenic	7440-38-2	D	A	5	2	5.00E-03	5.91E-02	3.90E-03	3.90E-03	5.0E-02	**1.2E+00**			4.3E+00	1.4E-02
W-10	INORG	Arsenic	7440-38-2	T	A	10	4	4.90E-03	6.33E-02	2.10E-03	3.90E-03	5.0E-02	**1.3E+00**			4.3E+00	1.5E-02
W-10	INORG	Barium	7440-39-3	D	D	5	5	1.05E-02	1.09E-01			2.0E+00	5.5E-02			1.4E+04	7.8E-06
W-10	INORG	Barium	7440-39-3	T	D	10	10	1.16E-02	2.19E-01			2.0E+00	1.1E-01			1.4E+04	1.6E-05
W-10	INORG	Beryllium	7440-41-7	D	B1	5				5.40E-04	5.40E-04	4.0E-03				2.9E+02	
W-10	INORG	Beryllium	7440-41-7	T	B1	10				5.40E-04	6.00E-04	4.0E-03				2.9E+02	
W-10	INORG	Cadmium	7440-43-9	D	B1	5				2.80E-04	2.80E-04	5.0E-03				1.9E+02	
W-10	INORG	Cadmium	7440-43-9	T	B1	10				2.80E-04	2.80E-04	5.0E-03				1.9E+02	
W-10	INORG	Chromium (total)	7440-47-3	D		5	2	5.30E-03	6.50E-03	1.40E-03	1.40E-03	1.0E-01	6.5E-02			4.6E+02	1.4E-05
W-10	INORG	Chromium (total)	7440-47-3	T		10	3	5.60E-03	1.84E-02	1.40E-03	1.50E-03	1.0E-01	1.8E-01			4.6E+02	4.0E-05
W-10	INORG	Cobalt	7440-48-4	D	B1	5	2	2.50E-03	1.11E-02	1.30E-03	1.30E-03	4.0E-02	2.8E-01			2.4E+03	4.6E-06
W-10	INORG	Cobalt	7440-48-4	T	B1	10	4	1.30E-03	1.14E-02	7.40E-04	1.30E-03	4.0E-02	2.9E-01			2.4E+03	4.8E-06
W-10	INORG	Copper	7440-50-8	D	D	5	1	4.60E-03	4.60E-03	4.20E-03	4.20E-03	1.4E+00	3.3E-03			7.4E+03	6.2E-07
W-10	INORG	Copper	7440-50-8	T	D	10	1	4.30E-03	4.30E-03	1.70E-03	4.20E-03	1.4E+00	3.1E-03			7.4E+03	5.8E-07
W-10	INORG	Lead	7439-92-1	D	B2	5				2.50E-03	2.50E-03	4.0E-03					
W-10	INORG	Lead	7439-92-1	T	B2	10				1.60E-03	2.50E-03	4.0E-03					
W-10	INORG	Manganese	7439-96-5	D	D	5	5	1.09E-02	4.83E-01			8.6E-01	5.6E-01			9.1E+03	5.3E-05
W-10	INORG	Manganese	7439-96-5	T	D	10	10	9.90E-03	5.11E-01			8.6E-01	5.9E-01			9.1E+03	5.6E-05
W-10	INORG	Mercury	7439-97-6	D	D	5				6.90E-05	6.90E-05	2.0E-03		5.6E-02		5.6E-02	
W-10	INORG	Mercury	7439-97-6	T	D	10	2	7.50E-05	9.10E-05	6.90E-05	8.70E-05	2.0E-03	4.6E-02	5.6E-02	1.6E-03	5.6E-02	1.6E-03
W-10	INORG	Nickel	7440-02-0	D	A	5	3	3.10E-03	2.42E-02	2.20E-03	2.20E-03	1.0E-01	2.4E-01			7.4E+04	3.3E-07
W-10	INORG	Nickel	7440-02-0	T	A	10	5	3.50E-03	2.47E-02	2.20E-03	2.90E-03	1.0E-01	2.5E-01			7.4E+04	3.3E-07
W-10	INORG	Selenium	7782-49-2	D	D	5				4.50E-03	4.50E-03	5.0E-02				9.7E+02	
W-10	INORG	Selenium	7782-49-2	T	D	10	1	4.90E-03	4.90E-03	4.50E-03	4.70E-03	5.0E-02	9.8E-02			9.7E+02	5.1E-06
W-10	INORG	Silver	7440-22-4	D	D	5				1.50E-03	1.50E-03	3.4E-02				1.5E+03	
W-10	INORG	Silver	7440-22-4	T	D	10				9.80E-04	1.50E-03	3.4E-02				1.5E+03	
W-10	INORG	Thallium	7440-28-0	D		5	2	2.80E-05	5.50E-03	1.80E-05	1.80E-05	2.0E-03	**2.8E+00**			1.3E+01	4.2E-04
W-10	INORG	Thallium	7440-28-0	T		10	1	6.80E-03	6.80E-03	1.80E-05	3.30E-05	2.0E-03	**3.4E+00**			1.3E+01	5.2E-04
W-10	INORG	Vanadium	7440-62-2	D		5	2	1.70E-03	2.40E-03	8.20E-04	8.20E-04	4.5E-03	5.3E-01			9.7E+02	2.5E-06
W-10	INORG	Vanadium	7440-62-2	T		10	3	1.20E-03	3.00E-03	6.70E-04	8.20E-04	4.5E-03	6.7E-01			9.7E+02	3.1E-06
W-10	INORG	Zinc	7440-66-6	D	D	5				1.20E-02	1.20E-02	2.4E+00				1.1E+05	
W-10	INORG	Zinc	7440-66-6	T	D	10	1	1.46E-02	1.46E-02	1.20E-02	1.40E-02	2.4E+00	6.1E-03			1.1E+05	1.3E-07
W-10	CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	T	B2	9	3	1.74E-09	4.88E-09	2.71E-09	3.99E-08	3.0E-08	1.6E-01			1.0E-08	4.9E-01

Notes:
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to Polychlorinated biphenyls (PCBs) for cancer effects and Aroclor 1254 for noncancer effects.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.
The MDEQ Drinking Water Criteria for Chromium III was calculated by ENVIRON to be account for valence specific toxicity.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 5-2b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

INTERMEDIATE AND DEEP GROUNDWATER SCREENING RESULTS

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
SWHI	Deep	VOC	Acetone	67-64-1	T	ID	12	9	2.40E-02	7.10E+00	5.10E-04	3.40E-03	7.3E-01	**9.7E+00**	2.1E+00	**3.4E+00**
SWHI	Deep	VOC	Benzene	71-43-2	T	A	12	2	2.60E-04	1.60E-03	1.60E-04	8.30E-02	5.0E-03	3.2E-01	5.0E-03	3.2E-01
SWHI	Deep	VOC	Bromodichloromethane	75-27-4	T	B2	12				1.70E-04	8.30E-02	1.0E-01		1.0E-01	
SWHI	Deep	VOC	Bromoform	75-25-2	T	B2	12				1.80E-04	8.30E-02	1.0E-01		1.0E-01	
SWHI	Deep	VOC	Bromomethane	74-83-9	T	D	12				2.00E-04	8.30E-02	1.0E-02		2.9E-02	
SWHI	Deep	VOC	2-Butanone	78-93-3	T	ID	12				4.10E-04	8.30E-01	1.3E+01		3.8E+01	
SWHI	Deep	VOC	Carbon Disulfide	75-15-0	T		12				2.00E-04	8.30E-02	8.0E-01		2.3E+00	
SWHI	Deep	VOC	Carbon Tetrachloride	56-23-5	T	B2	12				1.20E-04	8.30E-02	5.0E-03		5.0E-03	
SWHI	Deep	VOC	Chlorobenzene	108-90-7	T	D	12				1.40E-04	8.30E-02	1.0E-01		1.0E-01	
SWHI	Deep	VOC	Chloroethane	75-00-3	T		12				2.60E-04	8.30E-02	4.3E-01		1.7E+00	
SWHI	Deep	VOC	Chloroform	67-66-3	T	B2	12	1	3.55E-04	3.55E-04	1.40E-04	8.30E-02	1.0E-01	3.6E-03	1.0E-01	3.6E-03
SWHI	Deep	VOC	Chloromethane	74-87-3	T	D	12				1.30E-04	8.30E-02	2.6E-01		1.1E+00	
SWHI	Deep	VOC	Cumene	98-82-8	T	D	12				1.20E-04	8.30E-02	8.0E-01		2.3E+00	
SWHI	Deep	VOC	Cyclohexane	110-82-7	T	ID	12				1.30E-04	8.30E-02				
SWHI	Deep	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	12				6.20E-04	1.70E-01	2.0E-04		2.0E-04	
SWHI	Deep	VOC	Dibromochloromethane	124-48-1	T	C	12				2.60E-04	8.30E-02	1.0E-01		1.0E-01	
SWHI	Deep	VOC	1,2-Dibromoethane	106-93-4	T	B2	12				2.20E-04	8.30E-02	1.0E-03		1.0E-03	
SWHI	Deep	VOC	1,2-Dichlorobenzene	95-50-1	T	D	12				1.10E-04	8.30E-02	6.0E-01		6.0E-01	
SWHI	Deep	VOC	1,3-Dichlorobenzene	541-73-1	T	D	12				1.50E-04	8.30E-02	6.6E-03		1.9E-02	
SWHI	Deep	VOC	1,4-Dichlorobenzene	106-46-7	T	C	12				1.70E-04	8.30E-02	7.5E-02		7.5E-02	
SWHI	Deep	VOC	Dichlorodifluoromethane	75-71-8	T		12				2.60E-04	1.70E-01	1.7E+00		4.8E+00	
SWHI	Deep	VOC	1,1-Dichloroethane	75-34-3	T	C	12				1.60E-04	8.30E-02	8.8E-01		2.5E+00	
SWHI	Deep	VOC	1,2-Dichloroethane	107-06-2	T	B2	12				2.10E-04	8.30E-02	5.0E-03		5.0E-03	
SWHI	Deep	VOC	1,1-Dichloroethene	75-35-4	T	C	12				2.40E-04	8.30E-02	7.0E-03		7.0E-03	
SWHI	Deep	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	12				2.20E-04	4.20E-02	7.0E-02		7.0E-02	
SWHI	Deep	VOC	trans-1,2-Dichloroethene	156-60-5	T		12				1.50E-04	4.20E-02	1.0E-01		1.0E-01	
SWHI	Deep	VOC	1,2-Dichloropropane	78-87-5	T	B2	12				1.70E-04	8.30E-02	5.0E-03		5.0E-03	
SWHI	Deep	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	12				2.70E-04	8.30E-02	8.5E-03		3.5E-02	
SWHI	Deep	VOC	Ethyl Benzene	100-41-4	T	D	12				1.20E-04	8.30E-02	7.0E-01		7.0E-01	
SWHI	Deep	VOC	2-Hexanone	591-78-6	T		12				4.60E-04	8.30E-01	1.0E+00		2.9E+00	
SWHI	Deep	VOC	Methyl Acetate	79-20-9	T		12				4.10E-04	8.30E-01				
SWHI	Deep	VOC	Methyl tert-butyl ether	1634-04-4	T		12				1.30E-04	4.20E-01	2.4E-01		6.9E-01	
SWHI	Deep	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	12				2.30E-04	8.30E-01	1.8E+00		5.2E+00	
SWHI	Deep	VOC	Methylcyclohexane	108-87-2	T		12				1.50E-04	8.30E-02				
SWHI	Deep	VOC	Methylene Chloride	75-09-2	T	B2	12				2.90E-04	8.30E-02	5.0E-03		5.0E-03	
SWHI	Deep	VOC	Styrene	100-42-5	T		12				1.50E-04	8.30E-02	1.0E-01		1.0E-01	
SWHI	Deep	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	12				2.50E-04	8.30E-02	8.5E-03		3.5E-02	
SWHI	Deep	VOC	Tetrachloroethene	127-18-4	T	C-B2	12				2.30E-04	8.30E-02	5.0E-03		5.0E-03	
SWHI	Deep	VOC	Toluene	108-88-3	T	D	12	3	4.30E-04	1.00E-03	1.80E-04	8.30E-02	1.0E+00	1.0E-03	1.0E+00	1.0E-03
SWHI	Deep	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	12				1.70E-04	8.30E-02	7.0E-02		7.0E-02	
SWHI	Deep	VOC	1,1,1-Trichloroethane	71-55-6	T	D	12				1.50E-04	8.30E-02	2.0E-01		2.0E-01	
SWHI	Deep	VOC	1,1,2-Trichloroethane	79-00-5	T	C	12				3.00E-04	8.30E-02	5.0E-03		5.0E-03	
SWHI	Deep	VOC	Trichloroethene	79-01-6	T	C-B2	12				1.40E-04	8.30E-02	5.0E-03		5.0E-03	
SWHI	Deep	VOC	Trichlorofluoromethane	75-69-4	T		12				2.80E-04	8.30E-02	2.6E+00		7.3E+00	
SWHI	Deep	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		12				3.20E-04	8.30E-02	1.7E+02		1.7E+02	
SWHI	Deep	VOC	Vinyl Chloride	75-01-4	T	A	12				1.50E-04	8.30E-02	2.0E-03		2.0E-03	
SWHI	Deep	VOC	Xylenes (total)	1330-20-7	T	ID	12	3	3.50E-04	6.10E-04	3.30E-04	8.30E-02	1.0E+01	6.1E-05	1.0E+01	6.1E-05
SWHI	Deep	SVOC	Acenaphthene	83-32-9	T		12				8.00E-04	5.00E-03	1.3E+00		3.8E+00	
SWHI	Deep	SVOC	Acenaphthylene	208-96-8	T	D	12				7.10E-04	5.00E-03	5.2E-02		1.5E-01	
SWHI	Deep	SVOC	Acetophenone	98-86-2	T	D	12				2.60E-03	1.00E-02	1.5E+00		4.4E+00	
SWHI	Deep	SVOC	Anthracene	120-12-7	T	D	12				6.80E-04	5.00E-03	4.3E-02		4.3E-02	
SWHI	Deep	SVOC	Atrazine	1912-24-9	T		12				2.50E-03	5.00E-03	3.0E-03		3.0E-03	
SWHI	Deep	SVOC	Benzaldehyde	100-52-7	T		12				2.80E-03	1.00E-02				
SWHI	Deep	SVOC	Benzo(a)anthracene	56-55-3	T	B2	12				7.00E-04	5.00E-03	2.1E-03		8.5E-03	
SWHI	Deep	SVOC	Benzo(a)pyrene	50-32-8	T	B2	12				7.30E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Deep	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	12				9.40E-04	5.00E-03	2.0E-03		2.0E-03	
SWHI	Deep	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	12				8.50E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Deep	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	12				8.40E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Deep	SVOC	Biphenyl	92-52-4	T	D	12				2.60E-03	1.00E-02				

TABLE 5-2b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

INTERMEDIATE AND DEEP GROUNDWATER SCREENING RESULTS

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
SWHI	Deep	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	12				8.70E-04	5.00E-03				
SWHI	Deep	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	12				9.70E-04	5.00E-03	2.0E-03		8.3E-03	
SWHI	Deep	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	12	1	3.90E-03	3.90E-03	2.70E-03	5.00E-03	6.0E-03	6.5E-01	6.0E-03	6.5E-01
SWHI	Deep	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	12				8.80E-04	5.00E-03				
SWHI	Deep	SVOC	Butylbenzylphthalate	85-68-7	T	C	12				8.80E-04	5.00E-03	1.2E+00		2.7E+00	
SWHI	Deep	SVOC	Caprolactam	105-60-2	T		12	5	9.70E-03	5.40E-01	2.50E-03	1.00E-02	5.8E+00	9.3E-02	1.7E+01	3.2E-02
SWHI	Deep	SVOC	Carbazole	86-74-8	T	B2	12				8.20E-04	1.00E-02	8.5E-02		3.5E-01	
SWHI	Deep	SVOC	4-Chloro-3-methylphenol	59-50-7	T		12				9.90E-04	5.00E-03	1.5E-01		4.2E-01	
SWHI	Deep	SVOC	4-Chloroaniline	106-47-8	T		12				6.10E-04	1.00E-02				
SWHI	Deep	SVOC	2-Chloronaphthalene	91-58-7	T		12				8.50E-04	5.00E-03	1.8E+00		5.2E+00	
SWHI	Deep	SVOC	2-Chlorophenol	95-57-8	T		12				1.00E-03	5.00E-03	4.5E-02		1.3E-01	
SWHI	Deep	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		12				7.90E-04	5.00E-03				
SWHI	Deep	SVOC	Chrysene	218-01-9	T	B2	12				7.50E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Deep	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	12				7.90E-04	5.00E-03	2.0E-03		2.0E-03	
SWHI	Deep	SVOC	Dibenzofuran	132-64-9	T	D	12				1.10E-03	5.00E-03				
SWHI	Deep	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	12				9.30E-04	2.00E-02	1.1E-03		4.3E-03	
SWHI	Deep	SVOC	2,4-Dichlorophenol	120-83-2	T		12				8.50E-04	1.00E-02	7.3E-02		2.1E-01	
SWHI	Deep	SVOC	Diethylphthalate	84-66-2	T	D	12				6.50E-04	5.00E-03	5.5E+00		1.6E+01	
SWHI	Deep	SVOC	2,4-Dimethylphenol	105-67-9	T		12				8.50E-04	5.00E-03	3.7E-01		1.0E+00	
SWHI	Deep	SVOC	Dimethylphthalate	131-11-3	T	D	12				7.60E-04	5.00E-03	7.3E+01		2.1E+02	
SWHI	Deep	SVOC	Di-n-butylphthalate	84-74-2	T	D	12				6.70E-04	5.00E-03	8.8E-01		2.5E+00	
SWHI	Deep	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		12				1.30E-03	2.00E-02	2.0E-02		2.0E-02	
SWHI	Deep	SVOC	2,4-Dinitrophenol	51-28-5	T		12				3.00E-03	2.00E-02				
SWHI	Deep	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	12				7.90E-04	5.00E-03	7.7E-03		3.2E-02	
SWHI	Deep	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	12				5.70E-04	5.00E-03				
SWHI	Deep	SVOC	Di-n-octylphthalate	117-84-0	T		12				1.10E-03	5.00E-03	1.3E-01		3.8E-01	
SWHI	Deep	SVOC	Fluoranthene	206-44-0	T	D	12				8.10E-04	5.00E-03	2.1E-01		2.1E-01	
SWHI	Deep	SVOC	Fluorene	86-73-7	T	D	12				1.00E-03	5.00E-03	8.8E-01		2.0E+00	
SWHI	Deep	SVOC	Hexachlorobenzene	118-74-1	T	B2	12				7.40E-04	5.00E-03	1.0E-03		1.0E-03	
SWHI	Deep	SVOC	Hexachlorobutadiene	87-68-3	T	C	12				7.30E-04	5.00E-03	1.5E-02		4.2E-02	
SWHI	Deep	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	12				1.10E-03	5.00E-03	5.0E-02		5.0E-02	
SWHI	Deep	SVOC	Hexachloroethane	67-72-1	T	C	12				7.40E-04	5.00E-03	7.3E-03		2.1E-02	
SWHI	Deep	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	12				6.30E-04	5.00E-03	2.0E-03		2.0E-03	
SWHI	Deep	SVOC	Isophorone	78-59-1	T	C	12	1	2.65E-03	2.65E-03	6.30E-04	5.00E-03	7.7E-01	3.4E-03	3.1E+00	8.5E-04
SWHI	Deep	SVOC	2-Methylnaphthalene	91-57-6	T	ID	12				6.40E-04	5.00E-03	2.6E-01		7.5E-01	
SWHI	Deep	SVOC	Methylphenol (total)	1319-77-3	T		12				1.30E-03	5.00E-03	3.7E-01		1.0E+00	
SWHI	Deep	SVOC	Naphthalene	91-20-3	T	C	12				7.50E-04	5.00E-03	5.2E-01		1.5E+00	
SWHI	Deep	SVOC	2-Nitroaniline	88-74-4	T		12				7.00E-04	2.00E-02				
SWHI	Deep	SVOC	3-Nitroaniline	99-09-2	T	C	12				7.10E-04	2.00E-02				
SWHI	Deep	SVOC	4-Nitroaniline	100-01-6	T	C	12				1.30E-03	2.00E-02				
SWHI	Deep	SVOC	Nitrobenzene	98-95-3	T	D	12				8.10E-04	5.00E-03	3.4E-03		9.6E-03	
SWHI	Deep	SVOC	2-Nitrophenol	88-75-5	T		12				2.10E-03	5.00E-03	2.0E-02		5.8E-02	
SWHI	Deep	SVOC	4-Nitrophenol	100-02-7	T		12				1.90E-03	2.00E-02				
SWHI	Deep	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	12				1.40E-03	5.00E-03	2.7E-01		1.1E+00	
SWHI	Deep	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	12				6.70E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Deep	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	12				7.80E-04	5.00E-03				
SWHI	Deep	SVOC	Pentachlorophenol	87-86-5	T	B2	12				2.40E-03	5.00E-03	1.0E-03		1.0E-03	
SWHI	Deep	SVOC	Phenanthrene	85-01-8	T	D	12				8.20E-04	5.00E-03	5.2E-02		1.5E-01	
SWHI	Deep	SVOC	Phenol	108-95-2	T	ID	12				2.60E-03	5.00E-03	4.4E+00		1.3E+01	
SWHI	Deep	SVOC	Pyrene	129-00-0	T	D	12				1.10E-03	5.00E-03	1.4E-01		1.4E-01	
SWHI	Deep	SVOC	2,4,5-Trichlorophenol	95-95-4	T		12				1.20E-03	5.00E-03	7.3E-01		2.1E+00	
SWHI	Deep	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	12				1.70E-03	5.00E-03	1.2E-01		4.7E-01	
SWHI	Deep	P/PCB	PCBs (total)	1336-36-3	T	B2	1				8.20E-05	8.20E-05	5.0E-04		5.0E-04	
SWHI	Deep	INORG	Antimony	7440-36-0	D		10				2.20E-03	2.50E-02	6.0E-03		6.0E-03	
SWHI	Deep	INORG	Antimony	7440-36-0	T		12				2.20E-03	2.50E-02	6.0E-03		6.0E-03	
SWHI	Deep	INORG	Arsenic	7440-38-2	D	A	10	6	6.90E-03	1.88E-02	3.90E-03	1.00E-02	5.0E-02	3.8E-01	5.0E-02	3.8E-01
SWHI	Deep	INORG	Arsenic	7440-38-2	T	A	12	8	4.70E-03	3.19E-02	3.90E-03	1.00E-02	5.0E-02	6.4E-01	5.0E-02	6.4E-01
SWHI	Deep	INORG	Barium	7440-39-3	D	D	10	10	6.46E-02	3.24E-01			2.0E+00	1.6E-01	2.0E+00	1.6E-01
SWHI	Deep	INORG	Barium	7440-39-3	T	D	12	12	4.88E-02	3.31E-01			2.0E+00	1.7E-01	2.0E+00	1.7E-01

TABLE 5-2b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

INTERMEDIATE AND DEEP GROUNDWATER SCREENING RESULTS

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
SWHI	Deep	INORG	Beryllium	7440-41-7	D	B1	10				5.40E-04	1.00E-03	4.0E-03		4.0E-03	
SWHI	Deep	INORG	Beryllium	7440-41-7	T	B1	12				5.40E-04	1.00E-03	4.0E-03		4.0E-03	
SWHI	Deep	INORG	Cadmium	7440-43-9	D	B1	10				2.80E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Deep	INORG	Cadmium	7440-43-9	T	B1	12	2	3.10E-04	3.30E-04	2.80E-04	5.00E-03	5.0E-03	6.6E-02	5.0E-03	6.6E-02
SWHI	Deep	INORG	Chromium (total)	7440-47-3	D		10	1	1.50E-03	1.50E-03	1.40E-03	1.00E-02	1.0E-01	1.5E-02	1.0E-01	1.5E-02
SWHI	Deep	INORG	Chromium (total)	7440-47-3	T		12	7	3.60E-03	1.13E-02	1.40E-03	1.00E-02	1.0E-01	1.1E-01	1.0E-01	1.1E-01
SWHI	Deep	INORG	Cobalt	7440-48-4	D	B1	10				1.30E-03	2.00E-02	4.0E-02		1.0E-01	
SWHI	Deep	INORG	Cobalt	7440-48-4	T	B1	12	2	1.30E-03	4.80E-03	7.40E-04	2.00E-02	4.0E-02	1.2E-01	1.0E-01	4.8E-02
SWHI	Deep	INORG	Copper	7440-50-8	D	D	10				4.20E-03	5.00E-03	1.4E+00		4.0E+00	
SWHI	Deep	INORG	Copper	7440-50-8	T	D	12	1	3.60E-03	3.60E-03	1.70E-03	5.00E-03	1.4E+00	2.6E-03	4.0E+00	9.0E-04
SWHI	Deep	INORG	Lead	7439-92-1	D	B2	10				2.50E-03	3.00E-03	4.0E-03		4.0E-03	
SWHI	Deep	INORG	Lead	7439-92-1	T	B2	12				1.60E-03	3.00E-03	4.0E-03		4.0E-03	
SWHI	Deep	INORG	Manganese	7439-96-5	D	D	10	10	3.11E-02	2.32E-01			8.6E-01	2.7E-01	2.5E+00	9.3E-02
SWHI	Deep	INORG	Manganese	7439-96-5	T	D	12	12	3.44E-02	2.52E-01			8.6E-01	2.9E-01	2.5E+00	1.0E-01
SWHI	Deep	INORG	Mercury	7439-97-6	D	D	10				6.90E-05	2.00E-04	2.0E-03		2.0E-03	
SWHI	Deep	INORG	Mercury	7439-97-6	T	D	12	1	8.80E-05	8.80E-05	6.90E-05	2.00E-04	2.0E-03	4.4E-02	2.0E-03	4.4E-02
SWHI	Deep	INORG	Nickel	7440-02-0	D	A	10	3	2.40E-03	5.60E-03	2.20E-03	2.00E-02	1.0E-01	5.6E-02	1.0E-01	5.6E-02
SWHI	Deep	INORG	Nickel	7440-02-0	T	A	12	8	2.90E-03	7.40E-03	2.20E-03	2.00E-02	1.0E-01	7.4E-02	1.0E-01	7.4E-02
SWHI	Deep	INORG	Selenium	7782-49-2	D	D	10				4.50E-03	5.00E-03	5.0E-02		5.0E-02	
SWHI	Deep	INORG	Selenium	7782-49-2	T	D	12				4.50E-03	5.00E-03	5.0E-02		5.0E-02	
SWHI	Deep	INORG	Silver	7440-22-4	D	D	10				1.50E-03	5.00E-03	3.4E-02		9.8E-02	
SWHI	Deep	INORG	Silver	7440-22-4	T	D	12				9.80E-04	5.00E-03	3.4E-02		9.8E-02	
SWHI	Deep	INORG	Thallium	7440-28-0	D		11				1.80E-05	1.00E-02	2.0E-03		2.0E-03	
SWHI	Deep	INORG	Thallium	7440-28-0	T		13				1.80E-05	1.00E-02	2.0E-03		2.0E-03	
SWHI	Deep	INORG	Vanadium	7440-62-2	D		10				8.20E-04	1.00E-02	4.5E-03		6.2E-02	
SWHI	Deep	INORG	Vanadium	7440-62-2	T		12				6.70E-04	1.00E-02	4.5E-03		6.2E-02	
SWHI	Deep	INORG	Zinc	7440-66-6	D	D	10				1.20E-02	2.00E-02	2.4E+00		5.0E+00	
SWHI	Deep	INORG	Zinc	7440-66-6	T	D	12	2	1.28E-02	2.76E-02	1.20E-02	2.00E-02	2.4E+00	1.2E-02	5.0E+00	5.5E-03
SWHI	Intermediate	VOC	Acetone	67-64-1	T	ID	8	6	6.50E-01	1.30E+01	1.10E-03	3.60E-02	7.3E-01	**1.8E+01**	2.1E+00	**6.2E+00**
SWHI	Intermediate	VOC	Benzene	71-43-2	T	A	8				3.70E-04	4.00E-02	5.0E-03		5.0E-03	
SWHI	Intermediate	VOC	Bromodichloromethane	75-27-4	T	B2	8				3.20E-04	4.20E-02	1.0E-01		1.0E-01	
SWHI	Intermediate	VOC	Bromoform	75-25-2	T	B2	8				3.70E-04	4.50E-02	1.0E-01		1.0E-01	
SWHI	Intermediate	VOC	Bromomethane	74-83-9	T	D	7				3.00E-04	5.00E-02	1.0E-02		2.9E-02	
SWHI	Intermediate	VOC	2-Butanone	78-93-3	T	ID	8				5.90E-04	1.40E-01	1.3E+01		3.8E+01	
SWHI	Intermediate	VOC	Carbon Disulfide	75-15-0	T		8				2.40E-04	5.00E-02	8.0E-01		2.3E+00	
SWHI	Intermediate	VOC	Carbon Tetrachloride	56-23-5	T	B2	8				3.70E-04	3.00E-02	5.0E-03		5.0E-03	
SWHI	Intermediate	VOC	Chlorobenzene	108-90-7	T	D	8				3.80E-04	3.50E-02	1.0E-01		1.0E-01	
SWHI	Intermediate	VOC	Chloroethane	75-00-3	T		8				2.90E-04	6.50E-02	4.3E-01		1.7E+00	
SWHI	Intermediate	VOC	Chloroform	67-66-3	T	B2	8				3.50E-04	3.50E-02	1.0E-01		1.0E-01	
SWHI	Intermediate	VOC	Chloromethane	74-87-3	T	D	8				4.90E-04	3.20E-02	2.6E-01		1.1E+00	
SWHI	Intermediate	VOC	Cumene	98-82-8	T	D	8				3.90E-04	3.00E-02	8.0E-01		2.3E+00	
SWHI	Intermediate	VOC	Cyclohexane	110-82-7	T	ID	8				3.30E-04	3.20E-02				
SWHI	Intermediate	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	8				8.20E-04	1.60E-01	2.0E-04		2.0E-04	
SWHI	Intermediate	VOC	Dibromochloromethane	124-48-1	T	C	8				3.70E-04	6.50E-02	1.0E-01		1.0E-01	
SWHI	Intermediate	VOC	1,2-Dibromoethane	106-93-4	T	B2	8				3.40E-04	5.50E-02	1.0E-03		1.0E-03	
SWHI	Intermediate	VOC	1,2-Dichlorobenzene	95-50-1	T	D	8				3.80E-04	2.80E-02	6.0E-01		6.0E-01	
SWHI	Intermediate	VOC	1,3-Dichlorobenzene	541-73-1	T	D	8				3.80E-04	3.80E-02	6.6E-03		1.9E-02	
SWHI	Intermediate	VOC	1,4-Dichlorobenzene	106-46-7	T	C	8				3.80E-04	4.20E-02	7.5E-02		7.5E-02	
SWHI	Intermediate	VOC	Dichlorodifluoromethane	75-71-8	T		8				4.90E-04	6.50E-02	1.7E+00		4.8E+00	
SWHI	Intermediate	VOC	1,1-Dichloroethane	75-34-3	T	C	8				3.00E-04	4.00E-02	8.8E-01		2.5E+00	
SWHI	Intermediate	VOC	1,2-Dichloroethane	107-06-2	T	B2	8				2.80E-04	5.20E-02	5.0E-03		5.0E-03	
SWHI	Intermediate	VOC	1,1-Dichloroethene	75-35-4	T	C	8				3.10E-04	6.00E-02	7.0E-03		7.0E-03	
SWHI	Intermediate	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	8				3.50E-04	5.50E-02	7.0E-02		7.0E-02	
SWHI	Intermediate	VOC	trans-1,2-Dichloroethene	156-60-5	T		8				3.30E-04	3.80E-02	1.0E-01		1.0E-01	
SWHI	Intermediate	VOC	1,2-Dichloropropane	78-87-5	T	B2	8				4.10E-04	4.20E-02	5.0E-03		5.0E-03	
SWHI	Intermediate	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	8				3.50E-04	6.80E-02	8.5E-03		3.5E-02	
SWHI	Intermediate	VOC	Ethyl Benzene	100-41-4	T	D	8	1	6.50E-03	6.50E-03	4.10E-04	3.00E-02	7.0E-01	9.3E-03	7.0E-01	9.3E-03
SWHI	Intermediate	VOC	2-Hexanone	591-78-6	T		8				5.80E-04	1.40E-01	1.0E+00		2.9E+00	
SWHI	Intermediate	VOC	Methyl Acetate	79-20-9	T		8				5.40E-04	1.40E-01				

TABLE 5-2b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

INTERMEDIATE AND DEEP GROUNDWATER SCREENING RESULTS

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
SWHI	Intermediate	VOC	Methyl tert-butyl ether	1634-04-4	T		8				2.70E-04	7.10E-02	2.4E-01		6.9E-01	
SWHI	Intermediate	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	7	1	8.50E-03	8.50E-03	2.60E-04	1.40E-01	1.8E+00	4.7E-03	5.2E+00	1.6E-03
SWHI	Intermediate	VOC	Methylcyclohexane	108-87-2	T		8				4.20E-04	3.80E-02				
SWHI	Intermediate	VOC	Methylene Chloride	75-09-2	T	B2	8				2.90E-04	8.50E-02	5.0E-03		5.0E-03	
SWHI	Intermediate	VOC	Styrene	100-42-5	T		8				3.50E-04	3.80E-02	1.0E-01		1.0E-01	
SWHI	Intermediate	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	8				3.60E-04	6.20E-02	8.5E-03		3.5E-02	
SWHI	Intermediate	VOC	Tetrachloroethene	127-18-4	T	C-B2	8				4.20E-04	5.80E-02	5.0E-03		5.0E-03	
SWHI	Intermediate	VOC	Toluene	108-88-3	T	D	8	1	1.90E-02	1.90E-02	3.90E-04	4.50E-02	1.0E+00	1.9E-02	1.0E+00	1.9E-02
SWHI	Intermediate	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	8				4.00E-04	4.20E-02	7.0E-02		7.0E-02	
SWHI	Intermediate	VOC	1,1,1-Trichloroethane	71-55-6	T	D	8				3.90E-04	3.80E-02	2.0E-01		2.0E-01	
SWHI	Intermediate	VOC	1,1,2-Trichloroethane	79-00-5	T	C	8				3.60E-04	7.50E-02	5.0E-03		5.0E-03	
SWHI	Intermediate	VOC	Trichloroethene	79-01-6	T	C-B2	8				4.20E-04	3.50E-02	5.0E-03		5.0E-03	
SWHI	Intermediate	VOC	Trichlorofluoromethane	75-69-4	T		8				5.40E-04	7.00E-02	2.6E+00		7.3E+00	
SWHI	Intermediate	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		8				3.20E-04	8.00E-02	1.7E+02		1.7E+02	
SWHI	Intermediate	VOC	Vinyl Chloride	75-01-4	T	A	8				3.60E-04	3.80E-02	2.0E-03		2.0E-03	
SWHI	Intermediate	VOC	Xylenes (total)	1330-20-7	T	ID	8	1	2.50E-02	2.50E-02	4.40E-04	8.20E-02	1.0E+01	2.5E-03	1.0E+01	2.5E-03
SWHI	Intermediate	SVOC	Acenaphthene	83-32-9	T		8				8.00E-04	5.00E-03	1.3E+00		3.8E+00	
SWHI	Intermediate	SVOC	Acenaphthylene	208-96-8	T	D	8				7.10E-04	5.00E-03	5.2E-02		1.5E-01	
SWHI	Intermediate	SVOC	Acetophenone	98-86-2	T	D	8				2.60E-03	1.00E-02	1.5E+00		4.4E+00	
SWHI	Intermediate	SVOC	Anthracene	120-12-7	T	D	8				6.80E-04	5.00E-03	4.3E-02		4.3E-02	
SWHI	Intermediate	SVOC	Atrazine	1912-24-9	T		8				2.50E-03	5.00E-03	3.0E-03		3.0E-03	
SWHI	Intermediate	SVOC	Benzaldehyde	100-52-7	T		8				2.80E-03	1.00E-02				
SWHI	Intermediate	SVOC	Benzo(a)anthracene	56-55-3	T	B2	8				7.00E-04	5.00E-03	2.1E-03		8.5E-03	
SWHI	Intermediate	SVOC	Benzo(a)pyrene	50-32-8	T	B2	8				7.30E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Intermediate	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	8				9.40E-04	5.00E-03	2.0E-03		2.0E-03	
SWHI	Intermediate	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	8				8.50E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Intermediate	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	8				8.40E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Intermediate	SVOC	Biphenyl	92-52-4	T	D	8				2.60E-03	1.00E-02				
SWHI	Intermediate	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	8				8.70E-04	5.00E-03				
SWHI	Intermediate	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	8				9.70E-04	5.00E-03	2.0E-03		8.3E-03	
SWHI	Intermediate	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	8				2.70E-03	5.00E-03	6.0E-03		6.0E-03	
SWHI	Intermediate	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	8				8.80E-04	5.00E-03				
SWHI	Intermediate	SVOC	Butylbenzylphthalate	85-68-7	T	C	8				8.80E-04	5.00E-03	1.2E+00		2.7E+00	
SWHI	Intermediate	SVOC	Caprolactam	105-60-2	T		8	5	3.30E-03	8.20E-01	2.50E-03	2.50E-03	5.8E+00	1.4E-01	1.7E+01	4.8E-02
SWHI	Intermediate	SVOC	Carbazole	86-74-8	T	B2	8				8.20E-04	1.00E-02	8.5E-02		3.5E-01	
SWHI	Intermediate	SVOC	4-Chloro-3-methylphenol	59-50-7	T		8				9.90E-04	5.00E-03	1.5E-01		4.2E-01	
SWHI	Intermediate	SVOC	4-Chloroaniline	106-47-8	T		8				6.10E-04	1.00E-02				
SWHI	Intermediate	SVOC	2-Chloronaphthalene	91-58-7	T		8				8.50E-04	5.00E-03	1.8E+00		5.2E+00	
SWHI	Intermediate	SVOC	2-Chlorophenol	95-57-8	T		8				1.00E-03	5.00E-03	4.5E-02		1.3E-01	
SWHI	Intermediate	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		8				7.90E-04	5.00E-03				
SWHI	Intermediate	SVOC	Chrysene	218-01-9	T	B2	8				7.50E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Intermediate	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	8				7.90E-04	5.00E-03	2.0E-03		2.0E-03	
SWHI	Intermediate	SVOC	Dibenzofuran	132-64-9	T	D	8				1.10E-03	5.00E-03				
SWHI	Intermediate	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	8				9.30E-04	2.00E-02	1.1E-03		4.3E-03	
SWHI	Intermediate	SVOC	2,4-Dichlorophenol	120-83-2	T		8				8.50E-04	1.00E-02	7.3E-02		2.1E-01	
SWHI	Intermediate	SVOC	Diethylphthalate	84-66-2	T	D	8				6.50E-04	5.00E-03	5.5E+00		1.6E+01	
SWHI	Intermediate	SVOC	2,4-Dimethylphenol	105-67-9	T		8				8.50E-04	5.00E-03	3.7E-01		1.0E+00	
SWHI	Intermediate	SVOC	Dimethylphthalate	131-11-3	T	D	8				7.60E-04	5.00E-03	7.3E+01		2.1E+02	
SWHI	Intermediate	SVOC	Di-n-butylphthalate	84-74-2	T	D	8				6.70E-04	5.00E-03	8.8E-01		2.5E+00	
SWHI	Intermediate	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		8				1.30E-03	2.00E-02	2.0E-02		2.0E-02	
SWHI	Intermediate	SVOC	2,4-Dinitrophenol	51-28-5	T		8				3.00E-03	2.00E-02				
SWHI	Intermediate	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	8				7.90E-04	5.00E-03	7.7E-03		3.2E-02	
SWHI	Intermediate	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	8				5.70E-04	5.00E-03				
SWHI	Intermediate	SVOC	Di-n-octylphthalate	117-84-0	T		8				1.10E-03	5.00E-03	1.3E-01		3.8E-01	
SWHI	Intermediate	SVOC	Fluoranthene	206-44-0	T	D	8				8.10E-04	5.00E-03	2.1E-01		2.1E-01	
SWHI	Intermediate	SVOC	Fluorene	86-73-7	T	D	8				1.00E-03	5.00E-03	8.8E-01		2.0E+00	
SWHI	Intermediate	SVOC	Hexachlorobenzene	118-74-1	T	B2	8				7.40E-04	5.00E-03	1.0E-03		1.0E-03	
SWHI	Intermediate	SVOC	Hexachlorobutadiene	87-68-3	T	C	8				7.30E-04	5.00E-03	1.5E-02		4.2E-02	
SWHI	Intermediate	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	7				1.10E-03	5.00E-03	5.0E-02		5.0E-02	

TABLE 5-2b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

INTERMEDIATE AND DEEP GROUNDWATER SCREENING RESULTS

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
SWHI	Intermediate	SVOC	Hexachloroethane	67-72-1	T	C	8				7.40E-04	5.00E-03	7.3E-03		2.1E-02	
SWHI	Intermediate	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	8				6.30E-04	5.00E-03	2.0E-03		2.0E-03	
SWHI	Intermediate	SVOC	Isophorone	78-59-1	T	C	8				6.30E-04	5.00E-03	7.7E-01		3.1E+00	
SWHI	Intermediate	SVOC	2-Methylnaphthalene	91-57-6	T	ID	8				6.40E-04	5.00E-03	2.6E-01		7.5E-01	
SWHI	Intermediate	SVOC	Methylphenol (total)	1319-77-3	T		8				1.30E-03	5.00E-03	3.7E-01		1.0E+00	
SWHI	Intermediate	SVOC	Naphthalene	91-20-3	T	C	8				7.50E-04	5.00E-03	5.2E-01		1.5E+00	
SWHI	Intermediate	SVOC	2-Nitroaniline	88-74-4	T		8				7.00E-04	2.00E-02				
SWHI	Intermediate	SVOC	3-Nitroaniline	99-09-2	T	C	8				7.10E-04	2.00E-02				
SWHI	Intermediate	SVOC	4-Nitroaniline	100-01-6	T	C	8				1.30E-03	2.00E-02				
SWHI	Intermediate	SVOC	Nitrobenzene	98-95-3	T	D	8				8.10E-04	5.00E-03	3.4E-03		9.6E-03	
SWHI	Intermediate	SVOC	2-Nitrophenol	88-75-5	T		8				2.10E-03	5.00E-03	2.0E-02		5.8E-02	
SWHI	Intermediate	SVOC	4-Nitrophenol	100-02-7	T		8				1.90E-03	2.00E-02				
SWHI	Intermediate	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	8				1.40E-03	5.00E-03	2.7E-01		1.1E+00	
SWHI	Intermediate	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	8				6.70E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Intermediate	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	8				7.80E-04	5.00E-03				
SWHI	Intermediate	SVOC	Pentachlorophenol	87-86-5	T	B2	8				2.40E-03	5.00E-03	1.0E-03		1.0E-03	
SWHI	Intermediate	SVOC	Phenanthrene	85-01-8	T	D	8				8.20E-04	5.00E-03	5.2E-02		1.5E-01	
SWHI	Intermediate	SVOC	Phenol	108-95-2	T	ID	8				2.60E-03	5.00E-03	4.4E+00		1.3E+01	
SWHI	Intermediate	SVOC	Pyrene	129-00-0	T	D	8				1.10E-03	5.00E-03	1.4E-01		1.4E-01	
SWHI	Intermediate	SVOC	2,4,5-Trichlorophenol	95-95-4	T		8				1.20E-03	5.00E-03	7.3E-01		2.1E+00	
SWHI	Intermediate	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	8				1.70E-03	5.00E-03	1.2E-01		4.7E-01	
SWHI	Intermediate	P/PCB	PCBs (total)	1336-36-3	T	B2	1				8.20E-05	8.20E-05	5.0E-04		5.0E-04	
SWHI	Intermediate	INORG	Antimony	7440-36-0	D		6				2.20E-03	2.50E-02	6.0E-03		6.0E-03	
SWHI	Intermediate	INORG	Antimony	7440-36-0	T		8				2.20E-03	2.50E-02	6.0E-03		6.0E-03	
SWHI	Intermediate	INORG	Arsenic	7440-38-2	D	A	6	4	6.10E-03	2.74E-02	3.90E-03	3.90E-03	5.0E-02	5.5E-01	5.0E-02	5.5E-01
SWHI	Intermediate	INORG	Arsenic	7440-38-2	T	A	8	4	7.40E-03	2.66E-02	2.10E-03	3.90E-03	5.0E-02	5.3E-01	5.0E-02	5.3E-01
SWHI	Intermediate	INORG	Barium	7440-39-3	D	D	6	6	8.18E-02	3.04E-01			2.0E+00	1.5E-01	2.0E+00	1.5E-01
SWHI	Intermediate	INORG	Barium	7440-39-3	T	D	8	8	1.01E-01	2.88E-01			2.0E+00	1.4E-01	2.0E+00	1.4E-01
SWHI	Intermediate	INORG	Beryllium	7440-41-7	D	B1	6				5.40E-04	1.00E-03	4.0E-03		4.0E-03	
SWHI	Intermediate	INORG	Beryllium	7440-41-7	T	B1	8				5.40E-04	1.00E-03	4.0E-03		4.0E-03	
SWHI	Intermediate	INORG	Cadmium	7440-43-9	D	B1	6				2.80E-04	5.00E-03	5.0E-03		5.0E-03	
SWHI	Intermediate	INORG	Cadmium	7440-43-9	T	B1	8	1	3.30E-04	3.30E-04	2.80E-04	5.00E-03	5.0E-03	6.6E-02	5.0E-03	6.6E-02
SWHI	Intermediate	INORG	Chromium (total)	7440-47-3	D		6				1.40E-03	1.00E-02	1.0E-01		1.0E-01	
SWHI	Intermediate	INORG	Chromium (total)	7440-47-3	T		8	6	1.90E-03	6.05E-02	1.40E-03	1.00E-02	1.0E-01	6.1E-01	1.0E-01	6.1E-01
SWHI	Intermediate	INORG	Cobalt	7440-48-4	D	B1	6	2	1.90E-03	2.10E-03	1.30E-03	2.00E-02	4.0E-02	5.3E-02	1.0E-01	2.1E-02
SWHI	Intermediate	INORG	Cobalt	7440-48-4	T	B1	8	5	1.80E-03	6.20E-03	1.30E-03	2.00E-02	4.0E-02	1.6E-01	1.0E-01	6.2E-02
SWHI	Intermediate	INORG	Copper	7440-50-8	D	D	6				4.20E-03	5.00E-03	1.4E+00		4.0E+00	
SWHI	Intermediate	INORG	Copper	7440-50-8	T	D	8	3	5.60E-03	9.90E-03	1.70E-03	4.20E-03	1.4E+00	7.1E-03	4.0E+00	2.5E-03
SWHI	Intermediate	INORG	Lead	7439-92-1	D	B2	6				2.50E-03	3.00E-03	4.0E-03		4.0E-03	
SWHI	Intermediate	INORG	Lead	7439-92-1	T	B2	8	1	2.80E-03	2.80E-03	1.60E-03	3.00E-03	4.0E-03	7.0E-01	4.0E-03	7.0E-01
SWHI	Intermediate	INORG	Manganese	7439-96-5	D	D	6	6	3.49E-02	2.19E-01			8.6E-01	2.5E-01	2.5E+00	8.8E-02
SWHI	Intermediate	INORG	Manganese	7439-96-5	T	D	8	8	3.75E-02	3.52E-01			8.6E-01	4.1E-01	2.5E+00	1.4E-01
SWHI	Intermediate	INORG	Mercury	7439-97-6	D	D	6				6.90E-05	2.00E-04	2.0E-03		2.0E-03	
SWHI	Intermediate	INORG	Mercury	7439-97-6	T	D	8				6.90E-05	2.00E-04	2.0E-03		2.0E-03	
SWHI	Intermediate	INORG	Nickel	7440-02-0	D	A	6	3	2.30E-03	2.32E-02	2.20E-03	2.00E-02	1.0E-01	2.3E-01	1.0E-01	2.3E-01
SWHI	Intermediate	INORG	Nickel	7440-02-0	T	A	8	7	2.30E-03	5.90E-02	2.20E-03	2.20E-03	1.0E-01	5.9E-01	1.0E-01	5.9E-01
SWHI	Intermediate	INORG	Selenium	7782-49-2	D	D	6				4.50E-03	5.00E-03	5.0E-02		5.0E-02	
SWHI	Intermediate	INORG	Selenium	7782-49-2	T	D	8				4.50E-03	5.00E-03	5.0E-02		5.0E-02	
SWHI	Intermediate	INORG	Silver	7440-22-4	D	D	6				1.50E-03	5.00E-03	3.4E-02		9.8E-02	
SWHI	Intermediate	INORG	Silver	7440-22-4	T	D	8				9.80E-04	5.00E-03	3.4E-02		9.8E-02	
SWHI	Intermediate	INORG	Thallium	7440-28-0	D		6	2	6.80E-04	6.10E-03	1.80E-05	1.00E-02	2.0E-03	**3.1E+00**	2.0E-03	**3.1E+00**
SWHI	Intermediate	INORG	Thallium	7440-28-0	T		8	1	9.20E-05	9.20E-05	1.80E-05	1.00E-02	2.0E-03	4.6E-02	2.0E-03	4.6E-02
SWHI	Intermediate	INORG	Vanadium	7440-62-2	D		6				8.20E-04	1.00E-02	4.5E-03		6.2E-02	
SWHI	Intermediate	INORG	Vanadium	7440-62-2	T		8	2	2.20E-03	3.40E-03	6.70E-04	1.00E-02	4.5E-03	7.6E-01	6.2E-02	5.5E-02
SWHI	Intermediate	INORG	Zinc	7440-66-6	D	D	6	1	1.56E-02	1.56E-02	1.20E-02	2.00E-02	2.4E+00	6.5E-03	5.0E+00	3.1E-03
SWHI	Intermediate	INORG	Zinc	7440-66-6	T	D	8	4	1.34E-02	3.03E-02	1.20E-02	2.00E-02	2.4E+00	1.3E-02	5.0E+00	6.1E-03
W-01	Deep	VOC	Acetone	67-64-1	T	ID	11	5	4.50E-02	3.10E+00	5.10E-04	3.70E-01	7.3E-01	**4.2E+00**	2.1E+00	**1.5E+00**
W-01	Deep	VOC	Benzene	71-43-2	T	A	11	2	5.60E-04	4.50E-03	1.60E-04	1.20E-01	5.0E-03	9.0E-01	5.0E-03	9.0E-01
W-01	Deep	VOC	Bromodichloromethane	75-27-4	T	B2	10				1.70E-04	4.00E-02	1.0E-01		1.0E-01	

TABLE 5-2b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

INTERMEDIATE AND DEEP GROUNDWATER SCREENING RESULTS

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
W-01	Deep	VOC	Bromoform	75-25-2	T	B2	11				1.80E-04	1.20E-01	1.0E-01		1.0E-01	
W-01	Deep	VOC	Bromomethane	74-83-9	T	D	10				2.00E-04	1.00E-01	1.0E-02		2.9E-02	
W-01	Deep	VOC	2-Butanone	78-93-3	T	ID	11	1	9.60E-04	9.60E-04	4.10E-04	4.00E-01	1.3E+01	7.4E-05	3.8E+01	2.5E-05
W-01	Deep	VOC	Carbon Disulfide	75-15-0	T		11	1	9.40E-03	9.40E-03	2.00E-04	8.00E-02	8.0E-01	1.2E-02	2.3E+00	4.1E-03
W-01	Deep	VOC	Carbon Tetrachloride	56-23-5	T	B2	11				1.20E-04	1.20E-01	5.0E-03		5.0E-03	
W-01	Deep	VOC	Chlorobenzene	108-90-7	T	D	11				1.40E-04	1.30E-01	1.0E-01		1.0E-01	
W-01	Deep	VOC	Chloroethane	75-00-3	T		11				2.60E-04	9.70E-02	4.3E-01		1.7E+00	
W-01	Deep	VOC	Chloroform	67-66-3	T	B2	11	1	1.60E-04	1.60E-04	3.50E-04	1.20E-01	1.0E-01	1.6E-03	1.0E-01	1.6E-03
W-01	Deep	VOC	Chloromethane	74-87-3	T	D	11				1.30E-04	1.60E-01	2.6E-01		1.1E+00	
W-01	Deep	VOC	Cumene	98-82-8	T	D	11				1.20E-04	1.30E-01	8.0E-01		2.3E+00	
W-01	Deep	VOC	Cyclohexane	110-82-7	T	ID	11				1.30E-04	1.10E-01				
W-01	Deep	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	11				6.20E-04	2.70E-01	2.0E-04		2.0E-04	
W-01	Deep	VOC	Dibromochloromethane	124-48-1	T	C	11				2.60E-04	1.20E-01	1.0E-01		1.0E-01	
W-01	Deep	VOC	1,2-Dibromoethane	106-93-4	T	B2	11				2.20E-04	1.10E-01	1.0E-03		1.0E-03	
W-01	Deep	VOC	1,2-Dichlorobenzene	95-50-1	T	D	11				1.10E-04	1.30E-01	6.0E-01		6.0E-01	
W-01	Deep	VOC	1,3-Dichlorobenzene	541-73-1	T	D	11				1.50E-04	1.30E-01	6.6E-03		1.9E-02	
W-01	Deep	VOC	1,4-Dichlorobenzene	106-46-7	T	C	11				1.70E-04	1.30E-01	7.5E-02		7.5E-02	
W-01	Deep	VOC	Dichlorodifluoromethane	75-71-8	T		11				2.60E-04	1.60E-01	1.7E+00		4.8E+00	
W-01	Deep	VOC	1,1-Dichloroethane	75-34-3	T	C	11				1.60E-04	1.00E-01	8.8E-01		2.5E+00	
W-01	Deep	VOC	1,2-Dichloroethane	107-06-2	T	B2	11				2.10E-04	9.30E-02	5.0E-03		5.0E-03	
W-01	Deep	VOC	1,1-Dichloroethene	75-35-4	T	C	10				2.40E-04	4.00E-02	7.0E-03		7.0E-03	
W-01	Deep	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	10				2.20E-04	2.00E-02	7.0E-02		7.0E-02	
W-01	Deep	VOC	trans-1,2-Dichloroethene	156-60-5	T		11				1.50E-04	1.10E-01	1.0E-01		1.0E-01	
W-01	Deep	VOC	1,2-Dichloropropane	78-87-5	T	B2	11				1.70E-04	1.40E-01	5.0E-03		5.0E-03	
W-01	Deep	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	10				3.50E-04	1.20E-01	8.5E-03		3.5E-02	
W-01	Deep	VOC	Ethyl Benzene	100-41-4	T	D	10				1.20E-04	1.40E-01	7.0E-01		7.0E-01	
W-01	Deep	VOC	2-Hexanone	591-78-6	T		11				4.60E-04	4.00E-01	1.0E+00		2.9E+00	
W-01	Deep	VOC	Methyl Acetate	79-20-9	T		11				4.10E-04	4.00E-01				
W-01	Deep	VOC	Methyl tert-butyl ether	1634-04-4	T		11				1.30E-04	2.00E-01	2.4E-01		6.9E-01	
W-01	Deep	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	8	1	3.20E-04	3.20E-04	2.60E-04	4.00E-01	1.8E+00	1.8E-04	5.2E+00	6.2E-05
W-01	Deep	VOC	Methylcyclohexane	108-87-2	T		11				1.50E-04	1.40E-01				
W-01	Deep	VOC	Methylene Chloride	75-09-2	T	B2	11	1	1.60E-03	1.60E-03	2.90E-04	9.70E-02	5.0E-03	3.2E-01	5.0E-03	3.2E-01
W-01	Deep	VOC	Styrene	100-42-5	T		11				1.50E-04	1.20E-01	1.0E-01		1.0E-01	
W-01	Deep	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	11				2.50E-04	1.20E-01	8.5E-03		3.5E-02	
W-01	Deep	VOC	Tetrachloroethene	127-18-4	T	C-B2	10				4.20E-04	1.40E-01	5.0E-03		5.0E-03	
W-01	Deep	VOC	Toluene	108-88-3	T	D	11				1.80E-04	1.30E-01	1.0E+00		1.0E+00	
W-01	Deep	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	11				1.70E-04	1.30E-01	7.0E-02		7.0E-02	
W-01	Deep	VOC	1,1,1-Trichloroethane	71-55-6	T	D	11				1.50E-04	1.30E-01	2.0E-01		2.0E-01	
W-01	Deep	VOC	1,1,2-Trichloroethane	79-00-5	T	C	11				3.00E-04	1.20E-01	5.0E-03		5.0E-03	
W-01	Deep	VOC	Trichloroethene	79-01-6	T	C-B2	11				1.40E-04	1.40E-01	5.0E-03		5.0E-03	
W-01	Deep	VOC	Trichlorofluoromethane	75-69-4	T		11				2.80E-04	1.80E-01	2.6E+00		7.3E+00	
W-01	Deep	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		11				3.20E-04	1.10E-01	1.7E+02		1.7E+02	
W-01	Deep	VOC	Vinyl Chloride	75-01-4	T	A	11				1.50E-04	1.20E-01	2.0E-03		2.0E-03	
W-01	Deep	VOC	Xylenes (total)	1330-20-7	T	ID	11				3.30E-04	1.50E-01	1.0E+01		1.0E+01	
W-01	Deep	SVOC	Acenaphthene	83-32-9	T		11				8.00E-04	5.00E-03	1.3E+00		3.8E+00	
W-01	Deep	SVOC	Acenaphthylene	208-96-8	T	D	11				7.10E-04	5.00E-03	5.2E-02		1.5E-01	
W-01	Deep	SVOC	Acetophenone	98-86-2	T	D	11				2.60E-03	1.00E-02	1.5E+00		4.4E+00	
W-01	Deep	SVOC	Anthracene	120-12-7	T	D	11				6.80E-04	5.00E-03	4.3E-02		4.3E-02	
W-01	Deep	SVOC	Atrazine	1912-24-9	T		11				2.50E-03	5.00E-03	3.0E-03		3.0E-03	
W-01	Deep	SVOC	Benzaldehyde	100-52-7	T		11				2.80E-03	1.00E-02				
W-01	Deep	SVOC	Benzo(a)anthracene	56-55-3	T	B2	11				7.00E-04	5.00E-03	2.1E-03		8.5E-03	
W-01	Deep	SVOC	Benzo(a)pyrene	50-32-8	T	B2	11				7.30E-04	5.00E-03	5.0E-03		5.0E-03	
W-01	Deep	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	11				9.40E-04	5.00E-03	2.0E-03		2.0E-03	
W-01	Deep	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	11				8.50E-04	5.00E-03	5.0E-03		5.0E-03	
W-01	Deep	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	11				8.40E-04	5.00E-03	5.0E-03		5.0E-03	
W-01	Deep	SVOC	Biphenyl	92-52-4	T	D	11				2.60E-03	1.00E-02				
W-01	Deep	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	11				8.70E-04	5.00E-03				
W-01	Deep	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	11				9.70E-04	5.00E-03	2.0E-03		8.3E-03	
W-01	Deep	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	11	1	2.90E-03	2.90E-03	2.70E-03	5.00E-03	6.0E-03	4.8E-01	6.0E-03	4.8E-01

TABLE 5-2b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

INTERMEDIATE AND DEEP GROUNDWATER SCREENING RESULTS

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
W-01	Deep	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	11				8.80E-04	5.00E-03				
W-01	Deep	SVOC	Butylbenzylphthalate	85-68-7	T	C	11				8.80E-04	5.00E-03	1.2E+00		2.7E+00	
W-01	Deep	SVOC	Caprolactam	105-60-2	T		11				2.50E-03	1.00E-02	5.8E+00		1.7E+01	
W-01	Deep	SVOC	Carbazole	86-74-8	T	B2	11				8.20E-04	1.00E-02	8.5E-02		3.5E-01	
W-01	Deep	SVOC	4-Chloro-3-methylphenol	59-50-7	T		11				9.90E-04	5.00E-03	1.5E-01		4.2E-01	
W-01	Deep	SVOC	4-Chloroaniline	106-47-8	T		11				6.10E-04	1.00E-02				
W-01	Deep	SVOC	2-Chloronaphthalene	91-58-7	T		11				8.50E-04	5.00E-03	1.8E+00		5.2E+00	
W-01	Deep	SVOC	2-Chlorophenol	95-57-8	T		11				1.00E-03	5.00E-03	4.5E-02		1.3E-01	
W-01	Deep	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		11				7.90E-04	5.00E-03				
W-01	Deep	SVOC	Chrysene	218-01-9	T	B2	11				7.50E-04	5.00E-03	5.0E-03		5.0E-03	
W-01	Deep	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	11				7.90E-04	5.00E-03	2.0E-03		2.0E-03	
W-01	Deep	SVOC	Dibenzofuran	132-64-9	T	D	11				1.10E-03	5.00E-03				
W-01	Deep	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	10				9.30E-04	2.00E-02	1.1E-03		4.3E-03	
W-01	Deep	SVOC	2,4-Dichlorophenol	120-83-2	T		11				8.50E-04	1.00E-02	7.3E-02		2.1E-01	
W-01	Deep	SVOC	Diethylphthalate	84-66-2	T	D	11	1	7.10E-04	7.10E-04	6.50E-04	5.00E-03	5.5E+00	1.3E-04	1.6E+01	4.4E-05
W-01	Deep	SVOC	2,4-Dimethylphenol	105-67-9	T		11				8.50E-04	5.00E-03	3.7E-01		1.0E+00	
W-01	Deep	SVOC	Dimethylphthalate	131-11-3	T	D	11				7.60E-04	5.00E-03	7.3E+01		2.1E+02	
W-01	Deep	SVOC	Di-n-butylphthalate	84-74-2	T	D	11				6.70E-04	5.00E-03	8.8E-01		2.5E+00	
W-01	Deep	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		11				1.30E-03	2.00E-02	2.0E-02		2.0E-02	
W-01	Deep	SVOC	2,4-Dinitrophenol	51-28-5	T		11				3.00E-03	2.00E-02				
W-01	Deep	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	11				7.90E-04	5.00E-03	7.7E-03		3.2E-02	
W-01	Deep	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	11				5.70E-04	5.00E-03				
W-01	Deep	SVOC	Di-n-octylphthalate	117-84-0	T		11				1.10E-03	5.00E-03	1.3E-01		3.8E-01	
W-01	Deep	SVOC	Fluoranthene	206-44-0	T	D	11				8.10E-04	5.00E-03	2.1E-01		2.1E-01	
W-01	Deep	SVOC	Fluorene	86-73-7	T	D	11				1.00E-03	5.00E-03	8.8E-01		2.0E+00	
W-01	Deep	SVOC	Hexachlorobenzene	118-74-1	T	B2	11				7.40E-04	5.00E-03	1.0E-03		1.0E-03	
W-01	Deep	SVOC	Hexachlorobutadiene	87-68-3	T	C	11				7.30E-04	5.00E-03	1.5E-02		4.2E-02	
W-01	Deep	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	10				1.10E-03	5.00E-03	5.0E-02		5.0E-02	
W-01	Deep	SVOC	Hexachloroethane	67-72-1	T	C	11				7.40E-04	5.00E-03	7.3E-03		2.1E-02	
W-01	Deep	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	11				6.30E-04	5.00E-03	2.0E-03		2.0E-03	
W-01	Deep	SVOC	Isophorone	78-59-1	T	C	11				6.30E-04	5.00E-03	7.7E-01		3.1E+00	
W-01	Deep	SVOC	2-Methylnaphthalene	91-57-6	T	ID	11				6.40E-04	5.00E-03	2.6E-01		7.5E-01	
W-01	Deep	SVOC	Methylphenol (total)	1319-77-3	T		11				1.30E-03	5.00E-03	3.7E-01		1.0E+00	
W-01	Deep	SVOC	Naphthalene	91-20-3	T	C	11				7.50E-04	5.00E-03	5.2E-01		1.5E+00	
W-01	Deep	SVOC	2-Nitroaniline	88-74-4	T		11				7.00E-04	2.00E-02				
W-01	Deep	SVOC	3-Nitroaniline	99-09-2	T	C	11				7.10E-04	2.00E-02				
W-01	Deep	SVOC	4-Nitroaniline	100-01-6	T	C	11				1.30E-03	2.00E-02				
W-01	Deep	SVOC	Nitrobenzene	98-95-3	T	D	11				8.10E-04	5.00E-03	3.4E-03		9.6E-03	
W-01	Deep	SVOC	2-Nitrophenol	88-75-5	T		11				2.10E-03	5.00E-03	2.0E-02		5.8E-02	
W-01	Deep	SVOC	4-Nitrophenol	100-02-7	T		11				1.90E-03	2.00E-02				
W-01	Deep	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	11				1.40E-03	5.00E-03	2.7E-01		1.1E+00	
W-01	Deep	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	11				6.70E-04	5.00E-03	5.0E-03		5.0E-03	
W-01	Deep	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	11				7.80E-04	5.00E-03				
W-01	Deep	SVOC	Pentachlorophenol	87-86-5	T	B2	11				2.40E-03	5.00E-03	1.0E-03		1.0E-03	
W-01	Deep	SVOC	Phenanthrene	85-01-8	T	D	11				8.20E-04	5.00E-03	5.2E-02		1.5E-01	
W-01	Deep	SVOC	Phenol	108-95-2	T	ID	11	4	5.20E-03	8.80E-03	2.60E-03	5.00E-03	4.4E+00	2.0E-03	1.3E+01	6.8E-04
W-01	Deep	SVOC	Pyrene	129-00-0	T	D	11				1.10E-03	5.00E-03	1.4E-01		1.4E-01	
W-01	Deep	SVOC	2,4,5-Trichlorophenol	95-95-4	T		11				1.20E-03	5.00E-03	7.3E-01		2.1E+00	
W-01	Deep	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	11				1.70E-03	5.00E-03	1.2E-01		4.7E-01	
W-01	Deep	P/PCB	PCBs (total)	1336-36-3	D	B2	1				4.00E-04	4.00E-04	5.0E-04		5.0E-04	
W-01	Deep	P/PCB	PCBs (total)	1336-36-3	T	B2	11				8.20E-05	4.00E-04	5.0E-04		5.0E-04	
W-01	Deep	INORG	Antimony	7440-36-0	D		5	1	2.30E-03	2.30E-03	2.20E-03	2.50E-02	6.0E-03	3.8E-01	6.0E-03	3.8E-01
W-01	Deep	INORG	Antimony	7440-36-0	T		11				2.20E-03	2.50E-02	6.0E-03		6.0E-03	
W-01	Deep	INORG	Arsenic	7440-38-2	D	A	5	2	4.40E-03	7.10E-03	3.90E-03	1.00E-02	5.0E-02	1.4E-01	5.0E-02	1.4E-01
W-01	Deep	INORG	Arsenic	7440-38-2	T	A	11	7	4.40E-03	1.45E-02	3.90E-03	1.00E-02	5.0E-02	2.9E-01	5.0E-02	2.9E-01
W-01	Deep	INORG	Barium	7440-39-3	D	D	5	5	1.15E-01	3.73E-01			2.0E+00	1.9E-01	2.0E+00	1.9E-01
W-01	Deep	INORG	Barium	7440-39-3	T	D	11	11	1.26E-01	4.58E-01			2.0E+00	2.3E-01	2.0E+00	2.3E-01
W-01	Deep	INORG	Beryllium	7440-41-7	D	B1	5				5.40E-04	1.00E-03	4.0E-03		4.0E-03	
W-01	Deep	INORG	Beryllium	7440-41-7	T	B1	11				5.40E-04	1.00E-03	4.0E-03		4.0E-03	

TABLE 5-2b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

INTERMEDIATE AND DEEP GROUNDWATER SCREENING RESULTS

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
W-01	Deep	INORG	Cadmium	7440-43-9	D	B1	5				2.80E-04	5.00E-03	5.0E-03		5.0E-03	
W-01	Deep	INORG	Cadmium	7440-43-9	T	B1	11				2.80E-04	5.00E-03	5.0E-03		5.0E-03	
W-01	Deep	INORG	Chromium (total)	7440-47-3	D		5	1	2.30E-03	2.30E-03	1.40E-03	1.00E-02	1.0E-01	2.3E-02	1.0E-01	2.3E-02
W-01	Deep	INORG	Chromium (total)	7440-47-3	T		11	8	2.30E-03	9.10E-03	1.40E-03	1.00E-02	1.0E-01	9.1E-02	1.0E-01	9.1E-02
W-01	Deep	INORG	Cobalt	7440-48-4	D	B1	5	1	2.40E-03	2.40E-03	1.30E-03	2.00E-02	4.0E-02	6.0E-02	1.0E-01	2.4E-02
W-01	Deep	INORG	Cobalt	7440-48-4	T	B1	11	5	7.60E-04	2.20E-03	7.40E-04	2.00E-02	4.0E-02	5.5E-02	1.0E-01	2.2E-02
W-01	Deep	INORG	Copper	7440-50-8	D	D	5				4.20E-03	5.00E-03	1.4E+00		4.0E+00	
W-01	Deep	INORG	Copper	7440-50-8	T	D	11				1.70E-03	5.00E-03	1.4E+00		4.0E+00	
W-01	Deep	INORG	Lead	7439-92-1	D	B2	5				2.50E-03	3.00E-03	4.0E-03		4.0E-03	
W-01	Deep	INORG	Lead	7439-92-1	T	B2	11	1	1.60E-03	1.60E-03	1.60E-03	3.00E-03	4.0E-03	4.0E-01	4.0E-03	4.0E-01
W-01	Deep	INORG	Manganese	7439-96-5	D	D	5	4	3.45E-02	7.03E-02	9.00E-04	9.00E-04	8.6E-01	8.2E-02	2.5E+00	2.8E-02
W-01	Deep	INORG	Manganese	7439-96-5	T	D	11	8	2.81E-02	7.12E-02	6.80E-04	9.00E-04	8.6E-01	8.3E-02	2.5E+00	2.8E-02
W-01	Deep	INORG	Mercury	7439-97-6	D	D	5	1	7.20E-05	7.20E-05	6.90E-05	6.90E-05	2.0E-03	3.6E-02	2.0E-03	3.6E-02
W-01	Deep	INORG	Mercury	7439-97-6	T	D	11				6.90E-05	2.00E-04	2.0E-03		2.0E-03	
W-01	Deep	INORG	Nickel	7440-02-0	D	A	5	1	6.40E-03	6.40E-03	2.20E-03	2.00E-02	1.0E-01	6.4E-02	1.0E-01	6.4E-02
W-01	Deep	INORG	Nickel	7440-02-0	T	A	11	7	3.00E-03	9.90E-03	2.20E-03	2.00E-02	1.0E-01	9.9E-02	1.0E-01	9.9E-02
W-01	Deep	INORG	Selenium	7782-49-2	D	D	5				4.50E-03	5.00E-03	5.0E-02		5.0E-02	
W-01	Deep	INORG	Selenium	7782-49-2	T	D	11				4.50E-03	5.00E-03	5.0E-02		5.0E-02	
W-01	Deep	INORG	Silver	7440-22-4	D	D	5				1.50E-03	5.00E-03	3.4E-02		9.8E-02	
W-01	Deep	INORG	Silver	7440-22-4	T	D	11				9.80E-04	5.00E-03	3.4E-02		9.8E-02	
W-01	Deep	INORG	Thallium	7440-28-0	D		5				1.80E-05	1.00E-02	2.0E-03		2.0E-03	
W-01	Deep	INORG	Thallium	7440-28-0	T		11				1.80E-05	1.00E-02	2.0E-03		2.0E-03	
W-01	Deep	INORG	Vanadium	7440-62-2	D		5				8.20E-04	1.00E-02	4.5E-03		6.2E-02	
W-01	Deep	INORG	Vanadium	7440-62-2	T		11				6.70E-04	1.00E-02	4.5E-03		6.2E-02	
W-01	Deep	INORG	Zinc	7440-66-6	D	D	5	1	2.36E-02	2.36E-02	1.20E-02	2.00E-02	2.4E+00	9.8E-03	5.0E+00	4.7E-03
W-01	Deep	INORG	Zinc	7440-66-6	T	D	11	1	1.65E-02	1.65E-02	1.20E-02	2.00E-02	2.4E+00	6.9E-03	5.0E+00	3.3E-03
W-01	Intermediate	VOC	Acetone	67-64-1	T	ID	4	1	3.80E-02	3.80E-02	5.10E-04	7.30E-03	7.3E-01	5.2E-02	2.1E+00	1.8E-02
W-01	Intermediate	VOC	Benzene	71-43-2	T	A	4				1.60E-04	2.30E-03	5.0E-03		5.0E-03	
W-01	Intermediate	VOC	Bromodichloromethane	75-27-4	T	B2	4				1.70E-04	2.40E-03	1.0E-01		1.0E-01	
W-01	Intermediate	VOC	Bromoform	75-25-2	T	B2	4				1.80E-04	2.60E-03	1.0E-01		1.0E-01	
W-01	Intermediate	VOC	Bromomethane	74-83-9	T	D	3				2.00E-04	2.90E-03	1.0E-02		2.9E-02	
W-01	Intermediate	VOC	2-Butanone	78-93-3	T	ID	4				4.10E-04	5.90E-03	1.3E+01		3.8E+01	
W-01	Intermediate	VOC	Carbon Disulfide	75-15-0	T		4				2.00E-04	2.90E-03	8.0E-01		2.3E+00	
W-01	Intermediate	VOC	Carbon Tetrachloride	56-23-5	T	B2	4				1.20E-04	1.70E-03	5.0E-03		5.0E-03	
W-01	Intermediate	VOC	Chlorobenzene	108-90-7	T	D	4				1.40E-04	2.00E-03	1.0E-01		1.0E-01	
W-01	Intermediate	VOC	Chloroethane	75-00-3	T		4				2.60E-04	3.70E-03	4.3E-01		1.7E+00	
W-01	Intermediate	VOC	Chloroform	67-66-3	T	B2	4	1	1.70E-04	1.70E-04	3.50E-04	2.00E-03	1.0E-01	1.7E-03	1.0E-01	1.7E-03
W-01	Intermediate	VOC	Chloromethane	74-87-3	T	D	4	1	2.10E-04	2.10E-04	4.90E-04	1.90E-03	2.6E-01	8.1E-04	1.1E+00	1.9E-04
W-01	Intermediate	VOC	Cumene	98-82-8	T	D	4				1.20E-04	1.70E-03	8.0E-01		2.3E+00	
W-01	Intermediate	VOC	Cyclohexane	110-82-7	T	ID	4				1.30E-04	1.90E-03				
W-01	Intermediate	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	4				6.20E-04	8.90E-03	2.0E-04		2.0E-04	
W-01	Intermediate	VOC	Dibromochloromethane	124-48-1	T	C	4				2.60E-04	3.70E-03	1.0E-01		1.0E-01	
W-01	Intermediate	VOC	1,2-Dibromoethane	106-93-4	T	B2	4				2.20E-04	3.10E-03	1.0E-03		1.0E-03	
W-01	Intermediate	VOC	1,2-Dichlorobenzene	95-50-1	T	D	4				1.10E-04	1.60E-03	6.0E-01		6.0E-01	
W-01	Intermediate	VOC	1,3-Dichlorobenzene	541-73-1	T	D	4				1.50E-04	2.10E-03	6.6E-03		1.9E-02	
W-01	Intermediate	VOC	1,4-Dichlorobenzene	106-46-7	T	C	4				1.70E-04	2.40E-03	7.5E-02		7.5E-02	
W-01	Intermediate	VOC	Dichlorodifluoromethane	75-71-8	T		4				2.60E-04	3.70E-03	1.7E+00		4.8E+00	
W-01	Intermediate	VOC	1,1-Dichloroethane	75-34-3	T	C	4				1.60E-04	2.30E-03	8.8E-01		2.5E+00	
W-01	Intermediate	VOC	1,2-Dichloroethane	107-06-2	T	B2	4				2.10E-04	3.00E-03	5.0E-03		5.0E-03	
W-01	Intermediate	VOC	1,1-Dichloroethene	75-35-4	T	C	4				2.40E-04	3.40E-03	7.0E-03		7.0E-03	
W-01	Intermediate	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	4				2.20E-04	3.10E-03	7.0E-02		7.0E-02	
W-01	Intermediate	VOC	trans-1,2-Dichloroethene	156-60-5	T		4				1.50E-04	2.10E-03	1.0E-01		1.0E-01	
W-01	Intermediate	VOC	1,2-Dichloropropane	78-87-5	T	B2	4				1.70E-04	2.40E-03	5.0E-03		5.0E-03	
W-01	Intermediate	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	4				2.70E-04	3.90E-03	8.5E-03		3.5E-02	
W-01	Intermediate	VOC	Ethyl Benzene	100-41-4	T	D	4				1.20E-04	1.70E-03	7.0E-01		7.0E-01	
W-01	Intermediate	VOC	2-Hexanone	591-78-6	T		4				4.60E-04	6.60E-03	1.0E+00		2.9E+00	
W-01	Intermediate	VOC	Methyl Acetate	79-20-9	T		4				4.10E-04	5.90E-03				
W-01	Intermediate	VOC	Methyl tert-butyl ether	1634-04-4	T		4				1.30E-04	1.90E-03	2.4E-01		6.9E-01	
W-01	Intermediate	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	3				2.30E-04	3.30E-03	1.8E+00		5.2E+00	

TABLE 5-2b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

INTERMEDIATE AND DEEP GROUNDWATER SCREENING RESULTS

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
W-01	Intermediate	VOC	Methylcyclohexane	108-87-2	T		4				1.50E-04	2.10E-03				
W-01	Intermediate	VOC	Methylene Chloride	75-09-2	T	B2	3				2.90E-04	4.90E-03	5.0E-03		5.0E-03	
W-01	Intermediate	VOC	Styrene	100-42-5	T		4				1.50E-04	2.10E-03	1.0E-01		1.0E-01	
W-01	Intermediate	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	4				2.50E-04	3.60E-03	8.5E-03		3.5E-02	
W-01	Intermediate	VOC	Tetrachloroethene	127-18-4	T	C-B2	4				2.30E-04	3.30E-03	5.0E-03		5.0E-03	
W-01	Intermediate	VOC	Toluene	108-88-3	T	D	4				1.80E-04	2.60E-03	1.0E+00		1.0E+00	
W-01	Intermediate	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	4				1.70E-04	2.40E-03	7.0E-02		7.0E-02	
W-01	Intermediate	VOC	1,1,1-Trichloroethane	71-55-6	T	D	4				1.50E-04	2.10E-03	2.0E-01		2.0E-01	
W-01	Intermediate	VOC	1,1,2-Trichloroethane	79-00-5	T	C	4				3.00E-04	4.30E-03	5.0E-03		5.0E-03	
W-01	Intermediate	VOC	Trichloroethene	79-01-6	T	C-B2	4				1.40E-04	2.00E-03	5.0E-03		5.0E-03	
W-01	Intermediate	VOC	Trichlorofluoromethane	75-69-4	T		4				2.80E-04	4.00E-03	2.6E+00		7.3E+00	
W-01	Intermediate	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		4				3.20E-04	4.60E-03	1.7E+02		1.7E+02	
W-01	Intermediate	VOC	Vinyl Chloride	75-01-4	T	A	4				1.50E-04	2.10E-03	2.0E-03		2.0E-03	
W-01	Intermediate	VOC	Xylenes (total)	1330-20-7	T	ID	4				3.30E-04	4.70E-03	1.0E+01		1.0E+01	
W-01	Intermediate	SVOC	Acenaphthene	83-32-9	T		4				8.00E-04	8.00E-04	1.3E+00		3.8E+00	
W-01	Intermediate	SVOC	Acenaphthylene	208-96-8	T	D	4				7.10E-04	7.10E-04	5.2E-02		1.5E-01	
W-01	Intermediate	SVOC	Acetophenone	98-86-2	T	D	4				2.60E-03	2.60E-03	1.5E+00		4.4E+00	
W-01	Intermediate	SVOC	Anthracene	120-12-7	T	D	4				6.80E-04	6.80E-04	4.3E-02		4.3E-02	
W-01	Intermediate	SVOC	Atrazine	1912-24-9	T		4				2.50E-03	2.50E-03	3.0E-03		3.0E-03	
W-01	Intermediate	SVOC	Benzaldehyde	100-52-7	T		4				2.80E-03	2.80E-03				
W-01	Intermediate	SVOC	Benzo(a)anthracene	56-55-3	T	B2	4				7.00E-04	7.00E-04	2.1E-03		8.5E-03	
W-01	Intermediate	SVOC	Benzo(a)pyrene	50-32-8	T	B2	4				7.30E-04	7.30E-04	5.0E-03		5.0E-03	
W-01	Intermediate	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	4				9.40E-04	9.40E-04	2.0E-03		2.0E-03	
W-01	Intermediate	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	4				8.50E-04	8.50E-04	5.0E-03		5.0E-03	
W-01	Intermediate	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	4				8.40E-04	8.40E-04	5.0E-03		5.0E-03	
W-01	Intermediate	SVOC	Biphenyl	92-52-4	T	D	4				2.60E-03	2.60E-03				
W-01	Intermediate	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	4				8.70E-04	8.70E-04				
W-01	Intermediate	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	4				9.70E-04	9.70E-04	2.0E-03		8.3E-03	
W-01	Intermediate	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	4	1	8.80E-03	8.80E-03	2.70E-03	2.70E-03	6.0E-03	**1.5E+00**	6.0E-03	**1.5E+00**
W-01	Intermediate	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	4				8.80E-04	8.80E-04				
W-01	Intermediate	SVOC	Butylbenzylphthalate	85-68-7	T	C	4				8.80E-04	8.80E-04	1.2E+00		2.7E+00	
W-01	Intermediate	SVOC	Caprolactam	105-60-2	T		4	3	6.70E-03	3.90E-02	2.50E-03	2.50E-03	5.8E+00	6.7E-03	1.7E+01	2.3E-03
W-01	Intermediate	SVOC	Carbazole	86-74-8	T	B2	4				8.20E-04	8.20E-04	8.5E-02		3.5E-01	
W-01	Intermediate	SVOC	4-Chloro-3-methylphenol	59-50-7	T		4				9.90E-04	9.90E-04	1.5E-01		4.2E-01	
W-01	Intermediate	SVOC	4-Chloroaniline	106-47-8	T		4				6.10E-04	6.10E-04				
W-01	Intermediate	SVOC	2-Chloronaphthalene	91-58-7	T		4				8.50E-04	8.50E-04	1.8E+00		5.2E+00	
W-01	Intermediate	SVOC	2-Chlorophenol	95-57-8	T		4				1.00E-03	1.00E-03	4.5E-02		1.3E-01	
W-01	Intermediate	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		4				7.90E-04	7.90E-04				
W-01	Intermediate	SVOC	Chrysene	218-01-9	T	B2	4				7.50E-04	7.50E-04	5.0E-03		5.0E-03	
W-01	Intermediate	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	4				7.90E-04	7.90E-04	2.0E-03		2.0E-03	
W-01	Intermediate	SVOC	Dibenzofuran	132-64-9	T	D	4				1.10E-03	1.10E-03				
W-01	Intermediate	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	4				9.30E-04	9.30E-04	1.1E-03		4.3E-03	
W-01	Intermediate	SVOC	2,4-Dichlorophenol	120-83-2	T		4				8.50E-04	8.50E-04	7.3E-02		2.1E-01	
W-01	Intermediate	SVOC	Diethylphthalate	84-66-2	T	D	4				6.50E-04	6.50E-04	5.5E+00		1.6E+01	
W-01	Intermediate	SVOC	2,4-Dimethylphenol	105-67-9	T		4				8.50E-04	8.50E-04	3.7E-01		1.0E+00	
W-01	Intermediate	SVOC	Dimethylphthalate	131-11-3	T	D	4				7.60E-04	7.60E-04	7.3E+01		2.1E+02	
W-01	Intermediate	SVOC	Di-n-butylphthalate	84-74-2	T	D	4				6.70E-04	6.70E-04	8.8E-01		2.5E+00	
W-01	Intermediate	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		4				1.30E-03	1.30E-03	2.0E-02		2.0E-02	
W-01	Intermediate	SVOC	2,4-Dinitrophenol	51-28-5	T		4				3.00E-03	3.00E-03				
W-01	Intermediate	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	4				7.90E-04	7.90E-04	7.7E-03		3.2E-02	
W-01	Intermediate	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	4				5.70E-04	5.70E-04				
W-01	Intermediate	SVOC	Di-n-octylphthalate	117-84-0	T		4				1.10E-03	1.10E-03	1.3E-01		3.8E-01	
W-01	Intermediate	SVOC	Fluoranthene	206-44-0	T	D	4				8.10E-04	8.10E-04	2.1E-01		2.1E-01	
W-01	Intermediate	SVOC	Fluorene	86-73-7	T	D	4				1.00E-03	1.00E-03	8.8E-01		2.0E+00	
W-01	Intermediate	SVOC	Hexachlorobenzene	118-74-1	T	B2	4				7.40E-04	7.40E-04	1.0E-03		1.0E-03	
W-01	Intermediate	SVOC	Hexachlorobutadiene	87-68-3	T	C	4				7.30E-04	7.30E-04	1.5E-02		4.2E-02	
W-01	Intermediate	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	4				1.10E-03	1.10E-03	5.0E-02		5.0E-02	
W-01	Intermediate	SVOC	Hexachloroethane	67-72-1	T	C	4				7.40E-04	7.40E-04	7.3E-03		2.1E-02	
W-01	Intermediate	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	4				6.30E-04	6.30E-04	2.0E-03		2.0E-03	

TABLE 5-2b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

INTERMEDIATE AND DEEP GROUNDWATER SCREENING RESULTS

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
W-01	Intermediate	SVOC	Isophorone	78-59-1	T	C	4				6.30E-04	6.30E-04	7.7E-01		3.1E+00	
W-01	Intermediate	SVOC	2-Methylnaphthalene	91-57-6	T	ID	4				6.40E-04	6.40E-04	2.6E-01		7.5E-01	
W-01	Intermediate	SVOC	Methylphenol (total)	1319-77-3	T		4	1	2.65E-03	2.65E-03	1.30E-03	1.30E-03	3.7E-01	7.2E-03	1.0E+00	2.7E-03
W-01	Intermediate	SVOC	Naphthalene	91-20-3	T	C	4				7.50E-04	7.50E-04	5.2E-01		1.5E+00	
W-01	Intermediate	SVOC	2-Nitroaniline	88-74-4	T		4				7.00E-04	7.00E-04				
W-01	Intermediate	SVOC	3-Nitroaniline	99-09-2	T	C	4				7.10E-04	7.10E-04				
W-01	Intermediate	SVOC	4-Nitroaniline	100-01-6	T	C	4				1.30E-03	1.30E-03				
W-01	Intermediate	SVOC	Nitrobenzene	98-95-3	T	D	4				8.10E-04	8.10E-04	3.4E-03		9.6E-03	
W-01	Intermediate	SVOC	2-Nitrophenol	88-75-5	T		4				2.10E-03	2.10E-03	2.0E-02		5.8E-02	
W-01	Intermediate	SVOC	4-Nitrophenol	100-02-7	T		4				1.90E-03	1.90E-03				
W-01	Intermediate	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	4				1.40E-03	1.40E-03	2.7E-01		1.1E+00	
W-01	Intermediate	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	4				6.70E-04	6.70E-04	5.0E-03		5.0E-03	
W-01	Intermediate	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	4				7.80E-04	7.80E-04				
W-01	Intermediate	SVOC	Pentachlorophenol	87-86-5	T	B2	4				2.40E-03	2.40E-03	1.0E-03		1.0E-03	
W-01	Intermediate	SVOC	Phenanthrene	85-01-8	T	D	4				8.20E-04	8.20E-04	5.2E-02		1.5E-01	
W-01	Intermediate	SVOC	Phenol	108-95-2	T	ID	4	1	7.00E-03	7.00E-03	2.60E-03	2.60E-03	4.4E+00	1.6E-03	1.3E+01	5.4E-04
W-01	Intermediate	SVOC	Pyrene	129-00-0	T	D	4				1.10E-03	1.10E-03	1.4E-01		1.4E-01	
W-01	Intermediate	SVOC	2,4,5-Trichlorophenol	95-95-4	T		4				1.20E-03	1.20E-03	7.3E-01		2.1E+00	
W-01	Intermediate	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	4				1.70E-03	1.70E-03	1.2E-01		4.7E-01	
W-01	Intermediate	P/PCB	PCBs (total)	1336-36-3	D	B2	1				8.20E-05	8.20E-05	5.0E-04		5.0E-04	
W-01	Intermediate	P/PCB	PCBs (total)	1336-36-3	T	B2	4				8.20E-05	8.20E-05	5.0E-04		5.0E-04	
W-01	Intermediate	INORG	Antimony	7440-36-0	D		2				2.20E-03	2.20E-03	6.0E-03		6.0E-03	
W-01	Intermediate	INORG	Antimony	7440-36-0	T		4				2.20E-03	3.40E-03	6.0E-03		6.0E-03	
W-01	Intermediate	INORG	Arsenic	7440-38-2	D	A	2	1	6.20E-03	6.20E-03	3.90E-03	3.90E-03	5.0E-02	1.2E-01	5.0E-02	1.2E-01
W-01	Intermediate	INORG	Arsenic	7440-38-2	T	A	4	3	2.70E-03	5.20E-03	2.10E-03	2.10E-03	5.0E-02	1.0E-01	5.0E-02	1.0E-01
W-01	Intermediate	INORG	Barium	7440-39-3	D	D	2	2	4.00E-02	4.04E-01			2.0E+00	2.0E-01	2.0E+00	2.0E-01
W-01	Intermediate	INORG	Barium	7440-39-3	T	D	4	4	6.77E-02	4.32E-01			2.0E+00	2.2E-01	2.0E+00	2.2E-01
W-01	Intermediate	INORG	Beryllium	7440-41-7	D	B1	2				5.40E-04	5.40E-04	4.0E-03		4.0E-03	
W-01	Intermediate	INORG	Beryllium	7440-41-7	T	B1	4				5.40E-04	6.00E-04	4.0E-03		4.0E-03	
W-01	Intermediate	INORG	Cadmium	7440-43-9	D	B1	2	1	2.80E-04	2.80E-04	2.80E-04	2.80E-04	5.0E-03	5.6E-02	5.0E-03	5.6E-02
W-01	Intermediate	INORG	Cadmium	7440-43-9	T	B1	4	2	2.80E-04	5.70E-04	2.80E-04	2.80E-04	5.0E-03	1.1E-01	5.0E-03	1.1E-01
W-01	Intermediate	INORG	Chromium (total)	7440-47-3	D		2				1.40E-03	1.40E-03	1.0E-01		1.0E-01	
W-01	Intermediate	INORG	Chromium (total)	7440-47-3	T		4	1	6.80E-03	6.80E-03	1.40E-03	1.50E-03	1.0E-01	6.8E-02	1.0E-01	6.8E-02
W-01	Intermediate	INORG	Cobalt	7440-48-4	D	B1	2				1.30E-03	1.30E-03	4.0E-02		1.0E-01	
W-01	Intermediate	INORG	Cobalt	7440-48-4	T	B1	4	1	1.40E-03	1.40E-03	7.40E-04	1.30E-03	4.0E-02	3.5E-02	1.0E-01	1.4E-02
W-01	Intermediate	INORG	Copper	7440-50-8	D	D	2				4.20E-03	4.20E-03	1.4E+00		4.0E+00	
W-01	Intermediate	INORG	Copper	7440-50-8	T	D	4				1.70E-03	4.20E-03	1.4E+00		4.0E+00	
W-01	Intermediate	INORG	Lead	7439-92-1	D	B2	2				2.50E-03	2.50E-03	4.0E-03		4.0E-03	
W-01	Intermediate	INORG	Lead	7439-92-1	T	B2	4	1	1.35E-02	1.35E-02	1.60E-03	2.50E-03	4.0E-03	**3.4E+00**	4.0E-03	**3.4E+00**
W-01	Intermediate	INORG	Manganese	7439-96-5	D	D	2	2	2.80E-03	1.59E-01			8.6E-01	1.8E-01	2.5E+00	6.4E-02
W-01	Intermediate	INORG	Manganese	7439-96-5	T	D	4	4	6.31E-02	1.77E-01			8.6E-01	2.1E-01	2.5E+00	7.1E-02
W-01	Intermediate	INORG	Mercury	7439-97-6	D	D	2				6.90E-05	6.90E-05	2.0E-03		2.0E-03	
W-01	Intermediate	INORG	Mercury	7439-97-6	T	D	4				6.90E-05	8.70E-05	2.0E-03		2.0E-03	
W-01	Intermediate	INORG	Nickel	7440-02-0	D	A	2				2.20E-03	2.20E-03	1.0E-01		1.0E-01	
W-01	Intermediate	INORG	Nickel	7440-02-0	T	A	4	1	5.70E-03	5.70E-03	2.20E-03	2.90E-03	1.0E-01	5.7E-02	1.0E-01	5.7E-02
W-01	Intermediate	INORG	Selenium	7782-49-2	D	D	2				4.50E-03	4.50E-03	5.0E-02		5.0E-02	
W-01	Intermediate	INORG	Selenium	7782-49-2	T	D	4				4.50E-03	4.70E-03	5.0E-02		5.0E-02	
W-01	Intermediate	INORG	Silver	7440-22-4	D	D	2				1.50E-03	1.50E-03	3.4E-02		9.8E-02	
W-01	Intermediate	INORG	Silver	7440-22-4	T	D	4				9.80E-04	1.50E-03	3.4E-02		9.8E-02	
W-01	Intermediate	INORG	Thallium	7440-28-0	D		2				1.80E-05	5.00E-03	2.0E-03		2.0E-03	
W-01	Intermediate	INORG	Thallium	7440-28-0	T		4	1	4.40E-05	4.40E-05	3.30E-05	5.00E-03	2.0E-03	2.2E-02	2.0E-03	2.2E-02
W-01	Intermediate	INORG	Vanadium	7440-62-2	D		2	1	2.50E-03	2.50E-03	8.20E-04	8.20E-04	4.5E-03	5.6E-01	6.2E-02	4.0E-02
W-01	Intermediate	INORG	Vanadium	7440-62-2	T		4	1	4.90E-03	4.90E-03	6.70E-04	8.20E-04	4.5E-03	**1.1E+00**	6.2E-02	7.9E-02
W-01	Intermediate	INORG	Zinc	7440-66-6	D	D	2				1.20E-02	1.20E-02	2.4E+00		5.0E+00	
W-01	Intermediate	INORG	Zinc	7440-66-6	T	D	4	1	5.92E-01	5.92E-01	1.20E-02	1.40E-02	2.4E+00	2.5E-01	5.0E+00	1.2E-01
W-09	Deep	VOC	Acetone	67-64-1	T	ID	6	2	6.60E-04	1.60E-03	1.10E-03	1.10E-03	7.3E-01	2.2E-03	2.1E+00	7.6E-04
W-09	Deep	VOC	Benzene	71-43-2	T	A	6				1.60E-04	3.70E-04	5.0E-03		5.0E-03	
W-09	Deep	VOC	Bromodichloromethane	75-27-4	T	B2	6				1.70E-04	3.20E-04	1.0E-01		1.0E-01	
W-09	Deep	VOC	Bromoform	75-25-2	T	B2	6				1.80E-04	3.70E-04	1.0E-01		1.0E-01	

TABLE 5-2b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

INTERMEDIATE AND DEEP GROUNDWATER SCREENING RESULTS

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
W-09	Deep	VOC	Bromomethane	74-83-9	T	D	6				2.00E-04	3.00E-04	1.0E-02		2.9E-02	
W-09	Deep	VOC	2-Butanone	78-93-3	T	ID	6				4.10E-04	5.90E-04	1.3E+01		3.8E+01	
W-09	Deep	VOC	Carbon Disulfide	75-15-0	T		6	3	2.40E-04	9.30E-04	2.00E-04	2.40E-04	8.0E-01	1.2E-03	2.3E+00	4.0E-04
W-09	Deep	VOC	Carbon Tetrachloride	56-23-5	T	B2	6				1.20E-04	3.70E-04	5.0E-03		5.0E-03	
W-09	Deep	VOC	Chlorobenzene	108-90-7	T	D	6				1.40E-04	3.80E-04	1.0E-01		1.0E-01	
W-09	Deep	VOC	Chloroethane	75-00-3	T		6				2.60E-04	2.90E-04	4.3E-01		1.7E+00	
W-09	Deep	VOC	Chloroform	67-66-3	T	B2	6	1	2.80E-04	2.80E-04	1.40E-04	3.50E-04	1.0E-01	2.8E-03	1.0E-01	2.8E-03
W-09	Deep	VOC	Chloromethane	74-87-3	T	D	6				1.30E-04	4.90E-04	2.6E-01		1.1E+00	
W-09	Deep	VOC	Cumene	98-82-8	T	D	6				1.20E-04	3.90E-04	8.0E-01		2.3E+00	
W-09	Deep	VOC	Cyclohexane	110-82-7	T	ID	6				1.30E-04	3.30E-04				
W-09	Deep	VOC	1,2-Dibromo-3-chloropropane	96-12-8	T	B2	6				6.20E-04	8.20E-04	2.0E-04		2.0E-04	
W-09	Deep	VOC	Dibromochloromethane	124-48-1	T	C	6				2.60E-04	3.70E-04	1.0E-01		1.0E-01	
W-09	Deep	VOC	1,2-Dibromoethane	106-93-4	T	B2	6				2.20E-04	3.40E-04	1.0E-03		1.0E-03	
W-09	Deep	VOC	1,2-Dichlorobenzene	95-50-1	T	D	6				1.10E-04	3.80E-04	6.0E-01		6.0E-01	
W-09	Deep	VOC	1,3-Dichlorobenzene	541-73-1	T	D	6				1.50E-04	3.80E-04	6.6E-03		1.9E-02	
W-09	Deep	VOC	1,4-Dichlorobenzene	106-46-7	T	C	6				1.70E-04	3.80E-04	7.5E-02		7.5E-02	
W-09	Deep	VOC	Dichlorodifluoromethane	75-71-8	T		6				2.60E-04	4.90E-04	1.7E+00		4.8E+00	
W-09	Deep	VOC	1,1-Dichloroethane	75-34-3	T	C	6				1.60E-04	3.00E-04	8.8E-01		2.5E+00	
W-09	Deep	VOC	1,2-Dichloroethane	107-06-2	T	B2	6				2.10E-04	2.80E-04	5.0E-03		5.0E-03	
W-09	Deep	VOC	1,1-Dichloroethene	75-35-4	T	C	6				2.40E-04	3.10E-04	7.0E-03		7.0E-03	
W-09	Deep	VOC	cis-1,2-Dichloroethene	156-59-2	T	D	6				2.20E-04	3.50E-04	7.0E-02		7.0E-02	
W-09	Deep	VOC	trans-1,2-Dichloroethene	156-60-5	T		6				1.50E-04	3.30E-04	1.0E-01		1.0E-01	
W-09	Deep	VOC	1,2-Dichloropropane	78-87-5	T	B2	6				1.70E-04	4.10E-04	5.0E-03		5.0E-03	
W-09	Deep	VOC	1,3-Dichloropropene (total)	542-75-6	T	B2	6				2.70E-04	3.50E-04	8.5E-03		3.5E-02	
W-09	Deep	VOC	Ethyl Benzene	100-41-4	T	D	4				1.20E-04	4.10E-04	7.0E-01		7.0E-01	
W-09	Deep	VOC	2-Hexanone	591-78-6	T		6				4.60E-04	5.80E-04	1.0E+00		2.9E+00	
W-09	Deep	VOC	Methyl Acetate	79-20-9	T		6				4.10E-04	5.40E-04				
W-09	Deep	VOC	Methyl tert-butyl ether	1634-04-4	T		6	4	2.40E-04	5.20E-03	2.70E-04	2.70E-04	2.4E-01	2.2E-02	6.9E-01	7.5E-03
W-09	Deep	VOC	4-Methyl-2-pentanone	108-10-1	T	ID	6				2.30E-04	2.60E-04	1.8E+00		5.2E+00	
W-09	Deep	VOC	Methylcyclohexane	108-87-2	T		6				1.50E-04	4.20E-04				
W-09	Deep	VOC	Methylene Chloride	75-09-2	T	B2	7	1	1.80E-02	1.80E-02	2.80E-04	3.40E-04	5.0E-03	**3.6E+00**	5.0E-03	**3.6E+00**
W-09	Deep	VOC	Styrene	100-42-5	T		6				1.50E-04	3.50E-04	1.0E-01		1.0E-01	
W-09	Deep	VOC	1,1,2,2-Tetrachloroethane	79-34-5	T	C	6				2.50E-04	3.60E-04	8.5E-03		3.5E-02	
W-09	Deep	VOC	Tetrachloroethene	127-18-4	T	C-B2	6				2.30E-04	4.20E-04	5.0E-03		5.0E-03	
W-09	Deep	VOC	Toluene	108-88-3	T	D	6				1.80E-04	3.90E-04	1.0E+00		1.0E+00	
W-09	Deep	VOC	1,2,4-Trichlorobenzene	120-82-1	T	D	6				1.70E-04	4.00E-04	7.0E-02		7.0E-02	
W-09	Deep	VOC	1,1,1-Trichloroethane	71-55-6	T	D	6				1.50E-04	3.90E-04	2.0E-01		2.0E-01	
W-09	Deep	VOC	1,1,2-Trichloroethane	79-00-5	T	C	6				3.00E-04	3.60E-04	5.0E-03		5.0E-03	
W-09	Deep	VOC	Trichloroethene	79-01-6	T	C-B2	6				1.40E-04	4.20E-04	5.0E-03		5.0E-03	
W-09	Deep	VOC	Trichlorofluoromethane	75-69-4	T		6				2.80E-04	5.40E-04	2.6E+00		7.3E+00	
W-09	Deep	VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	T		6				3.20E-04	3.20E-04	1.7E+02		1.7E+02	
W-09	Deep	VOC	Vinyl Chloride	75-01-4	T	A	6				1.50E-04	3.60E-04	2.0E-03		2.0E-03	
W-09	Deep	VOC	Xylenes (total)	1330-20-7	T	ID	6				3.30E-04	4.40E-04	1.0E+01		1.0E+01	
W-09	Deep	SVOC	Acenaphthene	83-32-9	T		6				8.00E-04	8.00E-04	1.3E+00		3.8E+00	
W-09	Deep	SVOC	Acenaphthylene	208-96-8	T	D	6				7.10E-04	7.10E-04	5.2E-02		1.5E-01	
W-09	Deep	SVOC	Acetophenone	98-86-2	T	D	6				2.60E-03	2.60E-03	1.5E+00		4.4E+00	
W-09	Deep	SVOC	Anthracene	120-12-7	T	D	6				6.80E-04	6.80E-04	4.3E-02		4.3E-02	
W-09	Deep	SVOC	Atrazine	1912-24-9	T		6				2.50E-03	2.50E-03	3.0E-03		3.0E-03	
W-09	Deep	SVOC	Benzaldehyde	100-52-7	T		6				2.80E-03	2.80E-03				
W-09	Deep	SVOC	Benzo(a)anthracene	56-55-3	T	B2	6				7.00E-04	7.00E-04	2.1E-03		8.5E-03	
W-09	Deep	SVOC	Benzo(a)pyrene	50-32-8	T	B2	6				7.30E-04	7.30E-04	5.0E-03		5.0E-03	
W-09	Deep	SVOC	Benzo(b)fluoranthene	205-99-2	T	B2	6				9.40E-04	9.40E-04	2.0E-03		2.0E-03	
W-09	Deep	SVOC	Benzo(g,h,i)perylene	191-24-2	T	D	6				8.50E-04	8.50E-04	5.0E-03		5.0E-03	
W-09	Deep	SVOC	Benzo(k)fluoranthene	207-08-9	T	B2	6				8.40E-04	8.40E-04	5.0E-03		5.0E-03	
W-09	Deep	SVOC	Biphenyl	92-52-4	T	D	6				2.60E-03	2.60E-03				
W-09	Deep	SVOC	bis(2-Chloroethoxy)methane	111-91-1	T	D	6				8.70E-04	8.70E-04				
W-09	Deep	SVOC	bis(2-Chloroethyl) ether	111-44-4	T	B2	5				9.70E-04	9.70E-04	2.0E-03		8.3E-03	
W-09	Deep	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	B2	6				2.70E-03	2.70E-03	6.0E-03		6.0E-03	
W-09	Deep	SVOC	4-Bromophenyl-phenyl ether	101-55-3	T	D	6				8.80E-04	8.80E-04				

TABLE 5-2b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

INTERMEDIATE AND DEEP GROUNDWATER SCREENING RESULTS

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
W-09	Deep	SVOC	Butylbenzylphthalate	85-68-7	T	C	6				8.80E-04	8.80E-04	1.2E+00		2.7E+00	
W-09	Deep	SVOC	Caprolactam	105-60-2	T		6	1	3.10E-03	3.10E-03	2.50E-03	2.50E-03	5.8E+00	5.3E-04	1.7E+01	1.8E-04
W-09	Deep	SVOC	Carbazole	86-74-8	T	B2	6				8.20E-04	8.20E-04	8.5E-02		3.5E-01	
W-09	Deep	SVOC	4-Chloro-3-methylphenol	59-50-7	T		6				9.90E-04	9.90E-04	1.5E-01		4.2E-01	
W-09	Deep	SVOC	4-Chloroaniline	106-47-8	T		6				6.10E-04	6.10E-04				
W-09	Deep	SVOC	2-Chloronaphthalene	91-58-7	T		6				8.50E-04	8.50E-04	1.8E+00		5.2E+00	
W-09	Deep	SVOC	2-Chlorophenol	95-57-8	T		6				1.00E-03	1.00E-03	4.5E-02		1.3E-01	
W-09	Deep	SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	T		6				7.90E-04	7.90E-04				
W-09	Deep	SVOC	Chrysene	218-01-9	T	B2	6				7.50E-04	7.50E-04	5.0E-03		5.0E-03	
W-09	Deep	SVOC	Dibenz(a,h)anthracene	53-70-3	T	B2	6				7.90E-04	7.90E-04	2.0E-03		2.0E-03	
W-09	Deep	SVOC	Dibenzofuran	132-64-9	T	D	6				1.10E-03	1.10E-03				
W-09	Deep	SVOC	3,3'-Dichlorobenzidine	91-94-1	T	B2	6				9.30E-04	9.30E-04	1.1E-03		4.3E-03	
W-09	Deep	SVOC	2,4-Dichlorophenol	120-83-2	T		6				8.50E-04	8.50E-04	7.3E-02		2.1E-01	
W-09	Deep	SVOC	Diethylphthalate	84-66-2	T	D	6				6.50E-04	6.50E-04	5.5E+00		1.6E+01	
W-09	Deep	SVOC	2,4-Dimethylphenol	105-67-9	T		6				8.50E-04	8.50E-04	3.7E-01		1.0E+00	
W-09	Deep	SVOC	Dimethylphthalate	131-11-3	T	D	6				7.60E-04	7.60E-04	7.3E+01		2.1E+02	
W-09	Deep	SVOC	Di-n-butylphthalate	84-74-2	T	D	6				6.70E-04	6.70E-04	8.8E-01		2.5E+00	
W-09	Deep	SVOC	4,6-Dinitro-2-methylphenol	534-52-1	T		6				1.30E-03	1.30E-03	2.0E-02		2.0E-02	
W-09	Deep	SVOC	2,4-Dinitrophenol	51-28-5	T		6				3.00E-03	3.00E-03				
W-09	Deep	SVOC	2,4-Dinitrotoluene	121-14-2	T	B2	6				7.90E-04	7.90E-04	7.7E-03		3.2E-02	
W-09	Deep	SVOC	2,6-Dinitrotoluene	606-20-2	T	B2	6				5.70E-04	5.70E-04				
W-09	Deep	SVOC	Di-n-octylphthalate	117-84-0	T		6				1.10E-03	1.10E-03	1.3E-01		3.8E-01	
W-09	Deep	SVOC	Fluoranthene	206-44-0	T	D	6				8.10E-04	8.10E-04	2.1E-01		2.1E-01	
W-09	Deep	SVOC	Fluorene	86-73-7	T	D	6				1.00E-03	1.00E-03	8.8E-01		2.0E+00	
W-09	Deep	SVOC	Hexachlorobenzene	118-74-1	T	B2	6				7.40E-04	7.40E-04	1.0E-03		1.0E-03	
W-09	Deep	SVOC	Hexachlorobutadiene	87-68-3	T	C	5				7.30E-04	7.30E-04	1.5E-02		4.2E-02	
W-09	Deep	SVOC	Hexachlorocyclopentadiene	77-47-4	T	E	5				1.10E-03	1.10E-03	5.0E-02		5.0E-02	
W-09	Deep	SVOC	Hexachloroethane	67-72-1	T	C	6				7.40E-04	7.40E-04	7.3E-03		2.1E-02	
W-09	Deep	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	B2	6				6.30E-04	6.30E-04	2.0E-03		2.0E-03	
W-09	Deep	SVOC	Isophorone	78-59-1	T	C	6				6.30E-04	6.30E-04	7.7E-01		3.1E+00	
W-09	Deep	SVOC	2-Methylnaphthalene	91-57-6	T	ID	5				6.40E-04	6.40E-04	2.6E-01		7.5E-01	
W-09	Deep	SVOC	Methylphenol (total)	1319-77-3	T		6				1.30E-03	1.30E-03	3.7E-01		1.0E+00	
W-09	Deep	SVOC	Naphthalene	91-20-3	T	C	5				7.50E-04	7.50E-04	5.2E-01		1.5E+00	
W-09	Deep	SVOC	2-Nitroaniline	88-74-4	T		6				7.00E-04	7.00E-04				
W-09	Deep	SVOC	3-Nitroaniline	99-09-2	T	C	6				7.10E-04	7.10E-04				
W-09	Deep	SVOC	4-Nitroaniline	100-01-6	T	C	6				1.30E-03	1.30E-03				
W-09	Deep	SVOC	Nitrobenzene	98-95-3	T	D	6				8.10E-04	8.10E-04	3.4E-03		9.6E-03	
W-09	Deep	SVOC	2-Nitrophenol	88-75-5	T		6				2.10E-03	2.10E-03	2.0E-02		5.8E-02	
W-09	Deep	SVOC	4-Nitrophenol	100-02-7	T		6				1.90E-03	1.90E-03				
W-09	Deep	SVOC	N-Nitrosodiphenylamine	86-30-6	T	B2	6				1.40E-03	1.40E-03	2.7E-01		1.1E+00	
W-09	Deep	SVOC	N-Nitroso-di-n-propylamine	621-64-7	T	B2	6				6.70E-04	6.70E-04	5.0E-03		5.0E-03	
W-09	Deep	SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	T	C	6				7.80E-04	7.80E-04				
W-09	Deep	SVOC	Pentachlorophenol	87-86-5	T	B2	6				2.40E-03	2.40E-03	1.0E-03		1.0E-03	
W-09	Deep	SVOC	Phenanthrene	85-01-8	T	D	6				8.20E-04	8.20E-04	5.2E-02		1.5E-01	
W-09	Deep	SVOC	Phenol	108-95-2	T	ID	6				2.60E-03	2.60E-03	4.4E+00		1.3E+01	
W-09	Deep	SVOC	Pyrene	129-00-0	T	D	6				1.10E-03	1.10E-03	1.4E-01		1.4E-01	
W-09	Deep	SVOC	2,4,5-Trichlorophenol	95-95-4	T		6				1.20E-03	1.20E-03	7.3E-01		2.1E+00	
W-09	Deep	SVOC	2,4,6-Trichlorophenol	88-06-2	T	B2	6				1.70E-03	1.70E-03	1.2E-01		4.7E-01	
W-09	Deep	P/PCB	PCBs (total)	1336-36-3	T	B2	6				8.20E-05	8.20E-05	5.0E-04		5.0E-04	
W-09	Deep	INORG	Antimony	7440-36-0	D		2	1	2.70E-03	2.70E-03	2.20E-03	2.20E-03	6.0E-03	4.5E-01	6.0E-03	4.5E-01
W-09	Deep	INORG	Antimony	7440-36-0	T		6	1	4.90E-03	4.90E-03	2.20E-03	3.40E-03	6.0E-03	8.2E-01	6.0E-03	8.2E-01
W-09	Deep	INORG	Arsenic	7440-38-2	D	A	2	2	5.20E-03	2.59E-02			5.0E-02	5.2E-01	5.0E-02	5.2E-01
W-09	Deep	INORG	Arsenic	7440-38-2	T	A	6	5	3.10E-03	3.95E-02	2.10E-03	2.10E-03	5.0E-02	7.9E-01	5.0E-02	7.9E-01
W-09	Deep	INORG	Barium	7440-39-3	D	D	2	2	9.89E-02	2.02E-01			2.0E+00	1.0E-01	2.0E+00	1.0E-01
W-09	Deep	INORG	Barium	7440-39-3	T	D	6	6	3.60E-02	5.85E-01			2.0E+00	2.9E-01	2.0E+00	2.9E-01
W-09	Deep	INORG	Beryllium	7440-41-7	D	B1	2				5.40E-04	5.40E-04	4.0E-03		4.0E-03	
W-09	Deep	INORG	Beryllium	7440-41-7	T	B1	6				5.40E-04	6.00E-04	4.0E-03		4.0E-03	
W-09	Deep	INORG	Cadmium	7440-43-9	D	B1	2				2.80E-04	2.80E-04	5.0E-03		5.0E-03	
W-09	Deep	INORG	Cadmium	7440-43-9	T	B1	6	1	3.00E-04	3.00E-04	2.80E-04	2.80E-04	5.0E-03	6.0E-02	5.0E-03	6.0E-02

TABLE 5-2b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

INTERMEDIATE AND DEEP GROUNDWATER SCREENING RESULTS

Area	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Carc Class	Analyzed	Detected	Min Detected (mg/L)	Max Detected (mg/L)	Min QL (mg/L)	Max QL (mg/L)	Residential Drinking Water Criteria (mg/L)	Ratio of Max Detected to Residential Drinking Water Criteria	Industrial Drinking Water Criteria (mg/L)	Ratio of Max Detected to Industrial Drinking Water Criteria
W-09	Deep	INORG	Chromium (total)	7440-47-3	D		2				1.40E-03	1.40E-03	1.0E-01		1.0E-01	
W-09	Deep	INORG	Chromium (total)	7440-47-3	T		6	5	2.80E-03	8.40E-03	1.40E-03	1.40E-03	1.0E-01	8.4E-02	1.0E-01	8.4E-02
W-09	Deep	INORG	Cobalt	7440-48-4	D	B1	2				1.30E-03	1.30E-03	4.0E-02		1.0E-01	
W-09	Deep	INORG	Cobalt	7440-48-4	T	B1	6	3	7.60E-04	8.40E-03	7.40E-04	1.30E-03	4.0E-02	2.1E-01	1.0E-01	8.4E-02
W-09	Deep	INORG	Copper	7440-50-8	D	D	2				4.20E-03	4.20E-03	1.4E+00		4.0E+00	
W-09	Deep	INORG	Copper	7440-50-8	T	D	6				1.70E-03	4.20E-03	1.4E+00		4.0E+00	
W-09	Deep	INORG	Lead	7439-92-1	D	B2	2				2.50E-03	2.50E-03	4.0E-03		4.0E-03	
W-09	Deep	INORG	Lead	7439-92-1	T	B2	6				1.60E-03	2.50E-03	4.0E-03		4.0E-03	
W-09	Deep	INORG	Manganese	7439-96-5	D	D	2	1	6.18E-02	6.18E-02	9.00E-04	9.00E-04	8.6E-01	7.2E-02	2.5E+00	2.5E-02
W-09	Deep	INORG	Manganese	7439-96-5	T	D	6	5	4.61E-02	2.55E-01	9.00E-04	9.00E-04	8.6E-01	3.0E-01	2.5E+00	1.0E-01
W-09	Deep	INORG	Mercury	7439-97-6	D	D	2				6.90E-05	6.90E-05	2.0E-03		2.0E-03	
W-09	Deep	INORG	Mercury	7439-97-6	T	D	6				6.90E-05	8.70E-05	2.0E-03		2.0E-03	
W-09	Deep	INORG	Nickel	7440-02-0	D	A	2				2.20E-03	2.20E-03	1.0E-01		1.0E-01	
W-09	Deep	INORG	Nickel	7440-02-0	T	A	6	4	3.10E-03	9.30E-03	2.20E-03	2.90E-03	1.0E-01	9.3E-02	1.0E-01	9.3E-02
W-09	Deep	INORG	Selenium	7782-49-2	D	D	2				4.50E-03	4.50E-03	5.0E-02		5.0E-02	
W-09	Deep	INORG	Selenium	7782-49-2	T	D	6				4.50E-03	4.70E-03	5.0E-02		5.0E-02	
W-09	Deep	INORG	Silver	7440-22-4	D	D	2				1.50E-03	1.50E-03	3.4E-02		9.8E-02	
W-09	Deep	INORG	Silver	7440-22-4	T	D	6	1	1.30E-03	1.30E-03	9.80E-04	1.50E-03	3.4E-02	3.8E-02	9.8E-02	1.3E-02
W-09	Deep	INORG	Thallium	7440-28-0	D		2				1.80E-05	1.80E-05	2.0E-03		2.0E-03	
W-09	Deep	INORG	Thallium	7440-28-0	T		6				1.80E-05	3.30E-05	2.0E-03		2.0E-03	
W-09	Deep	INORG	Vanadium	7440-62-2	D		2				8.20E-04	8.20E-04	4.5E-03		6.2E-02	
W-09	Deep	INORG	Vanadium	7440-62-2	T		6				6.70E-04	8.20E-04	4.5E-03		6.2E-02	
W-09	Deep	INORG	Zinc	7440-66-6	D	D	2				1.20E-02	1.20E-02	2.4E+00		5.0E+00	
W-09	Deep	INORG	Zinc	7440-66-6	T	D	6				1.20E-02	1.40E-02	2.4E+00		5.0E+00	

Notes:
The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.
The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.
The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).
The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.
The concentrations for all PCB isomers were summed before comparing to Polychlorinated biphenyls (PCBs) for cancer effects and Aroclor 1254 for noncancer effects.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.
The concentrations for the 1,3-Dichloropropene isomers (cis and trans) were summed before comparing to the Screening Criteria.
The MDEQ Drinking Water Criteria for Chromium III was calculated by ENVIRON to be account for valence specific toxicity.

Chem Group - Chemical Group
Meas Basis - Measured Basis; T = Total, D = Dissolved
Carc Class - EPA Weight-of-Evidence Cancer Classification
Min QL - Minimum Quantitation Limit
Max QL - Maximum Quantitation Limit

TABLE 5-3
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

ESTIMATED CUMULATIVE CANCER RISK AND HI FOR AOIs WITH "CONTAMINATED" SOIL - BASED ON MAXIMUM CONCENTRATIONS

AOI	Matrix	Industrial Cumulative Risk	Industrial HI
F-07	Soil	2E-05	5E-01
F-08	Soil	1E-09	1E-02
F-15	Soil	3E-05	2E-01
M-02	Soil	2E-05	1E+00
M-07	Soil	2E-05	1E-01
M-09	Soil	7E-06	9E-02
M-16	Soil	2E-06	1E-01
P-09	Soil	1E-04	1E+00
P-10	Soil	4E-06	7E-02
P-11	Soil	2E-05	7E-01
SWDF	Soil	1E-06	4E-02
W-01	Soil	**3E-04**	**2E+01**
W-08	Soil	7E-05	**3E+00**
W-09	Soil	**6E-04**	**4E+01**
Area of Ind Redevelopment	Soil	**7E-04**	**5E+01**

TABLE 5-4a
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

ESTIMATED CUMULATIVE CANCER RISK AND HI FOR AOIs WITH CONTAMINATED" SOIL - BASED ON MAXIMUM CONCENTRATIONS AND 95% UCLs

AOI	Matrix	Industrial Cumulative Risk	Industrial HI
P-09	Soil	9E-05	4E-01
W-01 (routine wrkr)	Soil	4E-05	1E+00
W-01 (const wrkr)	Soil	1E-04	**3E+00**
W-08	Soil	7E-05	9E-01
W-09	Soil	4E-05	9E-01
Area of Ind Redevelopment	Soil	4E-05	1E+00

TABLE 5-4b
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

ESTIMATES OF HIGH-END CUMULATIVE CANCER RISK AND HAZARD INDEX FOR AOI W-1 CONSTRUCTION

		Soil Ingestion	Soil Dermal Contact	Soil Inhalation	SUM Soil Pathways
AOI W-01	Cancer Risk	3E-06	3E-07	6E-06	9E-06
AOI W-01	Hazard Index (HI)	3E-01	1E-02	2E-01	5E-01

TABLE 5-4c
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION

ESTIMATES OF HIGH-END CUMULATIVE CANCER RISK AND HAZARD INDEX FOR AREA OF INDUSTRIAL REDEVELOPMENT CONSTRUCTION

		Soil Ingestion	Soil Dermal Contact	Soil Inhalation	SUM Soil Pathways
Area of Ind Redevelopment	Cancer Risk	5E-06	8E-07	3E-06	9E-06
Area of Ind Redevelopment	Hazard Index (HI)	4E-01	3E-02	6E-01	1E+00

TABLE 5-5
GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN

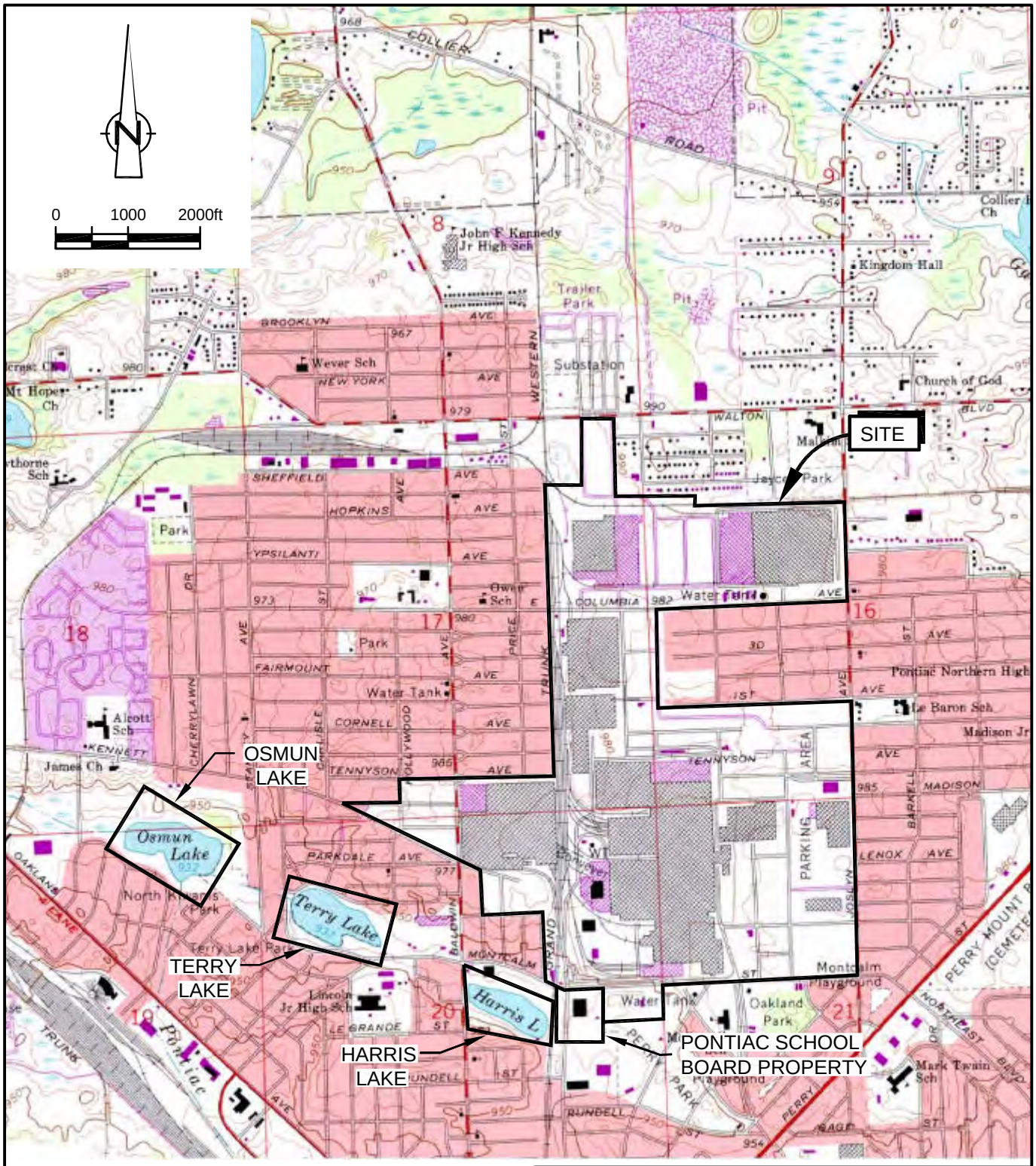
RCRA FACILITY INVESTIGATION

ESTIMATES OF HIGH-END CUMULATIVE CANCER RISK AND HAZARD INDEX BY AOI FOR NAPL AREAS 4 AND 5

		Smear Zone Soil Ingestion	Smear Zone Soil Dermal Contact		NAPL Dermal Contact	NAPL Vapor Inhalation	SUM Total
M-02 NAPL	Cancer Risk	1E-06	2E-07		3E-05	1E-06	4E-05
M-02 NAPL	Hazard Index (HI)	1E-01	4E-02		4E-02	4E-02	3E-01
M-16 NAPL	Cancer Risk	7E-07	1E-07		2E-05	6E-08	2E-05
M-16 NAPL	Hazard Index (HI)	7E-02	2E-02		5E-02	1E-02	1E-01

Figures

ENCORE
Environmental Corporate Remediation



SOURCE: USGS QUADRANGLE MAP;
PONTIAC NORTH, MICHIGAN

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

SITE LOCATION

ENCORE

FIGURE
1-1

17487-22(013)GN-WA001 NOV 24/2003

Operational Area	Facility Reference Number
CPC Pontiac Fiero Assembly Plant	MID005356910
GMC Central Foundry Division-Pontiac Plant	MID085470102
CPC-Pontiac	MID005356886
GMC Warehousing and Distribution Division	MID076331289

N

0 400 800ft

LEGEND

- PROPERTY BOUNDARY
- RAILROAD TRACKS
- FENCE
- FACILITY BOUNDARY
- FOOTPRINT OF FORMER STRUCTURE

CPC PONTIAC FIERO ASSEMBLY PLANT
PLANT 17
(MID005356910)

CPC-PONTIAC
PLANT
(MID005356886)

GMC CENTRAL FOUNDRY DIVISION - PONTIAC PLANT
(MID085470102)

GMC WAREHOUSING AND DISTRIBUTION DIVISION
(MID076331289)

BALDWIN AVENUE

MONTCALM STREET EAST

COLUMBIA AVENUE EAST

WALTON BLVD.

JOSLYN AVENUE

MONTCALM

PLANT 12

PLANT 15

PLANT 25

PLANT 33

PLANT 49

PLANT 5 & 23

PLANT 56 (OLD PLT 2)

PLANT 11

FORMER PLANT 8

FORMER PLANT 9

FORMER PLANT 6

FORMER PLANT 18

ELPO BLDG

POWER TRAIN HQ BLDG

POWERTRAIN ENGINEERING

EMISSIONS CONTROL BUILDING

CATALINA SUBSTATION

MONTCALM SUBSTATION

WASTEWATER TREATMENT

SWDF

ST. CLAIR STREET

YOUNG STREET

WING STREET

PORTLAND STREET

OWENS STREET

POWERHOUSE

BASINAW ST.

WATER TOWER

GIBSON STREET

LAUREL AVENUE

IVY AVENUE

FIRST AVENUE

SECOND AVENUE

THIRD AVENUE

FOURTH AVENUE

PONTIAC PLAZA

LOWELL STREET

KENNETT AVENUE

RADCLIFF AVENUE

MARDALE AVENUE

ENOCH AVENUE

WESTBROOK AVENUE

LAMARON AVENUE

MADISON AVENUE

MANSFIELD AVENUE

TENNYSON AVENUE

BEVERLY AVENUE

FIRST AVENUE

SECOND AVENUE

THIRD AVENUE

FOURTH AVENUE

COLUMBIA AVENUE

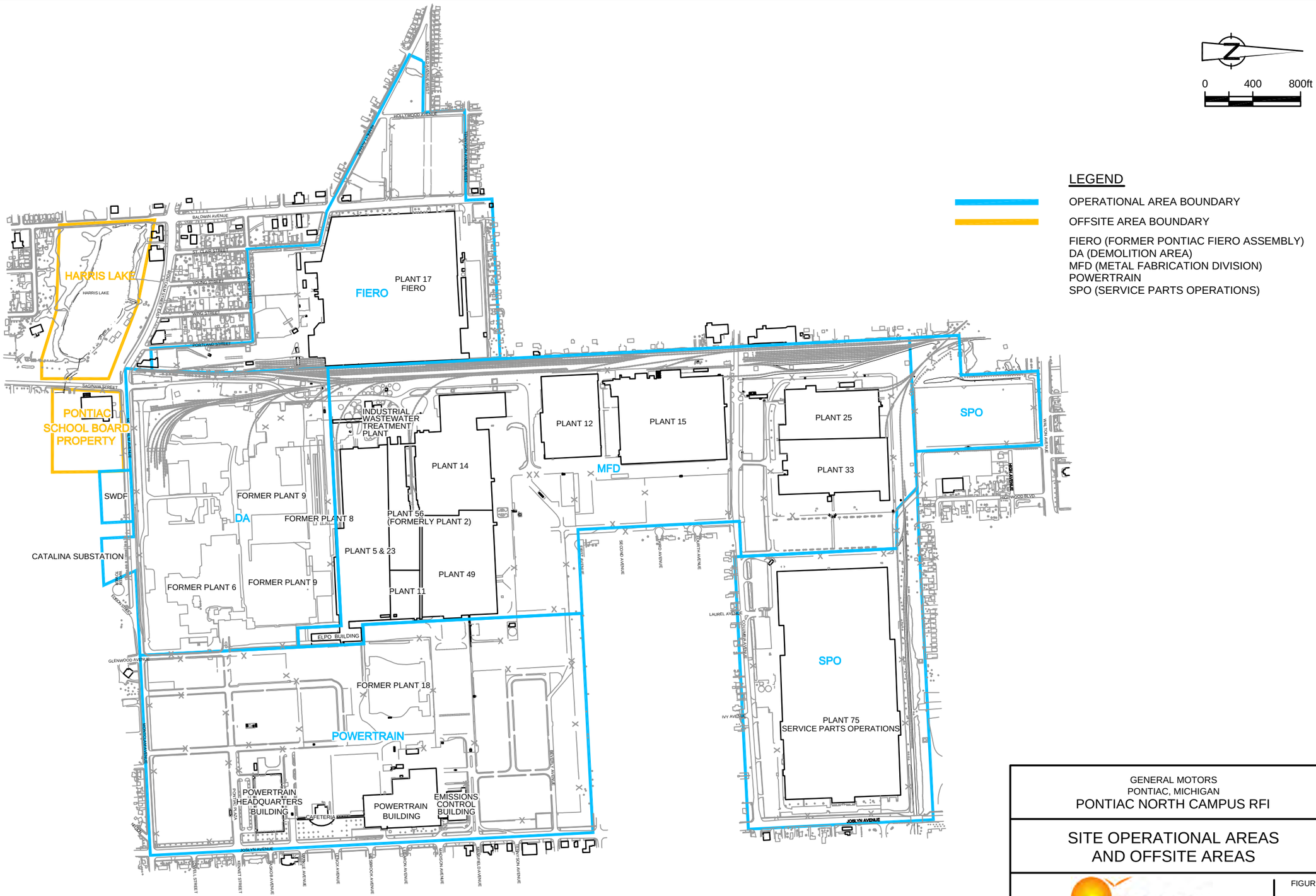
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

SITE FACILITIES

ENCORE

FIGURE
1-2

17487-22(013)GN-WA002 NOV 24/2003



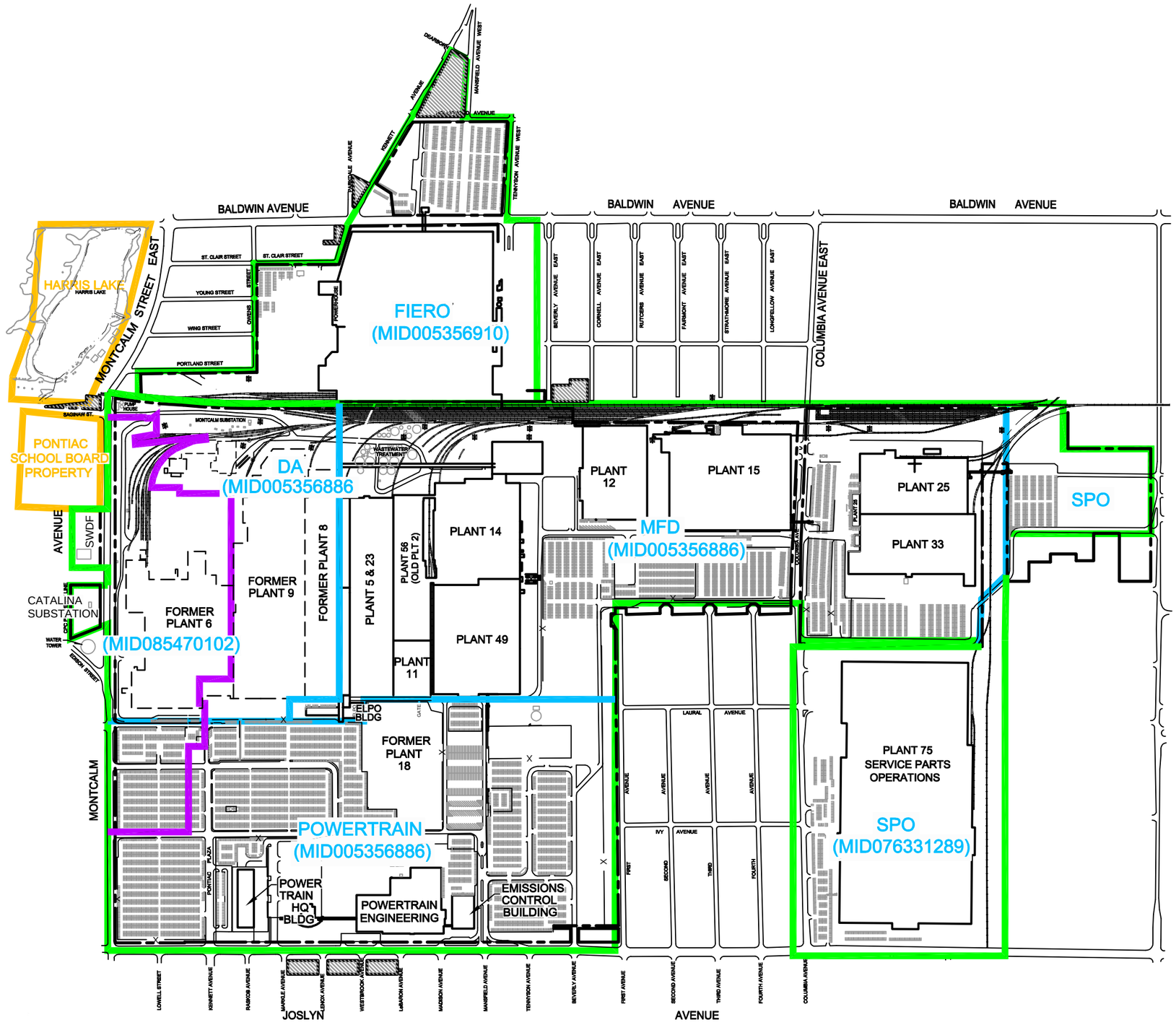
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

SITE OPERATIONAL AREAS
AND OFFSITE AREAS

ENCORE

FIGURE
1-3

17487-22(013)GN-WA003 NOV 24/2003



N

0 400 800ft

LEGEND

- FOOTPRINT OF FORMER STRUCTURE
- PROPERTY BOUNDARY
- RAILROAD TRACKS
- FENCE
- OPERATIONAL AREA BOUNDARY
- FACILITY BOUNDARY
- COMMON OPERATIONAL AREA AND FACILITY BOUNDARY
- OFFSITE AREA BOUNDARY

FIERO (FORMER PONTIAC FIERO ASSEMBLY)
DA (DEMOLITION AREA)
MFD (METAL FABRICATION DIVISION)
POWERTRAIN
SPO (SERVICE PARTS OPERATIONS)

Operational Area	Facility USEPA ID Number
Fiero	MID005356910
Demolition Area (DA)	MID005356886
	MID085470102
Metal Fabrication Division (MFD)	MID005356886
Powertrain	MID005356886
	MID085470102
Service Parts Operations (SPO)	MID076331289

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

SUMMARY OF SITE OPERATIONAL AREAS AND FACILITIES

ENCORE

FIGURE 1-4

17487-22(013)GN-WA004 NOV 24/2003

N

WALTON AVENUE
HIGH AVENUE
HIGHWOOD BLVD.
M-4
M-25
M-16
M-5
PLANT 25
PLANT 33
PLANT 75
PSERVICE PARTS OPERATIONS
JOSLYN AVENUE
M-23
COLUMBIA AVENUE
LAUREL AVENUE
IVY AVENUE
FOURTH AVENUE
THIRD AVENUE
SECOND AVENUE
FIRST AVENUE
PLANT 15
M-17
M-11
M-24
PLANT 8
BEVERLY AVENUE
TENNYSON AVENUE
MANSFIELD AVENUE
EMISSIONS CONTROL BUILDING
P-6
MADISON AVENUE
LEBARON AVENUE
WESBROOK AVENUE
LENOX AVENUE
MARKLE AVENUE
RASKOB AVENUE
KENNET STREET
LOWELL STREET
POWERTRAIN BUILDING
POWERTRAIN HEADQUARTERS BUILDING
CAFETERIA
PONTIAC PLAZA
F-8
F-13
TENNYSON AVENUE WEST
HOLLYWOOD AVENUE
KENNETT AVENUE
PLANT 17 FIERO
PLANT 49
PLANT 14
M-13
M-21
M-2
PLANT 56 (FORMERLY PLANT 2)
PLANT 11
M-9
P-11
P-9
P-10
FORMER PLANT 18
INDUSTRIAL WASTEWATER TREATMENT PLANT
M-1
PLANT 5 & 23
M-19
M-7
ELPO BUILDING
F-7
F-15
F-14
F-12
W-3
W-5
FORMER PLANT 8
W-6
W-8
FORMER PLANT 9
W-13
W-11
FORMER PLANT 6
W-10
W-1
W-9
OWENS STREET
BALDWIN AVENUE
ST. MARY STREET
YOUNG STREET
WING STREET
PORTLAND STREET
MONTCALM STREET EAST
HARRIS LAKE
SAGINAW STREET
MONTCALM AVENUE
PONTIAC SCHOOL BOARD PROPERTY
SWDF
OUTFALL 001
WATER TOWER
EDISON STREET
GLENWOOD AVENUE
MONTCALM AVENUE
WILSON

Legend:

- RAILROAD
- ROADS
- BUILDINGS
- AOI AND OFFSITE AREAS

W- 9 AOI ID

0 125 250 500 750 1,000
Feet

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

AREAS OF INTEREST AND OFFSITE AREAS

ENCORE

Figure
1-5

11/24/03 SYR-85 EIB TBR
PNC - 64411.310
PNC/RFI_NOV03/MXD/PontiacAOI.mxd

N

M-4
M-25
M-5
M-16
F-8
F-7
F-15
M-2
M-1
M-9
P-11
P-9
P-10
M-7
P-6
W-8
W-10
W-1
W-9
SWDF

WALTON AVENUE
HIGH AVENUE
HIGHWOOD BLVD
PLANT 25
PLANT 33
PLANT 75
PSERVICE PARTS OPERATIONS
JOSLYN AVENUE
COLUMBIA AVENUE
LAUREL AVENUE
IVY AVENUE
FOURTH AVENUE
THIRD AVENUE
SECOND AVENUE
FIRST AVENUE
PLANT 15
PLANT 12
BEVERLY AVENUE
TENNYSON AVENUE
MANSFIELD AVENUE
MADISON AVENUE
LEBARON AVENUE
WESBROOK AVENUE
LENOX AVENUE
MARKLE AVENUE
RASKOB AVENUE
KENNET STREET
LOWELL STREET
MONTCALM AVENUE
TELEGRAPH
TENNYSON AVENUE WEST
HOLLYWOOD AVENUE
KENSETT AVENUE
PLANT 17 FIERO
PLANT 14
PLANT 49
PLANT 56 (FORMERLY PLANT 2)
PLANT 11
PLANT 5 & 23
INDUSTRIAL WASTEWATER TREATMENT PLANT
FORMER PLANT 18
POWERTRAIN BUILDING
ELPO BUILDING
CAFETERIA
FORMER PLANT 8
FORMER PLANT 9
FORMER PLANT 6
POWERTRAIN HEADQUARTERS BUILDING
PONTIAC PLAZA
OWENS STREET
BALDWIN AVENUE
STEVENS STREET
YOUNG STREET
WINN STREET
PORTLAND STREET
MONTCALM STREET EAST
HARRIS LAKE
SAGINAW STREET
WATER TOWER
EDISON STREET
GLENWOOD AVENUE

Legend:

RAILROAD
ROADS
BUILDINGS
AOI AND OFFSITE AREAS
W- 9 AOI ID

0 125 250 500 750 1,000
Feet

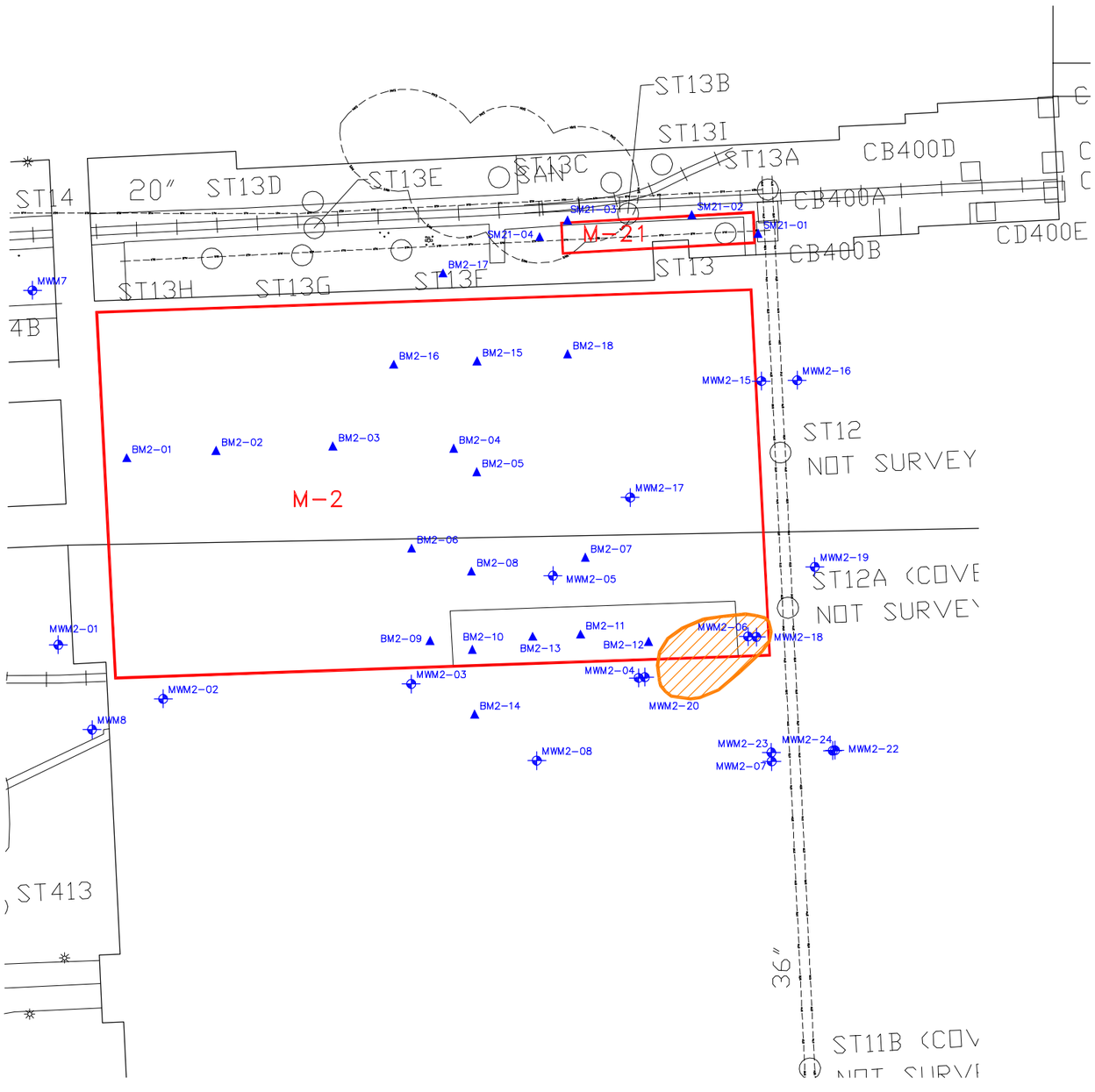
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

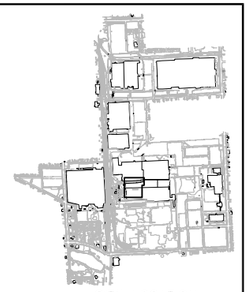
AOIs IN THE SUPPLEMENTAL RFI REPORT

ENCORE

Figure
1-6

11/24/03 SYR-85 EIB TBR
PNC - 64411.310
PNC/RFI_NOV03/MXD/PontiacAOI.mxd





SITE LOCATION

LEGEND:

- MWM2-05 — GROUNDWATER MONITORING WELL LOCATION
- BM2-12 — SOIL BORING LOCATION
- LOCATION WHERE NAPL HAS BEEN IDENTIFIED DURING RECENT RFI ACTIVITIES AT A MEASURABLE THICKNESS (>0.01 FEET)
- APPROXIMATE AOI AREA
- M-2 = FORMER PLATING OPERATION AREA
- M-21 = ELECTRICAL SUBSTATION

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.

0 40' 80'
GRAPHIC SCALE

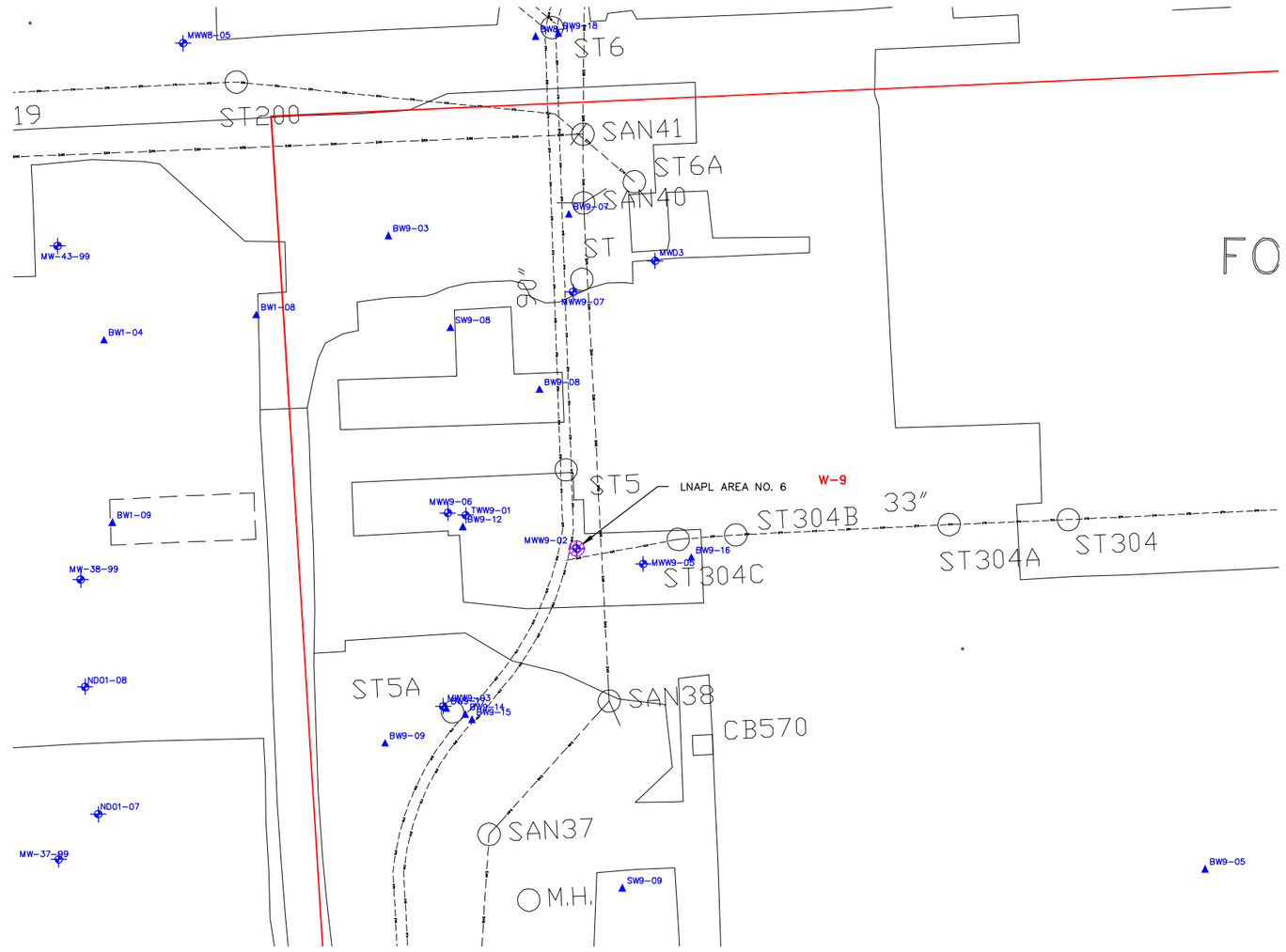
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

LNAPL AREA NO. 4

ENCORE

FIGURE 2-1

X: 64411X00, X01, X06.DWG, 64411X01.GIF
L: ON=* OFF=REF
P: PAGESET/PLT-DL
11/25/03 SYR-85-GMS SDL GMS
64411210/RFI-ADDM/64411G01.DWG



SITE LOCATION

LEGEND:

MWM2-05 — GROUNDWATER MONITORING WELL LOCATION

BM2-12 — SOIL BORING LOCATION

LOCATION WHERE NAPL HAS BEEN IDENTIFIED DURING RECENT RFI ACTIVITIES AT A MEASURABLE THICKNESS (>0.01 FEET)

APPROXIMATE AOI AREA

W-9 = FORMER CENTRAL FOUNDRY

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. GROUNDWATER ELEVATIONS CALCULATED FROM WATER LEVELS COLLECTED MAY 2003.

0 40' 80'

GRAPHIC SCALE

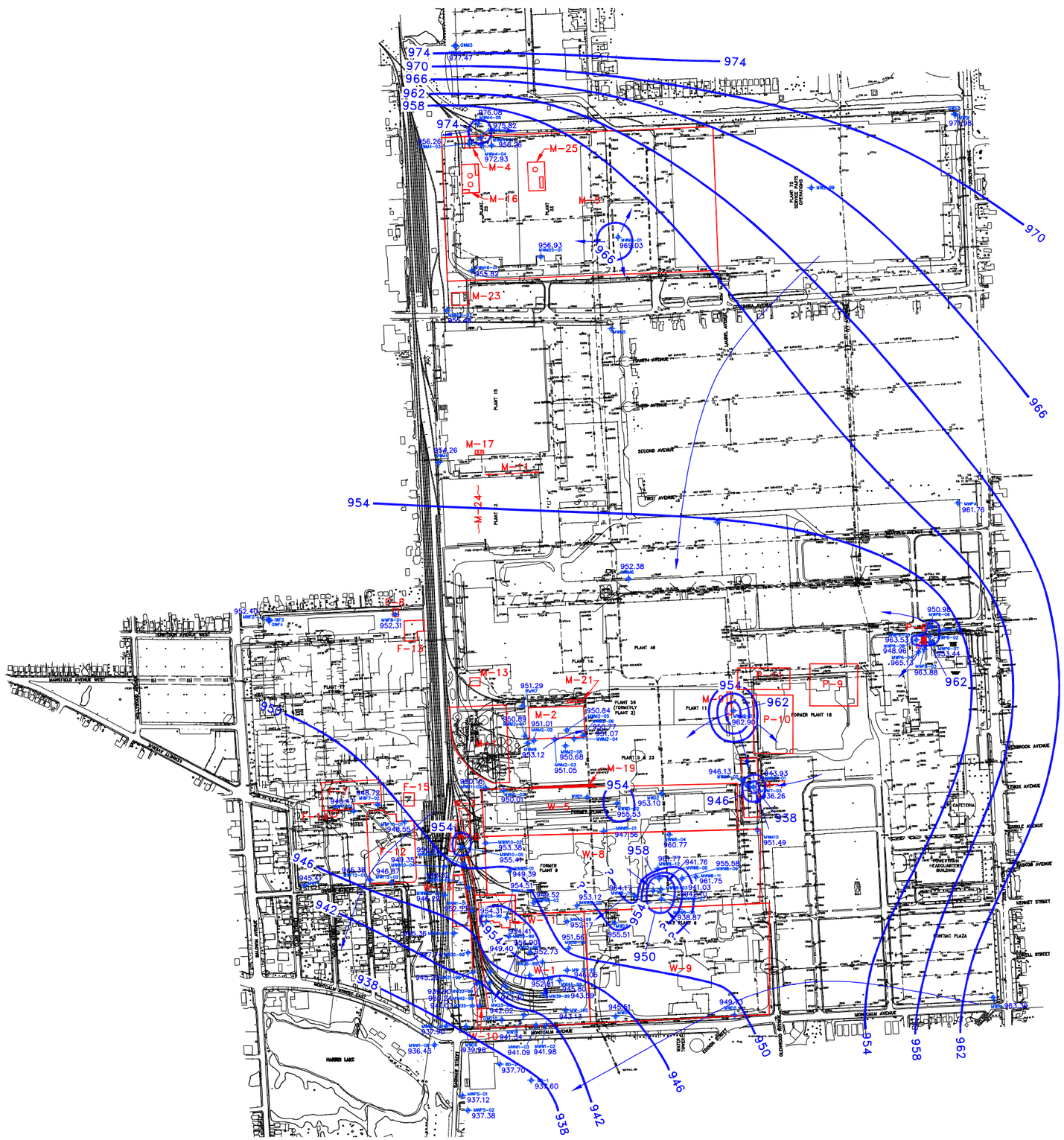
X: 64411x00, X01, X06.DWG, 64411X01.GIF
L: ON=* OFF=REF
P: PAGESET/PLT-DL
11/25/03 SYR-85-NES DJP GMS
64411210/RFI-ADDM/64411G02.DWG

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

LNAPL AREA NO. 6

ENCORE

FIGURE
2-2



LEGEND:

- GROUNDWATER MONITORING WELL LOCATION
- FENCED AREA
- APPROXIMATE AOI AREA
- 951.29 GROUNDWATER ELEVATION IN FEET
- 946 GROUNDWATER ELEVATION CONTOUR LINE IN FEET (4-FOOT INTERVAL UNLESS OTHERWISE INDICATED)
- GROUNDWATER FLOW DIRECTION

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. GROUNDWATER ELEVATIONS CALCULATED FROM WATER LEVELS COLLECTED NOVEMBER 11, 2002.

0 400' 800'
GRAPHIC SCALE

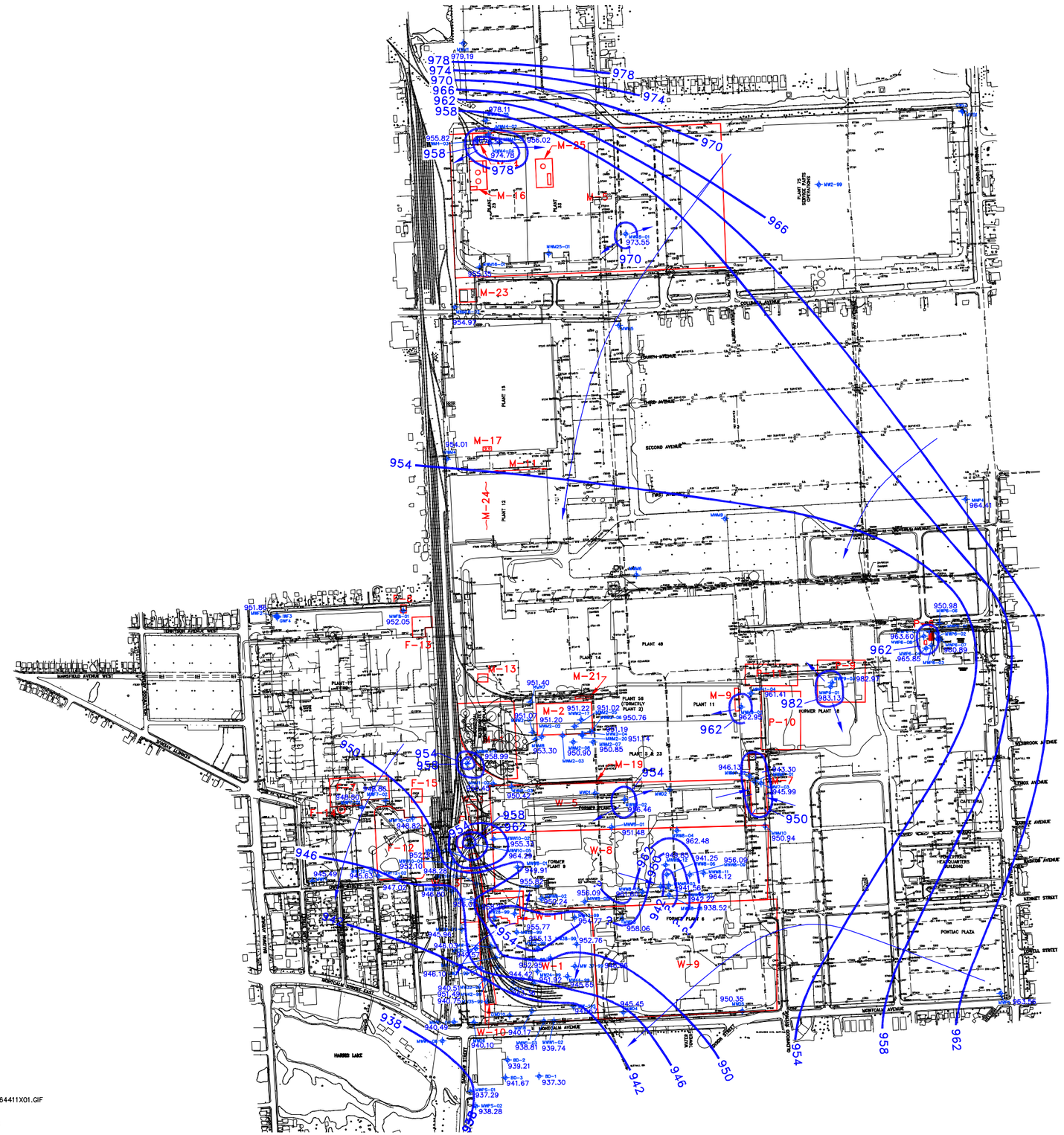
X: 64411X0D, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF
P: PAGESET/PLT-DL
11/24/03 SYR-84-RCB RCB GMS
64411210/RFI-ADDM/64411W03.DWG

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

GROUNDWATER FLOW CONTOUR MAP- NOVEMBER 2002

ENCORE

FIGURE 3-1



LEGEND:

- GROUNDWATER MONITORING WELL LOCATION
- FENCED AREA
- APPROXIMATE AOI AREA
- 951.29 GROUNDWATER ELEVATION IN FEET
- 974 GROUNDWATER ELEVATION CONTOUR LINE IN FEET (4-FOOT INTERVAL UNLESS OTHERWISE INDICATED)
- GROUNDWATER FLOW DIRECTION

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. GROUNDWATER ELEVATIONS CALCULATED FROM WATER LEVELS COLLECTED MAY 2003.

0 400' 800'
GRAPHIC SCALE

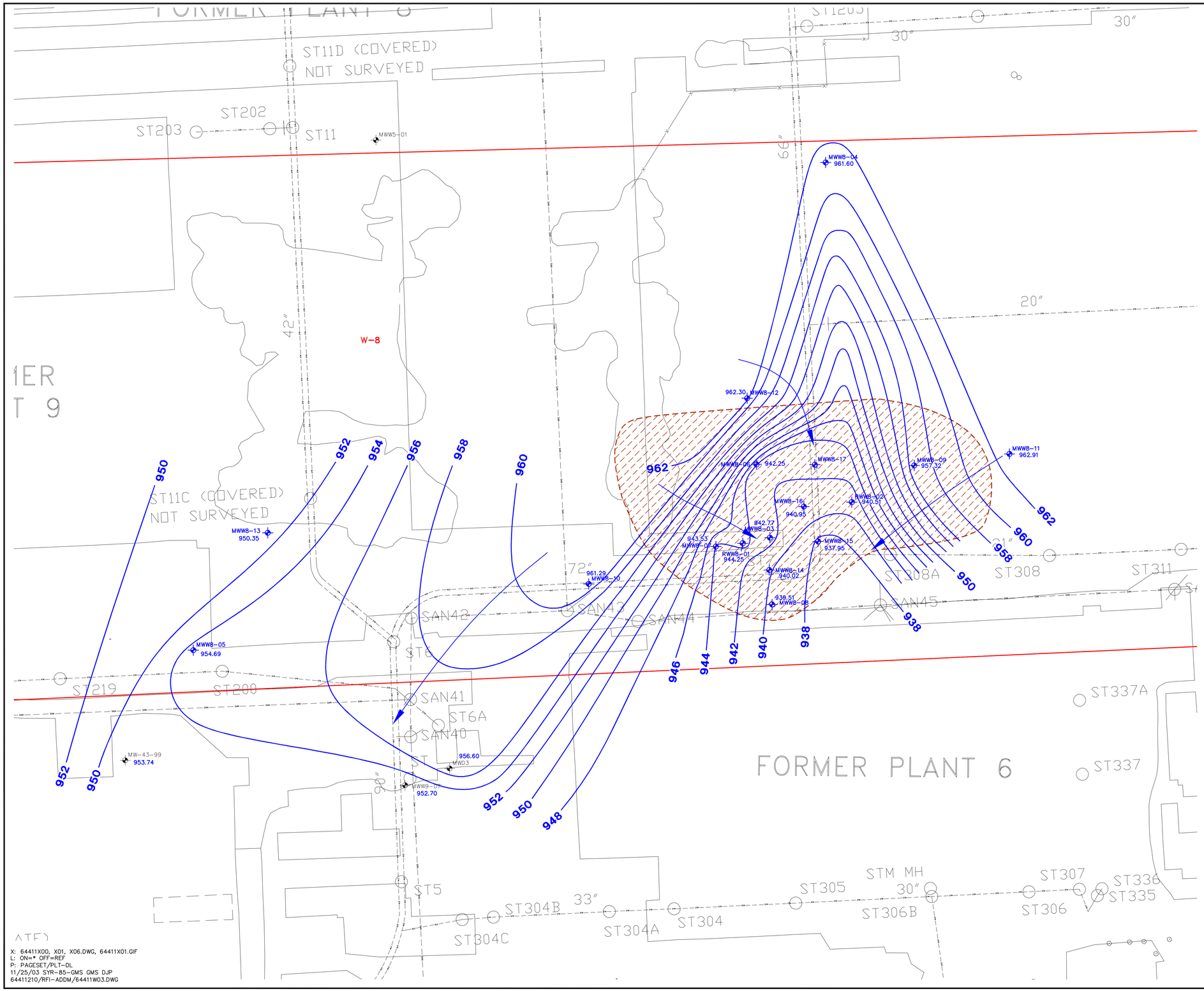
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

GROUNDWATER FLOW CONTOUR MAP-MAY 2003

ENCORE

FIGURE 3-2

X: 64411x00, X01.DWG, X06.DWG, 64411X01.GIF
L: ON=* OFF=REF
P: PAGESET/PLT-DL
11/24/03 SYR-85-RCB RCB GMS
64411210/GW/64411W04.DWG



SITE LOCATION

LEGEND:

- MWW8-04 — GROUNDWATER MONITORING WELL LOCATION
- APPROXIMATE AOI AREA
- W-8 = FORMER PLANT 9 BASEMENT AST
- 957.32 — GROUNDWATER ELEVATION IN FEET
- 950 — GROUNDWATER ELEVATION CONTOUR LINE IN FEET
- GROUNDWATER FLOW DIRECTION
- APPROXIMATE EXTENT OF LIGHT NON-AQUEOUS PHASE LIQUID (LNAPL)

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. GROUNDWATER ELEVATIONS CALCULATED FROM WATER LEVELS COLLECTED OCTOBER 27 & 28, 2003. WHERE LNAPL WAS PRESENT, AN EQUIVALENT GROUNDWATER ELEVATION WAS CALCULATED USING AN ESTIMATED SPECIFIC DENSITY FOR THE LNAPL OF 0.8".

0 50' 100'
SCALE: 1"=50'

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

AOI W-8 GROUNDWATER FLOW CONTOUR MAP

ENCORE

FIGURE 3-3

ATF)

X: 64411X00, X01, X06.DWG, 64411X01.GIF
L: ON=* OFF=REF
P: PAGESET/PLT-DL
11/25/03 SYR-85-GMS GMS DJP
64411210/RFI-ADDM/64411W03.DWG

SITE LOCATION

FORMER PLANT 6

W-9

NOT SURVEYED

M AVENUE

ATION

WATER TOWER

EDISON STREET

GLENWOOD AVENUE

GLENWOOD AVE. OUTFALL

SANOUTFALL

LEGEND:

- MWW9-01 — GROUNDWATER MONITORING WELL LOCATION
- APPROXIMATE AOI AREA
- W-9 = FORMER CENTRAL FOUNDRY
- 947.32 — GROUNDWATER ELEVATION IN FEET
- 948 — GROUNDWATER ELEVATION CONTOUR LINE IN FEET
- GROUNDWATER FLOW DIRECTION
- APPROXIMATE EXTENT OF LIGHT NON-AQUEOUS PHASE LIQUID (LNAPL)

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. GROUNDWATER ELEVATIONS CALCULATED FROM WATER LEVELS COLLECTED OCTOBER 27 & 28, 2003. WHERE LNAPL WAS PRESENT, AN EQUIVALENT GROUNDWATER ELEVATION WAS CALCULATED USING AN ESTIMATED SPECIFIC DENSITY FOR THE LNAPL OF 0.8".

0 100' 200'
GRAPHIC SCALE

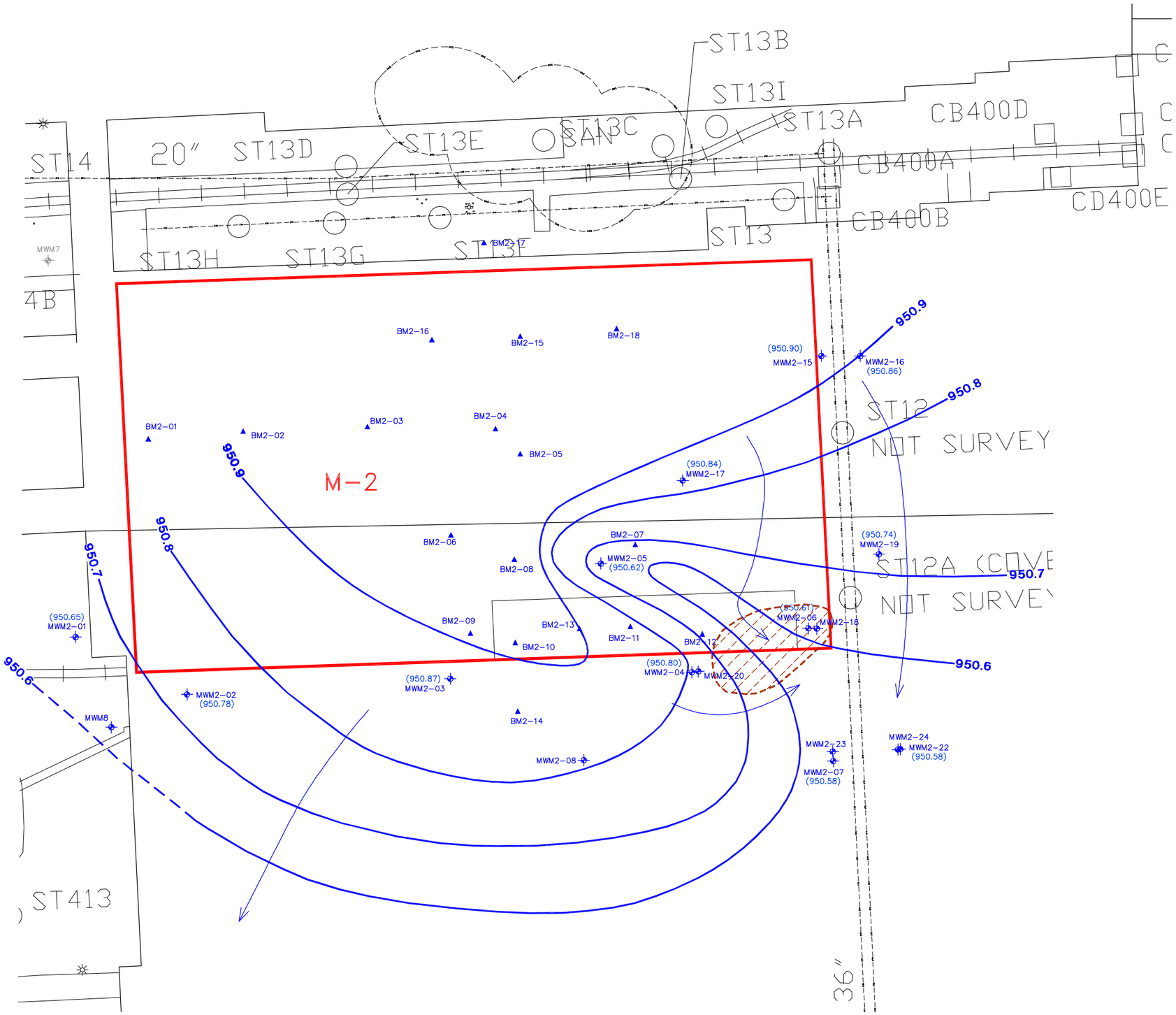
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

AOI W-9 GROUNDWATER FLOW CONTOUR MAP

ENCORE

FIGURE 3-4

X: 64411X00, X01, X06.DWG, 64411X01.GIF
L: ON=* OFF=REF
P: PAGESET/PLT-DL
11/24/03 SYR-85-GMS DMW GMS
64411210/RFI-ADDM/64411W02.DWG



SITE LOCATION

LEGEND:

- MWM2-05 — GROUNDWATER MONITORING WELL LOCATION
- BM2-12 — SOIL BORING LOCATION
- APPROXIMATE AOI AREA
- M-2 = FORMER PLATING OPERATION AREA
- 950.7 — GROUNDWATER ELEVATION CONTOUR
- (950.74) — GROUNDWATER ELEVATION
- GROUNDWATER FLOW DIRECTION
- APPROXIMATE EXTENT OF LIGHT NON-AQUEOUS PHASE LIQUID (LNAPL)

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. GROUNDWATER ELEVATIONS CALCULATED FROM WATER LEVELS COLLECTED ON AUGUST 27, 2003.

0 30' 60'
GRAPHIC SCALE

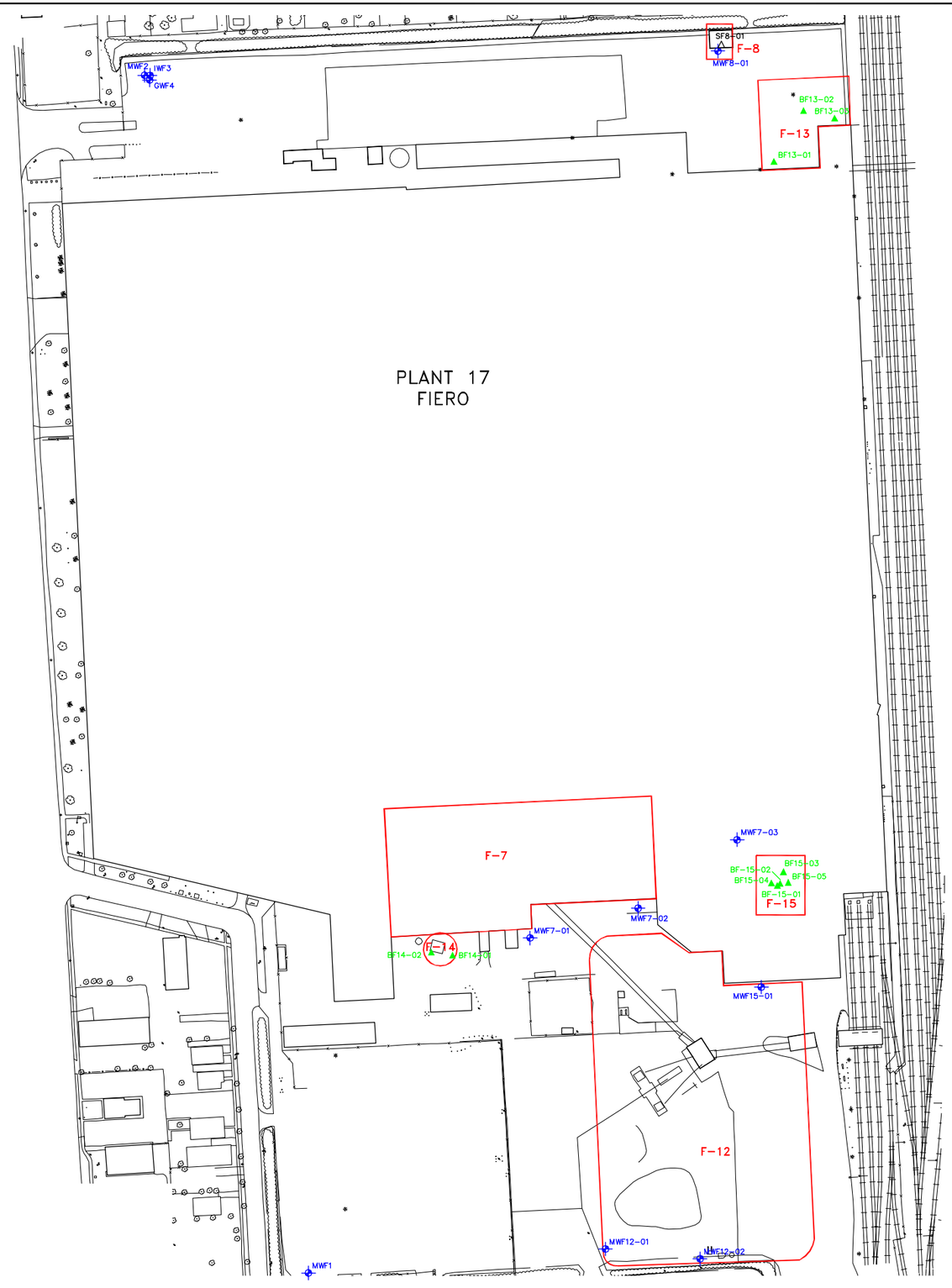
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

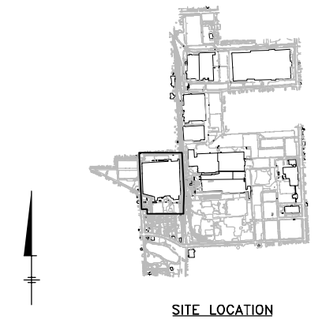
AOI M-2 GROUNDWATER FLOW CONTOUR MAP

ENCORE

FIGURE 3-5

X: 64411X00, 64411X01.DWG, 64411X01.GIF
L: ON=* OFF=REF
P: PAGESET/PLT-DL
11/25/03 SYR-85-GMS DJP GMS
64411210/RFI-ADDM/64411W05.DWG





SITE LOCATION

LEGEND:

MWM16-02 MONITORING WELL SAMPLE LOCATION

BM5-02 SOIL BORING SAMPLE LOCATION

SM23-03 SURFACE SOIL SAMPLE LOCATION

APPROXIMATE AOI AREA

F-7 = POWERHOUSE BASEMENT SUMPS
F-8 = FORMER PAINT SLUDGE PAD
F-12 = COAL STORAGE AREA
F-13 = OILY PEA GRAVEL AREA
F-14 = FUEL UST
F-15 = OIL/SOLVENT PIT

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.

0 100' 200'
GRAPHIC SCALE

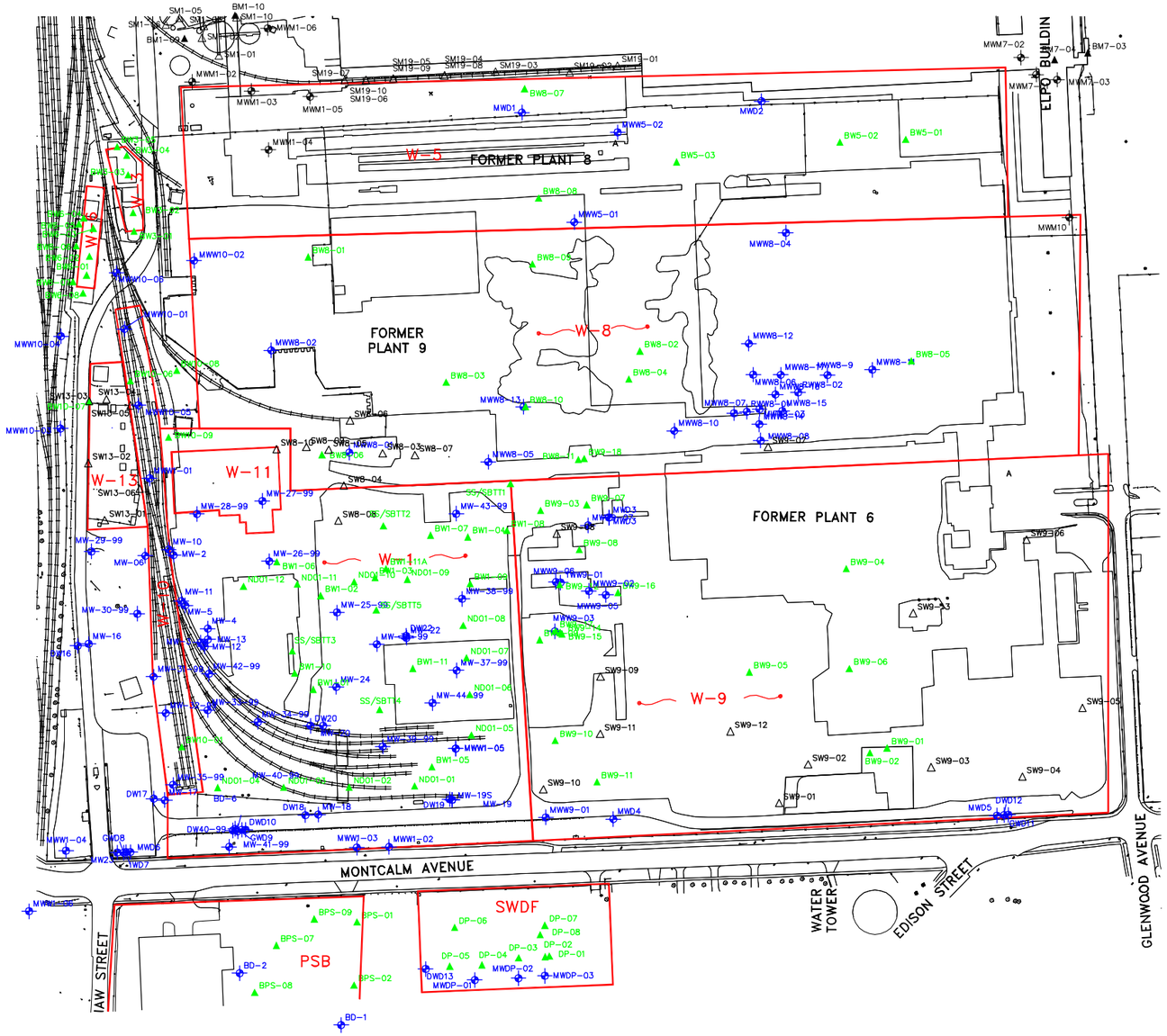
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

FIERO SAMPLE LOCATIONS

ENCORE

FIGURE
4-1

X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF
P: PAGESET/PLT-DL
11/25/03 SYR-85-GMS DJP GMS
64411210/RFI-ADDM/64411C01.DWG



SITE LOCATION

LEGEND:

- MWM16-02 — MONITORING WELL SAMPLE LOCATION
- BW5-01 — SOIL BORING LOCATION
- SW13-05 — SURFACE SOIL SAMPLE LOCATION
- FENCED AREA
- APPROXIMATE AOI AREA

W-1 = WEST YARD
W-3 = FORMER PLANT 8 FLAMMABLE LIQUID STORAGE TANK FARM
W-5 = FORMER PLANT 8 BASEMENT AST AREA
W-6 = FORMER PLANT 8 FLAMMABLE MATERIALS STORAGE AREA
W-8 = FORMER PLANT 9 BASEMENT AST
W-9 = FORMER CENTRAL FOUNDRY
W-10 = RAILROAD MARSHALLING AREA
W-11 = SALVAGE YARD SUMP DRAIN
W-13 = MONTCALM SUBSTATION
SWDF = STORM WATER DETENTION FACILITY
PSB = PONTIAC SCHOOL BOARD

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.

0 150' 300'
GRAPHIC SCALE

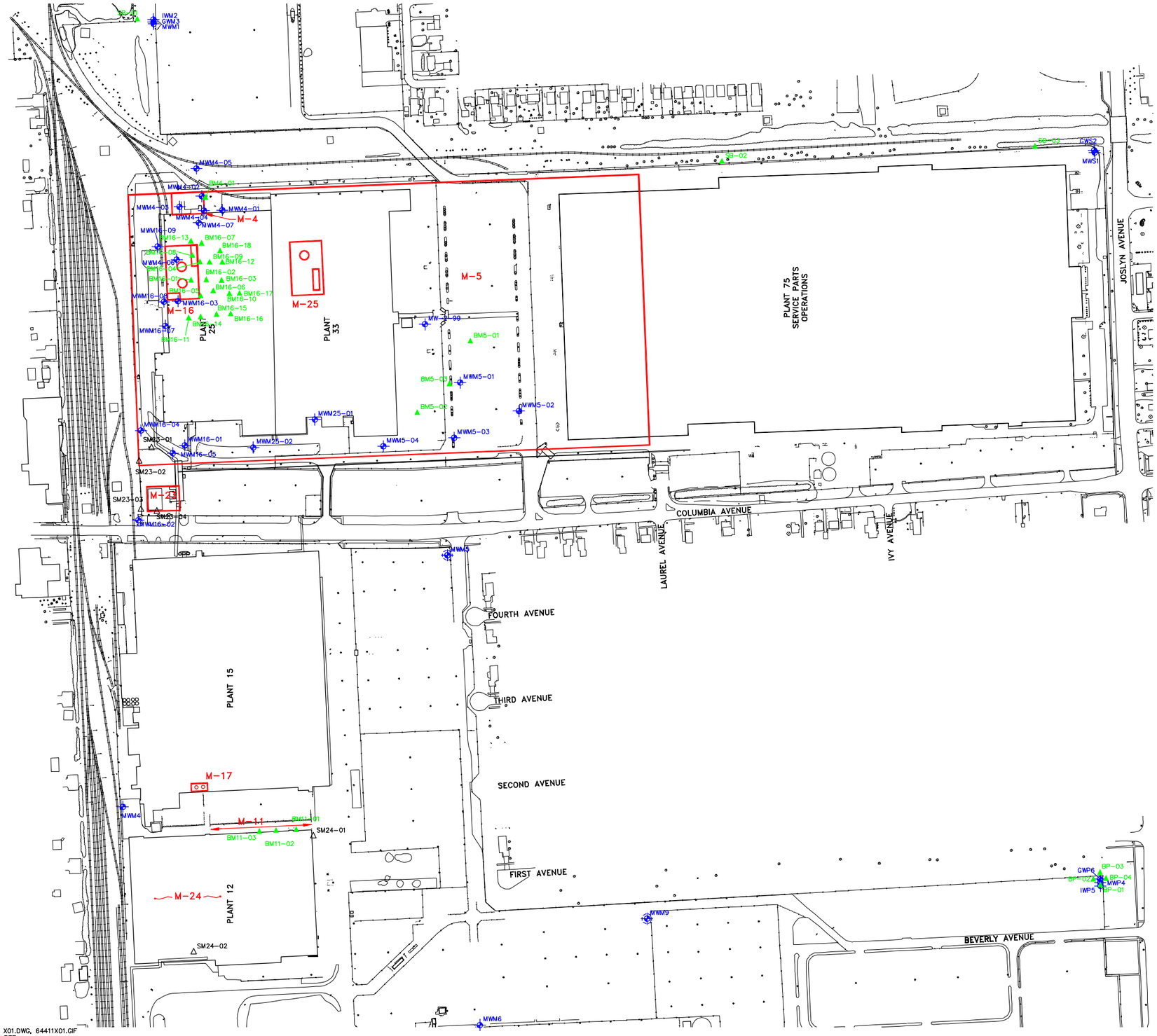
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

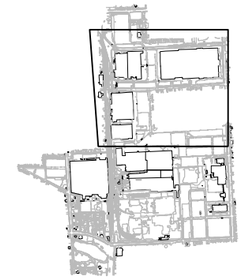
DA AND SWDF SAMPLE LOCATIONS

ENCORE

FIGURE 4-2

X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF
P: PAGESET/PLT-DL
11/26/03 SYR-85-GMS DJP GMS
64411210/RFI-ADDM/64411C02.DWG





SITE LOCATION

MWM16-02 MONITORING WELL SAMPLE LOCATION

MWM9 ABANDONED MONITORING WELL LOCATION

BM5-02 SOIL BORING SAMPLE LOCATION

SM23-03 SURFACE SOIL SAMPLE LOCATION

APPROXIMATE AOI AREA

M-4 = PLANT 25 FORMER GASOLINE UST AND CURRENT GASOLINE AST
M-5 = FORMER A2 FILL AREA
M-11 = PLANT 12 FORMER GASOLINE STORAGE AREA
M-16 = PLANT 25 BASEMENT SUMP AREA
M-17 = FORMER GASOLINE AST
M-23 = ELECTRICAL SUBSTATION
M-24 = PCB SPILL AREA
M-25 = PLANT 33 BASEMENT SUMP AREA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.

0 200' 400'
GRAPHIC SCALE

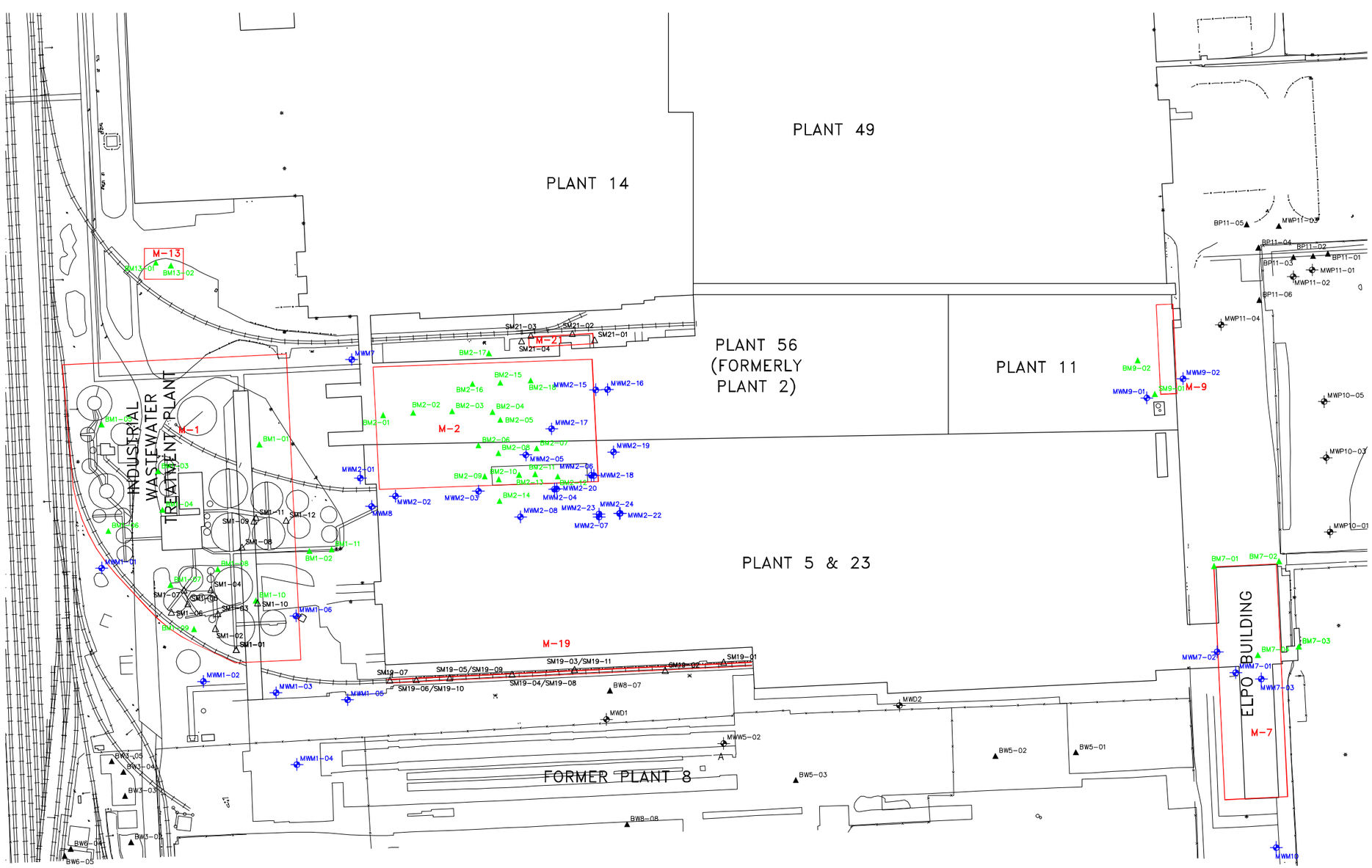
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

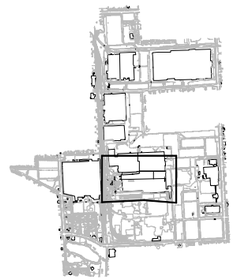
MFD (NORTHERN SECTION) AND SPO SAMPLING LOCATIONS

ENCORE

FIGURE 4-3

X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF
P: PAGESET/PLT-DL
11/25/03 SYR-85-GMS DJP GMS
6441121G/RFI-ADDM/64411C03.DWG





SITE LOCATION

LEGEND:

- MWM16-02 ⊕ MONITORING WELL SAMPLE LOCATION
- BM5-02 ▲ SOIL BORING SAMPLE LOCATION
- SM23-03 △ SURFACE SOIL SAMPLE LOCATION
- □ APPROXIMATE AOI AREA
- M-1 = POWERHOUSE BASEMENT SUMPS
- M-2 = FORMER PLATING OPERATION AREA
- M-7 = ELPO BUILDING/FLAMMABLE LIQUID STORAGE BUILDING
- M-9 = PLANT 11 OIL CONTAINMENT AREA
- M-13 = FORMER FUEL AST
- M-19 = ELECTRICAL SUBSTATION
- M-21 = RAILROAD TRACKS

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.

0 100' 200'
GRAPHIC SCALE

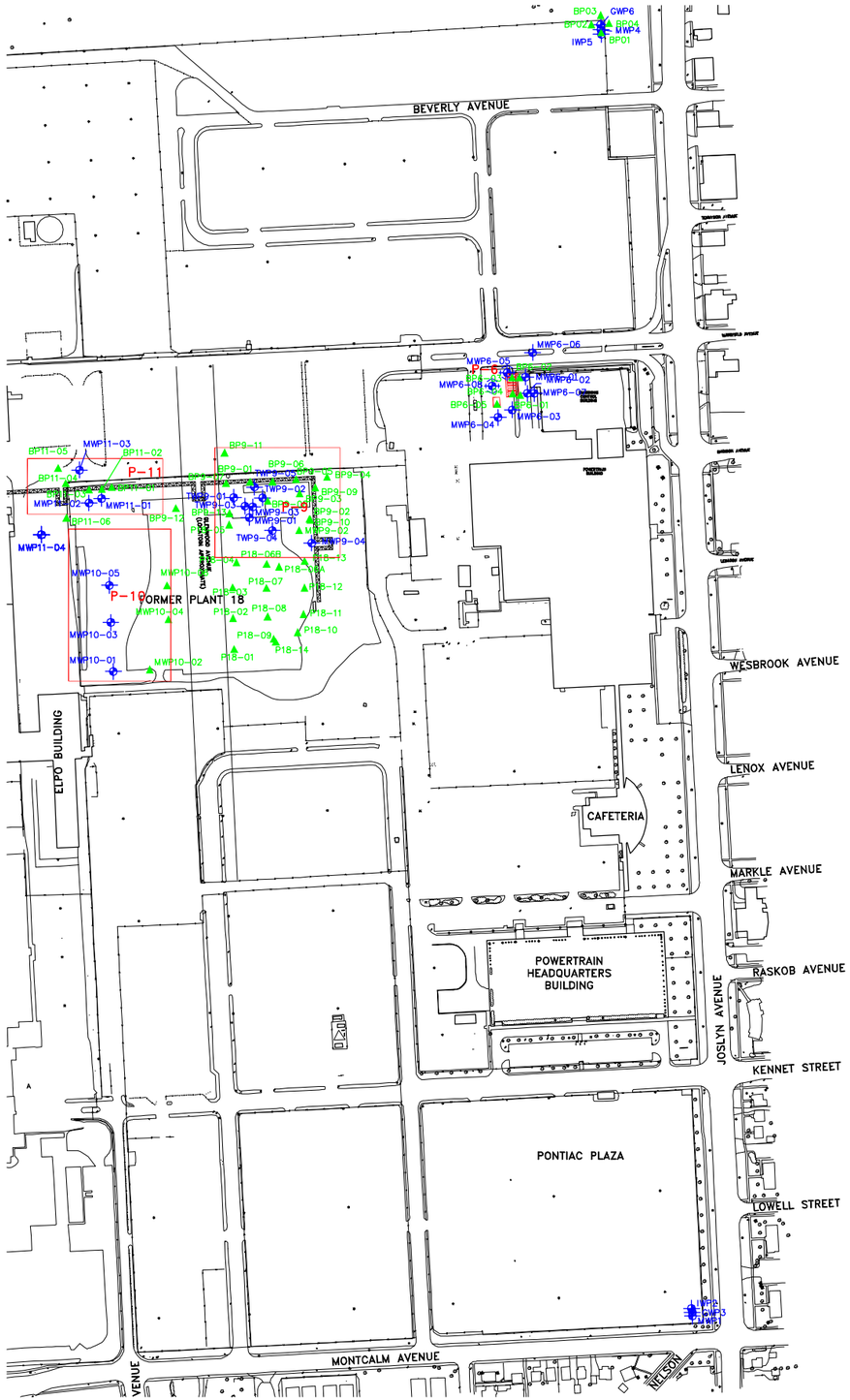
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

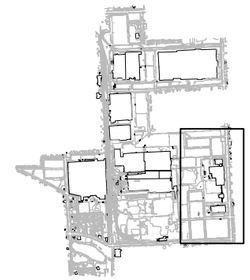
MFD (SOUTHERN SECTION) SAMPLE LOCATIONS

ENCORE

FIGURE
4-4

X: 64411X0D, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF
P: PAGESET/PLT-DL
11/25/03 SYR-85-GMS DJP GMS
64411210/RFI-ADDM/64411C04.DWG





SITE LOCATION

LEGEND:

- MWM16-02 — MONITORING WELL SAMPLE LOCATION
- MWP6-05 — ABANDONED MONITORING WELL SAMPLE LOCATION
- BM5-02 — SOIL BORING SAMPLE LOCATION
- APPROXIMATE AOI AREA
- P-6 = FORMER UST FARM AND STUDDARD SOLVENT AST
- P-9 = PIPELINE RELEASE
- P-10 = FORMER PLANT 18
- P-11 = TRESTLE PIPELINE RELEASE

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.

0 200' 400'
GRAPHIC SCALE

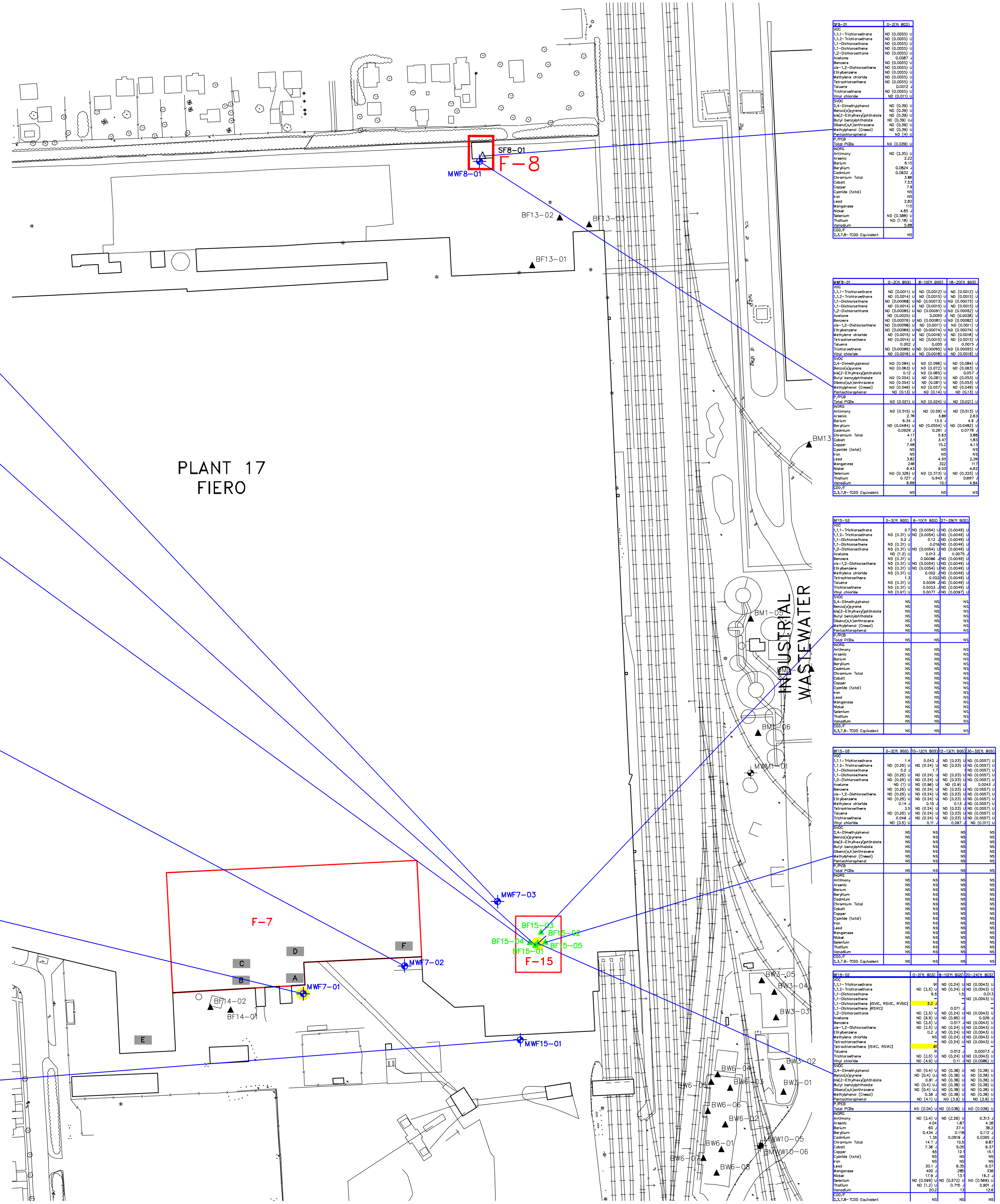
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

POWERTRAIN SAMPLE LOCATIONS

ENCORE

FIGURE 4-5

X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF
P: PAGESET/PLT-DL
11/26/03 SYR-85-GMS DJP GMS
64411210/RFI-ADDM/64411C05.DWG



BF15-01	0-2(ft BGS)	8-10(ft BGS)	18-20(ft BGS)
VOC			
1,1,1-Trichloroethane	0.96/2.5	ND (0.0086) U	ND (0.00077) U
1,1,2-Trichloroethane	ND (0.016) U/ND (0.032) U	ND (0.014) U	ND (0.001) U
1,1-Dichloroethane	0.24 J/0.53	1	ND (0.00048) U
1,1-Dichloroethene	–	ND (0.015) U	ND (0.001) U
1,1-Dichloroethene {RSVIC}	0.066 J/0.15 J	–	–
1,2-Dichloroethane	ND (0.011) U/ND (0.022) U	ND (0.0095) U	ND (0.00061) U
Acetone	0.14 J/ND (0.15) U	ND (0.065) U	0.0065 J
Benzene	ND (0.017) U/ND (0.034) U	ND (0.015) U	ND (0.00054) U
cis-1,2-Dichloroethene	ND (0.016) U/ND (0.032) U	ND (0.014) U	ND (0.0007) U
Ethylbenzene	ND (0.014) U/ND (0.028) U	ND (0.012) U	ND (0.00049) U
Methylene chloride	ND (0.042) U/ND (0.082) U	0.093 J	ND (0.0011) U
Tetrachloroethene	5.7	0.085 J	ND (0.001) U
Tetrachloroethene {RSVIC}	13	–	–
Toluene	ND (0.01) U/ND (0.02) U	ND (0.0087) U	0.0007 J
Trichloroethene	0.043 J/0.085 J	0.09 J	ND (0.00063) U
Vinyl chloride	ND (0.011) U/ND (0.022) U	ND (0.0095) U	ND (0.0012) U
SVOC			
2,4-Dimethylphenol	ND (0.088) U/ND (0.085) U	ND (0.092) U	ND (0.09) U
Benzo(a)pyrene	ND (0.066) U/ND (0.064) U	ND (0.069) U	ND (0.068) U
bis(2-Ethylhexyl)phthalate	ND (0.059) U/ND (0.057) U	ND (0.062) U	0.32 J
Butyl benzylphthalate	ND (0.056) U/ND (0.054) U	ND (0.059) U	ND (0.057) U
Dibenz(a,h)anthracene	ND (0.056) U/ND (0.054) U	ND (0.059) U	ND (0.057) U
Methylphenol (Cresol)	ND (0.052) U/ND (0.05) U	ND (0.054) U	ND (0.053) U
Pentachlorophenol	ND (0.13) U/ND (0.13) U	ND (0.14) U	ND (0.14) U
P/PCB			
Total PCBs	ND (0.022) U/ND (0.021) U	ND (0.023) U	ND (0.11) U
INORG			
Antimony	ND (0.539) U/ND (0.521) U	ND (0.566) U	ND (0.552) U
Arsenic	4.23/4.31	5.45	8.54
Barium	11.6/13.4	41.9	48.3
Beryllium	0.154/0.166	0.423	0.384
Cadmium	0.206 J/0.173 J	0.245 J	0.258 J
Chromium Total	5.27/7.04	12.5	12.1
Cobalt	4.22/4.44	7.64	6.91
Copper	12.3/12	14.8	16.4
Cyanide (total)	NS/NS	NS	NS
Iron	NS/NS	NS	NS
Lead	5.43/8.66	7.22	6.8
Manganese	234/242	582	341
Nickel	8.12/8.6	17.8	18.1
Selenium	ND (0.341) U/ND (0.33) U	ND (0.358) U	ND (0.349) U
Thallium	0.564 J/ND (0.532) U	ND (0.577) U	ND (0.564) U
Vanadium	8.9/8.2	17.5	15.7
CDD/F			
2,3,7,8-TCDD Equivalent	NS/NS	NS	NS

MWF7-03	7-9(ft BGS)	11-13(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0052) U	ND (0.0061) U
1,1,2-Trichloroethane	ND (0.0052) U	ND (0.0061) U
1,1-Dichloroethane	ND (0.0052) U	ND (0.0061) U
1,1-Dichloroethene	ND (0.0052) U	ND (0.0061) U
1,2-Dichloroethane	ND (0.0052) U	ND (0.0061) U
Acetone	0.019 J	0.012 J
Benzene	ND (0.0052) U	ND (0.0061) U
cis-1,2-Dichloroethene	ND (0.0052) U	ND (0.0061) U
Ethylbenzene	ND (0.0052) U	ND (0.0061) U
Methylene chloride	ND (0.0052) U	ND (0.0061) U
Tetrachloroethene	ND (0.0052) U	ND (0.0061) U
Toluene	0.00038 J	0.0006 J
Trichloroethene	ND (0.0052) U	ND (0.0061) U
Vinyl chloride	ND (0.01) U	ND (0.012) U
SVOC		
2,4-Dimethylphenol	ND (0.38) U	ND (0.35) U
Benzo(a)pyrene	ND (0.38) U	ND (0.35) U
bis(2-Ethylhexyl)phthalate	ND (0.38) U	ND (0.35) U
Butyl benzylphthalate	ND (0.38) U	ND (0.35) U
Dibenz(a,h)anthracene	ND (0.38) U	ND (0.35) U
Methylphenol (Cresol)	ND (0.38) U	ND (0.35) U
Pentachlorophenol	ND (4) U	ND (3.6) U
P/PCB		
Total PCBs	ND (0.038) U	ND (0.035) U
INORG		
Antimony	0.434 J	ND (2.1) UJ
Arsenic	8.96	1.01
Barium	35.7	13.1
Beryllium	0.176 J	ND (0.105) UJ
Cadmium	ND (0.583) U	ND (0.524) U
Chromium Total	14.2 J	4.76 J
Cobalt	7.97	3.41
Copper	18.8 J	7.3 J
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	7.87 J	3.83 J
Manganese	284	101
Nickel	20.5	7.87
Selenium	ND (0.583) U	ND (0.524) U
Thallium	1.14 J	0.379 J
Vanadium	19.1 J	7.76 J
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

BF15-04	0-2(ft BGS)	6-8(ft BGS)	26-28(ft BGS)
VOC			
1,1,1-Trichloroethane	2.1	ND (0.3) U	ND (0.0058) U
1,1,2-Trichloroethane	ND (0.69) U	ND (0.3) U	ND (0.0058) U
1,1-Dichloroethane	1.1	0.51	ND (0.0058) U
1,1-Dichloroethene	ND (0.69) U	ND (0.3) U	ND (0.0058) U
1,2-Dichloroethane	ND (0.69) U	ND (0.3) U	ND (0.0058) U
Acetone	ND (2.8) U	ND (1.2) U	0.0059 J
Benzene	ND (0.69) U	ND (0.3) U	ND (0.0058) U
cis-1,2-Dichloroethene	ND (0.69) U	ND (0.3) U	ND (0.0058) U
Ethylbenzene	ND (0.69) U	ND (0.3) U	ND (0.0058) U
Methylene chloride	ND (0.69) U	ND (0.3) U	ND (0.0058) U
Tetrachloroethene	–	0.13 J	ND (0.0058) U
Tetrachloroethene {RSVIC}	21	–	–
Toluene	ND (0.69) U	ND (0.3) U	ND (0.0058) U
Trichloroethene	0.21 J	0.046 J	ND (0.0058) U
Vinyl chloride	ND (1.4) U	ND (0.61) U	ND (0.012) U
SVOC			
2,4-Dimethylphenol	NS	NS	NS
Benzo(a)pyrene	NS	NS	NS
bis(2-Ethylhexyl)phthalate	NS	NS	NS
Butyl benzylphthalate	NS	NS	NS
Dibenz(a,h)anthracene	NS	NS	NS
Methylphenol (Cresol)	NS	NS	NS
Pentachlorophenol	NS	NS	NS
P/PCB			
Total PCBs	NS	NS	NS
INORG			
Antimony	NS	NS	NS
Arsenic	NS	NS	NS
Barium	NS	NS	NS
Beryllium	NS	NS	NS
Cadmium	NS	NS	NS
Chromium Total	NS	NS	NS
Cobalt	NS	NS	NS
Copper	NS	NS	NS
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	NS	NS	NS
Manganese	NS	NS	NS
Nickel	NS	NS	NS
Selenium	NS	NS	NS
Thallium	NS	NS	NS
Vanadium	NS	NS	NS
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWF7-02	0-2(ft BGS)	8-10(ft BGS)	18-20(ft BGS)
VOC			
1,1,1-Trichloroethane	0.0045 J	0.44	0.033
1,1,2-Trichloroethane	ND (0.0052) U	ND (0.25) U	ND (0.006) U
1,1-Dichloroethane	ND (0.0052) U	0.029 J	0.006
1,1-Dichloroethene	ND (0.0052) U	ND (0.25) U	0.0091
1,2-Dichloroethane	ND (0.0052) U	ND (0.25) U	ND (0.006) U
Acetone	ND (0.021) U	ND (0.99) U	ND (0.024) U
Benzene	ND (0.0052) U	ND (0.25) U	ND (0.006) U
cis-1,2-Dichloroethene	ND (0.0052) U	ND (0.25) U	ND (0.006) U
Ethylbenzene	ND (0.0052) U	0.014 J	ND (0.006) U
Methylene chloride	ND (0.0052) U	ND (0.25) U	ND (0.006) U
Tetrachloroethene	0.0028 J	0.93	0.047
Toluene	0.00071 J	ND (0.25) U	0.0015 J
Trichloroethene	ND (0.0052) U	0.055 J	0.0028 J
Vinyl chloride	ND (0.01) U	ND (0.5) U	ND (0.012) U
SVOC			
2,4-Dimethylphenol	ND (0.34) U	ND (0.37) U	ND (0.42) U
Benzo(a)pyrene	ND (0.34) U	ND (0.37) U	ND (0.42) U
bis(2-Ethylhexyl)phthalate	ND (0.34) U	ND (0.37) U	3.9
Butyl benzylphthalate	ND (0.34) U	ND (0.37) U	ND (0.42) U
Dibenz(a,h)anthracene	ND (0.34) U	ND (0.37) U	ND (0.42) U
Methylphenol (Cresol)	ND (0.34) U	ND (0.37) U	ND (0.42) U
Pentachlorophenol	ND (3.5) U	ND (3.8) U	ND (4.3) U
P/PCB			
Total PCBs	ND (0.034) U	ND (0.037) U	ND (0.042) U
INORG			
Antimony	ND (2.06) U	ND (2.23) U	ND (2.55) U
Arsenic	3.35	4.94	4.11
Barium	9.55	27.6	15.9
Beryllium	ND (0.103) U	0.0649 J	ND (0.128) U
Cadmium	0.114 J	0.151 J	0.177 J
Chromium Total	4.74	9.84	8.17
Cobalt	2.31	5.88	3.99
Copper	8.64	14.6	16.5
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	5.7	5.23	5.46
Manganese	170	273	303
Nickel	6.15 J	14.9 J	10.7 J
Selenium	ND (0.515) U	ND (0.557) U	0.511 J
Thallium	ND (1.03) U	ND (1.11) U	ND (1.28) U
Vanadium	6.46	14.7	10.9
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWF7-01	0-2(ft BGS)	8-10(ft BGS)	20-22(ft BGS)
VOC			
1,1,1-Trichloroethane	1.8	1.8	0.018
1,1,2-Trichloroethane	ND (0.34) U	ND (0.48) U	ND (0.0063) U
1,1-Dichloroethane	ND (0.34) U	ND (0.48) U	0.0019 J
1,1-Dichloroethene	ND (0.34) U	ND (0.48) U	ND (0.0063) U
1,2-Dichloroethane	ND (0.34) U	ND (0.48) U	ND (0.0063) U
Acetone	0.68 J	0.71 J	ND (0.025) U
Benzene	0.16 J	0.13 J	ND (0.0063) U
cis-1,2-Dichloroethene	ND (0.34) U	ND (0.48) U	ND (0.0063) U
Ethylbenzene	0.25 J	0.22 J	ND (0.0063) U
Methylene chloride	ND (0.34) U	ND (0.48) U	ND (0.0063) U
Tetrachloroethene	ND (0.34) U	0.49	0.015
Toluene	1.5	1.1	0.0024 J
Trichloroethene	ND (0.34) U	ND (0.48) U	ND (0.0063) U
Vinyl chloride	ND (0.68) U	ND (0.96) U	ND (0.013) U
SVOC			
2,4-Dimethylphenol	ND (0.36) U	ND (0.49) U	ND (0.35) U
Benzo(a)pyrene	0.4	0.35 J	ND (0.35) U
bis(2-Ethylhexyl)phthalate	0.11 J	0.31 J	ND (0.35) U
Butyl benzylphthalate	0.27 J	0.4 J	ND (0.35) U
Dibenz(a,h)anthracene	0.067 J	ND (0.49) UJ	ND (0.35) U
Methylphenol (Cresol)	ND (0.36) U	ND (0.49) U	ND (0.35) U
Pentachlorophenol	ND (3.7) U	ND (5) U	ND (3.6) U
P/PCB			
Total PCBs	1.8545 J	1.743 J	ND (0.035) U
INORG			
Antimony	0.646 J	3.08	ND (2.14) U
Arsenic	13.6	–	3.75
Arsenic {RDC}	–	39.4	–
Barium	76.4	205	6.82
Beryllium	0.365	0.995	ND (0.107) U
Cadmium	0.289 J	0.412 J	0.0936 J
Chromium Total	38.9	–	4.64
Chromium Total {IPSIC, RPSIC}	–	335	–
Cobalt	6.3	7.16	2.21
Copper	29.7	39.1	4.18
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	92.6	–	2.6
Lead {RDC}	–	496	–
Manganese	246	236	202
Nickel	29.3 J	134 J	5.55 J
Selenium	1.02	10.5	ND (0.535) U
Thallium	ND (1.1) U	0.912 J	ND (1.07) U
Vanadium	15.1	21.5	4.89
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWF15-01	0-2(ft BGS)	8-10(ft BGS)	18-20(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.001) U	0.066 J	ND (0.0015) U
1,1,2-Trichloroethane	ND (0.0013) U	ND (0.018) U	ND (0.002) U
1,1-Dichloroethane	ND (0.00064) U	ND (0.015) U	ND (0.00097) U
1,1-Dichloroethene	ND (0.0013) U	ND (0.019) U	ND (0.002) U
1,2-Dichloroethane	ND (0.0008) U	ND (0.012) U	ND (0.0012) U
Acetone	ND (0.0023) U	ND (0.082) U	ND (0.0035) U
Benzene	ND (0.00072) U	0.04 J	ND (0.0011) U
cis-1,2-Dichloroethene	ND (0.00093) U	ND (0.018) U	ND (0.0014) U
Ethylbenzene	ND (0.00065) U	0.028 J	ND (0.00099) U
Methylene chloride	ND (0.0014) U	0.096 J	ND (0.0022) U
Tetrachloroethene	0.0017 J	1.2	0.017
Toluene	0.0017 J	0.18 J	0.0037 J
Trichloroethene	ND (0.00084) U	0.043 J	ND (0.0013) U
Vinyl chloride	ND (0.0015) U	ND (0.012) U	ND (0.0023) U
SVOC			
2,4-Dimethylphenol	ND (0.083) U	ND (0.096) U	ND (0.089) U
Benzo(a)pyrene	ND (0.062) U	ND (0.072) U	ND (0.067) U
bis(2-Ethylhexyl)phthalate	ND (0.056) U	0.29 J	0.96
Butyl benzylphthalate	ND (0.053) U	ND (0.061) U	ND (0.057) U
Dibenz(a,h)anthracene	ND (0.053) U	ND (0.061) U	ND (0.057) U
Methylphenol (Cresol)	ND (0.049) U	ND (0.056) U	ND (0.052) U
Pentachlorophenol	ND (0.12) U	ND (0.14) U	ND (0.13) U
P/PCB			
Total PCBs	0.096 J	ND (0.024) U	ND (0.022) U
INORG			
Antimony	ND (0.509) U	ND (0.585) U	ND (0.546) U
Arsenic	3.44	–	7.21
Arsenic {RDC}	–	29.3	–
Barium	6.66	24.4	8.28
Beryllium	0.115	0.161	0.243
Cadmium	0.287 J	0.169 J	0.178 J
Chromium Total	3.51	6.31	15.6
Cobalt	2.01	1.87	1.94
Copper	7.84	25.5	21.6
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	3.67	10.4	5.12
Manganese	137	46.5	44
Nickel	6.28	5.38	5.38
Selenium	ND (0.322) U	3.72	ND (0.345) U
Thallium	ND (0.52) U	ND (0.597) U	ND (0.557) U
Vanadium	6.49	14.5	7.89
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

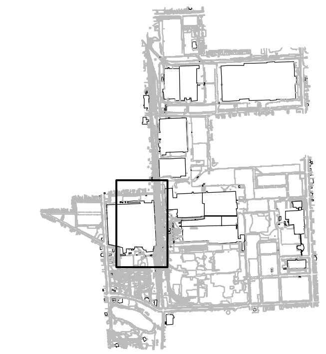
SF8-01	0-2(ft BGS)
VOC	
1,1,1-Trichloroethane	ND (0.0055) U
1,1,2-Trichloroethane	ND (0.0055) U
1,1-Dichloroethane	ND (0.0055) U
1,1-Dichloroethene	ND (0.0055) U
1,2-Dichloroethane	ND (0.0055) U
Acetone	0.0087 J
Benzene	ND (0.0055) U
cis-1,2-Dichloroethene	ND (0.0055) U
Ethylbenzene	ND (0.0055) U
Methylene chloride	ND (0.0055) U
Tetrachloroethene	ND (0.0055) U
Toluene	0.0012 J
Trichloroethene	ND (0.0055) U
Vinyl chloride	ND (0.011) U
SVOC	
2,4-Dimethylphenol	ND (0.39) U
Benzo(a)pyrene	ND (0.39) U
bis(2-Ethylhexyl)phthalate	ND (0.39) U
Butyl benzylphthalate	ND (0.39) UJ
Dibenz(a,h)anthracene	ND (0.39) U
Methylphenol (Cresol)	ND (0.39) U
Pentachlorophenol	ND (4) U
P/PCB	
Total PCBs	ND (0.039) U
INORG	
Antimony	ND (2.35) U
Arsenic	2.22
Barium	6.15
Beryllium	0.0824 J
Cadmium	0.0932 J
Chromium Total	3.86
Cobalt	7.53
Copper	7.9
Cyanide (total)	NS
Iron	NS
Lead	2.82
Manganese	115
Nickel	4.85 J
Selenium	ND (0.588) U
Thallium	ND (1.18) U
Vanadium	5.88
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWF8-01	0-2(ft BGS)	8-10(ft BGS)	18-20(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0011) U	ND (0.0012) U	ND (0.0012) U
1,1,2-Trichloroethane	ND (0.0014) U	ND (0.0015) U	ND (0.0015) U
1,1-Dichloroethane	ND (0.00068) U	ND (0.00073) U	ND (0.00073) U
1,1-Dichloroethene	ND (0.0014) U	ND (0.0015) U	ND (0.0015) U
1,2-Dichloroethane	ND (0.00085) U	ND (0.00091) U	ND (0.00092) U
Acetone	ND (0.0025) U	0.0095 J	ND (0.0026) U
Benzene	ND (0.00076) U	ND (0.00081) U	ND (0.00082) U
cis-1,2-Dichloroethene	ND (0.00098) U	ND (0.0011) U	ND (0.0011) U
Ethylbenzene	ND (0.00069) U	ND (0.00074) U	ND (0.00074) U
Methylene chloride	ND (0.0015) U	ND (0.0016) U	ND (0.0016) U
Tetrachloroethene	ND (0.0014) U	ND (0.0015) U	ND (0.0015) U
Toluene	0.002 J	0.005 J	0.0015 J
Trichloroethene	ND (0.00089) U	ND (0.00095) U	ND (0.00095) U
Vinyl chloride	ND (0.0016) U	ND (0.0018) U	ND (0.0018) U
SVOC			
2,4-Dimethylphenol	ND (0.084) U	ND (0.096) U	ND (0.084) U
Benzo(a)pyrene	ND (0.063) U	ND (0.072) U	ND (0.083) U
bis(2-Ethylhexyl)phthalate	0.12 J	ND (0.065) U	0.057 J
Butyl benzylphthalate	ND (0.054) U	ND (0.061) U	ND (0.053) U
Dibenz(a,h)anthracene	ND (0.054) U	ND (0.061) U	ND (0.053) U
Methylphenol (Cresol)	ND (0.049) U	ND (0.057) U	ND (0.049) U
Pentachlorophenol	ND (0.13) U	ND (0.14) U	ND (0.13) U
P/PCB			
Total PCBs	ND (0.021) U	ND (0.024) U	ND (0.021) U
INORG			
Antimony	ND (0.515) U	ND (0.59) U	ND (0.513) U
Arsenic	2.76	3.86	2.63
Barium	6.34 J	13.5 J	4.8 J
Beryllium	ND (0.0484) U	ND (0.0554) U	ND (0.0482) U
Cadmium	0.0929 J	0.261 J	0.0778 J
Chromium Total	4.17	5.63	3.88
Cobalt	2.1	3.47	1.83
Copper	7.48	15.2	4.13
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	3.82	4.95	2.26
Manganese	246	322	117
Nickel	6.43	9.03	4.62
Selenium	ND (0.326) U	ND (0.373) U	ND (0.325) U
Thallium	0.727 J	0.943 J	0.697 J
Vanadium	6.68	10.1	4.84
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

BF15-03	0-2(ft BGS)	8-10(ft BGS)	27-29(ft BGS)
VOC			
1,1,1-Trichloroethane	0.7	ND (0.0054) U	ND (0.0049) U
1,1,2-Trichloroethane	ND (0.31) U	ND (0.0054) U	ND (0.0049) U
1,1-Dichloroethane	0.2 J	0.12 J	ND (0.0049) U
1,1-Dichloroethene	ND (0.31) U	0.016	ND (0.0049) U
1,2-Dichloroethane	ND (0.31) U	ND (0.0054) U	ND (0.0049) U
Acetone	ND (1.2) U	0.013 J	0.0075 J
Benzene	ND (0.31) U	0.00086 J	ND (0.0049) U
cis-1,2-Dichloroethene	ND (0.31) U	ND (0.0054) U	ND (0.0049) U
Ethylbenzene	ND (0.31) U	ND (0.0054) U	ND (0.0049) U
Methylene chloride	ND (0.31) U	0.002 J	ND (0.0049) U
Tetrachloroethene	1.3	0.022	ND (0.0049) U
Toluene	ND (0.31) U	0.0009 J	ND (0.0049) U
Trichloroethene	ND (0.31) U	0.0023 J	ND (0.0049) U
Vinyl chloride	ND (0.61) U	0.0077 J	ND (0.0097) U
SVOC			
2,4-Dimethylphenol	NS	NS	NS
Benzo(a)pyrene	NS	NS	NS
bis(2-Ethylhexyl)phthalate	NS	NS	NS
Butyl benzylphthalate	NS	NS	NS
Dibenz(a,h)anthracene	NS	NS	NS
Methylphenol (Cresol)	NS	NS	NS
Pentachlorophenol	NS	NS	NS
P/PCB			
Total PCBs	NS	NS	NS
INORG			
Antimony	NS	NS	NS
Arsenic	NS	NS	NS
Barium	NS	NS	NS
Beryllium	NS	NS	NS
Cadmium	NS	NS	NS
Chromium Total	NS	NS	NS
Cobalt	NS	NS	NS
Copper	NS	NS	NS
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	NS	NS	NS
Manganese	NS	NS	NS
Nickel	NS	NS	NS
Selenium	NS	NS	NS
Thallium	NS	NS	NS
Vanadium	NS	NS	NS
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

BF15-05	0-2(ft BGS)	10-12(ft BGS)	12-13(ft BGS)	30-32(ft BGS)
VOC				
1,1,1-Trichloroethane	1.4	0.043 J	ND (0.23) U	ND (0.0057) U
1,1,2-Trichloroethane	ND (0.25) U	ND (0.24) U	ND (0.23) U	ND (0.0057) U
1,1-Dichloroethane	0.2 J	1.7	1	ND (0.0057) U
1,1-Dichloroethene	ND (0.25) U	ND (0.24) U	ND (0.23) U	ND (0.0057) U
1,2-Dichloroethane	ND (0.25) U	ND (0.24) U	ND (0.23) U	ND (0.0057) U
Acetone	ND (1) U	ND (0.96) U	ND (0.9) U	0.0043 J
Benzene	ND (0.25) U	ND (0.24) U	ND (0.23) U	ND (0.0057) U
cis-1,2-Dichloroethene	ND (0.25) U	ND (0.24) U	ND (0.23) U	ND (0.0057) U
Ethylbenzene	ND (0.25) U	ND (0.24) U	ND (0.23) U	ND (0.0057) U
Methylene chloride	0.14 J	0.15 J	0.13 J	ND (0.0057) U
Tetrachloroethene	3.5	ND (0.24) U	ND (0.23) U	ND (0.0057) U
Toluene	ND (0.25) U	ND (0.24) U	ND (0.23) U	ND (0.0057) U
Trichloroethene	0.048 J	ND (0.24) U	ND (0.23) U	ND (0.0057) U
Vinyl chloride	ND (0.5) U	0.11 J	0.097 J	ND (0.011) U
SVOC				
2,4-Dimethylphenol	NS	NS	NS	NS
Benzo(a)pyrene	NS	NS	NS	NS
bis(2-Ethylhexyl)phthalate	NS	NS	NS	NS
Butyl benzylphthalate	NS	NS	NS	NS
Dibenz(a,h)anthracene	NS	NS	NS	NS
Methylphenol (Cresol)	NS	NS	NS	NS
Pentachlorophenol	NS	NS	NS	NS
P/PCB				
Total PCBs	NS	NS	NS	NS
INORG				
Antimony	NS	NS	NS	NS
Arsenic	NS	NS	NS	NS
Barium	NS	NS	NS	NS
Beryllium	NS	NS	NS	NS
Cadmium	NS	NS	NS	NS
Chromium Total	NS	NS	NS	NS
Cobalt	NS	NS	NS	NS
Copper	NS	NS	NS	NS
Cyanide (total)	NS	NS	NS	NS
Iron	NS	NS	NS	NS
Lead	NS	NS	NS	NS
Manganese	NS	NS	NS	NS
Nickel	NS	NS	NS	NS
Selenium	NS	NS	NS	NS
Thallium	NS	NS	NS	NS
Vanadium	NS	NS	NS	NS
CDD/F				
2,3,7,8-TCDD Equivalent	NS	NS	NS	NS

BF15-02	0-2(ft BGS)	8-10(ft BGS)	20-24(ft BGS)
VOC			
1,1,1-Trichloroethane	91	ND (0.24) U	ND (0.0043) U
1,1,2-Trichloroethane	ND (2.5) U	ND (0.24) U	ND (0.0043) U
1,1-Dichloroethane	6.5	1.5	0.013
1,1-Dichloroethene	–	–	ND (0.0043) U
1,1-Dichloroethene {ISVIC, RSVIC, RVSIC}	2.2 J	–	–
1,1-Dichloroethene {RSVIC}	–	0.071 J	–
1,2-Dichloroethane	ND (2.5) U	ND (0.24) U	ND (0.0043) U
Acetone	ND (9.9) U	ND (0.95) U	0.026 J
Benzene	ND (2.5) U	0.017 J	ND (0.0043) U
cis-1,2-Dichloroethene	ND (2.5) U	ND (0.24) U	ND (0.0043) U
Ethylbenzene	0.2 J	ND (0.24) U	ND (0.0043) U
Methylene chloride	NS	ND (0.24) U	ND (0.0043) U
Tetrachloroethene	–	ND (0.24) U	ND (0.0043) U
Tetrachloroethene {ISVIC, RSVIC}	81	–	–
Toluene	R	0.012 J	0.00073 J
Trichloroethene	ND (2.5) U	ND (0.24) U	ND (0.0043) U
Vinyl chloride	ND (4.9) U	0.11 J	ND (0.0086) U
SVOC			
2,4-Dimethylphenol	ND (0.4) U	ND (0.38) U	ND (0.38) U
Benzo(a)pyrene	ND (0.4) UJ	ND (0.38) U	ND (0.38) U
bis(2-Ethylhexyl)phthalate	0.91 J	ND (0.38) U	ND (0.38) U
Butyl benzylphthalate	ND (0.4) UJ	ND (0.38) U	ND (0.38) U
Dibenz(a,h)anthracene	ND (0.4) UJ	ND (0.38) U	ND (0.38) U
Methylphenol (Cresol)	0.26 J	ND (0.38) U	ND (0.38) U
Pentachlorophenol	ND (4.1) U	ND (3.9) U	ND (3.9) U
P/PCB			
Total PCBs	ND (0.04) U	ND (0.038) U	ND (0.038) U
INORG			
Antimony	ND (2.4) U	ND (2.29) U	0.313 J
Arsenic	4.04	1.87	4.26
Barium	60 J	37.4	36.2
Beryllium	0.434 J	0.118	0.112 J
Cadmium	1.35	0.0519 J	0.0355 J
Chromium Total	14.7 J	10.5	9.87
Cobalt	7.36 J	5.05	6.37
Copper	65	12.1	15.1
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	30.1 J	6.35	6.07
Manganese	400 J	285	336
Nickel	17.9 J	13.1	18.3 J
Selenium	ND (0.599) U	ND (0.572) U	ND (0.569) U
Thallium	ND (1.2) U	0.715 J	0.901 J
Vanadium	20.2	13	12.6
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS



SITE LOCATION

LEGEND:

MWF7-03 GROUNDWATER MONITORING WELL LOCATION

SM19-07 SOIL BORING LOCATION

SF8-01 SURFACE SOIL SAMPLE LOCATION

CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA

APPROXIMATE AOI AREA

F-7 = POWERHOUSE BASEMENT SUMPS
F-8 = FORMER PAINT SLUDGE PAD
F-15 = OIL/SOLVENT PIT

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

A APPROXIMATE LOCATION OF SUMPS

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONTAMINATION.
7. NS – NOT SAMPLED

0 100' 200'
GRAPHIC SCALE

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

AOIs F-7, F-8 AND F-15 - SOIL

ENCORE

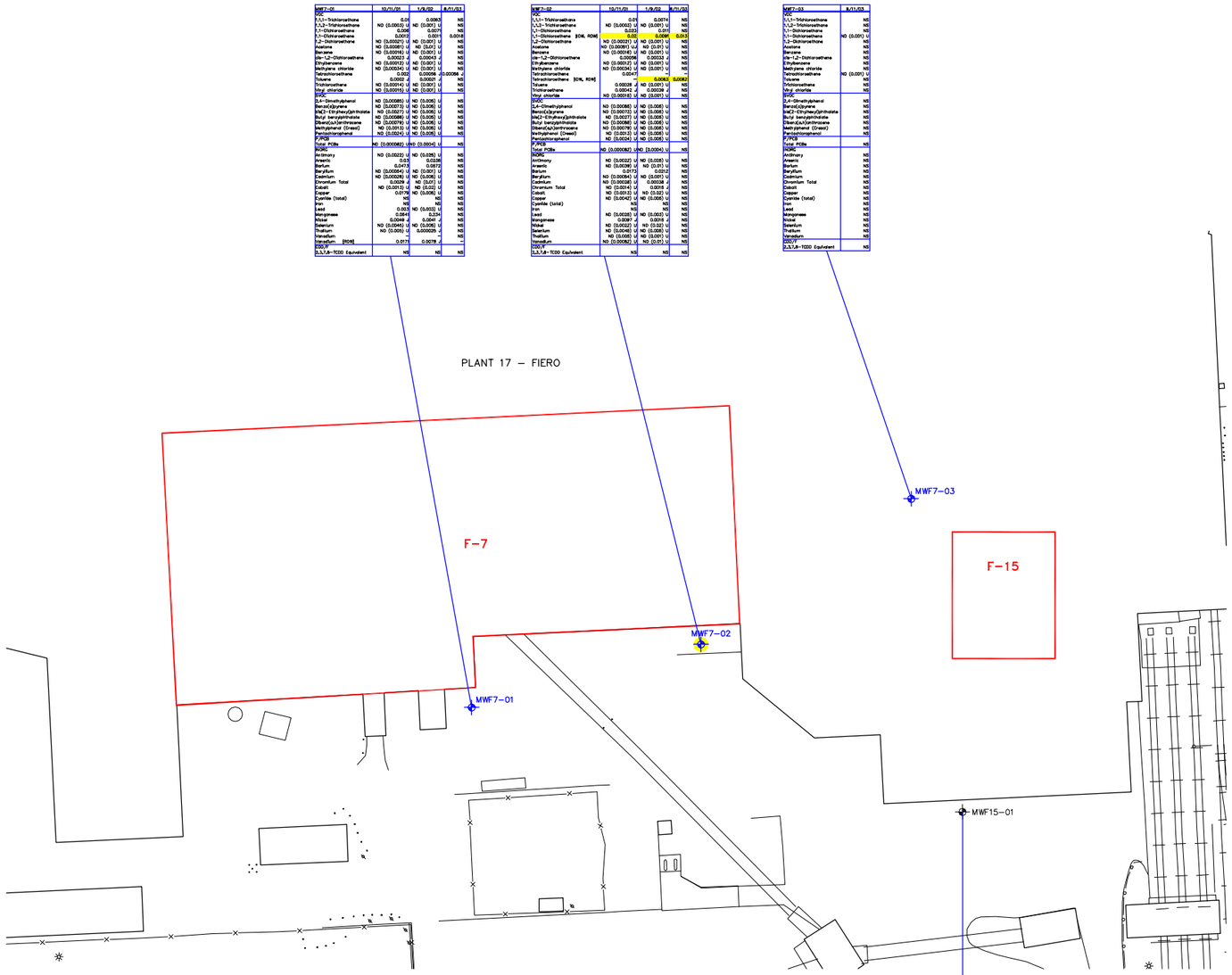
FIGURE 4-6

X: 64411X00, X01.DWG 64411X01.GIF
L: ON=* OFF=REF, DATABOX_POINT
P: PAGESET/PLT-DL
11/25/03 SYR-85-GMS DJP GMS
64411210/RFI-ADDM/64411C06.DWG

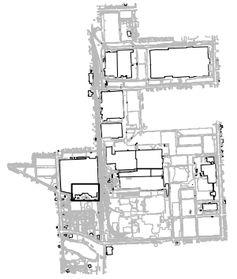
MWF7-05	10/31/01	1/9/02	8/31/03
VOC			
1,1,1-Trichloroethane	0.01	0.0063	NS
1,1,2-Trichloroethane	ND (0.00053) U	ND (0.001) U	NS
1,1-Dichloroethane	0.006	0.0077	NS
1,1-Dichloroethene	0.0012	0.001	0.0018
1,2-Dichloroethane	ND (0.00021) U	ND (0.001) U	NS
Acetone	ND (0.00091) U	ND (0.01) U	NS
Benzene	ND (0.00046) U	ND (0.001) U	NS
cis-1,2-Dichloroethene	0.00023 J	0.00043 J	NS
Ethylbenzene	ND (0.00012) U	ND (0.001) U	NS
Methylene chloride	ND (0.00034) U	ND (0.001) U	NS
Tetrachloroethene	0.002	0.00056 J	0.00056 J
Toluene	0.0002 J	0.00021 J	NS
Trichloroethene	ND (0.00041) U	ND (0.001) U	NS
Vinyl chloride	ND (0.00053) U	ND (0.001) U	NS
SVOC			
2,4-Dimethylphenol	ND (0.00085) U	ND (0.005) U	NS
Benzo(a)pyrene	ND (0.00073) U	ND (0.005) U	NS
bis(2-Ethylhexyl)phthalate	ND (0.00271) U	ND (0.005) U	NS
Butyl benzylphthalate	ND (0.00088) U	ND (0.005) U	NS
Dibenz(a,h)anthracene	ND (0.00079) U	ND (0.005) U	NS
Methylphenol (Cresol)	ND (0.00131) U	ND (0.005) U	NS
Pentachlorophenol	ND (0.00243) U	ND (0.005) U	NS
PCB			
Total PCBs	ND (0.0000882) UND (0.0004) U		NS
HDMC			
Antimony	ND (0.0022) U	ND (0.025) U	NS
Arsenic	0.63	0.0239	NS
Barium	0.0196	0.0213	NS
Beryllium	ND (0.00054) U	ND (0.001) U	NS
Cadmium	ND (0.00028) U	ND (0.005) U	NS
Chromium Total	0.0019 J	ND (0.01) U	NS
Cobalt	ND (0.0013) U	ND (0.02) U	NS
Copper	0.0196	ND (0.005) U	NS
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	0.0021	ND (0.0022) U	NS
Manganese	0.0261	0.024	NS
Nickel	0.0069 J	0.004 J	NS
Selenium	ND (0.0045) U	ND (0.005) U	NS
Thallium	ND (0.005) U	0.000029 J	NS
Vanadium			NS
Vanadium - [RDR]	0.0171	0.0078 J	
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWF7-02	10/31/01	1/9/02	8/31/03
VOC			
1,1,1-Trichloroethane	0.01	0.0074	NS
1,1,2-Trichloroethane	ND (0.00053) U	ND (0.001) U	NS
1,1-Dichloroethane	0.033	0.011	NS
1,1-Dichloroethene [EGL, RDW]	0.02	0.008	0.01
1,2-Dichloroethane	ND (0.00021) U	ND (0.001) U	NS
Acetone	ND (0.00091) U	ND (0.01) U	NS
Benzene	ND (0.00046) U	ND (0.001) U	NS
cis-1,2-Dichloroethene	0.00096	0.00032 J	NS
Ethylbenzene	ND (0.00012) U	ND (0.001) U	NS
Methylene chloride	ND (0.00034) U	ND (0.001) U	NS
Tetrachloroethene	0.0047	0.0013	0.0042
Tetrachloroethene [EGL, RDW]	---	0.005	0.0042
Toluene	0.0039 J	ND (0.001) U	NS
Trichloroethene	0.00098 J	ND (0.001) U	NS
Vinyl chloride	ND (0.00053) U	ND (0.001) U	NS
SVOC			
2,4-Dimethylphenol	ND (0.00085) U	ND (0.005) U	NS
Benzo(a)pyrene	ND (0.00073) U	ND (0.005) U	NS
bis(2-Ethylhexyl)phthalate	ND (0.00271) U	ND (0.005) U	NS
Butyl benzylphthalate	ND (0.00088) U	ND (0.005) U	NS
Dibenz(a,h)anthracene	ND (0.00079) U	ND (0.005) U	NS
Methylphenol (Cresol)	ND (0.00131) U	ND (0.005) U	NS
Pentachlorophenol	ND (0.00243) U	ND (0.005) U	NS
PCB			
Total PCBs	ND (0.0000882) UND (0.0004) U		NS
HDMC			
Antimony	ND (0.0022) U	ND (0.025) U	NS
Arsenic	ND (0.0039) U	ND (0.01) U	NS
Barium	0.0179	0.0213	NS
Beryllium	ND (0.00054) U	ND (0.001) U	NS
Cadmium	ND (0.00028) U	ND (0.005) U	NS
Chromium Total	ND (0.0018) U	0.0018 J	NS
Cobalt	ND (0.0014) U	0.0016 J	NS
Copper	ND (0.0012) U	ND (0.02) U	NS
Cyanide (total)	ND (0.0042) U	ND (0.005) U	NS
Iron	NS	NS	NS
Lead	ND (0.0025) U	ND (0.0025) U	NS
Manganese	0.0283	0.0297 J	NS
Nickel	ND (0.0028) U	0.0031 J	NS
Selenium	ND (0.0049) U	ND (0.005) U	NS
Thallium	ND (0.005) U	ND (0.001) U	NS
Vanadium	ND (0.00082) U	ND (0.01) U	NS
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWF7-03	8/31/03
VOC	
1,1,1-Trichloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	NS
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	NS
Acetone	NS
Benzene	NS
cis-1,2-Dichloroethene	NS
Ethylbenzene	NS
Methylene chloride	NS
Tetrachloroethene	ND (0.001) U
Toluene	NS
Trichloroethene	NS
Vinyl chloride	NS
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
PCB	
Total PCBs	NS
HDMC	
Antimony	NS
Arsenic	NS
Barium	NS
Beryllium	NS
Cadmium	NS
Chromium Total	NS
Cobalt	NS
Copper	NS
Cyanide (total)	NS
Iron	NS
Lead	NS
Manganese	NS
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
2,3,7,8-TCDD Equivalent	NS



MWF15-01	10/31/01	1/9/02
VOC		
1,1,1-Trichloroethane	ND (0.00015) U	0.0066 J
1,1,2-Trichloroethane	ND (0.00053) U	ND (0.001) U
1,1-Dichloroethane	0.0078	0.022
1,1-Dichloroethene	ND (0.00024) U	ND (0.001) U
1,2-Dichloroethane	ND (0.00021) U	ND (0.001) U
Acetone	ND (0.00091) U	ND (0.01) U
Benzene	ND (0.00046) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.00022) U	ND (0.0003) U
Ethylbenzene	ND (0.00012) U	ND (0.001) U
Methylene chloride	ND (0.00034) U	ND (0.001) U
Tetrachloroethene	0.00026 J	0.00029 J
Trichloroethene	ND (0.00041) U	ND (0.001) U
Vinyl chloride	ND (0.00053) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.00085) U	ND (0.005) U
Benzo(a)pyrene	ND (0.00073) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.00271) U	ND (0.005) U
Butyl benzylphthalate	ND (0.00088) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.00079) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.00131) U	ND (0.005) U
Pentachlorophenol	ND (0.00243) U	ND (0.005) U
PCB		
Total PCBs	ND (0.0000882) UND (0.00043) U	
HDMC		
Antimony	ND (0.0022) U	ND (0.025) U
Arsenic	ND (0.0039) U	ND (0.01) U
Barium	0.0189	0.0213
Beryllium	ND (0.00054) U	ND (0.001) U
Cadmium	ND (0.00028) U	0.00041 J
Chromium Total	ND (0.0014) U	ND (0.01) U
Cobalt	0.0021 J	ND (0.02) U
Copper	ND (0.0042) U	ND (0.005) U
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	ND (0.0025) U	ND (0.0013) U
Manganese	0.383	0.457
Nickel	0.0047 J	0.0051 J
Selenium	ND (0.0049) U	ND (0.005) U
Thallium	ND (0.005) U	0.000054 J
Vanadium	ND (0.00082) U	ND (0.01) U
2,3,7,8-TCDD Equivalent	NS	NS



SITE LOCATION

LEGEND:

MWF1 GROUNDWATER MONITORING WELL LOCATION

CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA

APPROXIMATE AOI AREA

F-7 = POWERHOUSE BASEMENT SUMPS

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONTAMINATION.
7. NS – NOT SAMPLED.

0 50' 100'
GRAPHIC SCALE

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

AOI F-7 - GROUNDWATER

ENCORE

FIGURE
4-7

X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/25/03 SYR-85-GMS DJP GMS
64411210/RFI-ADDM/64411C07.DWG

SITE LOCATION

LEGEND:

- MW-19 — GROUNDWATER MONITORING WELL LOCATION
- P18-01 — SOIL BORING LOCATION
- CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA
- LOCATION WHERE NAPL HAS BEEN IDENTIFIED DURING RECENT RFI ACTIVITIES AT A MEASURABLE THICKNESS (>0.01 FEET)
- APPROXIMATE AOI AREA
- W-1 = WEST YARD

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONTAMINATION.
7. NS – NOT SAMPLED.
8. R – DATA REJECTED FROM DATA VALIDATION.

0 100' 200'
GRAPHIC SCALE

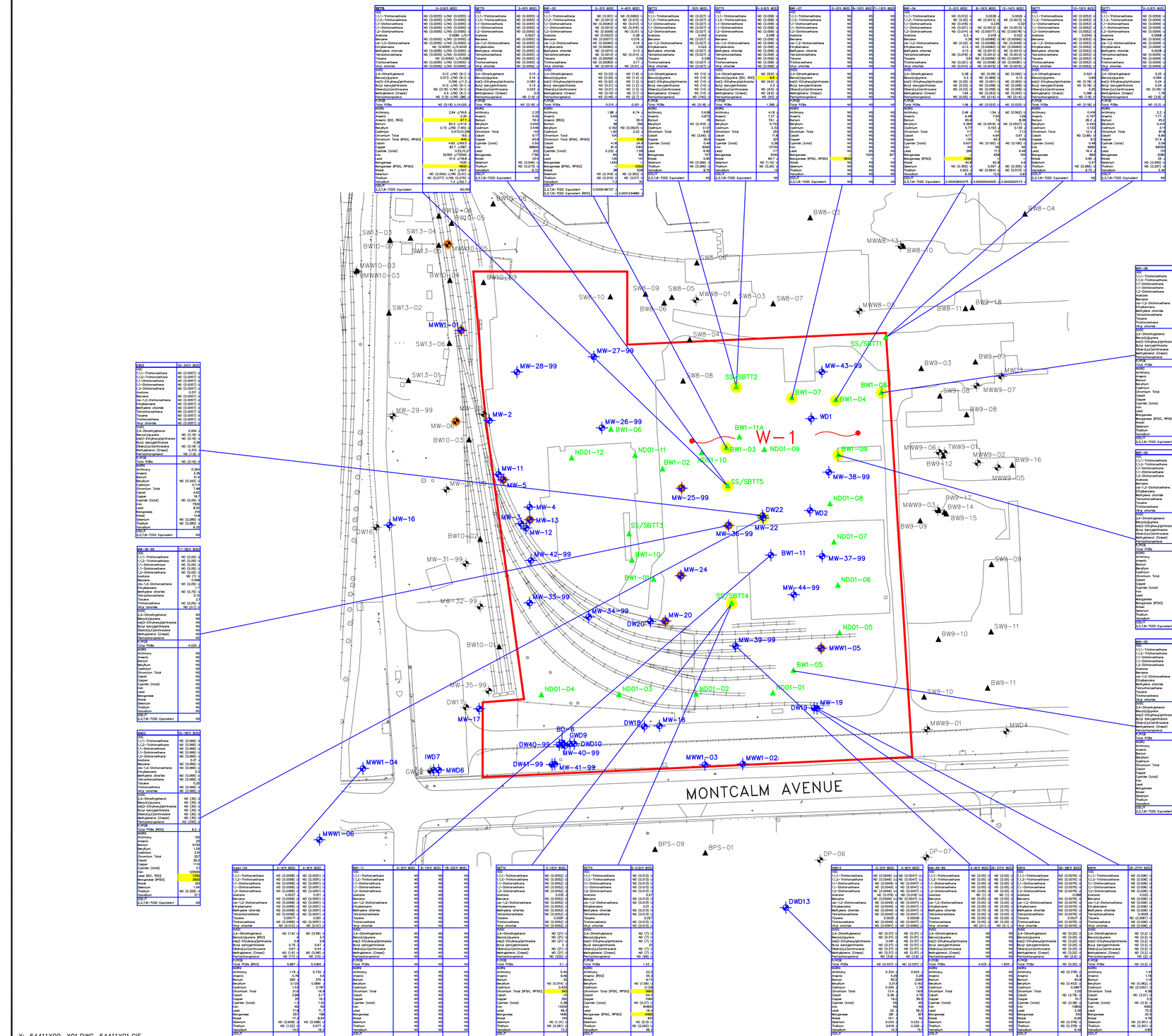
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

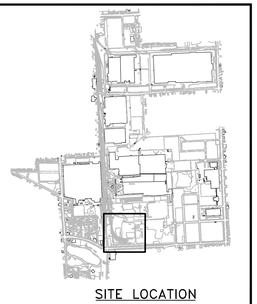
AOI W-1 - SOIL

ENCORE

FIGURE 4-8A

X: 64411X0D, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/26/03 SYR-85-GMS DJP GMS
64411210/RFI-ADDM/64411C08.DWG





SITE LOCATION

LEGEND:

MW-19 GROUNDWATER MONITORING WELL LOCATION

P18-01 SOIL BORING LOCATION

CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA

LOCATION WHERE NAPL HAS BEEN IDENTIFIED DURING RECENT RFI ACTIVITIES AT A MEASURABLE THICKNESS (>0.01 FEET)

APPROXIMATE AOI AREA

W-1 = WEST YARD

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONTAMINATION.
7. NS – NOT SAMPLED.
8. R – DATA REJECTED FROM DATA VALIDATION.

0 100' 200'
GRAPHIC SCALE

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS CMP

AOI W-1 - SOIL

ENCORE

FIGURE 4-8B

X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/26/03 SYR-85-GMS GMS SDL
64411210/RFI-ADDM/64411C09.DWG

MW-30-99	6/25/01	1/7/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U
Acetone	0.0041 J	ND (0.01) U
Benzene	0.00026 J	0.00021 J
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U
Ethylbenzene	ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) U
Tetrachloroethene	ND (0.001) U	ND (0.001) U
Toluene	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.001) U	0.00024 J
SVOC		
2,4-Dimethylphenol	ND (0.005) U	ND (0.02) U
Benzo(a)pyrene	ND (0.005) U	ND (0.02) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.02) U
Butyl benzylphthalate	ND (0.005) U	ND (0.02) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.02) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.02) U
Pentachlorophenol	ND (0.005) U	ND (0.02) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
INORG		
Antimony	ND (0.025) U	ND (0.025) U
Arsenic	0.0237	0.0239
Barium	0.191	0.223
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	0.0004 J
Chromium Total	ND (0.01) U	ND (0.01) U
Cobalt	ND (0.02) U	ND (0.02) U
Copper	ND (0.005) U	ND (0.005) U
Cyanide (total)	ND (0.01) U	ND (0.01) U
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese {RDW}	0.916	0.94
Nickel	ND (0.02) U	ND (0.02) U
Selenium	ND (0.005) U	ND (0.005) U
Thallium	–	ND (0.001) U
Thallium {IDW, RDW}	0.0102	–
Vanadium	ND (0.01) U	0.001 J
CDD/F		
2,3,7,8-TCDD Equivalent	ND (0.0000000051) U	0.00000000702565 J

MW-29-99	6/22/01	1/10/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	0.00019 J	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U
Acetone	0.00068 J	ND (0.01) U
Benzene	ND (0.001) U	ND (0.001) U
cis-1,2-Dichloroethene	0.002	ND (0.0005) U
Ethylbenzene	ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) U
Tetrachloroethene	ND (0.001) U	ND (0.001) U
Toluene	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U
Vinyl chloride	0.00018 J	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U
P/PCB		
Total PCBs	ND (0.0004) U	0.000367 J
INORG		
Antimony	ND (0.025) U	ND (0.025) U
Arsenic	ND (0.01) U	ND (0.01) U
Barium	0.0722	0.073
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U
Chromium Total	ND (0.01) U	ND (0.01) U
Cobalt	ND (0.02) U	ND (0.02) U
Copper	ND (0.005) U	ND (0.005) U
Cyanide (total)	ND (0.01) U	0.0023 J
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese	0.329	0.307 J
Nickel	ND (0.02) U	0.0026 J
Selenium	ND (0.005) U	ND (0.005) U
Thallium	ND (0.01) U	ND (0.001) U
Vanadium	ND (0.01) U	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	ND (0.0000000029) U	NS

MWW10-03	2/11/02	11/14/02	5/19/03
VOC			
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U
Acetone	ND (0.01) U	ND (0.01) U	ND (0.01) U
Benzene	0.00031 J	ND (0.001) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U	ND (0.0005) U
Ethylbenzene	0.00021 J	ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.001) U	R	ND (0.001) U
Tetrachloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U
Toluene	0.0011	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.001) U	ND (0.001) U	ND (0.001) U
SVOC			
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U	ND (0.005) U
P/PCB			
Total PCBs	ND (0.0004) U	ND (0.0004) U	ND (0.0004) U
INORG			
Antimony	ND (0.025) U	ND (0.025) U	ND (0.025) U
Arsenic	ND (0.01) U	ND (0.01) U	ND (0.01) U
Barium	0.0441	0.079	0.0577
Beryllium	ND (0.001) U	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U	ND (0.005) U
Chromium Total	0.0056 J	ND (0.01) U	ND (0.01) U
Cobalt	ND (0.02) U	ND (0.02) U	ND (0.02) U
Copper	0.0043 J	ND (0.005) U	ND (0.005) U
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	ND (0.003) U
Manganese	0.0397 J	0.0139	0.0099 J
Nickel	ND (0.02) U	ND (0.02) U	ND (0.02) U
Selenium	ND (0.005) U	ND (0.005) U	0.0049 J
Thallium	ND (0.001) U	ND (0.001) U	ND (0.001) U
Vanadium	ND (0.01) U	ND (0.01) U	ND (0.01) U
CDD/F			
2,3,7,8-TCDD Equivalent	0.00000000174955 J	ND (0.00000005) U	ND (0.0000000072) U

MWW10-04	2/11/02	11/14/02
VOC		
1,1,1-Trichloroethane	0.00062 J	0.00041 J
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	0.00084 J	0.0012
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U
Acetone	0.0031 J	ND (0.01) U
Benzene	0.00019 J	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U
Ethylbenzene	0.00015 J	ND (0.001) U
Methylene chloride	ND (0.001) U	R
Tetrachloroethene	ND (0.001) U	ND (0.001) U
Toluene	0.00071 J	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.001) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U
P/PCB		
Total PCBs	–	ND (0.0004) U
Total PCBs {IDW, RDW}	0.000831 J	–
INORG		
Antimony	ND (0.025) U	ND (0.025) U
Arsenic	0.0049 J	0.0056 J
Barium	0.102	0.219
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U
Chromium Total	ND (0.01) U	ND (0.01) U
Cobalt	0.0027 J	0.0013 J
Copper	ND (0.005) U	ND (0.005) U
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese	0.478 J	0.511
Nickel	0.0035 J	ND (0.02) U
Selenium	ND (0.005) U	ND (0.005) U
Thallium	ND (0.001) U	ND (0.001) U
Vanadium	ND (0.01) U	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	0.0000000017351 J	ND (0.00000005) U

MWW10-06	2/12/02	11/14/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U/ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U/ND (0.001) U
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U/ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U/ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U/ND (0.001) U
Acetone	ND (0.01) UJ	ND (0.01) U/ND (0.01) U
Benzene	ND (0.001) U	ND (0.001) U/ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U/ND (0.0005) U
Ethylbenzene	0.00017 J	ND (0.001) U/ND (0.001) U
Methylene chloride	ND (0.001) U	R/R
Tetrachloroethene	ND (0.001) U	ND (0.001) U/ND (0.001) U
Toluene	0.00059 J	ND (0.001) U/ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U/ND (0.001) U
Vinyl chloride	ND (0.001) U	ND (0.001) U/ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U/ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U/ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U/ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U/ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U/ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U/ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U/ND (0.005) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U/ND (0.0004) U
INORG		
Antimony	ND (0.025) U	ND (0.025) U/ND (0.025) U
Arsenic	ND (0.01) U	0.0085 J/0.0079 J
Barium	0.0504	0.0496/0.0512
Beryllium	ND (0.001) U	ND (0.001) U/ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U/ND (0.005) U
Chromium Total	ND (0.01) U	ND (0.01) U/ND (0.01) U
Cobalt	ND (0.02) U	ND (0.02) U/ND (0.02) U
Copper	ND (0.005) U	ND (0.005) U/ND (0.005) U
Cyanide (total)	NS	NS/NS
Iron	NS	NS/NS
Lead	ND (0.003) U	ND (0.003) U/ND (0.003) U
Manganese	0.337	0.256/0.268
Nickel	0.0047 J	0.0048 J/0.0046 J
Selenium	ND (0.005) U	ND (0.005) U/ND (0.005) U
Thallium	ND (0.001) U	ND (0.001) U/ND (0.001) U
Vanadium	0.0012 J	ND (0.01) U/ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	0.0000000048804 J	ND (0.00000005) U/ND (0.00000005) U

MWW10-02	2/12/02	11/14/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U
Acetone	ND (0.01) UJ	ND (0.01) UJ
Benzene	ND (0.001) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) UJ	ND (0.0005) U
Ethylbenzene	ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.001) U	R
Tetrachloroethene	ND (0.001) U	ND (0.001) U
Toluene	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.001) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	–	ND (0.005) U
bis(2-Ethylhexyl)phthalate {IDW, RDW}	0.15 J	–
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
INORG		
Antimony	ND (0.025) U	ND (0.025) U
Arsenic	ND (0.01) U	ND (0.01) U
Barium	0.0116	0.015
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U
Chromium Total	0.0065 J	0.0184
Cobalt	ND (0.02) U	0.0013 J
Copper	ND (0.005) U	ND (0.005) U
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese	0.0135	0.0187
Nickel	ND (0.02) U	0.0083 J
Selenium	ND (0.005) U	ND (0.005) U
Thallium	ND (0.001) U	ND (0.001) U
Vanadium	0.0016 J	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	ND (0.0000000024) U	ND (0.00000005) U

MWW10-01	9/6/01
VOC	
1,1,1-Trichloroethane	ND (0.001) UJ
1,1,2-Trichloroethane	ND (0.001) UJ
1,1-Dichloroethane	0.00073 J
1,1-Dichloroethene	ND (0.001) UJ
1,2-Dichloroethane	ND (0.001) UJ
Acetone	ND (0.01) UJ
Benzene	0.00058 J
cis-1,2-Dichloroethene	ND (0.0005) U
Ethylbenzene	0.001
Methylene chloride	ND (0.001) U
Tetrachloroethene	ND (0.001) U
Toluene	0.0019
Trichloroethene	ND (0.001) U
Vinyl chloride	ND (0.001) U
SVOC	
2,4-Dimethylphenol	ND (0.02) U
Benzo(a)pyrene	ND (0.02) U
bis(2-Ethylhexyl)phthalate	ND (0.02) U
Butyl benzylphthalate	ND (0.02) U
Dibenz(a,h)anthracene	ND (0.02) U
Methylphenol (Cresol)	ND (0.02) U
Pentachlorophenol	ND (0.02) U
P/PCB	
Total PCBs	0.0004085 J
INORG	
Antimony	0.0023 J
Arsenic {IDW, RDW}	0.0633
Barium	0.11
Beryllium	ND (0.001) U
Cadmium	ND (0.005) U
Chromium Total	ND (0.01) U
Cobalt	0.0114 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	0.155
Nickel	0.0247
Selenium	ND (0.005) U
Thallium {IDW, RDW}	0.0068 J
Vanadium	0.003 J
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWW1-01	8/28/01	1/7/02
VOC		
1,1,1-Trichloroethane	ND (0.00015) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.0003) U	ND (0.001) U
1,1-Dichloroethane	ND (0.00016) U	ND (0.001) U
1,1-Dichloroethene	ND (0.00024) U	ND (0.001) U
1,2-Dichloroethane	ND (0.00021) U	ND (0.001) U
Acetone	ND (0.00051) U	ND (0.01) U
Benzene	0.00022 J	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.00022) U	ND (0.0005) U
Ethylbenzene	0.00024 J	0.00044 J
Methylene chloride	ND (0.00034) U	ND (0.001) U
Tetrachloroethene	ND (0.00023) U	ND (0.001) U
Toluene	0.00036 J	0.00034 J
Trichloroethene	ND (0.00014) U	ND (0.001) U
Vinyl chloride	ND (0.00015) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.0042) U	ND (0.02) U
Benzo(a)pyrene	ND (0.0036) U	ND (0.02) U
bis(2-Ethylhexyl)phthalate	ND (0.014) U	ND (0.02) U
Butyl benzylphthalate	ND (0.0044) U	ND (0.02) U
Dibenz(a,h)anthracene	ND (0.004) U	ND (0.02) U
Methylphenol (Cresol)	ND (0.0065) U	ND (0.02) U
Pentachlorophenol	ND (0.012) U	ND (0.02) U
P/PCB		
Total PCBs	ND (0.000082) U	ND (0.0004) U
INORG		
Antimony	–	ND (0.025) U
Antimony {IDW, RDW}	0.0086 J	–
Arsenic	0.0187	0.0045 J
Barium	0.144	0.0575
Beryllium	ND (0.00054) U	ND (0.001) U
Cadmium	ND (0.00028) U	ND (0.005) U
Chromium Total	ND (0.0014) U	0.002 J
Cobalt	0.0032 J	0.002 J
Copper	ND (0.0042) U	ND (0.005) U
Cyanide (total)	ND (0.0017) U	ND (0.01) U
Iron	NS	NS
Lead	ND (0.0025) U	ND (0.003) U
Manganese	0.796	0.783
Nickel	0.0086 J	0.0074 J
Selenium	ND (0.0045) U	ND (0.005) U
Thallium	–	ND (0.001) U
Thallium {IDW, RDW}	0.0056 J	–
Vanadium	ND (0.00082) U	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	0.0000000035333 J	0.000000002023 J

MW-28-99	6/22/01	1/7/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	0.0003 J	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U
Acetone	0.0062 J	ND (0.01) U
Benzene	0.0019	0.0028
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U
Ethylbenzene	0.00072 J	0.00058 J
Methylene chloride	ND (0.001) U	ND (0.001) U
Tetrachloroethene	ND (0.001) U	ND (0.001) U
Toluene	0.0006 J	0.00078 J
Trichloroethene	ND (0.001) U	ND (0.001) U
Vinyl chloride	0.00026 J	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) UJ
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) UJ
Butyl benzylphthalate	ND (0.005) U	ND (0.005) UJ
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) UJ
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) UJ
Pentachlorophenol	ND (0.005) U	ND (0.005) UJ
P/PCB		
Total PCBs	0.0004785 J	ND (0.0004) U
INORG		
Antimony	ND (0.025) U	ND (0.025) U
Arsenic	0.0047 J	0.0041 J
Barium {IDW, RDW}	3.82	4.57
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	0.00039 J
Chromium Total	ND (0.01) U	0.0014 J
Cobalt	ND (0.02) U	ND (0.02) U
Copper	0.0194	0.0171
Cyanide (total)	ND (0.01) U	0.002 J
Iron	NS	NS
Lead {IDW, RDW}	0.0263	0.0271
Manganese	0.21	0.147
Nickel	0.0194 J	0.0093 J
Selenium	ND (0.005) U	ND (0.005) U
Thallium	ND (0.01) U	ND (0.001) U
Vanadium	0.0011 J	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	0.0000000063854 J	–
2,3,7,8-TCDD Equivalent {GCC}	–	0.0000000177027 J

MW-10	6/21/01	1/7/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U/ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U/ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U/ND (0.001) U	0.00016 J
1,1-Dichloroethene	ND (0.001) U/ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U/ND (0.001) U	ND (0.001) U
Acetone	ND (0.01) U/ND (0.01) U	ND (0.01) U
Benzene	0.00038 J/0.00034 J	0.00019 J
cis-1,2-Dichloroethene	ND (0.0005) U/ND (0.0005) U	ND (0.0005) U
Ethylbenzene	ND (0.001) U/ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.001) U/ND (0.001) U	ND (0.001) U
Tetrachloroethene	ND (0.001) U/ND (0.001) U	ND (0.001) U
Toluene	ND (0.001) U/ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.001) U/ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.001) U/ND (0.001) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.005) U/ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U/ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U/ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U/ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U/ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U/ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U/ND (0.005) U	ND (0.005) U
P/PCB		
Total PCBs	ND (0.0004) U/ND (0.0004) U	ND (0.0004) U
INORG		
Antimony	ND (0.025) U/ND (0.025) U	ND (0.025) U
Arsenic	0.0177/0.0197	0.0188
Barium	0.0833/0.0875	0.066
Beryllium	ND (0.001) U/ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U/ND (0.005) U	0.0003 J
Chromium Total	ND (0.01) U/ND (0.01) U	ND (0.01) U
Cobalt	0.0021 J/0.0026 J	0.0017 J
Copper	ND (0.005) U/ND (0.005) U	ND (0.005) U
Cyanide (total)	ND (0.01) U/ND (0.01) U	0.0061 J
Iron	NS/NS	NS
Lead	ND (0.003) U/ND (0.003) U	ND (0.003) U
Manganese	0.435/0.456	0.481
Nickel	0.0052 J/0.0057 J	0.004 J
Selenium	ND (0.005) U/ND (0.005) U	ND (0.005) U
Thallium	ND (0.01) U/ND (0.01) U	0.000018 J
Vanadium	ND (0.01) U/ND (0.01) U	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	0.0000000025757 J/0.0000000025263 J	0.0000000037973 J

MW-42-99	6/21/01	1/7/02
VOC		
1,1,1-Trichloroethane	ND (0.0033) U	ND (0.0033) U
1,1,2-Trichloroethane	ND (0.0033) U	ND (0.0033) U
1,1-Dichloroethane	0.023	0.014
1,1-Dichloroethene	ND (0.0033) U	ND (0.0033) U
1,2-Dichloroethane	ND (0.0033) U	ND (0.0033) U
Acetone	0.0086 J	ND (0.033) U
Benzene {IDW, RDW}	0.082	0.091
cis-1,2-Dichloroethene	0.0017	0.0018
Ethylbenzene	0.0063	0.0045
Methylene chloride	0.0037	0.0045
Tetrachloroethene	ND (0.0033) U	ND (0.0033) U
Toluene	0.015	0.011
Trichloroethene	0.00071 J	0.0008 J
Vinyl chloride {IDW, RDW}	0.0031 J	0.0025 J
SVOC		
2,4-Dimethylphenol	0.0028 J	ND (0.005) UJ
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
INORG		
Antimony	ND (0.025) U	ND (0.025) U
Arsenic	ND (0.01) U	ND (0.01) U
Barium	0.139	0.202
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U
Chromium Total	ND (0.01) U	ND (0.01) U
Cobalt	0.0018 J	ND (0.02) U
Copper	ND (0.005) U	ND (0.005) U
Cyanide (total)	0.0088 J	0.0111
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese	0.116	0.179
Nickel	0.0063 J	0.0048 J
Selenium	ND (0.005) U	ND (0.005) U
Thallium	ND (0.01) U	ND (0.001) U
Vanadium	ND (0.01) U	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	0.0000000030852 J	0.0000000031338 J

MW-31-99	6/25/01	1/7/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	0.0053	0.0025
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	0.00045 J	ND (0.001) U
Acetone	0.016	ND (0.01) U
Benzene	0.00016 J	ND (0.001) U
cis-1,2-Dichloroethene	0.00045 J	ND (0.0005) U
Ethylbenzene	ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) U
Tetrachloroethene	0.00043 J	0.0007 J
Toluene	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U
Vinyl chloride {IDW, RDW}	0.018	0.0043
SVOC		
2,4-Dimethylphenol	ND (0.005) U	ND (0.02) U
Benzo(a)pyrene	ND (0.005) U	ND (0.02) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.02) U
Butyl benzylphthalate	ND (0.005) U	ND (0.02) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.02) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.02) U
Pentachlorophenol	ND (0.005) U	ND (0.02) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
INORG		
Antimony	ND (0.025) U	ND (0.025) U
Arsenic	0.005 J	0.0064 J
Barium	0.511	0.418
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U
Chromium Total	ND (0.01) U	ND (0.01) U
Cobalt	ND (0.02) U	ND (0.02) U
Copper	ND (0.005) U	ND (0.005) U
Cyanide (total)	0.006 J	0.0069 J
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese	0.174	0.113
Nickel	0.0026 J	0.0033 J
Selenium	ND (0.005) U	ND (0.005) U
Thallium	–	ND (0.001) U
Thallium {IDW, RDW}	0.0057 J	–
Vanadium	0.0022 J	0.0031 J
CDD/F		
2,3,7,8-TCDD Equivalent	ND (0.0000000042) U	ND (0.0000000074) U

IWD7	9/11/01	1/9/02	11/13/02	5/21/03
VOC				
1,1,1-Trichloroethane	ND (0.001) U	ND (0.014) U	ND (0.0014) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.014) U	ND (0.0014) U	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U	ND (0.014) U	ND (0.0014) U	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	ND (0.014) U	ND (0.0014) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.014) U	ND (0.0014) U	ND (0.001) U
Acetone	ND (0.01) U	ND (0.14) U	ND (0.014) U	0.038
Benzene	ND (0.001) U	ND (0.014) U	ND (0.0014) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0071) U	ND (0.00072) U	ND (0.0005) U
Ethylbenzene	ND (0.001) U	ND (0.014) U	ND (0.0014) U	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.014) U	R	ND (0.001) U
Tetrachloroethene	ND (0.001) U	ND (0.014) U	ND (0.0014) U	ND (0.001) U
Toluene	ND (0.001) U	ND (0.014) U	ND (0.0014) U	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.014) U	ND (0.0014) U	ND (0.001) U
Vinyl chloride	ND (0.001) U	ND (0.014) UJ	ND (0.0014) U	ND (0.001) U
SVOC				
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	–	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate {IDW, RDW}	–	0.0088	–	–
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	0.00265 J	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
P/PCB				
Total PCBs	ND (0.0004) U	ND (0.0004) U	ND (0.0004) U	ND (0.0004) U
INORG				
Antimony	ND (0.025) U	ND (0.025) U	ND (0.025) U	ND (0.025) U
Arsenic	0.0052 J	0.0044 J	0.0027 J	ND (0.01) U
Barium	0.432	0.0677	0.413	0.39
Beryllium	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Cadmium	0.00028 J	0.00057 J	ND (0.005) U	ND (0.005) U
Chromium Total	ND (0.01) U	0.0068 J	ND (0.01) U	ND (0.01) U
Cobalt	0.0014 J	ND (0.02) U	ND (0.02) U	ND (0.02) U
Copper	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Cyanide (total)	NS	NS	NS	NS
Iron	NS	NS	NS	NS
Lead	ND (0.003) U	–	ND (0.003) U	ND (0.003) U
Lead {IDW, RDW}	–	0.0135	–	–
Manganese	0.177	0.0631	0.142	0.0809
Nickel	ND (0.02) U	0.0057 J	ND (0.02) U	ND (0.02) U
Selenium	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Thallium	ND (0.01) U	0.000044 J	ND (0.001) U	ND (0.001) U
Vanadium	ND (0.01) U	–	ND (0.01) U	ND (0.01) U
Vanadium {RDW}	–	0.0049 J	–	–
CDD/F				
2,3,7,8-TCDD Equivalent	NS	NS	NS	NS

MWW1-04	2/19/02	7/17/02	5/21/03
VOC			
1,1,1-Trichloroethane	ND (0.001) U	NS	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	NS	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U	NS	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	NS	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	NS	ND (0.001) U
Acetone	0.033 J	NS	ND (0.01) U
Benzene	0.00019 J	NS	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	NS	ND (0.0005) U
Ethylbenzene	ND (0.001) U	NS	ND (0.001) U
Methylene chloride	ND (0.001) U	NS	–
Methylene chloride {IDW, RDW}	–	–	0.007
Tetrachloroethene	ND (0.001) U	NS	ND (0.001) U
Toluene	0.00039 J	NS	ND (0.001) U
Trichloroethene	0.00024 J	NS	ND (0.001) U
Vinyl chloride	ND (0.001) U	NS	ND (0.001) U
SVOC			
2,4-Dimethylphenol	0.011	NS	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	NS	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	NS	0.0041 J
Butyl benzylphthalate	ND (0.005) U	NS	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	NS	ND (0.005) U
Methylphenol (Cresol)	0.02155 J	NS	ND (0.005) U
Pentachlorophenol	ND (0.005) U	NS	ND (0.005) U
P/PCB			
Total PCBs {IDW, RDW}	0.0007685 J	0.0006385 J	0.0014285 J
INORG			
Antimony	0.0026 J	NS	0.0056 J
Arsenic	0.006 J	NS	0.0033 J
Barium	0.0939	NS	0.035
Beryllium	ND (0.001) U	NS	ND (0.001) U
Cadmium	ND (0.005) U	NS	ND (0.005) U
Chromium Total	0.002 J	NS	0.0305
Cobalt	ND (0.02) U	NS	0.00076 J
Copper	0.0094	NS	0.0222
Cyanide (total)	NS	NS	0.0175
Iron	NS	NS	NS
Lead	0.004	NS	ND (0.003) U
Manganese	0.0016 J	NS	0.0013 J
Nickel	0.0103 J	NS	ND (0.02) U
Selenium	ND (0.005) U	NS	ND (0.005) U
Thallium	ND (0.001) U	NS	ND (0.001) U
Vanadium	–	NS	–
Vanadium {RDW}	0.0238	–	0.0484
CDD/F			
2,3,7,8-TCDD Equivalent	0.0000000020017 J	NS	0.0000000043555 J

GWD8	9/14/01	1/10/02	5/21/03
VOC			
1,1,1-Trichloroethane	ND (0.006) U	ND (0.0031) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.012) U	ND (0.0031) U	ND (0.001) U
1,1-Dichloroethane	ND (0.0064) U	ND (0.0031) U	ND (0.001) U
1,1-Dichloroethene	ND (0.0096) U	ND (0.0031) U	ND (0.001) U
1,2-Dichloroethane	ND (0.0084) U	ND (0.0031) U	ND (0.001) U
Acetone	–	0.14 J	ND (0.01) U
Acetone {IDW, RDW}	3.1	–	–
Benzene	ND (0.0064) U	0.0045	0.00056 J
cis-1,2-Dichloroethene	ND (0.0088) U	ND (0.0016) U	ND (0.0005) U
Ethylbenzene	ND (0.0048) U	ND (0.0031) U	ND (0.001) U
Methylene chloride	ND (0.014) U	ND (0.0031) U	ND (0.001) U
Tetrachloroethene	ND (0.0092) U	ND (0.0031) U	ND (0.001) U
Toluene	ND (0.0072) U	ND (0.0031) U	ND (0.001) U
Trichloroethene	ND (0.0056) U	ND (0.0031) U	ND (0.001) U
Vinyl chloride	ND (0.006) U	ND (0.0031) U	ND (0.001) U
SVOC			
2,4-Dimethylphenol	ND (0.00085) U	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.00073) U	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.0027) U	ND (0.005) U	0.0029 J
Butyl benzylphthalate	ND (0.00088) U	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.00079) U	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.0013) U	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.0024) U	ND (0.005) U	ND (0.005) U
P/PCB			
Total PCBs	ND (0.000082) U	ND (0.0004) U	ND (0.0004) U
INORG			
Antimony	ND (0.0022) U	ND (0.025) U	ND (0.025) U
Arsenic	ND (0.0039) U	ND (0.01) U	0.0075 J
Barium	0.238	0.363	0.458
Beryllium	ND (0.00054) U	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.00028) U	ND (0.005) U	ND (0.005) U
Chromium Total	ND (0.0014) U	0.0038 J	0.0023 J
Cobalt	ND (0.0013) U	0.0022 J	0.0011 J
Copper	ND (0.0042) U	ND (0.005) U	ND (0.005) U
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	ND (0.0025) U	ND (0.003) U	ND (0.003) U
Manganese	0.0712	0.067 J	0.0451
Nickel	ND (0.0022) U	0.0072 J	ND (0.02) U
Selenium	ND (0.0045) U	ND (0.005) U	ND (0.005) U
Thallium	ND (0.005) U	ND (0.001) U	ND (0.001) U
Vanadium	ND (0.00082) U	ND (0.01) U	ND (0.01) U
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWD6	9/11/01	1/9/02	11/13/02	5/21/03
VOC				
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Acetone	ND (0.01) U	ND (0.01) U	ND (0.01) U	ND (0.01) U
Benzene	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U	ND (0.0005) U	0.0024
Ethylbenzene	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Tetrachloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	0.0026
Toluene	0.00025 J	ND (0.001) U	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	0.0014
Vinyl chloride	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
SVOC				
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
P/PCB				
Total PCBs	ND (0.0004) U	ND (0.0004) U	ND (0.0004) U	ND (0.0004) U
INORG				
Antimony	ND (0.025) U	ND (0.025) U	ND (0.025) U	ND (0.025) U
Arsenic	0.0054 J	ND (0.01) U	0.0029 J	ND (0.01) U
Barium	0.532	0.166	0.22	1.09
Beryllium	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Chromium Total	ND (0.01) U	ND (0.01) U	ND (0.01) U	ND (0.01) U
Cobalt	ND (0.02) U	ND (0.02) U	0.00087 J	ND (0.02) U
Copper	ND (0.005) U	ND (0.005) U	ND (0.005) U	0.0023 J
Cyanide (total)	NS	NS	NS	NS
Iron	NS	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	0.0019 J	ND (0.003) U
Manganese	0.393	0.131	0.191	0.617
Nickel	ND (0.02) U	ND (0.02) U	ND (0.02) U	0.0049 J
Selenium	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Thallium	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Vanadium	ND (0.01) U	ND (0.01) U	ND (0.01) U	ND (0.01) U
CDD/F				
2,3,7,8-TCDD Equivalent	NS	NS	NS	NS

MWW1-06	11/13/02	5/21/03
VOC		
1,1,1-Trichloroethane	NS	ND (0.001) U
1,1,2-Trichloroethane	NS	ND (0.001) U
1,1-Dichloroethane	NS	ND (0.001) U
1,1-Dichloroethene	NS	ND (0.001) U
1,2-Dichloroethane	NS	ND (0.001) U
Acetone	NS	ND (0.01) U
Benzene	NS	ND (0.001) U
cis-1,2-Dichloroethene	NS	ND (0.0005) U
Ethylbenzene	NS	ND (0.001) U
Methylene chloride	NS	ND (0.001) U
Tetrachloroethene	NS	ND (0.001) U
Toluene	NS	ND (0.001) U
Trichloroethene	NS	ND (0.001) U
Vinyl chloride	NS	ND (0.001) U
SVOC		
2,4-Dimethylphenol	NS	ND (0.005) U
Benzo(a)pyrene	NS	ND (0.005) U
bis(2-Ethylhexyl)phthalate	NS	ND (0.005) U
Butyl benzylphthalate	NS	ND (0.005) U
Dibenz(a,h)anthracene	NS	ND (0.005) U
Methylphenol (Cresol)	NS	ND (0.005) U
Pentachlorophenol	NS	ND (0.005) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
INORG		
Antimony	NS	ND (0.025) U
Arsenic	NS	0.0046 J
Barium	NS	0.082
Beryllium	NS	ND (0.001) U
Cadmium	NS	ND (0.005) U
Chromium Total	NS	ND (0.01) U
Cobalt	NS	ND (0.02) U
Copper	NS	ND (0.005) U
Cyanide (total)	NS	0.004 J
Iron	NS	NS
Lead	NS	ND (0.003) U
Manganese	NS	0.418
Nickel	NS	ND (0.02) U
Selenium	NS	ND (0.005) U
Thallium	NS	ND (0.001) U
Vanadium	NS	0.00084 J
CDD/F		
2,3,7,8-TCDD Equivalent	NS	ND (0.00000001) U

MW-40-99	1/10/02	11/12/02	5/19/03
VOC			
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U/ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U/ND (0.001) U
1,1-Dichloroethane	ND (0.001) U	ND (0.001) UJ	ND (0.001) U/ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U/ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U/ND (0.001) U
Acetone	ND (0.01) U	ND (0.01) UJ	ND (0.01) U/ND (0.01) U
Benzene	ND (0.001) U	ND (0.001) U	ND (0.001) U/ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U	ND (0.0005) U/ND (0.0005) U
Ethylbenzene	ND (0.001) U	ND (0.001) UJ	ND (0.001) U/ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) UJ	ND (0.001) U/ND (0.001) U
Tetrachloroethene	ND (0.001) U	R	ND (0.001) U/ND (0.001) U
Toluene	ND (0.001) U	ND (0.001) U	ND (0.001) U/ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U/ND (0.001) U
Vinyl chloride	ND (0.001) U	ND (0.001) U	ND (0.001) U/ND (0.001) U
SVOC			
2,4-Dimethylphenol	ND (0.005) U	R	ND (0.005) U/ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.02) U	ND (0.005) U/ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.02) U	ND (0.005) U/ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.02) U	ND (0.005) U/ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.02) U	ND (0.005) U/ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.02) U	ND (0.005) U/ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.02) UJ	ND (0.005) U/ND (0.005) U
P/PCB			
Total PCBs	–	ND (0.0004) U	ND (0.0004) U/ND (0.0004) U
Total PCBs {IDW, RDW}	0.000597 J	–	–
INORG			
Antimony	ND (0.025) U	ND (0.025) U	ND (0.025) U/ND (0.025) U
Arsenic	ND (0.01) U	0.0035 J	0.004 J/0.0059 J
Barium	0.163	0.414	0.182/0.182
Beryllium	ND (0.001) U	ND (0.001) U	ND (0.001) U/ND (0.001) U
Cadmium	ND (0.005) U	0.00032 J	ND (0.005) U/ND (0.005) U
Chromium Total	ND (0.01) U	0.0038 J	ND (0.01) U/ND (0.01) U
Cobalt	ND (0.02) U	0.0066 J	0.0009 J/0.00077 J
Copper	ND (0.005) U	0.0055	ND (0.005) U/ND (0.005) U
Cyanide (total)	0.0028 J	0.0091 J	0.0057 J/0.0057 J
Iron	NS	NS	NS/NS
Lead	ND (0.003) U	0.0018 J	ND (0.003) U/ND (0.003) U
Manganese	0.301 J	0.15	–
Manganese {RDW}	–	–	1.19/1.24
Nickel	ND (0.02) U	0.0111 J	ND (0.02) U/ND (0.02) U
Selenium	ND (0.005) U	ND (0.005) U	ND (0.005) U/ND (0.005) U
Thallium	ND (0.001) U	ND (0.001) U	ND (0.001) U/ND (0.001) U
Vanadium	ND (0.01) U	0.0047 J	ND (0.01) U/ND (0.01) U
CDD/F			
2,3,7,8-TCDD Equivalent	NS	ND (0.00000005) U	ND (0.0000000067) U/ND (0.0000000073) U

GWD9	1/22/02	11/12/02	5/19/03
VOC			
1,1,1-Trichloroethane	ND (0.0067) U	ND (0.33) U	ND (0.015) U
1,1,2-Trichloroethane	ND (0.0067) U	ND (0.33) U	ND (0.015) U
1,1-Dichloroethane	ND (0.0067) U	ND (0.33) U	ND (0.015) U
1,1-Dichloroethene	ND (0.0067) U	R	ND (0.015) U
1,2-Dichloroethane	ND (0.0067) U	ND (0.33) U	ND (0.015) U
Acetone	0.31 J	ND (3.3) UJ	0.74
Benzene	ND (0.0067) U	ND (0.33) U	ND (0.015) U
cis-1,2-Dichloroethene	ND (0.0033) U	R	ND (0.0077) U
Ethylbenzene	ND (0.0067) U	ND (0.33) U	ND (0.015) U
Methylene chloride	ND (0.0067) U	ND (0.33) U	ND (0.015) U
Tetrachloroethene	ND (0.0067) UJ	ND (0.33) U	ND (0.015) U
Toluene	ND (0.0067) U	ND (0.33) U	ND (0.015) U
Trichloroethene	ND (0.0067) U	ND (0.33) U	ND (0.015) U
Vinyl chloride	ND (0.0067) U	ND (0.33) U	ND (0.015) U
SVOC			
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U	ND (0.005) U
P/PCB			
Total PCBs	ND (0.0004) U	ND (0.0004) U	ND (0.0004) U
INORG			
Antimony	ND (0.025) U	ND (0.025) U	ND (0.025) U
Arsenic	0.0088 J	0.0081 J	0.0061 J
Barium	0.414	0.422	0.399
Beryllium	ND (0.001) U	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U	ND (0.005) U
Chromium Total	ND (0.01) U	0.0043 J	0.0075 J
Cobalt	ND (0.02) U	ND (0.02) U	0.0014 J
Copper	ND (0.005) U	ND (0.005) U	ND (0.005) U
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	ND (0.003) U
Manganese	ND (0.01) U	0.0281	0.0312
Nickel	ND (0.02) U	0.0039 J	0.005 J
Selenium	ND (0.005) U	ND (0.005) U	ND (0.005) U
Thallium	ND (0.001) U	ND (0.001) U	ND (0.001) U
Vanadium	ND (0.01) U	ND (0.01) U	ND (0.01) U
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

DWD13	2/1/02	11/13/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U
Acetone	ND (0.01) UJ	ND (0.01) U
Benzene	ND (0.001) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U
Ethylbenzene	ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) U
Tetrachloroethene	R	ND (0.001) U
Toluene	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.001) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
INORG		
Antimony	ND (0.025) U	ND (0.025) U
Arsenic	ND (0.01) U	0.0052 J
Barium	0.139	0.145
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U
Chromium Total	ND (0.01) U	0.0057 J
Cobalt	ND (0.02) U	0.0009 J
Copper	ND (0.005) U	ND (0.005) U
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese	0.0486	ND (0.01) U
Nickel	ND (0.02) U	0.0044 J
Selenium	ND (0.005) U	ND (0.005) U
Thallium	ND (0.001) U	ND (0.001) U
Vanadium	ND (0.01) U	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

DWD10	1/22/02	11/12/02	5/19/03
VOC			
1,1,1-Trichloroethane	ND (0.01) U	ND (0.0033) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.01) U	ND (0.0033) U	ND (0.001) U
1,1-Dichloroethane	ND (0.01) U	ND (0.0033) U	ND (0.001) U
1,1-Dichloroethene	ND (0.01) U	ND (0.0033) U	ND (0.001) U
1,2-Dichloroethane	ND (0.01) U	ND (0.0033) U	ND (0.001) U
Acetone	ND (0.1) U	ND (0.033) UJ	0.045
Benzene	ND (0.01) U	ND (0.0033) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.005) U	ND (0.0017) U	ND (0.0005) U
Ethylbenzene	ND (0.01) U	R	ND (0.001) U
Methylene chloride	ND (0.01) U	0.0016 J	ND (0.001) U
Tetrachloroethene	ND (0.01) UJ	ND (0.0033) U	ND (0.001) U
Toluene	ND (0.01) U	ND (0.0033) U	ND (0.001) U
Trichloroethene	ND (0.01) U	ND (0.0033) U	ND (0.001) U
Vinyl chloride	ND (0.01) U	ND (0.0033) U	ND (0.001) U
SVOC			
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U	ND (0.005) U
P/PCB			
Total PCBs	ND (0.0004) U	ND (0.0004) U	ND (0.0004) U
INORG			
Antimony	ND (0.025) U	ND (0.025) U	ND (0.025) U
Arsenic	ND (0.01) U	0.0044 J	0.0145
Barium	0.126	0.148	0.16
Beryllium	ND (0.001) U	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U	ND (0.005) U
Chromium Total	0.0034 J	0.0033 J	0.0091 J
Cobalt	ND (0.02) U	ND (0.02) U	0.00076 J
Copper	ND (0.005) U	ND (0.005) U	ND (0.005) U
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	0.0016 J
Manganese	ND (0.01) U	0.0296	0.0326
Nickel	0.003 J	0.0048 J	0.0099 J
Selenium	ND (0.005) U	ND (0.005) U	ND (0.005) U
Thallium	ND (0.001) U	ND (0.001) U	ND (0.001) U
Vanadium	ND (0.01) U	ND (0.01) U	ND (0.01) U
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWW1-03	1/17/02	11/8/02	5/19/03
VOC			
1,1,1-Trichloroethane	ND (0.00015) U	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.0003) U	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	ND (0.00016) U	ND (0.001) U	ND (0.001) U
1,1-Dichloroethene	ND (0.00024) U	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.00021) U	ND (0.001) U	ND (0.001) U
Acetone	ND (0.00051) UJ	0.0011 J	ND (0.01) U
Benzene	ND (0.00016) U	ND (0.001) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.00022) U	ND (0.0005) U	ND (0.0005) U
Ethylbenzene	ND (0.00012) U	ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.00034) U	ND (0.001) U	ND (0.001) U
Tetrachloroethene	ND (0.00023) U	ND (0.001) U	ND (0.001) U
Toluene	ND (0.00018) U	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.00014) U	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.00015) U	ND (0.001) U	ND (0.001) U
SVOC			
2,4-Dimethylphenol	ND (0.0034) U	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.0029) U	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.011) U	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.0035) U	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.0032) U	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.0052) U	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.0096) U	ND (0.005) U	ND (0.005) U
P/PCB			
Total PCBs	ND (0.000082) U	ND (0.0004) U	ND (0.0004) U
INORG			
Antimony	ND (0.0022) U	ND (0.025) U	ND (0.025) U
Arsenic	0.0047 J	0.0061 J	ND (0.01) U
Barium	0.188	0.166	0.139
Beryllium	ND (0.00054) U	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.00028) U	ND (0.005) U	ND (0.005) U
Chromium Total	ND (0.0014) U	ND (0.01) U	ND (0.01) U
Cobalt	ND (0.0013) U	0.0011 J	ND (0.02) U
Copper	ND (0.0042) U	ND (0.005) U	ND (0.005) U
Cyanide (total)	0.0034 J	ND (0.01) U	ND (0.01) U
Iron	NS	NS	NS
Lead	ND (0.0025) U	ND (0.003) U	ND (0.003) U
Manganese	0.427 J	0.429 J	0.494
Nickel	0.0029 J	ND (0.02) U	ND (0.02) U
Selenium	ND (0.0045) U	ND (0.005) U	ND (0.005) U
Thallium	ND (0.000018) U	ND (0.001) U	ND (0.001) U
Vanadium	ND (0.00082) U	ND (0.01) U	ND (0.01) U
CDD/F			
2,3,7,8-TCDD Equivalent	ND (0.0000000019) U	ND (0.00000005) U	ND (0.000000007) U

MWW1-02	1/17/02	11/8/02	5/19/03
VOC			
1,1,1-Trichloroethane	ND (0.00015) U	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.0003) U	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	ND (0.00016) U	ND (0.001) U	ND (0.001) U
1,1-Dichloroethene	ND (0.00024) U	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.00021) U	ND (0.001) U	ND (0.001) U
Acetone	ND (0.00051) UJ	0.0021 J	ND (0.01) U
Benzene	ND (0.00016) U	ND (0.001) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.00022) U	ND (0.0005) U	ND (0.0005) U
Ethylbenzene	ND (0.00012) U	ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.00034) U	ND (0.001) U	ND (0.001) U
Tetrachloroethene	ND (0.00023) U	ND (0.001) U	ND (0.001) U
Toluene	ND (0.00018) U	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.00014) U	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.00015) U	ND (0.001) U	ND (0.001) U
SVOC			
2,4-Dimethylphenol	ND (0.00085) U	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.00073) U	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.0027) U	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.00088) U	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.00079) U	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.0013) U	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.0024) U	ND (0.005) U	ND (0.005) U
P/PCB			
Total PCBs	ND (0.000082) U	ND (0.0004) U	ND (0.0004) U
INORG			
Antimony	ND (0.0022) U	ND (0.025) U	ND (0.025) U
Arsenic	0.0109	0.0053 J	0.0021 J
Barium	0.155	0.137	0.178
Beryllium	ND (0.00054) U	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.00028) U	ND (0.005) U	ND (0.005) U
Chromium Total	ND (0.0014) U	ND (0.01) U	ND (0.01) U
Cobalt	ND (0.0013) U	ND (0.02) U	ND (0.02) U
Copper	ND (0.0042) U	ND (0.005) U	ND (0.005) U
Cyanide (total)	0.0027 J	ND (0.01) U	0.0023 J
Iron	NS	NS	NS
Lead	ND (0.0025) U	ND (0.003) U	ND (0.003) U
Manganese	0.539 J	0.448 J	0.464
Nickel	ND (0.0022) U	ND (0.02) U	ND (0.02) U
Selenium	ND (0.0045) U	ND (0.005) U	ND (0.005) U
Thallium	ND (0.000018) U	ND (0.001) U	ND (0.001) U
Vanadium	ND (0.00082) U	ND (0.01) U	ND (0.01) U
CDD/F			
2,3,7,8-TCDD Equivalent	ND (0.0000000022) U	ND (0.00000005) U	ND (0.0000000086) U

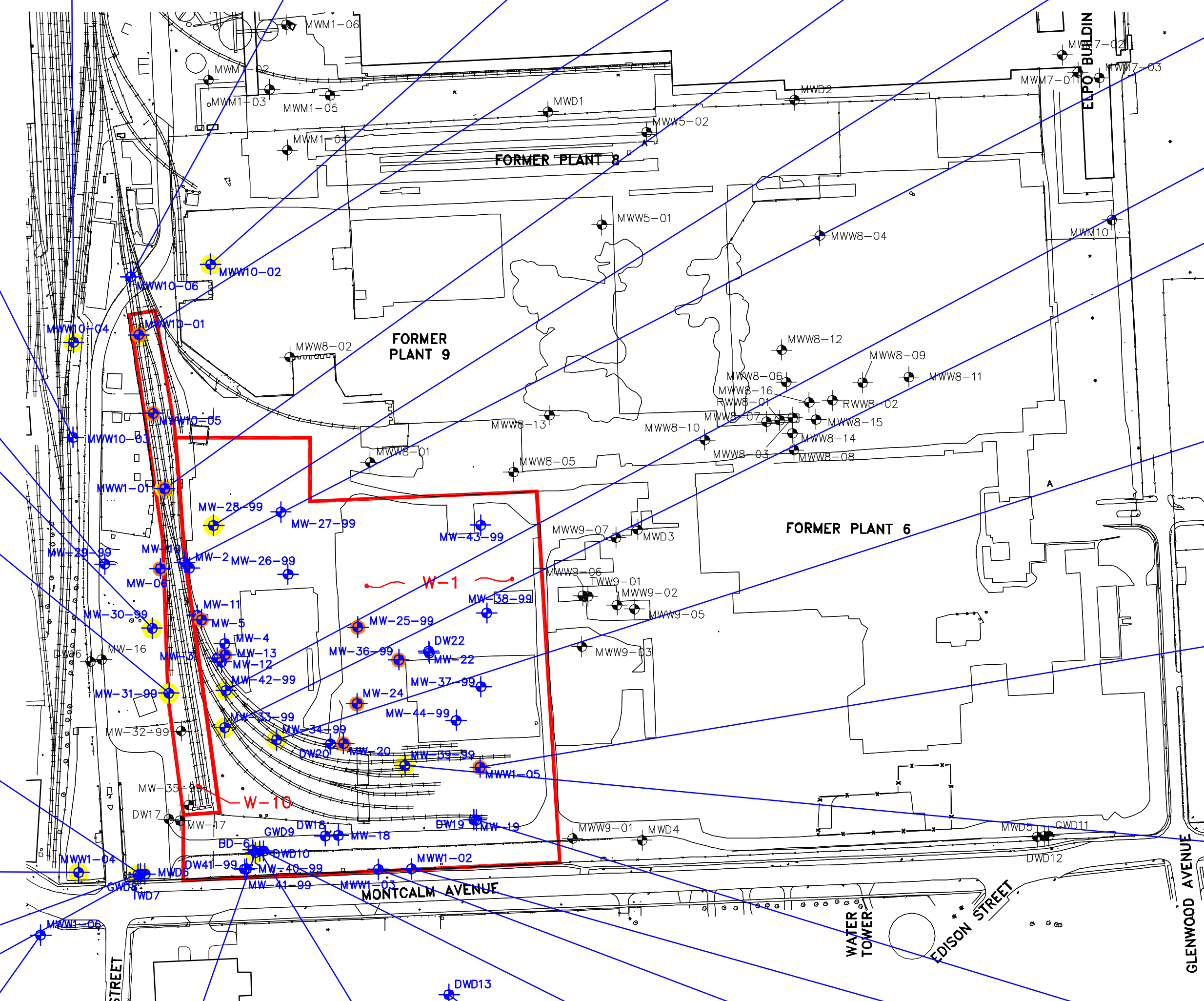
MW-33-99	6/25/01	1/7/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	0.00032 J	0.00026 J
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U
Acetone	0.0038 J	ND (0.01) U
Benzene {IDW, RDW}	0.0062	0.01
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U
Ethylbenzene	ND (0.001) U	ND (0.001) U
Methylene chloride	0.0005 J	0.00058 J
Tetrachloroethene	ND (0.001) U	ND (0.001) U
Toluene	ND (0.001) U	0.00028 J
Trichloroethene	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.001) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) UJ
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) UJ
Butyl benzylphthalate	ND (0.005) U	ND (0.005) UJ
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) UJ
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) UJ
Pentachlorophenol	ND (0.005) U	ND (0.005) UJ
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
INORG		
Antimony	ND (0.025) U	ND (0.025) U
Arsenic	ND (0.01) U	ND (0.01) U
Barium	0.116	0.147
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U
Chromium Total	ND (0.01) U	ND (0.01) U
Cobalt	ND (0.02) U	ND (0.02) U
Copper	ND (0.005) U	ND (0.005) U
Cyanide (total)	ND (0.01) U	0.0068 J
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese	0.371	0.467
Nickel	0.0046 J	0.0039 J
Selenium	0.0049 J	ND (0.005) U
Thallium	ND (0.01) U	ND (0.001) U
Vanadium	ND (0.01) U	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	ND (0.0000000059) U	ND (0.0000000023) U

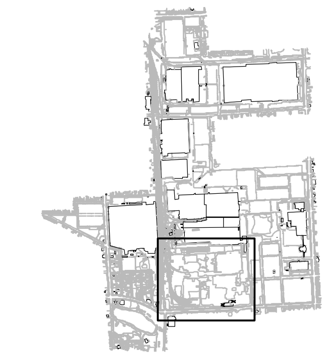
MW-34-99	8/28/01	1/7/02
VOC		
1,1,1-Trichloroethane	ND (0.00015) U	ND (0.001) U/ND (0.001) U
1,1,2-Trichloroethane	ND (0.0003) U	ND (0.001) U/ND (0.001) U
1,1-Dichloroethane	0.00074 J	0.00095 J/0.00095 J
1,1-Dichloroethene	ND (0.00024) U	ND (0.001) U/ND (0.001) U
1,2-Dichloroethane	ND (0.00021) U	ND (0.001) U/ND (0.001) U
Acetone	0.0013 J	ND (0.01) U/ND (0.01) U
Benzene {IDW, RDW}	0.0073	0.01/0.0093
cis-1,2-Dichloroethene	0.0028	0.004/0.0038
Ethylbenzene	0.015	0.02/0.018
Methylene chloride	ND (0.00034) U	ND (0.001) U/ND (0.001) U
Tetrachloroethene	ND (0.00023) U	ND (0.001) U/ND (0.001) U
Toluene	0.0041	0.0057/0.0055
Trichloroethene	0.00062 J	0.00089 J/0.0008 J
Vinyl chloride {IDW, RDW}	0.0056	0.0088/0.0078
SVOC		
2,4-Dimethylphenol	ND (0.00085) U	0.0018 J/0.002 J
Benzo(a)pyrene	ND (0.00073) U	ND (0.005) U/ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.0027) U	ND (0.005) U/ND (0.005) U
Butyl benzylphthalate	ND (0.00088) U	ND (0.005) U/ND (0.005) U
Dibenz(a,h)anthracene	ND (0.00079) U	ND (0.005) U/ND (0.005) U
Methylphenol (Cresol)	ND (0.0013) U	ND (0.005) U/ND (0.005) U
Pentachlorophenol	ND (0.0024) U	ND (0.005) U/ND (0.005) U
P/PCB		
Total PCBs	ND (0.000082) U	ND (0.0004) U/ND (0.0004) U
INORG		
Antimony	–	ND (0.025) U/ND (0.025) U
Antimony {IDW, RDW}	0.0074 J	–
Arsenic	0.005 J	0.006 J/0.0066 J
Barium	0.716	0.718/0.751
Beryllium	ND (0.00054) U	ND (0.001) U/ND (0.001) U
Cadmium	ND (0.00028) U	ND (0.005) U/0.0003 J
Chromium Total	ND (0.0014) U	ND (0.01) U/ND (0.01) U
Cobalt	ND (0.0013) U	ND (0.02) U/ND (0.02) U
Copper	ND (0.0042) U	ND (0.005) U/ND (0.005) U
Cyanide (total)	0.0063 J	0.0061 J/0.0063 J
Iron	NS	NS/NS
Lead	ND (0.0025) U	ND (0.003) U/ND (0.003) U
Manganese	0.607	0.58/0.591
Nickel	ND (0.0022) U	ND (0.02) U/ND (0.02) U
Selenium	ND (0.0045) U	ND (0.005) U/ND (0.005) U
Thallium	ND (0.005) U	ND (0.001) U/ND (0.001) U
Vanadium	ND (0.00082) U	ND (0.01) U/ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	0.0000000162535 J	–
2,3,7,8-TCDD Equivalent {GCC}	–	0.0000000293308 J/0.0000000138154 J

MWW1-05	8/19/02
VOC	
1,1,1-Trichloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	NS
1,1-Dichloroethene	NS
1,2-Dichloroethane	NS
Acetone	NS
Benzene	NS
cis-1,2-Dichloroethene	NS
Ethylbenzene	NS
Methylene chloride	NS
Tetrachloroethene	NS
Toluene	NS
Trichloroethene	NS
Vinyl chloride	NS
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	NS
Arsenic	NS
Barium	NS
Beryllium	NS
Cadmium	NS
Chromium Total	NS
Cobalt	NS
Copper	NS
Cyanide (total)	NS
Iron	NS
Lead	NS
Manganese	NS
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MW-39-99	8/28/01	1/10/02
VOC		
1,1,1-Trichloroethane	ND (0.00015) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.0003) U	ND (0.001) U
1,1-Dichloroethane	ND (0.00016) U	ND (0.001) U
1,1-Dichloroethene	ND (0.00024) U	ND (0.001) U
1,2-Dichloroethane	ND (0.00021) U	ND (0.001) U
Acetone	ND (0.00051) U	ND (0.01) U
Benzene	0.0033	0.0032
cis-1,2-Dichloroethene	ND (0.00022) U	ND (0.0005) U
Ethylbenzene	ND (0.00012) U	ND (0.001) U
Methylene chloride	ND (0.00034) U	ND (0.001) U
Tetrachloroethene	ND (0.00023) U	ND (0.001) U
Toluene	0.00027 J	0.00029 J
Trichloroethene	ND (0.00014) U	ND (0.001) U
Vinyl chloride	ND (0.00015) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.00085) U	ND (0.012) U
Benzo(a)pyrene	ND (0.00073) U	ND (0.012) U
bis(2-Ethylhexyl)phthalate	0.0027 J	ND (0.012) U
Butyl benzylphthalate	ND (0.00088) U	ND (0.012) U
Dibenz(a,h)anthracene	ND (0.00079) U	ND (0.012) U
Methylphenol (Cresol)	ND (0.0013) U	ND (0.012) U
Pentachlorophenol	ND (0.0024) U	ND (0.012) U
P/PCB		
Total PCBs {IDW, RDW, GCC}	0.004 J	0.004585 J
INORG		
Antimony	–	ND (0.025) U
Antimony {IDW, RDW}	0.0067 J	–
Arsenic	ND (0.0039) U	ND (0.01) U
Barium	0.132	0.0808
Beryllium	ND (0.00054) U	ND (0.001) U
Cadmium	ND (0.00028) U	ND (0.005) U
Chromium Total	ND (0.0014) U	0.0027 J
Cobalt	ND (0.0013) U	0.0021 J
Copper	0.0047 J	ND (0.005) U
Cyanide (total)	0.0089 J	0.0078 J
Iron	NS	NS
Lead {IDW, RDW}	0.0066	0.0199
Manganese	0.0515	0.0756 J
Nickel	0.003 J	0.0095 J
Selenium	ND (0.0045) U	ND (0.005) U
Thallium	ND (0.005) U	ND (0.001) U
Vanadium	ND (0.00082) U	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	0.00000000887905 J	NS

MW-19	8/28/01	1/7/02
VOC		
1,1,1-Trichloroethane	ND (0.00015) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.0003) U	ND (0.001) UJ
1,1-Dichloroethane	ND (0.00016) U	ND (0.001) U
1,1-Dichloroethene	ND (0.00024) U	ND (0.001) U
1,2-Dichloroethane	ND (0.00021) U	ND (0.001) U
Acetone	ND (0.00051) U	ND (0.01) U
Benzene	ND (0.00016) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.00022) U	ND (0.0005) U
Ethylbenzene	ND (0.00012) U	ND (0.001) U
Methylene chloride	ND (0.00034) U	ND (0.001) UJ
Tetrachloroethene	ND (0.00023) U	ND (0.001) U
Toluene	ND (0.00018) U	0.00033 J
Trichloroethene	ND (0.00014) U	ND (0.001) U
Vinyl chloride	ND (0.00015) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.00085) U	ND (0.012) U
Benzo(a)pyrene	ND (0.00073) U	ND (0.012) U
bis(2-Ethylhexyl)phthalate	ND (0.0027) U	ND (0.012) U
Butyl benzylphthalate	ND (0.00088) U	ND (0.012) U
Dibenz(a,h)anthracene	ND (0.00079) U	ND (0.012) U
Methylphenol (Cresol)	ND (0.0013) U	ND (0.012) U
Pentachlorophenol	ND (0.0024) U	ND (0.012) U
P/PCB		
Total PCBs	ND (0.000082) U	ND (0.0004) U
INORG		
Antimony	ND (0.0022) U	ND (0.025) U
Arsenic	0.0237	0.0264
Barium	0.0988	0.115
Beryllium	ND (0.00054) U	ND (0.001) U
Cadmium	0.0011 J	0.00058 J
Chromium Total	ND (0.0014) U	ND (0.01) U
Cobalt	0.0032 J	0.0025 J
Copper	ND (0.0042) U	ND (0.005) U
Cyanide (total)	0.0038 J	0.0024 J
Iron	NS	NS
Lead	ND (0.0025) U	ND (0.003) U
Manganese	0.246	0.409
Nickel	0.011 J	0.0134 J
Selenium	ND (0.0045) U	ND (0.005) U
Thallium	ND (0.005) U	ND (0.001) U
Vanadium	ND (0.00082) U	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	0.000000001828 J	ND (0.0000000088) U





SITE LOCATION

LEGEND:

MWD5 — GROUNDWATER MONITORING WELL LOCATION

CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA

LOCATION WHERE NAPL HAS BEEN IDENTIFIED DURING RECENT RFI ACTIVITIES AT A MEASURABLE THICKNESS (>0.01 FEET)

FENCED AREA

APPROXIMATE AOI AREA

W-1 = WEST YARD
W-10 = RAILROAD MARSHALLING AREA

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. MWW8-05 – LNAPL WAS HISTORICALLY DETECTED IN THIS MONITORING WELL ONLY ON OCTOBER 1st AND 8th 2001.
4. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
5. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
6. J – ESTIMATED CONCENTRATION.
7. B – LABORATORY BLANK CONTAMINATION.
8. NS – NOT SAMPLED.

0 200' 400'
GRAPHIC SCALE

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

AOI W-1 - GROUNDWATER

ENCORE

FIGURE 4-9

X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/26/03 SYR-85-GMS DJP GMS
64411210/RFI-ADDM/64411C10.DWG

MWW8-02	9/11/01	1/9/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	0.00021 J	0.00027 J
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U
Acetone	ND (0.01) U	ND (0.01) U
Benzene	ND (0.001) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U
Ethylbenzene	0.00015 J	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) U
Tetrachloroethene	ND (0.001) U	ND (0.001) U
Toluene	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.001) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.005) U	ND (0.012) U
Benzo(a)pyrene	ND (0.005) U	ND (0.012) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.012) U
Butyl benzylphthalate	ND (0.005) U	ND (0.012) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.012) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.012) U
Pentachlorophenol	ND (0.005) U	ND (0.012) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
INORG		
Antimony	ND (0.025) U	ND (0.025) U
Arsenic	0.0075 J	0.0147
Barium	0.0946	0.101
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	0.00032 J
Chromium Total	ND (0.01) U	ND (0.01) U
Cobalt	ND (0.02) U	ND (0.02) U
Copper	ND (0.005) U	ND (0.005) U
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese	0.167	0.153
Nickel	0.0036 J	0.0034 J
Selenium	ND (0.005) U	ND (0.005) U
Thallium	ND (0.01) U	ND (0.001) U
Vanadium	ND (0.01) U	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

MWW8-01	9/11/01	1/9/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	0.003	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U
Acetone	ND (0.01) U	ND (0.01) U
Benzene	0.00018 J	ND (0.001) U
cis-1,2-Dichloroethene	0.0023	ND (0.0005) U
Ethylbenzene	ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) U
Tetrachloroethene	ND (0.001) U	ND (0.001) U
Toluene	ND (0.001) U	ND (0.001) U
Trichloroethene	0.0026	0.0002 J
Vinyl chloride	0.00031 J	ND (0.001) UJ
SVOC		
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
INORG		
Antimony	ND (0.025) U	ND (0.025) U
Arsenic	ND (0.01) U	ND (0.01) U
Barium	0.0913	0.101
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	0.00034 J
Chromium Total	ND (0.01) U	0.0016 J
Cobalt	0.0032 J	0.003 J
Copper	ND (0.005) U	ND (0.005) U
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese	0.699	0.901
Nickel	0.0063 J	0.004 J
Selenium	ND (0.005) U	ND (0.005) U
Thallium	ND (0.01) U	ND (0.001) U
Vanadium	ND (0.01) U	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

MWW8-05	9/12/01	1/9/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	0.00022 J	0.0002 J
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U
Acetone	ND (0.01) U	ND (0.01) U
Benzene	0.00023 J	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U
Ethylbenzene	ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) U
Tetrachloroethene	ND (0.001) U	ND (0.001) U
Toluene	0.0002 J	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.001) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
INORG		
Antimony	ND (0.025) U	ND (0.025) U
Arsenic	0.036	0.0289
Barium	0.0689	0.0607
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	0.00034 J	0.00054 J
Chromium Total	ND (0.01) U	ND (0.01) U
Cobalt	ND (0.02) U	ND (0.02) U
Copper	ND (0.005) U	ND (0.005) U
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese {IDW, RDW}	3.2	3.04
Nickel	ND (0.02) U	ND (0.02) U
Selenium	ND (0.005) U	ND (0.005) U
Thallium	ND (0.01) U	ND (0.001) U
Vanadium	ND (0.01) U	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

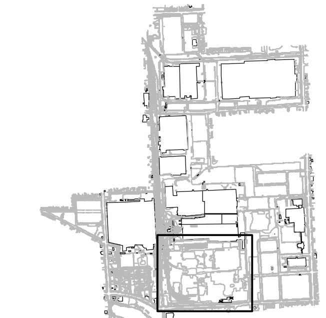
MWW8-13	8/25/03
VOC	
1,1,1-Trichloroethane	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	ND (0.01) U
Benzene	0.00047 J
cis-1,2-Dichloroethene	ND (0.0005) U
Ethylbenzene	0.0007 J
Methylene chloride	ND (0.001) UJ
Tetrachloroethene	ND (0.001) U
Toluene	0.002
Trichloroethene	ND (0.001) U
Vinyl chloride	ND (0.001) UJ
SVOC	
2,4-Dimethylphenol {IDW, RDW}	2.5
Benzo(a)pyrene	ND (1) U
bis(2-Ethylhexyl)phthalate	ND (1) U
Butyl benzylphthalate	ND (1) U
Dibenz(a,h)anthracene	ND (1) UJ
Methylphenol (Cresol) {IDW, RDW}	4.69 J
Pentachlorophenol	ND (1) U
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	ND (0.025) U
Arsenic	0.0188
Barium	ND (0.01) U
Beryllium	ND (0.001) U
Cadmium	ND (0.005) U
Chromium Total	ND (0.01) U
Cobalt	ND (0.02) U
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	0.0485 J
Nickel	0.0315
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium {RDW}	0.0065 J
CDD/F	
2,3,7,8-TCDD Equivalent	NS

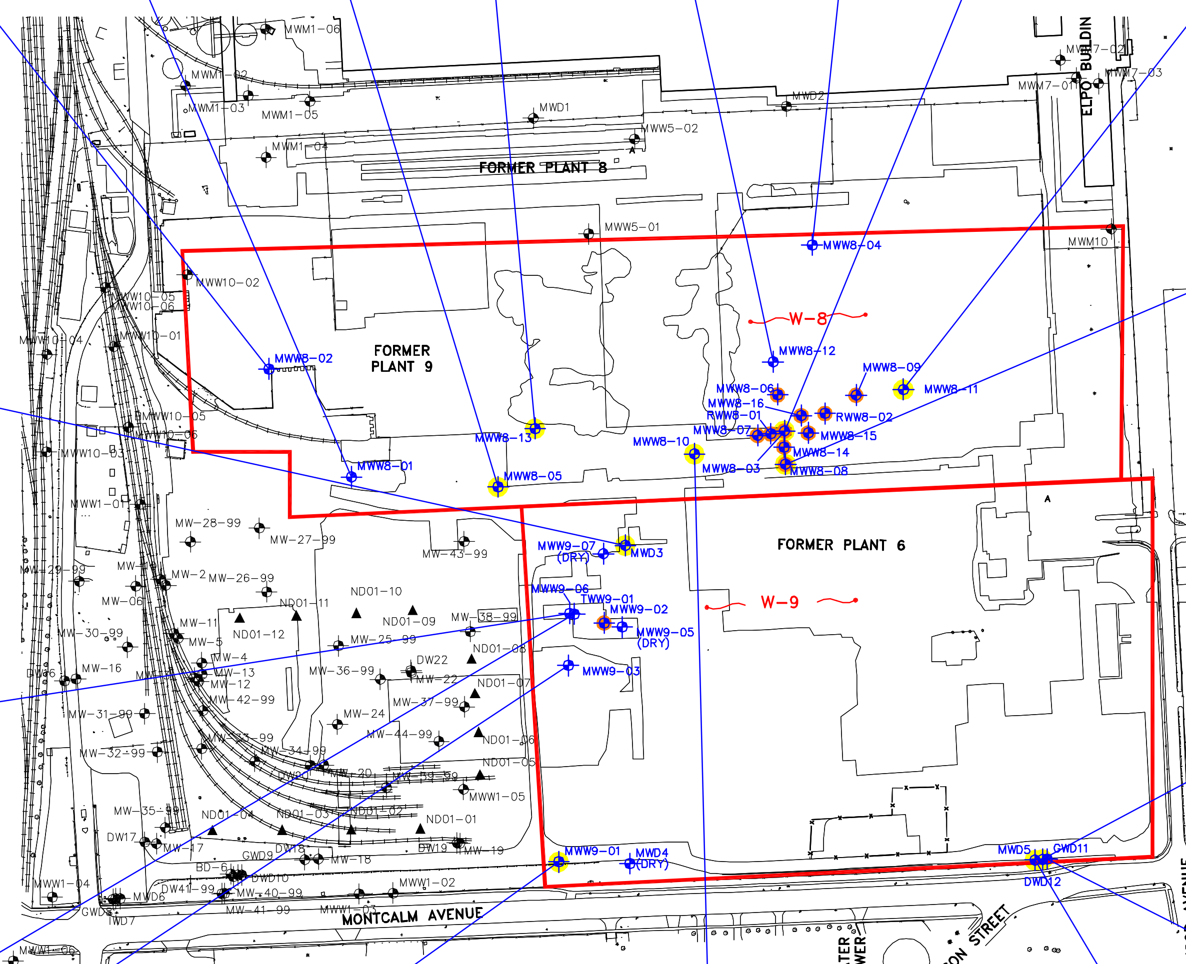
MWW8-12	2/13/02	11/12/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U
Acetone	0.029	ND (0.01) UJ
Benzene	0.00026 J	ND (0.001) U
cis-1,2-Dichloroethene	0.0003 J	ND (0.0005) U
Ethylbenzene	0.00032 J	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) UJ
Tetrachloroethene	ND (0.001) U	ND (0.001) U
Toluene	0.00086 J	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.001) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.05) U	ND (0.05) U
Benzo(a)pyrene	ND (0.05) U	ND (0.05) U
bis(2-Ethylhexyl)phthalate	ND (0.05) U	ND (0.05) U
Butyl benzylphthalate	ND (0.05) U	ND (0.05) U
Dibenz(a,h)anthracene	ND (0.05) U	ND (0.05) U
Methylphenol (Cresol)	ND (0.05) U	ND (0.05) U
Pentachlorophenol	ND (0.05) U	ND (0.05) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
INORG		
Antimony	ND (0.025) U	ND (0.025) U
Arsenic	0.0041 J	0.0063 J
Barium	0.205	0.0319
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U
Chromium Total	0.0476	ND (0.01) U
Cobalt	ND (0.02) U	ND (0.02) U
Copper	0.0066	ND (0.005) U
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese	0.0551	0.0035 J
Nickel	0.0075 J	0.0164 J
Selenium	ND (0.005) U	ND (0.005) U
Thallium	ND (0.001) U	ND (0.001) U
Vanadium	0.0036 J	–
Vanadium {RDW}	–	0.0119
CDD/F		
2,3,7,8-TCDD Equivalent	0.00000000194825 J	NS

MWW8-04	1/9/02
VOC	
1,1,1-Trichloroethane	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	ND (0.01) U
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U
Ethylbenzene	0.00016 J
Methylene chloride	ND (0.001) U
Tetrachloroethene	ND (0.001) U
Toluene	0.00028 J
Trichloroethene	ND (0.001) U
Vinyl chloride	ND (0.001) U
SVOC	
2,4-Dimethylphenol	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U
Pentachlorophenol	ND (0.005) U
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	ND (0.025) U
Arsenic	0.0186
Barium	0.0429
Beryllium	ND (0.001) U
Cadmium	ND (0.005) U
Chromium Total	ND (0.01) U
Cobalt	ND (0.02) U
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	0.254
Nickel	ND (0.02) U
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	ND (0.01) U
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWW8-03	9/17/01
VOC	
1,1,1-Trichloroethane	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	0.0018 J
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U
Ethylbenzene	0.00022 J
Methylene chloride	0.0005 J
Tetrachloroethene	ND (0.001) U
Toluene	0.00075 J
Trichloroethene	ND (0.001) U
Vinyl chloride	ND (0.001) U
SVOC	
2,4-Dimethylphenol	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U
Pentachlorophenol	ND (0.005) U
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	ND (0.025) U
Arsenic	0.0186
Barium	0.0776
Beryllium	ND (0.001) U
Cadmium	ND (0.005) U
Chromium Total	ND (0.01) U
Cobalt	0.0019 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	0.561
Nickel	0.0041 J
Selenium	ND (0.005) U
Thallium {IDW, RDW}	0.0061 J
Vanadium	0.0018 J
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWW8-11	2/11/02	11/12/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U
Acetone	ND (0.01) U	ND (0.01) UJ
Benzene	0.0005 J	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U
Ethylbenzene	0.00042 J	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) UJ
Tetrachloroethene	ND (0.001) U	ND (0.001) U
Toluene	0.0018	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.001) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
INORG		
Antimony	ND (0.025) U	ND (0.025) U
Arsenic	0.0194	0.0351
Barium	0.0265	0.0458
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U
Chromium Total	ND (0.01) U	0.005 J
Cobalt	ND (0.02) U	ND (0.02) U
Copper	ND (0.005) U	ND (0.005) U
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese {IDW, RDW}	2.92 J	3.57
Nickel	0.0059 J	0.007 J
Selenium	ND (0.005) U	ND (0.005) U
Thallium	ND (0.001) U	ND (0.001) U
Vanadium	ND (0.01) U	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	0.0000000021045 J	NS





MWW8-08	2/15/02	11/14/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U
Acetone	0.024 J	ND (0.01) U
Benzene	ND (0.001) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U
Ethylbenzene	0.00025 J	ND (0.001) U
Methylene chloride	ND (0.001) U	R
Tetrachloroethene	ND (0.001) U	ND (0.001) U
Toluene	0.001	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.001) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.005) U	ND (0.1) U
Benzo(a)pyrene	ND (0.005) U	ND (0.1) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.1) U
Butyl benzylphthalate	ND (0.005) U	ND (0.1) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.1) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.1) U
Pentachlorophenol	ND (0.005) U	ND (0.1) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
INORG		
Antimony	0.0028 J	ND (0.025) U
Arsenic	0.0287	–
Arsenic {IDW, RDW}	–	0.0849
Barium	0.46	1.03
Beryllium	0.00062 J	–
Beryllium {IDW, RDW}	–	0.0054
Cadmium	0.0011 J	0.0039 J
Chromium Total	0.0607	–
Chromium Total {IDW, RDW}	–	0.295
Cobalt	0.0275	–
Cobalt {RDW}	–	0.0879
Copper	0.0556	0.214
Cyanide (total)	NS	NS
Iron	NS	NS
Lead {IDW, RDW}	0.036	0.122
Manganese {RDW}	1.84 J	–
Manganese {IDW, RDW}	–	5.41
Nickel	0.0745 J	–
Nickel {IDW, RDW}	–	0.307
Selenium	ND (0.005) U	ND (0.005) U
Thallium	0.001	–
Thallium {IDW, RDW}	–	0.003
Vanadium {IDW, RDW}	0.0602	0.239
CDD/F		
2,3,7,8-TCDD Equivalent	–	NS
2,3,7,8-TCDD Equivalent {GCC}	0.000000019707 J	–

LEGEND:

MWD5 – GROUNDWATER MONITORING WELL LOCATION

CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA

LOCATION WHERE NAPL HAS BEEN IDENTIFIED DURING RECENT RFI ACTIVITIES AT A MEASURABLE THICKNESS (>0.01 FEET)

FENCED AREA

APPROXIMATE AOI AREA

W-8 = FORMER PLANT 9 BASEMENT AST
W-9 = FORMER CENTRAL FOUNDRY

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

MWD3	8/27/01	1/8/02
VOC		
1,1,1-Trichloroethane	ND (0.0006) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.0012) U	ND (0.001) U
1,1-Dichloroethane	ND (0.00064) U	0.00019 J
1,1-Dichloroethene	ND (0.00096) U	ND (0.001) U
1,2-Dichloroethane	ND (0.00084) U	ND (0.001) U
Acetone	0.16	0.014 J
Benzene	ND (0.00064) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.00088) U	ND (0.0005) U
Ethylbenzene	ND (0.00048) U	ND (0.001) U
Methylene chloride	ND (0.0014) U	ND (0.001) U
Tetrachloroethene	ND (0.00092) U	0.00089 J
Toluene	ND (0.00072) U	ND (0.001) U
Trichloroethene	ND (0.00056) U	ND (0.001) U
Vinyl chloride	ND (0.0006) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.00085) U	ND (0.005) U
Benzo(a)pyrene	ND (0.00073) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.0027) U	ND (0.005) U
Butyl benzylphthalate	ND (0.00088) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.00079) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.0013) U	ND (0.005) U
Pentachlorophenol	ND (0.0024) U	ND (0.005) U
P/PCB		
Total PCBs	ND (0.000082) U	ND (0.0004) U
INORG		
Antimony	0.0048 J	–
Antimony {IDW, RDW}	–	0.0079 J
Arsenic	ND (0.0039) U	0.0047 J
Barium	0.0772	0.0527
Beryllium	ND (0.00054) U	ND (0.001) U
Cadmium	0.00029 J	ND (0.005) U
Chromium Total	ND (0.0014) U	ND (0.01) U
Cobalt	ND (0.0013) U	ND (0.02) U
Copper	ND (0.0042) U	ND (0.005) U
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	ND (0.0025) U	–
Lead {IDW, RDW}	–	0.0057
Manganese	0.162	0.0247
Nickel	ND (0.0022) U	ND (0.02) U
Selenium	ND (0.0045) U	ND (0.005) U
Thallium	ND (0.005) U	ND (0.001) U
Vanadium	ND (0.00082) U	0.002 J
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

MWW9-06	9/30/03
VOC	
1,1,1-Trichloroethane	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	ND (0.01) UJ
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U
Ethylbenzene	ND (0.001) U
Methylene chloride	ND (0.001) U
Tetrachloroethene	ND (0.001) U
Toluene	ND (0.001) U
Trichloroethene	ND (0.001) U
Vinyl chloride	ND (0.001) UJ
SVOC	
2,4-Dimethylphenol	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	0.00058 J
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U
Pentachlorophenol	ND (0.005) U
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	ND (0.025) U
Arsenic	ND (0.01) U
Barium	0.107
Beryllium	ND (0.001) U
Cadmium	ND (0.005) U
Chromium Total	ND (0.01) U
Cobalt	ND (0.02) U
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	0.663
Nickel	ND (0.02) U
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	ND (0.01) U
CDD/F	
2,3,7,8-TCDD Equivalent	NS

TWW9-01	9/30/03
VOC	
1,1,1-Trichloroethane	ND (0.001) U/ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U/ND (0.001) U
1,1-Dichloroethane	ND (0.001) U/ND (0.001) U
1,1-Dichloroethene	ND (0.001) U/ND (0.001) U
1,2-Dichloroethane	ND (0.001) U/ND (0.001) U
Acetone	0.014 J/0.016 J
Benzene	0.00028 J/0.00029 J
cis-1,2-Dichloroethene	ND (0.0005) U/ND (0.0005) U
Ethylbenzene	ND (0.001) U/ND (0.001) U
Methylene chloride	ND (0.001) U/ND (0.001) U
Tetrachloroethene	ND (0.001) U/ND (0.001) U
Toluene	0.00026 J/0.00029 J
Trichloroethene	ND (0.001) U/ND (0.001) U
Vinyl chloride	ND (0.001) UJ/ND (0.001) UJ
SVOC	
2,4-Dimethylphenol	0.011 J/0.0098 J
Benzo(a)pyrene	ND (0.025) U/ND (0.025) U
bis(2-Ethylhexyl)phthalate	ND (0.025) U/ND (0.025) U
Butyl benzylphthalate	ND (0.025) U/ND (0.025) U
Dibenz(a,h)anthracene	ND (0.025) U/ND (0.025) U
Methylphenol (Cresol)	ND (0.025) U/ND (0.025) U
Pentachlorophenol	ND (0.025) U/ND (0.025) U
P/PCB	
Total PCBs	ND (0.0004) U/ND (0.0004) U
INORG	
Antimony	ND (0.025) U/ND (0.025) U
Arsenic	0.0102/0.011
Barium	0.173/0.161
Beryllium	ND (0.001) U/ND (0.001) U
Cadmium	ND (0.005) U/ND (0.005) U
Chromium Total	ND (0.01) U/ND (0.01) U
Cobalt	0.0024 J/0.0023 J
Copper	0.003 J/0.0026 J
Cyanide (total)	NS/NS
Iron	NS/NS
Lead	ND (0.003) U/ND (0.003) U
Manganese	0.0543/0.0666
Nickel	0.0057 J/0.0049 J
Selenium	ND (0.005) U/ND (0.005) U
Thallium	ND (0.001) U/ND (0.001) U
Vanadium	0.0042 J
Vanadium {RDW}	0.0048 J
CDD/F	
2,3,7,8-TCDD Equivalent	NS/NS

DWD12	1/18/02	11/12/02	5/20/03	10/31/03
VOC				
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS/NS
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS/NS
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS/NS
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS/NS
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS/NS
Acetone	0.00066 J	ND (0.01) UJ	ND (0.01) U	NS/NS
Benzene	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS/NS
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U	ND (0.0005) U	NS/NS
Ethylbenzene	ND (0.001) U	R	ND (0.001) U	NS/NS
Methylene chloride	ND (0.001) U	ND (0.001) U	–	ND (0.001) UJ/ND (0.001) UJ
Methylene chloride {IDW, RDW}	–	–	0.018	–
Tetrachloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS/NS
Toluene	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS/NS
Trichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS/NS
Vinyl chloride	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS/NS
SVOC				
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U	ND (0.005) U	NS/NS
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U	ND (0.005) U	NS/NS
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U	NS/NS
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U	NS/NS
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U	ND (0.005) U	NS/NS
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U	ND (0.005) U	NS/NS
Pentachlorophenol	ND (0.005) UJ	ND (0.005) U	ND (0.005) U	NS/NS
P/PCB				
Total PCBs	ND (0.0004) U	ND (0.0004) U	ND (0.0004) U	NS/NS
INORG				
Antimony	ND (0.025) U	ND (0.025) U	ND (0.025) U	NS/NS
Arsenic	0.0312	0.0395	0.0364	NS/NS
Barium	0.215	0.585	0.494	NS/NS
Beryllium	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS/NS
Cadmium	ND (0.005) U	ND (0.005) U	ND (0.005) U	NS/NS
Chromium Total	ND (0.01) U	0.0084 J	0.0047 J	NS/NS
Cobalt	ND (0.02) U	ND (0.02) U	0.0084 J	NS/NS
Copper	ND (0.005) U	ND (0.005) U	ND (0.005) U	NS/NS
Cyanide (total)	NS	NS	NS	NS/NS
Iron	NS	NS	NS	NS/NS
Lead	ND (0.003) U	ND (0.003) U	ND (0.003) U	NS/NS
Manganese	ND (0.01) U	0.0675	0.0597	NS/NS
Nickel	ND (0.02) U	0.0093 J	0.0031 J	NS/NS
Selenium	ND (0.005) U	ND (0.005) U	ND (0.005) U	NS/NS
Thallium	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS/NS
Vanadium	ND (0.01) U	ND (0.01) U	ND (0.01) U	NS/NS
CDD/F				
2,3,7,8-TCDD Equivalent	NS	NS	NS	NS/NS

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. MWW8-05 – LNAPL WAS HISTORICALLY DETECTED IN THIS MONITORING WELL ONLY ON OCTOBER 1st AND 8th 2001.
4. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
5. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
6. J – ESTIMATED CONCENTRATION.
7. B – LABORATORY BLANK CONTAMINATION.
8. NS – NOT SAMPLED.

0 200' 400'
GRAPHIC SCALE

MWW9-03	9/30/03
VOC	
1,1,1-Trichloroethane	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	ND (0.01) UJ
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U
Ethylbenzene	ND (0.001) U
Methylene chloride	ND (0.001) U
Tetrachloroethene	ND (0.001) U
Toluene	ND (0.001) U
Trichloroethene	ND (0.001) U
Vinyl chloride	ND (0.001) UJ
SVOC	
2,4-Dimethylphenol	ND (0.025) U
Benzo(a)pyrene	ND (0.025) U
bis(2-Ethylhexyl)phthalate	ND (0.025) U
Butyl benzylphthalate	ND (0.025) U
Dibenz(a,h)anthracene	ND (0.025) U
Methylphenol (Cresol)	ND (0.025) U
Pentachlorophenol	ND (0.025) U
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	ND (0.025) U
Arsenic	0.0154
Barium	0.0173
Beryllium	ND (0.001) U
Cadmium	ND (0.005) U
Chromium Total	ND (0.01) U
Cobalt	ND (0.02) U
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	0.67
Nickel	ND (0.02) U
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	ND (0.01) U
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWW9-01	8/25/03
VOC	
1,1,1-Trichloroethane	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	ND (0.01) U
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U
Ethylbenzene	ND (0.001) U
Methylene chloride	ND (0.001) UJ
Tetrachloroethene	ND (0.001) U
Toluene	ND (0.001) U
Trichloroethene	ND (0.001) U
Vinyl chloride	ND (0.001) UJ
SVOC	
2,4-Dimethylphenol	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U
Pentachlorophenol	ND (0.005) U
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	ND (0.025) U
Arsenic	0.0037 J
Barium	0.42
Beryllium	ND (0.001) U
Cadmium	ND (0.005) U
Chromium Total	0.0568
Cobalt	0.0027 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead {IDW, RDW}	0.0391
Manganese	0.187 J
Nickel	0.0385
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	0.0019 J
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWW8-10	2/12/02	11/12/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U/ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U/ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U/ND (0.001) U	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U/ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U/ND (0.001) U	ND (0.001) U
Acetone	0.003 J/ND (0.01) UJ	ND (0.01) UJ
Benzene	0.00065 J/0.0006 J	0.00041 J
cis-1,2-Dichloroethene	ND (0.0005) UJ/ND (0.0005) UJ	ND (0.0005) U
Ethylbenzene	0.00043 J/0.00034 J	ND (0.001) U
Methylene chloride	ND (0.001) U/ND (0.001) U	ND (0.001) UJ
Tetrachloroethene	ND (0.001) U/ND (0.001) U	ND (0.001) U
Toluene	0.0021/0.0019	0.00066 J
Trichloroethene	ND (0.001) U/ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.001) U/ND (0.001) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.05) U/ND (0.05) U	ND (0.025) U
Benzo(a)pyrene	ND (0.05) U/ND (0.05) U	ND (0.025) U
bis(2-Ethylhexyl)phthalate	ND (0.05) U/ND (0.05) U	ND (0.025) U
Butyl benzylphthalate	ND (0.05) U/ND (0.05) U	ND (0.025) U
Dibenz(a,h)anthracene	ND (0.05) U/ND (0.05) U	ND (0.025) U
Methylphenol (Cresol)	ND (0.05) U/ND (0.05) U	ND (0.025) U
Pentachlorophenol	ND (0.05) U/ND (0.05) U	ND (0.025) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
Total PCBs {IDW, RDW}	0.001431 J	–
INORG		
Antimony	ND (0.025) U/ND (0.025) U	ND (0.025) U
Arsenic	ND (0.01) U/ND (0.01) U	0.0092 J
Barium	0.306/0.303	0.382
Beryllium	ND (0.001) U/ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U/ND (0.005) U	ND (0.005) U
Chromium Total	ND (0.01) U/0.0016 J	ND (0.01) U
Cobalt	0.0095 J/0.0099 J	ND (0.02) U
Copper	ND (0.005) U/ND (0.005) U	ND (0.005) U
Cyanide (total)	NS/NS	NS
Iron	NS/NS	NS
Lead	ND (0.003) U/ND (0.003) U	ND (0.003) U
Manganese	0.328/0.326	0.167
Nickel	0.0174 J/0.0179 J	0.0169 J
Selenium	ND (0.005) U/ND (0.005) U	ND (0.005) U
Thallium	ND (0.001) U/ND (0.001) U	ND (0.001) U
Vanadium	ND (0.01) U/0.00093 J	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	ND (0.0000000045) U/0.0000000023568 J	NS

MWD5	8/27/01	1/8/02
VOC		
1,1,1-Trichloroethane	ND (0.00015) U	0.00025 J
1,1,2-Trichloroethane	ND (0.0003) U	ND (0.001) U
1,1-Dichloroethane	ND (0.00016) U	ND (0.001) U
1,1-Dichloroethene	ND (0.00024) U	ND (0.001) U
1,2-Dichloroethane	ND (0.00021) U	ND (0.001) U
Acetone	0.035	ND (0.01) UJ
Benzene	ND (0.00016) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.00022) U	ND (0.0005) U
Ethylbenzene	ND (0.00012) U	ND (0.001) U
Methylene chloride	ND (0.00034) U	ND (0.001) U
Tetrachloroethene	ND (0.00023) U	ND (0.001) U
Toluene	ND (0.00018) U	ND (0.001) U
Trichloroethene	ND (0.00014) U	ND (0.001) U
Vinyl chloride	ND (0.00015) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.00085) U	ND (0.005) U
Benzo(a)pyrene	ND (0.00073) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.0027) U	ND (0.005) U
Butyl benzylphthalate	ND (0.00088) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.00079) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.0013) U	ND (0.005) U
Pentachlorophenol	ND (0.0024) U	ND (0.005) U
P/PCB		
Total PCBs	ND (0.000082) U	ND (0.0004) U
INORG		
Antimony	ND (0.0022) U	ND (0.025) U
Arsenic	ND (0.0039) U	ND (0.01) U
Barium	0.201	0.0561
Beryllium	ND (0.00054) U	ND (0.001) U
Cadmium	ND (0.00028) U	ND (0.005) U
Chromium Total	ND (0.0014) U	0.0112
Cobalt	0.0029 J	ND (0.02) U
Copper	ND (0.0042) U	ND (0.005) U
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	ND (0.0025) U	ND (0.003) U
Manganese	0.382	0.0165
Nickel	0.0038 J	ND (0.02) U
Selenium	ND (0.0045) U	ND (0.005) U
Thallium	–	ND (0.001) U
Thallium {IDW, RDW}	0.0124	–
Vanadium	ND (0.00082) U	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

GWD11	1/29/02	11/12/02	5/20/03
VOC			
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U
Acetone	0.0016 J	ND (0.01) UJ	ND (0.01) U
Benzene	ND (0.001) U	ND (0.001) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U	ND (0.0005) U
Ethylbenzene	ND (0.001) U	R	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) U	ND (0.001) U
Tetrachloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U
Toluene	ND (0.001) U	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.001) U	ND (0.001) U	ND (0.001) U
SVOC			
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U	ND (0.005) U
P/PCB			
Total PCBs	ND (0.0004) U	ND (0.0004) U	ND (0.0004) U
INORG			
Antimony	ND (0.025) U	ND (0.025) U	0.0049 J
Arsenic	0.0059 J	0.0031 J	ND (0.01) U
Barium	0.102	0.336	0.036
Beryllium	ND (0.001) U	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	0.0003 J	ND (0.005) U
Chromium Total	0.0077 J	0.0034 J	0.0028 J
Cobalt	0.0016 J	ND (0.02) U	0.00076 J
Copper	ND (0.005) U	ND (0.005) U	ND (0.005) U
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	ND (0.003) U
Manganese	0.0726	0.255	0.0461
Nickel	0.0067 J	0.0053 J	ND (0.02) U
Selenium	ND (0.005) U	ND (0.005) U	ND (0.005) U
Thallium	ND (0.001) U	ND (0.001) U	ND (0.001) U
Vanadium	ND (0.01) U	ND (0.01) U	ND (0.01) U
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/26/03 SYR-85-GMS DJP GMS
64411210/RFI-ADDM/64411C11.DWG

GENERAL MOTORS
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PONTIAC NORTH CAMPUS RFI

AOIs W-8 AND W-9 - GROUNDWATER

ENCORE

FIGURE 4-10

MWW8-02	0-2(ft BGS)	6-8(ft BGS)	8-10(ft BGS)	12-14(ft BGS)
VOC				
1,1,1-Trichloroethane	ND (0.24) U	ND (0.005) U	ND (0.0045) U	ND (0.0046) U
1,1,2-Trichloroethane	ND (0.24) U	ND (0.005) U	ND (0.0045) U	ND (0.0046) U
1,1-Dichloroethane	ND (0.24) U	ND (0.005) U	ND (0.0045) U	ND (0.0046) U
1,1-Dichloroethene	ND (0.24) U	ND (0.005) U	ND (0.0045) U	ND (0.0046) U
1,2-Dichloroethane	ND (0.24) U	ND (0.005) U	ND (0.0045) U	ND (0.0046) U
Acetone	0.3 J	0.011 J	0.0097 J	0.0095 J
Benzene	0.045 J	ND (0.005) U	ND (0.0045) U	ND (0.0046) U
cis-1,2-Dichloroethene	ND (0.24) U	ND (0.005) U	ND (0.0045) U	ND (0.0046) U
Ethylbenzene	0.076 J	ND (0.005) U	ND (0.0045) U	ND (0.0046) U
Methylene chloride	ND (0.24) U	ND (0.005) UJ	ND (0.0045) UJ	ND (0.0046) UJ
Tetrachloroethene	ND (0.24) U	ND (0.005) U	ND (0.0045) U	ND (0.0046) U
Toluene	ND (0.24) U	0.00092 J	0.0011 J	0.0018 J
Trichloroethene	ND (0.24) U	ND (0.005) U	ND (0.0045) U	ND (0.0046) U
Vinyl chloride	ND (0.49) U	ND (0.01) U	ND (0.0089) U	ND (0.0093) U
SVOC				
2,4-Dimethylphenol	ND (20) U	ND (2) U	ND (0.38) U	ND (1.9) U
Benzo(a)pyrene	ND (20) U	ND (2) U	ND (0.38) U	0.76 J
bis(2-Ethylhexyl)phthalate	ND (20) U	ND (2) U	0.071 J	ND (1.9) U
Butyl benzylphthalate	ND (20) U	ND (2) U	ND (0.38) U	ND (1.9) U
Dibenz(a,h)anthracene	ND (20) U	ND (2) U	ND (0.38) U	ND (1.9) U
Methylphenol (Cresol)	ND (20) U	ND (2) U	ND (0.38) U	ND (1.9) U
Pentachlorophenol	ND (200) U	ND (21) U	ND (3.9) U	ND (20) U
P/PCB				
Total PCBs	ND (0.039) U	0.31725 J	0.1178 J	0.26595 J
INORG				
Antimony	7.46 J	ND (2.44) U	ND (2.29) U	ND (2.34) U
Arsenic	–	7.49	2.5	5.05
Arsenic {RDC}	36.2	–	–	–
Barium	509	85.9	67	121
Beryllium	ND (0.119) U	0.29	0.161	0.153
Cadmium	ND (5.93) U	ND (0.61) U	0.212 J	5.46
Chromium Total	–	156	156	17.6
Chromium Total {IPSIC, RPSIC}	857	–	–	–
Cobalt	40.6	8.34	6.14	7.5
Copper	1920	20	21.9	205
Cyanide (total)	NS	NS	NS	NS
Iron	NS	NS	NS	NS
Lead	–	14.7	10.4	31
Lead {RDC}	587	–	–	–
Manganese	–	236	230	337
Manganese {IPSIC}	2780	–	–	–
Nickel	1890	16.6	16.2	28.5
Selenium	8.62	0.622	ND (0.573) U	ND (0.586) U
Thallium	ND (11.9) U	ND (1.22) U	ND (1.15) U	ND (1.17) U
Vanadium	29.3	29.2	14.6	19.1
CDD/F				
2,3,7,8-TCDD Equivalent	NS	NS	NS	NS

SW8-09	0-2(ft BGS)
VOC	
1,1,1-Trichloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	NS
1,1-Dichloroethene	NS
1,2-Dichloroethane	NS
Acetone	NS
Benzene	NS
cis-1,2-Dichloroethene	NS
Ethylbenzene	NS
Methylene chloride	NS
Tetrachloroethene	NS
Toluene	NS
Trichloroethene	NS
Vinyl chloride	NS
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
P/PCB	
Total PCBs	NS
INORG	
Antimony	NS
Arsenic	NS
Barium	NS
Beryllium	NS
Cadmium	NS
Chromium Total	NS
Cobalt	NS
Copper	NS
Cyanide (total)	NS
Iron	NS
Lead	NS
Manganese	2040
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS

BW8-01	2-4(ft BGS)	8-10(ft BGS)	10-12(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0058) U	ND (0.0058) U	ND (0.0057) U
1,1,2-Trichloroethane	ND (0.0058) U	ND (0.0058) U	ND (0.0057) U
1,1-Dichloroethane	ND (0.0058) U	ND (0.0058) U	ND (0.0057) U
1,1-Dichloroethene	ND (0.0058) U	ND (0.0058) U	ND (0.0057) U
1,2-Dichloroethane	ND (0.0058) U	ND (0.0058) U	ND (0.0057) U
Acetone	ND (0.023) U	ND (0.023) U	ND (0.023) U
Benzene	ND (0.0058) U	ND (0.0058) U	ND (0.0057) U
cis-1,2-Dichloroethene	ND (0.0058) U	ND (0.0058) U	ND (0.0057) U
Ethylbenzene	ND (0.0058) U	ND (0.0058) U	ND (0.0057) U
Methylene chloride	ND (0.0058) UJ	ND (0.0058) UJ	ND (0.0057) UJ
Tetrachloroethene	ND (0.0058) U	ND (0.0058) U	ND (0.0057) U
Toluene	0.0026 J	0.0014 J	0.0027 J
Trichloroethene	ND (0.0058) U	ND (0.0058) U	ND (0.0057) U
Vinyl chloride	ND (0.012) U	ND (0.012) U	ND (0.011) U
SVOC			
2,4-Dimethylphenol	ND (0.37) U	ND (0.35) U	ND (0.39) U
Benzo(a)pyrene	ND (0.37) U	ND (0.35) U	ND (0.39) U
bis(2-Ethylhexyl)phthalate	0.062 J	0.11 J	0.064 J
Butyl benzylphthalate	ND (0.37) U	ND (0.35) U	ND (0.39) U
Dibenz(a,h)anthracene	ND (0.37) U	ND (0.35) U	ND (0.39) U
Methylphenol (Cresol)	ND (0.37) U	ND (0.35) U	ND (0.39) U
Pentachlorophenol	ND (3.8) U	ND (3.6) U	ND (4) U
P/PCB			
Total PCBs	ND (0.037) U	ND (0.035) U	ND (0.039) U
INORG			
Antimony	ND (2.25) U	ND (2.13) U	ND (2.38) U
Arsenic	3.83	2.91	4.23
Barium	10.7	20.6	24.8
Beryllium	ND (0.112) U	ND (0.107) U	0.0804 J
Cadmium	0.152 J	0.165 J	ND (0.595) U
Chromium Total	5.45	7.7	8.43
Cobalt	2.47	1.73	4.79
Copper	5.82	11	10.5
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	3.85	7.63	4.75
Manganese	127	114	273
Nickel	6.02	5.65	12.4
Selenium	ND (0.562) U	ND (0.533) U	ND (0.595) U
Thallium	ND (1.12) U	ND (1.07) U	ND (1.19) U
Vanadium	9.97	4.94	11.4
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

SW8-05	0-2(ft BGS)
VOC	
1,1,1-Trichloroethane	NS/NS
1,1,2-Trichloroethane	NS/NS
1,1-Dichloroethane	NS/NS
1,1-Dichloroethene	NS/NS
1,2-Dichloroethane	NS/NS
Acetone	NS/NS
Benzene	NS/NS
cis-1,2-Dichloroethene	NS/NS
Ethylbenzene	NS/NS
Methylene chloride	NS/NS
Tetrachloroethene	NS/NS
Toluene	NS/NS
Trichloroethene	NS/NS
Vinyl chloride	NS/NS
SVOC	
2,4-Dimethylphenol	NS/NS
Benzo(a)pyrene	NS/NS
bis(2-Ethylhexyl)phthalate	NS/NS
Butyl benzylphthalate	NS/NS
Dibenz(a,h)anthracene	NS/NS
Methylphenol (Cresol)	NS/NS
Pentachlorophenol	NS/NS
P/PCB	
Total PCBs	NS/NS
INORG	
Antimony	NS/NS
Arsenic	NS/NS
Barium	NS/NS
Beryllium	NS/NS
Cadmium	NS/NS
Chromium Total	NS/NS
Cobalt	NS/NS
Copper	NS/NS
Cyanide (total)	NS/NS
Iron	NS/NS
Lead	NS/NS
Manganese	952/1750
Nickel	NS/NS
Selenium	NS/NS
Thallium	NS/NS
Vanadium	NS/NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS/NS

SW8-06	0-2(ft BGS)
VOC	
1,1,1-Trichloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	NS
1,1-Dichloroethene	NS
1,2-Dichloroethane	NS
Acetone	NS
Benzene	NS
cis-1,2-Dichloroethene	NS
Ethylbenzene	NS
Methylene chloride	NS
Tetrachloroethene	NS
Toluene	NS
Trichloroethene	NS
Vinyl chloride	NS
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
P/PCB	
Total PCBs	NS
INORG	
Antimony	NS
Arsenic	NS
Barium	NS
Beryllium	NS
Cadmium	NS
Chromium Total	NS
Cobalt	NS
Copper	NS
Cyanide (total)	NS
Iron	NS
Lead	NS
Manganese	321
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS

BW8-03	0-2(ft BGS)	3-5(ft BGS)	8-10(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0045) U	ND (0.0061) U	ND (0.0045) U
1,1,2-Trichloroethane	ND (0.0045) U	ND (0.0061) U	ND (0.0045) U
1,1-Dichloroethane	ND (0.0045) U	ND (0.0061) U	ND (0.0045) U
1,1-Dichloroethene	ND (0.0045) U	0.00068 J	ND (0.0045) U
1,2-Dichloroethane	ND (0.0045) U	ND (0.0061) U	ND (0.0045) U
Acetone	0.029 J	0.047	ND (0.018) U
Benzene	ND (0.0045) U	ND (0.0061) U	ND (0.0045) U
cis-1,2-Dichloroethene	ND (0.0045) U	ND (0.0061) U	ND (0.0045) U
Ethylbenzene	ND (0.0045) U	ND (0.0061) U	ND (0.0045) U
Methylene chloride	0.0017 J	ND (0.0061) U	0.0023 J
Tetrachloroethene	ND (0.0045) U	ND (0.0061) U	ND (0.0045) U
Toluene	ND (0.0045) U	ND (0.0061) U	ND (0.0045) U
Trichloroethene	ND (0.0045) U	ND (0.0061) U	ND (0.0045) U
Vinyl chloride	ND (0.009) U	ND (0.012) U	ND (0.009) U
SVOC			
2,4-Dimethylphenol	ND (7.2) U	ND (7.8) U	ND (0.38) U
Benzo(a)pyrene	ND (7.2) U	ND (7.8) U	ND (0.38) U
bis(2-Ethylhexyl)phthalate	ND (7.2) U	ND (7.8) U	ND (0.38) U
Butyl benzylphthalate	ND (7.2) U	ND (7.8) U	ND (0.38) U
Dibenz(a,h)anthracene	ND (7.2) U	ND (7.8) U	ND (0.38) U
Methylphenol (Cresol)	ND (7.2) U	ND (7.8) U	ND (0.38) U
Pentachlorophenol	R	R	R
P/PCB			
Total PCBs	0.0172 J	0.14235 J	ND (0.038) U
INORG			
Antimony	1.97 J	1.52 J	0.301 J
Arsenic	7.2	7.08	5.3
Barium	99.5	131	38.6
Beryllium	0.161	0.419	0.182
Cadmium	ND (2.72) U	0.357 J	0.0396 J
Chromium Total	153 J	16.4 J	13.4 J
Cobalt	5.63	4.51	6.8
Copper	92.9	44.9	16.2
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	39.8	56.3	6.78
Manganese	1660	276	349
Nickel	82	27.5	18.2
Selenium	ND (2.72) U	0.88	ND (0.58) U
Thallium	ND (5.43) UJ	0.566 J	0.461 J
Vanadium	14.5	17.7	18.2
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

BW8-04	0-2(ft BGS)	5-7(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0051) U	ND (0.24) U
1,1,2-Trichloroethane	ND (0.0051) U	ND (0.24) U
1,1-Dichloroethane	ND (0.0051) U	ND (0.24) U
1,1-Dichloroethene	ND (0.0051) U	ND (0.24) U
1,2-Dichloroethane	ND (0.0051) U	ND (0.24) U
Acetone	ND (0.021) U	0.24 J
Benzene	ND (0.0051) U	ND (0.24) U
cis-1,2-Dichloroethene	ND (0.0051) U	ND (0.24) U
Ethylbenzene	ND (0.0051) U	0.13 J
Methylene chloride	ND (0.0051) U	ND (0.24) U
Tetrachloroethene	ND (0.0051) U	ND (0.24) U
Toluene	ND (0.0051) U	ND (0.24) U
Trichloroethene	ND (0.0051) U	ND (0.24) U
Vinyl chloride	ND (0.01) U	ND (0.48) U
SVOC		
2,4-Dimethylphenol	ND (0.35) U	ND (0.38) U
Benzo(a)pyrene	0.04 J	0.21 J
bis(2-Ethylhexyl)phthalate	ND (0.35) U	0.025 J
Butyl benzylphthalate	ND (0.35) U	ND (0.38) U
Dibenz(a,h)anthracene	ND (0.35) U	ND (0.38) U
Methylphenol (Cresol)	ND (0.35) U	ND (0.38) U
Pentachlorophenol	ND (3.6) U	ND (3.9) U
P/PCB		
Total PCBs	0.0539 J	0.32725 J
INORG		
Antimony	0.22 J	1.73 J
Arsenic	7.48	5.87 J
Barium	30.9	79.2
Beryllium	0.093 J	ND (0.116) UJ
Cadmium	0.157 J	0.592
Chromium Total	10.1 J	40.7 J
Cobalt	4.36	5.12 J
Copper	11.2 J	24.4 J
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	9.62 J	81.6 J
Manganese	397	744 J
Nickel	10.8	13.6 J
Selenium	ND (0.525) U	ND (0.578) U
Thallium	0.422 J	0.826 J
Vanadium	13.2 J	35.8 J
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

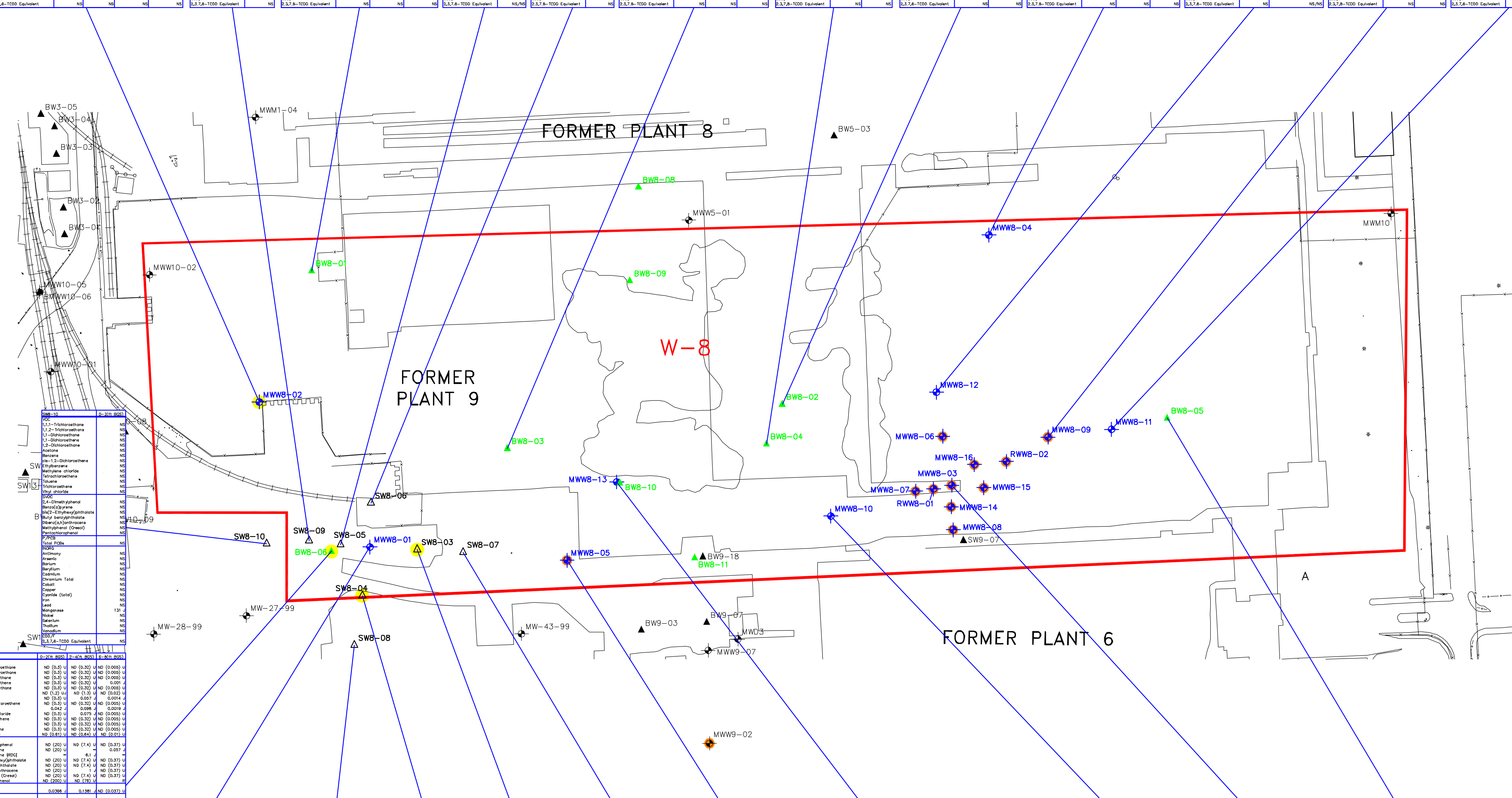
BW8-02	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0064) U	ND (0.0051) U
1,1,2-Trichloroethane	ND (0.0064) U	ND (0.0051) U
1,1-Dichloroethane	ND (0.0064) U	ND (0.0051) U
1,1-Dichloroethene	ND (0.0064) U	ND (0.0051) U
1,2-Dichloroethane	ND (0.0064) U	ND (0.0051) U
Acetone	ND (0.026) U	0.021
Benzene	ND (0.0064) U	0.0041 J
cis-1,2-Dichloroethene	ND (0.0064) U	ND (0.0051) U
Ethylbenzene	ND (0.0064) U	0.013
Methylene chloride	ND (0.0064) UJ	ND (0.0051) UJ
Tetrachloroethene	ND (0.0064) U	ND (0.0051) U
Toluene	0.0021 J	0.011
Trichloroethene	ND (0.0064) U	ND (0.0051) U
Vinyl chloride	ND (0.013) U	ND (0.01) U
SVOC		
2,4-Dimethylphenol	ND (0.36) U	ND (0.38) U
Benzo(a)pyrene	0.071 J	0.19 J
bis(2-Ethylhexyl)phthalate	ND (0.36) U	0.12 J
Butyl benzylphthalate	ND (0.36) U	ND (0.38) U
Dibenz(a,h)anthracene	ND (0.36) U	ND (0.38) U
Methylphenol (Cresol)	ND (0.36) U	ND (0.38) U
Pentachlorophenol	ND (3.7) U	ND (3.9) U
P/PCB		
Total PCBs	0.05845 J	0.3058 J
INORG		
Antimony	ND (2.19) U	0.583 J
Arsenic	4.6	3.63
Barium	39.1	37.4
Beryllium	0.157	0.0532 J
Cadmium	0.305 J	0.338 J
Chromium Total	12.1	15.7
Cobalt	5.09	3.21
Copper	12.5	9.5
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	15.4	24
Manganese	315	353
Nickel	12.4	7.92
Selenium	ND (0.547) U	ND (0.576) U
Thallium	ND (1.09) U	ND (1.15) U
Vanadium	15	14.8
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

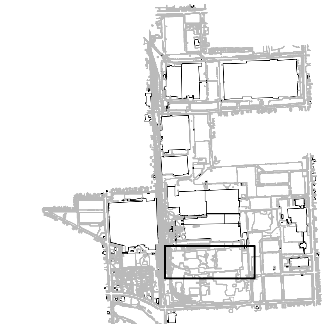
MWW8-04	2-4(ft BGS)	8-10(ft BGS)	10-12(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.001) U	ND (0.0053) U	ND (0.22) U
1,1,2-Trichloroethane	ND (0.0013) U	ND (0.0053) U	ND (0.22) U
1,1-Dichloroethane	ND (0.00065) U	ND (0.0053) U	ND (0.22) U
1,1-Dichloroethene	ND (0.0013) U	ND (0.0053) U	ND (0.22) U
1,2-Dichloroethane	ND (0.00082) U	ND (0.0053) U	ND (0.22) U
Acetone	ND (0.0024) U	0.014 J	ND (0.87) U
Benzene	ND (0.00073) U	ND (0.0053) U	ND (0.22) U
cis-1,2-Dichloroethene	ND (0.00094) U	ND (0.0053) U	ND (0.22) U
Ethylbenzene	ND (0.00066) U	ND (0.0053) U	ND (0.22) U
Methylene chloride	ND (0.0015) UJ	ND (0.0053) UJ	ND (0.22) UJ
Tetrachloroethene	ND (0.0013) U	ND (0.0053) U	ND (0.22) U
Toluene	0.0016 J	0.0021 J	ND (0.22) U
Trichloroethene	ND (0.00085) U	ND (0.0053) U	ND (0.22) U
Vinyl chloride	ND (0.0016) U	ND (0.011) U	ND (0.43) U
SVOC			
2,4-Dimethylphenol	ND (0.095) U	ND (0.38) U	ND (0.38) U
Benzo(a)pyrene	ND (0.072) U	ND (0.38) U	ND (0.38) U
bis(2-Ethylhexyl)phthalate	ND (0.064) U	0.18 J	0.081 J
Butyl benzylphthalate	ND (0.081) U	ND (0.38) U	ND (0.38) U
Dibenz(a,h)anthracene	ND (0.061) U	ND (0.38) U	ND (0.38) U
Methylphenol (Cresol)	ND (0.056) U	ND (0.38) U	ND (0.38) U
Pentachlorophenol	ND (0.14) U	ND (3.9) U	ND (3.9) U
P/PCB			
Total PCBs	ND (0.024) U	ND (0.038) U	ND (0.038) U
INORG			
Antimony	ND (0.585) U	ND (2.29) U	ND (2.28) U
Arsenic	4.3	4.35	4.14
Barium	37.7	30.3	42.2
Beryllium	0.165	ND (0.114) U	0.167
Cadmium	0.292 J	0.176 J	0.354 J
Chromium Total	12.1	9.27	12.5
Cobalt	5.97	3.99 J	5.81
Copper	12.1	11.2	13
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	7.31	10.2	5.92
Manganese	558	242	307
Nickel	13.8	8.85 J	14.8
Selenium	ND (0.37) U	ND (0.572) U	ND (0.571) U
Thallium	0.615 J	ND (1.14) U	ND (1.14) U
Vanadium	17.2	11.2	16.3
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

BMWW8-12	1-3(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.005) U	ND (0.27) U/ND (0.24) U
1,1,2-Trichloroethane	ND (0.005) U	ND (0.27) U/ND (0.24) U
1,1-Dichloroethane	ND (0.005) U	ND (0.27) U/ND (0.24) U
1,1-Dichloroethene	ND (0.005) U	ND (0.27) U/ND (0.24) U
1,2-Dichloroethane	ND (0.005) U	ND (0.27) U/ND (0.24) U
Acetone	0.03 J	0.32 J/ND (0.97) U
Benzene	ND (0.005) U	ND (0.27) U/ND (0.24) U
cis-1,2-Dichloroethene	ND (0.005) U	ND (0.27) U/ND (0.24) U
Ethylbenzene	ND (0.005) U	ND (0.27) U/ND (0.24) U
Methylene chloride	ND (0.005) U	ND (0.27) U/ND (0.24) U
Tetrachloroethene	ND (0.005) U	ND (0.27) U/ND (0.24) U
Toluene	0.0013 J	0.011 J/0.0098 J
Trichloroethene	ND (0.005) U	ND (0.27) U/ND (0.24) U
Vinyl chloride	ND (0.01) U	ND (0.54) U/ND (0.48) U
SVOC		
2,4-Dimethylphenol	ND (0.37) U	ND (0.39) U/ND (0.39) U
Benzo(a)pyrene	ND (0.37) U	ND (0.39) U/ND (0.39) U
bis(2-Ethylhexyl)phthalate	0.061 J	0.092 J/0.098 J
Butyl benzylphthalate	ND (0.37) U	ND (0.39) U/ND (0.39) U
Dibenz(a,h)anthracene	ND (0.37) U	ND (0.39) U/ND (0.39) U
Methylphenol (Cresol)	ND (0.37) U	ND (0.39) U/ND (0.39) U
Pentachlorophenol	ND (3.8) U	ND (4) U/ND (4) U
P/PCB		
Total PCBs	ND (0.037) U	0.0655 J/0.08245 J
INORG		
Antimony	ND (2.26) U	ND (2.36) U/ND (2.36) U
Arsenic	5.12	4.8/5.08
Barium	33.8	45.8/42.8
Beryllium	0.131	0.171/0.298
Cadmium	0.241 J	0.191 J/0.112 J
Chromium Total	10.5	9.72/15.2 J
Cobalt	5.12	5.83/7.68 J
Copper	15.2	12.1/15
Cyanide (total)	NS	NS/NS
Iron	NS	NS/NS
Lead	6.94	15.1/8.47 J
Manganese	229	261/183 J
Nickel	14.7	11.4/16.5 J
Selenium	0.193 J	ND (0.59) U/0.221 J
Thallium	0.696 J	0.628 J/0.382 J
Vanadium	17.2	12.5/21.3
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS/NS

BMWW8-09	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0063) U	ND (0.0044) U
1,1,2-Trichloroethane	ND (0.0063) U	ND (0.0044) U
1,1-Dichloroethane	ND (0.0063) U	ND (0.0044) U
1,1-Dichloroethene	ND (0.0063) U	ND (0.0044) U
1,2-Dichloroethane	ND (0.0063) U	ND (0.0044) U
Acetone	0.056 J	ND (0.017) U
Benzene	ND (0.0063) U	ND (0.0044) U
cis-1,2-Dichloroethene	ND (0.0063) U	ND (0.0044) U
Ethylbenzene	ND (0.0063) U	ND (0.0044) U
Methylene chloride	ND (0.0063) U	ND (0.0044) U
Tetrachloroethene	ND (0.0063) U	ND (0.0044) U
Toluene	0.0018 J	ND (0.0044) U
Trichloroethene	ND (0.0063) U	ND (0.0044) U
Vinyl chloride	ND (0.013) U	ND (0.0087) U
SVOC		
2,4-Dimethylphenol	ND (0.41) U	ND (0.36) U
Benzo(a)pyrene	0.092 J	ND (0.36) U
bis(2-Ethylhexyl)phthalate	ND (0.41) U	ND (0.36) U
Butyl benzylphthalate	ND (0.41) U	ND (0.36) U
Dibenz(a,h)anthracene	ND (0.41) U	ND (0.36) U
Methylphenol (Cresol)	ND (0.41) U	ND (0.36) U
Pentachlorophenol	ND (4.2) U	ND (3.8) U
P/PCB		
Total PCBs	0.05975 J	ND (0.036) U
INORG		
Antimony	ND (2.46) U	ND (2.21) U
Arsenic	6.74	3.06
Barium	47.2	26.1
Beryllium	0.285	0.117
Cadmium	0.199 J	0.16 J
Chromium Total	14.8	10.4
Cobalt	8.05	4.66
Copper	18.2	10.1
Cyanide (total)	ND (0.615) U	ND (0.553) U
Iron	NS	NS
Lead	8.5	5.76
Manganese	409	235
Nickel	20.6	12.4
Selenium	ND (0.615) U	ND (0.553) U
Thallium	0.775 J	0.613 J
Vanadium	20.6	14.4
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

BMWW8-11	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.005) U	ND (0.0049) U
1,1,2-Trichloroethane	ND (0.005) U	ND (0.0049) U
1,1-Dichloroethane	ND (0.005) U	ND (0.0049) U
1,1-Dichloroethene	ND (0.005) U	ND (0.0049) U
1,2-Dichloroethane	ND (0.005) U	ND (0.0049) U
Acetone	0.011 J	0.012 J
Benzene	ND (0.005) U	ND (0.0049) U
cis-1,2-Dichloroethene	ND (0.005) U	ND (0.0049) U
Ethylbenzene	ND (0.005) U	0.00081 J
Methylene chloride	ND (0.005) U	ND (0.0049) U
Tetrachloroethene	ND (0.005) U	ND (0.0049) U
Toluene	0.0011 J	0.00078 J
Trichloroethene	ND (0.005) U	ND (0.0049) U
Vinyl chloride	ND (0.01) U	ND (0.0098) U
SVOC		
2,4-Dimethylphenol	ND (0.39) U	ND (0.38) U
Benzo(a)pyrene	0.47	ND (0.38) U
bis(2-Ethylhexyl)phthalate	ND (0.39) U	ND (0.38) U
Butyl benzylphthalate	ND (0.39) U	ND (0.38) U
Dibenz(a,h)anthracene	ND (0.39) U	ND (0.38) U
Methylphenol (Cresol)	ND (0.39) U	ND (0.38) U
Pentachlorophenol	ND (4) U	ND (3.9) U
P/PCB		
Total PCBs	ND (0.039) U	ND (0.038) U
INORG		
Antimony	ND (2.37) U	ND (2.28) U
Arsenic	4.68	4.79
Barium	159 J	17.5 J
Beryllium	1.07	0.105 J
Cadmium	0.148 J	0.149 J
Chromium Total	8.1	9.95
Cobalt	2.85	5.1
Copper	11.8	10.9
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	4.39	5.99
Manganese	353	179
Nickel	8.4	12.6 J
Selenium	0.223 J	0.239 J
Thallium	0.596 J	0.512 J
Vanadium	11.4	16.5
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS





LEGEND:

- MWM10 — GROUNDWATER MONITORING WELL LOCATION
- P18-01 — SOIL BORING LOCATION
- SM23-03 — SOIL SURFACE SAMPLE LOCATION
- CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA
- LOCATION WHERE NAPL HAS BEEN IDENTIFIED DURING RECENT RFI ACTIVITIES AT A MEASURABLE THICKNESS (>0.01 FEET)
- APPROXIMATE AOI AREA
- W-8 = FORMER PLANT 9 BASEMENT AST

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

SW8-10	0-2(ft BGS)
VOC	
1,1,1-Trichloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	NS
1,1-Dichloroethene	NS
1,2-Dichloroethane	NS
Acetone	NS
Benzene	NS
cis-1,2-Dichloroethene	NS
Ethylbenzene	NS
Methylene chloride	NS
Tetrachloroethene	NS
Toluene	NS
Trichloroethene	NS
Vinyl chloride	NS
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
P/PCB	
Total PCBs	NS
INORG	
Antimony	NS
Arsenic	NS
Barium	NS
Beryllium	NS
Cadmium	NS
Chromium Total	NS
Cobalt	NS
Copper	NS
Cyanide (total)	NS
Iron	NS
Lead	NS
Manganese	131 J
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS

BW8-06	0-2(ft BGS)	2-4(ft BGS)	6-8(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.3) U	ND (0.32) U	ND (0.005) U
1,1,2-Trichloroethane	ND (0.3) U	ND (0.32) U	ND (0.005) U
1,1-Dichloroethane	ND (0.3) U	ND (0.32) U	ND (0.005) U
1,1-Dichloroethene	ND (0.3) U	ND (0.32) U	0.001 J
1,2-Dichloroethane	ND (0.3) U	ND (0.32) U	ND (0.005) U
Acetone	ND (1.2) UJ	ND (1.3) U	ND (0.02) U
Benzene	ND (0.3) U	0.057 J	0.0014 J
cis-1,2-Dichloroethene	ND (0.3) U	ND (0.32) U	ND (0.005) U
Ethylbenzene	0.042 J	0.098 J	0.0019 J
Methylene chloride	ND (0.3) U	0.075 J	ND (0.005) U
Tetrachloroethene	ND (0.3) U	ND (0.32) U	ND (0.005) U
Toluene	ND (0.3) U	ND (0.32) U	ND (0.005) U
Trichloroethene	ND (0.3) U	ND (0.32) U	ND (0.005) U
Vinyl chloride	ND (0.61) U	ND (0.64) U	ND (0.01) U
SVOC			
2,4-Dimethylphenol	ND (20) U	ND (7.4) U	ND (0.37) U
Benzo(a)pyrene	ND (20) U	–	0.057 J
Benzo(a)pyrene {RDC}	–	6.1 J	–
bis(2-Ethylhexyl)phthalate	ND (20) U	ND (7.4) U	ND (0.37) U
Butyl benzylphthalate	ND (20) U	ND (7.4) U	ND (0.37) U
Dibenz(a,h)anthracene	ND (20) U	1 J	ND (0.37) U
Methylphenol (Cresol)	ND (20) U	ND (7.4) U	ND (0.37) U
Pentachlorophenol	ND (200) U	ND (78) U	R
P/PCB			
Total PCBs	0.0366 J	0.1381 J	ND (0.037) U
INORG			
Antimony	5.33 J	31.5 J	101 J
Arsenic	–	16.1	–
Arsenic {IDC, RDC}	–	–	54
Arsenic {RDC}	25.5	–	–
Barium	432	4040	429
Beryllium	ND (0.119) U	0.044 J	ND (0.113) U
Cadmium	ND (5.94) U	38.5	ND (11.3) U
Chromium Total	–	–	123 J
Chromium Total {IPSIC, RPSIC}	726 J	383 J	–
Cobalt	20.2	7.79	64.2
Copper	1570	4930	–
Copper {RDC}	–	–	25800
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	179	–	–
Lead {IDC, RDC}	–	2820	8440
Manganese	1990	777	1600
Nickel	424	251	151
Selenium	ND (5.94) U	ND (11.2) U	4.89 J
Thallium	ND (11.9) UJ	ND (22.4) UJ	ND (22.7) UJ
Vanadium	25.3	25.1	52
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWW8-01	0-2(ft BGS)	8-10(ft BGS)	10-12(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0066) U	ND (0.0052) U	ND (0.0075) U
1,1,2-Trichloroethane	ND (0.0066) U	ND (0.0052) U	ND (0.0075) U
1,1-Dichloroethane	ND (0.0066) U	ND (0.0052) U	ND (0.0075) U
1,1-Dichloroethene	ND (0.0066) U	ND (0.0052) U	ND (0.0075) U
1,2-Dichloroethane	ND (0.0066) U	ND (0.0052) U	ND (0.0075) U
Acetone	ND (0.027) U	ND (0.021) U	ND (0.03) U
Benzene	ND (0.0066) U	ND (0.0052) U	ND (0.0075) U
cis-1,2-Dichloroethene	ND (0.0066) U	ND (0.0052) U	ND (0.0075) U
Ethylbenzene	ND (0.0066) U	ND (0.0052) U	ND (0.0075) U
Methylene chloride	ND (0.0066) UJ	ND (0.0052) UJ	ND (0.0075) UJ
Tetrachloroethene	ND (0.0066) U	ND (0.0052) U	ND (0.0075) U
Toluene	0.002 J	0.001 J	0.0016 J
Trichloroethene	ND (0.0066) U	ND (0.0052) U	ND (0.0075) U
Vinyl chloride	ND (0.013) U	ND (0.01) U	ND (0.015) U
SVOC			
2,4-Dimethylphenol	ND (0.41) U	ND (0.39) U	ND (0.36) U
Benzo(a)pyrene	ND (0.41) U	ND (0.39) U	ND (0.36) U
bis(2-Ethylhexyl)phthalate	ND (0.41) U	0.063 J	0.14 J
Butyl benzylphthalate	ND (0.41) U	ND (0.39) U	ND (0.36) U
Dibenz(a,h)anthracene	ND (0.41) U	ND (0.39) U	ND (0.36) U
Methylphenol (Cresol)	ND (0.41) U	ND (0.39) U	ND (0.36) U
Pentachlorophenol	ND (4.2) U	ND (4) U	ND (3.7) U
P/PCB			
Total PCBs	ND (0.041) U	ND (0.039) U	ND (0.036) U
INORG			
Antimony	0.972 J	ND (2.34) U	ND (2.18) U
Arsenic	4.99	2.54	2.17
Barium	28.2	8.75	7.06
Beryllium	ND (0.123) U	ND (0.117) U	ND (0.109) U
Cadmium	0.0586 J	0.0793 J	ND (0.545) U
Chromium Total	14.6	4.17	4.88
Cobalt	3.58 J	2.35	2.06
Copper	15.8	9.32	7.53
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	13.9	3.24	3.01
Manganese	351	221	149
Nickel	11.1	5.74	4.82
Selenium	ND (0.615) U	ND (0.585) U	ND (0.545) U
Thallium	ND (1.23) U	ND (1.17) U	0.777 J
Vanadium	12.7	7.65	6.18
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

SW8-08	0-2(ft BGS)
VOC	
1,1,1-Trichloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	NS
1,1-Dichloroethene	NS
1,2-Dichloroethane	NS
Acetone	NS
Benzene	NS
cis-1,2-Dichloroethene	NS
Ethylbenzene	NS
Methylene chloride	NS
Tetrachloroethene	NS
Toluene	NS
Trichloroethene	NS
Vinyl chloride	NS
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
P/PCB	
Total PCBs	NS
INORG	
Antimony	NS
Arsenic	NS
Barium	NS
Beryllium	NS
Cadmium	NS
Chromium Total	NS
Cobalt	NS
Copper	NS
Cyanide (total)	NS
Iron	NS
Lead	NS
Manganese	1170
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS

SW8-04	0-2(ft BGS)
VOC	
1,1,1-Trichloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	NS
1,1-Dichloroethene	NS
1,2-Dichloroethane	NS
Acetone	NS
Benzene	NS
cis-1,2-Dichloroethene	NS
Ethylbenzene	NS
Methylene chloride	NS
Tetrachloroethene	NS
Toluene	NS
Trichloroethene	NS
Vinyl chloride	NS
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
P/PCB	
Total PCBs	NS
INORG	
Antimony	NS
Arsenic	NS
Barium	NS
Beryllium	NS
Cadmium	NS
Chromium Total	264
Cobalt	NS
Copper	NS
Cyanide (total)	NS
Iron	NS
Lead	NS
Manganese {IPSIC}	2770
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS

SW8-03	0-2(ft BGS)
VOC	
1,1,1-Trichloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	NS
1,1-Dichloroethene	NS
1,2-Dichloroethane	NS
Acetone	NS
Benzene	NS
cis-1,2-Dichloroethene	NS
Ethylbenzene	NS
Methylene chloride	NS
Tetrachloroethene	NS
Toluene	NS
Trichloroethene	NS
Vinyl chloride	NS
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
P/PCB	
Total PCBs	NS
INORG	
Antimony	NS
Arsenic	NS
Barium	NS
Beryllium	NS
Cadmium	NS
Chromium Total {IPSIC, RPSIC}	1260
Cobalt	NS
Copper	NS
Cyanide (total)	NS
Iron	NS
Lead	NS
Manganese	1710
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS

SW8-07	0-2(ft BGS)
VOC	
1,1,1-Trichloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	NS
1,1-Dichloroethene	NS
1,2-Dichloroethane	NS
Acetone	NS
Benzene	NS
cis-1,2-Dichloroethene	NS
Ethylbenzene	NS
Methylene chloride	NS
Tetrachloroethene	NS
Toluene	NS
Trichloroethene	NS
Vinyl chloride	NS
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
P/PCB	
Total PCBs	NS
INORG	
Antimony	NS
Arsenic	NS
Barium	NS
Beryllium	NS
Cadmium	NS
Chromium Total	NS
Cobalt	NS
Copper	NS
Cyanide (total)	NS
Iron	NS
Lead	NS
Manganese	NS
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWW8-05	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0049) U	ND (0.0056) U
1,1,2-Trichloroethane	ND (0.0049) U	ND (0.0056) U
1,1-Dichloroethane	ND (0.0049) U	ND (0.0056) U
1,1-Dichloroethene	ND (0.0049) U	ND (0.0056) U
1,2-Dichloroethane	ND (0.0049) U	ND (0.0056) U
Acetone	ND (0.02) U	0.0071 J
Benzene	ND (0.0049) U	ND (0.0056) U
cis-1,2-Dichloroethene	ND (0.0049) U	ND (0.0056) U
Ethylbenzene	ND (0.0049) U	ND (0.0056) U
Methylene chloride	ND (0.0049) UJ	ND (0.0056) UJ
Tetrachloroethene	ND (0.0049) U	ND (0.0056) U
Toluene	0.00073 J	0.0023 J
Trichloroethene	ND (0.0049) U	ND (0.0056) U
Vinyl chloride	ND (0.0098) U	ND (0.011) U
SVOC		
2,4-Dimethylphenol	ND (0.37) U	ND (0.36) U
Benzo(a)pyrene	0.13 J	ND (0.36) U
bis(2-Ethylhexyl)phthalate	0.097 J	ND (0.36) U
Butyl benzylphthalate	0.77	ND (0.36) U
Dibenz(a,h)anthracene	ND (0.37) U	ND (0.36) U
Methylphenol (Cresol)	ND (0.37) U	ND (0.36) U
Pentachlorophenol	ND (3.8) U	ND (3.7) U
P/PCB		
Total PCBs	0.6405 J	0.05245 J
INORG		
Antimony	1.41 J	ND (2.18) U
Arsenic	–	6.02
Arsenic {RDC}	26.9	–
Barium	124	19.7
Beryllium	0.931	0.0605 J
Cadmium	0.989 J	0.145 J
Chromium Total	112	8.44
Cobalt	6.93	3.96
Copper	91.3	11.3
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	94.6	5.76
Manganese	1290	251
Nickel	41.8	9.95 J
Selenium	0.627 J	ND (0.545) U
Thallium	0.843 J	ND (1.09) U
Vanadium	11.8	11.2
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

MWW8-13	0-2(ft BGS)	8-10(ft BGS)	15-17(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0059) U	ND (0.25) U	ND (0.0051) U
1,1,2-Trichloroethane	ND (0.0059) U	ND (0.25) U	ND (0.0051) U
1,1-Dichloroethane	ND (0.0059) U	ND (0.25) U	ND (0.0051) U
1,1-Dichloroethene	ND (0.0059) U	ND (0.25) U	ND (0.0051) U
1,2-Dichloroethane	ND (0.0059) U	ND (0.25) U	ND (0.0051) U
Acetone	0.0073 J	0.12 J	0.0097 J
Benzene	ND (0.0059) U	ND (0.25) U	ND (0.0051) U
cis-1,2-Dichloroethene	ND (0.0059) U	ND (0.25) U	ND (0.0051) U
Ethylbenzene	ND (0.0059) U	0.018 J	ND (0.0051) U
Methylene chloride	ND (0.0059) U	ND (0.25) U	ND (0.0051) U
Tetrachloroethene	ND (0.0059) U	ND (0.25) U	ND (0.0051) U
Toluene	0.00097 J	0.015 J	ND (0.0051) U
Trichloroethene	ND (0.0059) U	ND (0.25) U	ND (0.0051) U
Vinyl chloride	ND (0.012) U	ND (0.5) U	ND (0.01) U
SVOC			
2,4-Dimethylphenol	ND (0.36) U	ND (3.9) U	ND (0.4) U
Benzo(a)pyrene	0.081 J	ND (3.9) U	ND (0.4) U
bis(2-Ethylhexyl)phthalate	ND (0.36) U	ND (3.9) U	ND (0.4) U
Butyl benzylphthalate	ND (0.36) U	ND (3.9) U	ND (0.4) U
Dibenz(a,h)anthracene	ND (0.36) U	ND (3.9) U	ND (0.4) U
Methylphenol (Cresol)	ND (0.36) U	ND (3.9) U	ND (0.4) U
Pentachlorophenol	ND (3.7) U	ND (40) U	ND (4.1) U
P/PCB			
Total PCBs	0.073 J	0.98 J	ND (0.04) U
INORG			
Antimony	0.722 J	0.353 J	0.381 J
Arsenic	3.42	4.82	5.11
Barium	28.7	43	46.1
Beryllium	ND (0.108) UJ	0.171 J	0.144 J
Cadmium	0.252 J	0.274 J	0.263 J
Chromium Total	21.5 J	16.3 J	16.5 J
Cobalt	2.9	7.88	6.71
Copper	24.6	16.7	16.9
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	21.9	7.91	7.67
Manganese	507	652	535
Nickel	15	19	18.8
Selenium	ND (0.541) UJ	ND (0.586) UJ	ND (0.6) UJ
Thallium	1.57 J	2.12 J	2.1 J
Vanadium	10	22.4	22.7
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

BMWW8-10	2-4(ft BGS)	12-14(ft BGS)
VOC		
1,1,1-Trichloroethane	R	ND (0.0052) U
1,1,2-Trichloroethane	R	ND (0.0052) U
1,1-Dichloroethane	ND (0.005) U	ND (0.0052) U
1,1-Dichloroethene	ND (0.005) U	ND (0.0052) U
1,2-Dichloroethane	ND (0.005) U	ND (0.0052) U
Acetone	ND (0.02) U	ND (0.021) U
Benzene	NS	ND (0.0052) U
cis-1,2-Dichloroethene	ND (0.005) U	ND (0.0052) U
Ethylbenzene	0.0033 J	0.00072 J
Methylene chloride	ND (0.005) U	ND (0.0052) U
Tetrachloroethene	ND (0.005) U	ND (0.0052) U
Toluene	0.0038 J	0.00097 J
Trichloroethene	ND (0.005) U	ND (0.0052) U
Vinyl chloride	ND (0.01) U	ND (0.01) U
SVOC		
2,4-Dimethylphenol	ND (0.38) U	ND (0.37) U
Benzo(a)pyrene	ND (0.38) U	ND (0.37) U
bis(2-Ethylhexyl)phthalate	0.35 J	1.8
Butyl benzylphthalate	ND (0.38) U	ND (0.37) U
Dibenz(a,h)anthracene	ND (0.38) U	ND (0.37) U
Methylphenol (Cresol)	ND (0.38) U	ND (0.37) U
Pentachlorophenol	ND (3.9) U	ND (3.8) U
P/PCB		
Total PCBs	0.0848 J	ND (0.037) U
INORG		
Antimony	0.604 J	0.334 J
Arsenic	3.58	3.53
Barium	32.1	23.2
Beryllium	0.0386 J	0.0882 J
Cadmium	0.0861 J	0.103 J
Chromium Total	19.8	7.83
Cobalt	2.82	3.42
Copper	31.6	8.78
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	31.8	4.79
Manganese	417	358
Nickel	19.6	9.31
Selenium	0.328 J	0.222 J
Thallium	0.696 J	0.601 J
Vanadium	7.14	13.2
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

MWW8-03	2-4(ft BGS)	8-10(ft BGS)	24-26(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.005) U	ND (0.3) U	ND (0.0043) U
1,1,2-Trichloroethane	ND (0.005) U	ND (0.3) U	ND (0.0043) U
1,1-Dichloroethane	0.0011 J	ND (0.3) U	ND (0.0043) U
1,1-Dichloroethene	ND (0.005) U	ND (0.3) U	ND (0.0043) U
1,2-Dichloroethane	ND (0.005) U	ND (0.3) U	ND (0.0043) U
Acetone	0.031 J	0.13 J	ND (0.017) U
Benzene	0.00084 J	ND (0.3) U	ND (0.0043) U
cis-1,2-Dichloroethene	ND (0.005) U	ND (0.3) U	ND (0.0043) U
Ethylbenzene	0.00068 J	0.028 J	ND (0.0043) U
Methylene chloride	ND (0.005) UJ	ND (0.3) UJ	ND (0.0043) UJ
Tetrachloroethene	ND (0.005) U	ND (0.3) U	ND (0.0043) U
Toluene	0.0037 J	0.056 J	ND (0.0043) U
Trichloroethene	ND (0.005) U	ND (0.3) U	ND (0.0043) U
Vinyl chloride	ND (0.01) U	ND (0.6) U	ND (0.0086) U
SVOC			
2,4-Dimethylphenol	ND (17) U	ND (19) U	ND (0.37) U
Benzo(a)pyrene	ND (17) U	ND (19) U	ND (0.37) U
bis(2-Ethylhexyl)phthalate	ND (17) U	ND (19) U	ND (0.37) U
Butyl benzylphthalate	ND (17) U	ND (19) U	ND (0.37) U
Dibenz(a,h)anthracene	ND (17) U	ND (19) U	ND (0.37) U
Methylphenol (Cresol)	ND (17) U	ND (19) U	ND (0.37) U
Pentachlorophenol	ND (180) U	ND (200) U	ND (3.9) U
P/PCB			
Total PCBs	0.0552 J	0.0863 J	ND (0.037) U
INORG			
Antimony	ND (2.1) U	ND (2.34) U	ND (2.27) U
Arsenic	3.89	2.84	6.07
Barium	14.7	9.93	31.1
Beryllium	ND (0.105) U	ND (0.117) U	0.125
Cadmium	0.142 J	0.111 J	0.341 J
Chromium Total	7.19	5.2	10.1
Cobalt	3.01	2.56	5.99
Copper	9.46	8.26	15
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	8.36	2.03	5.97
Manganese	174	174	258
Nickel	8.91	5.62	17.8
Selenium	ND (0.524) U	ND (0.584) U	0.556 J
Thallium	ND (1.05) U	ND (1.17) U	ND (1.14) U
Vanadium	8.94	8.68	15.1
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

BW8-05	0-2(ft BGS)	7-9(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0048) U	ND (0.22) U/ND (0.0043) U
1,1,2-Trichloroethane	ND (0.0048) U	ND (0.22) U/ND (0.0043) U
1,1-Dichloroethane	ND (0.0048) U	ND (0.22) U/ND (0.0043) U
1,1-Dichloroethene	ND (0.0048) U	ND (0.22) U/ND (0.0043) U
1,2-Dichloroethane	ND (0.0048) U	ND (0.22) U/ND (0.0043) U
Acetone	0.0057 J	0.25 J/0.0034 J
Benzene	ND (0.0048) U	ND (0.22) U/ND (0.0043) U
cis-1,2-Dichloroethene	ND (0.0048) U	ND (0.22) U/ND (0.0043) U
Ethylbenzene	ND (0.0048) U	ND (0.22) U/ND (0.0043) U
Methylene chloride	ND (0.0048) U	ND (0.22) U/0.0015 J
Tetrachloroethene	ND (0.0048) U	ND (0.22) U/ND (0.0043) U
Toluene	ND (0.0048) U	ND (0.22) U/ND (0.0043) U
Trichloroethene	ND (0.0048) U	ND (0.22) U/ND (0.0043) U
Vinyl chloride	ND (0.0096) U	ND (0.43) U/ND (0.0087) U
SVOC		
2,4-Dimethylphenol	ND (0.37) U	ND (0.37) U/ND (0.37) U
Benzo(a)pyrene	ND (0.37) U	ND (0.37) U/ND (0.37) U
bis(2-Ethylhexyl)phthalate	ND (0.37) U	ND (0.37) U/ND (0.37) U
Butyl benzylphthalate	ND (0.37) U	ND (0.37) U/ND (0.37) U
Dibenz(a,h)anthracene	ND (0.37) U	ND (0.37) U/ND (0.37) U
Methylphenol (Cresol)	ND (0.37) U	ND (0.37) U/ND (0.37) U
Pentachlorophenol	ND (3.8) U	ND (3.8) U/ND (3.8) U
P/PCB		
Total PCBs	ND (0.037) U	ND (0.037) U/ND (0.037) U
INORG		
Antimony	0.179 J	ND (2.21) UJ/0.262 J
Arsenic	3.91	3.75/3.64
Barium	46.3	27.4/31.6
Beryllium	0.0955 J	ND (0.111) UJ/0.0454 J
Cadmium	ND (0.559) U	ND (0.553) U/ND (0.555) U
Chromium Total	12 J	9.48 J/10.9 J
Cobalt	6.65	3.71/4.39
Copper	12.4 J	10.6 J/10.7 J
Cyanide (total)	NS	NS/NS
Iron	NS	NS/NS
Lead	5.53 J	4.27 J/5.01 J
Manganese	276	186/187
Nickel	14.6	10.8/12.2
Selenium	ND (0.559) U	ND (0.553) U/ND (0.555) U
Thallium	0.478 J	0.979 J/0.704 J
Vanadium	15.3 J	13.3 J/15.6 J
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS/NS

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONTAMINATION.
7. NS – NOT SAMPLED.
8. R – DATA REJECTED FROM DATA VALIDATION

0 100' 200'
GRAPHIC SCALE

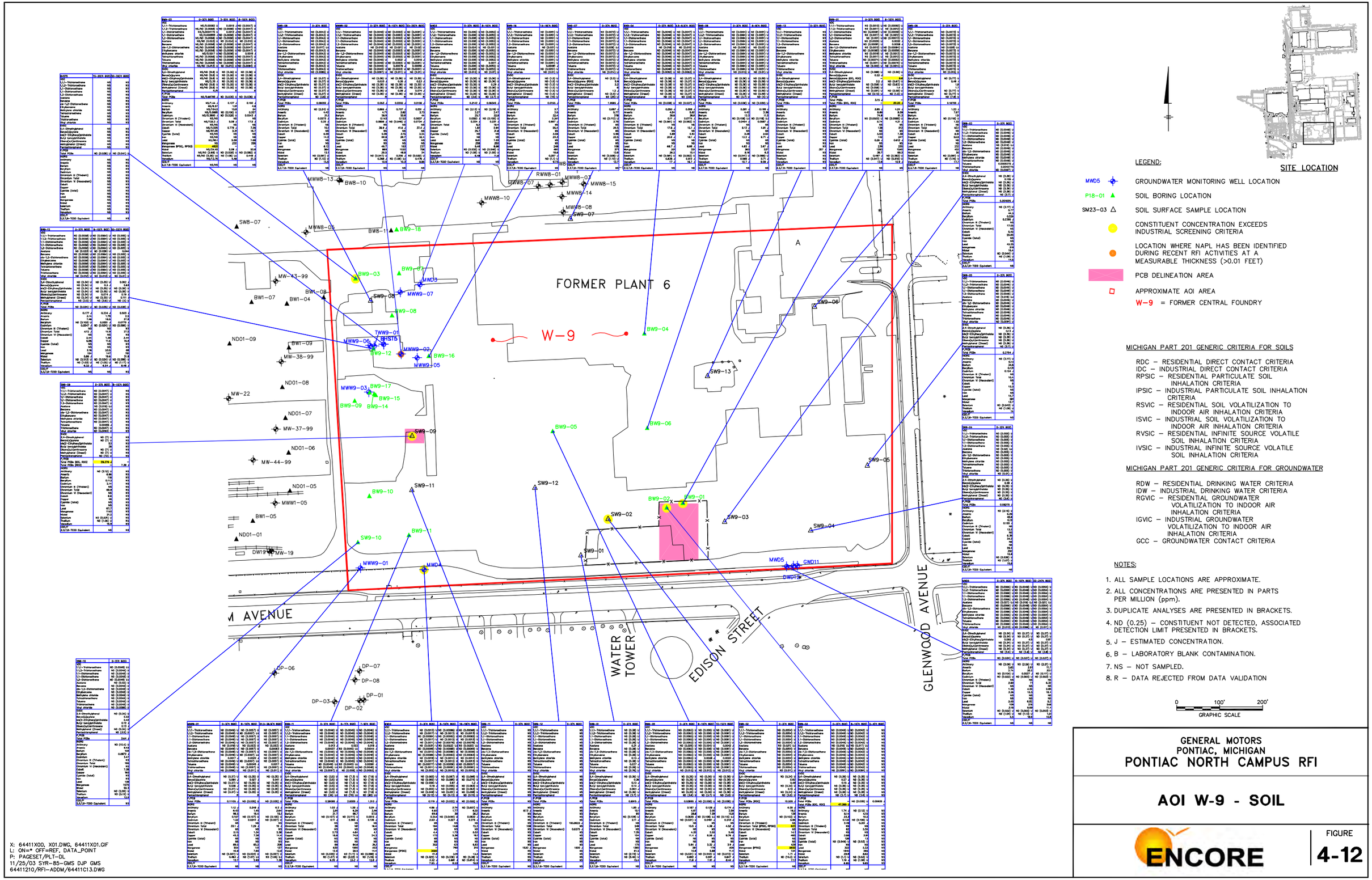
X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/26/03 SYR-85-GMS SDL GMS
64411210/RFI-ADDM/64411C12.DWG

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

AOI W-8 - SOIL

ENCORE

FIGURE
4-11



SITE LOCATION

LEGEND:

- MWD5 — GROUNDWATER MONITORING WELL LOCATION
- P18-01 — SOIL BORING LOCATION
- SM23-03 — SOIL SURFACE SAMPLE LOCATION
- CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA
- LOCATION WHERE NAPL HAS BEEN IDENTIFIED DURING RECENT RFI ACTIVITIES AT A MEASURABLE THICKNESS (>0.01 FEET)
- PCB DELINEATION AREA
- APPROXIMATE AOI AREA
- W-9 = FORMER CENTRAL FOUNDRY

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONTAMINATION.
7. NS – NOT SAMPLED.
8. R – DATA REJECTED FROM DATA VALIDATION

0 100' 200'
GRAPHIC SCALE

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

AOI W-9 - SOIL

ENCORE

FIGURE
4-12

X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/25/03 SYR-85-GMS DJP GMS
64411210/RFI-ADDM/64411C13.DWG

MWM2-01	8/30/01	1/8/02	11/12/02	6/23/03
VOC				
1,1,1-Trichloroethane	0.029	0.031	0.027	0.034
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	0.0018	0.0028	0.0027	0.0035
1,1-Dichloroethene	0.00082 J	0.001	ND (0.001) U	0.00033 J
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Acetone	ND (0.01) UJ	ND (0.01) U	ND (0.01) UJ	0.0015 J
Benzene	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U	ND (0.0005) U	ND (0.0005) U
Ethylbenzene	ND (0.001) U	ND (0.001) U	R	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Tetrachloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Toluene	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
SVOC				
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
P/PCB				
Total PCBs	ND (0.0004) U	ND (0.0004) U	ND (0.0004) U	ND (0.0004) U
INORG				
Antimony	ND (0.025) U	ND (0.025) U	ND (0.025) U	ND (0.025) U
Arsenic	ND (0.01) U	ND (0.01) U	ND (0.01) U	ND (0.01) U
Barium	0.0992	0.0809	0.0466	0.0628
Beryllium	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U	0.00029 J	ND (0.005) U
Chromium Total	NS	NS	0.0025 J	ND (0.01) U
Cobalt	ND (0.02) U	ND (0.02) U	ND (0.02) U	0.0026 J
Copper	0.0048 J	ND (0.005) U	ND (0.005) U	ND (0.005) U
Cyanide (total)	0.0136	0.0307	NS	NS
Iron	NS	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	ND (0.003) U	ND (0.003) U
Manganese	0.0538	0.0036 J	0.0226	ND (0.01) U
Nickel	0.004 J	0.007 J	0.0134 J	0.0046 J
Selenium	0.0054	ND (0.005) U	ND (0.005) U	ND (0.005) U
Thallium	–	0.00002 J	ND (0.001) U	ND (0.001) U
Thallium {IDW, RDW}	0.0055 J	–	–	–
Vanadium	0.0013 J	ND (0.01) U	ND (0.01) U	ND (0.01) U
CDD/F				
2,3,7,8-TCDD Equivalent	NS	NS	NS	NS

MWM2-02	8/30/01	1/8/02	11/12/02	6/23/03
VOC				
1,1,1-Trichloroethane	0.0019	0.004	0.012	0.0032
1,1,2-Trichloroethane	ND (0.0017) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	0.00048 J	0.00091 J	0.0012	0.00053 J
1,1-Dichloroethene	ND (0.0017) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.0017) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Acetone	0.12 J	ND (0.01) U	ND (0.01) UJ	0.0015 J
Benzene	ND (0.0017) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.00084) U	ND (0.0005) U	ND (0.0005) U	ND (0.0005) U
Ethylbenzene	ND (0.0017) U	ND (0.001) U	R	ND (0.001) U
Methylene chloride	ND (0.0017) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Tetrachloroethene	ND (0.0017) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Toluene	ND (0.0017) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.0017) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.0017) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
SVOC				
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
P/PCB				
Total PCBs	ND (0.0004) U	ND (0.0004) U	ND (0.0004) U	ND (0.0004) U
INORG				
Antimony	ND (0.025) U	ND (0.025) U	ND (0.025) U	ND (0.025) U
Arsenic	ND (0.01) U	ND (0.01) U	0.0025 J	ND (0.01) U
Barium	0.146	0.104	0.0325	0.0162
Beryllium	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Chromium Total	NS	NS	ND (0.01) U	ND (0.01) U
Cobalt	0.0029 J	0.0054 J	0.0195 J	0.0092 J
Copper	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Cyanide (total)	ND (0.01) U	ND (0.01) U	NS	NS
Iron	NS	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	ND (0.003) U	ND (0.003) U
Manganese	0.525	0.352	0.124	0.0934
Nickel	0.0034 J	0.0032 J	0.0107 J	ND (0.02) U
Selenium	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Thallium	ND (0.01) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Vanadium	ND (0.01) U	ND (0.01) U	ND (0.01) U	ND (0.01) U
CDD/F				
2,3,7,8-TCDD Equivalent	NS	NS	NS	NS

MWM7	8/22/01	1/8/02
VOC		
1,1,1-Trichloroethane	0.003	0.0037
1,1,2-Trichloroethane	ND (0.0003) U	ND (0.001) U
1,1-Dichloroethane	ND (0.00016) U	ND (0.001) U
1,1-Dichloroethene	ND (0.00024) U	ND (0.001) U
1,2-Dichloroethane	ND (0.00021) U	ND (0.001) U
Acetone	0.015	ND (0.01) UJ
Benzene	ND (0.00016) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.00022) U	ND (0.0005) U
Ethylbenzene	ND (0.00012) U	ND (0.001) U
Methylene chloride	ND (0.00034) U	ND (0.001) U
Tetrachloroethene	ND (0.00023) U	ND (0.001) U
Toluene	ND (0.00018) U	ND (0.001) U
Trichloroethene	0.00071 J	0.0011
Vinyl chloride	ND (0.00015) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.00085) U	ND (0.005) U
Benzo(a)pyrene	ND (0.00073) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.0027) U	ND (0.005) U
Butyl benzylphthalate	ND (0.00088) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.00079) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.0013) U	ND (0.005) U
Pentachlorophenol	ND (0.0024) U	ND (0.005) U
P/PCB		
Total PCBs	ND (0.000082) U	ND (0.0004) U
INORG		
Antimony	ND (0.0022) U	ND (0.025) U
Arsenic	ND (0.0039) U	ND (0.01) U
Barium	0.0724	0.0778
Beryllium	ND (0.00054) U	ND (0.001) U
Cadmium	0.00037 J	ND (0.005) U
Chromium Total	0.015	ND (0.01) U
Cobalt	ND (0.0013) U	ND (0.02) U
Copper	ND (0.0042) U	ND (0.005) U
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	ND (0.0025) U	ND (0.003) U
Manganese	0.122	0.0085 J
Nickel	0.0028 J	ND (0.02) U
Selenium	0.0051	ND (0.005) U
Thallium	ND (0.005) U	0.000049 J
Vanadium	0.0019 J	0.0011 J
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

MWM2-03	8/30/01	1/8/02	11/12/02	6/23/03
VOC				
1,1,1-Trichloroethane	0.05	0.05/0.052	0.05	0.033
1,1,2-Trichloroethane	ND (0.0006) U	ND (0.0017) U/ND (0.002) U	ND (0.002) U	ND (0.001) U
1,1-Dichloroethane	0.056	0.044/0.051	0.02	0.0028
1,1-Dichloroethene	0.003	0.0011 J/0.0038	0.0014 J	0.0012
1,2-Dichloroethane	ND (0.00042) U	ND (0.0017) U/ND (0.002) U	ND (0.002) U	ND (0.001) U
Acetone	0.0054 J	ND (0.017) U/ND (0.02) U	ND (0.02) UJ	ND (0.01) U
Benzene	ND (0.00032) U	ND (0.0017) U/ND (0.002) U	ND (0.002) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.00044) U	ND (0.00084) U/ND (0.001) U	ND (0.001) U	ND (0.0005) U
Ethylbenzene	ND (0.00024) U	ND (0.0017) U/ND (0.002) U	R	ND (0.001) U
Methylene chloride	ND (0.00068) U	ND (0.0017) U/ND (0.002) U	0.00091 J	ND (0.001) U
Tetrachloroethene	ND (0.00046) U	ND (0.0017) U/ND (0.002) U	ND (0.002) U	0.00072 J
Toluene	ND (0.00036) U	ND (0.0017) U/ND (0.002) U	ND (0.002) U	ND (0.001) U
Trichloroethene	ND (0.00028) U	ND (0.0017) U/ND (0.002) U	ND (0.002) U	ND (0.001) U
Vinyl chloride	ND (0.0003) U	ND (0.0017) U/ND (0.002) U	ND (0.002) U	ND (0.001) U
SVOC				
2,4-Dimethylphenol	ND (0.00085) U	ND (0.005) U/ND (0.005) U	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.00073) U	ND (0.005) U/ND (0.005) U	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.0027) U	ND (0.005) U/ND (0.005) U	–	ND (0.005) U
bis(2-Ethylhexyl)phthalate {IDW, RDW}	–	–	0.024	–
Butyl benzylphthalate	ND (0.00088) U	ND (0.005) U/ND (0.005) U	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.00079) U	ND (0.005) U/ND (0.005) U	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.0013) U	ND (0.005) U/ND (0.005) U	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.0024) U	ND (0.005) U/ND (0.005) U	ND (0.005) U	ND (0.005) U
P/PCB				
Total PCBs	ND (0.000082) U	ND (0.0004) U/ND (0.0004) U	ND (0.0004) U	ND (0.0004) U
INORG				
Antimony	ND (0.025) U	ND (0.025) U/ND (0.025) U	ND (0.025) U	ND (0.025) U
Arsenic	ND (0.01) U	ND (0.01) U/ND (0.01) U	ND (0.01) U	ND (0.01) U
Barium	0.202	0.185/0.178	0.0654	0.069
Beryllium	ND (0.001) U	ND (0.001) U/ND (0.001) U	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U/ND (0.005) U	ND (0.005) U	ND (0.005) U
Chromium Total	NS	NS/NS	ND (0.01) U	ND (0.01) U
Cobalt	0.0076 J	0.0047 J/0.0045 J	ND (0.02) U	0.0025 J
Copper	0.0046 J	0.0046 J/0.006	ND (0.005) U	ND (0.005) U
Cyanide (total)	0.0048 J	ND (0.01) U/0.0055 J	NS	NS
Iron	NS	NS/NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U/ND (0.003) U	ND (0.003) U	ND (0.003) U
Manganese	0.431	0.312 J/0.3	0.179	0.22
Nickel	0.0151 J	0.0146 J/0.0138 J	0.0071 J	0.0058 J
Selenium	0.005	ND (0.005) U/ND (0.005) U	ND (0.005) U	ND (0.005) U
Thallium	ND (0.01) U	0.000063 J/0.000066 J	ND (0.001) U	ND (0.001) U
Vanadium	0.0019 J	–	–	–
Vanadium {RDW}	–	0.0052 J/0.0048 J	0.0054 J	0.0053 J
CDD/F				
2,3,7,8-TCDD Equivalent	NS	NS/NS	NS	NS

MWM2-05	1/31/02	11/12/02	6/23/03
VOC			
1,1,1-Trichloroethane	0.075	0.081	0.025
1,1,2-Trichloroethane	ND (0.002) U	ND (0.0029) U	ND (0.001) U
1,1-Dichloroethane	0.019	0.012	0.0089
1,1-Dichloroethene	0.0046	0.0026 J	0.0011
1,2-Dichloroethane	ND (0.002) U	ND (0.0029) U	ND (0.001) U
Acetone	0.0044 J	ND (0.029) UJ	0.0019 J
Benzene	ND (0.002) U	ND (0.0029) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.001) U	ND (0.0014) U	ND (0.0005) U
Ethylbenzene	ND (0.002) U	R	ND (0.001) U
Methylene chloride	0.00069 J	0.001 J	ND (0.001) U
Tetrachloroethene	ND (0.002) U	ND (0.0029) U	ND (0.001) U
Toluene	ND (0.002) U	ND (0.0029) U	ND (0.001) U
Trichloroethene	ND (0.002) U	ND (0.0029) U	ND (0.001) U
Vinyl chloride	ND (0.002) U	ND (0.0029) U	ND (0.001) U
SVOC			
2,4-Dimethylphenol	NS	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	NS	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	NS	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	NS	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	NS	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	NS	ND (0.005) U	ND (0.005) U
Pentachlorophenol	NS	ND (0.005) U	ND (0.005) U
P/PCB			
Total PCBs	NS	ND (0.0004) U	ND (0.0004) U
INORG			
Antimony	NS	ND (0.025) U	ND (0.025) U
Arsenic	NS	0.0064 J	0.0064 J
Barium	NS	0.0622	0.0345
Beryllium	NS	ND (0.001) U	ND (0.001) U
Cadmium	NS	ND (0.005) U	ND (0.005) U
Chromium Total	NS	ND (0.01) U	ND (0.01) U
Cobalt	NS	ND (0.02) U	0.0023 J
Copper	NS	ND (0.005) U	ND (0.005) U
Cyanide (total)	NS	–	NS
Cyanide (total) {IDW, RDW}	–	0.55	–
Iron	NS	NS	NS
Lead	NS	ND (0.003) U	ND (0.003) U
Manganese	NS	0.13	0.0859
Nickel	NS	0.0128 J	0.0096 J
Selenium	NS	ND (0.005) U	ND (0.005) U
Thallium	NS	ND (0.001) U	ND (0.001) U
Vanadium	NS	ND (0.01) U	0.001 J
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWM2-17	6/23/03
VOC	
1,1,1-Trichloroethane	0.0064
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	0.00075 J
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	0.0013 J
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U
Ethylbenzene	ND (0.001) U
Methylene chloride	ND (0.001) U
Tetrachloroethene	ND (0.001) U
Toluene	ND (0.001) U
Trichloroethene	ND (0.001) U
Vinyl chloride	ND (0.001) U
SVOC	
2,4-Dimethylphenol	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U
Pentachlorophenol	ND (0.005) U
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	ND (0.025) U
Arsenic	0.0028 J
Barium	0.0754
Beryllium	ND (0.001) U
Cadmium	ND (0.005) U
Chromium Total	ND (0.01) U
Cobalt	0.0017 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	0.148
Nickel	0.0644
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	0.0019 J
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWM2-15	6/24/03
VOC	
1,1,1-Trichloroethane	0.00045 J
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	0.00077 J
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	ND (0.01) U
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U
Ethylbenzene	ND (0.001) U
Methylene chloride	ND (0.001) U
Tetrachloroethene	ND (0.001) U
Toluene	ND (0.001) U
Trichloroethene	0.0023
Vinyl chloride	ND (0.001) U
SVOC	
2,4-Dimethylphenol	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	0.0014 J
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U
Pentachlorophenol	ND (0.005) U
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	ND (0.025) U
Arsenic	0.0039 J
Barium	0.0837
Beryllium	ND (0.001) U
Cadmium	0.00035 J
Chromium Total	ND (0.01) U
Cobalt	0.00098 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	0.183
Nickel	0.0952
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	ND (0.01) U
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWM2-16	6/24/03
VOC	
1,1,1-Trichloroethane	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	0.0023
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	ND (0.01) U
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	0.00058
Ethylbenzene	ND (0.001) U
Methylene chloride	ND (0.001) U
Tetrachloroethene	ND (0.001) U
Toluene	ND (0.001) U
Trichloroethene	0.0014
Vinyl chloride	ND (0.001) U
SVOC	
2,4-Dimethylphenol	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	0.0015 J
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U
Pentachlorophenol	ND (0.005) U
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	ND (0.025) U
Arsenic	0.0037 J
Barium	0.0924
Beryllium	ND (0.001) U
Cadmium	0.00028 J
Chromium Total	ND (0.01) U
Cobalt	0.0013 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	0.15
Nickel	0.0456
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	ND (0.01) U
CDD/F	
2,3,7,8-TCDD Equivalent	NS

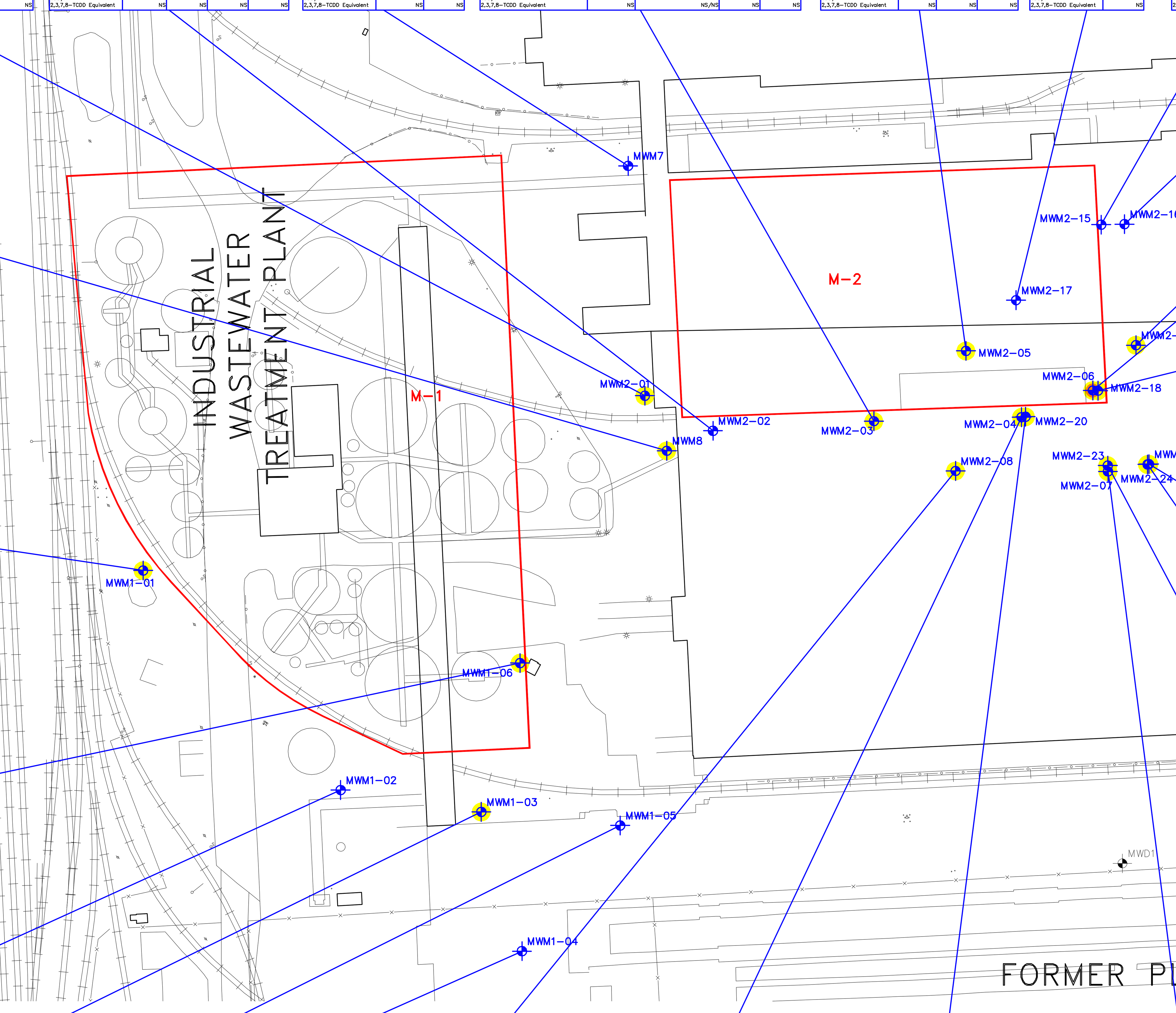
MWM2-19	6/23/03
VOC	
1,1,1-Trichloroethane	0.007
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	0.0075
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	0.0011 J
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U
Ethylbenzene	ND (0.001) U
Methylene chloride	ND (0.001) U
Tetrachloroethene	ND (0.001) U
Toluene	ND (0.001) U
Trichloroethene	ND (0.001) U
Vinyl chloride	0.0014
SVOC	
2,4-Dimethylphenol	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U
Pentachlorophenol	ND (0.005) U
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	ND (0.025) U
Arsenic	ND (0.01) U
Barium	0.065
Beryllium	ND (0.001) U
Cadmium	ND (0.005) U
Chromium Total	ND (0.01) U
Cobalt	0.0012 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	0.23
Nickel {IDW, RDW}	1.93
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	ND (0.01) U
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWM2-06	1/31/02
VOC	
1,1,1-Trichloroethane	ND (0.004) U
1,1,2-Trichloroethane	ND (0.004) U
1,1-Dichloroethane	0.11
1,1-Dichloroethene {IDW, RDW}	0.01
1,2-Dichloroethane	0.0013 J
Acetone	ND (0.04) U
Benzene	ND (0.004) U
cis-1,2-Dichloroethene	0.0054
Ethylbenzene	ND (0.004) U
Methylene chloride	0.0019 J
Tetrachloroethene	ND (0.004) U
Toluene	ND (0.004) U
Trichloroethene	0.0017 J
Vinyl chloride	0.001 J
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
P/PCB	
Total PCBs	NS
INORG	
Antimony	NS
Arsenic	NS
Barium	NS
Beryllium	NS
Cadmium	NS
Chromium Total	NS
Cobalt	NS
Copper	NS
Cyanide (total)	NS
Iron	NS
Lead	NS
Manganese	NS
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWM8	9/10/01	1/8/02
VOC		
1,1,1-Trichloroethane	ND (0.02) U	ND (0.067) U
1,1,2-Trichloroethane	ND (0.02) U	ND (0.067) U
1,1-Dichloroethane	ND (0.02) U	ND (0.067) U
1,1-Dichloroethene	ND (0.02) U	ND (0.067) U
1,2-Dichloroethane	ND (0.02) U	ND (0.067) U
Acetone {RDW}	1.4 J	–
Acetone {IDW, RDW}	–	3.4 J
Benzene	ND (0.02) U	ND (0.067) U
cis-1,2-Dichloroethene	ND (0.01) U	ND (0.033) U
Ethylbenzene	ND (0.02) U	ND (0.067) U
Methylene chloride	ND (0.02) U	ND (0.067) U
Tetrachloroethene	ND (0.02) U	ND (0.067) U
Toluene	ND (0.02) U	ND (0.067) U
Trichloroethene	ND (0.02) U	ND (0.067) U
Vinyl chloride	ND (0.02) U	ND (0.067) U
SVOC		
2,4-Dimethylphenol	0.0011 J	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
INORG		
Antimony	0.0023 J	0.0025 J
Arsenic	0.0122	0.0381
Barium	0.0565	0.0356
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	0.00033 J	0.00032 J
Chromium Total	0.0032 J	0.0029 J
Cobalt	0.0026 J	0.0024 J
Copper	0.0322	0.251
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	ND (0.003) U	–
Lead {IDW, RDW}	–	0.022
Manganese	0.0768	0.0635 J
Nickel	0.0143 J	0.0143 J
Selenium	ND (0.005) U	ND (0.005) U
Thallium	ND (0.01) U	0.00026 J
Vanadium {RDW}	0.0076 J	0.0116
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

MWM1-01	9/10/01	1/8/02
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U
Acetone	ND (0.01) U	ND (0.01) U
Benzene	ND (0.001) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U
Ethylbenzene	ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) U
Tetrachloroethene	0.00041 J	0.00038 J
Toluene	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U
Vinyl chloride	ND (0.001) U	ND (0.001) U
SVOC		
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.005) U	ND (0.005) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
INORG		
Antimony	–	0.005 J
Antimony {IDW, RDW}	0.0077 J	–
Arsenic	0.0053 J	0.0057 J
Barium	0.022	0.0136
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U
Chromium Total	NS	NS
Cobalt	ND (0.02) U	ND (0.02) U
Copper	ND (0.005) U	ND (0.005) U
Cyanide (total)	0.0081 J	0.0055 J
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese	0.0263	ND (0.01) U
Nickel	ND (0.02) U	ND (0.02) U
Selenium	0.0065	0.0045 J
Thallium	ND (0.01) U	ND (0.001) U
Vanadium	0.0028 J	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

MWM1-06	8/12/03
VOC	
1,1,1-Trichloroethane	NS/NS
1,1,2-Trichloroethane	NS/NS
1,1-Dichloroethane	NS/NS
1,1-Dichloroethene	NS/NS
1,2-Dichloroethane	NS/NS
Acetone	NS/NS
Benzene	NS/NS
cis-1,2-Dichloroethene	NS/NS
Ethylbenzene	NS/NS
Methylene chloride	NS/NS
Tetrachloroethene	NS/NS
Toluene	NS/NS
Trichloroethene	NS/NS
Vinyl chloride	NS/NS
SVOC	
2,4-Dimethylphenol	NS/NS
Benzo(a)pyrene	NS/NS
bis(2-Ethylhexyl)phthalate	NS/NS
Butyl benzylphthalate	NS/NS
Dibenz(a,h)anthracene	NS/NS
Methylphenol (Cresol)	NS/NS
Pentachlorophenol	NS/NS
P/PCB	
Total PCBs	NS/NS
INORG	
Antimony	NS/NS
Arsenic	NS/NS
Barium	NS/NS
Beryllium	NS/NS
Cadmium	NS/NS
Chromium Total	NS/NS
Cobalt	NS/NS
Copper	NS/NS
Cyanide (total) {IDW, RDW}	0.548/0.489
Iron	NS/NS
Lead	NS/NS
Manganese	NS/NS
Nickel	NS/NS
Selenium	NS/NS
Thallium	NS/NS
Vanadium	NS/NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS/NS



SITE LOCATION

LEGEND:

MWM2-08 — GROUNDWATER MONITORING WELL LOCATION

CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA

LOCATION WHERE NAPL HAS BEEN IDENTIFIED DURING RECENT RFI ACTIVITIES AT A MEASURABLE THICKNESS (>0.01 FEET)

APPROXIMATE AOI AREA

M-1 = WASTEWATER TREATMENT PLANT
M-2 = FORMER PLATING OPERATION AREA

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

MWM2-18	6/24/03
VOC	
1,1,1-Trichloroethane	ND (0.004) U
1,1,2-Trichloroethane	ND (0.004) U
1,1-Dichloroethane	0.067
1,1-Dichloroethene	0.0041
1,2-Dichloroethane	ND (0.004) U
Acetone	ND (0.04) U
Benzene	ND (0.004) U
cis-1,2-Dichloroethene	0.0015 J
Ethylbenzene	ND (0.004) U
Methylene chloride	ND (0.004) U
Tetrachloroethene	ND (0.004) U
Toluene	0.002 J
Trichloroethene {IDW, RDW}	0.0055
Vinyl chloride {IDW, RDW}	0.0034 J
SVOC	
2,4-Dimethylphenol	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	0.0011 J
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U
Pentachlorophenol	ND (0.005) U
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	ND (0.025) U
Arsenic	0.0025 J
Barium	0.0801
Beryllium	ND (0.001) U
Cadmium	ND (0.005) U
Chromium Total	ND (0.01) U
Cobalt	0.0025 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	0.271
Nickel {IDW, RDW}	4.85
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	ND (0.01) U
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWM2-22	6/23/03
VOC	
1,1,1-Trichloroethane	0.0056
1,1,2-Trichloroethane	ND (0.0033) U
1,1-Dichloroethane	0.091
1,1-Dichloroethene	0.0035
1,2-Dichloroethane	ND (0.0033) U
Acetone	0.0051 J
Benzene	ND (0.0033) U
cis-1,2-Dichloroethene	0.028
Ethylbenzene	ND (0.0033) U
Methylene chloride	ND (0.0033) U
Tetrachloroethene	0.0027 J
Toluene	ND (0.0033) U
Trichloroethene {IDW, RDW}	0.056
Vinyl chloride	ND (0.0033) U
SVOC	
2,4-Dimethylphenol	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U
Pentachlorophenol	ND (0.005) U
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	ND (0.025) U
Arsenic	0.0058 J
Barium	0.0882
Beryllium	ND (0.001) U
Cadmium	ND (0.005) U
Chromium Total	0.0017 J
Cobalt	0.00097 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	0.205
Nickel {IDW, RDW}	1.06
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	ND (0.01) U
CDD/F	
2,3,7,8-TCDD Equivalent	NS

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONTAMINATION.
7. NS – NOT SAMPLED.

0 80' 160'
GRAPHIC SCALE

MWM1-02	9/10/01	1/8/02	8/12/03
VOC			
1,1,1-Trichloroethane	0.00053 J	0.001	NS
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U	NS
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U	NS
Acetone	ND (0.01) U	ND (0.01) UJ	NS
Benzene	ND (0.001) U	ND (0.001) U	NS
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U	NS
Ethylbenzene	ND (0.001) U	ND (0.001) U	NS
Methylene chloride	ND (0.001) U	ND (0.001) U	NS
Tetrachloroethene	ND (0.001) U	ND (0.001) U	NS
Toluene	0.00044 J	ND (0.001) U	NS
Trichloroethene	ND (0.001) U	ND (0.001) U	NS
Vinyl chloride	ND (0.001) U	ND (0.001) U	NS
SVOC			
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U	NS
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U	NS
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U	NS
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U	NS
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U	NS
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U	NS
Pentachlorophenol	ND (0.005) U	ND (0.005) U	NS
P/PCB			
Total PCBs	ND (0.0004) U	ND (0.0004) U	NS
INORG			
Antimony	ND (0.025) U	ND (0.025) U	NS
Arsenic	0.0047 J	0.0053 J	NS
Barium	0.0895	0.0713	NS
Beryllium	ND (0.001) U	ND (0.001) U	NS
Cadmium	0.00038 J	ND (0.005) U	NS
Chromium Total	NS	NS	NS
Cobalt	0.0022 J	0.0023 J	NS
Copper	ND (0.005) U	ND (0.005) U	NS
Cyanide (total)	ND (0.01) U	ND (0.01) U	ND (0.01) U
Iron	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	NS
Manganese	0.157	0.123	NS
Nickel	ND (0.02) U	ND (0.02) U	NS
Selenium	ND (0.005) U	ND (0.005) U	NS
Thallium	ND (0.01) U	0.000045 J	NS
Vanadium	ND (0.01) U	ND (0.01) U	NS
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWM1-03	9/13/01	1/8/02	8/12/03
VOC			
1,1,1-Trichloroethane	ND (0.00015) U	0.00055 J	NS
1,1,2-Trichloroethane	ND (0.0003) U	ND (0.001) U	NS
1,1-Dichloroethane	ND (0.00016) U	ND (0.001) U	NS
1,1-Dichloroethene	ND (0.00024) U	ND (0.001) U	NS
1,2-Dichloroethane	ND (0.00021) U	ND (0.001) U	NS
Acetone	ND (0.00051) U	ND (0.01) U	NS
Benzene	ND (0.00016) U	ND (0.001) U	NS
cis-1,2-Dichloroethene	ND (0.00022) U	ND (0.0005) U	NS
Ethylbenzene	ND (0.00012) U	ND (0.001) U	NS
Methylene chloride	ND (0.00034) U	ND (0.001) U	NS
Tetrachloroethene	ND (0.00023) U	ND (0.001) U	NS
Toluene	ND (0.00018) U	ND (0.001) U	NS
Trichloroethene	ND (0.00014) U	ND (0.001) U	NS
Vinyl chloride	ND (0.00015) U	ND (0.001) U	NS
SVOC			
2,4-Dimethylphenol	ND (0.00085) U	ND (0.005) U	NS
Benzo(a)pyrene	ND (0.00073) U	ND (0.005) U	NS
bis(2-Ethylhexyl)phthalate	ND (0.0027) U	ND (0.005) U	NS
Butyl benzylphthalate	ND (0.00088) U	ND (0.005) U	NS
Dibenz(a,h)anthracene	ND (0.00079) U	ND (0.005) U	NS
Methylphenol (Cresol)	ND (0.0013) U	ND (0.005) U	NS
Pentachlorophenol	ND (0.0024) U	ND (0.005) U	NS
P/PCB			
Total PCBs	ND (0.000082) U	ND (0.0004) U	NS
INORG			
Antimony	ND (0.0022) U	ND (0.025) U	NS
Arsenic	ND (0.0039) U	0.007 J	NS
Barium	0.172	0.164	NS
Beryllium	ND (0.00054) U	ND (0.001) U	NS
Cadmium	ND (0.00028) U	ND (0.005) U	NS
Chromium Total	NS	NS	NS
Cobalt	0.0028 J	0.0027 J	NS
Copper	ND (0.0042) U	ND (0.005) U	NS
Cyanide (total) {IDW, RDW}	0.897	0.828	1.3
Iron	NS	NS	NS
Lead	ND (0.0025) U	ND (0.003) U	NS
Manganese	0.548	0.289	NS
Nickel	ND (0.0022) U	0.0037 J	NS
Selenium	ND (0.0045) U	ND (0.005) U	NS
Thallium	ND (0.005) U	ND (0.001) U	NS
Vanadium	ND (0.00082) U	ND (0.01) U	NS
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWM1-05	8/12/03
VOC	
1,1,1-Trichloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	NS
1,1-Dichloroethene	NS
1,2-Dichloroethane	NS
Acetone	NS
Benzene	NS
cis-1,2-Dichloroethene	NS
Ethylbenzene	NS
Methylene chloride	NS
Tetrachloroethene	NS
Toluene	NS
Trichloroethene	NS
Vinyl chloride	NS
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
P/PCB	
Total PCBs	NS
INORG	
Antimony	NS
Arsenic	NS
Barium	NS
Beryllium	NS
Cadmium	NS
Chromium Total	NS
Cobalt	NS
Copper	NS
Cyanide (total)	0.0476
Iron	NS
Lead	NS
Manganese	NS
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWM1-04	8/12/03
VOC	
1,1,1-Trichloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	NS
1,1-Dichloroethene	NS
1,2-Dichloroethane	NS
Acetone	NS
Benzene	NS
cis-1,2-Dichloroethene	NS
Ethylbenzene	NS
Methylene chloride	NS
Tetrachloroethene	NS
Toluene	NS
Trichloroethene	NS
Vinyl chloride	NS
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
P/PCB	
Total PCBs	NS
INORG	
Antimony	NS
Arsenic	NS
Barium	NS
Beryllium	NS
Cadmium	NS
Chromium Total	NS
Cobalt	NS
Copper	NS
Cyanide (total)	ND (0.01) U
Iron	NS
Lead	NS
Manganese	NS
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWM2-08	1/31/02	11/12/02
VOC		
1,1,1-Trichloroethane	0.038	0.1
1,1,2-Trichloroethane	ND (0.0056) U	ND (0.014) U
1,1-Dichloroethane	0.14	0.41
1,1-Dichloroethene	0.0035 J	–
1,1-Dichloroethene {IDW, RDW}	–	0.0081 J
1,2-Dichloroethane	ND (0.0056) U	ND (0.014) U
Acetone	ND (0.056) U	ND (0.14) UJ
Benzene	ND (0.0056) U	ND (0.014) U
cis-1,2-Dichloroethene	ND (0.0028) U	ND (0.0071) U
Ethylbenzene	ND (0.0056) U	R
Methylene chloride	ND (0.0056) U	–
Methylene chloride {IDW, RDW}	–	0.0076 J
Tetrachloroethene	ND (0.0056) U	ND (0.014) U
Toluene	ND (0.0056) U	ND (0.014) U
Trichloroethene	ND (0.0056) U	ND (0.014) U
Vinyl chloride	ND (0.0056) U	ND (0.014) U
SVOC		
2,4-Dimethylphenol	NS	ND (0.005) U
Benzo(a)pyrene	NS	ND (0.005) U
bis(2-Ethylhexyl)phthalate	NS	ND (0.005) U
Butyl benzylphthalate	NS	ND (0.005) U
Dibenz(a,h)anthracene	NS	ND (0.005) U
Methylphenol (Cresol)	NS	ND (0.005) U
Pentachlorophenol	NS	ND (0.005) U
P/PCB		
Total PCBs	NS	ND (0.0004) U
INORG		
Antimony	NS	ND (0.025) U
Arsenic	NS	ND (0.01) U
Barium	NS	0.258
Beryllium	NS	ND (0.001) U
Cadmium	NS	0.00038 J
Chromium Total	NS	ND (0.01) U
Cobalt	NS	0.0197 J
Copper	NS	ND (0.005) U
Cyanide (total)	NS	0.0107
Iron	NS	NS
Lead	NS	ND (0.003) U
Manganese	NS	0.322
Nickel	NS	0.0933
Selenium	NS	ND (0.005) U
Thallium	NS	ND (0.001) U
Vanadium	NS	ND (0.01) U
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

MWM2-04	8/30/01	1/8/02	11/12/02	6/24/03
VOC				
1,1,1-Trichloroethane {IDW, RDW}	0.48	0.42	0.55	0.6
1,1,2-Trichloroethane	–	–	ND (0.062) U	–
1,1,2-Trichloroethane {IDW, RDW}	0.012 J	0.01 J	–	0.02 J
1,1-Dichloroethane	0.64	–	–	–
1,1-Dichloroethane {RDW}	–	1.3	1.9	1.5
1,1-Dichloroethene {IDW, RDW}	0.08	0.075	0.091	0.087
1,2-Dichloroethane	ND (0.0052) U	–	ND (0.062) U	ND (0.04) U
1,2-Dichloroethane {IDW, RDW}	–	0.01 J	–	–
Acetone	0.23 J	0.45 J	ND (0.62) UJ	ND (0.4) U
Benzene	ND (0.004) U	ND (0.033) U	ND (0.062) U	ND (0.04) U
cis-1,2-Dichloroethene	ND (0.0055) U	ND (0.017) U	ND (0.031) U	ND (0.02) U
Ethylbenzene	ND (0.003) U	ND (0.033) U	R	ND (0.04) U
Methylene chloride	ND (0.0085) U	ND (0.033) U	–	ND (0.04) U
Methylene chloride {IDW, RDW}	–	–	0.024 J	–
Tetrachloroethene	ND (0.0058) U	ND (0.033) U	ND (0.062) U	ND (0.04) U
Toluene	ND (0.0045) U	ND (0.033) U	ND (0.062) U	ND (0.04) U
Trichloroethene	ND (0.0035) U	ND (0.033) U	ND (0.062) U	ND (0.04) U
Vinyl chloride	ND (0.0038) U	ND (0.033) U	ND (0.062) U	ND (0.04) U
SVOC				
2,4-Dimethylphenol	ND (0.00085) U	ND (0.005) U	ND (0.005) U	0.001 J
Benzo(a)pyrene	ND (0.00073) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.0027) U	ND (0.005) U	ND (0.005) U	0.0044 J
Butyl benzylphthalate	ND (0.00088) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.00079) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.0013) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Pentachlorophenol	ND (0.0024) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
P/PCB				
Total PCBs	ND (0.000082) U	0.0004115 J	ND (0.0004) U	ND (0.0004) U
INORG				
Antimony	ND (0.025) U	ND (0.025) U	ND (0.025) U	ND (0.025) U
Arsenic	ND (0.01) U	0.0047 J	0.0039 J	0.0039 J
Barium	0.0766	0.105	0.116	0.0576
Beryllium	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U	0.00029 J	ND (0.005) U
Chromium Total	NS	NS	ND (0.01) U	ND (0.01) U
Cobalt	0.0111 J	0.0191 J	0.0305	0.0177 J
Copper	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Cyanide (total)	ND (0.01) U	ND (0.01) U	NS	NS
Iron	NS	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	ND (0.003) U	ND (0.003) U
Manganese	–	–	0.745	0.482
Manganese {RDW}	1.21	1.21	–	–
Nickel	0.0613	–	–	0.055
Nickel {IDW, RDW}	–	0.153	0.18	–
Selenium	ND (0.005) U	ND (0.005) U	ND (0.005) U	ND (0.005) U
Thallium	ND (0.01) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Vanadium	ND (0.01) U	ND (0.01) U	ND (0.01) U	ND (0.01) U
CDD/F				
2,3,7,8-TCDD Equivalent	NS	NS	NS	NS

MWM2-20	6/23/03
VOC	
1,1,1-Trichloroethane {IDW, RDW}	0.24
1,1,2-Trichloroethane	ND (0.017) U
1,1-Dichloroethane	0.45
1,1-Dichloroethene {IDW, RDW}	0.029
1,2-Dichloroethane	ND (0.017) U
Acetone	ND (0.17) U
Benzene	ND (0.017) U
cis-1,2-Dichloroethene	ND (0.0083) U
Ethylbenzene	ND (0.017) U
Methylene chloride	ND (0.017) U
Tetrachloroethene {IDW, RDW}	0.0075 J
Toluene	ND (0.017) U
Trichloroethene	ND (0.017) U
Vinyl chloride	ND (0.017) U
SVOC	
2,4-Dimethylphenol	0.0013 J
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U
Pentachlorophenol	ND (0.005) U
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	ND (0.025) U
Arsenic	0.0044 J
Barium	0.048
Beryllium	ND (0.001) U
Cadmium	0.0003 J
Chromium Total	ND (0.01) U
Cobalt	0.0088 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	0.158
Nickel	0.0796
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	ND (0.01) U
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWM2-07	1/31/02	11/12/02	6/23/03
VOC			
1,1,1-Trichloroethane	ND (0.001) U	ND (0.002) U/ND (0.0025) U	ND (0.001) U/ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.002) U/ND (0.0025) U	ND (0.001) U/ND (0.001) U
1,1-Dichloroethane	0.021	0.044/0.062	0.023/0.023
1,1-Dichloroethene	0.001	0.0015 J/0.0013 J	0.00092 J/0.0009 J
1,2-Dichloroethane	0.00062 J	0.0012 J/0.0015 J	0.0007 J/0.00069 J
Acetone	ND (0.01) U	ND (0.02) UJ/ND (0.025) UJ	0.0011 J/ND (0.01) U
Benzene	ND (0.001) U	ND (0.002) U/ND (0.0025) U	ND (0.001) U/ND (0.001) U
cis-1,2-Dichloroethene	0.034	0.053	0.012/0.013
cis-1,2-Dichloroethene {IDW, RDW}	–	0.09	–
Ethylbenzene	ND (0.001) U	R/R	ND (0.001) U/ND (0.001) U
Methylene chloride	0.0004 J	0.0014 J/0.0015 J	0.00036 J/0.00039 J
Tetrachloroethene	0.0008 J	ND (0.002) U/ND (0.0025) U	ND (0.001) U/ND (0.001) U
Toluene	ND (0.001) U	ND (0.002) U/ND (0.0025) U	ND (0.001) U/ND (0.001) U
Trichloroethene	0.0024	0.0034/0.0027	0.0026/0.0025
Vinyl chloride {IDW, RDW}	0.0033	0.015/0.027	0.0032/0.0035
SVOC			
2,4-Dimethylphenol	NS	ND (0.005) U/ND (0.005) U	ND (0.005) U/ND (0.005) U
Benzo(a)pyrene	NS	ND (0.005) U/ND (0.005) U	ND (0.005) U/ND (0.005) U
bis(2-Ethylhexyl)phthalate	NS	ND (0.005) U/ND (0.005) U	ND (0.0068) U/ND (0.005) U
Butyl benzylphthalate	NS	ND (0.005) U/ND (0.005) U	ND (0.005) U/ND (0.005) U
Dibenz(a,h)anthracene	NS	ND (0.005) U/ND (0.005) U	ND (0.005) U/ND (0.005) U
Methylphenol (Cresol)	NS	ND (0.005) U/ND (0.005) U	ND (0.005) U/ND (0.005) U
Pentachlorophenol	NS	ND (0.005) U/ND (0.005) U	ND (0.005) U/ND (0.005) U
P/PCB			
Total PCBs	NS	ND (0.0004) U/ND (0.0004) U	ND (0.0004) U/ND (0.0004) U
INORG			
Antimony	NS	ND (0.025) U/ND (0.025) U	ND (0.025) U/ND (0.025) U
Arsenic	NS	0.0032 J/0.0037 J	0.0026 J/ND (0.01) U
Barium	NS	0.0598/0.0584	0.0659/0.0684
Beryllium	NS	ND (0.001) U/ND (0.001) U	ND (0.001) U/ND (0.001) U
Cadmium	NS	ND (0.005) U/ND (0.005) U	ND (0.005) U/ND (0.005) U
Chromium Total	NS	0.0018 J/ND (0.01) U	ND (0.01) U/ND (0.01) U
Cobalt	NS	0.004/0.0043 J	0.0019 J/0.0025 J
Copper	NS	ND (0.005) U/ND (0.005) U	ND (0.005) U/ND (0.005) U
Cyanide (total)	NS	0.0023 J/0.0051 J	NS/NS
Iron	NS	NS/NS	NS/NS
Lead	NS	ND (0.003) U/ND (0.003) U	ND (0.003) U/ND (0.003) U
Manganese	NS	0.455/0.439	0.318/0.335
Nickel	NS	–	–
Nickel {IDW, RDW}	–	10.8/10.4	4.74/5.04
Selenium	NS	ND (0.005) U/ND (0.005) U	ND (0.005) U/ND (0.005) U
Thallium	NS	ND (0.001) U/ND (0.001) U	ND (0.001) U/ND (0.001) U
Vanadium	NS	ND (0.01) U/ND (0.01) U	ND (0.01) U/ND (0.01) U
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS/NS	NS/NS

MWM2-23	6/23/03
VOC	
1,1,1-Trichloroethane	ND (0.0017) U
1,1,2-Trichloroethane	ND (0.0017) U
1,1-Dichloroethane	0.051
1,1-Dichloroethene	0.0012 J
1,2-Dichloroethane	0.0009 J
Acetone	0.0027 J
Benzene	ND (0.0017) U
cis-1,2-Dichloroethene	0.011
Ethylbenzene	ND (0.0017) U
Methylene chloride	0.00062 J
Tetrachloroethene	0.0013 J
Toluene	ND (0.0017) U
Trichloroethene	0.003
Vinyl chloride {IDW, RDW}	0.0023
SVOC	
2,4-Dimethylphenol	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U
Pentachlorophenol	ND (0.005) U
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	ND (0.025) U
Arsenic	ND (0.01) U
Barium	0.0984
Beryllium	ND (0.001) U
Cadmium	ND (0.005) U
Chromium Total	ND (0.01) U
Cobalt	0.0018 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	0.286
Nickel {IDW, RDW}	3.96
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	ND (0.01) U
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWM2-24	6/23/03
VOC	
1,1,1-Trichloroethane	0.0042
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	0.015
1,1-Dichloroethene	0.0017
1,2-Dichloroethane	ND (0.001) U
Acetone	0.0022 J
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	0.0026
Ethylbenzene	ND (0.001) U
Methylene chloride	ND (0.001) U
Tetrachloroethene	0.00072 J
Toluene	ND (0.001) U
Trichloroethene {IDW, RDW}	0.011
Vinyl chloride	0.00038 J
SVOC	
2,4-Dimethylphenol	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U
Pentachlorophenol	ND (0.005) U
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	ND (0.025) U
Arsenic	0.0047 J
Barium	0.0773
Beryllium	ND (0.001) U
Cadmium	ND (0.005) U
Chromium Total	0.0019 J
Cobalt	0.0008 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	0.241
Nickel {IDW, RDW}	1.7
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	ND (0.01) U
CDD/F	
2,3,7,8-TCDD Equivalent	NS

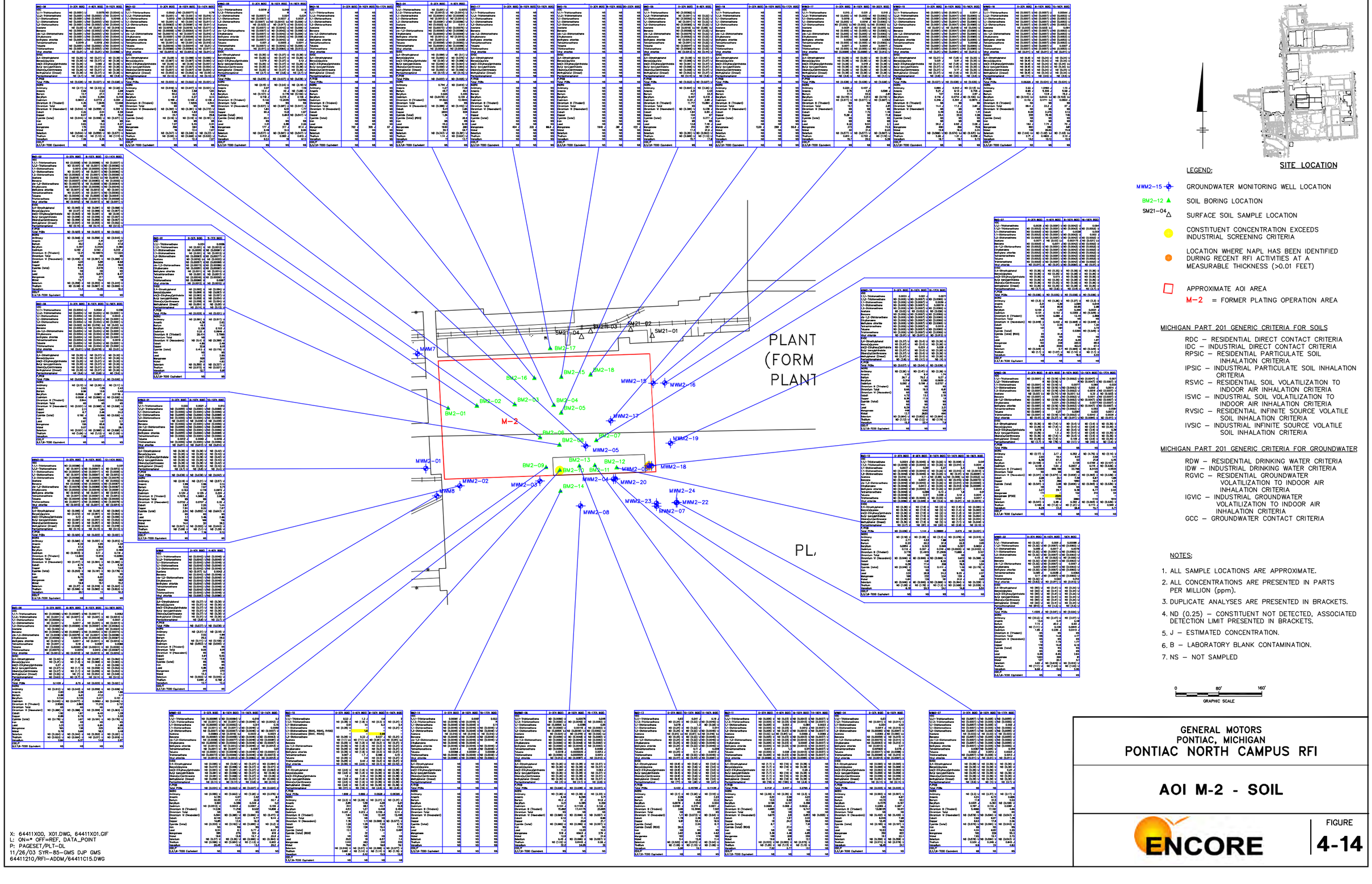
X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/24/03 SYR-85-GMS DJP GMS
64411210/RFI-ADDM/64411C14.DWG

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

AOIs M-1 AND M-2 - GROUNDWATER

ENCORE

FIGURE **4-13**



GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

AOI M-2 - SOIL

ENCORE

FIGURE 4-14

X: 64411X0D, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/26/03 SYR-85-GMS DJP GMS
64411210/RFI-ADDM/64411C15.DWG

MWM16-02	0-2(ft BGS)	6-8(ft BGS)	18-20(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.007) U	ND (0.0054) U	ND (0.0087) U
1,1,2-Trichloroethane	ND (0.007) U	ND (0.0054) U	ND (0.0087) U
1,1-Dichloroethane	ND (0.007) U	ND (0.0054) U	ND (0.0087) U
1,2-Dichloroethane	ND (0.007) U	ND (0.0054) U	ND (0.0087) U
Acetone	ND (0.028) U	ND (0.022) U	ND (0.027) U
Benzene	ND (0.007) U	ND (0.0054) U	ND (0.0087) U
cis-1,2-Dichloroethene	ND (0.007) U	ND (0.0054) U	ND (0.0087) U
Ethylbenzene	ND (0.007) U	ND (0.0054) U	ND (0.0087) U
Methylene chloride	ND (0.007) U	ND (0.0054) U	ND (0.0087) U
Tetrachloroethene	ND (0.007) U	ND (0.0054) U	ND (0.0087) U
Toluene	ND (0.007) U	0.0094 J	0.014 J
Trichloroethene	ND (0.007) U	ND (0.0054) U	ND (0.0087) U
Vinyl chloride	ND (0.014) U	ND (0.011) U	ND (0.013) U
SVOC			
2,4-Dimethylphenol	ND (0.35) U	ND (0.42) U	ND (0.36) U
Benzo(a)pyrene	0.13 J	ND (0.42) U	ND (0.36) U
Bis(2-Ethylhexyl)phthalate	0.29 J	ND (0.42) U	ND (0.36) U
Dibenz(a,h)anthracene	0.29 J	ND (0.42) U	ND (0.36) U
Dibenzofuran	ND (0.35) U	ND (0.42) U	ND (0.36) U
Methylphenol (Cresol)	ND (0.35) U	ND (0.42) U	ND (0.36) U
Pentachlorophenol	ND (3.6) U	ND (4.3) U	ND (3.7) U
PCBs			
Total PCBs	0.47889 J	0.10605 J	ND (0.036) U
INORG			
Antimony	ND (2.12) U	ND (2.53) U	ND (2.16) U
Arsenic	5.1	3.4 J	2.8 J
Barium	181	89.4 J	8.8 J
Beryllium	1.62	0.404	ND (0.108) U
Cadmium	0.418 J	0.422 J	0.19 J
Chromium III (Trivalent)	NS	NS	NS
Chromium Total	12.7	17.6	4.26
Chromium VI (Hexavalent)	NS	NS	NS
Cobalt	2.33	3.1	1.03
Copper	20.8	22.7	8.16
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	74.9	16.8	3.24
Manganese	1120 J	731 J	187 J
Nickel	9.83 J	31.7	5.16
Selenium	ND (1.06) U	ND (1.26) U	ND (0.539) U
Thallium	0.327 J	0.353 J	0.158 J
Vanadium	15.1	23.9	7.07
OTHER			
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWM16-01	0-2(ft BGS)	8-10(ft BGS)	14-16(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.00982) U	ND (0.00982) U	ND (0.0012) U
1,1,2-Trichloroethane	ND (0.0051) U	ND (0.0051) U	ND (0.0013) U
1,1-Dichloroethane	ND (0.00102) U	ND (0.00098) U	ND (0.00013) U
1,2-Dichloroethane	ND (0.00102) U	ND (0.00098) U	ND (0.00013) U
1,2-Dichloroethene	ND (0.00082) U	ND (0.00072) U	ND (0.00081) U
Acetone	ND (0.0019) U	ND (0.002) U	ND (0.0038) U
Benzene	ND (0.00098) U	ND (0.00084) U	ND (0.00081) U
cis-1,2-Dichloroethene	ND (0.00075) U	ND (0.00084) U	ND (0.0011) U
Ethylbenzene	ND (0.0023) U	ND (0.00084) U	ND (0.00074) U
Methylene chloride	ND (0.0012) U	ND (0.0013) U	ND (0.0024) U
Tetrachloroethene	ND (0.00082) U	ND (0.00072) U	ND (0.00081) U
Toluene	ND (0.00041) U	ND (0.00035) U	0.0027 J
Trichloroethene	ND (0.00098) U	ND (0.00078) U	ND (0.00093) U
Vinyl chloride	ND (0.0012) U	ND (0.0012) U	ND (0.00161) U
SVOC			
2,4-Dimethylphenol	ND (0.087) U	ND (0.09) U	ND (0.09) U
Benzo(a)pyrene	ND (0.085) U	ND (0.088) U	ND (0.088) U
Bis(2-Ethylhexyl)phthalate	0.11 J	0.11 J	0.11 J
Dibenz(a,h)anthracene	ND (0.085) U	ND (0.088) U	ND (0.087) U
Dibenzofuran	ND (0.096) U	ND (0.098) U	ND (0.097) U
Methylphenol (Cresol)	ND (0.087) U	ND (0.053) U	ND (0.053) U
Pentachlorophenol	ND (0.13) U	ND (0.14) U	ND (0.14) U
PCBs			
Total PCBs	0.114	ND (0.023) U	ND (0.023) U
INORG			
Antimony	0.898 J	0.562 J	0.583 J
Arsenic	4.4	3.47 J	3.16
Barium	41.8	34.7	9.52
Beryllium	0.32	0.186	ND (0.0518) U
Cadmium	0.162 J	0.0884 J	0.129 J
Chromium III (Trivalent)	NS	NS	NS
Chromium Total	14.9	11.6	6.96
Chromium VI (Hexavalent)	NS	NS	NS
Cobalt	3.46	3.16	2.24
Copper	33.5	17.8	10.2
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	21.6	7.62	4.58
Manganese	410	308	231
Nickel	14.7	14.7	6.56
Selenium	ND (0.537) U	ND (0.378) U	ND (0.349) U
Thallium	ND (0.542) U	ND (0.385) U	ND (0.354) U
Vanadium	16.9	15	8.09
OTHER			
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWM16-07	0-2(ft BGS)
VOC	
1,1,1-Trichloroethane	ND (0.0042) U
1,1,2-Trichloroethane	ND (0.0042) U
1,1-Dichloroethane	ND (0.0042) U
1,2-Dichloroethane	ND (0.0042) U
Acetone	0.013 J
Benzene	ND (0.0042) U
cis-1,2-Dichloroethene	ND (0.0042) U
Ethylbenzene	ND (0.0042) U
Methylene chloride	ND (0.0042) U
Tetrachloroethene	ND (0.0042) U
Toluene	0.0027 J
Trichloroethene	ND (0.0042) U
Vinyl chloride	ND (0.00861) U
SVOC	
2,4-Dimethylphenol	ND (0.36) U
Benzo(a)pyrene	ND (0.36) U
Bis(2-Ethylhexyl)phthalate	ND (0.36) U
Dibenz(a,h)anthracene	ND (0.36) U
Dibenzofuran	ND (0.36) U
Methylphenol (Cresol)	ND (0.36) U
Pentachlorophenol	ND (3.7) U
PCBs	
Total PCBs	0.0952 J
INORG	
Antimony	0.234 J
Arsenic	3.1 J
Barium	44.3 J
Beryllium	0.88 J
Cadmium	0.373 J
Chromium Total	13.4 J
Cobalt	5.73
Copper	25.7 J
Cyanide (total)	NS
Iron	NS
Lead	9
Manganese	284 J
Nickel	15.8
Selenium	ND (0.591) U
Thallium	0.338 J
Vanadium	13.1
OTHER	
2,3,7,8-TCDD Equivalent	NS

X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/26/03 SYR-85-GMS SDL GMS
64411210/RFI-ADDM/64411C16.DWG

SITE LOCATION

LEGEND:

- MWM4-07 — GROUNDWATER MONITORING WELL LOCATION
- BM5-03 — SOIL BORING LOCATION
- SM23-01 — SURFACE SOIL SAMPLE LOCATION
- CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA
- LOCATION WHERE NAPL HAS BEEN IDENTIFIED DURING RECENT RFI ACTIVITIES AT A MEASURABLE THICKNESS (>0.01 FEET)
- APPROXIMATE AOI AREA
- M-16 = PLANT 25 BASEMENT SUMP AREA

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONTAMINATION.
7. NS – NOT SAMPLED.

0 200' 400'
GRAPHIC SCALE

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

AOI M-16 - SOIL

ENCORE

FIGURE 4-15

MWM4-04	1/10/02	11/14/02	9/30/03
VOC			
1,1,1-Trichloroethane	ND (0.033) U	ND (0.033) U	NS
1,1,2-Trichloroethane	ND (0.033) U	ND (0.033) U	NS
1,1-Dichloroethane	ND (0.033) U	ND (0.033) U	NS
1,1-Dichloroethene	ND (0.033) U	ND (0.033) U	NS
1,2-Dichloroethane	ND (0.033) U	ND (0.033) U	NS
Acetone	ND (0.33) UJ	ND (0.33) U	NS
Benzene {IDW, RDW}	0.55	0.62	0.98
cis-1,2-Dichloroethene	ND (0.017) U	ND (0.017) U	NS
Ethylbenzene	–	0.11	–
Ethylbenzene {IDW, RDW}	0.85	–	1.5
Methylene chloride	ND (0.033) U	R	NS
Tetrachloroethene	ND (0.033) U	ND (0.033) U	NS
Toluene	0.034	0.026 J	0.057
Trichloroethene	ND (0.033) U	ND (0.033) U	NS
Vinyl chloride	ND (0.033) U	ND (0.033) U	NS
SVOC			
2,4-Dimethylphenol	NS	NS	NS
Benzo(a)pyrene	NS	NS	NS
bis(2-Ethylhexyl)phthalate	NS	NS	NS
Butyl benzylphthalate	NS	NS	NS
Dibenz(a,h)anthracene	NS	NS	NS
Methylphenol (Cresol)	NS	NS	NS
Pentachlorophenol	NS	NS	NS
P/PCB			
Total PCBs	NS	NS	NS
INORG			
Antimony	NS	NS	NS
Arsenic	NS	NS	NS
Barium	NS	NS	NS
Beryllium	NS	NS	NS
Cadmium	NS	NS	NS
Chromium Total	NS	NS	NS
Cobalt	NS	NS	NS
Copper	NS	NS	NS
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	NS
Manganese	NS	NS	NS
Nickel	NS	NS	NS
Selenium	NS	NS	NS
Thallium	NS	NS	NS
Vanadium	NS	NS	NS
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWM4-05	1/18/02	11/14/02	10/1/03
VOC			
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U	NS
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U	NS
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U	NS
Acetone	0.0021 J	ND (0.01) U	NS
Benzene	ND (0.001) U	ND (0.001) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U	NS
Ethylbenzene	ND (0.001) U	ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.001) U	R	NS
Tetrachloroethene	ND (0.001) U	ND (0.001) U	NS
Toluene	0.00031 J	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U	NS
Vinyl chloride	ND (0.001) U	ND (0.001) U	NS
SVOC			
2,4-Dimethylphenol	NS	NS	NS
Benzo(a)pyrene	NS	NS	NS
bis(2-Ethylhexyl)phthalate	NS	NS	NS
Butyl benzylphthalate	NS	NS	NS
Dibenz(a,h)anthracene	NS	NS	NS
Methylphenol (Cresol)	NS	NS	NS
Pentachlorophenol	NS	NS	NS
P/PCB			
Total PCBs	NS	NS	NS
INORG			
Antimony	NS	NS	NS
Arsenic	NS	NS	NS
Barium	NS	NS	NS
Beryllium	NS	NS	NS
Cadmium	NS	NS	NS
Chromium Total	NS	NS	NS
Cobalt	NS	NS	NS
Copper	NS	NS	NS
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	NS
Manganese	NS	NS	NS
Nickel	NS	NS	NS
Selenium	NS	NS	NS
Thallium	NS	NS	NS
Vanadium	NS	NS	NS
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWM4-02	8/20/01	1/10/02	11/14/02	10/1/03
VOC				
1,1,1-Trichloroethane	ND (0.01) U	ND (0.001) U	ND (0.001) U	NS
1,1,2-Trichloroethane	ND (0.01) U	ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethane	ND (0.01) U	ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethene	ND (0.01) U	ND (0.001) U	ND (0.001) U	NS
1,2-Dichloroethane	ND (0.01) U	ND (0.001) U	ND (0.001) U	NS
Acetone	ND (0.1) UJ	ND (0.01) U	ND (0.01) U	NS
Benzene	–	0.00033 J	0.0037	ND (0.001) U
Benzene {IDW, RDW}	0.11	–	–	–
cis-1,2-Dichloroethene	ND (0.005) U	ND (0.0005) U	ND (0.0005) U	NS
Ethylbenzene	0.16	0.00049 J	0.0023	0.00027 J
Methylene chloride	ND (0.01) U	ND (0.001) U	R	NS
Tetrachloroethene	ND (0.01) U	ND (0.001) U	ND (0.001) U	NS
Toluene	0.03	ND (0.001) U	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.01) U	ND (0.001) U	ND (0.001) U	NS
Vinyl chloride	ND (0.01) U	ND (0.001) U	ND (0.001) U	NS
SVOC				
2,4-Dimethylphenol	NS	NS	NS	NS
Benzo(a)pyrene	NS	NS	NS	NS
bis(2-Ethylhexyl)phthalate	NS	NS	NS	NS
Butyl benzylphthalate	NS	NS	NS	NS
Dibenz(a,h)anthracene	NS	NS	NS	NS
Methylphenol (Cresol)	NS	NS	NS	NS
Pentachlorophenol	NS	NS	NS	NS
P/PCB				
Total PCBs	NS	NS	NS	NS
INORG				
Antimony	NS	NS	NS	NS
Arsenic	NS	NS	NS	NS
Barium	NS	NS	NS	NS
Beryllium	NS	NS	NS	NS
Cadmium	NS	NS	NS	NS
Chromium Total	NS	NS	NS	NS
Cobalt	NS	NS	NS	NS
Copper	NS	NS	NS	NS
Cyanide (total)	NS	NS	NS	NS
Iron	NS	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	NS	NS
Manganese	NS	NS	NS	NS
Nickel	NS	NS	NS	NS
Selenium	NS	NS	NS	NS
Thallium	NS	NS	NS	NS
Vanadium	NS	NS	NS	NS
CDD/F				
2,3,7,8-TCDD Equivalent	NS	NS	NS	NS

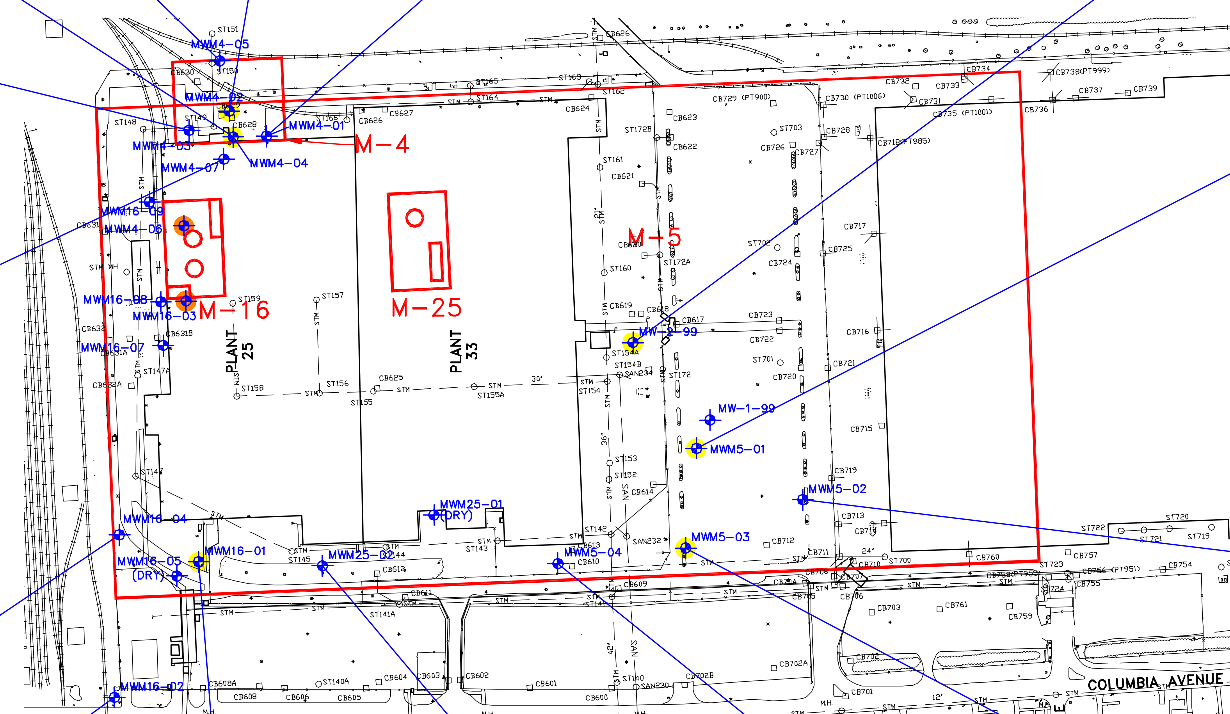
MWM4-01	8/20/01	1/10/02	11/14/02	9/30/03
VOC				
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
Acetone	ND (0.01) UJ	ND (0.01) UJ	ND (0.01) U	NS
Benzene	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U	ND (0.0005) U	NS
Ethylbenzene	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Methylene chloride	0.00035 J	ND (0.001) U	R	NS
Tetrachloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
Toluene	ND (0.001) U	ND (0.001) U	0.00042 J	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
Vinyl chloride	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
SVOC				
2,4-Dimethylphenol	NS	NS	NS	NS
Benzo(a)pyrene	NS	NS	NS	NS
bis(2-Ethylhexyl)phthalate	NS	NS	NS	NS
Butyl benzylphthalate	NS	NS	NS	NS
Dibenz(a,h)anthracene	NS	NS	NS	NS
Methylphenol (Cresol)	NS	NS	NS	NS
Pentachlorophenol	NS	NS	NS	NS
P/PCB				
Total PCBs	NS	NS	NS	NS
INORG				
Antimony	NS	NS	NS	NS
Arsenic	NS	NS	NS	NS
Barium	NS	NS	NS	NS
Beryllium	NS	NS	NS	NS
Cadmium	NS	NS	NS	NS
Chromium Total	NS	NS	NS	NS
Cobalt	NS	NS	NS	NS
Copper	NS	NS	NS	NS
Cyanide (total)	NS	NS	NS	NS
Iron	NS	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	NS	NS
Manganese	NS	NS	NS	NS
Nickel	NS	NS	NS	NS
Selenium	NS	NS	NS	NS
Thallium	NS	NS	NS	NS
Vanadium	NS	NS	NS	NS
CDD/F				
2,3,7,8-TCDD Equivalent	NS	NS	NS	NS

MW-2-99	9/17/01	1/10/02	8/12/03
VOC			
1,1,1-Trichloroethane	NS	NS	NS
1,1,2-Trichloroethane	NS	NS	NS
1,1-Dichloroethane	NS	NS	NS
1,1-Dichloroethene	NS	NS	NS
1,2-Dichloroethane	NS	NS	NS
Acetone	NS	NS	NS
Benzene	NS	NS	NS
cis-1,2-Dichloroethene	NS	NS	NS
Ethylbenzene	NS	NS	NS
Methylene chloride	NS	NS	NS
Tetrachloroethene	NS	NS	NS
Toluene	NS	NS	NS
Trichloroethene	NS	NS	NS
Vinyl chloride	NS	NS	NS
SVOC			
2,4-Dimethylphenol	NS	NS	NS
Benzo(a)pyrene	NS	NS	NS
bis(2-Ethylhexyl)phthalate	NS	NS	NS
Butyl benzylphthalate	NS	NS	NS
Dibenz(a,h)anthracene	NS	NS	NS
Methylphenol (Cresol)	NS	NS	NS
Pentachlorophenol	NS	NS	NS
P/PCB			
Total PCBs	ND (0.0004) U	–	ND (0.0004) U
Total PCBs {IDW, RDW}	–	0.000777 J	–
INORG			
Antimony	ND (0.025) U	0.0035 J	NS
Arsenic	0.0273	0.0259	NS
Barium	1.31	1.38	1.44
Beryllium	ND (0.001) U	ND (0.001) U	NS
Cadmium	0.00071 J	0.00054 J	NS
Chromium Total	0.0025 J	0.0027 J	NS
Cobalt	ND (0.02) U	ND (0.02) U	NS
Copper	ND (0.005) U	ND (0.005) U	NS
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	NS
Manganese {RDW}	0.983	1.16 J	1.16
Nickel	ND (0.02) U	ND (0.02) U	NS
Selenium	ND (0.005) U	ND (0.005) U	NS
Thallium	ND (0.01) U	ND (0.001) U	NS
Vanadium	–	–	NS
Vanadium {RDW}	0.0104	0.0078 J	–
CDD/F			
2,3,7,8-TCDD Equivalent	ND (0.0000000057) U	NS	NS

MWM4-03	8/20/01	1/10/02	11/14/02	9/30/03
VOC				
1,1,1-Trichloroethane	ND (0.0025) U	ND (0.001) U	ND (0.001) U	NS/NS
1,1,2-Trichloroethane	ND (0.0025) U	ND (0.001) U	ND (0.001) U	NS/NS
1,1-Dichloroethane	ND (0.0025) U	ND (0.001) U	ND (0.001) U	NS/NS
1,1-Dichloroethene	ND (0.0025) U	ND (0.001) U	ND (0.001) U	NS/NS
1,2-Dichloroethane	ND (0.0025) U	ND (0.001) U	ND (0.001) U	NS/NS
Acetone	0.17 J	0.0044 J	ND (0.01) U	NS/NS
Benzene	ND (0.0025) U	ND (0.001) U	ND (0.001) U	ND (0.001) U/ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0012) U	ND (0.0005) U	ND (0.0005) U	NS/NS
Ethylbenzene	ND (0.0025) U	ND (0.001) U	ND (0.001) U	ND (0.001) U/ND (0.001) U
Methylene chloride	0.0014 J	ND (0.001) U	R	NS/NS
Tetrachloroethene	ND (0.0025) U	ND (0.001) U	ND (0.001) U	NS/NS
Toluene	ND (0.0025) U	ND (0.001) U	ND (0.001) U	ND (0.001) U/ND (0.001) U
Trichloroethene	ND (0.0025) U	ND (0.001) U	ND (0.001) U	NS/NS
Vinyl chloride	ND (0.0025) U	ND (0.001) U	ND (0.001) U	NS/NS
SVOC				
2,4-Dimethylphenol	NS	NS	NS	NS/NS
Benzo(a)pyrene	NS	NS	NS	NS/NS
bis(2-Ethylhexyl)phthalate	NS	NS	NS	NS/NS
Butyl benzylphthalate	NS	NS	NS	NS/NS
Dibenz(a,h)anthracene	NS	NS	NS	NS/NS
Methylphenol (Cresol)	NS	NS	NS	NS/NS
Pentachlorophenol	NS	NS	NS	NS/NS
P/PCB				
Total PCBs	NS	NS	NS	NS/NS
INORG				
Antimony	NS	NS	NS	NS/NS
Arsenic	NS	NS	NS	NS/NS
Barium	NS	NS	NS	NS/NS
Beryllium	NS	NS	NS	NS/NS
Cadmium	NS	NS	NS	NS/NS
Chromium Total	NS	NS	NS	NS/NS
Cobalt	NS	NS	NS	NS/NS
Copper	NS	NS	NS	NS/NS
Cyanide (total)	NS	NS	NS	NS/NS
Iron	NS	NS	NS	NS/NS
Lead	ND (0.003) U	ND (0.003) U	NS	NS/NS
Manganese	NS	NS	NS	NS/NS
Nickel	NS	NS	NS	NS/NS
Selenium	NS	NS	NS	NS/NS
Thallium	NS	NS	NS	NS/NS
Vanadium	NS	NS	NS	NS/NS
CDD/F				
2,3,7,8-TCDD Equivalent	NS	NS	NS	NS/NS

MWM5-01	9/17/01	1/10/02	8/12/03
VOC			
1,1,1-Trichloroethane	NS	NS	NS
1,1,2-Trichloroethane	NS	NS	NS
1,1-Dichloroethane	NS	NS	NS
1,1-Dichloroethene	NS	NS	NS
1,2-Dichloroethane	NS	NS	NS
Acetone	NS	NS	NS
Benzene	NS	NS	NS
cis-1,2-Dichloroethene	NS	NS	NS
Ethylbenzene	NS	NS	NS
Methylene chloride	NS	NS	NS
Tetrachloroethene	NS	NS	NS
Toluene	NS	NS	NS
Trichloroethene	NS	NS	NS
Vinyl chloride	NS	NS	NS
SVOC			
2,4-Dimethylphenol	NS	NS	NS
Benzo(a)pyrene	NS	NS	NS
bis(2-Ethylhexyl)phthalate	NS	NS	NS
Butyl benzylphthalate	NS	NS	NS
Dibenz(a,h)anthracene	NS	NS	NS
Methylphenol (Cresol)	NS	NS	NS
Pentachlorophenol	NS	NS	NS
P/PCB			
Total PCBs	ND (0.0004) U	–	ND (0.0004) U
Total PCBs {IDW, RDW}	–	0.001637 J	–
INORG			
Antimony	ND (0.025) U	ND (0.025) U	NS
Arsenic	ND (0.01) U	0.0041 J	NS
Barium	1.96	–	–
Barium {IDW, RDW}	–	4.8	2.2
Beryllium	ND (0.001) U	ND (0.001) U	NS
Cadmium	0.00036 J	ND (0.005) U	NS
Chromium Total	ND (0.01) U	0.0205	NS
Cobalt	0.0079 J	ND (0.02) U	NS
Copper	ND (0.005) U	0.0052	NS
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	NS
Manganese	–	–	0.125
Manganese {RDW}	–	1.73 J	–
Manganese {IDW, RDW}	3.63	–	–
Nickel	0.0169 J	0.0175 J	NS
Selenium	ND (0.005) U	ND (0.005) U	NS
Thallium	ND (0.01) U	0.00003 J	NS
Vanadium	ND (0.01) U	ND (0.01) U	NS
CDD/F			
2,3,7,8-TCDD Equivalent	ND (0.0000000094) U	NS	NS

MWM4-07	10/1/03
VOC	
1,1,1-Trichloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	NS
1,1-Dichloroethene	NS
1,2-Dichloroethane	NS
Acetone	NS
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	NS
Ethylbenzene	ND (0.001) U
Methylene chloride	NS
Tetrachloroethene	NS
Toluene	ND (0.001) U
Trichloroethene	NS
Vinyl chloride	NS
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
P/PCB	
Total PCBs	NS
INORG	
Antimony	NS
Arsenic	NS
Barium	NS
Beryllium	NS
Cadmium	NS
Chromium Total	NS
Cobalt	NS
Copper	NS
Cyanide (total)	NS
Iron	NS
Lead	NS
Manganese	NS
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS



MWM5-02	8/12/03
VOC	
1,1,1-Trichloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	NS
1,1-Dichloroethene	NS
1,2-Dichloroethane	NS
Acetone	NS
Benzene	NS
cis-1,2-Dichloroethene	NS
Ethylbenzene	NS
Methylene chloride	NS
Tetrachloroethene	NS
Toluene	NS
Trichloroethene	NS
Vinyl chloride	NS
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
P/PCB	
Total PCBs	ND (0.0004) U
INORG	
Antimony	NS
Arsenic	NS
Barium	0.691
Beryllium	NS
Cadmium	NS
Chromium Total	NS
Cobalt	NS
Copper	NS
Cyanide (total)	NS
Iron	NS
Lead	NS
Manganese	0.679
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWM16-04	8/11/03
VOC	
1,1,1-Trichloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	NS
1,1-Dichloroethene	NS
1,2-Dichloroethane	NS
Acetone	NS
Benzene	NS
cis-1,2-Dichloroethene	NS
Ethylbenzene	NS
Methylene chloride	NS
Tetrachloroethene	NS
Toluene	NS
Trichloroethene	NS
Vinyl chloride	R
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
P/PCB	
Total PCBs	NS
INORG	
Antimony	NS
Arsenic	NS
Barium	NS
Beryllium	NS
Cadmium	NS
Chromium Total	NS
Cobalt	NS
Copper	NS
Cyanide (total)	NS
Iron	NS
Lead	NS
Manganese	NS
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS

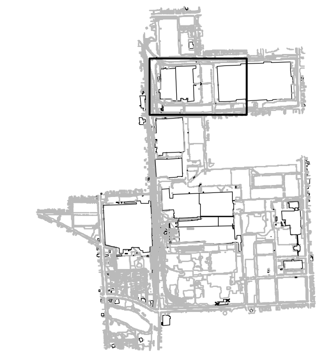
MWM16-02	1/31/02	11/13/02	8/11/03
VOC			
1,1,1-Trichloroethane	0.0027/0.0033	0.0029	NS
1,1,2-Trichloroethane	ND (0.001) U/ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethane	ND (0.001) U/ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethene	ND (0.001) U/ND (0.001) U	ND (0.001) U	NS
1,2-Dichloroethane	ND (0.001) U/ND (0.001) U	ND (0.001) U	NS
Acetone	ND (0.01) U/ND (0.01) U	ND (0.01) U	NS
Benzene	ND (0.001) U/ND (0.001) U	ND (0.001) U	NS
cis-1,2-Dichloroethene	ND (0.0005) U/ND (0.0005) U	ND (0.0005) U	NS
Ethylbenzene	ND (0.001) U/ND (0.001) U	ND (0.001) U	NS
Methylene chloride	ND (0.001) U/ND (0.001) U	ND (0.001) U	NS
Tetrachloroethene	ND (0.001) U/ND (0.001) U	ND (0.001) U	NS
Toluene	0.00029 J/ND (0.001) U	ND (0.001) U	NS
Trichloroethene	ND (0.001) U/ND (0.001) U	ND (0.001) U	NS
Vinyl chloride	ND (0.001) U/ND (0.001) U	ND (0.001) U	R
SVOC			
2,4-Dimethylphenol	ND (0.005) U/ND (0.005) U	ND (0.005) U	NS
Benzo(a)pyrene	ND (0.005) U/ND (0.005) U	ND (0.005) U	NS
bis(2-Ethylhexyl)phthalate	ND (0.005) U/0.0034 J	ND (0.005) U	NS
Butyl benzylphthalate	ND (0.005) U/ND (0.005) U	ND (0.005) U	NS
Dibenz(a,h)anthracene	ND (0.005) U/ND (0.005) U	ND (0.005) U	NS
Methylphenol (Cresol)	ND (0.005) U/ND (0.005) U	ND (0.005) U	NS
Pentachlorophenol	ND (0.005) U/ND (0.005) U	ND (0.005) U	NS
P/PCB			
Total PCBs	ND (0.0004) U/ND (0.0004) U	ND (0.0004) U	NS
INORG			
Antimony	ND (0.025) U/ND (0.025) U	ND (0.025) U	NS
Arsenic	ND (0.01) U/ND (0.01) U	ND (0.01) U	NS
Barium	0.046/0.0472	0.036	NS
Beryllium	ND (0.001) U/ND (0.001) U	ND (0.001) U	NS
Cadmium	ND (0.005) U/ND (0.005) U	ND (0.005) U	NS
Chromium Total	ND (0.01) U/ND (0.01) U	0.0018 J	NS
Cobalt	ND (0.02) U/0.0013 J	ND (0.02) U	NS
Copper	ND (0.005) U/ND (0.005) U	ND (0.005) U	NS
Cyanide (total)	NS/NS	NS	NS
Iron	NS/NS	NS	NS
Lead	ND (0.003) U/ND (0.003) U	ND (0.003) U	NS
Manganese	0.0951/0.0978	ND (0.01) U	NS
Nickel	ND (0.02) U/ND (0.02) U	ND (0.02) U	NS
Selenium	ND (0.005) U/ND (0.005) U	ND (0.005) U	NS
Thallium	ND (0.001) U/ND (0.001) U	ND (0.001) U	NS
Vanadium	ND (0.01) U/ND (0.01) U	ND (0.01) U	NS
CDD/F			
2,3,7,8-TCDD Equivalent	NS/NS	NS	NS

MWM16-01	9/13/01	1/10/02	8/11/03
VOC			
1,1,1-Trichloroethane	ND (0.00015) U	ND (0.001) U/ND (0.001) U	NS
1,1,2-Trichloroethane	ND (0.0003) U	ND (0.001) U/ND (0.001) U	NS
1,1-Dichloroethane	ND (0.00016) U	ND (0.001) U/ND (0.001) U	NS
1,1-Dichloroethene	ND (0.00024) U	ND (0.001) U/ND (0.001) U	NS
1,2-Dichloroethane	ND (0.00021) U	ND (0.001) U/ND (0.001) U	NS
Acetone	ND (0.00051) U	0.0086 J/0.0053 J	NS
Benzene	ND (0.00016) U	ND (0.001) U/ND (0.001) U	NS
cis-1,2-Dichloroethene	ND (0.00022) U	ND (0.0005) U/ND (0.0005) U	NS
Ethylbenzene	ND (0.00012) U	ND (0.001) U/ND (0.001) U	NS
Methylene chloride	ND (0.00034) U	ND (0.001) U/ND (0.001) U	NS
Tetrachloroethene	ND (0.00023) U	ND (0.001) U/ND (0.001) U	NS
Toluene	ND (0.00018) U	ND (0.001) U/ND (0.001) U	NS
Trichloroethene	ND (0.00014) U	ND (0.001) U/ND (0.001) U	NS
Vinyl chloride {IDW, RDW}	0.023	0.017/0.017	0.014 J
SVOC			
2,4-Dimethylphenol	ND (0.00085) U	ND (0.005) U/ND (0.005) U	NS
Benzo(a)pyrene	ND (0.00073) U	ND (0.005) U/ND (0.005) U	NS
bis(2-Ethylhexyl)phthalate	0.0055	ND (0.005) U/0.0027 J	NS
Butyl benzylphthalate	ND (0.00088) U	ND (0.005) U/ND (0.005) U	NS
Dibenz(a,h)anthracene	ND (0.00079) U	ND (0.005) U/ND (0.005) U	NS
Methylphenol (Cresol)	ND (0.0013) U	ND (0.005) U/ND (0.005) U	NS
Pentachlorophenol	ND (0.0024) U	ND (0.005) U/ND (0.005) U	NS
P/PCB			
Total PCBs	ND (0.000082) U	ND (0.0004) U/ND (0.0004) U	NS
INORG			
Antimony	ND (0.0022) U	ND (0.025) U/ND (0.025) U	NS
Arsenic	ND (0.0039) U	0.0077 J/0.0099 J	NS
Barium	0.165	0.217/0.212	NS
Beryllium	ND (0.00054) U	ND (0.001) U/ND (0.001) U	NS
Cadmium	ND (0.00028) U	ND (0.005) U/ND (0.005) U	NS
Chromium Total	ND (0.0014) U	ND (0.01) U/0.0021 J	NS
Cobalt	ND (0.0013) U	0.0025 J/0.0028 J	NS
Copper	ND (0.0042) U	ND (0.005) U/ND (0.005) U	NS
Cyanide (total)	NS	NS/NS	NS
Iron	NS	NS/NS	NS
Lead	ND (0.0025) U	ND (0.003) U/ND (0.003) U	NS
Manganese	–	0.818 J/0.827 J	NS
Manganese {RDW}	1.09	–	–
Nickel	ND (0.0022) U	0.0034 J/0.006 J	NS
Selenium	ND (0.0045) U	ND (0.005) U/ND (0.005) U	NS
Thallium	ND (0.005) U	ND (0.001) U/ND (0.001) U	NS
Vanadium	ND (0.00082) U	ND (0.01) U/ND (0.01) U	NS
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS/NS	NS

MWM25-02	8/11/03
VOC	
1,1,1-Trichloroethane	ND (0.001) U/ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U/ND (0.001) U
1,1-Dichloroethane	ND (0.001) U/ND (0.001) U
1,1-Dichloroethene	ND (0.001) U/ND (0.001) U
1,2-Dichloroethane	ND (0.001) U/ND (0.001) U
Acetone	ND (0.01) UJ/ND (0.01) UJ
Benzene	ND (0.001) U/ND (0.001) U
cis-1,2-Dichloroethene	ND (0.0005) U/ND (0.0005) U
Ethylbenzene	R/R
Methylene chloride	ND (0.001) U/ND (0.001) U
Tetrachloroethene	ND (0.001) U/ND (0.001) U
Toluene	ND (0.001) U/ND (0.001) U
Trichloroethene	ND (0.001) U/ND (0.001) U
Vinyl chloride	R/R
SVOC	
2,4-Dimethylphenol	ND (0.005) U/ND (0.005) U
Benzo(a)pyrene	ND (0.005) U/ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U/ND (0.005) U
Butyl benzylphthalate	ND (0.005) U/ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U/ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U/ND (0.005) U
Pentachlorophenol	ND (0.005) U/ND (0.005) U
P/PCB	
Total PCBs	ND (0.0004) U/ND (0.0004) U
INORG	
Antimony	ND (0.025) U/ND (0.025) U
Arsenic	0.0051 J/0.0045 J
Barium	0.0903/0.0886
Beryllium	ND (0.001) U/ND (0.001) U
Cadmium	ND (0.005) U/ND (0.005) U
Chromium Total	0.0016 J/ND (0.01) U
Cobalt	0.0031 J/0.0033 J
Copper	ND (0.005) U/ND (0.005) U
Cyanide (total)	NS/NS
Iron	NS/NS
Lead	ND (0.003) U/ND (0.003) U
Manganese	0.567/0.541
Nickel	0.008 J/0.007 J
Selenium	ND (0.005) U/ND (0.005) U
Thallium	0.00018 J/0.000222 J
Vanadium	ND (0.01) U/ND (0.01) U
CDD/F	
2,3,7,8-TCDD Equivalent	NS/NS

MWM5-04	8/12/03
VOC	
1,1,1-Trichloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	NS
1,1-Dichloroethene	NS
1,2-Dichloroethane	NS
Acetone	NS
Benzene	NS
cis-1,2-Dichloroethene	NS
Ethylbenzene	NS
Methylene chloride	NS
Tetrachloroethene	NS
Toluene	NS
Trichloroethene	NS
Vinyl chloride	NS
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
P/PCB	
Total PCBs	0.0004185 J
INORG	
Antimony	NS
Arsenic	NS
Barium	0.205
Beryllium	NS
Cadmium	NS
Chromium Total	NS
Cobalt	NS
Copper	NS
Cyanide (total)	NS
Iron	NS
Lead	NS
Manganese	0.287
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS

MWM5-03	8/12/03
VOC	
1,1,1-Trichloroethane	NS
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	NS
1,1-Dichloroethene	NS
1,2-Dichloroethane	NS
Acetone	NS
Benzene	NS
cis-1,2-Dichloroethene	NS
Ethylbenzene	NS
Methylene chloride	NS
Tetrachloroethene	NS
Toluene	NS
Trichloroethene	NS
Vinyl chloride	NS
SVOC	
2,4-Dimethylphenol	NS
Benzo(a)pyrene	NS
bis(2-Ethylhexyl)phthalate	NS
Butyl benzylphthalate	NS
Dibenz(a,h)anthracene	NS
Methylphenol (Cresol)	NS
Pentachlorophenol	NS
P/PCB	
Total PCBs {IDW, RDW}	0.0007185 J
INORG	
Antimony	NS
Arsenic	NS
Barium	0.66
Beryllium	NS
Cadmium	NS
Chromium Total	NS
Cobalt	NS
Copper	NS
Cyanide (total)	NS
Iron	NS
Lead	NS
Manganese	0.675
Nickel	NS
Selenium	NS
Thallium	NS
Vanadium	NS
CDD/F	
2,3,7,8-TCDD Equivalent	NS



SITE LOCATION

LEGEND:

MWM5-01 — GROUNDWATER MONITORING WELL LOCATION

CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA

LOCATION WHERE NAPL HAS BEEN IDENTIFIED DURING RECENT RFI ACTIVITIES AT A MEASURABLE THICKNESS (>0.01 FEET)

APPROXIMATE AOI AREA

M-4 = PLANT 25 FORMER GASOLINE UST AND CURRENT GASOLINE AST
M-5 = FORMER A2 FILL AREA
M-16 = PLANT 25 BASEMENT SUMP AREA
M-25 = PLANT 33 BASEMENT SUMP AREA

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONCENTRATION.
7. NS – NOT SAMPLED.

0 200' 400'
GRAPHIC SCALE

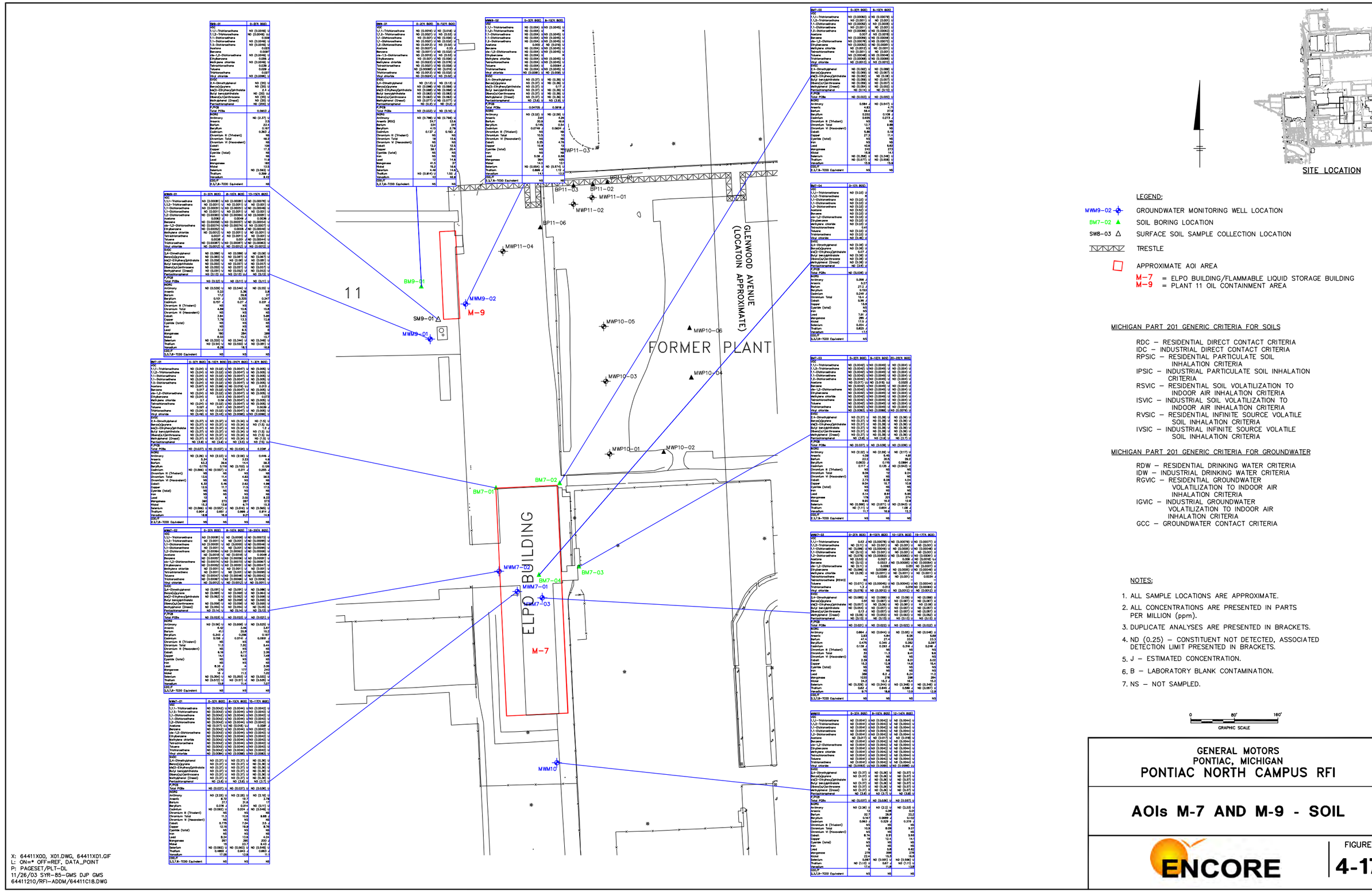
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

AOIs M-4, M-5, M-16 AND M-25 - GROUNDWATER

ENCORE

FIGURE **4-16**

X: 64411X00, X01.DWG, X06.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/25/03 SYR-85-GMS SDL GMS
64411210/RFI-ADDM/64411C17.DWG



MW9-02	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0048) U	ND (0.0045) U
1,1,2-Trichloroethane	ND (0.0048) U	ND (0.0045) U
1,1-Dichloroethane	0.006	ND (0.0045) U
1,1-Dichloroethene	ND (0.0048) U	ND (0.0045) U
1,2-Dichloroethane	ND (0.0048) U	ND (0.0045) U
Acetone	0.0097	ND (0.0045) U
Benzene	ND (0.0048) U	ND (0.0045) U
cis-1,2-Dichloroethene	ND (0.0048) U	ND (0.0045) U
Ethylbenzene	0.006 J	ND (0.0045) U
Methylene chloride	ND (0.0048) U	ND (0.0045) U
Tetrachloroethene	0.038 J	ND (0.0045) U
Toluene	0.039 J	ND (0.0045) U
Trichloroethene	0.027 J	ND (0.0045) U
Vinyl chloride	ND (0.0048) U	ND (0.0045) U
SVOC		
2,4-Dimethylphenol	ND (35) U	ND (0.0) U
Benzo(a)pyrene	ND (35) U	ND (0.0) U
bis(2-Ethylhexyl)phthalate	2.4 J	ND (0.0) U
Butyl benzylphthalate	ND (35) U	ND (0.0) U
Dibenz(a,h)anthracene	ND (35) U	ND (0.0) U
Methylphenol (Cresol)	ND (35) U	ND (0.0) U
Pentachlorophenol	ND (350) U	ND (0.0) U
PCBs		
Total PCBs	0.0903 J	ND (0.0) U
INORG		
Antimony	ND (2.37) U	ND (0.0) U
Arsenic	3.5	ND (0.0) U
Barium	33.6	ND (0.0) U
Beryllium	0.357 J	ND (0.0) U
Cadmium	0.363 J	ND (0.0) U
Chromium III (Trivalent)	NS	ND (0.0) U
Chromium Total	44.5	ND (0.0) U
Chromium VI (Hexavalent)	NS	ND (0.0) U
Cobalt	10.8	ND (0.0) U
Copper	17.8	ND (0.0) U
Cyanide (total)	NS	ND (0.0) U
Iron	NS	ND (0.0) U
Lead	16.8	ND (0.0) U
Manganese	185	ND (0.0) U
Nickel	13.5	ND (0.0) U
Selenium	ND (3.562) U	ND (0.0) U
Thallium	0.399 J	ND (0.0) U
Vanadium	8.42	ND (0.0) U
2,3,7,8-TCDD Equivalent	NS	NS

MW9-01	0-2(ft BGS)	8-10(ft BGS)	13-15(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.00281) U	ND (0.0028) U	ND (0.00278) U
1,1,2-Trichloroethane	ND (0.0011) U	ND (0.0011) U	ND (0.0011) U
1,1-Dichloroethane	ND (0.0028) U	ND (0.0028) U	ND (0.00278) U
1,1-Dichloroethene	ND (0.0011) U	ND (0.0011) U	ND (0.00046) U
1,2-Dichloroethane	ND (0.00363) U	ND (0.00364) U	ND (0.00361) U
Acetone	0.0082 J	0.0048 J	0.0536
Benzene	ND (0.00058) U	ND (0.00057) U	ND (0.00046) U
cis-1,2-Dichloroethene	ND (0.00079) U	ND (0.00078) U	ND (0.00077) U
Ethylbenzene	ND (0.00058) U	ND (0.00057) U	ND (0.00046) U
Methylene chloride	ND (0.0012) U	ND (0.0012) U	ND (0.00119) U
Tetrachloroethene	0.0037 J	ND (0.0011) U	ND (0.001) U
Toluene	0.0038 J	0.001 J	ND (0.00044) U
Trichloroethene	ND (0.00087) U	ND (0.00087) U	ND (0.00083) U
Vinyl chloride	ND (0.0012) U	ND (0.0012) U	ND (0.0012) U
SVOC			
2,4-Dimethylphenol	ND (0.086) U	ND (0.089) U	ND (0.08) U
Benzo(a)pyrene	ND (0.086) U	ND (0.087) U	ND (0.087) U
bis(2-Ethylhexyl)phthalate	ND (0.058) U	ND (0.06) U	ND (0.059) U
Butyl benzylphthalate	ND (0.055) U	ND (0.057) U	ND (0.057) U
Dibenz(a,h)anthracene	ND (0.055) U	ND (0.057) U	ND (0.057) U
Methylphenol (Cresol)	ND (0.059) U	ND (0.052) U	ND (0.053) U
Pentachlorophenol	ND (0.13) U	ND (0.131) U	ND (0.13) U
PCBs			
Total PCBs	NS (0.22) U	ND (0.11) U	ND (0.11) U
INORG			
Antimony	ND (0.533) U	ND (0.544) U	ND (0.53) U
Arsenic	5.32	5.36	5.8
Barium	17.2	28.8	37
Beryllium	0.101 J	0.325	0.347
Cadmium	0.157 J	0.27 J	0.259 J
Chromium III (Trivalent)	NS	NS	NS
Chromium Total	4.88	10.5	10.3
Chromium VI (Hexavalent)	NS	NS	NS
Cobalt	3.94	5.83	5.86
Copper	7.76	13.3	12.8
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	5.12	8.3	7.89
Manganese	160	264	289
Nickel	8.02	13.2	13.7
Selenium	ND (0.533) U	ND (0.544) U	ND (0.348) U
Thallium	ND (0.54) U	ND (0.553) U	ND (0.587) U
Vanadium	6.28	16.1	16.8
2,3,7,8-TCDD Equivalent	NS	NS	NS

MW7-02	0-2(ft BGS)	8-10(ft BGS)	18-20(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.00281) U	ND (0.0028) U	ND (0.00272) U
1,1,2-Trichloroethane	ND (0.0011) U	ND (0.0011) U	ND (0.00109) U
1,1-Dichloroethane	ND (0.0028) U	ND (0.0028) U	ND (0.00272) U
1,1-Dichloroethene	ND (0.0011) U	ND (0.001) U	ND (0.00098) U
1,2-Dichloroethane	ND (0.00364) U	ND (0.00363) U	ND (0.00349) U
Acetone	ND (0.0018) U	ND (0.0018) U	0.0048 J
Benzene	ND (0.0012) U	ND (0.0012) U	ND (0.00117) U
cis-1,2-Dichloroethene	ND (0.00079) U	ND (0.00078) U	ND (0.00076) U
Ethylbenzene	ND (0.0011) U	ND (0.001) U	ND (0.00098) U
Methylene chloride	ND (0.0011) U	ND (0.001) U	ND (0.00098) U
Tetrachloroethene	ND (0.00047) U	ND (0.00046) U	ND (0.0006) U
Toluene	ND (0.00047) U	ND (0.00046) U	ND (0.00045) U
Trichloroethene	ND (0.00087) U	ND (0.00086) U	ND (0.0006) U
Vinyl chloride	ND (0.0012) U	ND (0.0012) U	ND (0.0011) U
SVOC			
2,4-Dimethylphenol	ND (5.09) U	ND (3.09) U	ND (0.088) U
Benzo(a)pyrene	ND (0.087) U	ND (0.086) U	ND (0.086) U
bis(2-Ethylhexyl)phthalate	ND (0.062) U	ND (0.062) U	ND (0.061) U
Butyl benzylphthalate	0.49 J	ND (0.058) U	ND (0.057) U
Dibenz(a,h)anthracene	ND (0.058) U	ND (0.058) U	ND (0.057) U
Methylphenol (Cresol)	ND (0.054) U	ND (0.054) U	ND (0.053) U
Pentachlorophenol	ND (0.14) U	ND (0.14) U	ND (0.13) U
PCBs			
Total PCBs	ND (0.0108) U	ND (0.0103) U	ND (0.0101) U
INORG			
Antimony	ND (0.525) U	ND (0.528) U	ND (0.525) U
Arsenic	6.42	3.46	2.67
Barium	41.1	33.9	16.2
Beryllium	0.343 J	0.256	0.187
Cadmium	0.158 J	0.0741 J	0.0951 J
Chromium III (Trivalent)	NS	NS	NS
Chromium Total	10.3	7.1	5.41
Chromium VI (Hexavalent)	NS	NS	NS
Cobalt	6.19	3.77	2.36
Copper	14.3	9.13	7.49
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	8.36	4.1	2.36
Manganese	197	77.8	29.8
Nickel	12	11.2	7.25
Selenium	ND (0.254) U	ND (0.255) U	ND (0.332) U
Thallium	ND (0.572) U	ND (0.57) U	ND (0.539) U
Vanadium	13.8	11.4	7.07
2,3,7,8-TCDD Equivalent	NS	NS	NS

MW7-01	0-2(ft BGS)	8-10(ft BGS)	18-20(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0042) U	ND (0.0044) U	ND (0.0042) U
1,1,2-Trichloroethane	ND (0.0042) U	ND (0.0044) U	ND (0.0042) U
1,1-Dichloroethane	ND (0.0042) U	ND (0.0044) U	ND (0.0042) U
1,1-Dichloroethene	ND (0.0042) U	ND (0.0044) U	ND (0.0042) U
1,2-Dichloroethane	ND (0.0042) U	ND (0.0044) U	ND (0.0042) U
Acetone	ND (0.0042) U	ND (0.0044) U	ND (0.0042) U
Benzene	ND (0.0042) U	ND (0.0044) U	ND (0.0042) U
cis-1,2-Dichloroethene	ND (0.0042) U	ND (0.0044) U	ND (0.0042) U
Ethylbenzene	ND (0.0042) U	ND (0.0044) U	ND (0.0042) U
Methylene chloride	ND (0.0042) U	ND (0.0044) U	ND (0.0042) U
Tetrachloroethene	ND (0.0042) U	ND (0.0044) U	ND (0.0042) U
Toluene	ND (0.0042) U	ND (0.0044) U	ND (0.0042) U
Trichloroethene	ND (0.0042) U	ND (0.0044) U	ND (0.0042) U
Vinyl chloride	ND (0.0042) U	ND (0.0044) U	ND (0.0042) U
SVOC			
2,4-Dimethylphenol	ND (0.37) U	ND (0.37) U	ND (0.36) U
Benzo(a)pyrene	ND (0.37) U	ND (0.37) U	ND (0.36) U
bis(2-Ethylhexyl)phthalate	ND (0.37) U	ND (0.37) U	ND (0.36) U
Butyl benzylphthalate	ND (0.37) U	ND (0.37) U	ND (0.36) U
Dibenz(a,h)anthracene	ND (0.37) U	ND (0.37) U	ND (0.36) U
Methylphenol (Cresol)	ND (0.37) U	ND (0.37) U	ND (0.36) U
Pentachlorophenol	ND (3.8) U	ND (3.8) U	ND (3.7) U
PCBs			
Total PCBs	ND (0.037) U	ND (0.037) U	ND (0.036) U
INORG			
Antimony	ND (2.23) U	ND (2.28) U	ND (2.19) U
Arsenic	8.2	10.4	3.78
Barium	57.9	57.7	29.1
Beryllium	0.078 J	0.214	ND (0.11) U
Cadmium	ND (0.582) U	0.204 J	ND (0.548) U
Chromium III (Trivalent)	NS	NS	NS
Chromium Total	11.3	10.5	9.68 J
Chromium VI (Hexavalent)	NS	NS	NS
Cobalt	6.73	7.04	3.5 J
Copper	12.15	19.8	8.76
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	8.34	13.8	4.04
Manganese	351	396	200 J
Nickel	15	23.7	9.43 J
Selenium	ND (0.582) U	ND (0.583) U	ND (0.548) U
Thallium	0.488 J	0.843 J	0.683 J
Vanadium	17.95	13.8	10.9
2,3,7,8-TCDD Equivalent	NS	NS	NS

MW7-02	0-2(ft BGS)	8-10(ft BGS)	10-12(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.00078) U	ND (0.00078) U	ND (0.00078) U
1,1,2-Trichloroethane	ND (0.00109) U	ND (0.00109) U	ND (0.00109) U
1,1-Dichloroethane	ND (0.00078) U	ND (0.00078) U	ND (0.00078) U
1,1-Dichloroethene	ND (0.00109) U	ND (0.00109) U	ND (0.00109) U
1,2-Dichloroethane	ND (0.00101) U	ND (0.00101) U	ND (0.00101) U
Acetone	ND (0.0027) U	ND (0.0027) U	ND (0.0027) U
Benzene	ND (0.00109) U	ND (0.00109) U	ND (0.00109) U
cis-1,2-Dichloroethene	ND (0.00078) U	ND (0.00078) U	ND (0.00078) U
Ethylbenzene	ND (0.00109) U	ND (0.00109) U	ND (0.00109) U
Methylene chloride	ND (0.00109) U	ND (0.00109) U	ND (0.00109) U
Tetrachloroethene [RSVIC]	0.0	ND (0.00109) U	ND (0.00109) U
Toluene	ND (0.00109) U	ND (0.00109) U	ND (0.00109) U
Trichloroethene	0.0	ND (0.00109) U	ND (0.00109) U
Vinyl chloride	ND (0.00109) U	ND (0.00109) U	ND (0.00109) U
SVOC			
2,4-Dimethylphenol	ND (0.0862) U	ND (0.089) U	ND (0.088) U
Benzo(a)pyrene	ND (0.0862) U	ND (0.087) U	ND (0.087) U
bis(2-Ethylhexyl)phthalate	ND (0.0607) U	ND (0.06) U	ND (0.059) U
Butyl benzylphthalate	ND (0.0564) U	ND (0.057) U	ND (0.057) U
Dibenz(a,h)anthracene	0.13 J	ND (0.057) U	ND (0.057) U
Methylphenol (Cresol)	ND (0.052) U	ND (0.053) U	ND (0.053) U
Pentachlorophenol	ND (0.13) U	ND (0.13) U	ND (0.13) U
PCBs			
Total PCBs	ND (0.0101) U	ND (0.0101) U	ND (0.0101) U
INORG			
Antimony	0.864 J	ND (0.8443) U	ND (0.528) U
Arsenic	2.93	4.84	5.66
Barium	47.4	27.4	23.3
Beryllium	0.475	0.345 J	0.282 J
Cadmium	0.139 J	0.261 J	0.218 J
Chromium III (Trivalent)	NS	NS	NS
Chromium Total	10	11.3	9.41
Chromium VI (Hexavalent)	NS	NS	NS
Cobalt	2.39	5.8	5.01
Copper	15.2	12.8	14.8
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	3.9	5.2	5.24
Manganese	1030	1.2	1.21
Nickel	24.3	18.3	18.4
Selenium	ND (0.329) U	ND (0.344) U	ND (0.348) U
Thallium	0.62 J	0.845 J	ND (0.587) U
Vanadium	9.71	18.6	13.9
2,3,7,8-TCDD Equivalent	NS	NS	NS

MW7-04	0-2(ft BGS)
VOC	
1,1,1-Trichloroethane	ND (0.33) U
1,1,2-Trichloroethane	NS
1,1-Dichloroethane	ND (0.33) U
1,1-Dichloroethene	ND (0.33) U
1,2-Dichloroethane	ND (0.33) U
Acetone	ND (0.52) U
Benzene	ND (0.33) U
cis-1,2-Dichloroethene	ND (0.33) U
Ethylbenzene	ND (0.33) U
Methylene chloride	ND (0.33) U
Tetrachloroethene	0.41
Toluene	ND (0.33) U
Trichloroethene	ND (0.33) U
Vinyl chloride	ND (0.46) U
SVOC	
2,4-Dimethylphenol	ND (3.28) U
Benzo(a)pyrene	ND (0.36) U
bis(2-Ethylhexyl)phthalate	0.07 J
Butyl benzylphthalate	ND (0.36) U
Dibenz(a,h)anthracene	ND (0.36) U
Methylphenol (Cresol)	ND (0.36) U
Pentachlorophenol	ND (2.9) U
PCBs	
Total PCBs	NS (0.036) U
INORG	
Antimony	0.306 J
Arsenic	8.27
Barium	27.2 J
Beryllium	0.193 J
Cadmium	0.0705 J
Chromium Total	10.4 J
Cobalt	5.95 J
Copper	15.8
Cyanide (total)	NS
Iron	NS
Lead	7.81 J
Manganese	1040 J
Nickel	17.5 J
Selenium	0.324 J
Thallium	0.823 J
Vanadium	17.1
2,3,7,8-TCDD Equivalent	NS

MW7-03	0-2(ft BGS)	8-10(ft BGS)	20-22(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0042) U	ND (0.0045) U	ND (0.0041) U
1,1,2-Trichloroethane	ND (0.0042) U	ND (0.0045) U	ND (0.0041) U
1,1-Dichloroethane	ND (0.0042) U	ND (0.0045) U	ND (0.0041) U
1,1-Dichloroethene	ND (0.0042) U	ND (0.0045) U	ND (0.0041) U
1,2-Dichloroethane	ND (0.0042) U	ND (0.0045) U	ND (0.0041) U
Acetone	ND (0.0042) U	ND (0.0045) U	ND (0.0041) U
Benzene	ND (0.0042) U	ND (0.0045) U	ND (0.0041) U
cis-1,2-Dichloroethene	ND (0.0042) U	ND (0.0045) U	ND (0.0041) U
Ethylbenzene	ND (0.0042) U	ND (0.0045) U	ND (0.0041) U
Methylene chloride	ND (0.0042) U	ND (0.0045) U	ND (0.0041) U
Tetrachloroethene	ND (0.0042) U	ND (0.0045) U	ND (0.0041) U
Toluene	ND (0.0042) U	ND (0.0045) U	ND (0.0041) U
Trichloroethene	ND (0.0042) U	ND (0.0045) U	ND (0.0041) U
Vinyl chloride	ND (0.0063) U	ND (0.0068) U	ND (0.00619) U
SVOC			
2,4-Dimethylphenol	ND (0.37) U	ND (0.38) U	ND (0.36) U
Benzo(a)pyrene	ND (0.37) U	ND (0.38) U	ND (0.36) U
bis(2-Ethylhexyl)phthalate	0.11 J	ND (0.38) U	ND (0.36) U
Butyl benzylphthalate	ND (0.37) U	ND (0.38) U	ND (0.36) U
Dibenz(a,h)anthracene	ND (0.37) U	ND (0.38) U	ND (0.36) U
Methylphenol (Cresol)	ND (0.37) U	ND (0.38) U	ND (0.36) U
Pentachlorophenol	ND (3.8) U	ND (3.8) U	ND (3.7) U
PCBs			
Total PCBs	ND (0.037) U	ND (0.038) U	ND (0.036) U
INORG			
Antimony	ND (2.32) U	ND (2.39) U	ND (2.17) U
Arsenic	4.09	5.45	4.85
Barium	23.2	34.5	28.2
Beryllium	0.0833 J	0.176	0.0864 J
Cadmium	0.117 J	0.135 J	ND (0.543) U
Chromium III (Trivalent)	NS	NS	NS
Chromium Total	9.08	12	9.24
Chromium VI (Hexavalent)	NS	NS	NS
Cobalt	3.73	6.08	4.24
Copper	9.04	15.7	10.8
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	0.14	8.61	5.55
Manganese	328	331	274
Nickel	9.95	17.1	12.6
Selenium	ND (0.581) U	ND (0.577) U	ND (0.542) U
Thallium	ND (1.11) U	0.854 J	1.08 J
Vanadium	11.7	18.6	15.5
2,3,7,8-TCDD Equivalent	NS	NS	NS

MW7-03	0-2(ft BGS)	8-10(ft BGS)	10-12(ft BGS)	15-17(ft BGS)
VOC				
1,1,1-Trichloroethane	0.53 J	ND (0.00079) U	ND (0.00078) U	ND (0.00077) U
1,1,2-Trichloroethane	ND (0.11) U	ND (0.109) U	ND (0.109) U	ND (0.108) U
1,1-Dichloroethane	ND (0.098) U	ND (0.00459) U	ND (0.0045) U	ND (0.00446) U
1,1-Dichloroethene	ND (0.12) U	ND (0.115) U	ND (0.113) U	ND (0.112) U
1,2-Dichloroethane	ND (0.078) U	ND (0.00082) U	ND (0.00082) U	ND (0.00081) U
Acetone	ND (0.53) U	0.027 J	0.036 J	ND (0.0745) U
Benzene	ND (0.12) U	0.0033 J	ND (0.00088) U	ND (0.00086) U
cis-1,2-Dichloroethene	ND (0.11) U	0.0063 J	0.005 J	ND (0.00077) U
Ethylbenzene	ND (0.098) U	0.00089 J	ND (0.0045) U	ND (0.00446) U
Methylene chloride	ND (0.098) U	ND (0.00459) U	ND (0.0045) U	ND (0.00446) U
Tetrachloroethene [RSVIC]	0.0	0.0033 J	ND (0.0045) U	ND (0.00446) U
Toluene	ND (0.071) U	ND (0.00345) U	ND (0.00342) U	ND (0.00334) U
Trichloroethene	1.3 J	0.013	0.018 J	ND (0.00084) U
Vinyl chloride	ND (0.078) U	ND (0.00912) U	ND (0.00902) U	ND (0.00892) U
SVOC				
2,4-Dimethylphenol	ND (0.086) U	ND (0.089) U	ND (0.088) U	ND (0.088) U
Benzo(a)pyrene	0.45 J	ND (0.087) U	ND (0.087) U	ND (0.087) U
bis(2-Ethylhexyl)phthalate	ND (0.057) U	ND (0.06) U	ND (0.059) U	ND (0.06) U
Butyl benzylphthalate	ND (0.054) U	ND (0.057) U	ND (0.057) U	ND (0.057) U
Dibenz(a,h)anthracene	0.13 J	ND (0.057) U	ND (0.057) U	ND (0.057) U
Methylphenol (Cresol)	ND (0.05) U	ND (0.053) U	ND (0.053) U	ND (0.053) U
Pentachlorophenol	ND (0.13) U	ND (0.13) U	ND (0.13) U	ND (0.13) U
PCBs				
Total PCBs	ND (0.101) U	ND (0.0221) U	ND (0.021) U	ND (0.0221) U
INORG				
Antimony	0.864 J	ND (0.8443) U	ND (0.528) U	ND (0.548) U
Arsenic	2.93	4.84	5.66	5.66
Barium	47.4 J	27.4	23.3	23.3
Beryllium	0.475	0.345 J	0.282	0.297
Cadmium	0.139 J	0.261 J	0.218 J	0.248 J
Chromium III (Trivalent)	NS	NS	NS	NS
Chromium Total	10	11.3	9.41	9.8
Chromium VI (Hexavalent)	NS	NS	NS	NS
Cobalt	2.39	5.8	5.01	5.01
Copper	15.2	12.8	14.8	15.4
Cyanide (total)	NS	NS	NS	NS
Iron	NS	NS	NS	NS
Lead	3.9	5.2	5.24	7.51
Manganese	1030	1.2	1.21	1.29
Nickel	24.3	18.3	18.4	19.2
Selenium	ND (0.329) U	ND (0.344) U	ND (0.348) U	ND (0.348) U
Thallium	0.62 J	0.845 J	ND (0.587) U	ND (0.587) U
Vanadium	9.71	18.6	13.9	12.8
2,3,7,8-TCDD Equivalent	NS	NS	NS	NS

MW10	0-2(ft BGS)	8-10(ft BGS)	12-14(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0041) U	ND (0.0042) U	ND (0.0044) U
1,1,2-Trichloroethane	ND (0.0041) U	ND (0.0042) U	ND (0.0044) U
1,1-Dichloroethane	ND (0.0041) U	ND (0.0042) U	ND (0.0044) U
1,1-Dichloroethene	ND (0.0041) U	ND (0.0042) U	ND (0.0044) U
1,2-Dichloroethane	ND (0.0041) U	ND (0.0042) U	ND (0.0044) U
Acetone	ND (0.0077) U	ND (0.0079) U	ND (0.0082) U
Benzene	ND (0.0041) U	ND (0.0042) U	ND (0.0044) U
cis-1,2-Dichloroethene	ND (0.0041) U	ND (0.0042) U	ND (0.0044) U
Ethylbenzene	ND (0.0041) U	ND (0.0042) U	ND (0.0044) U
Methylene chloride	ND (0.0041) U	ND (0.0042) U	ND (0.0044) U
Tetrachloroethene	ND (0.0041) U	ND (0.0042) U	ND (0.0044) U
Toluene	ND (0.0041) U	ND (0.0042) U	ND (0.0044) U
Trichloroethene	ND (0.0041) U	ND (0.0042) U	ND (0.0044) U
Vinyl chloride	ND (0.0062) U	ND (0.0064) U	ND (0.0066) U
SVOC			
2,4-Dimethylphenol	ND (0.37) U	ND (0.38) U	ND (0.38) U
Benzo(a)pyrene	ND (0.37) U	ND (0.38) U	ND (0.38) U
bis(2-Ethylhexyl)phthalate	ND (0.37) U	ND (0.38) U	ND (0.38) U
Butyl benzylphthalate	ND (0.37) U	ND (0.38) U	ND (0.38) U
Dibenz(a,h)anthracene	ND (0.37) U	ND (0.38) U	ND (0.38) U
Methylphenol (Cresol)	ND (0.37) U	ND (0.38) U	ND (0.38) U
Pentachlorophenol	ND (3.8) U	ND (3.8) U	ND (3.8) U
PCBs			
Total PCBs	ND (0.037) U	ND (0.038) U	ND (0.038) U
INORG			
Antimony	ND (2.32) U	ND (2.39) U	ND (2.17) U
Arsenic	4.09	5.45	4.85
Barium	23.2	34.5	28.2
Beryllium	0.0833 J	0.176	0.0864 J
Cadmium	0.117 J	0.135 J	ND (0.543) U
Chromium III (Trivalent)	NS	NS	NS
Chromium Total	9.08	12	9.24
Chromium VI (Hexavalent)	NS	NS	NS
Cobalt	3.73	6.08	4.24
Copper	9.04	15.7	10.8
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	0.14	8.61	5.55
Manganese	328	331	274
Nickel	9.95	17.1	12.6
Selenium	ND (0.581) U	ND (0.577) U	ND (0.542) U
Thallium	ND (1.11) U	0.854 J	1.08 J
Vanadium	11.7	18.6	15.5
2,3,7,8-TCDD Equivalent	NS	NS	NS

SITE LOCATION

LEGEND:

- MWM9-02 — GROUNDWATER MONITORING WELL LOCATION
- BM7-02 — SOIL BORING LOCATION
- SW8-03 — SURFACE SOIL SAMPLE COLLECTION LOCATION
- TRESTLE
- APPROXIMATE AOI AREA
- M-7 = ELPO BUILDING/FLAMMABLE LIQUID STORAGE BUILDING
- M-9 = PLANT 11 OIL CONTAINMENT AREA

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONTAMINATION.
7. NS – NOT SAMPLED.

0 80' 160'
GRAPHIC SCALE

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

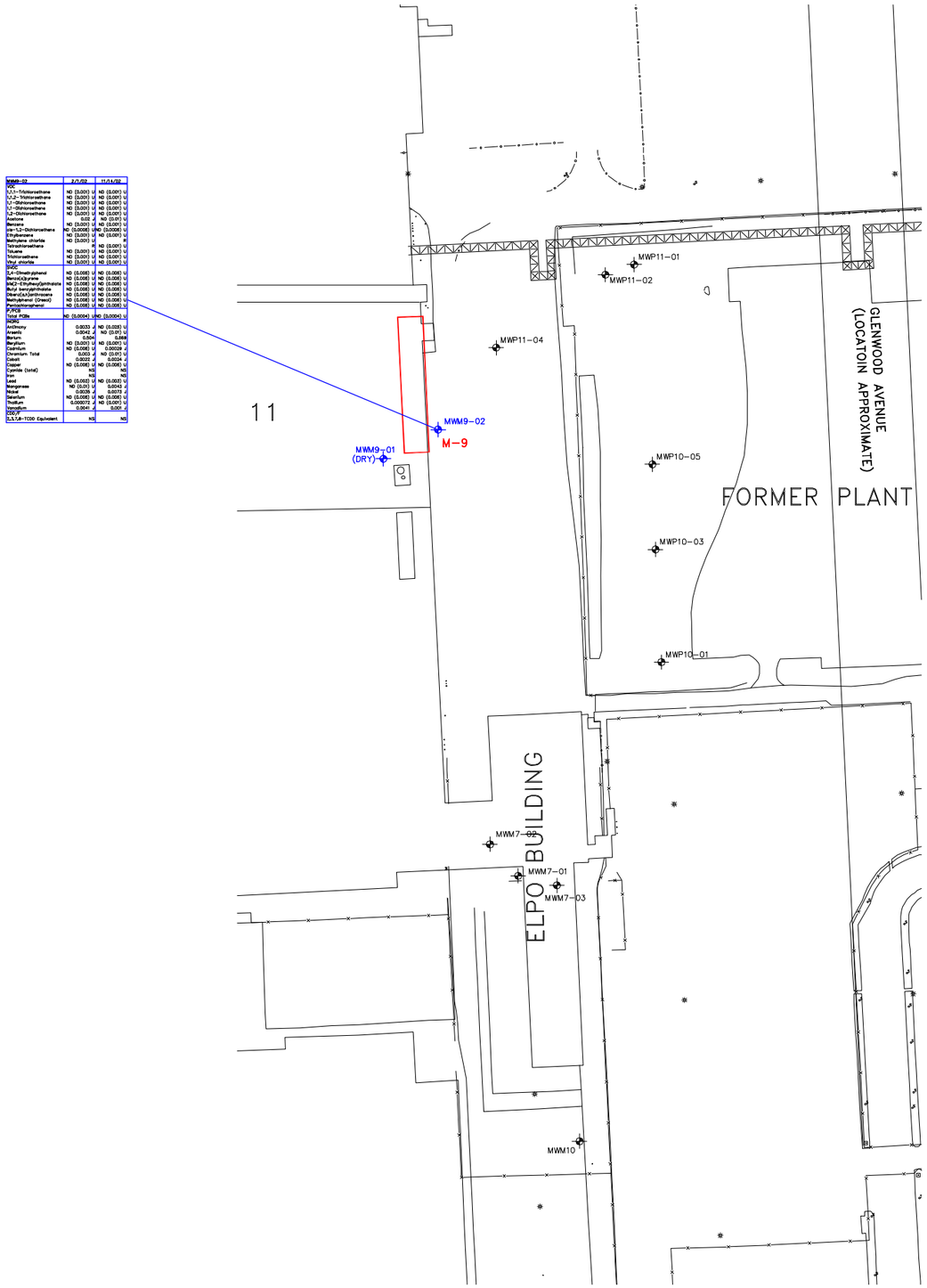
AOIs M-7 AND M-9 - SOIL

ENCORE

FIGURE 4-17

X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/26/03 SYR-85-GMS DJP GMS
64411210/RFI-ADDM/64411C18.DWG

MWM9-02	2/1/02	11/14/02
VOC		
1,1,1-Trichloroethane	ND (5.001) U	ND (5.001) U
1,1,2-Trichloroethane	ND (5.001) U	ND (5.001) U
1,1-Dichloroethene	ND (5.001) U	ND (5.001) U
1,1-Dichloroethane	ND (5.001) U	ND (5.001) U
1,2-Dichloroethane	ND (5.001) U	ND (5.001) U
Acetone	ND (5.001) U	ND (5.001) U
Benzene	ND (5.001) U	ND (5.001) U
cis-1,2-Dichloroethene	ND (5.0008) UND (5.0008) U	
Ethylbenzene	ND (5.001) U	ND (5.001) U
Methylene chloride	ND (5.001) U	R
Tetrachloroethene	R	ND (5.001) U
Toluene	ND (5.001) U	ND (5.001) U
Trichloroethene	ND (5.001) U	ND (5.001) U
Vinyl chloride	ND (5.001) U	ND (5.001) U
SVOC		
2,4-Dimethylphenol	ND (5.008) U	ND (5.008) U
Benzo(a)pyrene	ND (5.008) U	ND (5.008) U
bis(2-Ethylhexyl)phthalate	ND (5.008) U	ND (5.008) U
Butyl benzylphthalate	ND (5.008) U	ND (5.008) U
Dibenz(a)anthracene	ND (5.008) U	ND (5.008) U
Methylphenol (Cresol)	ND (5.008) U	ND (5.008) U
Naphthalene	ND (5.008) U	ND (5.008) U
PCB		
Total PCBs	ND (5.0004) UND (5.0004) U	
INORG		
Antimony	0.0033 J	ND (0.025) U
Arsenic	0.0042 J	ND (0.01) U
Barium	0.049	0.049
Beryllium	ND (0.003) U	ND (0.003) U
Cadmium	ND (0.005) U	0.00029 J
Chromium Total	0.003 J	ND (0.01) U
Cobalt	0.0022 J	0.0034 J
Copper	ND (0.008) U	ND (0.008) U
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese	ND (0.01) U	0.0043 J
Nickel	0.0039 J	0.0073 J
Selenium	ND (0.008) U	ND (0.008) U
Thallium	0.00072 J	ND (0.001) U
Vanadium	0.0041 J	0.001 J
OTHER		
2,3,7,8-TCDD Equivalent	NS	NS



SITE LOCATION

LEGEND:

MWM10 — GROUNDWATER MONITORING WELL LOCATION

CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA

TRESTLE

APPROXIMATE AOI AREA

M-9 = PLANT 11 OIL CONTAINMENT AREA

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONTAMINATION.
7. NS – NOT SAMPLED.
8. R – DATA REJECTED FROM DATA VALIDATION.

0 80' 160'
GRAPHIC SCALE

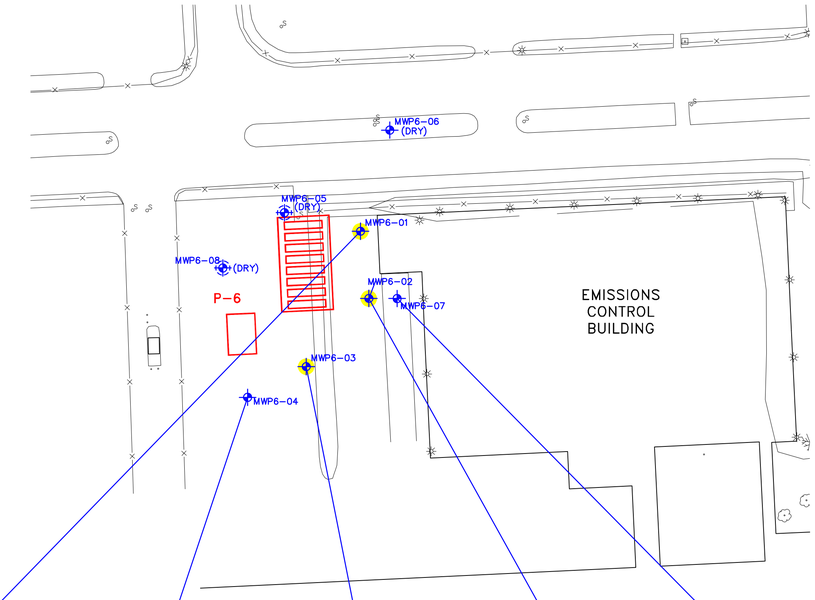
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

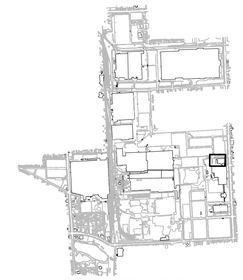
AOI M-9 - GROUNDWATER

ENCORE

FIGURE
4-18

X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/26/03 SYR-85-GMS SDL GMS
64411210/RFI-ADDM/64411C19.DWG





SITE LOCATION

LEGEND:

MWP6-01 GROUNDWATER MONITORING WELL LOCATION

MWP6-06 ABANDONED GROUNDWATER MONITORING WELL LOCATION

CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA

APPROXIMATE AOI AREA

P-6 = FORMER UST FARM AND STODDARD SOLVENT AST

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONTAMINATION.
7. NS – NOT SAMPLED.

0 50' 100'
GRAPHIC SCALE

MWP6-01	8/15/01	1/9/02	11/13/02	5/20/03
VOC				
1,1,1-Trichloroethane	ND (0.004) U	ND (0.001) U	ND (0.001) U	NS
1,1,2-Trichloroethane	ND (0.004) U	ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethane	ND (0.004) U	ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethene	ND (0.004) U	ND (0.001) U	ND (0.001) U	NS
1,2-Dichloroethane	ND (0.004) U	ND (0.001) U	ND (0.001) U	NS
Acetone	ND (0.04) U	ND (0.04) U	ND (0.01) U	NS
Benzene [EGLE, RDM]	0.003 J	0.0023 J	0.0033 J	0.003 J
cis-1,2-Dichloroethene	ND (0.002) U	ND (0.001) U	ND (0.0005) U	NS
Ethylbenzene	0.0017 J	0.0033 J	0.0032	0.0027
Methylene chloride	ND (0.004) U	ND (0.001) U	ND (0.001) U	NS
Tetrachloroethene	ND (0.004) U	ND (0.001) U	ND (0.001) U	NS
Toluene	0.0023 J	0.0068 J	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.004) U	ND (0.001) U	ND (0.001) U	NS
Vinyl chloride	ND (0.004) U	ND (0.001) U	ND (0.001) U	NS
SVOC				
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U	ND (0.005) U	NS
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U	ND (0.005) U	NS
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U	NS
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U	ND (0.005) U	NS
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U	ND (0.005) U	NS
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U	ND (0.005) U	NS
Pentachlorophenol	ND (0.005) U	ND (0.005) U	ND (0.005) U	NS
PCB				
Total PCBs	NS	NS	NS	NS
RCRA				
Antimony	NS,NS	NS	NS	NS
Arsenic	NS,NS	NS	NS	NS
Barium	NS,NS	NS	NS	NS
Beryllium	NS,NS	NS	NS	NS
Cadmium	NS,NS	NS	NS	NS
Chromium Total	NS,NS	NS	NS	NS
Cobalt	NS,NS	NS	NS	NS
Copper	NS,NS	NS	NS	NS
Cyanide (total)	NS,NS	NS	NS	NS
Iron	NS,NS	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	ND (0.003) U	NS
Manganese	NS,NS	NS	NS	NS
Nickel	NS,NS	NS	NS	NS
Selenium	NS,NS	NS	NS	NS
Thallium	NS,NS	NS	NS	NS
Vanadium	NS,NS	NS	NS	NS
PCDD/F				
2,3,7,8-TCDD Equivalent	NS,NS	NS	NS	NS

MWP6-04	8/15/01	1/9/02	11/13/02	5/20/03
VOC				
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
Acetone	ND (0.01) U	0.02 J	ND (0.01) U	NS
Benzene [EGLE, RDM]	0.0022 J	ND (0.0005) U	ND (0.0005) U	ND (0.0005) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U	ND (0.0005) U	NS
Ethylbenzene	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
Tetrachloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
Toluene	0.0022 J	ND (0.001) U	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
Vinyl chloride	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
SVOC				
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U	NS	NS
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U	NS	NS
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U	NS	NS
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U	NS	NS
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U	NS	NS
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U	NS	NS
Pentachlorophenol	ND (0.005) U	ND (0.005) U	NS	NS
PCB				
Total PCBs	NS	NS	NS	NS
RCRA				
Antimony	NS	NS	NS	NS
Arsenic	NS	NS	NS	NS
Barium	NS	NS	NS	NS
Beryllium	NS	NS	NS	NS
Cadmium	NS	NS	NS	NS
Chromium Total	NS	NS	NS	NS
Cobalt	NS	NS	NS	NS
Copper	NS	NS	NS	NS
Cyanide (total)	NS	NS	NS	NS
Iron	NS	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	NS	NS
Manganese	NS	NS	NS	NS
Nickel	NS	NS	NS	NS
Selenium	NS	NS	NS	NS
Thallium	NS	NS	NS	NS
Vanadium	NS	NS	NS	NS
PCDD/F				
2,3,7,8-TCDD Equivalent	NS	NS	NS	NS

MWP6-03	8/15/01	1/9/02	11/13/02	5/27/03
VOC				
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethane	ND (0.001) U	0.0005 J	ND (0.001) U	NS
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
Acetone	ND (0.01) U	0.012 J	ND (0.01) U	NS
Benzene [EGLE, RDM]	0.0033 J	0.004 J	0.004 J	0.004 J
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U	0.0006 J	NS
Ethylbenzene	ND (0.001) U	ND (0.001) U	ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
Tetrachloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
Toluene	0.0019 J	ND (0.001) U	ND (0.001) U	0.0027
Trichloroethene	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
Vinyl chloride	ND (0.001) U	ND (0.001) U	ND (0.001) U	NS
SVOC				
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U	NS	NS
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U	NS	NS
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U	NS	NS
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U	NS	NS
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U	NS	NS
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U	NS	NS
Pentachlorophenol	ND (0.005) U	ND (0.005) U	NS	NS
PCB				
Total PCBs	NS	NS	NS	NS
RCRA				
Antimony	NS	NS	NS	NS
Arsenic	NS	NS	NS	NS
Barium	NS	NS	NS	NS
Beryllium	NS	NS	NS	NS
Cadmium	NS	NS	NS	NS
Chromium Total	NS	NS	NS	NS
Cobalt	NS	NS	NS	NS
Copper	NS	NS	NS	NS
Cyanide (total)	NS	NS	NS	NS
Iron	NS	NS	NS	NS
Lead	ND (0.003) U	ND (0.003) U	NS	NS
Manganese	NS	NS	NS	NS
Nickel	NS	NS	NS	NS
Selenium	NS	NS	NS	NS
Thallium	NS	NS	NS	NS
Vanadium	NS	NS	NS	NS
PCDD/F				
2,3,7,8-TCDD Equivalent	NS	NS	NS	NS

MWP6-02	8/15/01	1/30/02	11/13/02	5/20/03
VOC				
1,1,1-Trichloroethane	ND (0.17) U	ND (0.056) U	ND (0.062) U	NS
1,1,2-Trichloroethane	ND (0.17) U	ND (0.056) U	ND (0.062) U	NS
1,1-Dichloroethane	ND (0.17) U	ND (0.056) U	ND (0.062) U	NS
1,1-Dichloroethene	ND (0.17) U	ND (0.056) U	ND (0.062) U	NS
1,2-Dichloroethane	ND (0.17) U	ND (0.056) U	ND (0.062) U	NS
Acetone	ND (1.7) U	ND (0.56) U	ND (0.62) U	NS
Benzene [EGLE, RDM]	0.36	0.36	0.36	0.36
cis-1,2-Dichloroethene	ND (0.083) U	ND (0.028) U	ND (0.031) U	NS
Ethylbenzene [EGLE, RDM]	0.82	1.3	1.8	1.1
Methylene chloride	ND (0.17) U	ND (0.056) U	ND (0.062) U	NS
Tetrachloroethene	ND (0.17) U	ND (0.056) U	ND (0.062) U	NS
Toluene	0.14	0.11	0.065	0.065
Toluene [EGLE, RDM]	1.4	1.1	0.65	0.65
Trichloroethene	ND (0.17) U	ND (0.056) U	ND (0.062) U	NS
Vinyl chloride	ND (0.17) U	ND (0.056) U	ND (0.062) U	NS
SVOC				
2,4-Dimethylphenol	0.026	0.0035 J	NS	NS
Benzo(a)pyrene	ND (0.025) U	ND (0.012) U	NS	NS
bis(2-Ethylhexyl)phthalate	ND (0.025) U	ND (0.012) U	NS	NS
Butyl benzylphthalate	ND (0.025) U	ND (0.012) U	NS	NS
Dibenz(a,h)anthracene	ND (0.025) U	ND (0.012) U	NS	NS
Methylphenol (Cresol)	0.295 J	ND (0.012) U	NS	NS
Pentachlorophenol	ND (0.025) U	ND (0.012) U	NS	NS
PCB				
Total PCBs	NS	NS	NS	NS
RCRA				
Antimony	NS	NS	NS	NS
Arsenic	NS	NS	NS	NS
Barium	NS	NS	NS	NS
Beryllium	NS	NS	NS	NS
Cadmium	NS	NS	NS	NS
Chromium Total	NS	NS	NS	NS
Cobalt	NS	NS	NS	NS
Copper	NS	NS	NS	NS
Cyanide (total)	NS	NS	NS	NS
Iron	NS	NS	NS	NS
Lead	NS (0.003) U	ND (0.003) U	NS	NS
Manganese	NS	NS	NS	NS
Nickel	NS	NS	NS	NS
Selenium	NS	NS	NS	NS
Thallium	NS	NS	NS	NS
Vanadium	NS	NS	NS	NS
PCDD/F				
2,3,7,8-TCDD Equivalent	NS	NS	NS	NS

MWP6-07	1/22/02	11/14/02	5/20/03
VOC			
1,1,1-Trichloroethane	ND (0.001) U	ND (0.001) U	NS
1,1,2-Trichloroethane	ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethane	ND (0.001) U	ND (0.001) U	NS
1,1-Dichloroethene	ND (0.001) U	ND (0.001) U	NS
1,2-Dichloroethane	ND (0.001) U	ND (0.001) U	NS
Acetone	ND (0.01) U	ND (0.01) U	NS
Benzene [EGLE, RDM]	0.0033 J	ND (0.0005) U	ND (0.0005) U
cis-1,2-Dichloroethene	ND (0.0005) U	ND (0.0005) U	NS
Ethylbenzene	0.00015 J	ND (0.001) U	ND (0.001) U
Methylene chloride	ND (0.001) U	ND (0.001) U	NS
Tetrachloroethene	ND (0.001) U	ND (0.001) U	NS
Toluene	0.00053 J	ND (0.001) U	ND (0.001) U
Trichloroethene	ND (0.001) U	ND (0.001) U	NS
Vinyl chloride	ND (0.001) U	ND (0.001) U	NS
SVOC			
2,4-Dimethylphenol	ND (0.005) U	ND (0.005) U	NS
Benzo(a)pyrene	ND (0.005) U	ND (0.005) U	NS
bis(2-Ethylhexyl)phthalate	ND (0.005) U	ND (0.005) U	NS
Butyl benzylphthalate	ND (0.005) U	ND (0.005) U	NS
Dibenz(a,h)anthracene	ND (0.005) U	ND (0.005) U	NS
Methylphenol (Cresol)	ND (0.005) U	ND (0.005) U	NS
Pentachlorophenol	ND (0.005) U	ND (0.005) U	NS
PCB			
Total PCBs	NS	NS	NS
RCRA			
Antimony	ND (0.025) U	NS	NS
Arsenic	ND (0.01) U	NS	NS
Barium	0.0184	NS	NS
Beryllium	ND (0.0005) U	NS	NS
Cadmium	0.00038 J	NS	NS
Chromium Total	ND (0.01) U	NS	NS
Cobalt	0.008 J	NS	NS
Copper	ND (0.005) U	NS	NS
Cyanide (total)	NS	NS	NS
Iron	0.0135 J	NS	NS
Lead	ND (0.003) U	ND (0.003) U	NS
Manganese	0.0135 J	NS	NS
Nickel	0.0132 J	NS	NS
Selenium	ND (0.005) U	NS	NS
Thallium	0.00017 J	NS	NS
Vanadium	ND (0.01) U	NS	NS
PCDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

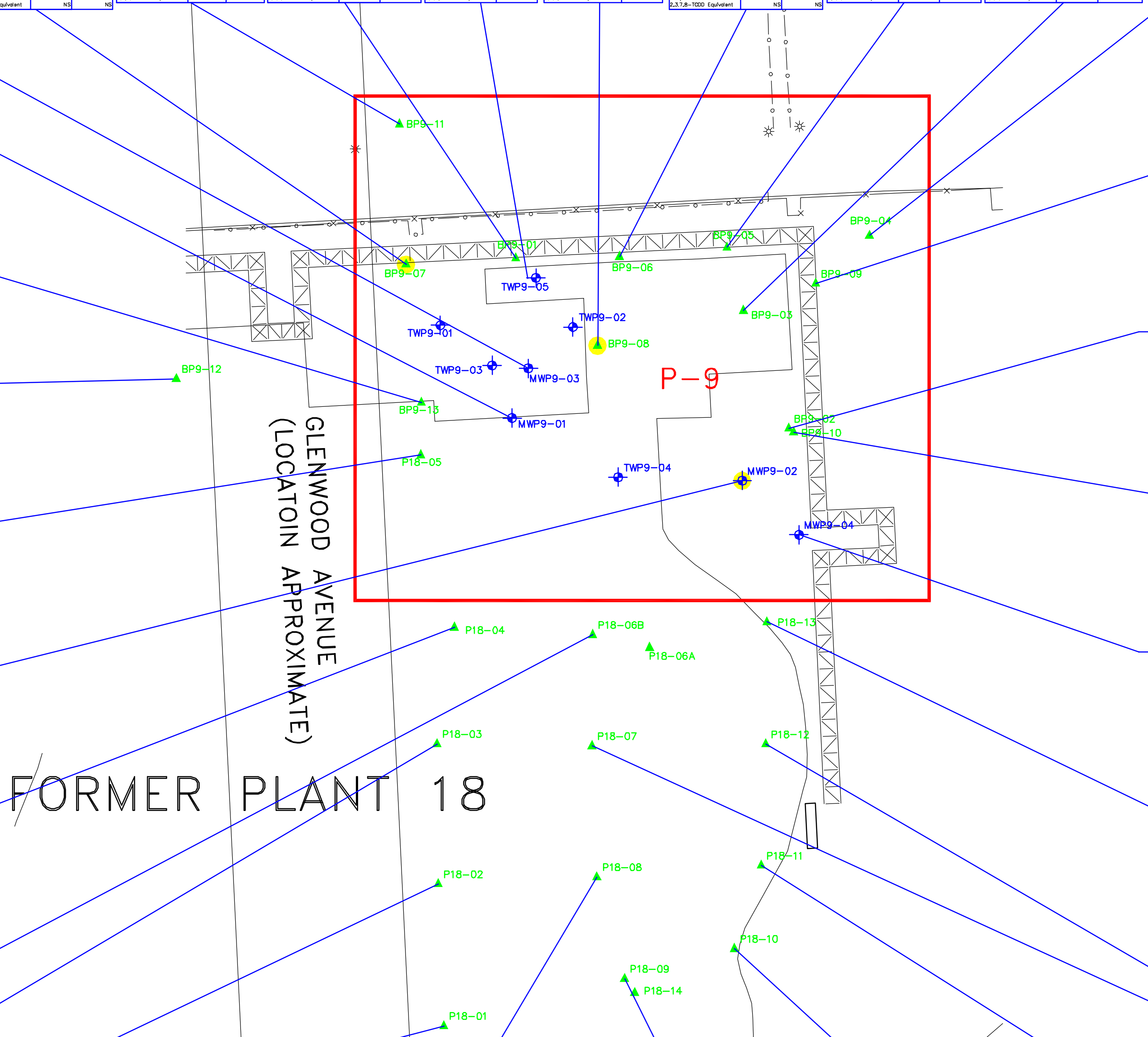
X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/25/03 SYR-85-GMS GMS DJP
64411210/RFI-ADDM/64411C20.DWG

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

AOI P-6 - GROUNDWATER

ENCORE

FIGURE
4-19



MWP9-03	0-2(ft BGS)	8-10(ft BGS)	15-17(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0046) U	ND (0.0049) U	ND (0.0049) U
1,1,2-Trichloroethane	ND (0.0046) U	ND (0.0049) U	ND (0.0049) U
1,1-Dichloroethane	ND (0.0046) U	ND (0.0049) U	ND (0.0049) U
1,1-Dichloroethene	ND (0.0046) U	ND (0.0049) U	ND (0.0049) U
1,2-Dichloroethane	ND (0.0046) U	ND (0.0049) U	ND (0.0049) U
Acetone	ND (0.018) UJ	0.014 J	0.0038 J
Benzene	ND (0.0046) U	ND (0.0049) U	ND (0.0049) U
cis-1,2-Dichloroethene	ND (0.0046) U	ND (0.0049) U	ND (0.0049) U
Ethylbenzene	ND (0.0046) U	ND (0.0049) U	ND (0.0049) U
Methylene chloride	0.0053	0.0032 J	0.0049
Tetrachloroethene	ND (0.0046) U	ND (0.0049) U	0.0019 J
Toluene	0.001 J	0.0013 J	0.0016 J
Trichloroethene	ND (0.0046) U	ND (0.0049) U	ND (0.0049) U
Vinyl chloride	ND (0.0092) U	ND (0.0098) U	ND (0.0097) U
SVOC			
2,4-Dimethylphenol	ND (0.37) U	ND (0.38) U	ND (0.37) U
Benzo(a)pyrene	0.14 J	0.031 J	ND (0.37) U
bis(2-Ethylhexyl)phthalate	ND (0.37) U	ND (0.38) U	ND (0.37) U
Butyl benzylphthalate	0.033 J	R	R
Dibenz(a,h)anthracene	ND (0.37) U	ND (0.38) U	ND (0.37) U
Methylphenol (Cresol)	ND (0.37) U	ND (0.38) U	ND (0.37) U
Pentachlorophenol	ND (3.9) U	ND (3.9) U	ND (3.8) U
P/PCB			
Total PCBs	0.0953 J	0.09095 J	ND (0.037) U
INORG			
Antimony	0.68 J	0.278 J	0.254 J
Arsenic	6.38	4.57	3.63
Barium	76.4	16.2	25.6
Beryllium	0.21 J	ND (0.116) U	ND (0.111) U
Cadmium	0.469 J	0.198 J	0.223 J
Chromium Total	23.3	6.11	8.29
Cobalt	6.68	3.23	4.17
Copper	43.2	9.29	10.7
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	17.4 J	8.39	6.19
Manganese	537 J	181	237
Nickel	23.4	7.81	10
Selenium	0.845	0.256 J	0.377 J
Thallium	0.953 J	0.663 J	0.726 J
Vanadium	20.7	9.31	12.6
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

BP9-07	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0046) U	ND (0.0041) U
1,1,2-Trichloroethane	ND (0.0046) U	ND (0.0041) U
1,1-Dichloroethane	ND (0.0046) U	ND (0.0041) U
1,1-Dichloroethene	ND (0.0046) U	ND (0.0041) U
1,2-Dichloroethane	ND (0.0046) U	ND (0.0041) U
Acetone	ND (0.018) UJ	0.0077 J
Benzene	ND (0.0046) U	ND (0.0041) U
cis-1,2-Dichloroethene	ND (0.0046) U	ND (0.0041) U
Ethylbenzene	ND (0.0046) U	ND (0.0041) U
Methylene chloride	ND (0.0046) U	0.014 J
Tetrachloroethene	ND (0.0046) U	ND (0.0041) U
Toluene	ND (0.0046) U	0.0019 J
Trichloroethene	ND (0.0046) U	ND (0.0041) U
Vinyl chloride	ND (0.0092) U	ND (0.0083) U
SVOC		
2,4-Dimethylphenol	ND (7.4) U	ND (0.37) U
Benzo(a)pyrene	–	0.018 J
Benzo(a)pyrene {IDC, RDC}	11	–
bis(2-Ethylhexyl)phthalate	0.45 J	0.034 J
Butyl benzylphthalate	ND (7.4) U	ND (0.37) U
Dibenz(a,h)anthracene	1.8 J	ND (0.37) U
Methylphenol (Cresol)	ND (7.4) U	ND (0.37) U
Pentachlorophenol	ND (76) U	ND (3.8) U
P/PCB		
Total PCBs	2.0175 J	ND (0.037) U
INORG		
Antimony	0.592 J	R
Arsenic	6.02	3.14
Barium	101	20.3
Beryllium	0.134	ND (0.112) U
Cadmium	0.0913 J	ND (0.56) U
Chromium Total	12.9	8.55
Cobalt	3.78	3.48
Copper	140	8.53
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	44.9	5.01
Manganese	253	206
Nickel	23.2	10
Selenium	ND (0.562) U	ND (0.56) U
Thallium	0.799 J	0.764 J
Vanadium	11.9	10.6
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

BP9-11	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	NS	NS
1,1,2-Trichloroethane	NS	NS
1,1-Dichloroethane	NS	NS
1,1-Dichloroethene	NS	NS
1,2-Dichloroethane	NS	NS
Acetone	NS	NS
Benzene	NS	NS
cis-1,2-Dichloroethene	NS	NS
Ethylbenzene	NS	NS
Methylene chloride	NS	NS
Tetrachloroethene	NS	NS
Toluene	NS	NS
Trichloroethene	NS	NS
Vinyl chloride	NS	NS
SVOC		
2,4-Dimethylphenol	NS	NS
Benzo(a)pyrene	0.061 J	ND (0.36) U
bis(2-Ethylhexyl)phthalate	NS	NS
Butyl benzylphthalate	NS	NS
Dibenz(a,h)anthracene	NS	NS
Methylphenol (Cresol)	NS	NS
Pentachlorophenol	NS	NS
P/PCB		
Total PCBs	NS	NS
INORG		
Antimony	NS	NS
Arsenic	NS	NS
Barium	NS	NS
Beryllium	NS	NS
Cadmium	NS	NS
Chromium Total	NS	NS
Cobalt	NS	NS
Copper	NS	NS
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	NS	NS
Manganese	NS	NS
Nickel	NS	NS
Selenium	NS	NS
Thallium	NS	NS
Vanadium	NS	NS
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

BP9-01	0-2(ft BGS)	7-9(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0047) U	ND (0.0042) U
1,1,2-Trichloroethane	ND (0.0047) U	ND (0.0042) U
1,1-Dichloroethane	ND (0.0047) U	ND (0.0042) U
1,1-Dichloroethene	ND (0.0047) U	ND (0.0042) U
1,2-Dichloroethane	ND (0.0047) U	ND (0.0042) U
Acetone	ND (0.019) UJ	0.0059 J
Benzene	ND (0.0047) U	ND (0.0042) U
cis-1,2-Dichloroethene	ND (0.0047) U	ND (0.0042) U
Ethylbenzene	ND (0.0047) U	ND (0.0042) U
Methylene chloride	0.0064	0.012
Tetrachloroethene	ND (0.0047) U	ND (0.0042) U
Toluene	0.00036 J	0.0013 J
Trichloroethene	ND (0.0047) U	ND (0.0042) U
Vinyl chloride	ND (0.0094) U	ND (0.0084) U
SVOC		
2,4-Dimethylphenol	ND (0.38) U	ND (0.37) U
Benzo(a)pyrene	0.42	ND (0.37) U
bis(2-Ethylhexyl)phthalate	0.065 J	0.03 J
Butyl benzylphthalate	0.037 J	ND (0.37) U
Dibenz(a,h)anthracene	0.076 J	ND (0.37) U
Methylphenol (Cresol)	ND (0.38) U	ND (0.37) U
Pentachlorophenol	ND (3.9) U	ND (3.8) U
P/PCB		
Total PCBs	0.5343 J	ND (0.037) U
INORG		
Antimony	ND (2.27) U	0.218 J
Arsenic	4.09	6.81
Barium	30.1	22.3
Beryllium	ND (0.114) U	0.0525 J
Cadmium	ND (0.569) U	ND (0.557) U
Chromium Total	7.52	8.81
Cobalt	3.16	3.67
Copper	10.2	8.65
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	9.13	4.76
Manganese	186	220
Nickel	9.58	12.4
Selenium	ND (0.569) U	ND (0.557) U
Thallium	0.772 J	0.847 J
Vanadium	10.1	12.2
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

TPP9-01	3.5-4(ft BGS)
VOC	
1,1,1-Trichloroethane	ND (0.0046) U
1,1,2-Trichloroethane	ND (0.0046) U
1,1-Dichloroethane	ND (0.0046) U
1,1-Dichloroethene	ND (0.0046) U
1,2-Dichloroethane	ND (0.0046) U
Acetone	ND (0.019) UJ
Benzene	ND (0.0046) U
cis-1,2-Dichloroethene	ND (0.0046) U
Ethylbenzene	ND (0.0046) U
Methylene chloride	ND (0.0046) U
Tetrachloroethene	ND (0.0046) U
Toluene	0.012
Trichloroethene	ND (0.0046) U
Vinyl chloride	ND (0.0093) U
SVOC	
2,4-Dimethylphenol	ND (0.38) U
Benzo(a)pyrene	ND (0.38) U
bis(2-Ethylhexyl)phthalate	ND (0.38) U
Butyl benzylphthalate	ND (0.38) U
Dibenz(a,h)anthracene	ND (0.38) U
Methylphenol (Cresol)	ND (0.38) U
Pentachlorophenol	ND (3.9) U
P/PCB	
Total PCBs	ND (0.038) U
INORG	
Antimony	0.398 J
Arsenic	2.61
Barium	21.2
Beryllium	0.169
Cadmium	0.131 J
Chromium Total	7.03
Cobalt	3.24
Copper	8.51
Cyanide (total)	NS
Iron	NS
Lead	4.34
Manganese	163
Nickel	8.32
Selenium	ND (0.572) U
Thallium	ND (1.14) U
Vanadium	9.95
CDD/F	
2,3,7,8-TCDD Equivalent	NS

BP9-08	0-2(ft BGS)
VOC	
1,1,1-Trichloroethane	ND (0.0047) U
1,1,2-Trichloroethane	ND (0.0047) U
1,1-Dichloroethane	ND (0.0047) U
1,1-Dichloroethene	ND (0.0047) U
1,2-Dichloroethane	ND (0.0047) U
Acetone	ND (0.019) U
Benzene	ND (0.0047) U
cis-1,2-Dichloroethene	ND (0.0047) U
Ethylbenzene	ND (0.0047) U
Methylene chloride	0.0023 J
Tetrachloroethene	ND (0.0047) U
Toluene	0.0014 J
Trichloroethene	ND (0.0047) U
Vinyl chloride	ND (0.0094) U
SVOC	
2,4-Dimethylphenol	ND (18) U
Benzo(a)pyrene {IDC, RDC}	12 J
bis(2-Ethylhexyl)phthalate	0.87 J
Butyl benzylphthalate	ND (18) U
Dibenz(a,h)anthracene {RDC}	2.5 J
Methylphenol (Cresol)	ND (18) U
Pentachlorophenol	ND (190) U
P/PCB	
Total PCBs {RDC}	8.835 J
INORG	
Antimony	0.22 J
Arsenic	3.55
Barium	77.6
Beryllium	ND (0.111) U
Cadmium	0.172 J
Chromium Total	10.1
Cobalt	2.11
Copper	11.8
Cyanide (total)	NS
Iron	NS
Lead	20.6
Manganese	159
Nickel	6.46
Selenium	ND (0.553) U
Thallium	0.534 J
Vanadium	7.53
CDD/F	
2,3,7,8-TCDD Equivalent	NS

BP9-06	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0049) U	ND (0.0039) U
1,1,2-Trichloroethane	ND (0.0049) U	ND (0.0039) U
1,1-Dichloroethane	ND (0.0049) U	ND (0.0039) U
1,1-Dichloroethene	ND (0.0049) U	ND (0.0039) U
1,2-Dichloroethane	ND (0.0049) U	ND (0.0039) U
Acetone	ND (0.02) UJ	0.0033 J
Benzene	ND (0.0049) U	ND (0.0039) U
cis-1,2-Dichloroethene	ND (0.0049) U	ND (0.0039) U
Ethylbenzene	ND (0.0049) U	ND (0.0039) U
Methylene chloride	0.0067	0.0089
Tetrachloroethene	ND (0.0049) U	ND (0.0039) U
Toluene	ND (0.0049) U	0.0011 J
Trichloroethene	ND (0.0049) U	ND (0.0039) U
Vinyl chloride	ND (0.0099) U	ND (0.0078) U
SVOC		
2,4-Dimethylphenol	ND (3.6) U	ND (0.37) U
Benzo(a)pyrene	–	ND (0.37) U
Benzo(a)pyrene {RDC}	6.3	–
bis(2-Ethylhexyl)phthalate	0.64 J	ND (0.37) U
Butyl benzylphthalate	2.6 J	ND (0.37) U
Dibenz(a,h)anthracene	1.1 J	ND (0.37) U
Methylphenol (Cresol)	ND (3.6) U	ND (0.37) U
Pentachlorophenol	ND (37) U	ND (3.8) U
P/PCB		
Total PCBs	2.37 J	ND (0.037) U
INORG		
Antimony	0.193 J	0.197 J
Arsenic	2.9	3.37
Barium	51.8	28
Beryllium	ND (0.108) U	0.0619 J
Cadmium	0.0535 J	ND (0.555) U
Chromium Total	7.06	9.59
Cobalt	2.3	3.56
Copper	8.93	9.08
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	12.4	4.73
Manganese	156	194
Nickel	6.4	11.6
Selenium	ND (0.542) U	ND (0.555) U
Thallium	0.572 J	0.766 J
Vanadium	8.11	14.1
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

BP9-05	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0046) U	ND (0.0045) U
1,1,2-Trichloroethane	ND (0.0046) U	ND (0.0045) U
1,1-Dichloroethane	ND (0.0046) U	ND (0.0045) U
1,1-Dichloroethene	ND (0.0046) U	ND (0.0045) U
1,2-Dichloroethane	ND (0.0046) U	ND (0.0045) U
Acetone	0.0094 J	0.0088 J
Benzene	ND (0.0046) U	ND (0.0045) U
cis-1,2-Dichloroethene	ND (0.0046) U	ND (0.0045) U
Ethylbenzene	ND (0.0046) U	ND (0.0045) U
Methylene chloride	ND (0.0046) U	0.0089
Tetrachloroethene	ND (0.0046) U	ND (0.0045) U
Toluene	0.0012 J	0.0012 J
Trichloroethene	ND (0.0046) U	ND (0.0045) U
Vinyl chloride	ND (0.0092) U	ND (0.009) U
SVOC		
2,4-Dimethylphenol	ND (3.8) U	ND (0.39) U
Benzo(a)pyrene	0.22 J	ND (0.39) U
bis(2-Ethylhexyl)phthalate	ND (3.8) U	ND (0.39) U
Butyl benzylphthalate	R	R
Dibenz(a,h)anthracene	ND (3.8) U	ND (0.39) U
Methylphenol (Cresol)	ND (3.8) U	ND (0.39) U
Pentachlorophenol	ND (39) U	ND (4) U
P/PCB		
Total PCBs	0.5444 J	0.0682 J
INORG		
Antimony	0.658 J	0.439 J
Arsenic	4.5	4.46
Barium	18.9	55.6
Beryllium	ND (0.114) U	0.209
Cadmium	0.61	0.398 J
Chromium Total	30.2	16.6
Cobalt	5.14	7.65
Copper	23.9	16.8
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	15.9	8.03
Manganese	338	318
Nickel	16.3	22
Selenium	0.937	0.703
Thallium	0.897 J	0.918 J
Vanadium	13.1	22.4
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

BP9-03	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0043) U	ND (0.0042) U
1,1,2-Trichloroethane	ND (0.0043) U	ND (0.0042) U
1,1-Dichloroethane	ND (0.0043) U	ND (0.0042) U
1,1-Dichloroethene	ND (0.0043) U	ND (0.0042) U
1,2-Dichloroethane	ND (0.0043) U	ND (0.0042) U
Acetone	0.01 J	0.0037 J
Benzene	ND (0.0043) U	ND (0.0042) U
cis-1,2-Dichloroethene	ND (0.0043) U	ND (0.0042) U
Ethylbenzene	ND (0.0043) U	ND (0.0042) UJ
Methylene chloride	ND (0.0043) U	0.0038 J
Tetrachloroethene	ND (0.0043) U	ND (0.0042) UJ
Toluene	0.0025 J	0.00094 J
Trichloroethene	ND (0.0043) U	ND (0.0042) U
Vinyl chloride	ND (0.0087) U	ND (0.0085) U
SVOC		
2,4-Dimethylphenol	ND (0.37) U	ND (0.37) U
Benzo(a)pyrene	ND (0.37) U	ND (0.37) U
bis(2-Ethylhexyl)phthalate	ND (0.37) U	ND (0.37) U
Butyl benzylphthalate	R	R
Dibenz(a,h)anthracene	ND (0.37) U	ND (0.37) U
Methylphenol (Cresol)	ND (0.37) U	ND (0.37) U
Pentachlorophenol	ND (3.8) U	ND (3.8) U
P/PCB		
Total PCBs	ND (0.037) U	ND (0.037) U
INORG		
Antimony	0.391 J	0.399 J
Arsenic	4.12	5.02
Barium	40.6	35
Beryllium	0.105 J	0.12
Cadmium	0.281 J	0.322 J
Chromium Total	11.7	10.7
Cobalt	5.51	6.21
Copper	12.4	12.3
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	6.13	5.41
Manganese	295	274
Nickel	13.5	15.4
Selenium	0.46 J	0.487 J
Thallium	0.921 J	0.776 J
Vanadium	15.9	15
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

MWP9-01	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0048) U	ND (0.0047) U
1,1,2-Trichloroethane	ND (0.0048) U	ND (0.0047) U
1,1-Dichloroethane	ND (0.0048) U	ND (0.0047) U
1,1-Dichloroethene	ND (0.0048) U	ND (0.0047) U
1,2-Dichloroethane	ND (0.0048) U	ND (0.0047) U
Acetone	0.037 J	0.017 J
Benzene	ND (0.0048) U	ND (0.0047) U
cis-1,2-Dichloroethene	ND (0.0048) U	ND (0.0047) U
Ethylbenzene	ND (0.0048) U	ND (0.0047) U
Methylene chloride	0.012	0.0068
Tetrachloroethene	0.00054 J	ND (0.0047) U
Toluene	0.0031 J	0.00095 J
Trichloroethene	ND (0.0048) U	ND (0.0047) U
Vinyl chloride	ND (0.0097) U	ND (0.0094) U
SVOC		
2,4-Dimethylphenol	ND (7.4) U	ND (0.37) U
Benzo(a)pyrene	ND (7.4) U	ND (0.37) U
bis(2-Ethylhexyl)phthalate	ND (7.4) U	0.023 J
Butyl benzylphthalate	ND (7.4) U	ND (0.37) U
Dibenz(a,h)anthracene	ND (7.4) U	ND (0.37) U
Methylphenol (Cresol)	ND (7.4) U	ND (0.37) U
Pentachlorophenol	ND (77) U	ND (3.8) U
P/PCB		
Total PCBs	0.07525 J	ND (0.037) U
INORG		
Antimony	ND (2.25) U	ND (2.22) U
Arsenic	2.99	3.59
Barium	9.31	28
Beryllium	ND (0.113) U	0.155
Cadmium	ND (0.563) U	ND (0.554) U
Chromium Total	5.38	10.6
Cobalt	2.13	5.46
Copper	5.97	10.9
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	3.4	5.02
Manganese	173	229
Nickel	5.94	16.4
Selenium	ND (0.563) U	ND (0.554) U
Thallium	0.46 J	0.856 J
Vanadium	6.5	14.3
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

BP9-13	0-2(ft BGS)	6-8(ft BGS)
VOC		
1,1,1-Trichloroethane	NS	NS
1,1,2-Trichloroethane	NS	NS
1,1-Dichloroethane	NS	NS
1,1-Dichloroethene	NS	NS
1,2-Dichloroethane	NS	NS
Acetone	NS	NS
Benzene	NS	NS
cis-1,2-Dichloroethene	NS	NS
Ethylbenzene	NS	NS
Methylene chloride	NS	NS
Tetrachloroethene	NS	NS
Toluene	NS	NS
Trichloroethene	NS	NS
Vinyl chloride	NS	NS
SVOC		
2,4-Dimethylphenol	NS	NS
Benzo(a)pyrene	0.22 J	0.077 J
bis(2-Ethylhexyl)phthalate	NS	NS
Butyl benzylphthalate	NS	NS
Dibenz(a,h)anthracene	NS	NS
Methylphenol (Cresol)	NS	NS
Pentachlorophenol	NS	NS
P/PCB		
Total PCBs	NS	NS
INORG		
Antimony	NS	NS
Arsenic	NS	NS
Barium	NS	NS
Beryllium	NS	NS
Cadmium	NS	NS
Chromium Total	NS	NS
Cobalt	NS	NS
Copper	NS	NS
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	NS	NS
Manganese	NS	NS
Nickel	NS	NS
Selenium	NS	NS
Thallium	NS	NS
Vanadium	NS	NS
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

BP9-12	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	NS	NS
1,1,2-Trichloroethane	NS	NS
1,1-Dichloroethane	NS	NS
1,1-Dichloroethene	NS	NS
1,2-Dichloroethane	NS	NS
Acetone	NS	NS
Benzene	NS	NS
cis-1,2-Dichloroethene	NS	NS
Ethylbenzene	NS	NS
Methylene chloride	NS	NS
Tetrachloroethene	NS	NS
Toluene	NS	NS
Trichloroethene	NS	NS
Vinyl chloride	NS	NS
SVOC		
2,4-Dimethylphenol	NS	NS
Benzo(a)pyrene	ND (0.38) U	ND (0.36) U
bis(2-Ethylhexyl)phthalate	NS	NS
Butyl benzylphthalate	NS	NS
Dibenz(a,h)anthracene	NS	NS
Methylphenol (Cresol)	NS	NS
Pentachlorophenol	NS	NS
P/PCB		
Total PCBs	NS	NS
INORG		
Antimony	NS	NS
Arsenic	NS	NS
Barium	NS	NS
Beryllium	NS	NS
Cadmium	NS	NS
Chromium Total	NS	NS
Cobalt	NS	NS
Copper	NS	NS
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	NS	NS
Manganese	NS	NS
Nickel	NS	NS
Selenium	NS	NS
Thallium	NS	NS
Vanadium	NS	NS
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

P18-05	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0043) U	0.017
1,1,2-Trichloroethane	ND (0.0043) U	ND (0.0037) U
1,1-Dichloroethane	0.0015 J	0.018
1,1-Dichloroethene	ND (0.0043) U	0.001 J
1,2-Dichloroethane	ND (0.0043) U	ND (0.0037) U
Acetone	0.0061 J	ND (0.015) UJ
Benzene	ND (0.0043) U	ND (0.0037) U
cis-1,2-Dichloroethene	ND (0.0043) U	ND (0.0037) U
Ethylbenzene	ND (0.0043) U	ND (0.0037) U
Methylene chloride	ND (0.0043) U	ND (0.0037) U
Tetrachloroethene	ND (0.0043) U	ND (0.0037) U
Toluene	ND (0.0043) U	ND (0.0037) U
Trichloroethene	ND (0.0043) U	ND (0.0037) U
Vinyl chloride	ND (0.0086) U	ND (0.0075) U
SVOC		
2,4-Dimethylphenol	ND (4.7) U	ND (0.36) U
Benzo(a)pyrene	0.2 J	ND (0.36) U
bis(2-Ethylhexyl)phthalate	0.53 J	ND (0.36) U
Butyl benzylphthalate	ND (4.7) U	ND (0.36) U
Dibenz(a,h)anthracene	ND (4.7) U	ND (0.36) U
Methylphenol (Cresol)	ND (4.7) U	ND (0.36) U
Pentachlorophenol	ND (49) U	ND (3.7) U
P/PCB		
Total PCBs	ND (0.038) U	ND (0.036) U
INORG		
Antimony	0.256 J	R
Arsenic	4.73 J	4.57 J
Barium	49	25.4
Beryllium	0.41	0.194
Cadmium	0.31 J	0.179 J
Chromium Total	13.8 J	7.63 J
Cobalt	7.13	3.83
Copper	17.7	9.85
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	6.88 J	5.22 J
Manganese	360	225
Nickel	18.9	9.13
Selenium	R	R
Thallium	ND (1.14) U	ND (1.1) U
Vanadium	17.1	11.7
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

MWP9-02	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0056) U/ND (0.0046) UJ	ND (0.0043) U
1,1,2-Trichloroethane	ND (0.0056) U/ND (0.0046) U	ND (0.0043) U
1,1-Dichloroethane	ND (0.0056) U/ND (0.0046) U	ND (0.0043) U
1,1-Dichloroethene	ND (0.0056) U/ND (0.0046) U	ND (0.0043) U
1,2-Dichloroethane	ND (0.0056) U/ND (0.0046) U	ND (0.0043) U
Acetone	0.0074 J/ND (0.018) UJ	0.006 J
Benzene	ND (0.0056) U/ND (0.0046) U	ND (0.0043) U
cis-1,2-Dichloroethene	ND (0.0056) U/ND (0.0046) U	ND (0.0043) U
Ethylbenzene	ND (0.0056) U/ND (0.0046) U	ND (0.0043) U
Methylene chloride	0.0058/ND (0.0046) U	0.0033 J
Tetrachloroethene	ND (0.0056) U/ND (0.0046) U	ND (0.0043) U
Toluene	0.0019 J/0.0011 J	0.0012 J
Trichloroethene	ND (0.0056) U/ND (0.0046) U	ND (0.0043) U
Vinyl chloride	ND (0.011) U/ND (0.0092) U	ND (0.0085) U
SVOC		
2,4-Dimethylphenol	ND (1.5) U/ND (2.4) U	ND (0.37) U
Benzo(a)pyrene	1.6	ND (0.37) U
Benzo(a)pyrene {RDC}	2.7	–
bis(2-Ethylhexyl)phthalate	0.62 J/1.3 J	ND (0.37) U
Butyl benzylphthalate	0.17 J/0.43 J	R
Dibenz(a,h)anthracene	0.3 J/0.5 J	ND (0.37) U
Methylphenol (Cresol)	ND (1.5) U/ND (2.4) U	ND (0.37) U
Pentachlorophenol	ND (15) U/ND (25) U	ND (3.8) U
P/PCB		
Total PCBs	–	ND (0.037) U
Total PCBs {IDC, RDC}	23.56 J	–
Total PCBs {RDC}	5.8875 J	–
INORG		
Antimony	1.11 J/1.23 J	0.305 J
Arsenic	4.59/4.01	3.4
Barium	211/180	32.7
Beryllium	ND (0.112) U/ND (0.111) U	0.0916 J
Cadmium	0.669/0.583	0.286 J
Chromium Total	14.8/11.2	10.2
Cobalt	4.07/3.45	4.98
Copper	18.1/13.2	10.9
Cyanide (total)	NS/NS	NS
Iron	NS/NS	NS
Lead	44.3/38.4	4.78
Manganese	240/231	305
Nickel	11.6/9.48	13
Selenium	0.433 J/0.296 J	0.28 J
Thallium	0.756 J/0.781 J	0.649 J
Vanadium	12.1/11.8	15.2
CDD/F		
2,3,7,8-TCDD Equivalent	NS/NS	NS

P18-04	0-2(ft BGS)	6-8(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0042) U	ND (0.0043) U
1,1,2-Trichloroethane	ND (0.0042) U	ND (0.0043) U
1,1-Dichloroethane	ND (0.0042) U	ND (0.0043) U
1,1-Dichloroethene	ND (0.0042) U	ND (0.0043) U
1,2-Dichloroethane	ND (0.0042) U	ND (0.0043) U
Acetone	0.019 J	0.0097 J
Benzene	ND (0.0042) U	ND (0.0043) U
cis-1,2-Dichloroethene	ND (0.0042) U	ND (0.0043) U
Ethylbenzene	ND (0.0042) U	ND (0.0043) U
Methylene chloride	ND (0.0042) U	ND (0.0043) U
Tetrachloroethene	ND (0.0042) U	ND (0.0043) U
Toluene	ND (0.0042) U	ND (0.0043) U
Trichloroethene	ND (0.0042) U	ND (0.0043) U
Vinyl chloride	ND (0.0085) U	ND (0.0086) U
SVOC		
2,4-Dimethylphenol	ND (7.4) U	ND (0.36) U
Benzo(a)pyrene	ND (7.4) U	ND (0.36) U
bis(2-Ethylhexyl)phthalate	ND (7.4) U	ND (0.36) U
Butyl benzylphthalate	ND (7.4) U	ND (0.36) U
Dibenz(a,h)anthracene	ND (7.4) U	ND (0.36) U
Methylphenol (Cresol)	ND (7.4) U	ND (0.36) U
Pentachlorophenol	ND (76) U	ND (3.7) U
P/PCB		
Total PCBs	0.0238 J	ND (0.036) U
INORG		
Antimony	0.273 J	0.23 J
Arsenic	3.98 J	4.25 J
Barium	32.1	44.8
Beryllium	0.325	0.323
Cadmium	0.221 J	0.266 J
Chromium Total	10.8 J	10.6 J
Cobalt	4.83	6.49
Copper	12.3	16.8
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	5.88 J	5.99 J
Manganese	235	353
Nickel	12.4	16.6
Selenium	R	R
Thallium	ND (1.11) U	ND (1.1) U
Vanadium	15.5	14
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

P18-06	0-2(ft BGS)	6-8(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0045) U	ND (0.0041) U
1,1,2-Trichloroethane	ND (0.0045) U	ND (0.0041) U
1,1-Dichloroethane	ND (0.0045) U	ND (0.0041) U
1,1-Dichloroethene	ND (0.0045) U	ND (0.0041) U
1,2-Dichloroethane	ND (0.0045) U	ND (0.0041) U
Acetone	ND (0.018) UJ	ND (0.016) UJ
Benzene	ND (0.0045) U	ND (0.0041) U
cis-1,2-Dichloroethene	ND (0.0045) U	ND (0.0041) U
Ethylbenzene	ND (0.0045) U	ND (0.0041) U
Methylene chloride	ND (0.0045) U	ND (0.0041) U
Tetrachloroethene	ND (0.0045) U	ND (0.0041) U
Toluene	ND (0.0045) U	ND (0.0041) U
Trichloroethene	ND (0.0045) U	ND (0.0041) U
Vinyl chloride	ND (0.0089) U	ND (0.0082) U
SVOC		
2,4-Dimethylphenol	ND (0.37) U	ND (0.36) U
Benzo(a)pyrene	ND (0.37) U	ND (0.36) U
bis(2-Ethylhexyl)phthalate	ND (0.37) U	ND (0.36) U
Butyl benzylphthalate	ND (0.37) U	ND (0.36) U
Dibenz(a,h)anthracene	ND (0.37) U	ND (0.36) U
Methylphenol (Cresol)	ND (0.37) U	ND (0.36) U
Pentachlorophenol	ND (3.8) U	ND (3.8) U
P/PCB		
Total PCBs	ND (0.037) U	ND (0.036) U
INORG		
Antimony	0.219 J	0.245 J
Arsenic	4.25	4.52
Barium	41.1	32.9
Beryllium	0.354	0.27
Cadmium	0.291 J	0.238 J
Chromium Total	10.9	10.2
Cobalt	7.28	5.08
Copper	18.4	12.7
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	6.34	4.7
Manganese	378	258
Nickel	17.8 J	13 J
Selenium	ND (0.565) U	ND (0.552) U
Thallium	0.478 J	ND (1.1) U
Vanadium	14.6	14.7
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

P18-03	0-2(ft BGS)	6-8(ft BGS)	8-10(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0051) U	ND (0.0045) U	ND (0.004) U
1,1,2-Trichloroethane	ND (0.0051) U	ND (0.0045) U	ND (0.004) U
1,1-Dichloroethane	ND (0.0051) U	ND (0.0045) U	ND (0.004) U
1,1-Dichloroethene	ND (0.0051) U	ND (0.0045) U	ND (0.004) U
1,2-Dichloroethane	ND (0.0051) U	ND (0.0045) U	ND (0.004) U
Acetone	ND (0.02) UJ	ND (0.018) UJ	ND (0.016) UJ
Benzene	ND (0.0051) U	ND (0.0045) U	ND (0.004) U
cis-1,2-Dichloroethene	ND (0.0051) U	ND (0.0045) U	ND (0.004) U
Ethylbenzene	ND (0.0051) U	ND (0.0045) U	ND (0.004) U
Methylene chloride	ND (0.0051) U	ND (0.0045) U	ND (0.004) U
Tetrachloroethene	ND (0.0051) U	ND (0.0045) U	ND (0.004) U
Toluene	ND (0.0051) U	ND (0.0045) U	0.00052 J
Trichloroethene	ND (0.0051) U	ND (0.0045) U	ND (0.004) U
Vinyl chloride	ND (0.01) UJ	ND (0.0091) U	ND (0.0081) U
SVOC			
2,4-Dimethylphenol	ND (0.39) U	ND (0.37) U	ND (7.2) U
Benzo(a)pyrene	ND (0.39) U	ND (0.37) U	ND (7.2) U
bis(2-Ethylhexyl)phthalate	ND (0.39) U	ND (0.37) U	ND (7.2) U
Butyl benzylphthalate	ND (0.39) U	ND (0.37) U	ND (7.2) U
Dibenz(a,h)anthracene	ND (0.39) U	ND (0.37) U	ND (7.2) U
Methylphenol (Cresol)	ND (0.39) U	ND (0.37) U	ND (7.2) U
Pentachlorophenol	ND (4) U	ND (3.8) U	ND (74) U
P/PCB			
Total PCBs	ND (0.039) U	ND (0.037) U	0.0152 J
INORG			
Antimony	0.287 J	0.196 J	0.202 J
Arsenic	6.09	4.54	6.17
Barium	48.7	38.8	39.1
Beryllium	0.418	0.317	0.249
Cadmium	0.248 J	0.287 J	0.234 J
Chromium Total	14.1	9.9	9.13
Cobalt	7.53	5.85	5.49
Copper	15.9	18.2	12.6
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	6.4	6.44	5.1
Manganese	333	300	315
Nickel	18.4 J	14.5 J	13.3 J
Selenium	ND (0.587) U	ND (0.561) U	ND (0.547) U
Thallium	0.397 J	ND (1.12) U	ND (1.09) U
Vanadium	18.9	13.2	13.7
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

P18-02	0-2(ft BGS)	6-8(ft BGS)	8-10(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0052) U	ND (0.0045) U	ND (0.0047) U
1,1,2-Trichloroethane	ND (0.0052) U	ND (0.0045) U	ND (0.0047) U
1,1-Dichloroethane	ND (0.0052) U	ND (0.0045) U	ND (0.0047) U
1,1-Dichloroethene	ND (0.0052) U	ND (0.0045) U	ND (0.0047) U
1,2-Dichloroethane	ND (0.0052) U	ND (0.0045) U	ND (0.0047) U
Acetone	ND (0.021) UJ	ND (0.018) UJ	ND (0.019) UJ
Benzene	ND (0.0052) U	ND (0.0045) U	ND (0.0047) U
cis-1,2-Dichloroethene	ND (0.0052) U	ND (0.0045) U	ND (0.0047) U
Ethylbenzene	0.0026 J	ND (0.0045) U	0.0012 J
Methylene chloride	ND (0.0052) U	ND (0.0045) U	ND (0.0047) U
Tetrachloroethene	ND (0.0052) U	ND (0.0045) U	ND (0.0047) U
Toluene	0.0056	0.0005 J	0.0014 J
Trichloroethene	ND (0.0052) U	ND (0.0045) U	ND (0.0047) U
Vinyl chloride	ND (0.01) U	ND (0.009) U	ND (0.0095) U
SVOC			
2,4-Dimethylphenol	ND (1) U	ND (19) U	ND (19) U
Benzo(a)pyrene	ND (1) U	ND (19) U	ND (19) U
bis(2-Ethylhexyl)phthalate	ND (1) U	ND (19) U	ND (19) U
Butyl benzylphthalate	ND (1) U	ND (19) U	ND (19) U
Dibenz(a,h)anthracene	ND (1) U	ND (19) U	ND (19) U
Methylphenol (Cresol)	ND (1) U	ND (19) U	ND (19) U
Pentachlorophenol	ND (10) U	ND (190) U	ND (200) U
P/PCB			
Total PCBs	ND (0.041) U	0.03135 J	ND (0.038) U
INORG			
Antimony	0.295 J	0.392 J	0.311 J
Arsenic	5.94	4	3.66
Barium	49.7	41	42.5
Beryllium	0.576	0.315	0.287
Cadmium	0.248 J	0.262 J	0.198 J
Chromium Total	16.8	10.1	10.6
Cobalt	7.99	6.11	5.31
Copper	18.5	16	12.5
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	8.06	5.79	4.83
Manganese	462	324	252
Nickel	21 J	15.5 J	12.8 J
Selenium	ND (0.614) U	ND (0.572) U	ND (0.578) U
Thallium	0.514 J	0.412 J	ND (1.16) U
Vanadium	21.5	14.3	15.7
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

P18-01	0-2(ft BGS)	6-8(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0052) U	ND (0.0046) U
1,1,2-Trichloroethane	ND (0.0052) U	ND (0.0046) U
1,1-Dichloroethane	ND (0.0052) U	ND (0.0046) U
1,1-Dichloroethene	ND (0.0052) U	ND (0.0046) U
1,2-Dichloroethane	ND (0.0052) U	ND (0.0046) U
Acetone	ND (0.021) UJ	ND (0.019) UJ
Benzene	ND (0.0052) U	ND (0.0046) U
cis-1,2-Dichloroethene	ND (0.0052) U	ND (0.0046) U
Ethylbenzene	ND (0.0052) U	ND (0.0046) U
Methylene chloride	ND (0.0052) U	ND (0.0046) U
Tetrachloroethene	ND (0.0052) U	ND (0.0046) U
Toluene	ND (0.0052) U	ND (0.0046) U
Trichloroethene	ND (0.0052) U	ND (0.0046) U
Vinyl chloride	ND (0.01) U	ND (0.0093) U
SVOC		
2,4-Dimethylphenol	ND (0.39) U	ND (0.4) U
Benzo(a)pyrene	ND (0.39) U	ND (0.4) U
bis(2-Ethylhexyl)phthalate	ND (0.39) U	ND (0.4) U
Butyl benzylphthalate	ND (0.39) U	ND (0.4) U
Dibenz(a,h)anthracene	ND (0.39) U	ND (0.4) U
Methylphenol (Cresol)	ND (0.39) U	ND (0.4) U
Pentachlorophenol	ND (4) U	ND (4.1) U
P/PCB		
Total PCBs	0.34655 J	ND (0.04) U
INORG		
Antimony	0.287 J	0.383 J
Arsenic	3.42 J	4.26 J
Barium	10.3	48.8
Beryllium	0.105 J	0.357
Cadmium	0.103 J	0.26 J
Chromium Total	5.01 J	11.6 J
Cobalt	2.22	6.9
Copper	7.38	16.5
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	4.02 J	6.54 J
Manganese	295	356
Nickel	6.08	18.4
Selenium	R	R
Thallium	ND (1.18) U	0.426 J
Vanadium	6.41	14.8
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

P18-08	0-2(ft BGS)	6-8(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.004) U	0.0036 J
1,1,2-Trichloroethane	ND (0.004) U	ND (0.0042) U
1,1-Dichloroethane	ND (0.004) U	ND (0.0042) U
1,1-Dichloroethene	ND (0.004) U	ND (0.0042) U
1,2-Dichloroethane	ND (0.004) U	ND (0.0042) U
Acetone	ND (0.016) UJ	ND (0.017) U
Benzene	ND (0.004) U	ND (0.0042) U
cis-1,2-Dichloroethene	ND (0.004) U	ND (0.0042) U
Ethylbenzene	ND (0.004) U	ND (0.0042) U
Methylene chloride	ND (0.004) U	ND (0.0042) U
Tetrachloroethene	ND (0.004) U	ND (0.0042) U
Toluene	ND (0.004) U	ND (0.0042) U
Trichloroethene	ND (0.004) U	ND (0.0042) U
Vinyl chloride	ND (0.0081) U	ND (0.0083) U
SVOC		
2,4-Dimethylphenol	ND (0.36) U	ND (0.37) U
Benzo(a)pyrene	ND (0.36) U	ND (0.37) U
bis(2-Ethylhexyl)phthalate	ND (0.36) U	ND (0.37) U
Butyl benzylphthalate	ND (0.36) U	ND (0.37) U
Dibenz(a,h)anthracene	ND (0.36) U	ND (0.37) U
Methylphenol (Cresol)	ND (0.36) U	ND (0.37) U
Pentachlorophenol	ND (3.7) U	ND (3.8) U
P/PCB		
Total PCBs	ND (0.036) U	ND (0.037) U
INORG		
Antimony	0.147 J	0.185 J
Arsenic	4.46 J	4.48 J
Barium	32.4	33.3
Beryllium	0.31	0.282
Cadmium	0.256 J	0.223 J
Chromium Total	10.3 J	10.4 J
Cobalt	6.12	4.85
Copper	14.4	12.5
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	5.32 J	5.65 J
Manganese	307	245
Nickel	14.6	12.4
Selenium	R	R
Thallium	ND (1.09) U	ND (1.11) U
Vanadium	14.3	14.8
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

P18-09	0-2(ft BGS)	6-8(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0047) U	ND (0.0043) U
1,1,2-Trichloroethane	ND (0.0047) U	ND (0.0043) U
1,1-Dichloroethane	ND (0.0047) U	ND (0.0043) U
1,1-Dichloroethene	ND (0.0047) U	ND (0.0043) U
1,2-Dichloroethane	ND (0.0047) U	ND (0.0043) U
Acetone	ND (0.019) U	ND (0.017) U
Benzene	ND (0.0047) U	ND (0.0043) U
cis-1,2-Dichloroethene	ND (0.0047) U	ND (0.0043) U
Ethylbenzene	ND (0.0047) U	ND (0.0043) U
Methylene chloride	ND (0.0047) U	ND (0.0043) U
Tetrachloroethene	ND (0.0047) U	ND (0.0043) U
Toluene	ND (0.0047) U	ND (0.0043) U
Trichloroethene	0.00055 J	ND (0.0043) U
Vinyl chloride	ND (0.0093) U	ND (0.0085) U
SVOC		
2,4-Dimethylphenol	ND (0.38) U	ND (0.37) U
Benzo(a)pyrene	0.073 J	ND (0.37) U
bis(2-Ethylhexyl)phthalate	ND (0.38) U	ND (0.37) U
Butyl benzylphthalate	ND (0.38) U	ND (0.37) U
Dibenz(a,h)anthracene	ND (0.38) U	ND (0.37) U
Methylphenol (Cresol)	ND (0.38) U	ND (0.37) U
Pentachlorophenol	ND (3.9) U	ND (3.8) U
P/PCB		
Total PCBs	ND (0.038) U	ND (0.037) U
INORG		
Antimony	0.389 J	0.173 J
Arsenic	6.31 J	4.29 J
Barium	37	47
Beryllium	0.453	0.375
Cadmium	0.25 J	0.286 J
Chromium Total	14.6 J	12.6 J
Cobalt	8.64	6.84
Copper	11.8	16.1
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	8.4 J	6.25 J
Manganese	314	362
Nickel	14.6	18
Selenium	R	R
Thallium	0.405 J	0.353 J
Vanadium	20.6	15.9
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

P18-10	0-2(ft BGS)	6-8(ft BGS)	8-10(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0042) U	ND (0.0047) U	ND (0.24) U
1,1,2-Trichloroethane	ND (0.0042) U	ND (0.0047) U	ND (0.24) U
1,1-Dichloroethane	ND (0.0042) U	ND (0.0047) U	ND (0.24) U
1,1-Dichloroethene	ND (0.0042) U	ND (0.0047) U	ND (0.24) U
1,2-Dichloroethane	ND (0.0042) U	ND (0.0047) U	ND (0.24) U
Acetone	ND (0.017) UJ	ND (0.019) UJ	ND (0.95) UJ
Benzene	ND (0.0042) U	ND (0.0047) U	ND (0.24) U
cis-1,2-Dichloroethene	0.0021 J	0.024	0.09 J
Ethylbenzene	ND (0.0042) U	ND (0.0047) U	ND (0.24) U
Methylene chloride	ND (0.0042) U	ND (0.0047) U	ND (0.24) U
Tetrachloroethene	ND (0.0042) U	ND (0.0047) U	ND (0.24) U
Toluene	ND (0.0042) U	ND (0.0047) U	ND (0.24) U
Trichloroethene	0.0065	0.00097 J	0.47
Vinyl chloride	ND (0.0084) U	0.0017 J	ND (0.48) U
SVOC			
2,4-Dimethylphenol	ND (0.37) U	ND (0.4) U	ND (7.8) U
Benzo(a)pyrene	0.072 J	0.042 J	ND (7.8) U
bis(2-Ethylhexyl)phthalate	ND (0.37) U	ND (0.4) U	ND (7.8) U
Butyl benzylphthalate	ND (0.37) U	ND (0.4) U	ND (7.8) U
Dibenz(a,h)anthracene	ND (0.37) U	ND (0.4) U	ND (7.8) U
Methylphenol (Cresol)	ND (0.37) U	ND (0.4) U	ND (7.8) U
Pentachlorophenol	ND (3.8) U	ND (4.1) U	ND (80) U
P/PCB			
Total PCBs	ND (0.037) U	ND (0.04) U	ND (0.39) U
INORG			
Antimony	0.268 J	0.371 J	0.36 J
Arsenic	3.47	7.67	3.91
Barium	39.1	62.2	30.2
Beryllium	0.346	0.542	0.262
Cadmium	0.112 J	0.181 J	0.084 J
Chromium Total	11.1	18.2	11.5
Cobalt	5.21	6.85	4.29
Copper	8.56	16.3	9.6
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	8.87	8.3	5.39
Manganese	214	357	145
Nickel	9.69 J	22.5 J	11.6 J
Selenium	ND (0.563) U	ND (0.599) U	ND (0.588) U
Thallium	ND (1.13) U	0.428 J	0.358 J
Vanadium	18.7	23.3	15.2
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

P18-11	0-2(ft BGS)	6-8(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0055) U/ND (0.0059) U	ND (0.23) U
1,1,2-Trichloroethane	ND (0.0055) U/ND (0.0059) U	ND (0.23) U
1,1-Dichloroethane	ND (0.0055) U/ND (0.0059) U	ND (0.23) U
1,1-Dichloroethene	ND (0.0055) U/ND (0.0059) U	ND (0.23) U
1,2-Dichloroethane	ND (0.0055) U/ND (0.0059) U	ND (0.23) U
Acetone	ND (0.022) U/ND (0.024) U	ND (0.91) U
Benzene	ND (0.0055) U/ND (0.0059) U	ND (0.23) U
cis-1,2-Dichloroethene	ND (0.0055) U/ND (0.0059) U	0.21 J
Ethylbenzene	ND (0.0055) U/ND (0.0059) U	ND (0.23) U
Methylene chloride	ND (0.0055) U/ND (0.0059) U	ND (0.23) U
Tetrachloroethene	ND (0.0055) U/ND (0.0059) U	ND (0.23) U
Toluene	ND (0.0055) U/ND (0.0059) U	ND (0.23) U
Trichloroethene	0.011/0.0036 J	4.4
Vinyl chloride	ND (0.011) U/ND (0.012) U	ND (0.45) U
SVOC		
2,4-Dimethylphenol	ND (0.35) U/ND (0.35) U	ND (0.37) U
Benzo(a)pyrene	0.042 J/0.063 J	ND (0.37) U
bis(2-Ethylhexyl)phthalate	ND (0.35) U/ND (0.35) U	ND (0.37) U
Butyl benzylphthalate	0.052 J/ND (0.35) U	ND (0.37) U
Dibenz(a,h)anthracene	ND (0.35) U/ND (0.35) U	ND (0.37) U
Methylphenol (Cresol)	ND (0.35) U/ND (0.35) U	ND (0.37) U
Pentachlorophenol	ND (3.6) U/ND (3.5) U	ND (3.8) U
P/PCB		
Total PCBs	ND (0.035) U/ND (0.035) U	ND (0.037) U
INORG		
Antimony	R/0.26 J	0.259 J
Arsenic	3.68/3.27	4.69
Barium	10/9.77	33.9
Beryllium	ND (0.106) U/ND (0.106) U	ND (0.112) U
Cadmium	0.118 J/0.0835 J	0.0933 J
Chromium Total	4.56 J/5.74 J	10.2 J
Cobalt	2.36/2.59	5.51
Copper	7.41/7.88	12.1
Cyanide (total)	NS/NS	NS
Iron	NS/NS	NS
Lead	4.1 J/4.43 J	4.99 J
Manganese	213/257	274
Nickel	5.55/6.76	13.6
Selenium	ND (0.53) U/ND (0.53) U	ND (0.559) U
Thallium	0.39 J/0.564 J	0.657 J
Vanadium	5.78/7.05	13.8
CDD/F		
2,3,7,8-TCDD Equivalent	NS/NS	NS

P18-07	0-2(ft BGS)	6-8(ft BGS)	8-10(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0041) U	ND (0.0045) U	ND (0.004) U
1,1,2-Trichloroethane	ND (0.0041) U	ND (0.0045) U	ND (0.004) U
1,1-Dichloroethane	ND (0.0041) U	0.00053 J	0.00073 J
1,1-Dichloroethene	ND (0.0041) U	ND (0.0045) U	ND (0.004) U
1,2-Dichloroethane	ND (0.0041) U	ND (0.0045) U	ND (0.004) U
Acetone	ND (0.017) UJ	ND (0.018) UJ	ND (0.016) UJ
Benzene	ND (0.0041) U	ND (0.0045) U	ND (0.004) U
cis-1,2-Dichloroethene	ND (0.0041) U	0.0042 J	0.0061
Ethylbenzene	ND (0.0041) U	ND (0.0045) U	0.00035 J
Methylene chloride	ND (0.0041) U	ND (0.0045) U	ND (0.004) U
Tetrachloroethene	ND (0.0041) U	ND (0.0045) U	0.0006 J
Toluene	ND (0.0041) U	ND (0.0045) U	0.00067 J
Trichloroethene	ND (0.0041) U	0.00062 J	0.0019 J
Vinyl chloride	ND (0.0083) U	ND (0.009) U	ND (0.008) U
SVOC			
2,4-Dimethylphenol	ND (0.37) U	ND (18) U	ND (7.3) U
Benzo(a)pyrene	ND (0.37) U	ND (18) U	ND (7.3) U
bis(2-Ethylhexyl)phthalate	ND (0.37) U	ND (18) U	ND (7.3) U
Butyl benzylphthalate	ND (0.37) U	ND (18) U	ND (7.3) U
Dibenz(a,h)anthracene	ND (0.37) U	ND (18) U	ND (7.3) U
Methylphenol (Cresol)	ND (0.37) U	ND (18) U	ND (7.3) U
Pentachlorophenol	ND (3.8) U	ND (190) U	ND (75) U
P/PCB			
Total PCBs	ND (0.037) U	0.25615 J	0.29225 J
INORG			
Antimony	0.195 J	0.19 J	0.171 J
Arsenic	4.8	4.12	3.76
Barium	46.7	36.3	31.8
Beryllium	0.291	0.28	0.266
Cadmium	0.262 J	0.21 J	0.217 J
Chromium Total	48.6	10.5	9.32
Cobalt	5.45	5.79	5.13
Copper	13.3	13.2	12.5
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	5.97	5.26	4.52
Manganese	285	272	230
Nickel	13 J	15.4 J	13.9 J
Selenium	ND (0.558) U	ND (0.555) U	ND (0.552) U
Thallium	0.351 J	ND (1.11) U	ND (1.1) U
Vanadium	14.7	15	13.9
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

BP9-04	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.004) UJ	ND (0.0041) UJ
1,1,2-Trichloroethane	ND (0.004) U	ND (0.0041) U
1,1-Dichloroethane	ND (0.004) U	ND (0.0041) U
1,1-Dichloroethene	ND (0.004) U	ND (0.0041) U
1,2-Dichloroethane	ND (0.004) U	ND (0.0041) U
Acetone	0.0029 J	ND (0.017) UJ
Benzene	ND (0.004) U	ND (0.0041) U
cis-1,2-Dichloroethene	ND (0.004) U	ND (0.0041) U
Ethylbenzene	ND (0.004) U	ND (0.0041) U
Methylene chloride	ND (0.004) U	ND (0.0041) U
Tetrachloroethene	ND (0.004) U	ND (0.0041) U
Toluene	0.0006 J	ND (0.0041) U
Trichloroethene	ND (0.004) U	ND (0.0041) U
Vinyl chloride	ND (0.0079) U	ND (0.0083) U
SVOC		
2,4-Dimethylphenol	ND (1.5) U	ND (0.37) U
Benzo(a)pyrene	0.76 J	ND (0.37) U
bis(2-Ethylhexyl)phthalate	0.68	ND (0.37) U
Butyl benzylphthalate	0.14 J	ND (0.37) U
Dibenz(a,h)anthracene	0.13 J	ND (0.37) U
Methylphenol (Cresol)	ND (1.5) U	ND (0.37) U
Pentachlorophenol	ND (15) U	ND (3.8) U
P/PCB		
Total PCBs	2.283 J	ND (0.037) U
INORG		
Antimony	R	R
Arsenic	2.13	3.55
Barium	58.7	32.7
Beryllium	0.187	0.32
Cadmium	0.162 J	ND (0.56) U
Chromium Total	4.98	9.82
Cobalt	1.82 J	4.59 J
Copper	5.63	10.5
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	11.6 J	4.45
Manganese	152	238
Nickel	5.36	13.3
Selenium	ND (0.566) U	ND (0.56) U
Thallium	ND (1.13) UJ	ND (1.12) UJ
Vanadium	5.47	14.2
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

BP9-09	0-2(ft BGS)	2-4(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0042) UJ	ND (0.0046) UJ
1,1,2-Trichloroethane	ND (0.0042) U	ND (0.0046) U
1,1-Dichloroethane	ND (0.0042) U	ND (0.0046) U
1,1-Dichloroethene	ND (0.0042) U	ND (0.0046) U
1,2-Dichloroethane	ND (0.0042) U	ND (0.0046) U
Acetone	ND (0.017) UJ	ND (0.018) UJ
Benzene	ND (0.0042) U	ND (0.0046) U
cis-1,2-Dichloroethene	ND (0.0042) U	ND (0.0046) U
Ethylbenzene	ND (0.0042) U	ND (0.0046) U
Methylene chloride	ND (0.0042) U	ND (0.0046) U
Tetrachloroethene	ND (0.0042) U	ND (0.0046) U
Toluene	0.00068 J	ND (0.0046) U
Trichloroethene	ND (0.0042) U	ND (0.0046) U
Vinyl chloride	ND (0.0085) U	ND (0.0092) U
SVOC		
2,4-Dimethylphenol	ND (0.72) U	0.14 J
Benzo(a)pyrene	0.36 J	0.43
bis(2-Ethylhexyl)phthalate	ND (0.72) U	ND (0.37) U
Butyl benzylphthalate	R	R
Dibenz(a,h)anthracene	0.066 J	0.074 J
Methylphenol (Cresol)	ND (0.72) U	0.2315 J
Pentachlorophenol	ND (7.4) U	ND (3.8) U
P/PCB		
Total PCBs	1.57 J	1.4715 J
INORG		
Antimony	0.47 J	0.521 J
Arsenic	3.58	3.45
Barium	76.9	44.9
Beryllium	ND (0.109) U	ND (0.111) U
Cadmium	0.329 J	0.417 J
Chromium Total	10.6	8.14
Cobalt	3.66	2.44
Copper	11.4	10.1
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	17	20.3
Manganese	198	173
Nickel	9.18	7.44
Selenium	0.321 J	0.276 J
Thallium	0.624 J	0.727 J
Vanadium	10.4	8.43
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

BP9-02	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0043) U	ND (0.0041) U
1,1,2-Trichloroethane	ND (0.0043) U	ND (0.0041) U
1,1-Dichloroethane	ND (0.0043) U	ND (0.0041) U
1,1-Dichloroethene	ND (0.0043) U	ND (0.0041) U
1,2-Dichloroethane	ND (0.0043) U	ND (0.0041) U
Acetone	ND (0.017) UJ	ND (0.017) UJ
Benzene	ND (0.0043) U	ND (0.0041) U
cis-1,2-Dichloroethene	ND (0.0043) U	ND (0.0041) U
Ethylbenzene	ND (0.0043) U	ND (0.0041) U
Methylene chloride	0.005	0.0055
Tetrachloroethene	0.00049 J	ND (0.0041) U
Toluene	0.0011 J	0.00065 J
Trichloroethene	ND (0.0043) U	ND (0.0041) U
Vinyl chloride	ND (0.0085) U	ND (0.0083) U
SVOC		
2,4-Dimethylphenol	ND (1.5) U	ND (0.37) U
Benzo(a)pyrene	1.3 J	ND (0.37) U
bis(2-Ethylhexyl)phthalate	0.77 J	ND (0.37) U
Butyl benzylphthalate	0.18 J	R
Dibenz(a,h)anthracene	0.17 J	ND (0.37) U
Methylphenol (Cresol)	ND (1.5) U	ND (0.37) U
Pentachlorophenol	ND (15) U	ND (3.8) U
P/PCB		
Total PCBs	2.9315 J	ND (0.037) U
INORG		
Antimony	0.237 J	0.317 J
Arsenic	4.05	4.07
Barium	72.7	36.8
Beryllium	ND (0.111) U	0.102 J
Cadmium	0.0526 J	0.288 J
Chromium Total	9.18	11.9
Cobalt	3.37	6.35
Copper	11.2	12.9
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	18.8	5.22
Manganese	214	350
Nickel	9.63	16.7
Selenium	ND (0.554) U	0.422 J
Thallium	0.687 J	0.877 J
Vanadium	10.6	17.1
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

BP9-10	0-2(ft BGS)	8-10(ft BGS)	13-15(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0049) U	ND (0.0048) U	ND (0.0044) U
1,1,2-Trichloroethane	ND (0.0049) U	ND (0.0048) U	ND (0.0044) U
1,1-Dichloroethane	ND (0.0049) U	ND (0.0048) U	ND (0.0044) U
1,1-Dichloroethene	ND (0.0049) U	ND (0.0048) U	ND (0.0044) U
1,2-Dichloroethane	ND (0.0049) U	ND (0.0048) U	ND (0.0044) U
Acetone	ND (0.02) UJ	0.029 J	0.0078 J
Benzene	ND (0.0049) U	0.00041 J	ND (0.0044) U
cis-1,2-Dichloroethene	ND (0.0049) U	ND (0.0048) U	ND (0.0044) U
Ethylbenzene	ND (0.0049) U	ND (0.0048) U	ND (0.0044) U
Methylene chloride	ND (0.0049) U	ND (0.0048) U	ND (0.0044) U
Tetrachloroethene	ND (0.0049) U	0.00056 J	ND (0.0044) U
Toluene	ND (0.0049) U	0.00094 J	ND (0.0044) U
Trichloroethene	ND (0.0049) U	ND (0.0048) U	ND (0.0044) U
Vinyl chloride	ND (0.0098) U	ND (0.0097) U	ND (0.0089) U
SVOC			
2,4-Dimethylphenol	ND (1.5) U	ND (0.39) U	ND (0.38) U
Benzo(a)pyrene	2.1	0.19 J	ND (0.38) U
bis(2-Ethylhexyl)phthalate	0.63 J	0.084 J	ND (0.38) U
Butyl benzylphthalate	0.11 J	ND (0.39) U	ND (0.38) U
Dibenz(a,h)anthracene	0.43 J	0.041 J	ND (0.38) U
Methylphenol (Cresol)	ND (1.5) U	ND (0.39) U	ND (0.38) U
Pentachlorophenol	ND (16) U	ND (4) U	ND (3.9) U
P/PCB			
Total PCBs	–	0.6175 J	ND (0.038) U
Total PCBs {RDC}	5.004 J	–	–
INORG			
Antimony	R	R	R
Arsenic	4.12	4.01	4.48
Barium	132	35.3	26.8
Beryllium	0.189	0.209	0.287
Cadmium	0.505 J	0.275 J	0.573 J
Chromium Total	10.3	8.84	10.9
Cobalt	3.64 J	3.71 J	5.64 J
Copper	16.4	16.5	16.5
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	34.5	27.3	6.22
Manganese	222	297	231 J
Nickel	9.81 J	10 J	18.4 J
Selenium	ND (0.576) U	ND (0.584) U	0.914
Thallium	ND (1.15) UJ	ND (1.17) UJ	0.429 J
Vanadium	10.1	10.3	17.5
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWP9-04	8-10(ft BGS)	14-16(ft BGS)	0-2(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0047) U	ND (0.0044) U	NS
1,1,2-Trichloroethane	ND (0.0047) U	ND (0.0044) U	NS
1,1-Dichloroethane	ND (0.0047) U	ND (0.0044) U	NS
1,1-Dichloroethene	ND (0.0047) U	ND (0.0044) U	NS
1,2-Dichloroethane	ND (0.0047) U	ND (0.0044) U	NS
Acetone	0.004 J	ND (0.018) UJ	NS
Benzene	ND (0.0047) U	ND (0.0044) U	NS
cis-1,2-Dichloroethene	ND (0.0047) U	ND (0.0044) U	NS
Ethylbenzene	ND (0.0047) U	ND (0.0044) U	NS
Methylene chloride	ND (0.0047) U	ND (0.0044) U	NS
Tetrachloroethene	ND (0.0047) U	ND (0.0044) U	NS
Toluene	0.00034 J	ND (0.0044) U	NS
Trichloroethene	ND (0.0047) U	ND (0.0044) U	NS
Vinyl chloride	ND (0.0094) U	ND (0.0088) U	NS
SVOC			
2,4-Dimethylphenol	ND (0.38) U	ND (0.37) U	NS
Benzo(a)pyrene	ND (0.38) U	ND (0.37) U	NS
bis(2-Ethylhexyl)phthalate	ND (0.38) U	ND (0.37) U	NS
Butyl benzylphthalate	ND (0.38) U	ND (0.37) U	NS
Dibenz(a,h)anthracene	ND (0.38) U	ND (0.37) U	NS
Methylphenol (Cresol)	ND (0.38) U	ND (0.37) U	NS
Pentachlorophenol	ND (4) U	ND (3.8) U	NS
P/PCB			
Total PCBs	ND (0.038) U	ND (0.037) U	3.9655 J
INORG			
Antimony	R	R	NS
Arsenic	5.15	6.29	NS
Barium	46.8	41	NS
Beryllium	0.319	0.284	NS
Cadmium	0.333 J	0.292 J	NS
Chromium Total	11.2	11.2	NS
Cobalt	6.53 J	5.4 J	NS
Copper	21	13.8	NS
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	6.56	6.68	NS
Manganese	404	279	NS
Nickel	17.4 J	14.1 J	NS
Selenium	ND (0.583) U	ND (0.565) U	NS
Thallium	ND (1.17) UJ	ND (1.13) UJ	NS
Vanadium	14.9	15.8	NS
CDD/F			
2,3,7,8-TCDD Equivalent	NS	NS	NS

P18-13	0-2(ft BGS)	6-8(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0051) U	ND (0.004) U
1,1,2-Trichloroethane	ND (0.0051) U	ND (0.004) U
1,1-Dichloroethane	ND (0.0051) U	ND (0.004) U
1,1-Dichloroethene	ND (0.0051) U	ND (0.004) U
1,2-Dichloroethane	ND (0.0051) U	ND (0.004) U
Acetone	ND (0.02) U	ND (0.016) U
Benzene	ND (0.0051) U	ND (0.004) U
cis-1,2-Dichloroethene	ND (0.0051) U	ND (0.004) U
Ethylbenzene	ND (0.0051) U	ND (0.004) U
Methylene chloride	ND (0.0051) U	ND (0.004) U
Tetrachloroethene	ND (0.0051) U	ND (0.004) U
Toluene	ND (0.0051) U	ND (0.004) U
Trichloroethene	ND (0.0051) U	ND (0.004) U
Vinyl chloride	ND (0.01) U	ND (0.008) U
SVOC		
2,4-Dimethylphenol	ND (0.38) U	ND (0.37) U
Benzo(a)pyrene	ND (0.38) U	ND (0.37) U
bis(2-Ethylhexyl)phthalate	0.031 J	ND (0.37) U
Butyl benzylphthalate	ND (0.38) U	ND (0.37) U
Dibenz(a,h)anthracene	ND (0.38) U	ND (0.37) U
Methylphenol (Cresol)	ND (0.38) U	ND (0.37) U
Pentachlorophenol	ND (3.9) U	ND (3.8) U
P/PCB		
Total PCBs	0.01625 J	ND (0.037) U
INORG		
Antimony	R	0.156 J
Arsenic	3.8	6.22
Barium	23.8	38.9
Beryllium	0.0775 J	0.0955 J
Cadmium	0.187 J	0.187 J
Chromium Total	7.38 J	9.42 J
Cobalt	4.31	4.76
Copper	11.1	11.8
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	4.93 J	5.07 J
Manganese	260	231
Nickel	11.3	12.3
Selenium	ND (0.574) U	ND (0.556) U
Thallium	0.425 J	0.445 J
Vanadium	10.2	13.3
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

P18-12	0-2(ft BGS)	6-8(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0045) U	ND (0.0043) U
1,1,2-Trichloroethane	ND (0.0045) U	ND (0.0043) U
1,1-Dichloroethane	ND (0.0045) U	ND (0.0043) U
1,1-Dichloroethene	ND (0.0045) U	ND (0.0043) U
1,2-Dichloroethane	ND (0.0045) U	ND (0.0043) U
Acetone	ND (0.018) U	ND (0.017) U
Benzene	ND (0.0045) U	ND (0.0043) U
cis-1,2-Dichloroethene	0.0034 J	0.036
Ethylbenzene	ND (0.0045) U	ND (0.0043) U
Methylene chloride	ND (0.0045) U	ND (0.0043) U
Tetrachloroethene	ND (0.0045) U	ND (0.0043) U
Toluene	ND (0.0045) U	ND (0.0043) U
Trichloroethene	0.067	0.15
Vinyl chloride	ND (0.009) U	0.0018 J
SVOC		
2,4-Dimethylphenol	ND (0.38) U	ND (3.7) U
Benzo(a)pyrene	ND (0.38) U	ND (3.7) U
bis(2-Ethylhexyl)phthalate	ND (0.38) U	ND (3.7) U
Butyl benzylphthalate	ND (0.38) U	ND (3.7) U
Dibenz(a,h)anthracene	ND (0.38) U	ND (3.7) U
Methylphenol (Cresol)	ND (0.38) U	ND (3.7) U
Pentachlorophenol	ND (3.9) U	ND (39) U
P/PCB		
Total PCBs	ND (0.038) U	1.63 J
INORG		
Antimony	R	R
Arsenic	4.23	5.97
Barium	53.7	32.8
Beryllium	0.147	0.0986 J
Cadmium	0.135 J	0.222 J
Chromium Total	12.9 J	11.1 J
Cobalt	6.47	5.15
Copper	16.3	13.1
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	7.32 J	5.86 J
Manganese	349	272
Nickel	17	13.9
Selenium	ND (0.574) U	ND (0.566) U
Thallium	0.549 J	0.753 J
Vanadium	16.4	14.1
CDD/F		
2,3,7,8-TCDD Equivalent	NS	NS

LEGEND:

TWP9-03 — GROUNDWATER MONITORING WELL LOCATION

BM1-08 — SOIL BORING LOCATION

CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA

TRESTLE

APPROXIMATE AOI AREA

P-9 = PIPELINE RELEASE

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONTAMINATION.
7. NS – NOT SAMPLED.

0 50' 100'
GRAPHIC SCALE

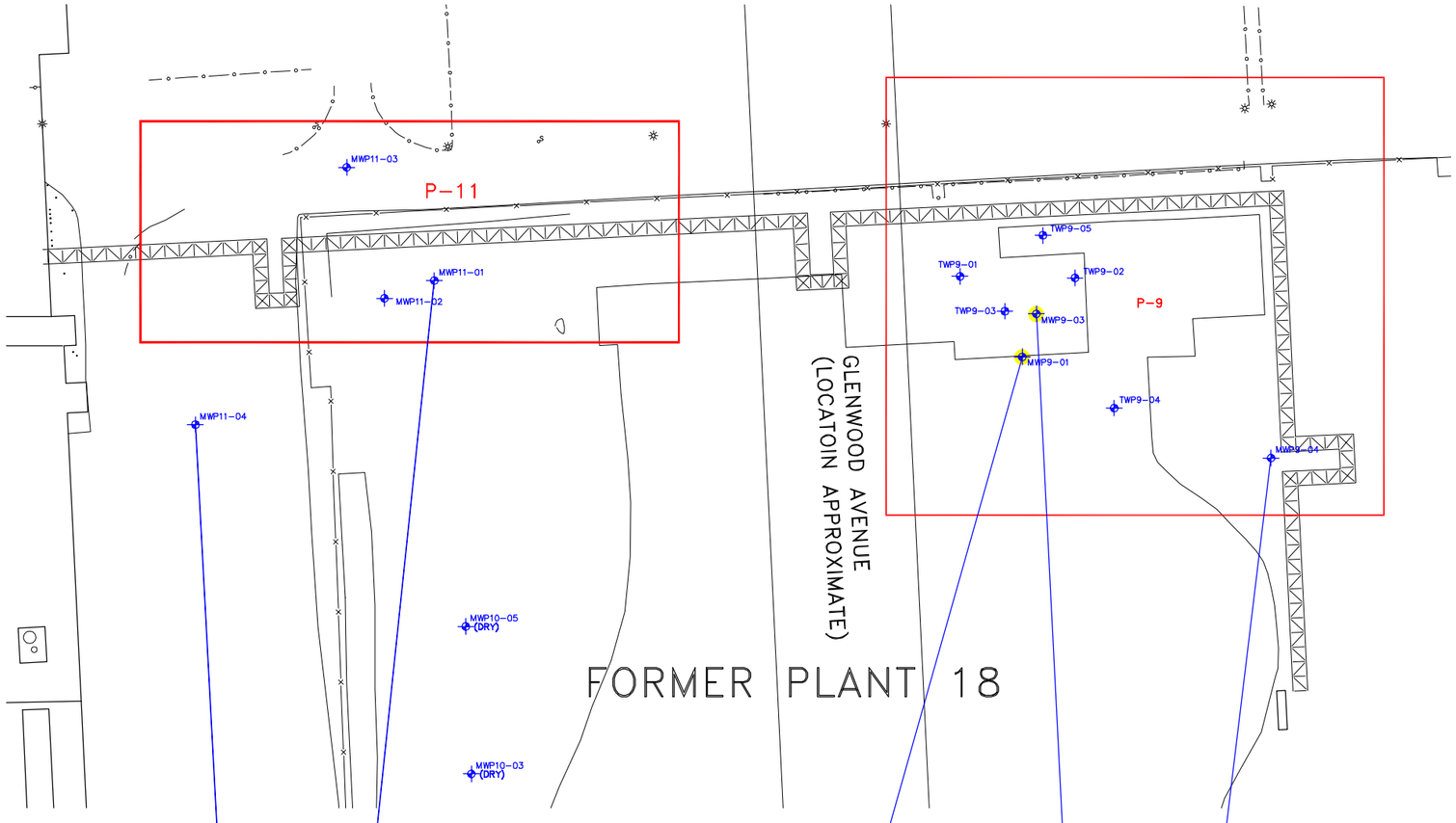
GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

AOI P-9 - SOIL

ENCORE

FIGURE 4-20

X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/26/03 SYR-85-GMS SDL GMS
64411210/RFI-ADDM/64411C21.DWG



SITE LOCATION

LEGEND:

MWP6-06 GROUNDWATER MONITORING WELL LOCATION

CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA

TRESTLE

APPROXIMATE AOI AREA

P-9 = PIPELINE RELEASE
P-11 = TRESTLE PIPELINE RELEASE

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONTAMINATION.
7. NS – NOT SAMPLED.

0 50' 100'
GRAPHIC SCALE

MWP11-04	8/13/03
VOC	
1,1,1-Trichloroethane	ND (0.005) U
1,1,2-Trichloroethane	ND (0.005) U
1,1-Dichloroethane	ND (0.005) U
1,1-Dichloroethene	ND (0.01) U
1,2-Dichloroethane	ND (0.005) U
Acetone	ND (0.01) UJ
Benzene	ND (0.005) U
cis-1,2-Dichloroethene	ND (0.005) U
Ethylbenzene	0.001 J
Methylene chloride	ND (0.005) U
Tetrachloroethene	0.001 J
Toluene	ND (0.005) U
Trichloroethene	ND (0.005) U
Vinyl chloride	ND (0.005) U
SVOC	
2,4-Dimethylphenol	ND (0.05) U
Benzo(a)pyrene	ND (0.005) U
Bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U
Pentachlorophenol	R
P/PCB	
Total PCBs	ND (0.0004) U
TAL	
Antimony	ND (0.025) U
Arsenic	0.0235
Barium	0.397
Beryllium	ND (0.001) U
Cadmium	ND (0.005) U
Chromium Total	ND (0.01) U
Cobalt	ND (0.005) U
Copper	ND (0.025) U
Cyanide (total)	0.0067 J
Iron	NS
Lead	ND (0.003) U
Manganese	0.039
Nickel	ND (0.02) U
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	ND (0.01) U
COC/F	
2,3,7,8-TCDD Equivalent	NS

MWP11-01	8/13/03
VOC	
1,1,1-Trichloroethane	ND (0.0033) U/ND (0.005) U
1,1,2-Trichloroethane	ND (0.0033) U/ND (0.005) U
1,1-Dichloroethane	ND (0.0033) U/ND (0.005) U
1,1-Dichloroethene	ND (0.0033) U/ND (0.005) U
1,2-Dichloroethane	ND (0.0033) U/ND (0.005) U
Acetone	0.018 J/0.02 J
Benzene	ND (0.005) U/ND (0.0033) U
cis-1,2-Dichloroethene	R/R
Ethylbenzene	ND (0.0033) U/ND (0.005) U
Methylene chloride	ND (0.0033) U/ND (0.005) U
Tetrachloroethene	ND (0.0033) U/ND (0.005) U
Toluene	ND (0.0033) U/ND (0.005) U
Trichloroethene	ND (0.0033) U/ND (0.005) U
Vinyl chloride	R/ND (0.005) U
SVOC	
2,4-Dimethylphenol	ND (0.25) U/ND (0.05) U
Benzo(a)pyrene	ND (0.05) U/ND (0.05) U
Bis(2-Ethylhexyl)phthalate	ND (0.05) U/ND (0.05) U
Butyl benzylphthalate	ND (0.05) U/ND (0.05) U
Dibenz(a,h)anthracene	ND (0.05) U/ND (0.05) U
Methylphenol (Cresol)	ND (0.05) U/ND (0.05) U
Pentachlorophenol	R/ND (0.05) U
P/PCB	
Total PCBs	ND (0.0004) U/ND (0.0004) U
TAL	
Antimony	ND (0.025) U/ND (0.025) U
Arsenic	0.0033 J/0.0045 J
Barium	0.0415/0.0459
Beryllium	ND (0.001) U/ND (0.001) U
Cadmium	ND (0.0005) U/ND (0.005) U
Chromium Total	ND (0.01) U/ND (0.01) U
Cobalt	0.0056 J/0.0062 J
Copper	0.0062 J/0.008 J
Cyanide (total)	ND/NS
Iron	NS/NS
Lead	ND (0.003) U/ND (0.003) U
Manganese	0.321/0.489
Nickel	0.011 J/0.0094 J
Selenium	ND (0.005) U/ND (0.005) U
Thallium	ND (0.001) U/ND (0.001) U
Vanadium	ND (0.01) U/0.0088 J
COC/F	
2,3,7,8-TCDD Equivalent	NS/NS

MWP9-01	8/13/03	9/8/03
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.005) U/ND (0.005) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.005) U/ND (0.005) U
1,1-Dichloroethane	0.0078 J	0.0076 J/0.0071 J
1,1-Dichloroethene	ND (0.001) U	ND (0.005) U/ND (0.005) U
1,2-Dichloroethane	ND (0.001) U	ND (0.005) U/ND (0.005) U
Acetone	0.025 J	0.085 J/0.055 J
Benzene	ND (0.001) U	ND (0.005) U/ND (0.005) U
cis-1,2-Dichloroethene	R/ND (0.0005) U	ND (0.0005) U/ND (0.0005) U
Ethylbenzene	ND (0.001) U	ND (0.005) U/ND (0.005) U
Methylene chloride	ND (0.001) U	ND (0.005) U/ND (0.005) U
Tetrachloroethene	ND (0.001) U	ND (0.005) U/ND (0.005) U
Toluene	ND (0.001) U	ND (0.005) U/ND (0.005) U
Trichloroethene	ND (0.001) U	ND (0.005) U/ND (0.005) U
Vinyl chloride	R/ND (0.001) U	ND (0.005) U/ND (0.005) U
SVOC		
2,4-Dimethylphenol	ND (0.050) U	ND (0.02) U/ND (0.005) U
Benzo(a)pyrene	ND (0.050) U	ND (0.02) U/ND (0.005) U
Bis(2-Ethylhexyl)phthalate	ND (0.050) U	ND (0.02) U/ND (0.005) U
Butyl benzylphthalate	ND (0.050) U	ND (0.02) U/ND (0.005) U
Dibenz(a,h)anthracene	ND (0.050) U	ND (0.005) U/ND (0.02) U
Methylphenol (Cresol)	0.00215 J	0.0095 J/0.0043 J
Pentachlorophenol	ND (0.005) UJ	ND (0.02) U
Pentachlorophenol [SOIL RDW]		0.0028 J
P/PCB		
Total PCBs	ND (0.0004) U/ND (0.0004) U	ND (0.0004) U
TAL		
Antimony	ND (0.025) U	ND (0.025) U/ND (0.025) U
Arsenic	0.0045 J	0.0225/0.0234
Barium	0.0031 J	0.0327/0.0228
Beryllium	ND (0.001) U	ND (0.001) U/ND (0.001) U
Cadmium	ND (0.0005) U	ND (0.005) U/ND (0.005) U
Chromium Total	ND (0.01) U	ND (0.01) U/ND (0.01) U
Cobalt	0.0055 J	ND (0.01) U/ND (0.01) U
Copper	ND (0.02) U	ND (0.02) U/ND (0.02) U
Cyanide (total)	0.0067 J	0.0043 J/0.0044 J
Iron	NS	NS/NS
Lead	ND (0.003) U	0.0032J/0.0025 J
Manganese	0.0038 J	ND (0.01) U/ND (0.01) U
Nickel	ND (0.02) U	0.0067 J/0.0105 J
Selenium	0.0067	0.013/0.0142
Thallium	ND (0.001) U	ND (0.001) U/ND (0.001) U
Vanadium [SOIL RDW]	0.378	0.0843/0.0852
COC/F		
2,3,7,8-TCDD Equivalent	NS	NS/NS

MWP9-03	8/13/03	9/8/03
VOC		
1,1,1-Trichloroethane	ND (0.01) U	ND (0.0037) U
1,1,2-Trichloroethane	ND (0.01) U	ND (0.0037) U
1,1-Dichloroethane	0.0078 J	ND (0.0037) U
1,1-Dichloroethene	ND (0.01) U	ND (0.0037) U
1,2-Dichloroethane	ND (0.01) U	ND (0.0037) U
Acetone	0.71 J	0.22 J
Benzene	ND (0.01) U	ND (0.0037) U
cis-1,2-Dichloroethene	R/ND (0.0038) U	ND (0.0029) U
Ethylbenzene	ND (0.01) U	ND (0.0037) U
Methylene chloride	ND (0.01) U/ND (0.0037) U	ND (0.0037) U
Tetrachloroethene	ND (0.01) U/ND (0.0037) U	ND (0.0037) U
Toluene	ND (0.01) U	ND (0.0037) U
Trichloroethene	ND (0.01) U	ND (0.0037) U
Vinyl chloride	ND (0.01) U	ND (0.0037) U
SVOC		
2,4-Dimethylphenol	0.3 J	0.3 J
Benzo(a)pyrene [RDW]	0.3 J	0.4 J
Bis(2-Ethylhexyl)phthalate	ND (0.25) U	ND (0.33) U
Butyl benzylphthalate	ND (0.25) U	ND (0.33) U
Dibenz(a,h)anthracene	ND (0.25) U	ND (0.33) U
Methylphenol (Cresol)	1.27B J	1.2 J
Pentachlorophenol	ND (0.33) UJ	ND (0.33) UJ
P/PCB		
Total PCBs	0.0003685 J	ND (0.0004) U
TAL		
Antimony [SOIL RDW]	0.0084 J	0.0131 J
Arsenic	0.0449	0.0251
Barium	0.0134	0.0289
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U
Chromium Total	ND (0.01) U	ND (0.01) U
Cobalt	ND (0.01) U	ND (0.01) U
Copper	ND (0.025) U	ND (0.025) U
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese	ND (0.01) U	0.0294
Nickel	0.0081 J	0.0096 J
Selenium	ND (0.005) U	ND (0.005) U
Thallium	ND (0.001) U	ND (0.001) U
Vanadium [RDW]	0.0115 J	0.0087 J
COC/F		
2,3,7,8-TCDD Equivalent	NS	NS

MWP9-04	8/13/03	9/8/03
VOC		
1,1,1-Trichloroethane	ND (0.001) U	ND (0.005) U
1,1,2-Trichloroethane	ND (0.001) U	ND (0.005) U
1,1-Dichloroethane	ND (0.001) U	0.0005 J
1,1-Dichloroethene	ND (0.001) U	ND (0.005) U
1,2-Dichloroethane	ND (0.001) U	ND (0.005) U
Acetone	0.0024 J	ND (0.01) UJ
Benzene	ND (0.001) U	ND (0.005) U
cis-1,2-Dichloroethene	R/ND (0.0005) U	ND (0.0005) U
Ethylbenzene	ND (0.001) U	ND (0.005) U
Methylene chloride	ND (0.001) U	ND (0.005) U
Tetrachloroethene	ND (0.001) U	ND (0.005) U
Toluene	ND (0.001) U	ND (0.005) U
Trichloroethene	ND (0.001) U	ND (0.005) U
Vinyl chloride	ND (0.001) U	ND (0.005) U
SVOC		
2,4-Dimethylphenol	ND (0.012) U	ND (0.005) U
Benzo(a)pyrene	ND (0.012) U	ND (0.005) U
Bis(2-Ethylhexyl)phthalate	ND (0.012) U	ND (0.005) U
Butyl benzylphthalate	ND (0.012) U	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.012) U	ND (0.005) U
Methylphenol (Cresol)	ND (0.012) U	ND (0.005) U
Pentachlorophenol	ND (0.012) U	ND (0.005) U
P/PCB		
Total PCBs	ND (0.0004) U	ND (0.0004) U
TAL		
Antimony	ND (0.025) U	ND (0.025) U
Arsenic	ND (0.01) U	0.0032 J
Barium	0.0191 J	0.0246
Beryllium	ND (0.001) U	ND (0.001) U
Cadmium	ND (0.005) U	ND (0.005) U
Chromium Total	ND (0.01) U	ND (0.01) U
Cobalt	ND (0.01) U	0.0026 J
Copper	ND (0.025) U	ND (0.025) U
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	ND (0.003) U	ND (0.003) U
Manganese	0.0294	0.0436
Nickel	0.0096 J	0.0108 J
Selenium	ND (0.005) U	ND (0.005) U
Thallium	ND (0.001) U	ND (0.001) U
Vanadium	ND (0.01) U	0.0061 J
COC/F		
2,3,7,8-TCDD Equivalent	NS	NS

X: 64411X00, X01.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/26/03 SYR-85-GMS SDL GMS
64411210/RFI-ADDM/64411C22.DWG

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

AOIs P-9 AND P-11 - GROUNDWATER

ENCORE

FIGURE
4-21

SITE LOCATION

LEGEND:

- MWP11-02 — GROUNDWATER MONITORING WELL LOCATION
- BM1-08 — SOIL BORING LOCATION
- CONSTITUENT CONCENTRATION EXCEEDS INDUSTRIAL SCREENING CRITERIA
- TRESTLE
- APPROXIMATE AOI AREA
- P-10 = FORMER PLANT 18
- P-11 = TRESTLE PIPELINE RELASE

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

- RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
- IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
- RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
- IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
- RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
- ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
- RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
- IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

- RDW – RESIDENTIAL DRINKING WATER CRITERIA
- IDW – INDUSTRIAL DRINKING WATER CRITERIA
- RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
- IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
- GCC – GROUNDWATER CONTACT CRITERIA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONTAMINATION.
7. NS – NOT SAMPLED.

0 80' 160'

GRAPHIC SCALE

BM11-04	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0047) UJ	ND (0.0041) U
1,1,2-Trichloroethane	ND (0.0047) UJ	ND (0.0041) U
1,1-Dichloroethane	ND (0.0047) UJ	ND (0.0041) U
1,1-Dichloroethene	ND (0.0047) UJ	ND (0.0041) U
1,2-Dichloroethane	ND (0.0047) UJ	ND (0.0041) U
Acetone	0.014 J	ND (0.016) U
Benzene	ND (0.0047) UJ	ND (0.0041) U
cis-1,2-Dichloroethene	ND (0.0047) UJ	ND (0.0041) U
Ethylbenzene	ND (0.0047) UJ	ND (0.0041) U
Methylene chloride	ND (0.0047) UJ	ND (0.0041) U
Tetrachloroethene	ND (0.0047) UJ	ND (0.0041) U
Toluene	ND (0.0047) UJ	ND (0.0041) U
Trichloroethene	ND (0.0047) UJ	ND (0.0041) U
Vinyl chloride	ND (0.0098) UJ	ND (0.0082) U
SVOC		
2,4-Dimethylphenol	ND (0.37) UJ	ND (0.36) U
Benzo(a)pyrene	0.017 J	ND (0.36) U
bis(2-Ethylhexyl)phthalate	ND (0.37) UJ	ND (0.36) U
Butyl benzylphthalate	R	R
Dibenz(a,h)anthracene	ND (0.37) UJ	ND (0.37) U
Methylphenol (Cresol)	ND (0.37) UJ	ND (0.36) U
Pentachlorophenol	ND (3.8) UJ	ND (3.7) U
PCBS		
Total PCBs	ND (0.037) UJ	ND (0.036) U
RCRA		
Antimony	0.536 J	0.445 J
Arsenic	3.84	7.39
Barium	27.3	43.4
Beryllium	0.118	0.199
Cadmium	0.0564 J	0.0733 J
Chromium Total	17.8	11.7
Cobalt	4.84	6.85
Copper	17.7	17.8
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	45	6.9
Manganese	562	258
Nickel	17.2	19.3
Selenium	0.561 J	0.708 J
Thallium	0.858 J	0.84 J
Vanadium	13.8	19.3
2,3,7,8-TCDD		
2,3,7,8-TCDD Equivalent	NS	NS

BM11-56	0-2(ft BGS)	8-10(ft BGS)	12.5-14(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0045) UJ	ND (0.0049) UJ	ND (0.0040) U
1,1,2-Trichloroethane	ND (0.0045) UJ	ND (0.0049) UJ	ND (0.0040) U
1,1-Dichloroethane	ND (0.0045) UJ	ND (0.0049) UJ	ND (0.0040) U
1,1-Dichloroethene	ND (0.0045) UJ	ND (0.0049) UJ	ND (0.0040) U
1,2-Dichloroethane	ND (0.0045) UJ	ND (0.0049) UJ	ND (0.0040) U
Acetone	0.011 J	0.011 J	0.009 J
Benzene	ND (0.0045) UJ	ND (0.0049) UJ	ND (0.0040) U
cis-1,2-Dichloroethene	ND (0.0045) UJ	ND (0.0049) UJ	ND (0.0040) U
Ethylbenzene	ND (0.0045) UJ	ND (0.0049) UJ	ND (0.0040) U
Methylene chloride	0.0024 J	ND (0.0049) UJ	ND (0.0040) U
Tetrachloroethene	ND (0.0045) UJ	ND (0.0049) UJ	ND (0.0040) U
Toluene	ND (0.0045) UJ	ND (0.0049) UJ	0.00047 J
Trichloroethene	ND (0.0045) UJ	ND (0.0049) UJ	ND (0.0040) U
Vinyl chloride	ND (0.0089) UJ	ND (0.0098) UJ	ND (0.0080) U
SVOC			
2,4-Dimethylphenol	ND (0.38) UJ	ND (0.36) UJ	ND (0.38) U
Benzo(a)pyrene	ND (0.4) UJ	ND (0.36) UJ	ND (0.38) U
bis(2-Ethylhexyl)phthalate	ND (0.38) UJ	ND (0.36) UJ	ND (0.38) U
Butyl benzylphthalate	ND (0.38) UJ	ND (0.36) UJ	ND (0.38) U
Dibenz(a,h)anthracene	ND (0.38) UJ	ND (0.36) UJ	ND (0.38) U
Methylphenol (Cresol)	ND (0.38) UJ	ND (0.36) UJ	ND (0.38) U
Pentachlorophenol	ND (3.8) UJ	ND (3.6) UJ	ND (3.8) U
PCBS			
Total PCBs	ND (0.04) UJ	ND (0.036) UJ	ND (0.038) U
RCRA			
Antimony	R	R	R
Arsenic	4.54	4.19	8.54
Barium	46.2	48.5	16
Beryllium	0.463	0.386	0.556
Cadmium	ND (0.57) UJ	0.0938 J	0.0653 J
Chromium Total	13.1	11.2	6.03 J
Cobalt	6.7 J	7.57 J	3.49 J
Copper	13.7	16.5	11.5
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	7.7	4.83	5.63 J
Manganese	465	370	219
Nickel	16	16.1	8.71
Selenium	ND (0.57) UJ	ND (0.54) UJ	ND (0.56) U
Thallium	ND (1.14) UJ	ND (1.15) UJ	ND (1.14) UJ
Vanadium	19.7	15.7	8.71
2,3,7,8-TCDD			
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWP11-03	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0045) UJ	ND (0.0052) U
1,1,2-Trichloroethane	ND (0.0045) UJ	ND (0.0052) U
1,1-Dichloroethane	ND (0.0045) UJ	ND (0.0052) U
1,1-Dichloroethene	ND (0.0045) UJ	ND (0.0052) U
1,2-Dichloroethane	ND (0.0045) UJ	ND (0.0052) U
Acetone	0.0077 J	0.0097 J
Benzene	ND (0.0045) UJ	ND (0.0052) U
cis-1,2-Dichloroethene	ND (0.0045) UJ	ND (0.0052) U
Ethylbenzene	ND (0.0045) UJ	ND (0.0052) U
Methylene chloride	ND (0.0045) UJ	ND (0.0052) U
Tetrachloroethene	ND (0.0045) UJ	ND (0.0052) U
Toluene	ND (0.0045) UJ	0.00047 J
Trichloroethene	ND (0.0045) UJ	ND (0.0052) U
Vinyl chloride	ND (0.01) UJ	ND (0.0067) U
SVOC		
2,4-Dimethylphenol	ND (0.38) UJ	ND (0.37) U
Benzo(a)pyrene	ND (0.38) UJ	ND (0.37) U
bis(2-Ethylhexyl)phthalate	0.13 J	ND (0.38) U
Butyl benzylphthalate	0.036 J	ND (0.38) U
Dibenz(a,h)anthracene	0.063 J	0.045 J
Methylphenol (Cresol)	ND (0.37) UJ	ND (0.38) U
Pentachlorophenol	ND (3.8) UJ	ND (3.8) U
PCBS		
Total PCBs	NS (0.041) U	ND (0.038) U
RCRA		
Antimony	R	R
Arsenic	5.43	5.58
Barium	88.9	31.7
Beryllium	0.676	0.318
Cadmium	0.0653 J	0.0314 J
Chromium Total	20.4	6.03
Cobalt	4.16 J	1.16 J
Copper	14.4	13.1
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	20.4	5.44
Manganese	439	124
Nickel	17	6.71
Selenium	ND (0.627) UJ	ND (0.569) UJ
Thallium	ND (1.25) UJ	ND (1.69) UJ
Vanadium	15.5	14.2
2,3,7,8-TCDD		
2,3,7,8-TCDD Equivalent	NS	NS

BM11-08	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0047) UJ	ND (0.0047) U
1,1,2-Trichloroethane	ND (0.0047) UJ	ND (0.0047) U
1,1-Dichloroethane	ND (0.0047) UJ	ND (0.0047) U
1,1-Dichloroethene	ND (0.0047) UJ	ND (0.0047) U
1,2-Dichloroethane	ND (0.0047) UJ	ND (0.0047) U
Acetone	ND (0.19) UJ	0.014 J
Benzene	ND (0.0047) UJ	ND (0.0047) U
cis-1,2-Dichloroethene	ND (0.0047) UJ	ND (0.0047) U
Ethylbenzene	ND (0.0047) UJ	ND (0.0047) U
Methylene chloride	ND (0.0047) UJ	ND (0.0047) U
Tetrachloroethene	ND (0.0047) UJ	ND (0.0047) U
Toluene	ND (0.0047) UJ	ND (0.0047) U
Trichloroethene	ND (0.0047) UJ	ND (0.0047) U
Vinyl chloride	ND (0.0085) UJ	ND (0.0066) U
SVOC		
2,4-Dimethylphenol	ND (0.38) UJ	ND (0.37) U
Benzo(a)pyrene	ND (0.34) UJ	ND (0.36) U
bis(2-Ethylhexyl)phthalate	ND (0.38) UJ	ND (0.37) U
Butyl benzylphthalate	ND (0.34) UJ	ND (0.36) U
Dibenz(a,h)anthracene	ND (0.34) UJ	ND (0.37) U
Methylphenol (Cresol)	ND (0.34) UJ	ND (0.36) U
Pentachlorophenol	ND (3.8) UJ	ND (3.7) U
PCBS		
Total PCBs	ND (0.034) U	ND (0.037) U
RCRA		
Antimony	ND (3.04) UJ	ND (3.34) U
Arsenic	2.57 J	6.17 J
Barium	7.43 J	44.8 J
Beryllium	0.11 J	0.364 J
Cadmium	0.0349 J	0.0158 J
Chromium Total	5.1 J	8.3 J
Cobalt	1.64 J	6.38 J
Copper	4.71 J	14.1 J
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	3.99 J	6.11 J
Manganese	72 J	233
Nickel	4.62 J	17.2 J
Selenium	ND (0.53) UJ	ND (0.567) UJ
Thallium	ND (1.06) UJ	ND (1.13) UJ
Vanadium	5.4 J	14.9 J
2,3,7,8-TCDD		
2,3,7,8-TCDD Equivalent	NS	NS

BM11-01	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0052) UJ	ND (0.0044) UJ
1,1,2-Trichloroethane	ND (0.0052) UJ	ND (0.0044) UJ
1,1-Dichloroethane	ND (0.0052) UJ	ND (0.0044) UJ
1,1-Dichloroethene	ND (0.0052) UJ	ND (0.0044) UJ
1,2-Dichloroethane	ND (0.0052) UJ	ND (0.0044) UJ
Acetone	0.0038 J	0.0039 J
Benzene	ND (0.0052) UJ	ND (0.0044) UJ
cis-1,2-Dichloroethene	ND (0.0052) UJ	ND (0.0044) UJ
Ethylbenzene	ND (0.0052) UJ	ND (0.0044) UJ
Methylene chloride	ND (0.0052) UJ	ND (0.0044) UJ
Tetrachloroethene	ND (0.0052) UJ	ND (0.0044) UJ
Toluene	ND (0.0052) UJ	ND (0.0044) UJ
Trichloroethene	ND (0.0052) UJ	ND (0.0044) UJ
Vinyl chloride	ND (0.01) UJ	ND (0.0087) UJ
SVOC		
2,4-Dimethylphenol	ND (0.38) UJ	ND (0.37) UJ
Benzo(a)pyrene	ND (0.38) UJ	ND (0.37) UJ
bis(2-Ethylhexyl)phthalate	ND (0.38) UJ	ND (0.37) UJ
Butyl benzylphthalate	ND (0.38) UJ	ND (0.37) UJ
Dibenz(a,h)anthracene	ND (0.38) UJ	ND (0.37) UJ
Methylphenol (Cresol)	ND (0.38) UJ	ND (0.37) UJ
Pentachlorophenol	ND (3.8) UJ	ND (3.7) UJ
PCBS		
Total PCBs	ND (0.038) UJ	ND (0.037) UJ
RCRA		
Antimony	ND (3.12) UJ	ND (3.37) UJ
Arsenic	2.61 J	2.74 J
Barium	7.43 J	44.8 J
Beryllium	0.11 J	0.364 J
Cadmium	0.0349 J	0.0158 J
Chromium Total	5.1 J	8.3 J
Cobalt	1.64 J	6.38 J
Copper	4.71 J	14.1 J
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	3.99 J	6.11 J
Manganese	72 J	233
Nickel	4.62 J	17.2 J
Selenium	ND (0.53) UJ	ND (0.567) UJ
Thallium	ND (1.06) UJ	ND (1.13) UJ
Vanadium	5.4 J	14.9 J
2,3,7,8-TCDD		
2,3,7,8-TCDD Equivalent	NS	NS

MWP11-01	0-2(ft BGS)	8-10(ft BGS)	14-16(ft BGS)
VOC			
1,1,1-Trichloroethane	ND (0.0046) UJ	ND (0.006) UJ	ND (0.005) U
1,1,2-Trichloroethane	ND (0.0046) UJ	ND (0.006) UJ	ND (0.005) U
1,1-Dichloroethane	ND (0.0046) UJ	ND (0.006) UJ	ND (0.005) U
1,1-Dichloroethene	ND (0.0046) UJ	ND (0.006) UJ	ND (0.005) U
1,2-Dichloroethane	ND (0.0046) UJ	ND (0.006) UJ	ND (0.005) U
Acetone	0.0068 J	ND (0.012) UJ	ND (0.01) U
Benzene	ND (0.0046) UJ	ND (0.006) UJ	ND (0.005) U
cis-1,2-Dichloroethene	ND (0.0046) UJ	ND (0.006) UJ	ND (0.005) U
Ethylbenzene	ND (0.0046) UJ	ND (0.006) UJ	ND (0.005) U
Methylene chloride	ND (0.0046) UJ	ND (0.006) UJ	ND (0.005) U
Tetrachloroethene	ND (0.0046) UJ	ND (0.006) UJ	ND (0.005) U
Toluene	ND (0.0046) UJ	ND (0.006) UJ	ND (0.005) U
Trichloroethene	ND (0.0046) UJ	ND (0.006) UJ	ND (0.005) U
Vinyl chloride	ND (0.0092) UJ	ND (0.012) UJ	ND (0.01) U
SVOC			
2,4-Dimethylphenol	ND (0.95) UJ	ND (0.36) UJ	ND (0.34) U
Benzo(a)pyrene	1.2 J	ND (0.36) UJ	ND (0.34) U
bis(2-Ethylhexyl)phthalate	0.22 J	ND (0.36) UJ	ND (0.34) U
Butyl benzylphthalate	0.14 J	ND (0.36) UJ	ND (0.34) U
Dibenz(a,h)anthracene	0.19 J	ND (0.36) UJ	ND (0.34) U
Methylphenol (Cresol)	ND (0.95) UJ	ND (0.36) UJ	ND (0.34) U
Pentachlorophenol	ND (9.6) UJ	ND (3.7) UJ	ND (3.4) U
PCBS			
Total PCBs	3.789 J	0.05 J	ND (0.036) U
RCRA			
Antimony	0.291 J	ND (2.18) UJ	ND (2.32) U
Arsenic	3.77 J	2.98 J	3.14 J
Barium	37.7 J	29.6 J	19.2 J
Beryllium	0.288 J	0.131 J	0.09 J
Cadmium	0.323 J	ND (0.544) UJ	ND (0.581) UJ
Chromium Total	10.2 J	8.58 J	4.78 J
Cobalt	3.78 J	2.47 J	1.9 J
Copper	12.8 J	5.2 J	4.45 J
Cyanide (total)	NS	NS	NS
Iron	NS	NS	NS
Lead	30.8 J	3.82 J	2.69 J
Manganese	230 J	210 J	150 J
Nickel	10.8 J	8.39 J	4.87 J
Selenium	ND (0.874) UJ	ND (0.544) UJ	ND (0.581) UJ
Thallium	ND (1.15) UJ	ND (1.09) UJ	ND (1.16) UJ
Vanadium	12.4 J	9.09 J	3.82 J
2,3,7,8-TCDD			
2,3,7,8-TCDD Equivalent	NS	NS	NS

MWP10-06	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	NS	NS
1,1,2-Trichloroethane	NS	NS
1,1-Dichloroethane	NS	NS
1,1-Dichloroethene	NS	NS
1,2-Dichloroethane	NS	NS
Acetone	NS	NS
Benzene	NS	NS
cis-1,2-Dichloroethene	NS	NS
Ethylbenzene	NS	NS
Methylene chloride	NS	NS
Tetrachloroethene	NS	NS
Toluene	NS	NS
Trichloroethene	NS	NS
Vinyl chloride	NS	NS
SVOC		
2,4-Dimethylphenol	ND (0.36) U	ND (0.37) U
Benzo(a)pyrene	ND (0.36) U	ND (0.37) U
bis(2-Ethylhexyl)phthalate	ND (0.36) U	ND (0.37) U
Butyl benzylphthalate	ND (0.36) U	ND (0.37) U
Dibenz(a,h)anthracene	ND (0.36) U	ND (0.37) U
Methylphenol (Cresol)	ND (0.36) U	ND (0.37) U
Pentachlorophenol	ND (3.7) U	ND (3.8) U
PCBS		
Total PCBs	ND (0.036) U	ND (0.037) U
RCRA		
Antimony	NS	NS
Arsenic	NS	NS
Barium	NS	NS
Beryllium	NS	NS
Cadmium	NS	NS
Chromium Total	NS	NS
Cobalt	NS	NS
Copper	NS	NS
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	NS	NS
Manganese	NS	NS
Nickel	NS	NS
Selenium	NS	NS
Thallium	NS	NS
Vanadium	NS	NS
2,3,7,8-TCDD		
2,3,7,8-TCDD Equivalent	NS	NS

MWP10-05	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	NS	NS
1,1,2-Trichloroethane	NS	NS
1,1-Dichloroethane	NS	NS
1,1-Dichloroethene	NS	NS
1,2-Dichloroethane	NS	NS
Acetone	NS	NS
Benzene	NS	NS
cis-1,2-Dichloroethene	NS	NS
Ethylbenzene	NS	NS
Methylene chloride	NS	NS
Tetrachloroethene	NS	NS
Toluene	NS	NS
Trichloroethene	NS	NS
Vinyl chloride	NS	NS
SVOC		
2,4-Dimethylphenol	ND (0.37) U	ND (0.37) U
Benzo(a)pyrene	ND (0.37) U	ND (0.37) U
bis(2-Ethylhexyl)phthalate	ND (0.37) U	ND (0.37) U
Butyl benzylphthalate	ND (0.37) U	ND (0.37) U
Dibenz(a,h)anthracene	ND (0.37) U	ND (0.37) U
Methylphenol (Cresol)	ND (0.37) U	ND (0.37) U
Pentachlorophenol	ND (3.8) U	ND (3.8) U
PCBS		
Total PCBs	ND (0.037) U	ND (0.037) U
RCRA		
Antimony	NS	NS
Arsenic	NS	NS
Barium	NS	NS
Beryllium	NS	NS
Cadmium	NS	NS
Chromium Total	NS	NS
Cobalt	NS	NS
Copper	NS	NS
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	NS	NS
Manganese	NS	NS
Nickel	NS	NS
Selenium	NS	NS
Thallium	NS	NS
Vanadium	NS	NS
2,3,7,8-TCDD		
2,3,7,8-TCDD Equivalent	NS	NS

MWP10-04	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	NS	NS
1,1,2-Trichloroethane	NS	NS
1,1-Dichloroethane	NS	NS
1,1-Dichloroethene	NS	NS
1,2-Dichloroethane	NS	NS
Acetone	NS	NS
Benzene	NS	NS
cis-1,2-Dichloroethene	NS	NS
Ethylbenzene	NS	NS
Methylene chloride	NS	NS
Tetrachloroethene	NS	NS
Toluene	NS	NS
Trichloroethene	NS	NS
Vinyl chloride	NS	NS
SVOC		
2,4-Dimethylphenol	ND (0.36) U	ND (0.37) U
Benzo(a)pyrene	ND (0.36) U	ND (0.37) U
bis(2-Ethylhexyl)phthalate	ND (0.36) U	ND (0.37) U
Butyl benzylphthalate	ND (0.36) U	ND (0.37) U
Dibenz(a,h)anthracene	ND (0.36) U	ND (0.37) U
Methylphenol (Cresol)	ND (0.36) U	ND (0.37) U
Pentachlorophenol	ND (3.6) U	ND (3.8) U
PCBS		
Total PCBs	ND (0.036) U	ND (0.037) U
RCRA		
Antimony	NS	NS
Arsenic	NS	NS
Barium	NS	NS
Beryllium	NS	NS
Cadmium	NS	NS
Chromium Total	NS	NS
Cobalt	NS	NS
Copper	NS	NS
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	NS	NS
Manganese	NS	NS
Nickel	NS	NS
Selenium	NS	NS
Thallium	NS	NS
Vanadium	NS	NS
2,3,7,8-TCDD		
2,3,7,8-TCDD Equivalent	NS	NS

MWP10-03	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	NS,NS	NS
1,1,2-Trichloroethane	NS,NS	NS
1,1-Dichloroethane	NS,NS	NS
1,1-Dichloroethene	NS,NS	NS
1,2-Dichloroethane	NS,NS	NS
Acetone	NS,NS	NS
Benzene	NS,NS	NS
cis-1,2-Dichloroethene	NS,NS	NS
Ethylbenzene	NS,NS	NS
Methylene chloride	NS,NS	NS
Tetrachloroethene	NS,NS	NS
Toluene	NS,NS	NS
Trichloroethene	NS,NS	NS
Vinyl chloride	NS,NS	NS
SVOC		
2,4-Dimethylphenol	ND (0.36) U	ND (0.37) U
Benzo(a)pyrene	0.033 J	0.012 J
bis(2-Ethylhexyl)phthalate	ND (0.36) U	ND (0.36) U
Butyl benzylphthalate	ND (0.36) U	ND (0.36) U
Dibenz(a,h)anthracene	ND (0.36) U	0.024 J
Methylphenol (Cresol)	ND (0.36) U	ND (0.36) U
Pentachlorophenol	ND (3.7) U	ND (3.7) U
PCBS		
Total PCBs	ND (0.036) U	ND (0.036) U
RCRA		
Antimony	NS,NS	NS
Arsenic	NS,NS	NS
Barium	NS,NS	NS
Beryllium	NS,NS	NS
Cadmium	NS,NS	NS
Chromium Total	NS,NS	NS
Cobalt	NS,NS	NS
Copper	NS,NS	NS
Cyanide (total)	NS,NS	NS
Iron	NS,NS	NS
Lead	NS,NS	NS
Manganese	NS,NS	NS
Nickel	NS,NS	NS
Selenium	NS,NS	NS
Thallium	NS,NS	NS
Vanadium	NS,NS	NS
2,3,7,8-TCDD		
2,3,7,8-TCDD Equivalent	NS,NS	NS

MWP10-02	0-2(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	NS,NS	NS
1,1,2-Trichloroethane	NS,NS	NS
1,1-Dichloroethane	NS,NS	NS
1,1-Dichloroethene	NS,NS	NS
1,2-Dichloroethane	NS,NS	NS
Acetone	NS,NS	NS
Benzene	NS,NS	NS
cis-1,2-Dichloroethene	NS,NS	NS
Ethylbenzene	NS,NS	NS
Methylene chloride	NS,NS	NS
Tetrachloroethene	NS,NS	NS
Toluene	NS,NS	NS
Trichloroethene	NS,NS	NS
Vinyl chloride	NS,NS	NS
SVOC		
2,4-Dimethylphenol	ND (0.37) U	ND (0.37) U
Benzo(a)pyrene	ND (0.37) U	ND (0.37) U
bis(2-Ethylhexyl)phthalate	ND (0.37) U	ND (0.37) U
Butyl benzylphthalate	ND (0.37) U	ND (0.37) U
Dibenz(a,h)anthracene	ND (0.37) U	ND (0.37) U
Methylphenol (Cresol)	ND (0.37) U	ND (0.37) U
Pentachlorophenol	ND (3.8) U	ND (3.8) U
PCBS		
Total PCBs	ND (0.037) U	ND (0.037) U
RCRA		
Antimony	NS,NS	NS
Arsenic	NS,NS	NS
Barium	NS,NS	NS
Beryllium	NS,NS	NS
Cadmium	NS,NS	NS
Chromium Total	NS,NS	NS
Cobalt	NS,NS	NS
Copper	NS,NS	NS
Cyanide (total)	NS,NS	NS
Iron	NS,NS	NS
Lead	NS,NS	NS
Manganese	NS,NS	NS
Nickel	NS,NS	NS
Selenium	NS,NS	NS
Thallium	NS,NS	NS
Vanadium	NS,NS	NS
2,3,7,8-TCDD		
2,3,7,8-TCDD Equivalent	NS,NS	NS

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L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/26/03 SYR-85-GMS SDL GMS
64411210/RFI-ADDM/64411C23.DWG

GENERAL MOTORS
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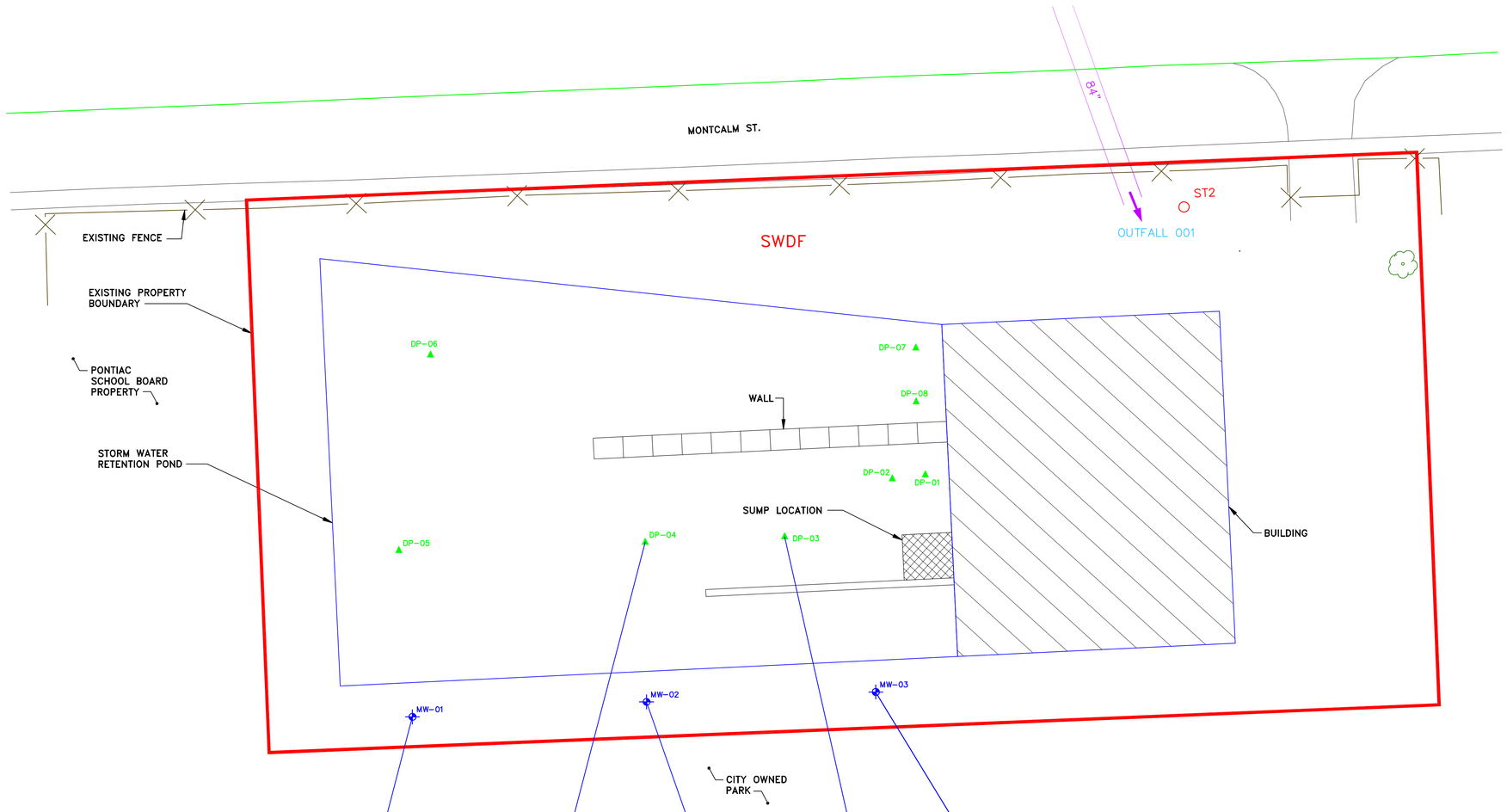
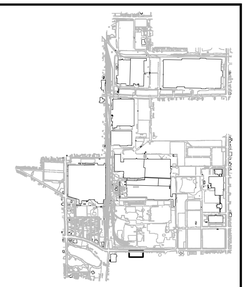
PONTIAC NORTH CAMPUS RFI

AOIs P-10 AND P-11 - SOIL

ENCORE

FIGURE 4-22





SITE LOCATION

LEGEND:

- SOIL BORING
- MONITORING WELL
- APPROXIMATE AOI AREA
  SWDF = STORM WATER DETENTION FACILITY

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONTAMINATION.
7. NS – NOT SAMPLED.

0 20' 40'
GRAPHIC SCALE

MW-01	1-3(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0052) U	ND (0.0049) U
1,1,2-Trichloroethane	ND (0.0052) U	ND (0.0049) U
1,1-Dichloroethane	ND (0.0052) U	ND (0.0049) U
1,1-Dichloroethene	ND (0.0052) U	ND (0.0049) U
1,2-Dichloroethane	ND (0.0052) U	ND (0.0049) U
Acetone	ND (0.0131) U	ND (0.0109) U
Benzene	0.0013 J	ND (0.0049) U
cis-1,2-Dichloroethene	ND (0.0052) U	ND (0.0049) U
Ethylbenzene	ND (0.0052) U	ND (0.0049) U
Methylene chloride	ND (0.0052) U	ND (0.0049) U
Tetrachloroethene	ND (0.0052) U	ND (0.0049) U
Toluene	0.00059 J	ND (0.0049) U
Trichloroethene	0.0017 J	ND (0.0049) U
Vinyl chloride	ND (0.01) U	ND (0.0097) U
SVOC		
2,4-Dimethylphenol	ND (0.372) U	ND (0.392) U
Benzo(a)pyrene	ND (0.37) U	ND (0.39) U
bis(2-Ethylhexyl)phthalate	ND (0.37) U	ND (0.39) U
Butyl benzylphthalate	ND (0.37) U	ND (0.39) U
Dibenz(a,h)anthracene	ND (0.37) U	ND (0.39) U
Methylphenol (Cresol)	ND (0.37) U	ND (0.39) U
Pentachlorophenol	ND (3.6) U	ND (3.8) U
PCBs		
Total PCBs	0.041 J	ND (0.039) U
RCRA		
Antimony	ND (2.27) U	ND (2.34) U
Arsenic	2.44	5.43
Barium	19.8	47.8
Beryllium	ND (0.113) U	0.552 J
Cadmium	0.0705 J	0.552 J
Chromium Total	4.7	14.1
Cobalt	4	6.64
Copper	8.45	14.5
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	9.92	9.03
Manganese	139	268
Nickel	5.99	15.7
Selenium	ND (0.565) U	ND (0.585) U
Thallium	ND (1.14) U	ND (1.17) U
Vanadium	7.13	20.4
PCDF		
2,3,7,8-TCDD Equivalent	NS	NS

MW-04	3.5-5(ft BGS)
VOC	
1,1,1-Trichloroethane	ND (0.0047) U
1,1,2-Trichloroethane	ND (0.0047) U
1,1-Dichloroethane	ND (0.0047) U
1,1-Dichloroethene	ND (0.0047) U
1,2-Dichloroethane	ND (0.0047) U
Acetone	ND (0.0095) U
Benzene	ND (0.0047) U
cis-1,2-Dichloroethene	ND (0.0047) U
Ethylbenzene	ND (0.0047) U
Methylene chloride	0.020
Tetrachloroethene	ND (0.0047) U
Toluene	0.00064 J
Trichloroethene	ND (0.0047) U
Vinyl chloride	ND (0.0094) U
SVOC	
2,4-Dimethylphenol	ND (0.38) U
Benzo(a)pyrene	ND (0.38) U
bis(2-Ethylhexyl)phthalate	ND (0.38) U
Butyl benzylphthalate	ND (0.38) U
Dibenz(a,h)anthracene	ND (0.38) U
Methylphenol (Cresol)	ND (0.38) U
Pentachlorophenol	ND (3.84) U
PCBs	
Total PCBs	ND (0.038) U
RCRA	
Antimony	ND (2.28) U
Arsenic	5.16
Barium	53.7
Beryllium	0.57 J
Cadmium	0.339 J
Chromium Total	13.5
Cobalt	7.03
Copper	17.4
Cyanide (total)	NS
Iron	NS
Lead	8.63
Manganese	383
Nickel	18.4
Selenium	ND (0.569) U
Thallium	ND (1.14) U
Vanadium	17.6
PCDF	
2,3,7,8-TCDD Equivalent	NS

MW-02	1-3(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0047) U	ND (0.005) U
1,1,2-Trichloroethane	ND (0.0047) U	ND (0.005) U
1,1-Dichloroethane	ND (0.0047) U	ND (0.005) U
1,1-Dichloroethene	ND (0.0047) U	ND (0.005) U
1,2-Dichloroethane	ND (0.0047) U	ND (0.005) U
Acetone	ND (0.0095) U	ND (0.01) U
Benzene	ND (0.0047) U	ND (0.005) U
cis-1,2-Dichloroethene	ND (0.0047) U	ND (0.005) U
Ethylbenzene	ND (0.0047) U	ND (0.005) U
Methylene chloride	ND (0.0047) U	ND (0.005) U
Tetrachloroethene	ND (0.0047) U	ND (0.005) U
Toluene	0.00043 J	ND (0.005) U
Trichloroethene	ND (0.0047) U	ND (0.005) U
Vinyl chloride	ND (0.0094) U	ND (0.0099) U
SVOC		
2,4-Dimethylphenol	ND (0.36) U	ND (0.38) U
Benzo(a)pyrene	ND (0.36) U	0.14 J
bis(2-Ethylhexyl)phthalate	ND (0.36) U	ND (0.38) U
Butyl benzylphthalate	ND (0.36) U	ND (0.38) U
Dibenz(a,h)anthracene	ND (0.36) U	ND (0.38) U
Methylphenol (Cresol)	ND (0.36) U	ND (0.38) U
Pentachlorophenol	ND (3.7) U	ND (3.8) U
PCBs		
Total PCBs	0.0589 J	0.0728 J
RCRA		
Antimony	ND (2.2) U	0.304 J
Arsenic	9.3	6.16
Barium	60.2	77.9
Beryllium	0.47 J	ND (0.117) U
Cadmium	0.847	0.578 J
Chromium Total	20.6	12.9
Cobalt	7.48	4.84
Copper	27.2	23.5
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	21.6	29.2
Manganese	404	274
Nickel	22.8	15.4
Selenium	ND (0.549) U	ND (0.583) U
Thallium	ND (1.1) U	ND (1.17) U
Vanadium	21.1	15.2
PCDF		
2,3,7,8-TCDD Equivalent	NS	NS

MW-03	2.5-5(ft BGS)
VOC	
1,1,1-Trichloroethane	ND (0.0053) U/ND (0.0051) U
1,1,2-Trichloroethane	ND (0.0053) U/ND (0.0051) U
1,1-Dichloroethane	ND (0.0053) U/ND (0.0051) U
1,1-Dichloroethene	ND (0.0053) U/ND (0.0051) U
1,2-Dichloroethane	ND (0.0053) U/ND (0.0051) U
Acetone	ND (0.0201) U/ND (0.0191) U
Benzene	ND (0.0053) U/ND (0.0051) U
cis-1,2-Dichloroethene	ND (0.0053) U/ND (0.0051) U
Ethylbenzene	ND (0.0053) U/ND (0.0051) U
Methylene chloride	0.006 J/0.0032 J
Tetrachloroethene	ND (0.0053) U/ND (0.0051) U
Toluene	0.0014 J/0.002 J
Trichloroethene	ND (0.0053) U/ND (0.0051) U
Vinyl chloride	ND (0.0101) U/ND (0.0097) U
SVOC	
2,4-Dimethylphenol	ND (0.37) U/ND (0.37) U
Benzo(a)pyrene	ND (0.37) U/ND (0.37) U
bis(2-Ethylhexyl)phthalate	ND (0.37) U/ND (0.37) U
Butyl benzylphthalate	ND (0.37) U/ND (0.37) U
Dibenz(a,h)anthracene	ND (0.37) U/ND (0.37) U
Methylphenol (Cresol)	ND (0.37) U/ND (0.37) U
Pentachlorophenol	ND (3.8) U/ND (3.8) U
PCBs	
Total PCBs	ND (0.037) U/ND (0.037) U
RCRA	
Antimony	ND (2.26) U/ND (2.25) U
Arsenic	3.4/4.42
Barium	45.4/69.4
Beryllium	0.18/ND (0.112) U
Cadmium	0.236 J/0.247 J
Chromium Total	8.85/14.4
Cobalt	4.22/5.35
Copper	12.5/16.5
Cyanide (total)	NS/NS
Iron	NS/NS
Lead	249
Mercury (RCC)	0.1
Manganese	172/345
Nickel	60.4/11
Selenium	ND (0.565) U/ND (0.563) U
Thallium	ND (1.13) U/ND (1.13) U
Vanadium	11.5/14.9
PCDF	
2,3,7,8-TCDD Equivalent	NS/NS

MW-05	1-3(ft BGS)	8-10(ft BGS)
VOC		
1,1,1-Trichloroethane	ND (0.0052) U	ND (0.0052) U
1,1,2-Trichloroethane	ND (0.0052) U	ND (0.0052) U
1,1-Dichloroethane	ND (0.0052) U	ND (0.0052) U
1,1-Dichloroethene	ND (0.0052) U	ND (0.0052) U
1,2-Dichloroethane	ND (0.0052) U	ND (0.0052) U
Acetone	ND (0.0104) U	ND (0.0104) U
Benzene	ND (0.0052) U	ND (0.0052) U
cis-1,2-Dichloroethene	ND (0.0052) U	ND (0.0052) U
Ethylbenzene	ND (0.0052) U	ND (0.0052) U
Methylene chloride	ND (0.0052) U	ND (0.0052) U
Tetrachloroethene	ND (0.0052) U	ND (0.0052) U
Toluene	ND (0.0052) U	ND (0.0052) U
Trichloroethene	ND (0.0052) U	ND (0.0052) U
Vinyl chloride	ND (0.01) U	ND (0.01) U
SVOC		
2,4-Dimethylphenol	ND (0.34) U	ND (0.34) U
Benzo(a)pyrene	ND (0.34) U	ND (0.34) U
bis(2-Ethylhexyl)phthalate	ND (0.34) U	ND (0.34) U
Butyl benzylphthalate	ND (0.34) U	ND (0.34) U
Dibenz(a,h)anthracene	ND (0.34) U	ND (0.34) U
Methylphenol (Cresol)	ND (0.34) U	ND (0.34) U
Pentachlorophenol	ND (3.5) U	ND (3.5) U
PCBs		
Total PCBs	ND (0.034) U	ND (0.034) U
RCRA		
Antimony	ND (2.06) U	ND (2.06) U
Arsenic	4.03	4.03
Barium	71	71
Beryllium	0.167 J	0.167 J
Cadmium	4.12	4.12
Chromium Total	2.4	2.4
Cobalt	6.86	6.86
Cyanide (total)	NS	NS
Iron	NS	NS
Lead	3.69	3.69
Manganese	4.72	4.72
Nickel	ND (0.516) U	ND (0.516) U
Selenium	ND (1.03) U	ND (1.03) U
Thallium	8.79	8.79
Vanadium	NS	NS
PCDF		
2,3,7,8-TCDD Equivalent	NS	NS

X: 64411X00.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT-DL
11/25/03 SYR-85-SDL GMS DJP
64411210/RFI-ADDM/64411C24.DWG

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

STORM WATER DETENTION FACILITY - SOIL

ENCORE

FIGURE
4-23

DP-06	10/4/02
VOC	
1,1,1-Trichloroethane	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	0.0021 J
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.001) U
Ethylbenzene	ND (0.001) U
Methylene chloride	ND (0.001) U
Tetrachloroethene	ND (0.001) U
Toluene	0.00072 J
Trichloroethene	ND (0.001) U
Vinyl chloride	ND (0.001) U
SVOC	
2,4-Dimethylphenol	0.0038 J
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	0.00825 J
Pentachlorophenol	ND (0.005) U
PCBs	
Total PCBs [ICW, RDW]	0.0010615 J
RDRC	
Antimony	ND (0.025) U
Arsenic	0.0234 J
Barium	0.0522
Beryllium	0.00369 J
Cadmium	0.00241 J
Chromium Total	ND (0.01) U
Cobalt	ND (0.02) U
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	ND (0.01) U
Nickel	0.0045 J
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium [RDW]	0.005 J
PDCF	
2,3,7,8-TCDD Equivalent	NS

DP-02	10/3/02
VOC	
1,1,1-Trichloroethane	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	0.00054 J
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	ND (0.01) U
Benzene	0.00045 J
cis-1,2-Dichloroethene	ND (0.001) U
Ethylbenzene	ND (0.001) U
Methylene chloride	ND (0.001) U
Tetrachloroethene	ND (0.001) U
Toluene	0.00095 J
Trichloroethene	ND (0.001) U
Vinyl chloride	ND (0.001) U
SVOC	
2,4-Dimethylphenol	0.0058 J
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	0.0175 J
Pentachlorophenol	ND (0.005) U
PCBs	
Total PCBs [ICW, RDW]	0.0013215 J
RDRC	
Antimony	ND (0.025) U
Arsenic	0.0194 J
Barium	0.0888
Beryllium	ND (0.001) U
Cadmium	0.00065 J
Chromium Total	ND (0.01) U
Cobalt	0.0025 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	0.003 J
Manganese	0.484
Nickel	0.0052 J
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium [RDW]	0.0139 J
PDCF	
2,3,7,8-TCDD Equivalent	NS

DP-07	10/4/02
VOC	
1,1,1-Trichloroethane	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	0.0055 J
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.001) U
Ethylbenzene	ND (0.001) U
Methylene chloride	ND (0.001) U
Tetrachloroethene	ND (0.001) U
Toluene	0.00054 J
Trichloroethene	ND (0.001) U
Vinyl chloride	ND (0.001) U
SVOC	
2,4-Dimethylphenol	0.003 J
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	0.00565 J
Pentachlorophenol	ND (0.005) U
PCBs	
Total PCBs	0.0004015 J
RDRC	
Antimony [ICW, RDW]	0.0129 J
Arsenic	0.0097 J
Barium	0.0346
Beryllium	ND (0.001) U
Cadmium	0.0005 J
Chromium Total	ND (0.01) U
Cobalt	ND (0.02) U
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	0.0077 J
Manganese	ND (0.01) U
Nickel	0.0035 J
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	0.0074 J
PDCF	
2,3,7,8-TCDD Equivalent	NS

DP-08	10/4/02
VOC	
1,1,1-Trichloroethane	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	ND (0.01) U
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.001) U
Ethylbenzene	ND (0.001) U
Methylene chloride	ND (0.001) U
Tetrachloroethene	ND (0.001) U
Toluene	0.00062 J
Trichloroethene	ND (0.001) U
Vinyl chloride	ND (0.001) U
SVOC	
2,4-Dimethylphenol	0.0061 J
Benzo(a)pyrene	ND (0.012) U
bis(2-Ethylhexyl)phthalate	ND (0.012) U
Butyl benzylphthalate	ND (0.012) U
Dibenz(a,h)anthracene	ND (0.012) U
Methylphenol (Cresol)	0.0109 J
Pentachlorophenol	ND (0.012) U
PCBs	
Total PCBs	0.000368 J
RDRC	
Antimony	ND (0.025) U
Arsenic	0.0128 J
Barium	0.0479
Beryllium	0.0009 J
Cadmium	0.00087 J
Chromium Total	ND (0.01) U
Cobalt	0.00088 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead [ICW, RDW]	0.0078
Manganese	0.0583
Nickel	0.0031 J
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	0.003 J
PDCF	
2,3,7,8-TCDD Equivalent	NS

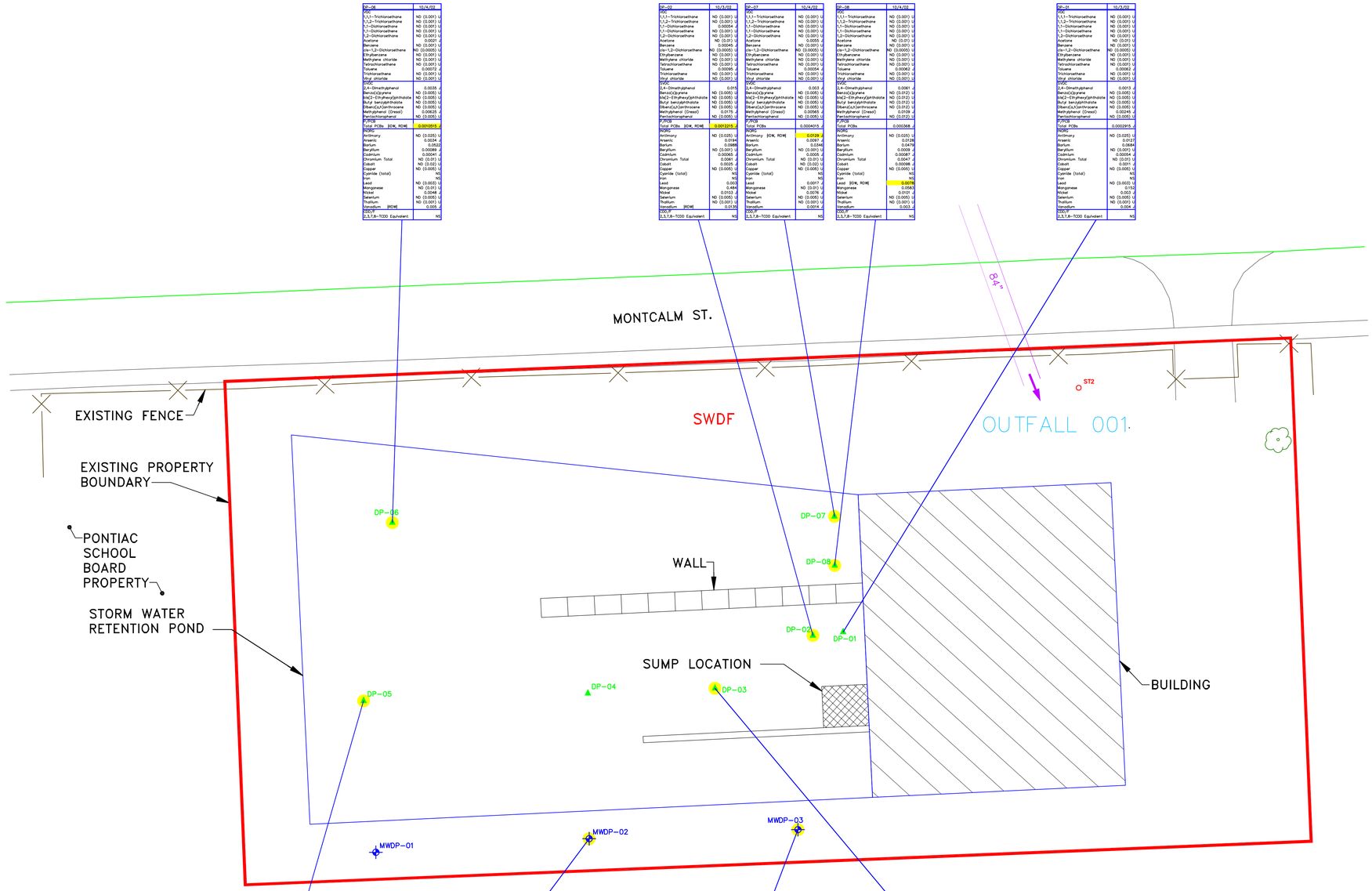
DP-04	10/3/02
VOC	
1,1,1-Trichloroethane	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	ND (0.01) U
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.001) U
Ethylbenzene	ND (0.001) U
Methylene chloride	ND (0.001) U
Tetrachloroethene	ND (0.001) U
Toluene	ND (0.001) U
Trichloroethene	ND (0.001) U
Vinyl chloride	ND (0.001) U
SVOC	
2,4-Dimethylphenol	0.0013 J
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	0.00245 J
Pentachlorophenol	ND (0.005) U
PCBs	
Total PCBs	0.0002915 J
RDRC	
Antimony	ND (0.025) U
Arsenic	0.0127
Barium	0.0684
Beryllium	ND (0.001) U
Cadmium	0.00054 J
Chromium Total	ND (0.01) U
Cobalt	0.0011 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead	ND (0.003) U
Manganese	0.152
Nickel	0.0037 J
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium	0.004 J
PDCF	
2,3,7,8-TCDD Equivalent	NS

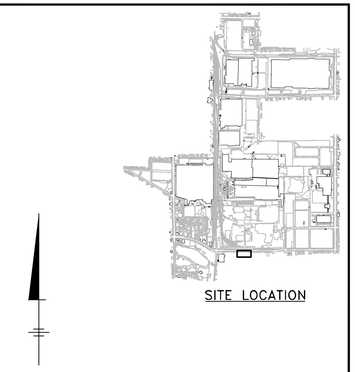
DP-05	10/3/02
VOC	
1,1,1-Trichloroethane	ND (0.001) U/ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U/ND (0.001) U
1,1-Dichloroethane	ND (0.001) U/ND (0.001) U
1,1-Dichloroethene	ND (0.001) U/ND (0.001) U
1,2-Dichloroethane	ND (0.001) U/ND (0.001) U
Acetone	ND (0.01) U/ND (0.01) U
Benzene	ND (0.001) U/ND (0.001) U
cis-1,2-Dichloroethene	ND (0.001) U/ND (0.001) U
Ethylbenzene	ND (0.001) U/ND (0.001) U
Methylene chloride	ND (0.001) U/ND (0.001) U
Tetrachloroethene	ND (0.001) U/ND (0.001) U
Toluene	0.00074 J/0.00074 J
Trichloroethene	ND (0.001) U/ND (0.001) U
Vinyl chloride	ND (0.001) U/ND (0.001) U
SVOC	
2,4-Dimethylphenol	0.0041 J/0.002 J
Benzo(a)pyrene	ND (0.005) U/ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U/ND (0.005) U
Butyl benzylphthalate	ND (0.005) U/ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U/ND (0.005) U
Methylphenol (Cresol)	0.00555 J/0.00535 J
Pentachlorophenol	ND (0.005) U/ND (0.005) U
PCBs	
Total PCBs [ICW, RDW]	0.0009715 J/0.0018213 J
RDRC	
Antimony	ND (0.025) U/ND (0.025) U
Arsenic	0.0032 J/0.0044 J
Barium	0.0515/0.0544
Beryllium	ND (0.001) U/ND (0.001) U
Cadmium	0.00041 J/0.00035 J
Chromium Total	ND (0.01) U/ND (0.01) U
Cobalt	ND (0.02) U/ND (0.02) U
Copper	ND (0.005) U/ND (0.005) U
Cyanide (total)	NS/NS
Iron	NS/NS
Lead	ND (0.003) U/ND (0.003) U
Manganese	ND (0.01) U/ND (0.01) U
Nickel	0.0038 J/0.0039 J
Selenium	ND (0.005) U/ND (0.005) U
Thallium	ND (0.001) U/ND (0.001) U
Vanadium [RDW]	0.0072 J/0.0072 J
PDCF	
2,3,7,8-TCDD Equivalent	NS/NS

MW-02	10/4/02
VOC	
1,1,1-Trichloroethane	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	ND (0.01) U
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.001) U
Ethylbenzene	ND (0.001) U
Methylene chloride	ND (0.001) U
Tetrachloroethene	ND (0.001) U
Toluene	0.00054 J
Trichloroethene	ND (0.001) U
Vinyl chloride	ND (0.001) U
SVOC	
2,4-Dimethylphenol	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U
Pentachlorophenol	ND (0.005) U
PCBs	
Total PCBs	0.000128 J
RDRC	
Antimony	ND (0.025) U
Arsenic	0.0053 J
Barium	0.473
Beryllium	0.00069 J
Cadmium [ICW, RDW]	0.0087 J
Chromium Total	0.04
Cobalt	0.0026 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead [ICW, RDW]	0.1061
Manganese [RDW]	1.64
Nickel	0.0983
Selenium	ND (0.005) U
Thallium	0.0026 J
Vanadium [ICW, RDW]	0.0361
PDCF	
2,3,7,8-TCDD Equivalent	NS

MW-03	10/4/02
VOC	
1,1,1-Trichloroethane	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	ND (0.01) U
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.001) U
Ethylbenzene	ND (0.001) U
Methylene chloride	ND (0.001) U
Tetrachloroethene	ND (0.001) U
Toluene	ND (0.001) U
Trichloroethene	ND (0.001) U
Vinyl chloride	ND (0.001) U
SVOC	
2,4-Dimethylphenol	ND (0.005) U
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	ND (0.005) U
Pentachlorophenol	ND (0.005) U
PCBs	
Total PCBs	0.000318 J
RDRC	
Antimony	ND (0.025) U
Arsenic	0.0043 J
Barium	0.0187
Beryllium	ND (0.001) U
Cadmium	0.0043 J
Chromium Total	0.0049 J
Cobalt	0.0013 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead [ICW, RDW]	0.0184
Manganese	0.0582
Nickel	0.0056 J
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium [RDW]	0.0043 J
PDCF	
2,3,7,8-TCDD Equivalent	NS

MW-03	10/3/02
VOC	
1,1,1-Trichloroethane	ND (0.001) U
1,1,2-Trichloroethane	ND (0.001) U
1,1-Dichloroethane	ND (0.001) U
1,1-Dichloroethene	ND (0.001) U
1,2-Dichloroethane	ND (0.001) U
Acetone	ND (0.01) U
Benzene	ND (0.001) U
cis-1,2-Dichloroethene	ND (0.001) U
Ethylbenzene	ND (0.001) U
Methylene chloride	ND (0.001) U
Tetrachloroethene	ND (0.001) U
Toluene	ND (0.001) U
Trichloroethene	ND (0.001) U
Vinyl chloride	ND (0.001) U
SVOC	
2,4-Dimethylphenol	0.0072 J
Benzo(a)pyrene	ND (0.005) U
bis(2-Ethylhexyl)phthalate	ND (0.005) U
Butyl benzylphthalate	ND (0.005) U
Dibenz(a,h)anthracene	ND (0.005) U
Methylphenol (Cresol)	0.00705 J
Pentachlorophenol	ND (0.005) U
PCBs	
Total PCBs [ICW, RDW]	0.0007515 J
RDRC	
Antimony [ICW, RDW]	0.0067 J
Arsenic	0.0163
Barium	0.134
Beryllium	ND (0.001) U
Cadmium	0.00059 J
Chromium Total	0.01
Cobalt	0.0049 J
Copper	ND (0.005) U
Cyanide (total)	NS
Iron	NS
Lead [ICW, RDW]	0.0137
Manganese	0.396
Nickel	0.0249 J
Selenium	ND (0.005) U
Thallium	ND (0.001) U
Vanadium [RDW]	0.0109 J
PDCF	
2,3,7,8-TCDD Equivalent	NS





LEGEND:

- SOIL BORING
- MONITORING WELL
- APPROXIMATE AOI AREA
  SWDF = STORM WATER DETENTION FACILITY

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC – RESIDENTIAL DIRECT CONTACT CRITERIA
IDC – INDUSTRIAL DIRECT CONTACT CRITERIA
RPSIC – RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA
IPSIC – INDUSTRIAL PARTICULATE SOIL INHALATION CRITERIA
RSVIC – RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
ISVIC – INDUSTRIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
RVSIC – RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA
IVSIC – INDUSTRIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

MICHIGAN PART 201 GENERIC CRITERIA FOR GROUNDWATER

RDW – RESIDENTIAL DRINKING WATER CRITERIA
IDW – INDUSTRIAL DRINKING WATER CRITERIA
RGVIC – RESIDENTIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
IGVIC – INDUSTRIAL GROUNDWATER VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA
GCC – GROUNDWATER CONTACT CRITERIA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.
2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (ppm).
3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.
4. ND (0.25) – CONSTITUENT NOT DETECTED, ASSOCIATED DETECTION LIMIT PRESENTED IN BRACKETS.
5. J – ESTIMATED CONCENTRATION.
6. B – LABORATORY BLANK CONTAMINATION.
7. NS – NOT SAMPLED.

0 20' 40'
GRAPHIC SCALE

X: 64411X00.DWG, 64411X01.GIF
L: ON=* OFF=REF, DATA_POINT
P: PAGESET/PLT=DL
11/25/03 SYR-BS-SDL GMS DJP
64411210/RFI-ADDM/64411C25.DWG

GENERAL MOTORS
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS RFI

STORM WATER DETENTION FACILITY - GROUNDWATER

ENCORE

FIGURE
4-24

Appendix A

Analytical Compound List

ENCORE
Environmental Corporate Remediation

APPENDIX A

GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN
PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION
PARAMETER LIST AND TARGETED QUANTITATION LIMITS

	Targeted [1] *Quantitation Limits*	
Compound	*Water (µg/L)*	*Soil (µg/kg)*
TCL Volatile Organic Compounds (VOC)		
Acetone	10	20
Benzene	1	5
Bromodichloromethane	1	5
Bromoform	1	5
Bromomethane	1	10
2-Butanone	10	20
Carbon disulfide	1	5
Carbon tetrachloride	1	5
Chlorobenzene	1	5
Chloroethane	1	10
Chloroform	1	5
Chloromethane	1	10
Cyclohexane	1	10
Dibromochloromethane	1	5
1,2-Dibromo-3-chloropropane	2	10
1,2-Dibromoethane	1	5
1,2-Dichlorobenzene	1	5
1,3-Dichlorobenzene	1	5
1,4-Dichlorobenzene	1	5
Dichlorodifluoromethane	2	10
1,1-Dichloroethane	1	5
1,2-Dichloroethane	1	5
1,1-Dichloroethene	1	5
cis-1,2-Dichloroethene	0.5	5
trans-1,2-Dichloroethene	0.5	5
1,2-Dichloropropane	1	5
cis-1,3-Dichloropropene	1	5
trans-1,3-Dichloropropene	1	5
Ethylbenzene	1	5
2-Hexanone	10	20
Isopropylbenzene	1	5
Methyl acetate	10	10
Methylene chloride	1	5
Methylcyclohexane	1	10
4-Methyl-2-pentanone	10	20
Methyl tert-butyl ether	5	20
Styrene	1	5
1,1,2,2-Tetrachloroethane	1	5
Tetrachloroethene	1	5
Toluene	1	5

APPENDIX A

GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN
PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION
PARAMETER LIST AND TARGETED QUANTITATION LIMITS

Compound	Targeted [1] Quantitation Limits Water (µg/L)	Soil (µg/kg)
TCL VOC (cont'd)		
1,2,4-Trichlorobenzene	1	5
1,1,1-Trichloroethane	1	5
1,1,2-Trichloroethane	1	5
Trichloroethene	1	5
Trichlorofluoromethane	1	10
1,1,2-Trichloro-1,2,2-trifluoroethane	1	5
Vinyl chloride	1	10
Xylenes (total)	1	10
BTEX		
Benzene	1	50
Toluene	1	50
Ethylbenzene	1	50
Xylene	1	50
TCL Semi-Volatile Organic Compounds (SVOC)		
Acenaphthene	5	330
Acenaphthylene	5	330
Acetophenone	10	330
Anthracene	5	330
Atrazine	5	330
Benzaldehyde	10	330
Benzo(a)anthracene	5	330
Benzo(a)pyrene	5	330
Benzo(b)fluoranthene	5	330
Benzo(g,h,i)perylene	5	330
Benzo(k)fluoranthene	5	330
1,1'-Biphenyl	10	330
4-Bromophenylphenyl ether	5	330
Butylbenzylphthalate	5	330
di-n-Butyphthalate	5	330
Caprolactam	10	330
Carbazole	10	330
4-Chloroaniline	10	1,300
bis(2-Chloroethoxy)methane	5	330
bis(2-Chloroethyl)ether	5	330
bis(2-Chloroisopropyl)ether	5	330
4-Chloro-3-methylphenol	5	330
2-Chloronaphthalene	5	330
2-Chlorophenol	5	330

APPENDIX A

GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN
PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION
PARAMETER LIST AND TARGETED QUANTITATION LIMITS

	Targeted [1] *Quantitation Limits*	
Compound	*Water (µg/L)*	*Soil (µg/kg)*
TCL Semi-Volatile Organic Compounds (cont'd)		
4-Chlorophenyl phenyl ether	5	330
Chrysene	5	330
Dibenz(a,h)anthracene	5	330
Dibenzofuran	5	330
3,3'-Dichlorobenzidine	20	2,000
2,4-Dichorophenol	10	330
Diethylphthalate	5	330
2,4-Dimethylphenol	5	330
Dimethylphthalate	5	330
4,6-Dinitro-2-methylphenol	20	1,700
2,4-Dinitrophenol	20	1,700
2,4-Dinitrotoluene	5	330
2,6-Dinitrotoluene	5	330
bis(2-Ethylhexyl)phthalate	5	330
Fluoranthene	5	330
Fluorene	5	330
Hexachlorobenzene	5	330
Hexachlorobutadiene	5	330
Hexachlorocyclopentadiene	5	330
Hexachloroethane	5	100
Indeno(1,2,3-cd)pyrene	5	330
Isophorone	5	330
2-Methylnaphthalene	5	330
2-Methylphenol	5	330
4-Methylphenol	5	330
Naphthalene	5	330
2-Nitroaniline	20	1,700
3-Nitroaniline	20	1,700
4-Nitroaniline	20	1,700
Nitrobenzene	5	330
2-Nitrophenol	5	330
4-Nitrophenol	20	1,700
N-Nitroso-di-n-propylamine	5	330
N-Nitrosodiphenylamine (diphenylamine)	5	330
di-n-Octylphthalate	5	330
Pentachlorophenol	5	3,400
Phenanthrene	5	330
Phenol	5	330
Pyrene	5	330
2,4,5-Trichlorophenol	5	1,700
2,4,6-Trichlorophenol	5	330

APPENDIX A

GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN
PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION
PARAMETER LIST AND TARGETED QUANTITATION LIMITS

Compound	*Targeted [1] Quantitation Limits*	
	Water (µg/L)	*Soil (µg/kg)*
TCL Polychlorinated Biphenyls (PCB)		
Aroclor 1016	0.2	33
Aroclor 1221	0.2	33
Aroclor 1232	0.4	33
Aroclor 1242	0.2	33
Aroclor 1248	0.2	33
Aroclor 1254	0.2	33
Aroclor 1260	0.2	33
Dioxins/Furans		
2,3,7,8-TCDD	0.00001	0.001
1,2,3,7,8-PeCDD	0.00001	0.001
1,2,3,4,7,8-HxCDD	0.000025	0.0025
1,2,3,6,7,8-HxCDD	0.000025	0.0025
1,2,3,7,8,9-HxCDD	0.000025	0.0025
1,2,3,4,6,7,8-HpCDD	0.000025	0.0025
OCDD	0.00005	0.005
2,3,7,8-TCDF	0.00001	0.001
1,2,3,7,8-PeCDF	0.00001	0.001
2,3,4,7,8-PeCDF	0.00001	0.001
1,2,3,4,7,8-HxCDF	0.000025	0.0025
1,2,3,6,7,8-HxCDF	0.000025	0.0025
2,3,4,6,7,8-HxCDF	0.000025	0.0025
1,2,3,7,8,9-HxCDF	0.000025	0.0025
1,2,3,4,6,7,8-HpCDF	0.000025	0.0025
1,2,3,4,7,8,9-HpCDF	0.000025	0.0025
OCDF	0.00005	0.005
TAL Inorganics		
Antimony	25	2,000
Arsenic	10	500
Barium	10	1,000
Beryllium	1	100
Cadmium	5	500
Chromium	10	1,000
Cobalt	20	1,000
Copper	5	500
Lead	3	200
Manganese	10	1,000
Mercury	0.2	33

APPENDIX A

GENERAL MOTORS CORPORATION
PONTIAC NORTH CAMPUS - PONTIAC, MICHIGAN
PONTIAC, MICHIGAN

RCRA FACILITY INVESTIGATION
PARAMETER LIST AND TARGETED QUANTITATION LIMITS

	Targeted [1] ***Quantitation Limits***	
Compound	***Water (µg/L)***	***Soil (µg/kg)***
Inorganics (cont'd)		
Nickel	20	2,000
Selenium	5	500
Silver	5	500
Thallium [2]	1	1,000
Vanadium	10	1,000
Zinc	20	1,000
Cyanide (total)	10	500
Hexavalent Chromium	0.5	500

Notes:

[1] - Please note that these are targeted quantitation limits and are presented for guidance only. Actual quantitation limits are highly matrix dependent and may be elevated due to matrix effects QA/QC problems and high concentrations of target and non-target analytes.

[2] - The analytical method to analyze thallium in groundwater was modified from SW 846-6010B to SW 846-6020 because of false indication of thallium above applicable screening criteria.

Appendix B

Soil Boring Logs and Monitoring Well Construction Diagrams

ENCORE
Environmental Corporate Remediation

Date Start/Finish: 7/23/03
Drilling Company: Prosonic Corporation
Driller's Name: Terry Warner
Drilling Method: Geoprobe
Sampler Size: 60 inches

Northing: 424824.84
Easting: 13411390.82
Casing Elevation: NA

Borehole Depth: 30' below grade
Surface Elevation: 973.60

Descriptions By: Karen Partington (CRA)

Well ID: BF15-03

Client: GM

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
975								
0							CONCRETE.	
							Brown fine to coarse SAND, some Gravel, no odor, loose, dry.	
				BG				
	1	0-5	NA		SP			Borehole backfilled with Bentonite Pellets.
970				BG				
				BG				
5							Black, no odor below 5.2' bgs.	
							White CONCRETE chips.	
					GW		Brown Sandy fine GRAVEL, no odor, loose, dry.	
					GP			
					CL/GP		White 3" chunks of GRAVEL and Cobbles, no odor, compact, dry.	
	2	5-10	NA	BG			Brown-gray CLAY and rounded to subrounded coarse GRAVEL, no odor, damp.	
965							Gray-black CLAY, trace Gravel, non-plastic, no odor, very stiff, damp.	
							Moist at 8.0' bgs.	
10							Wet at 10' bgs.	
					CL			
	3	10-15	NA	BG				
960							4"-thick seam of brown-gray Sand and coarse Gravel, 2" Gravel chunk at bottom, damp.	
15								
	4	15-20	NA	BG				
							Gray-black CLAY, trace Gravel, non-plastic, no odor, very stiff, wet.	

EEC
Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BF15-03

Borehole Depth: 30' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
955	4	15-20	NA	BG	CL			Borehole backfilled with Bentonite Pellets.
20								
	5	20-25	NA	BG				
950								
25								
	6	25-30	NA	BG			Stiff, slightly plastic below 28' bgs.	
945					SP		Brown fine to coarse SAND, no odor, wet.	
30								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/23/03 - 7/29/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 424807.61 **Easting:** 13411375.67 **Casing Elevation:** NA **Borehole Depth:** 30' below grade **Surface Elevation:** 973.70 **Descriptions By:** Karen Partington (CRA)	**Well ID:** BF15-04 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
975								
0							WOOD.	
							CONCRETE.	
				50.1	SP		Brown fine SAND, trace Gravel, no odor, loose, dry. Black, increased Gravel below 1.2' bgs.	
							Red BRICK.	Borehole backfilled with Bentonite Pellets.
	1	0-5	NA				Brown-gray CLAY, some Gravel, trace Silt, non-plastic, firm, no odor, dry.	
970				71.1				
5							Some Silt, trace Sand, soft, damp below 5.5' bgs.	
	2	5-10	NA	BG			Gray, plastic, very soft, wet below 7.0' bgs.	
965					CL		Trace Silt, non-plastic, stiff below 8.5' bgs.	
10							Trace Gravel, stiff, moist at 10' bgs.	
				4.1				
	3	10-15	NA				Firm at 12' bgs.	
960				BG				
15							2" Gravel chunks, Sandy, moist at 14.8' bgs.	
	4	15-20	NA	BG			Coarse grained, brown at 15.2' bgs.	
							Brown-gray CLAY, some Gravel, trace Silt, non-plastic, firm, no odor, dry.	

EEC
Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BF15-04

Borehole Depth: 30' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
955	4	15-20	NA	BG				Borehole backfilled with Bentonite Pellets.
20					CL		Very moist at 20' bgs.	
	5	20-25	NA	BG				
950								
25							Silt, soft to firm at 25' bgs.	
							Saturated at 26' bgs.	
	6	25-30	NA	BG	SP		Brown medium SAND, very compact, no odor, wet.	
945								
30								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/29/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 424808.57 **Easting:** 13411402.00 **Casing Elevation:** NA **Borehole Depth:** 35' below grade **Surface Elevation:** 973.63 **Descriptions By:** Karen Partington (CRA)	**Well ID:** BF15-05 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
975								
0							CONCRETE.	
	1	0-5	NA	BG	SW		Brown Gravelly fine to coarse SAND, no odor, dry.	Borehole backfilled with Bentonite Pellets.
970								
5	2	5-10	NA	BG			No Recovery. Unable to remove sleeve from rod, Concrete chunk removed from sleeve.	
965								
10	3	10-15	NA	51 238 BG	CL SP		Gray CLAY, trace Gravel, some dark brown to back straitions, fecal odor, stiff, damp. Gray , no odor at 12.5' bgs. Trace Sand, firm, moist at 13' bgs. Gray fine SAND, no odor, wet. 2"-thick Gray Silty Clay seam, firm at 14.5' bgs.	
960								
15	4	15-20	NA	BG	CL		Gray CLAY, trace Gravel, non-plastic, no odor, stiff, moist to wet. 1"-thick Sandy seam at 15.8' bgs. Gray CLAY, trace Gravel, non-plastic, no odor, stiff, moist to wet.	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BF15-05

Borehole Depth: 35' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
955	4	15-20	NA	BG	CL			Borehole backfilled with Bentonite Pellets.
20								
	5	20-25	NA	BG				
950								
25								
	6	25-30	NA	BG				
945								
30							Brown medium SAND, no odor, very compact, wet.	
	7	30-35	NA	BG	SP			
940								
35								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/23/01 **Drilling Company:** ALTECH **Driller's Name:** R. Bonsell **Drilling Method:** Direct Push **Sampler Size:** 2" x 4'	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 10 **Surface Elevation:** N **Descriptions By:** D. Deitner	**Well ID:** BM1-11 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0	0								
		0 - 5	DP	3.5	BG	SP		brown fine grained SAND, trace Silt, trace Gravel, dry	Borehole backfilled with Bentonite Pellets.
						GW		gray fine to medium grained GRAVEL with Sand, trace Silt, moist	
		S-1				ML		brown SILT with SAND, moist to wet at 4.6' black lens, sheen	
5	-5					SM		brown fine grained Silty SAND, wet	
		5-10	DP	5.0	BG	ML		brown SILT, trace fine Sand, wet at 7.0' with sand and clay at 8.1' with sand	
		S-2							
10	10								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/23/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 429175.59 **Easting:** 13411858.26 **Casing Elevation:** NA **Borehole Depth:** 30' below grade **Surface Elevation:** 985.44' **Descriptions By:** D. Deitner	**Well ID:** BM16-01 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 985							CONCRETE.	
	1	0-5	75	BG	SP		Brown fine poorly graded SAND (SP), trace Silt, compact, dry. [FILL] Moist below 4.0' bgs.	Borehole backfilled with Bentonite Pellets.
5 980	2	5-10	80	BG				
10 975	3	10-15	80	BG				
15 970	4	15-20	80	BG			Brown fine poorly graded SAND (SP), trace Silt, compact, moist. [FILL]	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BM16-01

Borehole Depth: 30' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
					SP			
					CL		Brown fine Sandy CLAY (CL), firm, low plasticity, moist. [FILL]	
	4	15-20	80	BG			Brown fine poorly graded SAND (SP), trace Silt, compact, moist.	Borehole backfilled with Bentonite Pellets.
20 / 965								
	5	20-25	80	BG	SP			
25 / 960								
	6	25-30	90	BG			Saturated, oily product present, strong odor at 27' bgs.	
30 / 955								
35 / 950								

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/15/03
Drilling Company: Prosonic Corporation
Driller's Name: Dan O'Mara
Drilling Method: Geoprobe Direct Pus
Sampler Size: 60 inches

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 35' below grade
Surface Elevation: NA

Descriptions By: Dan Deitner

Well ID: BM16-02

Client: GM

Location: GM Pontiac North Campus

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0	0							CONCRETE.	
		1	0-5	100%	BG	SP		Light brown fine SAND, trace silt, compact, poorly graded, moist, fill.	Borehole backfilled with hydrated bentonite chip and concrete patched.
5	-5							faint odor	
		2	5-10	70%	BG	CL		Brown and gray SILTY CLAY, 1 mm thick horizontal sand lenses, firm, low plasticity, moist, fill.	
10	-10								
		3	10-15	70%	BG			2" lens wet sand, odor present	
15	-15							2" lens wet sand, odor present	
								Brown medium SAND, trace fine rounded gravel, compact, poorly graded, wet (saturated with oil), fill.	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BM16-02

Borehole Depth: 35' below grade

DRAFT

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20	100%	BG	SP			
							Gray SILTY CLAY, firm, low plasticity, moist, natural.	
20-*20*							soft	
	5	20-25	100%	BG	CL		firm, competent	
25-*25*							trace medium grained rounded gravel	
	6	25-30	100%	BG				
							Gray fine SAND, trace silt, compact, poorly graded, moist, natural.	
30-*30*							wet, odor, oily	
	7	30-35	100%	BG	SP			
35-*35*								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/15/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe Direct Push **Sampler Size:** 60 inches	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 20' **Surface Elevation:** NA **Descriptions By:** Dan Deitner	**Well ID:** BM16-03 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0	0							Concrete.	
								Dark brown SILT with SAND, moist (Fill).	
		1	0-5'	100%	BG	ML			
5	-5							Brown and gray SILTY CLAY, trace fine Sand, trace fine Gravel, low plasticity, moist (Fill).	
		2	5-10'	100%	BG	CL			
10	-10								Boring backfilled with hydrated bentonite pellets (0-20' bgs)
		3	10-15'	100%	BG				
						SW		Brown SAND, trace Silt, trace coarse Gravel, wet (Fill).	
								Gray SILTY CLAY, trace Gravel, low plasticity, moist.	
15	-15					CL			

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BM16-03

Borehole Depth: 20'

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20 20	4	15-20'	100%	BG	CL			

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/15/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe Direct Push **Sampler Size:** 60 inches	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 25' **Surface Elevation:** NA **Descriptions By:** Dan Deitner	**Well ID:** BM16-04 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0	0							Concrete.	
		1	0-5'	100%	BG	SP		Light Brown SAND, trace silt, compact, poorly graded, dry, fill.	Boring backfilled with hydrated bentonite pellets and concrete patched.
5	-5							moist, faint petroleum type odor	
		2	5-10'	100%	BG				
10	-10								
		3	10-15'	100%	BG			1" lens silty clay, odor present 2" lens silty clay, odor present	
15	-15								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BM16-04

Borehole Depth: 25'

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG				
20-20					SC		Gray fine CLAYEY SAND, loose, poorly graded, very moist, odor, natural.	
	5	20-25'	100%	BG	SM		Gray fine SILTY SAND, compact, poorly graded, wet, strong diesel type odor.	
					CL		Gray SILTY CLAY, trace fine grained sand lenses, trace fine grained rounded gravel, firm low plasticity, moist.	
25-25								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/16/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe Direct Push **Sampler Size:** 60 inches	**Northing:** 429115.82 **Easting:** 13411894.30 **Casing Elevation:** NA **Borehole Depth:** 30' **Surface Elevation:** NA **Descriptions By:** SM Duly	**Well ID:** BM16-05 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 985							Concrete.	
	1	0-5'	3.8	BG	SM		Brown fine SAND, poorly graded, medium dense, dry, fill sand.	Boring backfilled with hydrated bentonite pellets.
5 / 980	2	5-10'	3.5	BG				
10 / 975	3	10-15'	4.0	BG			Grayish brown SILTY CLAY, few fine to coarse Sand, trace fine Gravel, moderately plastic, stiff, damp, fill	
15 / 970								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BM16-05

Borehole Depth: 30'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	4.0	BG			3" lense of SILTY CLAY as above at 12.6' - 13.4'	
20 / 965					CL		Grayish brown SILTY CLAY, few fine to coarse Sand, trace fine to coarse gravel, Silt lenses up to 5" thick throughout, weakly plastic, very stiff, damp, fill.	
	5	20-25'	5.0	BG			3" thick Silt lense	
25 / 960							4" thick Silt lense	
	6	25-30'	4.5	BG			12" saturated Silt lense	
30					SP		Pale brown to brown fine SAND, poorly graded, little Silt, weak to moderate petroleum/oily odor, saturated, medium dense.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/16/03
Drilling Company: Prosonic Corporation
Driller's Name: Dan O'Mara
Drilling Method: Geoprobe Direct Push
Sampler Size: 60 inches

Northing: 429134.55
Easting: 13411941.38
Casing Elevation: NA

Borehole Depth: 35'
Surface Elevation: NA

Descriptions By: SM Duly

Well ID: BM16-06

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 985							Concrete.	
	1	0-5'	2.9'	BG	SM		Yellowish brown fine to coarse SILTY SAND, poorly graded, few fine to coarse Gravel, medium dense, dry, fill.	Boring backfilled with hydrated bentonite pellets.
5 / 980	2	5-10'	4.7'	BG				
					CL		Brown SILTY CLAY, few fine to coarse Sand, trace fine to medium Gravel, medium stiff, weakly to moderately plastic, damp, fill.	
10 / 975	3	10-15'	4.0'	BG				
					SP		Brown SAND, poorly graded, fine SAND, little Silt, dry, medium dense to loose,	
15 / 970							4" thick lense of SILTY CLAY as at 8.2' - 14.3' bgs.	

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Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.120
Data File:BM16-06.dat

Template:I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 10/29/03

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BM16-06

Borehole Depth: 35'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	5.0'	BG			saturated Gray SILTY CLAY as at 8.2' - 14.3' bgs, trace fine to coarse Gravel, Sand lenses up to 3" thick throughout to 20' bgs, fill.	
20 *965*	5	20-25'	4.0'	BG	CL			
25 *960*	6	25-30'	5.0'	BG			18" thick saturated Silt lense	
30 *955*	7	30-35'	4.0'	BG	SM		Gray to grayish brown fine SILTY SAND, poorly graded, moist to wet, very dense, sheen on water. saturated	
35								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/17/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe Direct Push **Sampler Size:** 60 inches	**Northing:** 429314.07 **Easting:** 13411897.58 **Casing Elevation:** NA **Borehole Depth:** 35' **Surface Elevation:** NA **Descriptions By:** Dan Deitner/SM Duly	**Well ID:** BM16-07 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 985							Concrete.	
	1	0-5'	2.0'	BG	SM		Brown fine SILTY SAND, poorly graded, dry, medium dense to loose, fill.	Borehole backfilled with hydrated bentonite chip and concrete patched.
5 980	2	5-10'	4.8'	BG	CL		Brown to grayish brown SILTY CLAY, few fine to coarse Sand, trace fine to coarse Gravel, lenses of Silty Sand throughout up to 3" thick, weakly to moderately plastic, stiff, damp to dry, fill.	
10 975	3	10-15'	4.0'	BG			very weak oily odor	
15 970							saturated Silt lense, 3" thick saturated Silty Sand lense	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BM16-07

Borehole Depth: 35'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	4.0'	BG				
					SP		Grayish brown fine to coarse SAND, poorly graded, little Silt, occasional lenses of Silty Clay, weak odor, saturated between clay lenses, medium dense, fill.	
20 / 965	5	20-25'	5.0'	BG	CL		Gray SILTY CLAY, few fine to coarse Sand, trace fine to coarse Gravel, moderately plastic, stiff, damp, fill.	
25 / 960	6	25-30'	5.0'	BG	SP		Light brown fine SAND, trace silt, compact, poorly graded, dry, natural.	
30 / 955	7	30-35'	5.0'	BG				

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/17/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe Direct Push **Sampler Size:** 60 inches	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 35' **Surface Elevation:** NA **Descriptions By:** Dan Deitner	**Well ID:** BM16-08 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 0							Concrete.	
	1	0-5'	100%	BG	SP		Light brown SAND, trace silt, compact, poorly graded, dry, fill.	Borehole backfilled with hydrated bentonite chip and concrete patched.
5 / -5							moist	
	2	5-10'	100%	BG	SM		Light brown fine SILTY SAND, compact, poorly graded, moist, odor, fill.	
					CL		Brown and gray SANDY CLAY, trace silt, firm, very moist to wet. trace gravel, slight sheen present	
10 / -10							Light brown fine SAND with silt, compact, poorly graded, moist, faint odor, fill.	
	3	10-15'	100%	BG			2.5" lens clayey sand	
							1" lens clayey sand	
15 / -15					SP			

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BM16-08

Borehole Depth: 35'

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG			2" lens silty sand dry 1/2" piece concrete moist clayey sand, gray, stronger odor	
20-20							1/4" lens wet sand, odor	
	5	20-25'	100%	BG	CL		Gray SILTY CLAY, trace sand, firm, low plasticity, moist, odor, natural.	
25-25							Light brown fine SAND, trace silt, compact, poorly graded, dry.	
	6	25-30'	100%	BG			damp	
30-30					SP		oily	
							wet	
	7	30-35'	100%	BG				
35-35								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/17/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe Direct Push **Sampler Size:** 60 inches	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 35' **Surface Elevation:** NA **Descriptions By:** Dan Deitner	**Well ID:** BM16-09 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 0							Concrete.	Borehole backfilled with hydrated bentonite chip and concrete patched.
					SM		Light brown fine SILTY SAND, compact, poorly graded, damp, odor, fill.	
	1	0-5'	100%	BG			Light brown fine SAND, trace silt, compact, poorly graded, damp, odor, fill.	
5 / -5					SP			
	2	5-10'	100%	BG			trace clay pieces	
10 / -10							Gray SILTY CLAY, trace fine grained sand, firm, medium plasticity, moist, trace horizontal sand lenses 1 mm thick, fill.	
	3	10-15'	100%	BG			horizontal sand lenses not present	
15 / -15							1/4" lens sand	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BM16-09

Borehole Depth: 35'

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
					CL		1/2" lens sand, oily 1/8" lens sand, oily 1/8" lens sand, oily	
	4	15-20'	100%	BG				
20-20							sand lenses not present natural clay	
	5	20-25'	100%	BG				
25-25							Light brown fine SAND, trace silt, compact, poorly graded, dry, natural.	
	6	25-30'	100%	BG				
30-30					SP		wet	
	7	30-35'	100%	BG				
35-35								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/17/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe Direct Push **Sampler Size:** 60 inches	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 30' **Surface Elevation:** NA **Descriptions By:** Dan Deitner	**Well ID:** BM16-10 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Stratigraphic Description	Well Construction
0 / 0							
						Concrete.	Borehole backfilled with hydrated bentonite chip and concrete patched.
					SM	Light brown fine SILTY SAND, compact, poorly graded, moist, odor present, fill.	
	1	0-5'	100%	BG	SP	Light brown fine SAND, trace silt, compact, poorly graded, moist, odor present, fill. 1" lens silty clay 2" lens silty clay	
5 / -5							
	2	5-10'	100%	BG	CL	Brown and gray SANDY CLAY, firm, low plasticity, moist, fill.	
10 / -10					SM	Light brown fine, SILTY SAND, compact, poorly graded, moist, fill.	
	3	10-15'	100%	BG	CL	Gray SILTY CLAY, trace fine sand lenses 1 mm thick, firm, low plasticity, moist, fill 1.5" lens silty sand homogeneous (sand lenses not present)	
15 / -15							
						Brown fine SAND, trace silt, compact, poorly graded, wet, odor present.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BM16-10

Borehole Depth: 30'

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG	SP		2.5" lens silty clay 1" lens coarse gravel	
20-20					CL		Gray SILTY CLAY with silt, firm, medium plasticity, moist, homogeneous.	
	5	20-25'	100%	BG	SM		Gray fine SILTY SAND, trace fine grained gravel, loose, poorly graded, wet, faint odor.	
25-25					CL		Gray SILTY CLAY, trace sand, firm medium plasticity, moist, homogeneous, odor not present.	
	6	25-30'	100%	BG	ML		Gray SANDY SILT, trace clay, compact, very moist to wet.	
30-30					SP		Gray fine SAND with silt, compact, poorly graded, wet, faint odor.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/17/03
Drilling Company: Prosonic Corporation
Driller's Name: Dan O'Mara
Drilling Method: Geoprobe Direct Push
Sampler Size: 60 inches

Northing: 429032.65
Easting: 13411849.13
Casing Elevation: 985.26

Borehole Depth: 35'
Surface Elevation: NA

Descriptions By: Dan Deitner

Well ID: BM16-11

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 985							Concrete.	
	1	0-5'	100%	BG	SP		Light brown fine SAND, trace Silt, poorly graded, compact, dry, fill.	Borehole backfilled with hydrated bentonite chip and concrete patched.
5 / 980	2	5-10'	100%	BG			medium brown light brown	
10 / 975	3	10-15'	100%	BG			moist 2" lens Clayey Sand 1/2" lens Clayey Sand	
15 / 970								

EEC
Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.120
Data File:BM16-11.dat

Template:I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 11/7/03

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BM16-11

Borehole Depth: 35'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG			3" lens Silty Sand, trace Clay	
20 / 965								
	5	20-25'	100%	BG	MH		Light brown fine SANDY SILT, poorly graded, compact, very moist.	
					SM		Light brown fine SILTY SAND, poorly graded, compact, moist.	
25 / 960					SP		Light brown fine SAND, trace Silt, compact, poorly graded, dry.	
					CL		Gray SILTY CLAY, firm, low plasticity, moist. 1/2" lens wet Sand 1/2" lens Silty Sand	
	6	25-30'	100%	BG			Light brown fine SAND, trace Silt, poorly graded, compact, dry.	
30 / 955					SP		very moist to wet wet	
	7	30-35'	100%	BG				
35								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/28/03
Drilling Company: Prosonic Corporation
Driller's Name: Dan O'Mara
Drilling Method: Geoprobe Direct Push
Sampler Size: 60 inches

Northing: 429242.83
Easting: 13411975.75
Casing Elevation: 985.42

Borehole Depth: 30'
Surface Elevation: NA

Descriptions By: Dan Deitner

Well ID: BM16-12

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 985							Concrete.	
	1	0-5'	100%	BG	SP		Light brown fine SAND, trace Silt, poorly graded, compact, damp.	Borehole backfilled with hydrated bentonite chip and concrete patched.
5 / 980	2	5-10'	100%	BG			moist trace pieces of Clay	
					CL		Brown with light brown lenses SILTY CLAY with Silt and Sand lenses, stiff, low plasticity, moist.	
10 / 975	3	10-15'	100%	BG	SP		Light brown fine SAND, trace Silt, with pieces of Clay, compact, poorly graded, moist.	
					CL		Brown wiht light brown lenses SILTY CLAY with 1mm thick Silt lenses, stiff, low plasticity, moist.	
15 / 970					CL		Gray SILTY CLAY, trace fine Sand, trace fine Gravel, stiff, low plasticity, trace rootlets, moist. rootlets not present	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.120
Data File:BM16-12.dat

Template:I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 11/7/03

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BM16-12

Borehole Depth: 30'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG			1" lens wet Sand	
					SP		Gray fine SAND, trace Silt, compact, wet.	
20					CL		Gray SILTY CLAY, homogeneous, firm, low plasticity, moist.	
965							3" lens wet Sand	
					CL		Gray SANDY CLAY, firm, low plasticity, wet.	
	5	20-25'	100%	BG				
					CL		Gray SILTY CLAY, trace fine Sand, trace fine Gravel, firm, low plasticity, homogeneous, moist.	
25								
960								
	6	25-30'	100%	BG				
					SP		Gray fine SAND, trace Silt, compact, moist. wet	
30								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.120
Data File:BM16-12.dat

Template:I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 11/7/03

Date Start/Finish: 9/17/03
Drilling Company: Prosonic Corporation
Driller's Name: Dan O'Mara
Drilling Method: Geoprobe Direct Push
Sampler Size: 60 inches

Northing: 429322.08
Easting: 13411857.35
Casing Elevation: 985.43

Borehole Depth: 30'
Surface Elevation: NA

Descriptions By: Dan Deitner

Well ID: BM16-13

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 985							Concrete.	
	1	0-5'	100%	BG	SM		Gray and brown fine SILTY SAND, trace Clay, compact, poorly graded, moist.	Borehole backfilled with hydrated bentonite chip and concrete patched.
5 / 980	2	5-10'	100%	BG	CL		Gray SILTY CLAY, 1 mm thick Sand lenses, firm, low plasticity, moist. 1/4" lens Silty Sand Sand lenses not present with fine Sand lenses 1mm thick	
10 / 975	3	10-15'	100%	BG	SP		Gray fine SAND, trace Silt, poorly graded, compact, wet.	
15 / 970							Gray SILTY CLAY with 1mm thick wet Sand lenses, firm low plasticity, moist.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Encore Environmental Consortium, LLC

Project: 64411.120
Data File:BM16-13.dat

Template:I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 11/7/03

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BM16-13

Borehole Depth: 30'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
							3" lens wet Sand	
	4	15-20'	100%	BG			Sandy Clay, trace Silt	
20 / 965					CL			
	5	20-25'	100%	BG			Silty Clay, trace Sand, fine Gravel, homogeneous	
25 / 960							Brown fine SAND, trace Silt, poorly graded, compact, dry.	
	6	25-30'	100%	BG	SP		moist to very moist	
30							wet	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/17/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe Direct Push **Sampler Size:** 60 inches	**Northing:** 429036.60 **Easting:** 13411894.21 **Casing Elevation:** 985.32 **Borehole Depth:** 32' **Surface Elevation:** NA **Descriptions By:** Dan Deitner	**Well ID:** BM16-14 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Stratigraphic Description
0	985						Concrete.
		1	0-5'	95%	BG	SP	Light brown fine SAND, trace Silt, poorly graded, compact, dry, fill.
5	980	2	5-10'	90%	BG	SC	Dark brown fine CLAYEY SAND, poorly graded, compact, moist, fill.
						SP	Light brown fine SAND, trace Silt, poorly graded, compact, moist, fill.
10	975	3	10-15'	90%	BG	SP	Dark brown SILTY CLAY, trace Sand, stiff, low plasticity, moist, fill.
						CL	Light brown fine SAND, few Silt, poorly graded, compact, dry, fill.
						SP	Brown SILTY CLAY, trace Sand, stiff , low plasticity, moist, fill. 1/2" lens Sand and Gravel 1/4" lens Sand 3" lens Sand
15	970						

Well Construction

Borehole backfilled with hydrated bentonite chip and concrete patched.

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Encore Environmental Consortium, LLC

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BM16-14

Borehole Depth: 32'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG				
20 / 965					CL		Light brown fine SAND with SILT, poorly graded, compact, moist. very fine grained	
	5	20-25'	100%	BG				
25 / 960					SP		Brown fine SILTY SAND, poorly graded, compact, moist. wet	
	6	25-30'	100%	BG	SM		Gray and brown SILTY CLAY, stiff, low plasticity, moist.	
30 / 955					CL		Light brown fine SAND, trace Silt, poorly graded, compact, moist. wet	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/17/03
Drilling Company: Prosonic Corporation
Driller's Name: Dan O'Mara
Drilling Method: Geoprobe Direct Push
Sampler Size: 60 inches

Northing: 429046.32
Easting: 13411954.31
Casing Elevation: 985.53

Borehole Depth: 32'
Surface Elevation: NA

Descriptions By: Dan Deitner

Well ID: BM16-15

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 985							Concrete.	
	1	0-5'	100%	BG	SP		Brown fine SAND, trace Silt, poorly graded, compact.	Borehole backfilled with hydrated bentonite chip and concrete patched.
5 / 980	2	5-10'	100%	BG			3" lens Silty Clay	
10 / 975	3	10-15'	100%	BG	SC		Brown fine CLAYEY SAND, trace Silt, poorly graded, compact, moist.	
							2.5" lens Sand, trace Silt	
15 / 970							1" lens Sand, trace Silt	
							Dark brown SILTY CLAY, trace Sand, trace fine Gravel, low plasticity, homegeneous, moist.	

EEC
Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BM16-15

Borehole Depth: 32'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG	CL		trace 1mm thick Silt lens	
					SP		Light brown fine SAND, trace Silt, poorly graded, compact, moist.	
20 / 965								
	5	20-25'	100%	BG	SM		Light brown fine SILTY SAND, poorly graded, compact, very moist. moist	
25 / 960								
	6	25-30'	100%	BG			2.5" lens Silty Clay	
					SP		Yellowish brown fine SAND, trace Silt, compact, poorly graded, moist. grayish brown wet	
30 / 955								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/27/03
Drilling Company: Prosonic Corporation
Driller's Name: Dan O'Mara
Drilling Method: Geoprobe Direct Push
Sampler Size: 60 inches

Northing: 429048.03
Easting: 13412006.93
Casing Elevation: 985.54

Borehole Depth: 30'
Surface Elevation: NA

Descriptions By: Dan Deitner

Well ID: BM16-16

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Stratigraphic Description
0 / 985						Concrete.
					SM	Light brown fine SILTY SAND, poorly graded, compact, faint odor, moist.
	1	0-5'	100%	BG	SP	Light brown fine SAND, trace Silt, compact, poorly graded, damp.
5 / 980	2	5-10'	100%	BG	CL	Gray SANDY CLAY, trace fine Gravel, trace Silt, firm, low plasticity, homogeneous, moist.
					CL	Brown SILTY CLAY, trace fine Gravel, stiff, low plasticity, homogeneous, moist.
10 / 975					SP	Light brown fine SAND, trace Silt, poorly graded, compact, moist, fill.
	3	10-15'	100%	BG	OL	Dark gray with brown mottling ORGANIC SILTY CLAY, trace fine Gravel, stiff, low plasticity, moist, trace rootlets.
						trace peat fibers
15 / 970						Gray with brown mottling SILTY CLAY, trace fine Gravel, stiff, low plasticity, moist.

Well Construction: Borehole backfilled with hydrated bentonite chip and concrete patched.

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Encore Environmental Consortium, LLC

Project: 64411.120
Data File:BM16-16.dat

Template:I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 11/7/03

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BM16-16

Borehole Depth: 30'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG	CL			
					SM		Yellowish fine SILTY SAND, compact, poorly graded, moist.	
20 / 965								
	5	20-25'	100%	BG			2" lens, very moist 1/2" lens Silty Clay	
25 / 960								
					MH		Medium brown fien SANDY SILT, poorly graded, compact, very moist to wet.	
	6	25-30'	100%	BG			2" lens Silty Clay	
					SP		Gray fine SAND, trace Silt, compact, poorly graded, very moist. wet	
30								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/28/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe Direct Push **Sampler Size:** 60 inches	**Northing:** 429125.55 **Easting:** 13412041.01 **Casing Elevation:** 985.54 **Borehole Depth:** 30' **Surface Elevation:** NA **Descriptions By:** Dan Deitner	**Well ID:** BM16-17 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0	985							Concrete.	
		1	0-5'	100%	BG	SP		Light brown fine SAND, trace Silt, trace pieces of Clay, poorly graded, moist.	Borehole backfilled with hydrated bentonite chip and concrete patched.
5	980	2	5-10'	100%	BG			Clay pieces not present trace Clay pieces	
						CL		Brown SILTY CLAY, low plasticity, stiff, moist.	
10	975	3	10-15'	100%	BG	SP		Light brown fine SAND, trace Silt, trace Clay pieces, compact, poorly graded, moist.	
						CL		Light brown SILTY CLAY with Silt and Sand lenses, low plasticity, moist.	
15	970							Medium brown fine CLAYEY SAND, compact, wet.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BM16-17

Borehole Depth: 30'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
					SC			
	4	15-20'	100%	BG	SP		Medium brown fine SAND, trace Silt, compact, wet.	
					CL		Brown fine SANDY CLAY, trace Silt, trace fine Gravel, stiff low plasticity, moist. 1/2" lens wet Sand	
20 *965*					SP		Gray fine SAND with SILT, trace Clay, compact, wet.	
	5	20-25'	100%	BG	CL		Gray SILTY CLAY, stiff, low plasticity, homogeneous, moist.	
25 *960*	6	25-30'	100%	BG			Sandy Clay, very moist to wet	
					SP		Gray fine SAND, trace SILT, compact, poorly graded, wet.	
30								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/28/03
Drilling Company: Prosonic Corporation
Driller's Name: Dan O'Mara
Drilling Method: Geoprobe Direct Push
Sampler Size: 60 inches

Northing: 429285.18
Easting: 13411967.69
Casing Elevation: NA

Borehole Depth: 30'
Surface Elevation: 985.47

Descriptions By: Dan Deitner

Well ID: BM16-18

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 985							Concrete.	
	1	0-5'	100%	BG	SP		Light brown fine SAND, trace Silt, poorly graded, damp.	Borehole backfilled with hydrated bentonite chip and concrete patched.
5 / 980	2	5-10'	100%	BG	CL		Gray SILTY CLAY with Silt lenses, firm, low plasticity.	
10 / 975	3	10-15'	100%	BG			1/8" lens sand, faint odor	
							1/2" lens sand	
15 / 970							few silt lenses	
							Gray SILTY CLAY, firm, medium to high plasticity, homogeneous, moist.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BM16-18

Borehole Depth: 30'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG	CH			
20 / 965					CL		Gray SILTY CLAY, trace fine Gravel, trace Sand, stiff, low plasticity, moist.	
	5	20-25'	100%	BG				
25 / 960							Gray fine SAND, trace Silt, compact, damp.	
	6	25-30'	100%	BG	SP		wet	
30								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 04/28/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan **Drilling Method:** Direct Push **Sampler Size:** 60"	**Northing:** 425671.73 **Easting:** 13414326.43 **Casing Elevation:** NA **Borehole Depth:** 25' **Surface Elevation:** 983.96 **Descriptions By:** Dan Dettner	**Well ID:** BP9-01 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Stratigraphic Description
985						
0						Concrete and Brick rubble (FILL).
	1	0-5'	100%	BG		Brown SAND (SW), trace Silt, moist (FILL).
980						Wet.
5					SW	Trace gravel.
						Gravel not present. Trace black stains. Brown.
	2	5-10'	100%	BG	ML	Medium brown SILT (ML), trace Sand, trace Clay, moist.
975						Gray SILTY CLAY (CL), trace Sand, trace fine Gravel, low plasticity, moist.
10						
	3	10-15'	100%	BG	CL	
970						
15						

Well Construction: Boring backfilled with hydrated bentonite pellets (0-25' bgs)

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP9-01

Borehole Depth: 25'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG	CL		With sand.	
965							Trace sand.	
20								
	5	20-25'	100%	BG				
960								
25								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 04/29/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan **Drilling Method:** Direct Push **Sampler Size:** 60"	**Northing:** 425570.76 **Easting:** 13414488.32 **Casing Elevation:** NA **Borehole Depth:** 25' **Surface Elevation:** 986.27 **Descriptions By:** Dan Dettner	**Well ID:** BP9-02 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Stratigraphic Description
0 / 985	1	0-5'	100%	BG		Concrete and Brick rubble with Sand (FILL).
					SM	Brown medium SILTY SAND (SM), moist to very moist.
5 / 980						Concrete.
					SW	Brown SAND, trace Silt, trace fine grained Gravel, moist.
	2	5-10'	100%	BG	CL	Brown SILTY CLAY (CL), trace fine grained Sand, trace fine grained Gravel, low plasticity, moist.
10 / 975	3	10-15'	100%	BG		Brown with gray mottling.
15 / 970						

Well Construction: Boring backfilled with hydrated bentonite pellets (0-25' bgs)

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP9-02

Borehole Depth: 25'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG	CL		Brown SILTY CLAY (CL), trace fine grained Sand, trace fine grained Gravel, low plasticity, moist.	
20								
965	5	20-25'	100%	BG				
25								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 04/29/03
Drilling Company: Prosonic Corporation
Driller's Name: Dan
Drilling Method: Direct Push
Sampler Size: 60"

Northing: 425640.58
Easting: 13414461.56
Casing Elevation: NA

Borehole Depth: 25'
Surface Elevation: 984.70

Descriptions By: Dan Dettner

Well ID: BP9-03

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
985 / 0							Concrete slab.	
	1	0-5'	100%	BG	ML		Medium brown SILT (ML), trace Sand, trace Clay, moist.	
980 / 5					CL		Brown SILTY CLAY (CL), trace fine Sand, low plasticity, moist.	
					ML		Medium brown SANDY SILT (ML), trace Gravel, moist.	
	2	5-10'	100%	BG	CL		Brown SILTY CLAY (CL), trace fine Sand, trace fine Gravel, low plasticity, moist.	
975 / 10					ML		SILT (ML), trace Clay, trace Sand, trace Gravel, very moist.	Boring backfilled with hydrated bentonite pellets (0-25' bgs)
	3	10-15'	100%	BG	CL		Gray SILTY CLAY (CL), trace fine Sand, trace fine Gravel, low plasticity, moist.	
970 / 15								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.000
Data File:BP9-03.dat

Template:I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 06/26/03

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP9-03

Borehole Depth: 25'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG	CL		Gray SILTY CLAY (CL), trace fine Sand, trace fine Gravel, low plasticity, moist.	
965 20								
	5	20-25'	100%	BG			3" lense of Sand, wet.	
960 25								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 04/30/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan **Drilling Method:** Direct Push **Sampler Size:** 60"	**Northing:** 425685.18 **Easting:** 13414536.27 **Casing Elevation:** NA **Borehole Depth:** 35' **Surface Elevation:** 988.52 **Descriptions By:** Dan Dettner	**Well ID:** BP9-04 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
990								
0								
	1	0-5'	100%	BG	SM		Dark brown SILTY SAND (SM), trace fine Gravel, trace concrete and brick rubble, moist to very moist (FILL).	
985							Concre slab.	
					SM		Brown SILTY SAND (SM), trace Gravel, moist (FILL).	
5							Brown SILTY CLAY (CL), trace fine Sand, trace fine Gravel, moist, low plasticity.	
	2	5-10'	100%	BG				
980								
10					CL			Boring backfilled with hydrated bentonite pellets (0-35' bgs)
	3	10-15'	100%	BG				
975							3" lense of Sand, wet.	
15							Brown with gray mottling, trace fine Sand lenses (1mm thick).	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Encore Environmental Consortium, LLC

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP9-04

Borehole Depth: 35'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970 / 20	4	15-20'	100%	BG	CL		Brown SILTY CLAY (CL), trace fine Sand, trace fine Gravel, moist, low plasticity. Gray, Sand lenses not present.	
965 / 25	5	20-25'	100%	BG				
960 / 30	6	25-30'	100%	BG				
955 / 35	7	30-35'	100%	BG				

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 04/29/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan **Drilling Method:** Direct Push **Sampler Size:** 60"	**Northing:** 425678.19 **Easting:** 13414451.72 **Casing Elevation:** NA **Borehole Depth:** 35' **Surface Elevation:** 984.54 **Descriptions By:** Dan Dettner	**Well ID:** BP9-05 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
985								
0	1	0-5'	80%	BG			Concrete and brick rubble, trace Sand (FILL).	
980					SW		Medium brown SAND, trace Silt, moist. Black staining, strong odor. Brown. Black, wet, trace gravel. Gravel not present.	
5	2	5-10'	100%	BG				
975					CL		Brown SILTY CLAY, trace fine Sand, trace fine Gravel, low plasticity, moist. Gray. Trace gravel.	Boring backfilled with hydrated bentonite pellets (0-35' bgs)
10	3	10-15'	100%	BG				
970					ML		Gray SILT with Sand, trace Clay, moist to very moist, medium dilatancy.	
15							Gray SILTY CLAY, trace Sand, low plasticity, moist.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP9-05

Borehole Depth: 35'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
965 / 20	4	15-20'	100%	BG	CL			
	5	20-25'	100%	BG				
960 / 25	6	25-30'	100%	BG				
955 / 30	7	30-35'	100%	BG				
950 / 35								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 04/29/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan **Drilling Method:** Direct Push **Sampler Size:** 60"	**Northing:** 425672.66 **Easting:** 13414387.91 **Casing Elevation:** NA **Borehole Depth:** 35' **Surface Elevation:** 984.75 **Descriptions By:** Dan Dettner	**Well ID:** BP9-06 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 985	1	0-5'	80%	BG			Concrete and brick rubble, dry (FILL).	
					SM		Dark brown SANDY SILT, very moist (FILL). Wood.	
5 / 980	2	5-10'	100%	BG	ML		Dark gray SILT, trace Sand, trace Clay, moist (FILL).	
					SW		Light brown SAND, trace Silt, wet.	
10 / 975	3	10-15'	100%	BG	CL		Brown SILTY CLAY, trace fine and, trace fine Gravel, low plasticity. Gray.	Boring backfilled with hydrated bentonite pellets (0-35' bgs)
15 / 970					CL			

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Encore Environmental Consortium, LLC

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP9-06

Borehole Depth: 35'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG	ML		Gray SANDY SILT, very moist, rapid dilutancy. Trace coarse Gravel.	
20 / 965	5	20-25'	100%	BG	CL		Gray SILTY CLAY, trace fine Sand, trace fine Gravel, low plasticity.	
25 / 960	6	25-30'	100%	BG				
30 / 955	7	30-35'	100%	BG				
35 / 950								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 04/28/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan **Drilling Method:** Direct Push **Sampler Size:** 60"	**Northing:** 425668.03 **Easting:** 13414261.31 **Casing Elevation:** NA **Borehole Depth:** 35' **Surface Elevation:** 983.35 **Descriptions By:** Dan Dettner	**Well ID:** BP9-07 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	985								
0								Light brown SILTY SAND and GRAVEL, dry (FILL).	
		1	0-5'	70%	BG	GM			
	980							Dark brown SANDY SILT, trace Gravel, moist to very moist (FILL).	
5									
		2	5-10'	100%	BG	SW		Medium brown SAND, trace, Silt, very moist to wet.	
	975							Gray SILTY CLAY, trace fine Sand, low plasticity, moist.	
10									Boring backfilled with hydrated bentonite pellets (0-35' bgs)
								1" lens Sand, wet.	
		3	10-15'	100%	BG	CL		With Sand and Silt, very moist.	
	970								
15									

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP9-07

Borehole Depth: 35'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG	CL		Gray SILTY CLAY, trace fine Sand, low plasticity, moist.	
965							Silty Clay, trace Sand.	
20								
	5	20-25'	100%	BG				
960								
25								
	6	25-30'	100%	BG				
955								
30								
	7	30-35'	100%	BG				
950								
35								

EEC
Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 04/28/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan **Drilling Method:** Direct Push **Sampler Size:** 60"	**Northing:** 425619.92 **Easting:** 13414374.93 **Casing Elevation:** NA **Borehole Depth:** 15' **Surface Elevation:** 984.22 **Descriptions By:** Dan Dettner	**Well ID:** BP9-08 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	985								
0								Concrete and brick rubble (FILL).	
		1	0-5'	100%	BG			Medium brown SAND, trace Silt.	
	980					SP			
5		2	5-10'	100%	BG			Light brown SAND, trace Silt, wet.	
	975					SW			Boring backfilled with hydrated bentonite pellets (0-15' bgs)
10		3	10-15'	100%	BG			Gray SILTY CLAY, trace fine Sand, trace fine Gravel. low plasticity.	
	970					CL			
15									

EEC
Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 04/29/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan **Drilling Method:** Direct Push **Sampler Size:** 60"	**Northing:** 425656.67 **Easting:** 13414504.33 **Casing Elevation:** NA **Borehole Depth:** 15' **Surface Elevation:** 986.40 **Descriptions By:** Dan Dettner	**Well ID:** BP9-09 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Stratigraphic Description
0 / 985						Concrete and brick rubble (FILL), trace Sand.
	1	0-5'	80%	BG	GW	Light brown SAND and GRAVEL, trace Silt, dry (FILL).
					SW	Light brown SAND with SILT, very moist (FILL). Wet.
5 / 980	2	5-10'	60%	BG		Black foundry SAND.
					SM	Dark brown SILTY SAND, trace Gravel, wet.
10 / 975	3	10-15'	100%	BG	CL	Gray SILTY CLAY, trace Sand, trace Gravel, low plasticity, moist.
15						

Well Construction: Boring backfilled with hydrated bentonite pellets (0-15' bgs)

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 05/08/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10' corebarrel	**Northing:** 425568.35 **Easting:** 13414491.24 **Casing Elevation:** NA **Borehole Depth:** 17' **Surface Elevation:** 986.30 **Descriptions By:** Wayne Patterson	**Well ID:** BP9-10 **Client:** General Motors Corporation **Location:** Pontiac North Campus Pontiac, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0								
985	1	0-2'		0.9	SC		Brown CLAYEY SAND (FILL), dry.	
5					CL		Brown SANDY CLAY (CL), fine to coarse sand, few fine gravel, slightly moist.	
980							Concrete (footer).	
					CL		CLAY (FILL), moist.	
	2	8-10'		1.1			Concrete (footer).	Boring backfilled with hydrated bentonite pellets (0-17' bgs)
10								
975					CL		Brown CLAY, few fine to medium sand, dry to moist.	
	3	13-15'		0.3	SC		Gray CLAYEY SAND (SC), wet.	
15					CL		Brownish-gray CLAY (CL), moist.	
970							End of boring.	

Remarks:

Project: 64411.000
Data File:BP9-11.dat

Template:I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 10/29/03

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP9-10

Borehole Depth: 17'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20								

Remarks:

Date Start/Finish: 05/08/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10' corebarrel	**Northing:** 425751.31 **Easting:** 13414257.36 **Casing Elevation:** NA **Borehole Depth:** 17' **Surface Elevation:** 986.03 **Descriptions By:** Dave Straccia	**Well ID:** BP9-11 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 985	1	0-5'	100%	BG	MH		Brown SANDY SILT, trace medium Gravel, dry.	
5 / 980	2	5-10'	100%	BG	CL		Brown with gray mottling SILTY CLAY, trace fine Gravel, stiff, low plasticity, moist. trace fine Sand	
10 / 975	3	10-15'	100%	BG			brown and gray gray with sand brown, very moist to moist trace silt soft, gray	Boring backfilled with hydrated bentonite pellets (0-20' bgs)
15 / 970								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Encore Environmental Consortium, LLC

Project: 64411.000
Data File:BP9-11.dat

Template:I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 10/29/03

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP9-11

Borehole Depth: 17'

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG				
20								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 05/08/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Direct Push **Sampler Size:** 60"	**Northing:** 425600.16 **Easting:** 13414124.96 **Casing Elevation:** NA **Borehole Depth:** 20' **Surface Elevation:** 983.18 **Descriptions By:** Dave Straccia	**Well ID:** BP9-12 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
985								
0								
	1	0-5'	100%	BG	MH		Brown SANDY SILT, trace fine Gravel, dry, fill. trace fine gravel, moist 1.5" silty clay Brown with gray mottling SILTY CLAY, trace fine Gravel, firm, low plasticity, moist.	
980								
5	2	5-10'	100%	BG	CL		moist, natural	
975								
10	3	10-15'	100%	BG			brown and gray, firm	Boring backfilled with hydrated bentonite pellets (0-20' bgs)
970							gray	
15								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP9-12

Borehole Depth: 20'

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
965	4	15-20'	100%	BG				
20								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 05/08/03
Drilling Company: Prosonic Corporation
Driller's Name: Dan O'Mara
Drilling Method: Direct Push
Sampler Size: 60"

Northing: 425586.09
Easting: 13414270.47
Casing Elevation: NA

Borehole Depth: 30'
Surface Elevation: 984.62

Descriptions By: SM Duly

Well ID: BP9-13

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
985								
0								
	1	0-5'	4.8'	BG	ML		Brown SILT, little Clay, little fine to coarse Sand, medium dense, dry, fill.	
							gravel and pebbles, aggregate	
980					CL		Grayish brown SILTY CLAY, few fine to medium Sand, stiff, damp, fill.	
5							Brown fine to medium SAND, some to little Silt, few Clay, medium dense to loose, fill.	
	2	5-10'	2.3'	BG	SP		increased clay to some, building debris	
							saturated	
975								
10							fine to coarse gravel, pebbles, SP unit fines downward	Boring backfilled with hydrated bentonite pellets (0-20' bgs)
					ML		Brown SILT, little fine Sand, moist to saturated, medium dense.	
	3	10-15'	3.0'	BG	ML		Black with brown SILT as above but with little Clay, weak odor, wood fragments, fill.	
							black oily material in patches up to 1" in diameter	
							concrete debris	
970								
15							Grayish brown SILT, trace to little Clay, fine to coarse Sand, dense, damp, fill.	
							occasional brick fragment	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.000
Data File:BP9-13.dat

Template:I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 10/29/03

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP9-13

Borehole Depth: 30'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	3.8'	BG	ML		lenses/patches of clay with silt	
965 20								
	5	20-25'	3.3'	BG			6" fine to coarse gravel lense, saturated	
							saturated, sand, gravel, concrete debris throughout	
960 25							metallic debris, increased sand to some	
	6	25-30'	0.5'	BG				
955 30								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 05/01/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan **Drilling Method:** Direct Push **Sampler Size:** 60"	**Northing:** 425656.91 **Easting:** 13413950.24 **Casing Elevation:** NA **Borehole Depth:** 25' **Surface Elevation:** 980.44 **Descriptions By:** Dan Dettner	**Well ID:** BP11-01 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 980							Concrete and brick rubble (FILL).	
	1	0-5'	0%	BG	SW		Light brown SAND, trace Silt, moist, faint odor.	
5 975							Very moist.	
					CL		Brown and gray SILTY CLAY, trace fine Sand, trace medium Gravel, moist (FILL).	
	2	5-10'	100%	BG			Brown SILTY CLAY, trace Sand, trace Gravel, low plasticity, moist.	
10 970					CL			Boring backfilled with hydrated bentonite pellets (0-25' bgs)
	3	10-15'	100%	BG				
15 965								

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP11-01

Borehole Depth: 25'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG	CL			
20 / 960								
	5	20-25'	100%	BG				
					SM		Light brown SILTY SAND, trace medium Gravel, moist.	
					CL		Gray SILTY CLAY, trace Gravel, low plasticity, moist.	
25								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 05/01/03
Drilling Company: Prosonic Corporation
Driller's Name: Dan
Drilling Method: Direct Push
Sampler Size: 60"

Northing: 425652.46
Easting: 13413923.45
Casing Elevation: NA

Borehole Depth: 25'
Surface Elevation: 980.11

Descriptions By: Dan Dettner

Well ID: BP11-02

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 980					GP		Gray GRAVEL, trace Silt, moist (Fill).	
	1	0-5'	90%	BG	SW		Medium brown SAND, trace Silt, moist (Fill).	
5 / 975							Very moist.	
	2	5-10'	100%	BG	CL		Brown and gray SILTY CLAY, trace Sand (Fill), low plasticity, moist.	
10 / 970					CL		Brown SILTY CLAY, trace fine Sand, trace fine Gravel, low plasticity, moist.	Boring backfilled with hydrated bentonite pellets (0-25' bgs)
	3	10-15'	100%	BG				
15 / 965							Brown with gray mottling.	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP11-02

Borehole Depth: 25'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG	CL		Gray.	
20 960								
	5	20-25'	100%	BG				
25								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 05/01/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan **Drilling Method:** Direct Push **Sampler Size:** 60"	**Northing:** 425650.50 **Easting:** 13413887.96 **Casing Elevation:** NA **Borehole Depth:** 25' **Surface Elevation:** 979.95 **Descriptions By:** Dan Dettner	**Well ID:** BP11-03 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Stratigraphic Description
0 980	1	0-5'	100%	BG	GP	Gray GRAVEL with SILT, moist (Fill).
					SW	Light brown SAND, trace Silt, moist (Fill).
5 975	2	5-10'	100%	BG		
					CL	Brown and gray SILTY CLAY, trace Sand, trace Gravel, low plasticity, moist (Fill).
10 970	3	10-15'	100%	BG	CL	Brown SILTY CLAY, trace fine Sand, trace fine Gravel, low plasticity, moist. Brown with gray mottling. Trace fine sand lenses, 1 mm thick.
15 965						

Well Construction: Boring backfilled with hydrated bentonite pellets (0-25' bgs)

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP11-03

Borehole Depth: 25'

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG	CL		Gray, sand lenses not present.	
20 960								
	5	20-25'	100%	BG			1/2" lens of wet sand.	
25 955								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.000
Data File:BP11-03.dat

Template:I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 07/02/03

Date Start/Finish: 04/30/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan **Drilling Method:** Direct Push **Sampler Size:** 60"	**Northing:** 425667.50 **Easting:** 13413825.10 **Casing Elevation:** NA **Borehole Depth:** 25' **Surface Elevation:** 969.40 **Descriptions By:** Dan Dettner	**Well ID:** BP11-04 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0							Concrete.	
					GW		Light gray SAND and GRAVEL, dry (Fill).	
							Brown SILTY CLAY, trace Gravel, low plasticity, moist.	
	1	0-5'	100%	BG				
965								
5								
	2	5-10'	100%	BG	CL			
960								
10								Boring backfilled with hydrated bentonite pellets (0-25' bgs)
							Trace sand.	
	3	10-15'	100%	BG			Gray.	
							Brown.	
955								
15								
							Coarse sand. Gray.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP11-04

Borehole Depth: 25'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950 / 20	4	15-20'	100%	BG	CL			
945 / 25	5	20-25'	100%	BG				

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 04/30/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan **Drilling Method:** Direct Push **Sampler Size:** 60"	**Northing:** 425709.50 **Easting:** 13413803.91 **Casing Elevation:** NA **Borehole Depth:** 20' **Surface Elevation:** 969.23 **Descriptions By:** Dan Dettner	**Well ID:** BP11-05 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	970								
0								Concrete.	
								Dark brown SILT with SAND, moist (Fill).	
		1	0-5'	100%	BG	ML			
	965							Brown and gray SILTY CLAY, trace fine Sand, trace fine Gravel, low plasticity, moist (Fill).	
5									
		2	5-10'	100%	BG	CL			
	960								
10									Boring backfilled with hydrated bentonite pellets (0-20' bgs)
		3	10-15'	100%	BG				
						SW		Brown SAND, trace Silt, trace coarse Gravel, wet (Fill).	
	955							Gray SILTY CLAY, trace Gravel, low plasticity, moist.	
15						CL			

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP11-05

Borehole Depth: 20'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950 / 20	4	15-20'	100%	BG	CL			

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 04/30/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan **Drilling Method:** Direct Push **Sampler Size:** 60"	**Northing:** 425573.62 **Easting:** 13413826.70 **Casing Elevation:** NA **Borehole Depth:** 25' **Surface Elevation:** 964.60 **Descriptions By:** Dan Dettner	**Well ID:** BP11-06 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0	965								
								Asphalt.	
								Concrete.	
								Black SILTY SAND, trace Clay, trace Gravel, moist.	
		1	0-5'	100%	BG	SM		Brown.	
								Black.	
5	960							Brown and gray SILTY CLAY, trace Gravel, low plasticity, moist.	
		2	5-10'	100%	BG			2" lens sand and clay.	
10	955					CL			Boring backfilled with hydrated bentonite pellets (0-25' bgs)
		3	10-15'	100%	BG			Trace sand lenses (1 mm thick).	
15	950								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: BP11-06

Borehole Depth: 25'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
945 / 20	4	15-20'	100%	BG	CL			
	5	20-25'	100%	BG				
940 / 25					GW		Light gray SAND and GRAVEL, dry.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/30/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 423815.61 **Easting:** 13412354.95 **Casing Elevation:** NA **Borehole Depth:** 15' below grade **Surface Elevation:** 966.44 **Descriptions By:** Karen Partington (CRA)	**Well ID:** BW1-11A **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 965	1	0-5	NA	BG	SP		Dark brown fine SAND, trace Gravel, no odor, hard, dry. Black at 1.5' bgs. Light brown 2"-thick seam, loose at 2.5' bgs. Black, slight odor, damp at 4.0' bgs. Some Silt at 4.5' bgs.	Borehole backfilled with Bentonite Pellets.
5 / 960	2	5-10	NA	BG <9999 BG			Black, gray, and silver color, no Silt, no odor, hard, loose, dry at 5.0' bgs. Brown fine Sand, no odor, dry at 5.5' bgs. Gravel chunks, damp at 5.7' bgs. Dark brown, gray, black Gravelly Sand, damp at 5.8' bgs. Fine to coarse grained Sand, slight odor, wet at 6.0' bgs. No odor at 7.0' bgs. 2"-thick white coarse Sand seam, wet at 7.3' bgs. Black fine SAND, trace white Gravel, no odor, compact.	
10 / 955	3	10-15	NA	BG			Brown, orange-brown, and light brown color at 9.7' bgs. Black, trace Gravel, wet at 10' bgs. 2"-thick seam of coarse to 1" Gravelly white chunks at 13' bgs.	
15								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/28/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 424225.41 **Easting:** 13412487.13 **Casing Elevation:** NA **Borehole Depth:** 15' below grade **Surface Elevation:** 967.64 **Descriptions By:** Karen Partington (CRA)	**Well ID:** BW8-03 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0							CONCRETE.	
				2319			Black, brown, and yellow FILL consiting of Gravelly Sand, hardened black Slag chunks, odor, loose, moist.	
965	1	0-5	NA	507	CL		Gray Silty CLAY, black striations, firm, odor, moist.	Borehole backfilled with Bentonite Pellets.
					GW		Black Sandy GRAVEL, odor, loose, looks greasy, moist.	
5				1276			CONCRETE chunk.	
							Gray-brown CLAY, firm, dry. Trace Gravel and Sand, no odor, moist below 5.5' bgs.	
960	2	5-10	NA	BG				
10					CL		Soft, wet below 11' bgs.	
							Odor present below 12' bgs.	
955	3	10-15	NA	BG				
15							Stiff below 14' bgs.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

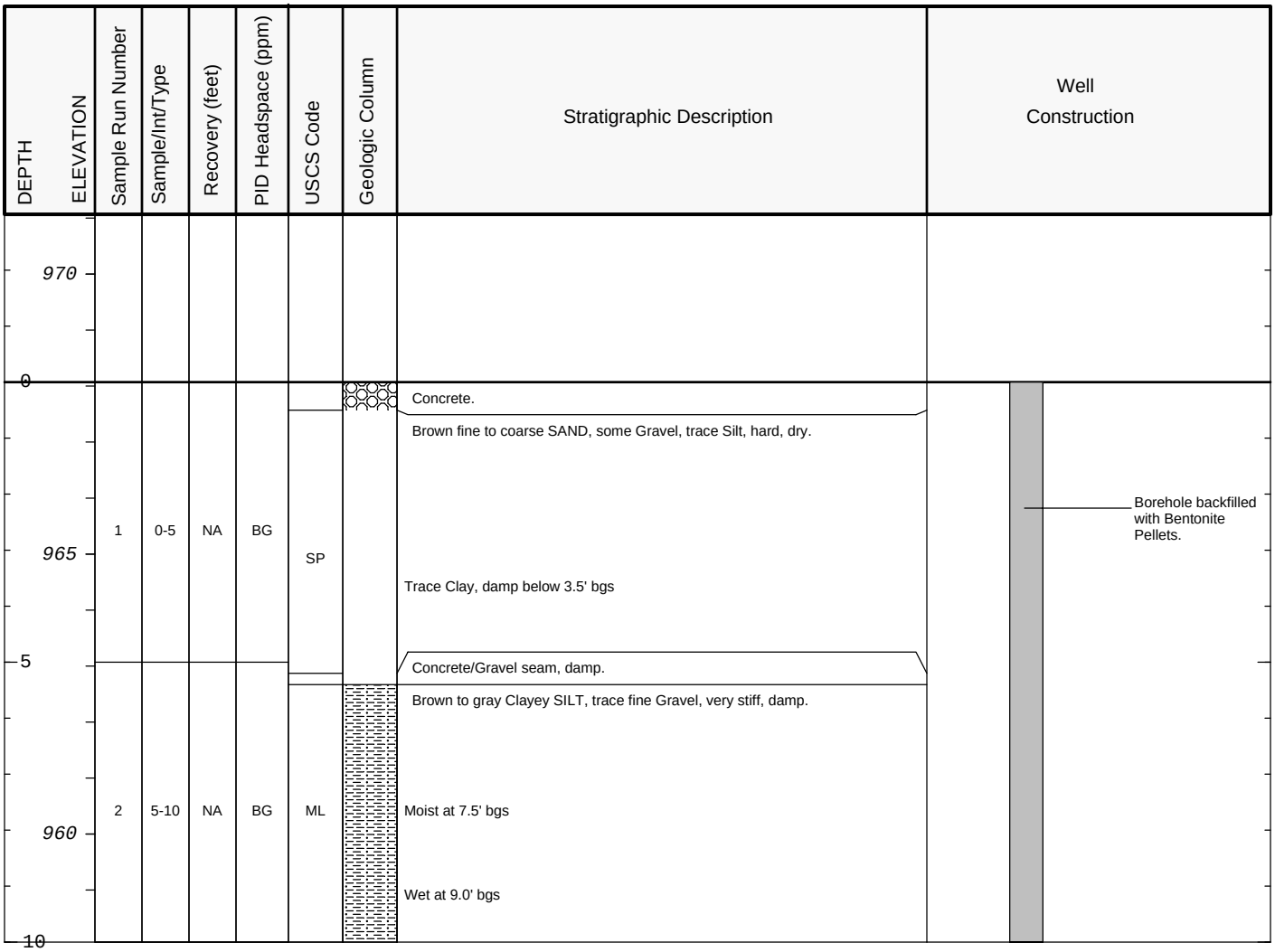
Date Start/Finish: 7/22/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 424232.44 **Easting:** 13412888.63 **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** 969.34 **Descriptions By:** Karen Partington (CRA)	**Well ID:** BW8-04 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0								
					SP		Brown Gravelly fine to coarse SAND, loose, dry.	
							Brown Silty fine SAND, some Gravel, very compact, hard, dry.	
	1	0-5	NA	BG	SM			Borehole backfilled with Bentonite Pellets.
965							Dark brown to black color, trace Clay below 4.3' bgs Slightly damp, increasingly dry below 4.5' bgs	
5								
							Brown to gray Clayey SILT, some Sand, moist.	
	2	5-10	NA	BG	ML		4" thick Sandy coarse Gravel seam with Silt and Clay at 6.0' bgs Wet below 6.5' bgs 1" thick coarse Gravel seam at 7.0' bgs	
960								
10								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/22/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 424272.55 **Easting:** 13413509.87 **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** 968.07 **Descriptions By:** Karen Partington (CRA)	**Well ID:** BW8-05 **Client:** GM **Location:** GM Pontiac North Campus



Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/28/03
Drilling Company: Prosonic Corporation
Driller's Name: Terry Warner
Drilling Method: Geoprobe
Sampler Size: 60 inches

Northing: 424065.98
Easting: 13412214.19
Casing Elevation: NA

Borehole Depth: 10' below grade
Surface Elevation: 963.48

Descriptions By: Karen Partington (CRA)

Well ID: BW8-06

Client: GM

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
965								
0							CONCRETE.	
					SP		Gray-brown fine SAND, trace Silt, trace Gravel, slight chemical odor, compact, moist. Black color at 1.0' bgs.	
				1340			Increased Gravel to some at 2.0' bgs. Trace red Brick at 2.5' bgs. Black greasy staining, trace possible Charcoal bits, wet below 2.7' bgs.	Borehole backfilled with Bentonite Pellets.
	1	0-5	NA				CONCRETE.	
960					CL		Gray-brown CLAY, trace Gravel, slight odor, stiff, moist.	
				1405	GW		Trace possible Charcoal bits, grading to black Fill, Gravel, red Brick, Glass, odor, compact below 3.7' bgs.	
5							Gray GRAVEL AND SAND, chunksof 1" Gravel, loose, dry.	
					CL		Gray, black, and brown CLAY, trace Gravel, stiff, damp.	
				BG				
							Rust-brown coarse Sandy GRAVEL, 1" Gravel chunks, no odor, loose, moist.	
	2	5-10	NA				Wet at 7.5' bgs.	
				BG			Gray-black Silty CLAY, no odor, wet.	
955					CL			
				BG			Firm at 9.4' bgs.	
10								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/29/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 20' below grade **Surface Elevation:** NA **Descriptions By:** Karen Partington (CRA)	**Well ID:** BW8-07 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0	0								
								CONCRETE.	
						CL		Brown Sandy Gravelly CLAY, no odor, firm, moist.	
		1	0-5	NA	BG			Void or empty space noticed beside the adjoining slabs wall of Concrete. Remaining sample fell into Void.	Borehole backfilled with Bentonite Pellets.
5	-5								
		2	5-10	NA	BG	CL		Brown CLAY, some Gravel, no odor, soft. Stiff at 7.5' bgs. Gravelly, firm, moist at 8.5' bgs.	
10	-10							Trace Gravel at 10' bgs.	
						SP		Brown fine SAND, no odor, compact, moist.	
		3	10-15	NA	BG	CL		Brown CLAY, trace Gravel, no odor, stiff, moist. Gray color at 13' bgs.	
15	-15							Wet at 15' bgs.	
		4	15-20	NA	BG			Gray CLAY, trace Gravel, no odor, stiff, wet.	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BW8-07

Borehole Depth: 20' below grade

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20 20	4	15-20	NA	BG	CL		2"-thick saturated seam of Clay with Sand and Silt, soft at 19' bgs.	Borehole backfilled with Bentonite Pellets.

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/29/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 424630.74 **Easting:** 13412690.35 **Casing Elevation:** NA **Borehole Depth:** 20' below grade **Surface Elevation:** 967.41 **Descriptions By:** Karen Partington	**Well ID:** BW8-08 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0							CONCRETE.	
							Black-brown Gravelly fine to coarse SAND, dry.	
965	1	0-5	NA	BG	SW			Borehole backfilled with Bentonite Pellets.
5							Brown Gravelly CLAY, crumbly, stiff, dry.	
							Some Sand, trace Clay below 5.5' bgs.	
							Brown CLAY, trace Gravel, firm, dry.	
960	2	5-10	NA	BG				
							Damp at 8.5' bgs.	
10					CL		Dark gray with black mottled Gravel pieces, wet at 10.2' bgs.	
							Brown-gray at 11' bgs.	
955	3	10-15	NA	BG				
							Some Gravel and Sand below 14.6' bgs.	
15	4	15-20	NA	BG				
					CL		Brown CLAY, some Gravel and Sand, firm, wet.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BW8-08

Borehole Depth: 20' below grade

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950	4	15-20	NA	BG	SW		Brown coarse SAND, some Gravel, wet.	Borehole backfilled with Bentonite Pellets.
					CL		Brown-gray CLAY, some Gravel, soft, wet. Trace Gravel, firm at 19.2' bgs.	
20								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/28/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 424485.49 **Easting:** 13412676.96 **Casing Elevation:** NA **Borehole Depth:** 20' below grade **Surface Elevation:** 967.72 **Descriptions By:** Karen Partington (CRA)	**Well ID:** BW8-09 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0							Concrete.	
					FI		Brown, black, and gray FILL consisting of fine to coarse Sand, Gravel, Clay, loose and compact, dry.	Borehole backfilled with Bentonite Pellets.
965	1	0-5	NA	BG				
5								
					SP		Brown fine SAND with Silt, compact, dry.	
960	2	5-10	NA	BG			Moist at 8.5' bgs	
10								
					SC		Gray Clayey fine SAND and SILT, odor.	
955	3	10-15	NA	BG			Gray-black color at 14' bgs	
15							Trace Gravel below 14.7' bgs	
	4	15-20	NA	BG				
							Brownish gray fine to coarse SAND and GRAVEL, slight odor, hard, very compact, wet.	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BW8-09

Borehole Depth: 20' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950	4	15-20	NA	BG	GW		Gray at 18.6' bgs	Borehole backfilled with Bentonite Pellets.
20					CL/SP		Gray CLAY and brown fine SAND stratified in 1/4" to 1" thick seams, soft, wet.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/30/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 242172.10 **Easting:** 13412661.39 **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** 967.60 **Descriptions By:** Karen Partington (CRA)	**Well ID:** BW8-10 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0							CONCRETE.	
							Brown Clayey fine SAND, trace Gravel, firm, no odor, damp.	
					SC			
965	1	0-5	NA	BG				Borehole backfilled with Bentonite Pellets.
							Moist at 3.5' bgs.	
							Brown fine SAND, compact, moist. Slight chemical odor, trace black, wet from 4.1' - 5.0' bgs.	
5					SP			
							Brown-gray CLAY, trace Gravel, no odor, stiff, wet.	
960	2	5-10	NA	BG			2"-thick seam of Sand at 7.5' bgs.	
					CL		Trace Silt at 8.0' bgs.	
					SP		Brown fine SAND, some Gravel, no odor, compact, saturated.	
10					GP		Brown-gray coarse GRAVEL, no odor, compact, saturated.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/28/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 424055.63 **Easting:** 13412777.50 **Casing Elevation:** NA **Borehole Depth:** 20' below grade **Surface Elevation:** 967.29 **Descriptions By:** Karen Partington (CRA)	**Well ID:** BW8-11 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0								
965	1	0-5	NA	BG			Brown fine SAND, trace Gravel, no odor, loose, dry.	Borehole backfilled with Bentonite Pellets.
							Damp at 3.0' bgs.	
5								
960	2	5-10	NA	BG	SP		Moist at 6.5' bgs.	
10								
955	3	10-15	NA	BG			Very moist to wet at 14' bgs.	
15	4	15-20	NA	BG	CL		Gray CLAY, trace Gravel, no odor, stiff, damp. Firm, wet at 15' bgs. Black straitions, 2"-thick thin, wiry, brittle/friable fibers at 15.5' bgs.	
							Gray CLAY, trace Gravel, no odor, stiff, damp.	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BW8-11

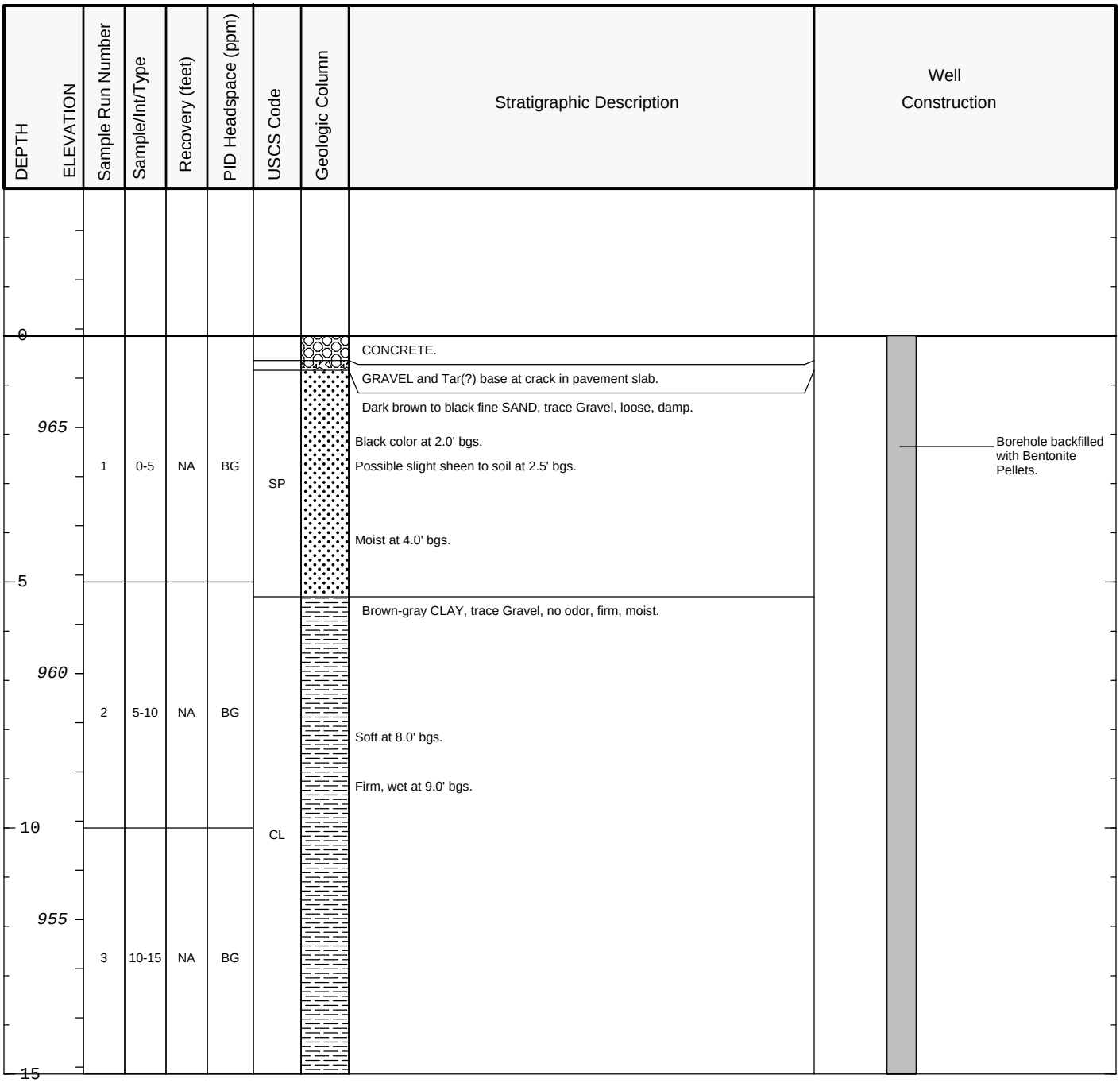
Borehole Depth: 20' below grade

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950	4	15-20	NA	BG	CL			Borehole backfilled with Bentonite Pellets.
20								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/28/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 423943.76 **Easting:** 13412694.83 **Casing Elevation:** NA **Borehole Depth:** 15' below grade **Surface Elevation:** 966.86 **Descriptions By:** Karen Partington (CRA)	**Well ID:** BW9-03 **Client:** GM **Location:** GM Pontiac North Campus



Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/22/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 423815.49 **Easting:** 13413366.48 **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** 970.97 **Descriptions By:** Karen Partington	**Well ID:** BW9-04 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0	970	1	0-5	NA	BG	SP		CONCRETE.	
								Black fine SAND, damp.	
						CL		Light brown CLAY, trace Gravel, non-plastic, very stiff, damp.	Borehole backfilled with Bentonite Pellets.
5	965	2	5-10	NA	BG			Trace black Sand, wet below 6.2' bgs.	
						ML		Brown fine Sandy SILT, soft, saturated.	
								3"-inch brown Sandy Seam, saturated below 7.2' bgs.	
								Trace Clay below 8.0' bgs.	
						CL		Light brown CLAY, trace Gravel, non-plastic, very stiff, wet.	
10									

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/22/03
Drilling Company: Prosonic Corporation
Driller's Name: Terry Warner
Drilling Method: Geoprobe
Sampler Size: 60 inches

Northing: 423588.14
Easting: 13413153.43
Casing Elevation: NA

Borehole Depth: 15' below grade
Surface Elevation: 971.12

Descriptions By: Karen Partington

Well ID: BW9-05

Client: GM

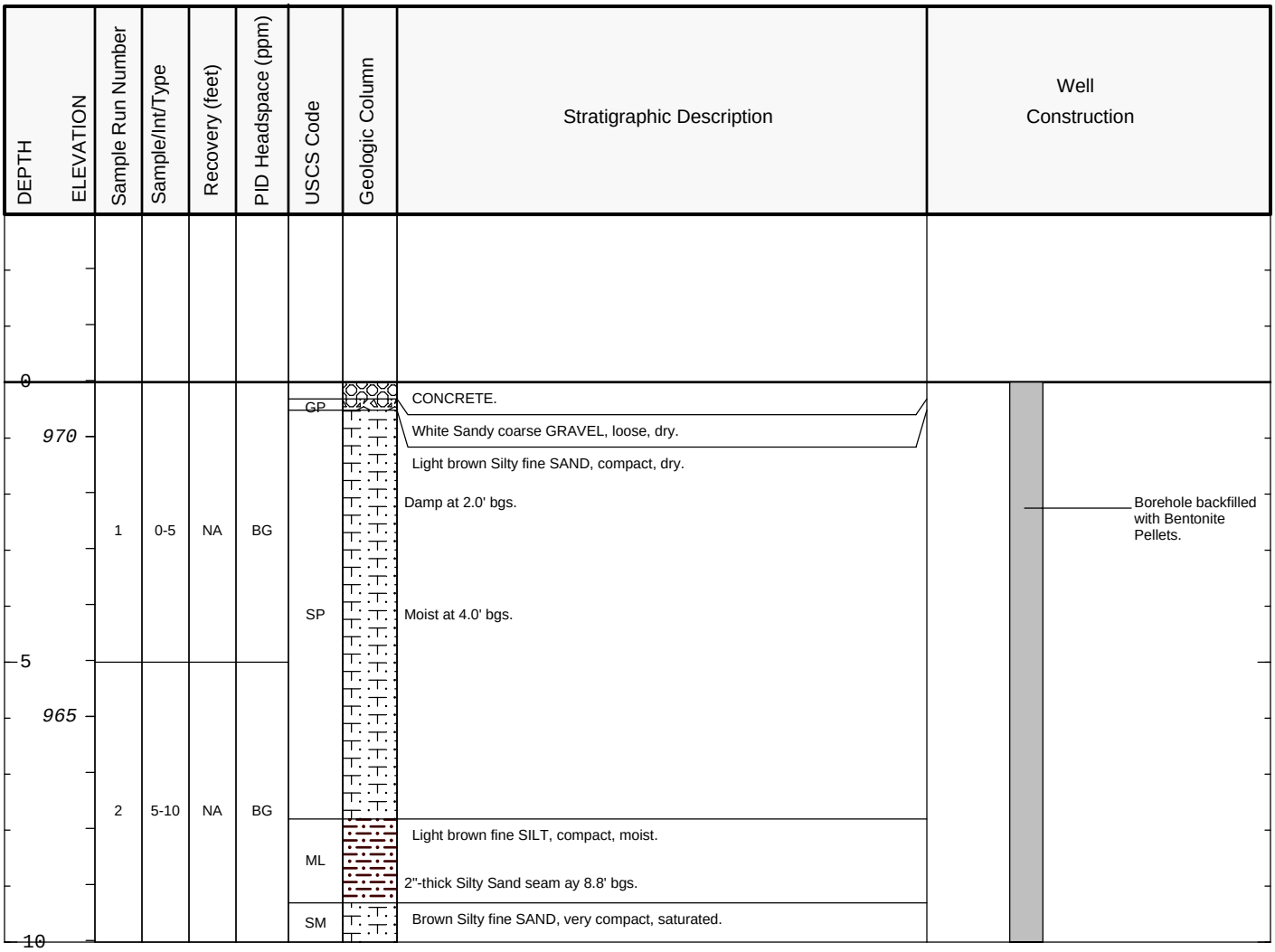
Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 970					SP		Brown fine to coarse SAND, some Gravel, Grass, and Roots, loose, dry.	
							CONCRETE Rubble.	
	1	0-5	NA	BG	SP/GP		Brown Gravelly fine to coarse SAND, loose, slightly damp.	Borehole backfilled with Bentonite Pellets.
							Moist, compact at 4.0' bgs.	
5 / 965							Some Silt and trace Gravel below 6.0' bgs.	
	2	5-10	NA	BG			Rust brown fine SAND, loose, dry.	
							1/2"-thick seam of gray coarse Gravel, loose, dry. Trace Silt below 7.25' bgs.	
10 / 960					SP		Wet below 11.8' bgs.	
	3	10-15	NA	BG			Saturated below 12.2' bgs.	
15								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/22/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 423595.82 **Easting:** 13413373.19 **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** 970.97 **Descriptions By:** Karen Partington	**Well ID:** BW9-06 **Client:** GM **Location:** GM Pontiac North Campus



Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/29/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 423955.89 **Easting:** 13412796.02 **Casing Elevation:** NA **Borehole Depth:** 27' below grade **Surface Elevation:** 967.55 **Descriptions By:** Wayne Patterson	**Well ID:** BW9-07 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0							CONCRETE.	
							Black fine SAND, loose, dry.	Borehole backfilled with Bentonite Pellets.
965	1	0-7	NA	BG				
5								
					SP			
960							Saturated at 9.0' bgs.	
10								
	2	7-17	NA	BG				
955								
15					ML		Dark gray SILT.	
					CL		Dark gray Silty CLAY, few fine to coarse Sand and Gravel, medium stiff to stiff, slightly plastic, damp.	
	2	7-17	NA	BG			Dark gray Silty CLAY, few fine to coarse Sand and Gravel, medium stiff to stiff, slightly plastic, damp.	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BW9-07

Borehole Depth: 27' below grade

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950								
20					CL			Borehole backfilled with Bentonite Pellets.
945	3	17-27	NA	BG				
25								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/28/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 423857.43 **Easting:** 13412779.69 **Casing Elevation:** NA **Borehole Depth:** 25' below grade **Surface Elevation:** 970.2 **Descriptions By:** 970.25	**Well ID:** BW9-08 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0	970							CONCRETE.	
								Brown fine SAND, trace Gravel, no odor, dry.	Borehole backfilled with Bentonite Pellets.
		1	0-5	NA	BG			Damp ay 3.0' bgs.	
5	965							Moist at 5.0' bgs.	
						SP			
		2	5-10	NA	BG			Black staining, moust at 7.2' bgs.	
								Moist at 8.0' bgs.	
10	960								
						GW		White coarse Gravelly, Sandy SLAG, no odor, dry.	
		3	10-15	NA	BG			Gray CLAY, trace Gravel, firm, moist.	
						CL			
15	955	4	15-20	NA	BG				
								Gray CLAY, trace Gravel, firm, moist.	

EEC
Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BW9-08

Borehole Depth: 25' below grade

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20	NA	BG				Borehole backfilled with Bentonite Pellets.
20 950					CL		2" Gravl chunks at 20.2' bgs. Wet, soft at 20.4' bgs.	
	5	20-25	NA	BG			Gray-black striations, firm at 22' bgs.	
25							Stiff at 24' bgs.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: **Drilling Company:** **Driller's Name:** **Drilling Method:** **Sampler Size:**	**Northing:** **Easting:** **Casing Elevation:** **Borehole Depth:** **Surface Elevation:** **Descriptions By:**	**Well ID:** **Client:** **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project:
Data File:

Template:
Date:

Date Start/Finish: 7/28/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 423437.42 **Easting:** 13412726.98 **Casing Elevation:** NA **Borehole Depth:** 30' below grade **Surface Elevation:** 970.74 **Descriptions By:** Karen Partington	**Well ID:** BW9-10 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 970							CONCRETE.	
							Brown fine SAND, dry.	Borehole backfilled with Bentonite Pellets.
	1	0-5	NA	BG			Damp at 3.0' bgs.	
5 / 965							Black color at 5.0' bgs.	
	2	5-10	NA	BG	SP		Light brown mottled patches at 8.0' bgs.	
							Black-gray color at 9.5' bgs.	
10 / 960							Black with light brown mottled patches at 10' bgs.	
	3	10-15	NA	BG			Trace 1" Gravel chunks at 12.5' bgs.	
15 / 955	4	15-20	NA	BG			No Recovery. 3" Rock blocked sample collection for sleeve.	
							No Recovery. 3" Rock blocked sample collection for sleeve.	

EEC
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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BW9-10

Borehole Depth: 30' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20	NA	BG				Borehole backfilled with Bentonite Pellets.
20 / 950	5	20-25	NA	BG	SP		Brown fine SAND, moist.	
					GW		Brown-gray fine to coarse Sandy GRAVEL, compact, moist.	
					SM		Brown Silty Clayey fine SAND, compact, moist.	
25 / 945	6	25-30	NA	BG	SP		Gray-brown fine SAND, compact, moist.	
					CL		Gray-brown CLAY, stiff, moist.	
30					SW		Brown-gray Gravelly fine to coarse SAND, wet.	

EEC
Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/29/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 423346.29 **Easting:** 13412818.92 **Casing Elevation:** NA **Borehole Depth:** 27' below grade **Surface Elevation:** 970.38 **Descriptions By:** Wayne Patterson	**Well ID:** BW9-11 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 970							CONCRETE.	
	1	0-7	NA	BG	SP		Black fine SAND, loose, dry. Yellow-brown color from 3.0' - 4.5' bgs.	Borehole backfilled with Bentonite Pellets.
5 / 965								
	2	7-17	NA	BG	CL		Dark gray Silty CLAY, few fine to coarse Sand, few Gravel, Concrete rubble from 7.0' - 8.0' bgs, slight odor, slight sheen, moderately plastic, saturated.	
10 / 960								
15 / 955	2	7-17	NA	BG	CL		Dark gray Silty CLAY, few fine to coarse Sand, few Gravel, slight odor, slight sheen, moderately plastic, saturated.	

EEC
Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BW9-11

Borehole Depth: 27' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
					ML		Dark gray SILT, saturated.	Borehole backfilled with Bentonite Pellets.
20 / 950	3	17-27	NA	BG	SP		Gray-brown fine SAND, loose, dry.	
					CL		Gray-brown SILT, saturated.	
25 / 945					SP		Gray-brown fine SAND, loose, dry.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/30/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 423780.37 **Easting:** 13412736.50 **Casing Elevation:** NA **Borehole Depth:** 25' below grade **Surface Elevation:** 970.61 **Descriptions By:** Karen Partington	**Well ID:** BW9-12 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 970							CONCRETE.	
							Brown fine SAND, loose, dry.	
	1	0-5	NA	BG				Borehole backfilled with Bentonite Pellets.
5 / 965							Dark brown, compact at 4.5' bgs.	
	2	5-10	NA	BG	SP		Gray to dark brown, some Gravel, damp at 7.5' bgs. No Gravel, dry at 8.0' bgs.	
10 / 960							2"-thick Slag chunk at 10.5' bgs.	
	3	10-15	NA	BG			Light brown color, some white coarse Gravel (looks like hardened foam chunks, powders easily) at 11.4' bgs. Dark brown color at 12' bgs.	
							No white Gravel at 13.5' bgs.	
15 / 955	4	15-20	NA	BG				
							Brown fine SAND, loose, dry.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BW9-12

Borehole Depth: 25' below grade

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20	NA	BG	SP		Light brown color at 17' bgs. Dark brown, some coarse white Gravel pieces at 17.5' bgs. Gray-brown color, damp at 19' bgs. Dark brown to black at 19.5' bgs. Black color at 20' bgs. Moist at 20.3' bgs. Wet at 20.4' bgs. Trace white Gravel at 20.6' bgs Saturated at 21' bgs. No Gravel at 22' bgs.	Borehole backfilled with Bentonite Pellets.
20 950	5	20-25	NA	BG				
25								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/8/03
Drilling Company: Prosonic Corporation
Driller's Name: Mike Bond
Drilling Method: Geoprobe
Sampler Size: 10 feet

Northing: 423675.00
Easting: 13412738.00
Casing Elevation: NA

Borehole Depth: 27.5' bgs
Surface Elevation: 968.79'

Descriptions By: D. Deitner

Well ID: BW9-14

Client: GM

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0							CONCRETE.	
					SP		Dark brown medium poorlt graded SAND (SP), trace Silt, compact, moist. [FILL]	
				BG				
965	1	0-7	100					
5				BG			Dark brown Silty fine poorly graded SAND (SM), trace medium rounded Gravel, moist. [FILL]	Borehole backfilled with Bentonite Pellets.
960				BG				
10					SM			
	2	7-17	100				Gray color below 12' bgs.	
955				BG				
15							Brown color below 15' bgs.	
	2	7-17	100	BG			Dark brown Silty fine poorly graded SAND (SM), trace medium rounded Gravel, faint odor, very moist. [FILL]	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BW9-14

Borehole Depth: 27.5' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950 / 20	3	17-27.5	100	3.4	SM			Borehole backfilled with Bentonite Pellets.
945 / 25				4.0			Foundry SAND.	
					CL		Gray Silty CLAY (CL), low plasticity, moist. [FILL]	
					SM		Gray and black Silty fine to medium poorly graded SAND (SM), trace fine rounded Gravel, moist. [FILL]	
940 / 30								
935 / 35								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/11/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 423763.05 **Easting:** 13412864.94 **Casing Elevation:** NA **Borehole Depth:** 37' **Surface Elevation:** 970.51 **Descriptions By:** Dan Dietner	**Well ID:** BW9-16 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0	970	1	0-5	NA	BG	SP		CONCRETE. Light brown fine SAND, trace Silt, poorly graded, compact, moist. trace fine Gravel dark brown, trace organics (topsoil)	Borehole backfilled with Bentonite Pellets.
5	965	2	5-10	NA	BG	MH		2" concrete rubble Light brown SANDY SILT, compact, moist.	
10	960	3	10-15	NA	BG	SP		Dark brown fine SAND, trace Silt, trace fine Gravel, compact, moist. with slag and concrete	
15	955	4	15-20	NA	BG			odor slag and concrete not present	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BW9-16

Borehole Depth: 37'

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20	NA	BG			Brown, black, and gray mixture SILTY CLAY, trace fine Gravel, horizontal Sand lenses, low plasticity, moist.	Borehole backfilled with Bentonite Pellets.
20 950								
	5	20-25	NA	BG	CL			
25								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/11/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 423678.33 **Easting:** 13412727.34 **Casing Elevation:** NA **Borehole Depth:** 37' **Surface Elevation:** 968.70 **Descriptions By:** Dan Dietner	**Well ID:** BW9-17 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0							CONCRETE.	
					SM		Dark brown fine SILTY SAND, trace medium Gravel, trace steel slag, compact, poorly graded, moist.	
					SP		Light brown fine SAND, trace Silt, compact, poorly graded, moist.	Borehole backfilled with Bentonite Pellets.
		0-5	100%	BG			Dark brown fine SILTY SAND, trace fine Gravel, compact, poorly graded.	
965								
5								
		5-10	100%	BG			very moist to moist, loose	
960								
10								
		10-15	100%	BG				
955								
15					SM			
		15-20	100%	BG				

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BW9-17

Borehole Depth: 37'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950 / 20		15-20	100%	BG				Borehole backfilled with Bentonite Pellets.
945 / 25		20-25	100%	BG				
940 / 30		25-30	100%	BG			Gray SILTY CLAY, trace fine Gravel, firm, low plasticity, moist. 3" verticle lens sand	
935 / 35		30-35	100%	BG	CL		1/8" horizontal lens sand	
		35-37	100%	BG				

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/11/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 424057.46 **Easting:** 13412790.25 **Casing Elevation:** NA **Borehole Depth:** 37' **Surface Elevation:** 967.40 **Descriptions By:** Dan Dietner	**Well ID:** BW9-18 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0								
	1	0-5	100%	BG			Light brown fine SAND, trace Silt, loose, poorly graded, dry.	
							damp, compact	Borehole backfilled with Bentonite Pellets.
965								
5								
	2	5-10	100%	BG			moist	
							trace fine Gravel	
960								
10								
	3	10-15	100%	BG	SP			
955								
15								
	4	15-20	100%	BG				

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Encore Environmental Consortium, LLC

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: BW9-18

Borehole Depth: 37'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950 / 20	4	15-20	100%	BG				Borehole backfilled with Bentonite Pellets.
945 / 25	5	20-25	100%	BG	CL		Gray SILTY CLAY, trace Sand, trace fine Gravel, low plasticity, very moist.	
	6	25-30	100%	BG	GM		Gray medium SILTY SAND and GRAVEL, loose poorly gravel, very moist to wet.	
940 / 30	7	30-35	100%	BG	CL		Gray SILTY CLAY, trace fine Gravel, low plasticity, moist.	
935 / 35	8	35-37	100%	BG				

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 10/03/02
Drilling Company: Altech Services
Driller's Name: NA
Drilling Method: Direct Push
Sampler Size: 2" ID - 5' Macrocore

Northing: 422963.47
Easting: 13412714.10
Casing Elevation: NA

Borehole Depth: 15' below grade
Surface Elevation: 939.14

Descriptions By: Wayne Patterson

Well ID: DP-01

Client: GM-PNC

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
940								
0							Cement surface.	
	0-5'	DP	2.5		FI		Dark brown SILTY CLAY, weakly plastic, some gravel aggregate, dry, (fill).	
							Dark gray to black SILTY CLAY, weakly plastic, few fine to coarse sand, few fine to coarse gravel, soft to medium stiff, saturated, at 4.0' - 4.5' brown silt lense, at 4.5' clay as at 2.5' - 4.0' becoming brown, at 7.5' becoming gray to light gray.	Borehole backfilled with Bentonite Pellets and capped with Cement.
935	5-1							
5	5-10'	DP	4.5		CL			
930	5-2						Dark brown to black PEAT, nonplastic, wood fibers, moist.	
10	5-15'	DP	2.5		PT			
925	5-3							
15					OL		Light gray MARL, some carbonate fragments, very soft, moist, organic odor.	

EEC Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 10/03/02
Drilling Company: Altech Services
Driller's Name: NA
Drilling Method: Direct Push
Sampler Size: 2" ID - 5' Macrocore

Northing: 422962.15
Easting: 13412704.70
Casing Elevation: NA

Borehole Depth: 15' below grade
Surface Elevation: 939.11

Descriptions By: Wayne Patterson

Well ID: DP-02

Client: GM-PNC

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
940								
0							Cement surface.	
	0-5'	DP	3.0	BG	FI		Dark brown SILTY CLAY, weakly plastic, some gravel aggregate, dry, (fill).	
					CL		Dark gray SILTYCLAY, weakly plastic, few fine to coarse sand, few fine to coarse gravel, medium stiff to stiff, saturated, at 4.0' - 7.0' brown silt lense, at 7.0' clay as at 2.5' - 4.0' becoming brown, at 8.0' becoming light gray.	Borehole backfilled with Bentonite Pellets and capped with Cement.
935	5-1							
5	5-10'	DP	3.5	BG				
930	5-2							
10					PT		Dark brown to black PEAT, nonplastic, wood fibers, moist.	
	10-15'	DP	2.5	BG				
925	5-3							
15					OL		Light gray MARL, some carbonate fragments, very soft, moist.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.215
Data File:DP-02.dat

Template:j:\rockware\logplot2001\logfiles\Templates\Pontiac2.ldf
Date: 12/17/02

Date Start/Finish: 10/03/02 **Drilling Company:** Altech Services **Driller's Name:** NA **Drilling Method:** Direct Push **Sampler Size:** 2" ID - 5' Macrocore	**Northing:** 422959.50 **Easting:** 13412646.36 **Casing Elevation:** NA **Borehole Depth:** 15' below grade **Surface Elevation:** 939.42 **Descriptions By:** Wayne Patterson	**Well ID:** DP-03 **Client:** GM-PNC **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	940								
0								Cement surface.	
		0-5'	DP	4.0		FI		Dark brown SILTY CLAY, weakly plastic, some gravel aggregate, dry, (fill).	
		5-1				CL		Dark gray SILTY CLAY, weakly plastic, few fine to coarse sand, few fine to coarse gravel, stiff, damp, at 2.5' - 3.0' black staining, at 4.0' - 6.0' brown silt, saturated at 5.0', at 6.0' clay as at 2.5' - 4.0' becoming brown, becoming softer with depth, at 9.0' becoming light gray.	Borehole backfilled with Bentonite Pellets and capped with Cement.
	935								
5		5-10'	DP	2.5					
		5-2							
	930								
10		10-15'	DP	2.5		PT		Dark brown to black PEAT, nonplastic, wood fibers, moist.	
		5-3							
	925								
15									

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 10/03/02
Drilling Company: Altech Services
Driller's Name: NA
Drilling Method: Direct Push
Sampler Size: 2" ID - 5' Macrocore

Northing: 422944.16
Easting: 13412565.71
Casing Elevation: NA

Borehole Depth: 15' below grade
Surface Elevation: 939.71

Descriptions By: Wayne Patterson

Well ID: DP-04

Client: GM-PNC

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 940								
0	0-5'	DP	4.0	BG	FI		Cement surface.	Borehole backfilled with Bentonite Pellets and capped with Cement.
							Dark brown SILTY CLAY, weakly plastic, some gravel aggregate, some fine to coarse sand, dry (fill).	
5 / 935	5-1				CL		Dark brown SILTY CLAY, weakly plastic, few fine to coarse sand, few fine to coarse gravel, hard, dry.	
	5-10'	DP	3.0	BG				
	5-2							
10 / 930					PT		Dark brown to black PEAT, nonplastic, wood fibers, moist.	
	10-15'	DP	2.5	BG				
	5-3				OL		Light gray MARL, some carbonate fragments, very soft, moist.	
15 / 925								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.215
Data File:DP-04.dat

Template:j:\rockware\logplot2001\logfiles\Templates\Pontiac2.ldf
Date: 12/17/02

Date Start/Finish: 10/03/02
Drilling Company: Altech Services
Driller's Name: NA
Drilling Method: Direct Push
Sampler Size: 2" ID - 5' Macrocore

Northing: 422941.08
Easting: 13412495.03
Casing Elevation: NA

Borehole Depth: 15' below grade
Surface Elevation: 939.78

Descriptions By: Wayne Patterson

Well ID: DP-05

Client: GM-PNC

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 940	0-5'	DP	3.5		FI		Cement surface. Dark brown angular GRAVEL aggregate, some silty Clay, some fine to coarse sand, saturated (fill).	Borehole backfilled with Bentonite Pellets and capped with Cement.
5 / 935	5-1 5-10'	DP	3.0		CL		Dark gray SILTY CLAY, little olive green mottling, weakly plastic, few fine to coarse sand, few fine to coarse gravel, stiff, damp to moist.	
10 / 930	5-2				PT		Dark brown to black PEAT, nonplastic, wood fibers, moist.	
15 / 925	10-15' 5-3	DP	3.0		OL		Light gray MARL, some carbonate fragments, very soft, moist.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 10/03/02
Drilling Company: Altech Services
Driller's Name: NA
Drilling Method: Direct Push
Sampler Size: 2" ID - 5' Macrocore

Northing: 423026.46
Easting: 13412505.94
Casing Elevation: NA

Borehole Depth: 15' below grade
Surface Elevation: 939.79

Descriptions By: Wayne Patterson

Well ID: DP-06

Client: GM-PNC

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 940	0-5' / 5-1	DP	2.0	10.7	FI		Cement surface. Dark brown to dark gray GRAVEL AGGREGATE, some silty Clay, some fine to coarse sand, saturated (fill).	Borehole backfilled with Bentonite Pellets and capped with Cement.
5 / 935	5-10' / 5-2	DP	2.5	5.6	CL		Gray to greenish gray with yellow mottling SILTY CLAY, weakly plastic, few fine to coarse sand, few fine to coarse gravel, stiff, saturated.	
10 / 930	10-15' / 5-3	DP	0.0	NA	PT		Dark brown to black PEAT, nonplastic, wood fibers, moist.	
15 / 925								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 10/03/02
Drilling Company: Altech Services
Driller's Name: NA
Drilling Method: Direct Push
Sampler Size: 2" ID - 5' Macrocore

Northing: 423031.25
Easting: 13412704.18
Casing Elevation: NA

Borehole Depth: 10' below grade
Surface Elevation: 939.81

Descriptions By: Wayne Patterson

Well ID: DP-07

Client: GM-PNC

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 940	0-5'	DP	3.0		FI		Cement surface. Brown GRAVEL aggregate, nonplastic, few silty clay, few fine to coarse sand, saturated (fill), at 2.5' - 3.0' black stained.	Borehole backfilled with Bentonite Pellets and capped with Cement.
	5-1				CL		Gray SILTY CLAY, weakly plastic, few fine to coarse sand, few fine to coarse gravel, stiff, saturated.	
5 / 935	5-10'	DP	2.5		PT		Dark brown to black PEAT, nonplastic, wood fibers, moist.	
	5-2				OL		Light gray MARL, some carbonate fragments, very soft, moist.	
10 / 930								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 10/03/02
Drilling Company: Altech Services
Driller's Name: NA
Drilling Method: Direct Push
Sampler Size: 2" ID - 5' Macrocore

Northing: 423010.66
Easting: 13412693.55
Casing Elevation: NA

Borehole Depth: 15' below grade
Surface Elevation: 939.87

Descriptions By: Wayne Patterson

Well ID: DP-08

Client: GM-PNC

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 940	0-5'	DP	3.0		FI		Cement surface. Dark brown GRAVEL aggregate, few silty clay, few fine to coarse subangular sand, red brick fragment, strong odor, saturated (fill).	Borehole backfilled with Bentonite Pellets and capped with Cement.
	5-1				CL		Gray with olive green mottling SILTY CLAY, weakly plastic, few fine to coarse sand, few fine to coarse gravel, medium stiff, moist, becoming brown to light brown with depth.	
5 / 935	5-10'	DP	2.0					
	5-2				PT		Dark brown to black PEAT, nonplastic, wood fibers, moist.	
10 / 930	10-15'	DP	0.0					
	5-3							
15 / 925								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.215
Data File:DP-08.dat

Template:j:\rockware\logplot2001\logfiles\Templates\Pontiac2.ldf
Date: 12/17/02

Date Start/Finish: 10/04/02
Drilling Company: Altech Services
Driller's Name: NA
Drilling Method: Direct Push
Sampler Size: 2" ID - 5' Macrocore

Northing: 422912.83
Easting: 13412549.42
Casing Elevation: 949.95

Borehole Depth: 20' below grade
Surface Elevation: 947.93

Descriptions By: Wayne Patterson

Well ID: MW-01

Client: GM-PNC

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0					FI		Black TOPSOIL, organic, plant material, dry to damp.	
							CONCRETE, highly weathered, fractured.	
945	1	5'	4.0				Light brown with little orange mottling SILTY CLAY, weakly plastic, few fine to coarse sand, few fine to coarse gravel, stiff to very stiff, dry.	
5								
940	2	5'	4.0				at 7' 7.5' black staining, 2 -3" lenses of gravel aggregate	
10					CL		becomes black stained and saturated becoming more plastic and medium stiff	
935	3	5'	3.0				1" layer of asphalt	
15								
930	4	5'	3.0				becoming siltier and more plastic, soft	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM-PNC

Site Location:
GM Pontiac North Campus

Boring ID: MW-01

Borehole Depth: 20' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 10/04/02
Drilling Company: Altech Services
Driller's Name: NA
Drilling Method: Direct Push
Sampler Size: 2" ID - 5' Macrocore

Northing: 422916.91
Easting: 13412645.65
Casing Elevation: 951.12

Borehole Depth: 20' below grade
Surface Elevation: 948.70

Descriptions By: Wayne Patterson

Well ID: MW-02

Client: GM-PNC

Location: GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0								Dark brown to black TOPSOIL, organic, plant material, dry.	
						FI			
		1	5'	4.0	0.0			CONCRETE, highly weathered, fractured.	
								Brown and gray mottled SILTY CLAY, weakly plastic, few fine to coarse sand, few fine to coarse gravel, stiff, dry to damp.	
	945								
5									
		2	5'	5.0	0.0				
	940							Black staining, moist, becoming medium stiff.	
10									
		3	5'	3.5	0.0	CL			
	935								
15								3" lense of light brown fine sand, saturated.	
		4	5'	3.0	0.0				
								1" lense of light brown fine sand, saturated	
	930								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM-PNC

Site Location:
GM Pontiac North Campus

Boring ID: MW-02

Borehole Depth: 20' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 10/04/02 **Drilling Company:** Altech Services **Driller's Name:** NA **Drilling Method:** Direct Push **Sampler Size:** 2" ID - 5' Macrocore	**Northing:** 422922.03 **Easting:** 13412703.63 **Casing Elevation:** 948.40 **Borehole Depth:** 15' below grade **Surface Elevation:** 948.70 **Descriptions By:** Wayne Patterson	**Well ID:** MW-03 **Client:** GM-PNC **Location:** GM Pontiac North Campus

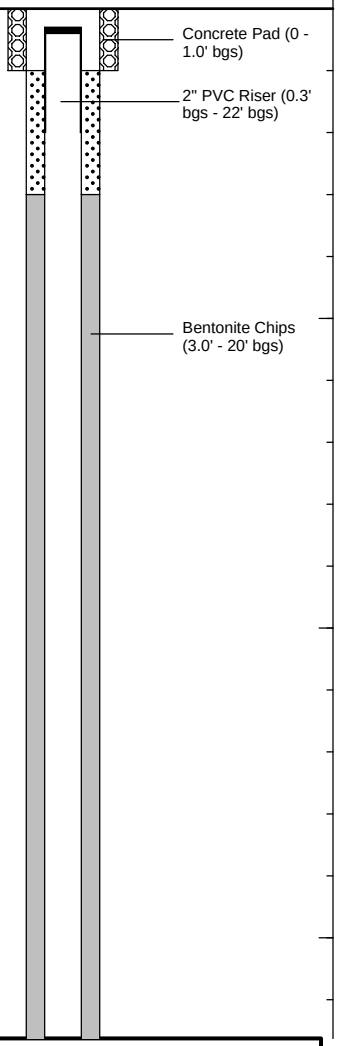
DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0						FL		Concrete surface.	
						SP		Light brown fine to coarse SAND, nonplastic, few fine to coarse gravel, dry, loose, fill material.	
		1	5'	4.0	0.0				
	945								
5						ML		Light brown SILT, nonplastic, few clay, saturated at 7.0'.	
		2	5'	3.0	0.0	SM		Black fine to medium SILTY SAND, nonplastic, loose, saturated, at 8.0' 1" lense of light brown sand.	
	940								
10		3	5'	4.5	0.0	CL		Grayish brown SILTY CLAY, slightly plastic, some fine to coarse sand, few fine sand, few fine gravel, medium stiff, moist.	
	935								
15									

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/24/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Hollow Stem Auger **Sampler Size:** 60 inches	**Northing:** 424876.83 **Easting:** 13411321.54 **Casing Elevation:** 973.31 **Borehole Depth:** 35' below grade **Surface Elevation:** 973.63 **Descriptions By:** Karen Partington	**Well ID:** MWF7-03 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Stratigraphic Description
975 / 0						CONCRETE.
						Brown Gravelly fine to coarse SAND, loose, dry to damp.
	1	0-5	NA		SW	
970 / 5						
	2	5-10	NA		CL	Gray Silty CLAY, trace fine gravel, slightly plastic, stiff, dry to damp.
965					ML	Black SILT, trace Clay, stiff, firm, dry.
10					CL	Gray CLAY, trace fine to coarse Gravel, non-plastic, stiff, damp.
						Some Sand below 10.5' bgs.
	3	10-15	NA		SP	Brown-gray fine to medium SAND, compact, damp.
960						Very moist to wet at 14.5' bgs.
15	4	15-20	NA		CL	Gray CLAY, trace fine to coarse Gravel, stiff, non-plastic, damp.
						Gray CLAY, trace fine to coarse Gravel, stiff, non-plastic, damp.



Well Construction

EEC Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWF7-03

Borehole Depth: 35' below grade

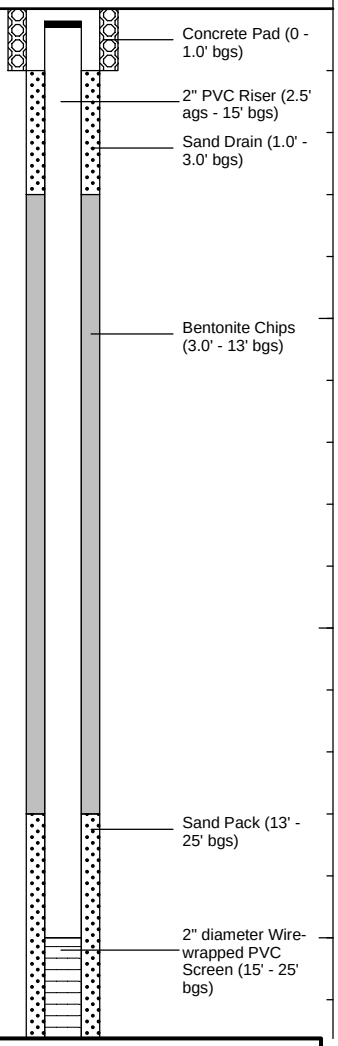
DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
955 / 20	4	15-20	NA		CL		Slightly plastic, moist below 17.5' bgs.	Bentonite Chips (3.0' - 20' bgs); 2" PVC Riser (0.3' bgs - 22' bgs)
950 / 25	5	20-25	NA					Sand Pack (20' - 32' bgs)
945 / 30	6	25-30	NA				Trace Silt, very moist below 27.5' bgs.	2" diameter #10 Wire-Wrapped Screen (22' - 32' bgs)
940 / 35	7	30-35	NA		SP		Brown to gray fine to coarse SAND, compact, wet.	Formation Collapse (32' - 35' bgs)

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/23/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 424739.22 **Easting:** 13412096.62 **Casing Elevation:** 970.25 **Borehole Depth:** 27' below grade **Surface Elevation:** 967.65 **Descriptions By:** Wayne Patterson	**Well ID:** MWM1-04 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Stratigraphic Description
970						
0						CONCRETE.
						Yellow-brown fine SAND, rare Clay, loose, dry.
965	1	0-7	NA	0.0	SP	
5						
960						
10						Dark gray SILT, saturated.
	2	7-17	NA	0.0	ML	
955						Dark gray Silty CLAY, moderately plastic, medium stiff, wet.
15					CL	
	2	7-17	NA	0.0		Yellow-brown fine to medium SAND, increasing grain size with depth, loose, dry.



Well Construction

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.011
Data File:MWM1-04.dat

Template:J:\rockware\LogPlot 2001\LogFiles\64411\Geoprobe.ldf
Date: 8/25/03

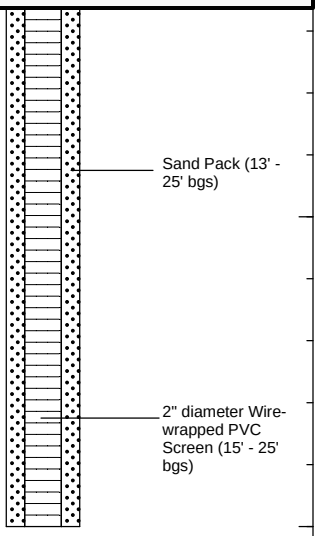
Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWM1-04

Borehole Depth: 27' below grade

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950								
20					SP			
	3	17-27	NA	0.0				
945								
25								



Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/23/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 424855.83 **Easting:** 13412187.71 **Casing Elevation:** 967.48 **Borehole Depth:** 27' below grade **Surface Elevation:** 967.66 **Descriptions By:** Wayne Patterson	**Well ID:** MWM1-05 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0							CONCRETE.	Concrete Pad (0 - 1.0' bgs)
							Yellow-brown (10YR 5/4) fine SAND, no odor, loose, dry.	2" PVC Riser (0.3' bgs - 15' bgs)
965								Sand Drain (1.0' - 3.0' bgs)
	1	0-7	NA	BG	SP			
5								Bentonite Chips (3.0' - 13' bgs)
960							Dark gray-brown (10YR 4/2) SILT, no odor, moist to wet.	
10					ML			
	2	7-17	NA	BG	CL		Dark gray-brown (10YR 4/2) Silty CLAY, no odor, slightly plastic, stiff, moist.	
							Yellow-brown (10YR 5/6) fine to medium SAND, no odor, loose, dry.	
955					SP			Sand Pack (13' - 25' bgs)
15								2" diameter Wire-wrapped PVC Screen (15' - 25' bgs)
	2	7-17	NA	BG			Dark gray-brown (10Yr 4/2) fine to medium SAND, no odor, loose, dry.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

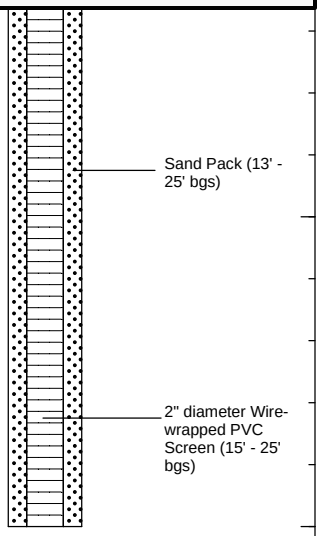
Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWM1-05

Borehole Depth: 27' below grade

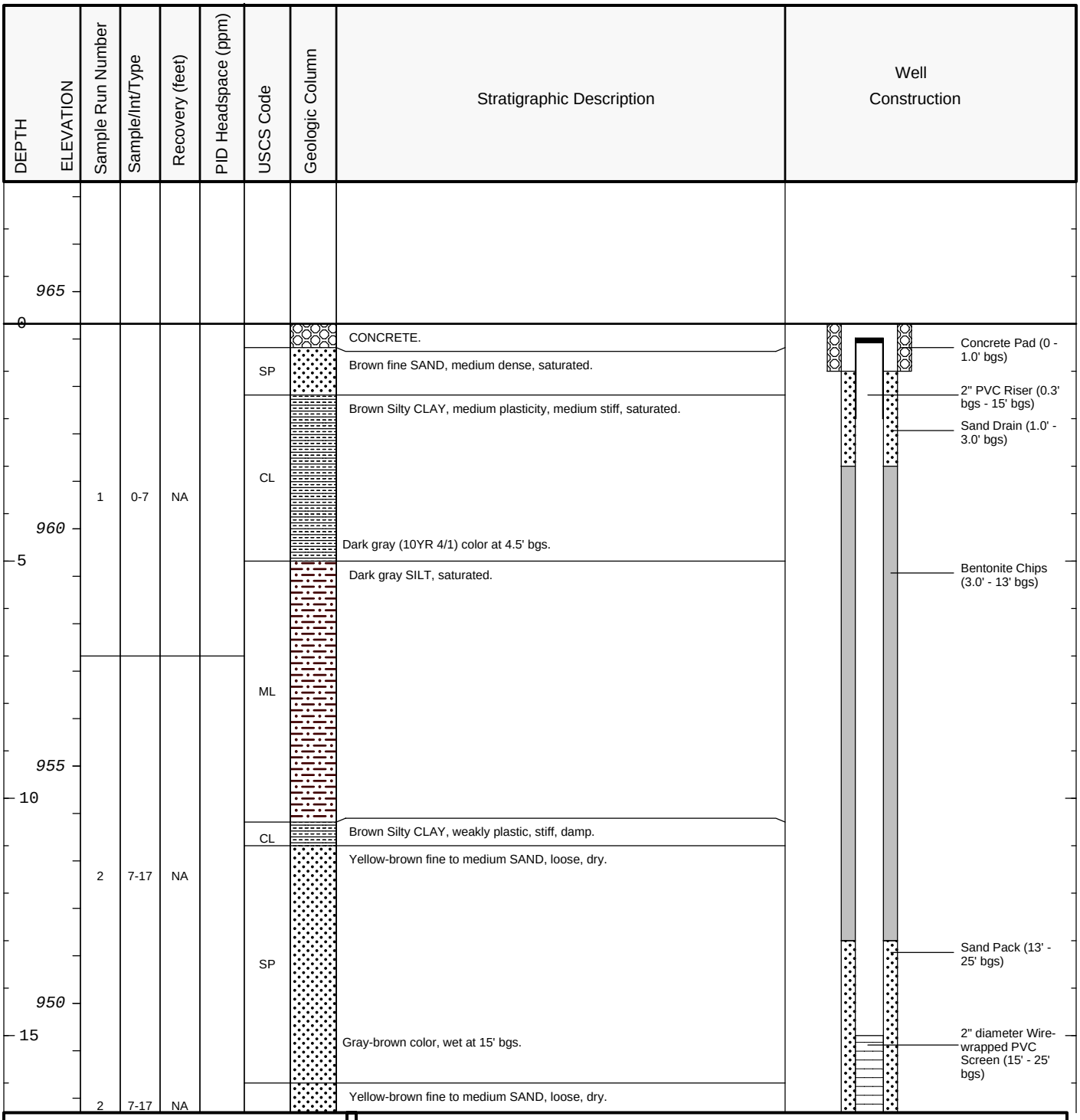
DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950								
20								
	3	17-27	NA	BG	SP		Color change to dark gray (10YR 4/1), saturated at 17' bgs.	
945								
25								



Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/23/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 425006.51 **Easting:** 13412094.92 **Casing Elevation:** 964.07 **Borehole Depth:** 27' below grade **Surface Elevation:** 964.32 **Descriptions By:** Wayne Patterson	**Well ID:** MWM1-06 **Client:** GM **Location:** GM Pontiac North Campus



Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWM1-06

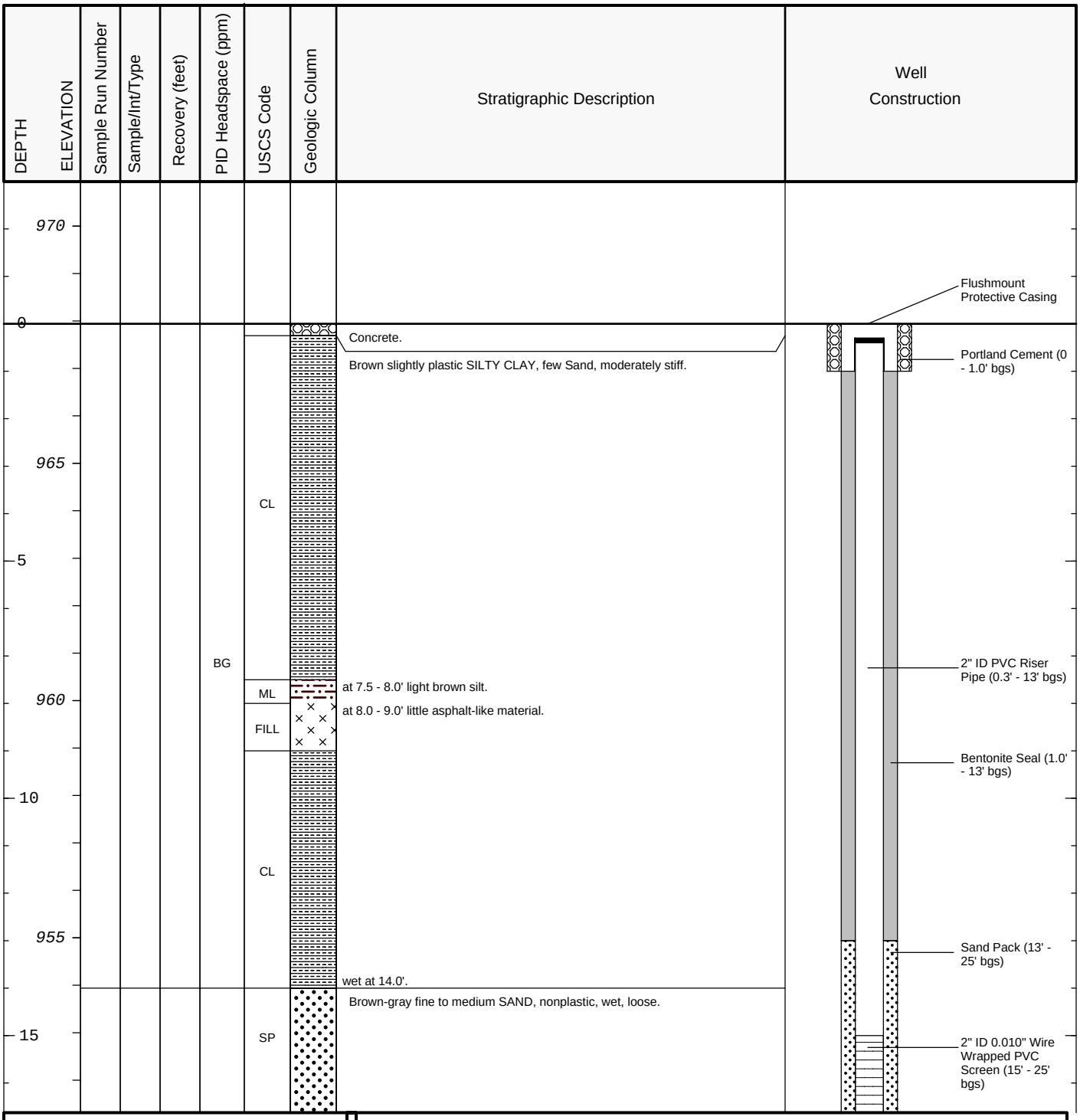
Borehole Depth: 27' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
945 / 20	3	17-27	NA		SP		Dark gray (10YR 4/1) color, saturated at 17' bgs.	Sand Pack (13' - 25' bgs); 2" diameter Wire-wrapped PVC Screen (15' - 25' bgs)
940 / 25								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 05/31/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Direct Push **Sampler Size:** 5' Macrocore	**Northing:** 425413.15 **Easting:** 13412633.15 **Casing Elevation:** 967.58 **Borehole Depth:** 25' **Surface Elevation:** 967.94 **Descriptions By:** Wayne Patterson	**Well ID:** MWM2-15 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus



Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWM2-15

Borehole Depth: 25'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950							Brown-gray fine to medium SAND, nonplastic, wet, loose.	Sand Pack (13' - 25' bgs)
20				BG	SP			
945							at 23.0' color becomes dark gray to black.	2" ID 0.010" Wire Wrapped PVC Screen (15' - 25' bgs)
25				BG	CL		Dark gray SILTY CLAY, few fine to coarse Sand, few fine Gravel, weakly plastic, moist, stiff.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 06/01/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Direct Push **Sampler Size:** 5' Macrocore	**Northing:** 425413.65 **Easting:** 13412655.07 **Casing Elevation:** 967.70 **Borehole Depth:** 25' **Surface Elevation:** 968.00 **Descriptions By:** Wayne Patterson	**Well ID:** MWM2-16 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								Flushmount Protective Casing
0				BG	SP		Concrete.	Portland Cement (0 - 1.0' bgs)
							Gray-black very fine SAND, dry.	
							Brown SILTY CLAY, few gravel and asphalt aggregate, weakly plastic, dry, medium stiff.	
965								
				BG	CL			
5								
								2" ID PVC Riser Pipe (0.3' - 12' bgs)
960							Gray very fine SAND, nonplastic, dry.	
								Bentonite Seal (1.0' - 12' bgs)
10				BG	SP			
								Sand Pack (12' - 25' bgs)
							Brown SILT, wet.	
955				BG	ML			
							Brown SILTY CLAY, weakly plastic, damp, stiff.	
				BG	CL		Grayish-brown fine to medium SAND, nonplastic, wet, loose.	
15					SP			2" ID 0.010" Wire Wrapped PVC Screen (14' - 24' bgs)

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWM2-16

Borehole Depth: 25'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950				BG	SP		becomes saturated at 17.5'.	Sand Pack (12' - 25' bgs)
20								
945							at 23 - 23.5' becomes gray-black in color.	2" ID 0.010" Wire Wrapped PVC Screen (14' - 24' bgs)
				BG	CL		Dark gray SILTY CLAY, few fine to coarse Sand, few fine Gravel, weakly plastic, moist, stiff.	
25								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Encore Environmental Consortium, LLC

Project: 64411.000
Data File:MWM2-16.dat

Template:I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 06/11/03

Date Start/Finish: 4/24/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Walter Tidwell **Drilling Method:** Direct Push **Sampler Size:** 5' Macrocore	**Northing:** 425343.08 **Easting:** 13412554.56 **Casing Elevation:** 967.43 **Borehole Depth:** 28.6' **Surface Elevation:** 967.88 **Descriptions By:** Wayne Patterson	**Well ID:** MWM2-17 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0							Concrete.	Flushmount Protective Casing
							Dark grayish brown weakly plastic SILTY CLAY, few fine to coarse Sand, few fine to medium Gravel, medium stiff, moist, fill.	Portland Cement (0 - 1.0' bgs)
965	1	0-5'	4.5	BG			At 1' color change to brown.	
5							At 2', 4" lense little to some medium sand.	
960	2	5-10'	5.0	BG	CL			2" ID PVC Riser Pipe (0.3' - 18' bgs)
10								Bentonite Seal (1.0 - 16' bgs)
955	3	10-15'	5.0	BG	SP		Yellowish brown nonplastic fine poorly graded SAND, dry to damp, loose, vertical seams of gray throughout unit.	
15							At 14', color change to light gray, becoming fine to medium in grain size predominately fine.	
	4	15-20'	4.0	3.2			Light gray nonplastic fine to medium poorly graded SAND, dry to damp, loose, vertical seams of gray throughout unit.	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWM2-17

Borehole Depth: 28.6'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950	4	15-20'	4.0	3.2	SP		At 17.2', Color change to dark grayish brown, increased moisture to wet.	2" ID PVC Riser Pipe (0.3' - 18' bgs)
20							At 20', Color change to dark gray, saturated.	Sand Pack (16 - 28.6' bgs)
945	5	20-25'	4.0	BG				2" ID 0.010" Wire Wrapped PVC Screen (18' - 28' bgs)
25	6	25-28'	3.0	BG				
940					CL		Dark gray slightly plastic SILTY CLAY, few fine to coarse Sand, few fine to medium Gravel, damp, soft, native clay till.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 05/18/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Direct Push **Sampler Size:** 5' Macrocore	**Northing:** 425259.19 **Easting:** 13412630.51 **Casing Elevation:** 967.59 **Borehole Depth:** 32' **Surface Elevation:** 967.94 **Descriptions By:** Randy Brown	**Well ID:** MWM2-18 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								Flushmount Protective Casing
0							CONCRETE.	Portland Cement (0 - 1.0' bgs)
							No samples collected from 1.0' - 6.0' and 10' - 25' bgs. See log for MWM2-06 for geologic description.	
965								
5								
					SP		Black-stained fine SAND with steel, concrete debris, moist, tar-like product odor.	
							Brown SILTY CLAY, trace Gravel, fractured with gray tar-like staining in fractures.	2" ID PVC Riser Pipe (0.3' - 18' bgs)
960	1	6-10'		8.8	CL			Hydrated Bentonite Chips (1.0' - 16' bgs)
10							No samples collected from 1.0' - 6.0' and 10' - 25' bgs. See log for MWM2-06 for geologic description.	
955								
15								
							No samples collected from 1.0' - 6.0' and 10' - 25' bgs. See log for MWM2-06 for geologic description.	

EEC Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWM2-18

Borehole Depth: 32'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950								2" ID PVC Riser Pipe (0.3' - 18' bgs)
20								Sand Pack (16' - 28' bgs)
945								0.010" Wire Wrapped PVC Screen (18' - 28' bgs)
25	2	25-30'	4.5	61	SP		Gray fine to medium SAND, trace Gravel, wet, loose, faint odor.	
940					CL		Gray SILTY CLAY, trace Gravel, medium plasticity, moist.	
30	3	30-32'	2	58				Formation Collapse (28' - 32' bgs)

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 05/18/03
Drilling Company: Prosonic Corporation
Driller's Name: Dan O'Mara
Drilling Method: Direct Push
Sampler Size: 5' Macrocore

Northing: 425301.37
Easting: 13412665.67
Casing Elevation: 967.74

Borehole Depth: 25'
Surface Elevation: 968.00

Descriptions By: Matt Stuk

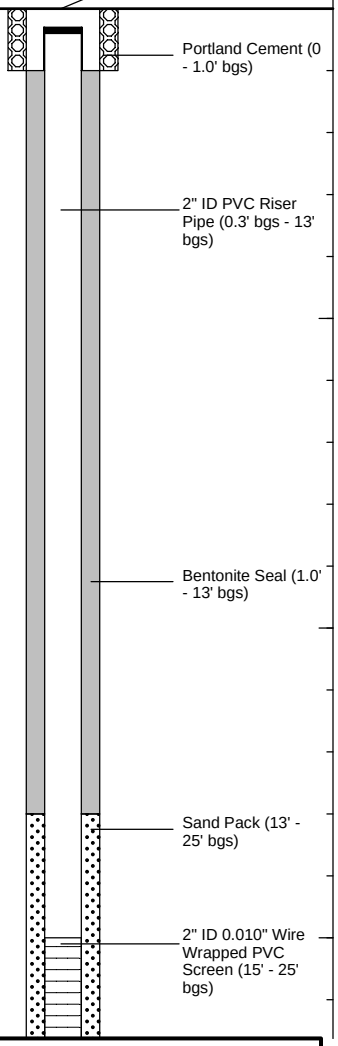
Well ID: MWM2-19

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
970							
0							Concrete.
	1	0-2'		BG	SC		Brown CLAYEY SAND.
965					CL		Brown SANDY CLAY, some Sand, moist.
5				BG			
960							
10							
	2	8-16'		BG	SM		Gray to brown SILTY SAND, dry.
955				BG	ML		Brownish-gray SANDY SILT, few to some fine Sand, moist.
				BG	SP		Brown fine to medium SAND, dry.
15				BG	CL		Dark brown SANDY CLAY, fine to medium Sand, moist.
							Brown fine to medium SILTY SAND, dry.

Well Construction



EEC
Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWM2-19

Borehole Depth: 25'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	3	16-17'						
950							at 17.7' becoming brownish-gray and wet.	Sand Pack (13' - 25' bgs)
20				BG	SM			2" ID 0.010" Wire Wrapped PVC Screen (15' - 25' bgs)
945								
					CL		Gray SILTY CLAY, some Silt, high plasticity, moist.	
25							End of boring.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 4/24/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Direct Push **Sampler Size:** 5' Macrocore	**Northing:** 425325.02 **Easting:** 13412563.37 **Casing Elevation:** 967.30 **Borehole Depth:** 33' **Surface Elevation:** 967.81 **Descriptions By:** Wayne Patterson	**Well ID:** MWM2-20 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0							CONCRETE.	Flushmount Protective Casing
							No samples collected from 1.0' - 21' bgs. See log for MWM2-04 for geologic description.	Portland Cement (0 - 2.0' bgs)
965								2" ID PVC Riser Pipe (0.3' - 19' bgs)
5								
960								Bentonite Seal (2.0' - 16' bgs)
10								
955								
15							No samples collected from 1.0' - 21' bgs. See log for MWM2-04 for geologic description.	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWM2-20

Borehole Depth: 33'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950								
20								
					SM		Grayish brown fine SILTY SAND, nonplastic, moist, medium dense.	
945	1	21-26'	4.0	BG				
					SP		Grayish brown fine to medium SAND, saturated, loose.	
25								
				BG			Dark gray SILTY CLAY, slightly plastic, few moderate to coarse Sand, few fine to medium Gravel, rare Cobble damp to moist, medium stiff, native clay till. Moderate odor.	
940	2	26-31'	4.0		CL			
30				BG				
	3	31-33'	2.0	BG				
935								

2" ID PVC Riser Pipe (0.3' - 19' bgs)

Sand Pack (16' - 29.25' bgs)

2" ID 0.010" Wire Wrapped PVC Screen (19' - 29' bgs)

Natural Collapse (29.25' - 33' bgs)

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 06/01/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Direct Push **Sampler Size:** NA	**Northing:** 425194.04 **Easting:** 13412677.80 **Casing Elevation:** 967.56 **Borehole Depth:** 25' **Surface Elevation:** 967.94 **Descriptions By:** Matt Stuk	**Well ID:** MWM2-22 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								Flushmount Protective Casing
0							CONCRETE.	Portland Cement (0 - 1.0' bgs)
							No samples collected from 0 - 25' bgs. See MWM2-24 for geologic description.	
965								2" ID PVC Riser Pipe (0.3' - 15' bgs)
5								
960								Bentonite Seal (1.0' - 13' bgs)
10								
955								Sand Pack (13' - 25' bgs)
15								2" ID 0.010" Wire Wrapped PVC Screen (15' - 25' bgs)
							No samples collected from 0 - 25' bgs. See MWM2-24 for geologic description.	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWM2-22

Borehole Depth: 25'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950								Sand Pack (13' - 25' bgs)
20								2" ID 0.010" Wire Wrapped PVC Screen (15' - 25' bgs)
945								
25								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 05/18/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Direct Push **Sampler Size:** 5' Macrocore	**Northing:** 425189.69 **Easting:** 13412639.53 **Casing Elevation:** 967.61 **Borehole Depth:** 30' **Surface Elevation:** 967.94 **Descriptions By:** Randy Brown	**Well ID:** MWM2-23 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0							CONCRETE.	Flushmount Protective Casing; Portland Cement (0 - 1.0' bgs)
							No samples collected from 1.0' - 25' bgs. See MWM2-07 for geologic description.	
965								2" ID PVC Riser Pipe (0.3' - 15' bgs)
5								
960								Hydrated Bentonite Chips (1.0' - 13' bgs)
10								
955								Sand Pack (13' - 25' bgs)
15								2" ID 0.010" Wire Wrapped PVC Screen (15' - 25' bgs)
							No samples collected from 1.0' - 25' bgs. See MWM2-07 for geologic description.	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWM2-23

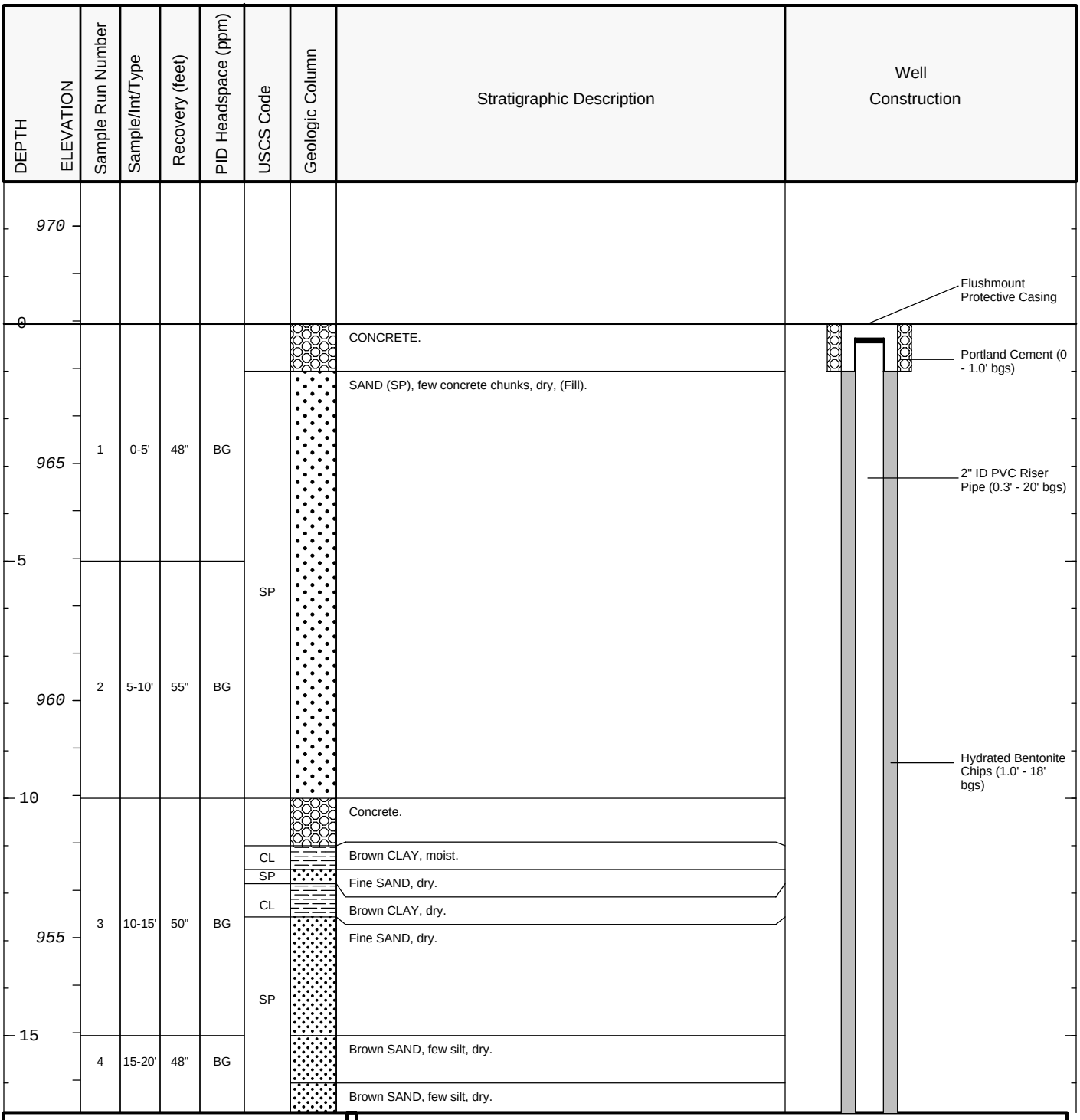
Borehole Depth: 30'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950								Sand Pack (13' - 25' bgs)
20								
945								2" ID 0.010" Wire Wrapped PVC Screen (15' - 25' bgs)
25								
	1	25-30'	4.5	BG	CL		Gray SILTY CLAY, trace gravel, medium plasticity, moist.	
940								Formation Collapse (25' - 30' bgs)
30								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 05/18/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Direct Push **Sampler Size:** 5' Macrocore	**Northing:** 425190.76 **Easting:** 13412676.44 **Casing Elevation:** 967.36 **Borehole Depth:** 30' **Surface Elevation:** 967.94 **Descriptions By:** Matt Stuk	**Well ID:** MWM2-24 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus



Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWM2-24

Borehole Depth: 30'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950	4	15-20'	48"	BG	SP		at 18' becoming wet.	Hydrated Bentonite Chips (1.0' - 18' bgs); 2" ID PVC Riser Pipe (0.3' - 20' bgs)
20								
945	5	20-25'	60"	BG			at 23' becoming black with slight petroleum odor.	Sand Pack (18' - 30' bgs)
25								2" ID 0.010" Wire Wrapped PVC Screen (20' - 30' bgs)
940	6	25-30'	60"	BG				
					CL		Gray CLAY, few fine to medium sand, high plasticity, moist.	
30								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/21/03 - 7/22/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Hollow Stem Auger **Sampler Size:** 60 inches	**Northing:** 429253.71 **Easting:** 13411803.58 **Casing Elevation:** 911.10 **Borehole Depth:** 11' below grade **Surface Elevation:** 961.29 **Descriptions By:** Karen Partington	**Well ID:** MWM4-06 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 960							CONCRETE.	Concrete Pad (0 - 0.7' bgs); 2" PVC Riser (0.3' bgs - 1.0' bgs)
	1	0-5	1.5	36.9			Brown poorly graded fine SAND, trace Silt, chemical odor, wet.	
				71.9				Well Gravel Sand Pack (0.7' - 11' bgs)
5 / 955	2	5-10	4.0	22	SP		Sand is coarse and is black to dark brown, slight chemical odor, no Silt present below 5.0' bgs.	2" diameter #10 Wire-Wrapped Screen (1.0' - 11' bgs)
				25				
10	3	10-11	1.0	11.2				

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/15/03 - 9/27/03
Drilling Company: Prosonic Corporation
Driller's Name: Dan O'Mara
Drilling Method: Geoprobe 4 1/4" HSA
Sampler Size: 60 inches

Northing: 429392.55
Easting: 13411886.56
Casing Elevation: 985.22

Borehole Depth: 35'
Surface Elevation: 985.44

Descriptions By: Dan Deitner

Well ID: MWM4-07

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 985							Concrete.	Concrete Pad (0 - 0.7' bgs)
					SM		Light brown SILTY SAND, compact, poorly graded, moist, fill.	
	1	0-5'	100%	BG			1/2" lens concrete	
					SP		Light brown fine SAND, trace silt, compact poorly graded, moist, faint petroleum type odor, fill.	2" PVC Riser (0.3' bgs - 28.0' bgs)
5 / 980								
	2	5-10'	70%	BG			Gray SILTY CLAY, firm, low plasticity, moist, homogeneous, fill.	Bentonite Chips (1.0 - 26.0 bgs)
10 / 975							with silt and sand lenses (1mm thick)	
	3	10-15'	70%	BG				
15 / 970					CL		trace medium grained subrounded gravel	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWM4-07

Borehole Depth: 35'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	4	15-20'	100%	BG			trace 1 mm thick vertical sand lenses	
20 / 965								
	5	20-25'	100%	BG				
25 / 960							Gray fine SAND, trace silt, compact poorly graded, very moist, natural. moist	
	6	25-30'	100%	BG				Well Gravel Sand Pack (26' - 38' bgs)
30 / 955					SP		wet	
	7	30-35'	100%	BG				2" diameter #10 Wire-Wrapped Screen (28.0' - 38.0' bgs)
35 / 950								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWM4-07

Borehole Depth: 35'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction

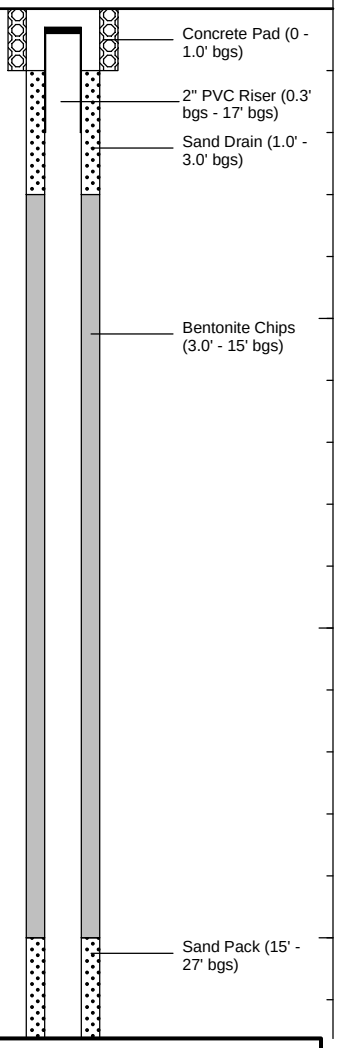
Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/28/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 428683.19 **Easting:** 13413092.40 **Casing Elevation:** 977.07 **Borehole Depth:** 27' below grade **Surface Elevation:** 977.33 **Descriptions By:** Wayne Patterson	**Well ID:** MWM5-02 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Stratigraphic Description
980						
0						ASPHALT.
					SP	Brown fine to medium SAND, loose, wet.
975						Very dark gray Silty CLAY, few fine to coarse Sand, few fine Gravel, 2" of black fine Sand from 1.5' - 1.7' bgs, moderately plastic, soft, moist.
	1	0-7	NA	NA	CL	
5						
970					SP	Dark gray fine to coarse SAND, few Clay, few Gravel, increased grain size with depth, loose, wet.
						Dark gray Silty CLAY, few fine to coarse Sand, few fine Gravel, moderately plastic, soft, moist.
10						
	2	7-17	NA	NA	CL	Becoming slightly plastic, stiff, damp at 12' bgs.
965						
15						
	2	7-17	NA	NA		Dark gray Silty CLAY, few fine to coarse Sand, few fine Gravel, moderately plastic, soft, moist.

Well Construction



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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWM5-02

Borehole Depth: 27' below grade

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
960					CL			2" PVC Riser (0.3' bgs - 17' bgs)
					SP		Dark gray fine SAND, loose, saturated.	Sand Pack (15' - 27' bgs)
20								
955	3	17-27	NA	NA				
					ML		Dark gray SILT, saturated.	2" diameter Wire-wrapped PVC Screen (17' - 27' bgs)
25								
					SP		Dark gray fine SAND, loose, saturated.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/22/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10' corebarrel	**Northing:** 428582.60 **Easting:** 13412848.69 **Casing Elevation:** 979.11 **Borehole Depth:** 36.5' **Surface Elevation:** 979.10 **Descriptions By:** Wayne Patterson	**Well ID:** MWM5-03 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	980								
0								Asphalt.	Flushmount Protective Cover
						SP		Brown fine SAND, loose, some gravel aggregate, moist.	Portland Cement (0-1' bgs)
						CL		Black SILTY CLAY, few sand, few gravel.	Sand Drain (1-3' bgs)
		1	0-6.5'		BG	SM		Brown fine to coarse SILTY SAND, few clay, moist, loose.	
	975								Bentonite Seal (3-21.5' bgs)
5									
								Dark gray SILTY CLAY, few fine to coarse Sand, few fine to coarse Gravel, stiff, slightly plastic, damp.	2" ID PVC Riser Pipe (0.3' bgs - 16' bgs)
	970								
10									
		2	6.5-16.5'		BG	CL			
	965								
15									

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.120
Data File:MWM5-03.dat

Template:I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 7/25/03

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWM5-03

Borehole Depth: 36.5'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
960 / 20								0.010" Wire Wrapped PVC Screen (23.5-33.5' bgs)
							Brown fine to medium SAND, loose, damp, increasing grain size with depth.	Sand Pack (21.5-33.5' bgs)
	3 16.5-26.5'			BG				
955 / 25							Color change to dark gray, saturated.	
					SP			
950 / 30								
	4 26.5-36.5'			BG				
945 / 35								Natural Collapse (33.5-36.5')

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/22/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10' corebarrel	**Northing:** 428550.44 **Easting:** 13412582.24 **Casing Elevation:** 979.55 **Borehole Depth:** 37' **Surface Elevation:** 979.91 **Descriptions By:** Wayne Patterson	**Well ID:** MWM5-04 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 980								
					SP		Asphalt. Brown fine SAND, some gravel aggregate, damp to moist.	Flushmount Protective Cover Portland Cement (0-1' bgs)
							Brown SILTY CLAY, few fine to coarse Sand, rare Gravel, rare Cobble, damp to moist becoming dry.	Sand Drain (1-3' bgs)
	1	0-7'		BG				
5 975							At 4-5' black staining.	Bentonite Seal (3-14' bgs)
					CL			2" ID PVC Riser Pipe (0.3' bgs - 16' bgs)
10 970								
	2	7-17'		BG				
15 965								
							Yellowish brown fine SAND, loose, dry.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWM5-04

Borehole Depth: 37'

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20 960	3	17-27'		BG	SP		Color change to grayish brown, saturated, fine to medium grain size.	0.010" Wire Wrapped PVC Screen (16-26' bgs); Sand Pack (14-26' bgs)
25 955							Increased grain size fine to coarse, few gravel.	
30 950	4	27-37'		BG	CL		Dark gray SILTY CLAY as at 1-16', damp.	Natural Collapse (30-37')
35 945								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: **Drilling Company:** Pennsylvania Drilling Co **Driller's Name:** Norm Hormel **Drilling Method:** Hollow Stem **Sampler Size:** 2", 2' long	**Northing:** 426369.51 **Easting:** 13412945.37 **Casing Elevation:** 971.53 **Borehole Depth:** 26 **Surface Elevation:** 971.76 **Descriptions By:** G. Liedel	**Well ID:** MWM6 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Stratigraphic Description	Well Construction
0					Concrete	Concrete	Flushmount Locked Protective Casing Concrete (0 - 1' bgs)
970	0-2 1	SS	1.5	BG	SC-CL	light brown fine SAND and CLAY, trace Silt, loose, dry	
	2-4 2	SS	1.8	BG			
5	4-6 3	SS	0.0	BG	CL	light brown mottled with gray Silty CLAY, trace fine Gravel, medium stiff, moist	Cement/Bentonite Grout (1 - 12' bgs)
965	6-8 4	SS	1.8	BG			2-inch ID, flush threaded, Schedule 40 PVC riser pipe (0 - 16' bgs)
	8-10 5	SS	1.8	BG			
10	10-12 6	SS	2.0	BG		at 9.7' becomes gray	
960	12-14 7	SS	1.8	BG	SP-ML	gray very fine SAND and SILT, moist	Hydrated Bentonite Seal (12 - 14' bgs)
					SP	light brown fine SAND, medium dense, moist	
15	14-16 8	SS	2.0	BG			# 5 Sand Pack (14 - 26' bgs)
						light brown fine SAND, medium dense, moist to wet	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWM6

Borehole Depth: 26

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
955	16-18 / 9	SS	2.0	BG	SP		at 17.0' wet	▽
	18-20 / 10	SS	2.0	BG	SM-ML		gray very fine SAND and SILT, loose, wet	# 5 Sand Pack (14 - 26' bgs)
20	20-22 / 11	SS	2.0	BG				2-inch ID, PVC wire-wrapped, 10-slot well screen (16 - 26' bgs)
950	22-24 / 12	SS	2.0	BG	CL-ML		gray CLAY and SILT, trace fine Gravel, medium stiff, moist to wet	
					SP		grayish brown fine to medium SAND	
					ML-CL		gray CLAY and SILT, trace fine gravel, moist	
25	24-26 / 13	SS	2.0	BG	SP		gray medium SAND, very loose, wet	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

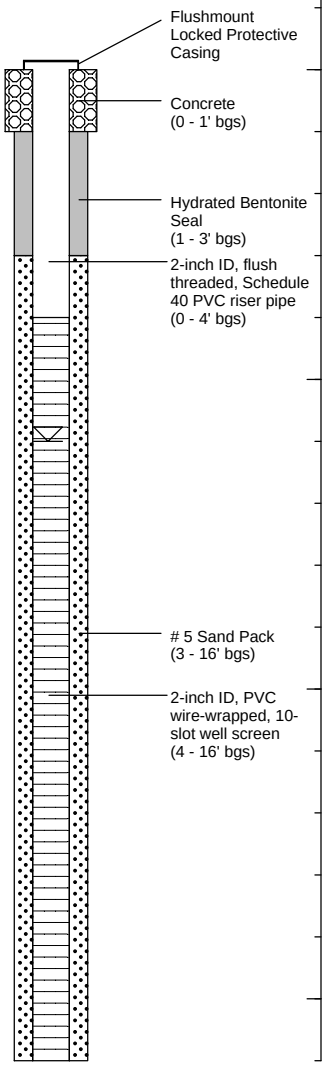
Project: 64411.011
Data File:MWM6.dat

Template:j:\rockware\logplot2001\logfiles\64411\Pontiac.ldf
Date: 04/17/02

Date Start/Finish: 7/19/01 - 7/20/01 **Drilling Company:** Pennsylvania Drilling Co **Driller's Name:** Chris Coulter **Drilling Method:** 8' Spun Casing **Sampler Size:** 2", 2' Long	**Northing:** 425203.42 **Easting:** 13412230.90 **Casing Elevation:** 964.10 **Borehole Depth:** 16 **Surface Elevation:** 964.51 **Descriptions By:** Dave Straccia	**Well ID:** MWM8 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
0	965	0-2 1	SS	0.1		Concrete		Concrete, no recovery
		2-4 2	SS	1.0	8.1	CL		olive brown Silty CLAY, little coarse Sand, hard, low plasticity, odor, dry (fill)
5	960	4-6 3	SS	1.0	22.4	CL		olive brown Silty CLAY, trace very fine Sand, hard, low plasticity, slightly moist, odor (fill)
		6-8 4	SS	1.0	BG	CL		olive brown Sandy CLAY, fine to coarse Sand, some Silt, hard, low plasticity, moist, odor
10	955	8-10 5	SS	1.5	BG	SP		brown fine Sand (outwash), poorly graded, trace medium Sand, dense, wet
		10-12 6	SS	1.0	BG	SP		brown very fine to fine SAND, poorly graded, medium dense, wet
		12-14 7	SS	1.2	BG			at 12.0' - 14.0' very fine Sand
15	950	14-16 8	SS	1.0	BG	SP		brown fine SAND, loose, moist

Well Construction



EEC Encore Environmental Consortium, LLC

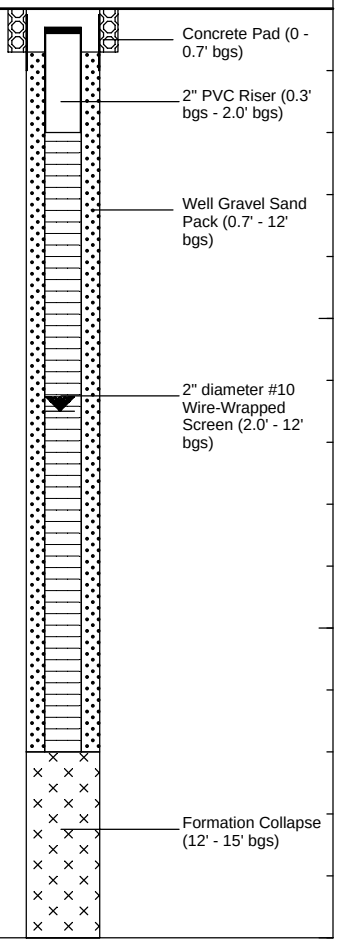
Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/21/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Terry Warner **Drilling Method:** Hollow Stem Auger **Sampler Size:** 60 inches	**Northing:** 429097.12 **Easting:** 13411808.01 **Casing Elevation:** 960.92 **Borehole Depth:** 15' below grade **Surface Elevation:** 961.26 **Descriptions By:** Karen Partington	**Well ID:** MWM16-03 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
0 / 960	1	0-5	NA	BG 5.2 8.7 15.3	SP		Slight chemical odor, moist at 4.5' bgs. Wet at 5.5' bgs. Loose, saturated at 6.5' bgs.
5 / 955	2	5-10	NA	BG			
10 / 950	3	10-15	NA	28 4.7 BG	GW		Sand is black and medium-grained below 10' bgs. Color change to 10.4' bgs.
15							

Well Construction



Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/21/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10' corebarrel	**Northing:** 428609.82 **Easting:** 13411668.91 **Casing Elevation:** 980.20 **Borehole Depth:** 27' **Surface Elevation:** 980.73 **Descriptions By:** Wayne Patterson	**Well ID:** MWM16-04 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 980					CL		Dark grayish brown CLAY (Topsoil).	Flushmount Protective Cover; Portland Cement (0-1' bgs)
	1	0-7'		BG	CL		Brown SILTY CLAY, slightly plastic, damp.	Sand Drain (1-3' bgs)
5 / 975					SM		Brown fine to medium SILTY SAND, few Clay, loose, moist to wet.	Bentonite Seal (3-15' bgs)
10 / 970	2	7-17'		BG	CL		Dark gray SILTY CLAY, weakly plastic, few fine to coarse Sand, few fine Gravel, stiff, dry to damp.	2" ID PVC Riser Pipe (0.3' bgs - 17' bgs)
15 / 965								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWM16-04

Borehole Depth: 27'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
					SP		Brown fine SAND (SP), loose, dry.	0.010" Wire Wrapped PVC Screen (17-27' bgs)
20 / 960	3	17-27'		BG	ML		Brown SILT (ML), saturated at 19'.	Sand Pack (15-27' bgs)
25 / 955							Color change to dark gray, some sand.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/21/03
Drilling Company: Prosonic Corporation
Driller's Name: Mike Bond
Drilling Method: Rotosonic
Sampler Size: 10' corebarrel

Northing: 428524.28
Easting: 13411788.91
Casing Elevation: 980.96

Borehole Depth: 27'
Surface Elevation: 981.12

Descriptions By: Wayne Patterson

Well ID: MWM16-05

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 980	1	0-7'		BG	CL		Brown SILTY CLAY (CL), medium stiff, some sand , some gravel, damp to moist.	Flushmount Protective Cover; Portland Cement (0-1' bgs); Sand Drain (1-3' bgs); Bentonite Seal (3-14' bgs); 2" ID PVC Riser Pipe (0.3' bgs - 16' bgs)
5 / 975	2	7-17'		BG	SP		Yellowish brown fine SAND (SP), loose, dry.	
10 / 970								
15 / 965								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWM16-05

Borehole Depth: 27'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
							Yellowish brown SILT (ML), saturated.	0.010" Wire Wrapped PVC Screen (17-26' bgs)
20 / 960					ML			Sand Pack (14-26' bgs)
	3	17-27'		BG	CL		Yellowish borwn SILTY CLAY (CL), damp to moist.	
					ML		SILT (ML) as at 18 - 22', moist.	
							Dark gray fine to medium SAND (SP), damp.	
25 / 955					SP			Bentonite Chip (26-27')

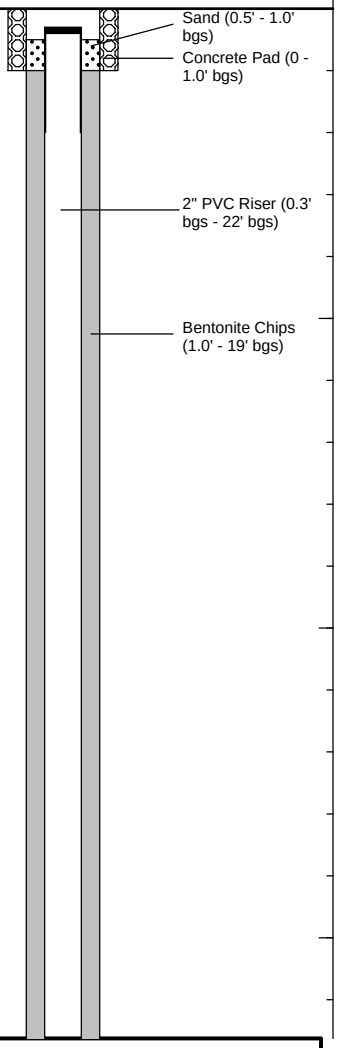
Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/18/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 429004.22 **Easting:** 13411760.25 **Casing Elevation:** 981.2' **Borehole Depth:** 37' bgs **Surface Elevation:** 981.52' **Descriptions By:** D. Deitner	**Well ID:** MWM16-07 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Stratigraphic Description
0 / 981.52						CONCRETE.
					GM	Gray Silty coarse angular poorly graded SAND and GRAVEL (GM), moist.
980					CL	Brown to dark gray Silty CLAY (CL), trace Sand and fine rounded Gravel, low plasticity, stiff, faint odor, moist.
	1	0-7	NA	NA		Medium brown, petroleum odor below 3.0' bgs.
					SP	Brown fine poorly graded SAND (SP), trace Silt, moist.
5 / 975						Brown Silty CLAY (CL), with fine Sand lenses, firm, low plasticity, moist. [FILL]
						Brown Silty CLAY (CL), trace fine Sand and fine rounded Gravel, low plasticity, stiff, moist.
10					CL	Gray to brown mottling, trace coarse to fine rounded Gravel at 10.5' bgs.
970	2	7-17	NA	NA		Gray color below 11.5' bgs.
15						
965	2	7-17	NA	NA		Gray Silty CLAY (CL), trace fine Sand and fine rounded Gravel, low plasticity, stiff, moist.

Well Construction



Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWM16-07

Borehole Depth: 37' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Stratigraphic Description	Well Construction
					CL		Bentonite Chips (1.0' - 19' bgs)
20 / 960					ML	Brown fine poorly graded Sandy SILT (ML), compact, very moist.	2" PVC Riser (0.3' bgs - 22' bgs)
	3	17-27	NA	NA	CL	Brown Silty CLAY (CL), interbedded with Silt and fine Sand lenses, firm, low plasticity, moist.	K&E Sand and Gravel #1 Well Gravel (19' - 32' bgs)
25 / 955					SP	Brown fine poorly graded SAND (SP), trace Silt, compact, moist. Wet at 26' bgs. Trace coarse fine rounded Gravel at 27.5' bgs.	2" diameter #10 slot PVC Screen (22' - 32' bgs)
30 / 950	4	27-37	NA	NA	CL	Gray Silty CLAY (CL), trace fine Sand, low plasticity, firm, moist.	Natural Collapse (32' - 37' bgs)
35 / 945	4	27-37	NA	NA	CL	2" Silty Sand lens, trace medium Gravel, wet at 35.8' bgs. Gray Silty CLAY (CL), trace fine Sand, low plasticity, firm, moist.	Natural Collapse (32' - 37' bgs)

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWM16-07

Borehole Depth: 37' bgs

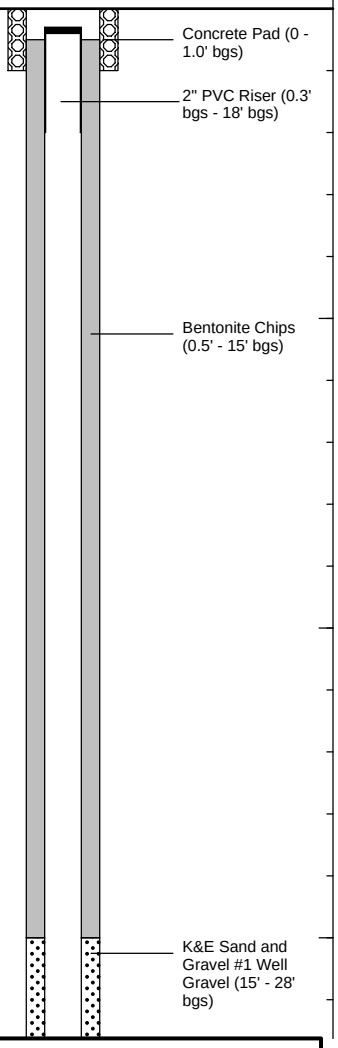
DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
40 / 940								
45 / 935								
50 / 930								
55								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/18/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 429095.12 **Easting:** 13411755.34 **Casing Elevation:** 982.05' **Borehole Depth:** 32' bgs **Surface Elevation:** 982.35' **Descriptions By:** D. Deitner	**Well ID:** MWM16-08 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
985							
0							CONCRETE.
					GM		Gray Silty coarse angular poorly graded SAND and GRAVEL (GM), wet. [FILL]
980							Brown fine to medium subrounded, moist below 2.0' bgs.
	1	0-7	NA	NA	SP		Brown fine poorly graded SAND (SP), trace Silt, trace medium rounded Gravel, compact, moist.
5					SM		Brown Silty fine poorly graded SAND (SM), compact, moist.
975					ML		Gray fine Sandy SILT (ML), trace Clay, moist. Trace fine rounded Gravel below 7.5' bgs.
10	2	7-17	NA	NA			
970					SM		Gray Silty fine poorly graded SAND (SP), compact, very moist.
15					CL		Gray Silty CLAY (CL), with Sand, trace fine rounded Gravel, stiff, low plasticity, moist.
	2	7-17	NA	NA	CL		Gray Silty CLAY (CL), with Sand, trace fine rounded Gravel, stiff, low plasticity, moist.



Well Construction

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

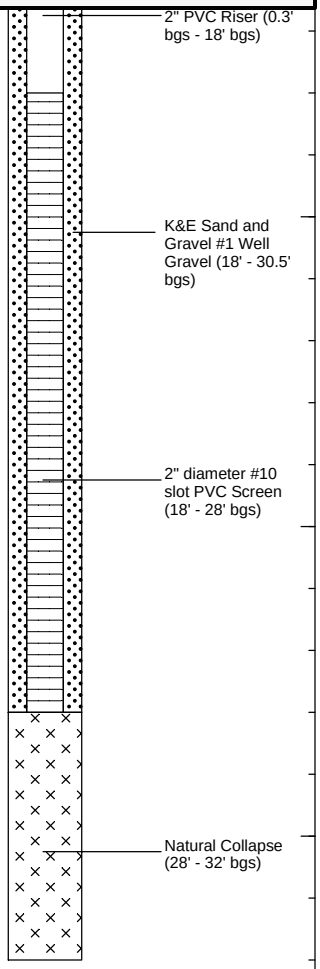
Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWM16-08

Borehole Depth: 32' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
965							
					SM		Brown Silty fine poorly graded SAND (SM), compact, moist.
20					ML		Brown fine poorly graded Sandy SILT (ML), compact, very moist. Rapid dilatarity, wet below 20' bgs.
960	3	17-27	NA	NA			
25					CL		Gray Silty CLAY (CL), trace poorly graded Sand, firm, low plasticity, very moist.
955					SP		Gray fine poorly graded SAND (SP), trace Silt, compact, wet.
30	4	27-32	NA	NA			
950							
35							



Well Construction

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Encore Environmental Consortium, LLC

Date Start/Finish: 8/18/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 429303.14 **Easting:** 13411731.59 **Casing Elevation:** 981.8' **Borehole Depth:** 37' bgs **Surface Elevation:** 982.06' **Descriptions By:** D. Deitner	**Well ID:** MWM16-09 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Stratigraphic Description	Well Construction
985							
0						CONCRETE.	Sand (0.5' - 1.0' bgs) Concrete Pad (0 - 1.0' bgs)
					GM	Brown medium subrounded poorly graded SAND and GRAVEL (GM), with Silt, compact, moist. [FILL]	
980						Dark brown SILT (ML), with fine Sand and medium rounded Gravel, moist.	
	1	0-7	100	BG	ML	Light brown Sandy Silt, no Gravel below 3.0' bgs.	2" PVC Riser (0.3' bgs - 20' bgs)
5						Gray Silty CLAY (CL), firm, medium plasticity, moist.	Bentonite Chips (1.0' - 18' bgs)
975							
					CL		
10							
	2	7-17	100	BG			
970						Gray CLAY (CL), little Sand, firm, low plasticity, very moist.	
					SP	Gray fine poorly graded SAND (SP), trace Silt, compact, wet.	
15					CL	Gray Silty CLAY (CL), with Sand, stiff, low plasticity, moist.	
	2	7-17	100	BG		Gray Silty CLAY (CL), with Sand, stiff, low plasticity, moist.	Bentonite Chips (1.0' - 18' bgs)

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Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWM16-09

Borehole Depth: 37' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
965					CL		Trace fine Sand and fine rounded Gravel below 18' bgs.	2" PVC Riser (0.3' bgs - 20' bgs)
20								K&E Sand and Gravel #1 Well Gravel (18' - 30.5' bgs)
960	3	17-27	100	BG				
								2" diameter #10 slot PVC Screen (20' - 30' bgs)
25								
955					SP		Gray fine poorly graded SAND (SP), trace Silt, wet.	
							Trace medium rounded Gravel below 28.5' - 30.5' bgs.	
30								
							Gray-brown color below 31' bgs.	
950	4	27-37	100	BG			Gray medium Gravel below 32' bgs.	Natural Collapse (30.5' - 37' bgs)
35					CL		Gray Silty CLAY (CL), low plasticity, stiff, moist.	
	4	27-37	100	BG	CL		Gray Silty CLAY (CL), low plasticity, stiff, moist.	Natural Collapse (30.5' - 37' bgs)
945								

EEC
Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWM16-09

Borehole Depth: 37' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
40 / 940								
45 / 935								
50 / 930								
55								

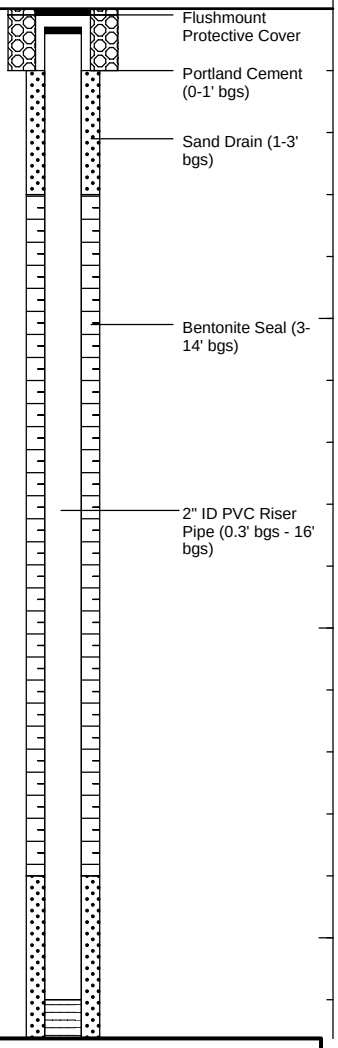
Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/21/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10' corebarrel	**Northing:** 428545.56 **Easting:** 13412091.94 **Casing Elevation:** 980.06 **Borehole Depth:** 27' **Surface Elevation:** 980.28 **Descriptions By:** Wayne Patterson	**Well ID:** MWM25-02 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
0 980					CL		Light grayish brown clayey TOPSOIL, some Gravel.
	1	0-7'		BG	CL		Brown SILTY CLAY (CL), few fine to coarse SAND, few fine to coarse Gravel, stiff, damp.
5 975							
10 970	2	7-17'		BG	SP		Yellowish brown fine SAND (SP), loose, dry.
							Yellowish brown SILT (ML), saturated at 13.5'.
15 965							

Well Construction



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Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWM25-02

Borehole Depth: 27'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20 960	3	17-27'		BG	ML			0.010" Wire Wrapped PVC Screen (16-26' bgs)
								Sand Pack (14-26' bgs)
25 955					SP		Yellowish brown fine to medium SAND (SP), loose, damp.	Bentonite Chip (26-27')

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 6/28/01 - 6/29/01
Drilling Company: Pennsylvania Drilling Co
Driller's Name: Norm Hormel
Drilling Method: 8" spun casing
Sampler Size: 2", 2' Long

Northing: 423401.88
Easting: 13415530.69
Casing Elevation: 982.48

Borehole Depth: 26
Surface Elevation: 982.70

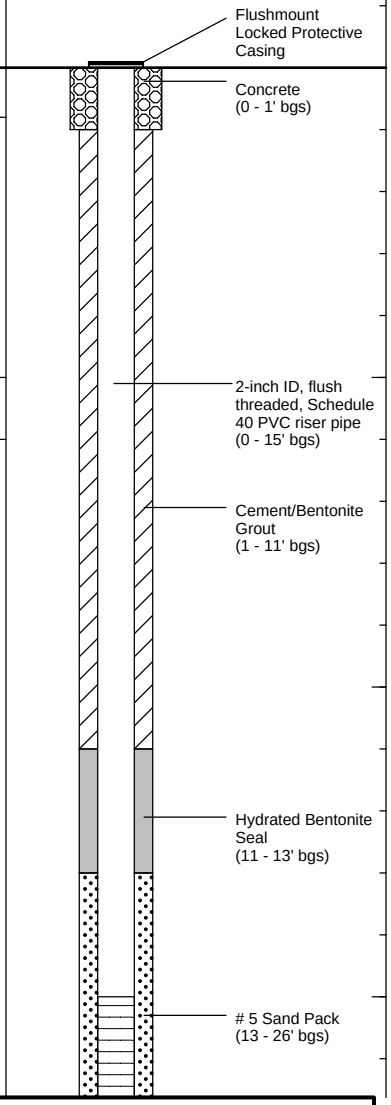
Descriptions By: G. Liedel

Well ID: MWP1

Client: GM

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
985							
0	0-2	SS	1.5		Asphalt		asphalt at 0.8 gravel base, coarse, wet
	1						light brown, Silty CLAY, trace fine Sand, very stiff, moist
980	2-4	SS	1.8		CL		
	2						
	4-6	SS	1.8				
5	3				SW		light brown, fine to coarse SAND, moist
	6-8	SS	1.8				light brown mottled with gray, Silty CLAY, trace fine Gravel, very stiff to hard, moist
975	4						at 8.0 becomes gray
	8-10	SS	2.0				
10	5						
	10-12	SS	2.0		CL		
	6						
970	12-14	SS	2.0				
	7						
	14-16	SS	2.0				
15	8						



Well Construction

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Encore Environmental Consortium, LLC

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWP1

Borehole Depth: 26

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	16-18	SS	1.8		CL			
965	9				ML		gray SILT, trace Clay, wet	
	18-20	SS	2.0		SP		gray, medium to coarse, SAND, trace Silt, medium, wet	# 5 Sand Pack (13 - 26' bgs)
20	10							2-inch ID, PVC wire-wrapped, 10-slot well screen (15 - 25' bgs)
	20-22	SS	1.8				gray, Silty CLAY, trace fine to medium Sand, trace fine Gravel, stiff to very stiff, moist	
960	11				CL			
	22-24	SS	1.8					
	12							
	24-26	SS	2.0					
25	13							

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish:
Drilling Company: Pennsylvania Drilling Co
Driller's Name: Earl Stye
Drilling Method: 8" spun casing
Sampler Size: 3", 2' long

Northing: 426906.54
Easting: 13415281.73
Casing Elevation: 977.31

Borehole Depth: 21
Surface Elevation: 974.76

Descriptions By: Bart Williams

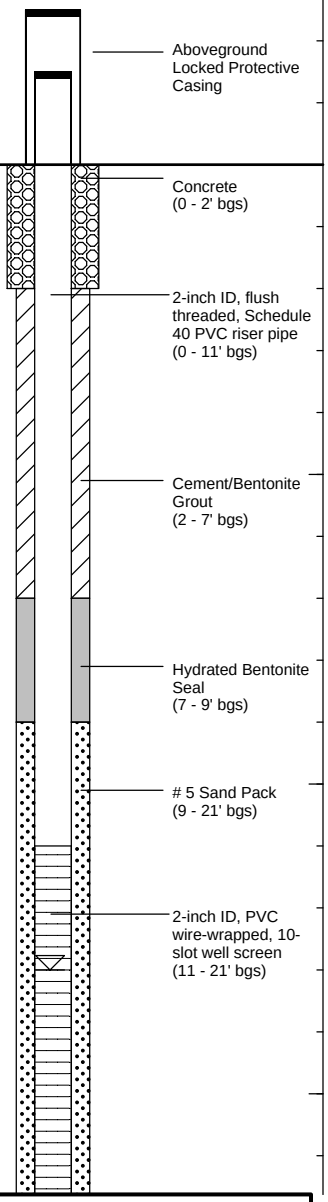
Well ID: MWP4

Client: GM

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
0 / 975	0-2 / 1	SS	1.2		SW		brown fine to medium SAND, trace Vegetation, trace Clay, trace fine Gravel, loose, moist
	2-4 / 2	SS	1.8				at 2.3' poorly sorted fine sands
5 / 970	4-6 / 3	SS	1.6		CL		brown-gray CLAY, trace fine to medium Sand, trace fine Gravel, stiff, low plsticity, dry
	6-8 / 4	SS	1.5				at 7.0 - 7.2' sandy clay seam fine, moist
	8-10 / 5	SS	1.7				
10 / 965	10-12 / 6	SS	1.4		CL		gray Silty CLAY, trace fine Gravel, trace fine Sand, stiff, low plasticity, dry
	12-14 / 7	SS	1.5		GC		Gravelly CLAY, trace fine to medium Sand, wet
							at 13.6' increase in moisture content
15 / 960	14-16 / 8	SS	1.6				at 15.2 - 15.5' fine sand seam, wet
							at 16.0' increase in plasticity

Well Construction



EEC Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWP4

Borehole Depth: 21

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	16-18 9	SS	1.7		GC		at 18.0' stiff, wet at 18.7' increase in moisture, plasticity at 19.3-19.5' trace fine sand, wet	# 5 Sand Pack (9 - 21' bgs) 2-inch ID, PVC wire-wrapped, 10-slot well screen (11 - 21' bgs)
20 955	18-20 10	SS	0.7					
	20-21 11	SS	0.7		CL		CLAY trace Gravel	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 4/28/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10' corebarrel	**Northing:** 425576.80 **Easting:** 13414324.12 **Casing Elevation:** 987.24 **Borehole Depth:** 8' **Surface Elevation:** 985.04 **Descriptions By:** Wayne Patterson	**Well ID:** MWP9-01 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 *985*							Concrete.	Aboveground Protective Casing (2.5' ags - 1.5' bgs) Portland Cement (0-1' bgs) Bentonite Seal (1-2' bgs) 2" ID PVC Riser Pipe (1.5' ags - 3' bgs)
	1	0-7'		BG	SM		Brown nonplastic fine to medium SILTY SAND, little Clay, some odor, moist, loose, little black staining towards base, fill.	
5 *980*					CL		Brown and mottled weakly plastic SILTY CLAY, little medium to coarse Sand, few fine to coarse Gravel, rare Cobble, medium stiff.	Sand Pack (2-8' bgs) 0.010" Wire Wrapped PVC Screen (3-8' bgs)
	2	7-8'		BG			Color change to dark gray. End of boring.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 4/29/03
Drilling Company: Prosonic Corporation
Driller's Name: Mike Bond
Drilling Method: Rotosonic
Sampler Size: 10' corebarrel

Northing: 425606.27
Easting: 13414333.78
Casing Elevation: 987.92

Borehole Depth: 27'
Surface Elevation: 985.64

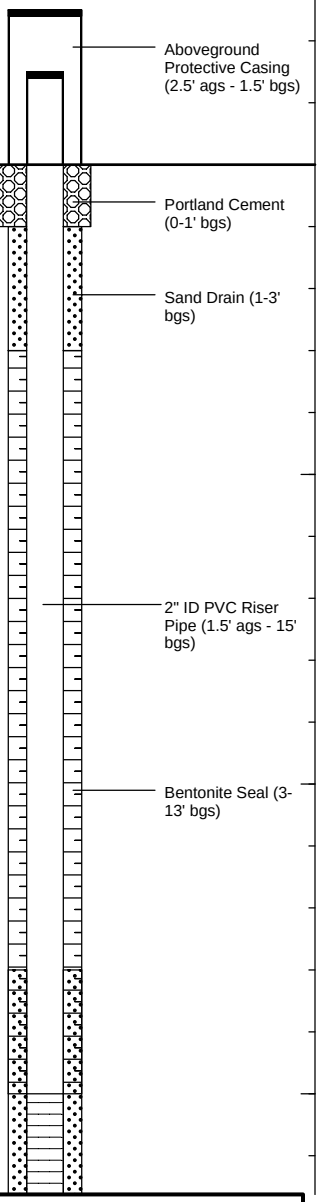
Descriptions By: Wayne Patterson

Well ID: MWP9-03

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
0 / 985	1	0-4'		BG	CL		Brown slightly plastic SILTY CLAY, few fine to coarse Sand, few fine to coarse Gravel, moist, roots within top 2', increased silt content within top 2'.
5 / 980					SM		Dark gray nonplastic fine to medium SILTY SAND, wet, loose, few clay, fill.
10 / 975	2	4-17'		BG	CL		Dark grayish brown slightly plastic SILTY CLAY, few fine to coarse Gravel, increased silt content, rare construction debris, moist, medium stiff.
15 / 970					ML		Dark yellowish brown nonplastic SILT (ML), few Clay.



Well Construction

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWP9-03

Borehole Depth: 27'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
							Dark gray nonplastic fine to medium SILTY SAND, few Clay, saturated, very loose.	Sand Pack (13-25.5' bgs)
20 / 965	3	17-27'		BG	SM			0.010" Wire Wrapped PVC Screen (15-25' bgs)
25 / 960					CL		Brown slightly plastic SILTY CLAY, few fine to coarse Sand, few fine to coarse Gravel, some dark staining, dry to damp.	Bentonite (25.5-27' bgs)

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 5/8/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 4" diameter x 10'	**Northing:** 425507.54 **Easting:** 13414494.34 **Casing Elevation:** 988.91 **Borehole Depth:** 27' below grade **Surface Elevation:** 958.89 **Descriptions By:** Matt Stuk	**Well ID:** MWP9-04 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
								2" PVC Riser (2.5' ags - 13' bgs)
0 985							Boring through old wall of building. Brick and Concrete.	Concrete Pad (0 - 1.0' bgs)
	1	0-8	NA	BG				Hydrated Bentonite (1.0' - 12' bgs)
5 980								
	2	8-17	NA	BG	CL		Brown CLAY, with gray mottling, some fine Sand and Gravel, medium plasticity.	Sand Pack (12' - 23' bgs)
10 975								2" PVC Screen (13' - 23' bgs)
15 970							Brown CLAY, with gray mottling, some fine Sand and Gravel, medium plasticity.	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWP9-04

Borehole Depth: 27' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	2	8-17	NA	BG	CL			
					SM		Gray Silty SAND, few fine Gravel, wet.	Sand Pack (12' - 23' bgs)
							Gray CLAY, few Sand and Gravel, medium to high plasticity, moist.	
20 / 965								2" PVC Screen (13' - 23' bgs)
	3	17-27	NA	BG	CL			
								Formation Collapse (23' - 27' bgs)
25 / 960								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 5/01/03
Drilling Company: Prosonic Corporation
Driller's Name: Mike Bond
Drilling Method: Rotosonic
Sampler Size: 10' corebarrel

Northing: 425157.76
Easting: 13413954.22
Casing Elevation: 987.51

Borehole Depth: 47'
Surface Elevation: 984.93

Descriptions By: Wayne Patterson

Well ID: MWP10-01

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 985	1	0-4'		BG	SM		Black nonplastic fine to medium SILTY SAND, few fine to medium Gravel, few Clay, rare Cobble, damp, moist, fill.	Aboveground Protective Casing (2.5' ags - 1.5' bgs); Portland Cement (0-1' bgs)
5 980								Bentonite Seal (1-24' bgs)
10 975	2	4-17'		BG				2" ID PVC Riser Pipe (1.5' ags - 26' bgs)
15 970							Dark gray and brown mottled slightly plastic SILTY CLAY (CL), few fine to coarse Sand, few fine to coarse Gravel, dry to damp, medium stiff becoming	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWP10-01

Borehole Depth: 47'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
							stiff.	Bentonite Seal (1-24' bgs)
20 965	3	17-27'		BG	CL		Color change to 10 YR 4/1 dark gray.	2" ID PVC Riser Pipe (1.5' ags - 26' bgs)
25 960								Sand Pack (24-36' bgs)
30 955	4	27-37'		BG	SP		Brown nonplastic medium to coarse SAND, little fine to medium Gravel, dry to damp.	0.010" Wire Wrapped PVC Screen (26-36' bgs)
35 950								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWP10-01

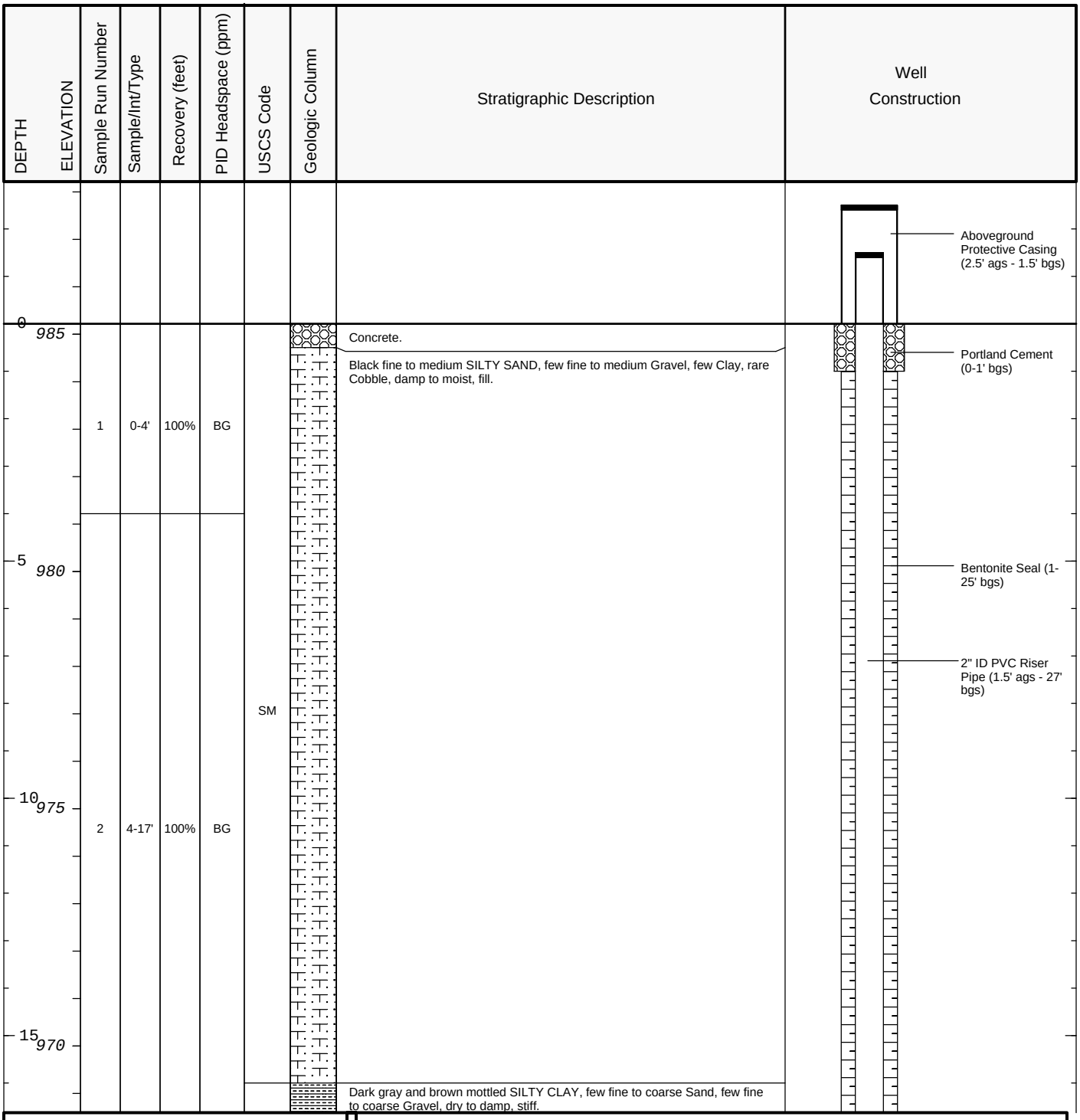
Borehole Depth: 47'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
40 945	5	37-47'		BG	CL		Dark gray and brown mottled weakly plastic SILTY CLAY, few fine to coarse Sand, few fine to coarse Gravel, dry, very stiff.	Natural Collapse (36-47' bgs)
45 940								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 5/7/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10' corebarrel	**Northing:** 425291.32 **Easting:** 13413947.18 **Casing Elevation:** 987.63 **Borehole Depth:** 37' **Surface Elevation:** 985.22 **Descriptions By:** Wayne Patterson	**Well ID:** MWP10-03 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus



Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.000
Data File:MWP10-03.dat

Template:I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 11/12/03

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWP10-03

Borehole Depth: 37'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20 / 965	3	17-27'	100%	BG	CL			Sand Pack (25-37' bgs)
25 / 960								
30 / 955	4	27-37'	100%	BG	SP		At 34' to 36' - Dark gray medium to coarse SAND, little fine Gravel, damp to moist, loose.	0.010" Wire Wrapped PVC Screen (27-37' bgs)
35 / 950								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 5/7/03
Drilling Company: Prosonic Corporation
Driller's Name: Mike Bond
Drilling Method: Rotosonic
Sampler Size: 10' corebarrel

Northing: 425392.21
Easting: 13413943.38
Casing Elevation: 988.74

Borehole Depth: 37'
Surface Elevation: 986.31

Descriptions By: Wayne Patterson

Well ID: MWP10-05

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 985	1	0-4'	100%	BG	CL		Brown SILTY CLAY, increased Silt content from 0-5' bgs, few fine to coarse Sand, few fine to medium Gravel, slightly plastic, damp, medium stiff.	Aboveground Protective Casing (2.5' ags - 1.5' bgs); Portland Cement (0-1' bgs); Bentonite Seal (1-24' bgs); 2" ID PVC Riser Pipe (1.5' ags - 26' bgs)
5 980								
10 975	2	4-17'	100%	BG				
15 970								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

EEC Encore Environmental Consortium, LLC

Project: 64411.000
Data File: MWP10-05.dat

Template: I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 10/29/03

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWP10-05

Borehole Depth: 37'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
							concrete (4")	Bentonite Seal (1-24' bgs)
20 965							color change to dark gray, becoming moderately plastic, damp to moist, becoming soft	
	3	17-27'	100%	BG				2" ID PVC Riser Pipe (1.5' ags - 26' bgs)
25 960					CL			
								Sand Pack (24-36' bgs)
30 955								0.010" Wire Wrapped PVC Screen (26-36' bgs)
	4	27-37'	100%	BG			dark gray, nonplastic, fine SILTY SAND, few clay, wet	
35 950								Natural Collapse (36-37' bgs)

EEC
Encore Environmental Consortium, LLC

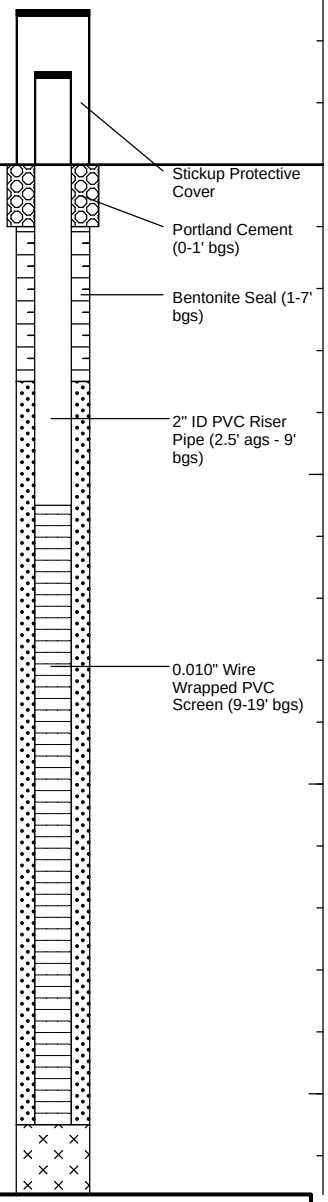
Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 5/6/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10' corebarrel	**Northing:** 425616.87 **Easting:** 13413887.76 **Casing Elevation:** 984.26 **Borehole Depth:** 27' **Surface Elevation:** 981.68 **Descriptions By:** Wayne Patterson	**Well ID:** MWP11-02 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
0 / 980	1	0-7'	100%	BG	ML		Brown SILT, moist, fill.
5 / 975							few clay, little fine to medium gravel
10 / 970	2	7-17'	100%	BG			
15							concrete, building floor?

Well Construction



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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWP11-02

Borehole Depth: 27'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
965								
							Brown SILTY CLAY, some fine to coarse Gravel, slightly plastic, damp.	
20					CL			
960	3	17-27'	100%	BG			concrete	Natural Collapse (19'-27' bgs)
25							Dark gray SILTY CLAY, few fine to coarse Gravel, few fine to coarse Sand, damp, slightly plastic, native clay till.	
955								
30					CL			
950		27'-37'	100%	BG				
35								
945								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 4/30/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10' corebarrel	**Northing:** 425706.53 **Easting:** 13413861.86 **Casing Elevation:** NA **Borehole Depth:** 27' **Surface Elevation:** 971.11 **Descriptions By:** Wayne Patterson	**Well ID:** MWP11-03 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 970	1	0-7'	100%	BG	ML		Concrete Gravel aggregate, some silty clay, fill Brown and dark gray mottled SILTY CLAY, few fine to coarse Sand, few fine to coarse Gravel, rare Cobble, damp, medium stiff, fill.	Borehole grouted to ground surface.
5 / 965								
10 / 960	2	7-17'	100%	BG				
15 / 955							native clay	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWP11-03

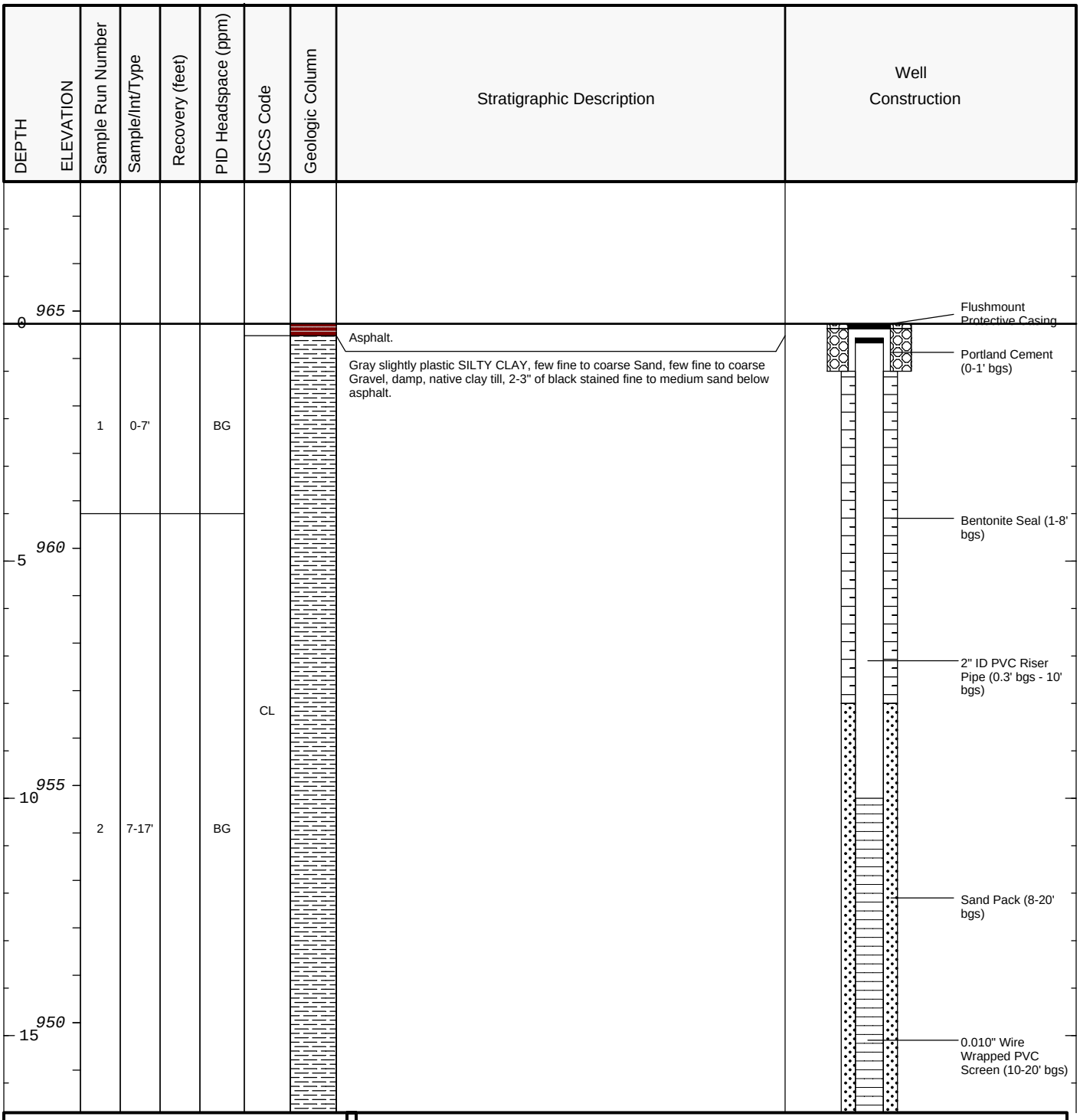
Borehole Depth: 27'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
							becoming stiff, dry, weakly plastic	
20 / 950	3	17-27'	100%	BG	CL			
							dark gray medium to coarse Sand, few fine to coarse Gravel, dry, interbedded with clay	
25 / 945								
							sand as at 23.5 - 24.5'	
30 / 940					CL		some gravel, some cobbles	
		27'-37'	100%	BG				
35 / 935								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 4/29/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10' corebarrel	**Northing:** 425530.39 **Easting:** 13413758.29 **Casing Elevation:** 964.36 **Borehole Depth:** 27' **Surface Elevation:** 964.73 **Descriptions By:** Wayne Patterson	**Well ID:** MWP11-04 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus



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Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.000
Data File:MWP11-04.dat

Template:I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 05/14/03

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWP11-04

Borehole Depth: 27'

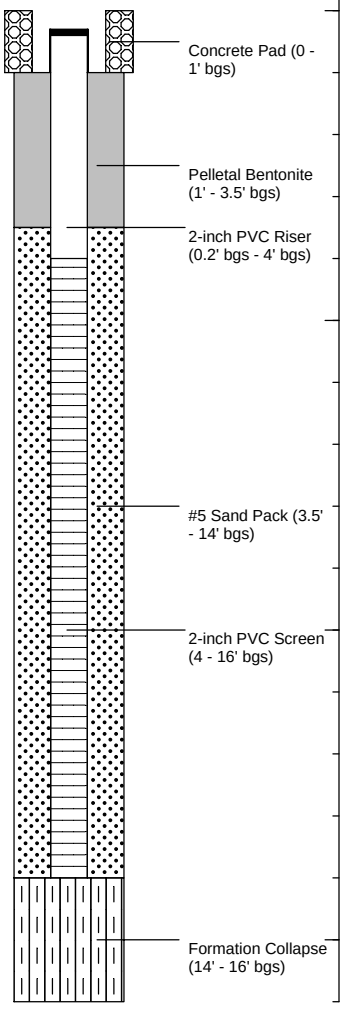
DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20 / 945					SM		Gray nonplastic fine to coarse SILTY SAND, little Clay, little fine to medium Gravel, saturated.	
	3	17-27'		BG	CL		Gray slightly plastic SILTY CLAY (CL), few fine to coarse Sand, few fine to coarse Gravel, damp, stiff to very stiff, native clay till.	Natural Collapse (20-27' bgs)
25 / 940					SP		10 YR 5/1 gray nonplastic medium to coarse subrounded GRAVELLY SAND (SP), 1.0' layer of cobbles at bottom of boring.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/30/02 **Drilling Company:** Prosonic **Driller's Name:** Norm Hormel **Drilling Method:** Rotosonic **Sampler Size:** 10'	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 16' **Surface Elevation:** NA **Descriptions By:** Matt Stuk	**Well ID:** MWW1-06 **Client:** General Motors **Location:** GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
0	0					SC		Clayey SAND, with some gravel, fill material.
		1	0-7'	100%	NA			Light to dark gray MARL, high shell content, moist to wet.
5	-5							
10	-10					OH		
		2	7-16'	100%	NA			
15	-15							



Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 05/29/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10' corebarrel	**Northing:** 424173.56 **Easting:** 13412656.41 **Casing Elevation:** 970.22 **Borehole Depth:** 67' **Surface Elevation:** 967.75 **Descriptions By:** Wayne Patterson	**Well ID:** MWW8-13 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970 / 0							No soil samples collected. See SBMWW8-13 for descriptions.	Aboveground Protective Casing (2.5' ags - 1.5' bgs); Portland Cement (0-1' bgs); Bentonite Seal (1-15' bgs); 2" ID PVC Riser Pipe (1.5' ags - 17' bgs)
965 / 5								
960 / 10								
955 / 15								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

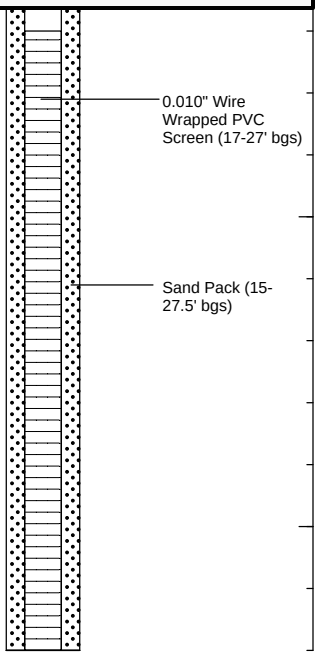
Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWW8-13

Borehole Depth: 67'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950								
20								
945								
25								



Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 10/11/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10' corebarrel	**Northing:** 424135.08 **Easting:** 13413175.04 **Casing Elevation:** 970.23 **Borehole Depth:** 31.5' **Surface Elevation:** 967.71 **Descriptions By:** Wayne Patterson	**Well ID:** MWW8-14 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								Stickup Protective Casing
0							Concrete.	Portland Cement (0 - 1.0' bgs)
					SP		Black fine SAND (SP), some angular gravel, loose, saturated, sheen on water, no odor, fill.	
965							Grayish brown and light brown mottled SILTY CLAY (CL), few fine to coarse subangular sand, few fine to coarse subangular gravel, rare cobble, slightly plastic, stiff, no odor, dry, fill.	Sand Drain (1 - 3.0' bgs)
	1	0-7'	100%	NA				2" ID PVC Riser Pipe (2.5' ags - 11.5' bgs)
5								Hydrated Bentonite Chips (3.0' - 9.5' bgs)
							Color change to dark gray, moderately plastic, moist to wet.	
960								
10								
955								
	2	7-17'	100%	NA				
15								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.120
Data File: MWW8-14.dat

Template: I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 10/14/03

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWW8-14

Borehole Depth: 31.5'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950					CL		Natural - no fill.	Sand Pack (9.5' - 31.5' bgs)
20								
945	3	17-31.5	100%	NA			Dark gray SILT (ML), saturated, no odor, few very fine sand.	2" ID 0.010" Wire Wrapped PVC Screen (11.5 - 31.5' bgs)
25								
940							Dark gray fine SAND (SP), few clay, loose, saturated, no odor.	
30								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 10/11/03
Drilling Company: Prosonic Corporation
Driller's Name: Mike Bond
Drilling Method: Rotosonic
Sampler Size: 10' corebarrel

Northing: 424164.60
Easting: 13413225.53
Casing Elevation: 970.24

Borehole Depth: 31.5'
Surface Elevation: 967.71

Descriptions By: Wayne Patterson

Well ID: MWW8-15

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
970							
0							Concrete.
							Black fine SAND (SP), few silt, few angular gravel, loose, dry-damp, no odor, fill.
965	1	0-7'	100%	NA	SP		
5							Subsurface concrete.
960							Grayish brown, little mottling with light brown SILTY CLAY (CL), few fine to coarse subangular sand, few fine to coarse subangular gravel, rare cobble, moderately plastic, soft - medium stiff, no odor, moist, fill.
10							
955	2	7-17'	100%	NA	CL		
15							

Well Construction

- Stickup Protective Casing
- Portland Cement (0 - 1.0' bgs)
- Sand Drain (1 - 3.0' bgs)
- 2" ID PVC Riser Pipe (2.5' ags - 11.5' bgs)
- Hydrated Bentonite Chips (3.0' - 9.5' bgs)

EEC Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWW8-15

Borehole Depth: 31.5'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950								
20							Grayish brown SILT (ML), saturated, no odor.	Sand Pack (9.5' - 31.5' bgs)
945	3	17-31.5	100%	NA	ML		Dark gray SILT (ML), saturated, slight odor.	2" ID 0.010" Wire Wrapped PVC Screen (11.5 - 31.5' bgs)
25								
940								
30					CL		Dark gray SILTY CLAY (CL), few fine to coarse subangular sand, few fine to coarse subangular gravel, rare cobble, moderately plastic, soft - medium stiff, no odor, moist, natural.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 10/11/03
Drilling Company: Prosonic Corporation
Driller's Name: Mike Bond
Drilling Method: Rotosonic
Sampler Size: 10' corebarrel

Northing: 424200.69
Easting: 13413210.82
Casing Elevation: 970.46

Borehole Depth: 31.5'
Surface Elevation: 968.00

Descriptions By: Wayne Patterson

Well ID: MWW8-16

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
970							
0							Concrete.
					CL		Black SILTY CLAY (CL), some gravel aggregate, wet, no odor, fill.
965	1	0-7'	100%	NA			Subsurface concrete.
5							
960							Dark gray SILTY CLAY (CL), few fine to coarse subangular sand, few fine to coarse subangular gravel, rare wood fragments, moderately plastic, soft to medium stiff, wet with NAPL, slight odor, fill.
10							
955	2	7-17'	100%	NA	CL		
15							

Well Construction

- Stickup Protective Casing
- Portland Cement (0 - 1.0' bgs)
- Sand Drain (1 - 3.0' bgs)
- 2" ID PVC Riser Pipe (2.5' ags - 11.5' bgs)
- Hydrated Bentonite Chips (3.0' - 9.5' bgs)

EEC Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: MWW8-16

Borehole Depth: 31.5'

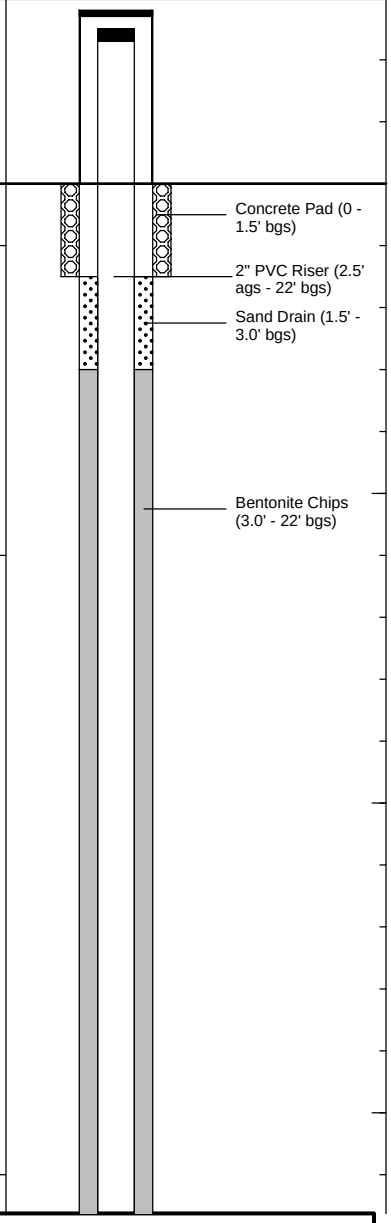
DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950							Increased silt content.	Sand Pack (9.5' - 31.5' bgs)
20								
945	3	17-31.5	100%	NA			Dark gray SILT (ML), saturated, with NAPL, moderate odor.	
25					ML			2" ID 0.010" Wire Wrapped PVC Screen (11.5 - 31.5' bgs)
940					SP		Dark gray fine SAND (SP), loose, moist with NAPL, slight odor.	
30					CL		Dark gray SILTY CLAY (CL), few fine to coarse subangular sand, few fine to coarse subangular gravel, rare wood fragments, moderately plastic, soft to medium stiff, wet with NAPL, slight odor.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/28/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 423270.54 **Easting:** 13412705.83 **Casing Elevation:** 969.60 **Borehole Depth:** 37' below grade **Surface Elevation:** 969.94 **Descriptions By:** Wayne Patterson	**Well ID:** MWW9-01 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
0 970							CONCRETE.
							Black Silty CLAY, few fine to coarse Sand, few fine to coarse Gravel, slightly plastic, medium stiff, dry.
	1		NA	NA	CL		
5 965							
							Black fine SAND, few Silt, loose, dry.
10 960					SP		
	2		NA	NA			
15 955							
	2		NA	NA			Black fine SAND, few Silt, loose, dry.



Well Construction

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWW9-01

Borehole Depth: 37' below grade

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20 950	3		NA	NA	SP			Bentonite Chips (3.0' - 22' bgs); 2" PVC Riser (2.5' ags - 22' bgs); Sand Pack (22' - 34' bgs)
					CL		Black Silty CLAY, medium stiff, slightly plastic, moist.	
25 945					SP		Black fine SAND, few Silt, loose, dry. Wet to saturated at 26.5' bgs.	2" diameter Wire-wrapped PVC Screen (24' - 34' bgs)
					ML		Dark gray SILT, saturated.	
30 940	4		NA	NA	PT		Black PEAT, plant fragments, moist.	
					ML		Dark gray SILT, saturated.	
					SP		Dark gray fine to medium SAND, loose. 3"-thick Silt lense at 33.25' bgs.	
35 935					ML		Gray-brown SILT, saturated.	Natural Collapse (34' - 37' bgs)
	4		NA	NA	ML		Gray-brown SILT, saturated.	Natural Collapse (34' - 37' bgs)

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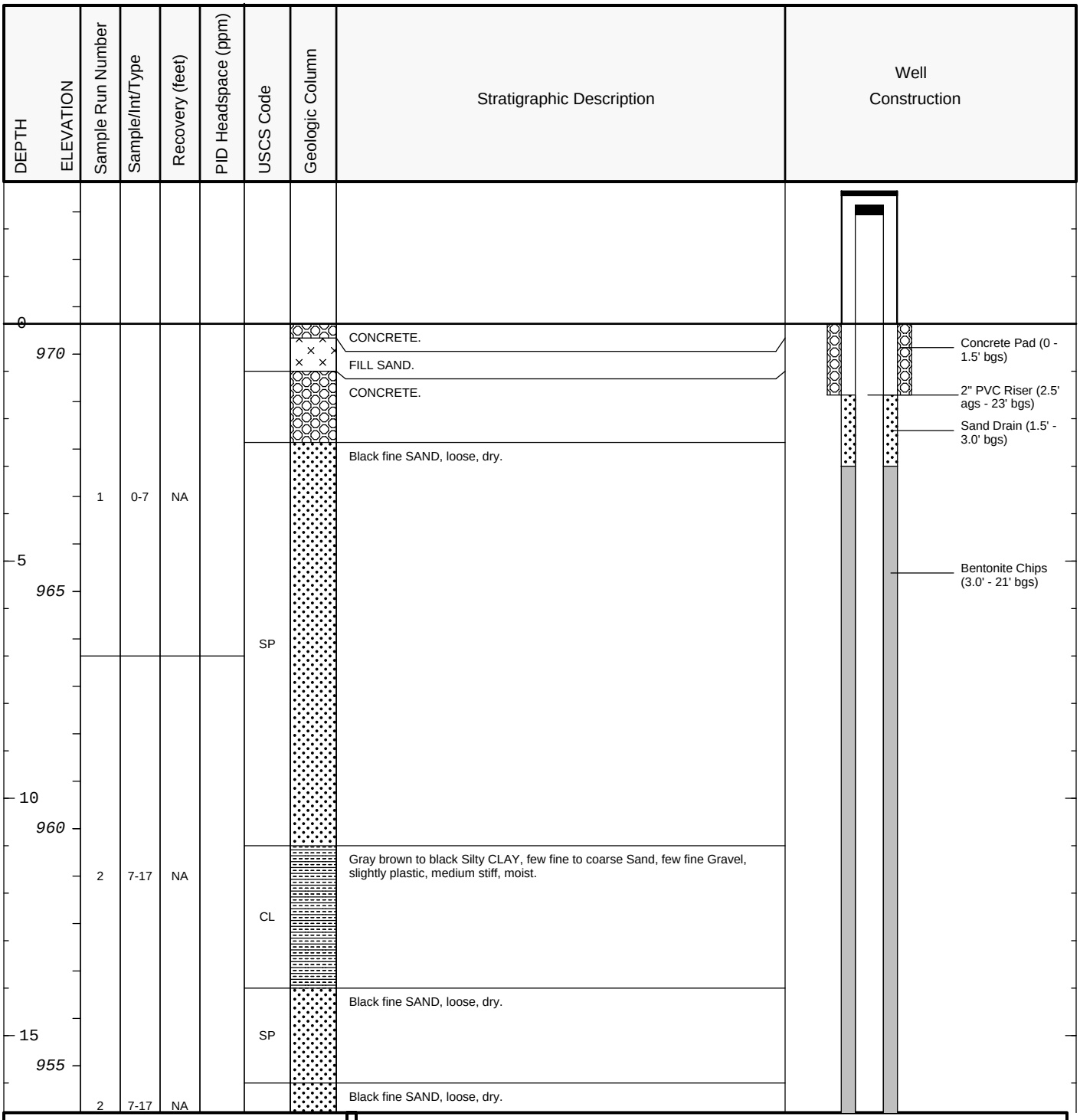
Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/28/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 423768.48 **Easting:** 13412800.41 **Casing Elevation:** 973.26 **Borehole Depth:** 37' below grade **Surface Elevation:** 970.64 **Descriptions By:** Wayne Patterson	**Well ID:** MWW9-02 **Client:** GM **Location:** GM Pontiac North Campus



Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWW9-02

Borehole Depth: 37' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20 / 950	3	17-27	NA		SP		Saturated at 25' bgs.	Bentonite Chips (3.0' - 21' bgs); 2" PVC Riser (2.5' ags - 23' bgs); Sand Pack (21' - 33' bgs); 2" diameter Wire-wrapped PVC Screen (23' - 33' bgs)
25 / 945								
30 / 940	4	27-37	NA		ML		Brown SILT, some Gravel. Product, black staining, strong odor at 31.5' bgs.	
					CL		Dark gray Silty CLAY, few fine to coarse Sand, few fine Gravel, medium stiff, moderately plastic, damp.	
35 / 935	4	27-37	NA		CL		Dark gray Silty CLAY, few fine to coarse Sand, few fine Gravel, medium stiff, moderately plastic, damp.	Natural Collapse (33' - 37' bgs)

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/8/07 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 423679.96 **Easting:** 13412725.48 **Casing Elevation:** 971.98' **Borehole Depth:** 37' bgs **Surface Elevation:** 969.11' **Descriptions By:** D. Deitner	**Well ID:** MWW9-03 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0							CONCRETE.	Sand (0.5' - 1.0' bgs) Concrete Pad (0 - 1.0' bgs)
					SW		Light brown fine to medium well graded SAND (SW), with Gravel, trace Silt, loose, dry. [FILL] 1" of Concrete below 1.0' bgs.	
				BG	SP		Dark brown fine poorly graded SAND (SP), trace Silt, trace fine rounded Gravel, compact, moist. [FILL]	
	1	0-7	100					2" PVC Riser (2.8' ags - 18' bgs)
965							Brown Silty CLAY (CL), trace medium subangular Gravel, low plasticity, firm, moist. [FILL]	
5					CL			
				2.1	SP		Dark brown fine poorly graded SAND (SP), trace Silt, trace fine rounded Gravel, compact, moist. [FILL]	Bentonite Chips (1.0' - 16' bgs)
							Loose below 8.0' bgs.	
960				2.4				
10					SP			
	2	7-17	100					
955				2.2				
15								
	2	7-17	100	2.2	SP		Dark brown fine poorly graded SAND (SP), trace Silt, trace fine rounded Gravel, loose, moist. [FILL]	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWW9-03

Borehole Depth: 37' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
					ML		Brown SILT (ML), trace fine Sand, trace Clay, trace rounded Gravel, compact, moist.	2" PVC Riser (2.8' ags - 18' bgs)
950 / 20				2.8	SM		Black Silty fine poorly graded SAND (SM), compact, moist. [FILL]	K&E Sand and Gravel #1 Well Gravel (16' - 28' bgs)
	3	17-27	100		SP		Black fine poorly graded SAND (SP), trace Silt, compact, moist. Brown, very moist to wet at 23.5' bgs.	
945 / 25				2.3	SW		Gray fine to medium well graded SAND (SW), with Gravel, trace silt, compact, wet.	2" diameter #10 slot PVC Screen (18' - 28' bgs)
940 / 30	4	27-37		2.2	CL		Gray Silty CLAY (CL), trace fine rounded Gravel, trace Sand lenses to 28' bgs, low plasticity, firm, moist.	Natural Collapse (28' - 37' bgs)
935 / 35				2.7				
	4	27-37		2.7	CL		Gray Silty CLAY (CL), trace fine rounded Gravel, low plasticity, firm, moist.	Natural Collapse (28' - 37' bgs)

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWW9-03

Borehole Depth: 37' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
930								
40								
925								
45								
920								
50								
915								
55								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/28/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 423760 **Easting:** 13412838 **Casing Elevation:** NA **Borehole Depth:** 37' below grade **Surface Elevation:** NA **Descriptions By:** Wayne Patterson	**Well ID:** MWW9-05 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 970							Concrete.	Concrete Pad (0 - 1.5' bgs)
					SW		Dark brown fine SAND, trace Silt, trace fine to coarse Gravel, compact, damp.	2" PVC Riser (2.5' ags - 23' bgs)
								Sand Drain (1.5' - 3.0' bgs)
	1	0-7	NA	BG				
							Concrete.	
5 / 965							Dark brown fine SAND, trace Silt, trace medium Gravel, compact, poorly graded, moist.	Bentonite Chips (3.0' - 21' bgs)
					SP			
10 / 960	2	7-17	NA	BG				
15 / 955								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWW9-05

Borehole Depth: 37' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20 / 950	3	17-27	NA	BG	CL		Gray and black mixture SILTY CLAY, trace fine Gravel, trace Sand, firm low plasticity, moist to very moist.	Bentonite Chips (3.0' - 21' bgs); 2" PVC Riser (2.5' ags - 23' bgs); Sand Pack (21' - 33' bgs)
25 / 945							Brown SILTY CLAY, trace fine to medium Gravel, firm low plasticity, moist, till.	2" diameter Wire-wrapped PVC Screen (23' - 33' bgs)
30 / 940	4	27-37	NA	BG	CL			Natural Collapse (33' - 37' bgs)
35 / 935								

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411
Data File:MWW9-05.dat

Template:J:\rockware\LogPlot 2001\LogFiles\64411\Geoprobe.ldf
Date: 8/25/03

Date Start/Finish: 9/10/03
Drilling Company: Prosonic Corporation
Driller's Name: Mike Bond
Drilling Method: Rotosonic
Sampler Size: 10 feet

Northing: 423788.49
Easting: 13412728.05
Casing Elevation: 973.82

Borehole Depth: 37' below grade
Surface Elevation: 970.82

Descriptions By: Dan Dietner

Well ID: MWW9-06

Client: GM

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 970					SP		CONCRETE. Medium brown fine SAND, trace Silt, trace Gravel, compact, poorly graded, moist.	Concrete Pad (0 - 1.5' bgs) 2" PVC Riser (2.5' ags - 23' bgs) Sand Drain (1.5' - 3.0' bgs)
	1	0-7		BG	MH		Brown and black SILT with Sand, trace coarse Gravel, compact, moist.	
5 / 965					SP		Dark brown fine SAND, trace Silt, trace fine Gravel, compact, poorly graded, moist. trace coarse slag mixed with foundary sand foundary sand	Bentonite Chips (3.0' - 20' bgs)
10 / 960	2	7-17		BG				
15 / 955	2	7-17		BG				

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWW9-06

Borehole Depth: 37' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
					SP		wet small piece of wire	Bentonite Chips (3.0' - 20' bgs) 2" PVC Riser (2.5' ags - 23' bgs) Sand Pack (20' - 33' bgs) 2" diameter Wire-wrapped PVC Screen (23' - 33' bgs)
20 / 950	3	17-27		BG				
25 / 945								
				BG				
30 / 940	4	27-37			ML		Gray SILT, trace Clay, trace Sand, loose, wet.	
				BG	CL		Gray SILTY CLAY, trace fine Gravel, low plasticity, moist.	Natural Collapse (33' - 37' bgs)
35 / 935	4	27-37		BG				Natural Collapse (33' - 37' bgs)

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Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 9/10/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 423912.61 **Easting:** 13412798.41 **Casing Elevation:** 970.59 **Borehole Depth:** 27' below grade **Surface Elevation:** 967.59 **Descriptions By:** Dan Dietner	**Well ID:** MWW9-07 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0							CONCRETE.	Concrete Pad (0 - 1.5' bgs)
							Black fine SAND, trace Silt, trace medium Gravel, compact poorly graded, moist.	2" PVC Riser (2.5' ags - 13' bgs)
								Sand Drain (1.5' - 3.0' bgs)
965	1	0-7	100%	BG				
5					SP		trace coarse slag	Bentonite Chips (3.0' - 11' bgs)
960							mixed with foundary sand	
							foundary sand	
10								2" PVC Riser (2.5' ags - 13' bgs)
	2	7-17	100%	BG			Brown SILT with Clay, trace Sand, loose, slightly plastic, very moist.	
955					ML			
15								Sand Pack (11' - 23' bgs)
							Gray SILT, trace Sand, trace Clay, very moist.	
	2	7-17	100%	BG				

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: MWW9-07

Borehole Depth: 27' below grade

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950					MH			
					ML		Gray Silt with Clay, trace Sand, trace fine Gravel, loose, very moist.	
20								2" diameter Wire-wrapped PVC Screen (13' - 23' bgs)
	3	17-27	100%	BG				
945							Gray SILTY CLAY, trace fine Gravel, stiff, low plasticity, moist. wet	
25					CL		small piece of wire	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/4/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 425216.18 **Easting:** 13414283.74 **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** 985.05 **Descriptions By:** Dave Straccia	**Well ID:** P18-01 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 *985*							CONCRETE.	
	1	0-5	NA	BG	SP		Brown fine to coarse SAND, moist.	Borehole backfilled with Bentonite Pellets.
5 *980*	2	5-10	NA	BG	CL		Brown CLAY, trace fine Gravel, stiff, dry.	
10								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/4/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 425300.41 **Easting:** 13414280.45 **Casing Elevation:** NA **Borehole Depth:** 15' below grade **Surface Elevation:** 985.06 **Descriptions By:** Dave Straccia	**Well ID:** P18-02 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 985							CONCRETE.	
							Olive-brown CLAY, trace black Sand from 0.1' - 0.6' bgs, slight odor, stiff, dry.	
	1	0-5	NA				Brown color, trace Gravel.	Borehole backfilled with Bentonite Pellets.
5 / 980								
	2	5-10	NA		CL		Olive-brown color, Sheen over Clay, moderate odor at 7.0' bgs. Some small Sand seams from 7.5' - 8.5' bgs.	
10 / 975							Wet at 10' bgs.	
	3	10-15	NA					
15								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/4/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 425383.55 **Easting:** 13414279.63 **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** 985.01 **Descriptions By:** Dave Straccia	**Well ID:** P18-03 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 *985*							CONCRETE.	
							Olive-brown CLAY, trace fine Gravel, very stiff, soft, dry.	Borehole backfilled with Bentonite Pellets.
	1	0-5	NA	BG				
5 *980*					CL			
	2	5-10	NA	BG				
10							Slight odor and oily sheen at 9.5' bgs.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/4/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 425452.70 **Easting:** 13414289.96 **Casing Elevation:** NA **Borehole Depth:** 20' below grade **Surface Elevation:** 984.27 **Descriptions By:** Dave Straccia	**Well ID:** P18-04 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
985								
0							Gray-brown CLAY, trace fine to coarse Gravel, very stiff, dry.	
	1	0-5	NA					Borehole backfilled with Bentonite Pellets.
980								
5								
	2	5-10	NA		CL			
975								
10								
	3	10-15	NA					
970								
15							Gray color, trace fine to coarse Sand, moderately stiff and 15' bgs.	
	4	15-20	NA					
							Gray CLAY, trace fine to coarse Sand, trace fine to coarse Gravel, moderately stiff, dry.	

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Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: P18-04

Borehole Depth: 20' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
965 / 20	4	15-20	NA		CL			Borehole backfilled with Bentonite Pellets.

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/4/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 425554.98 **Easting:** 13414270.00 **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** 984.91 **Descriptions By:** Dave Straccia	**Well ID:** P18-05 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 985	1	0-5	NA	BG	CL		Brown-gray CLAY, trace fine to coarse Gravel, stiff, dry.	Borehole backfilled with Bentonite Pellets.
5 980	2	5-10	NA	BG	SP		Brown poorly sorted fine to medium SAND, wet.	
					CL		Brown CLAY, trace fine to coarse Gravel, some small fine to coarse Sand seams, stiff, dry. Slight odor and oily sheen at 9.5' bgs.	
10 975								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/4/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 425448.28 **Easting:** 13414371.98 **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** 983.03 **Descriptions By:** Dave Straccia	**Well ID:** P18-06 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
985								
0								
	1	0-5	NA				Brown-gray CLAY, trace fine to coarse Gravel, stiff, dry.	Borehole backfilled with Bentonite Pellets.
980								
5					CL			
	2	5-10	NA					
975							Gray color, moderately stiff, plastic below 9.0' bgs.	
10								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/4/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 425382.34 **Easting:** 13414371.63 **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** 984.4 **Descriptions By:** 984.43	**Well ID:** P18-07 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
985								
0							Brown CLAY, trace fine to coarse Gravel, stiff, dry.	Borehole backfilled with Bentonite Pellets.
	1	0-5	NA	BG				
980								
5					CL			
							Gray color, odor, oily sheen below 7.0' bgs.	
	2	5-10	NA	BG				
975								
10								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/4/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 425304.50 **Easting:** 13414374.54 **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** 984.37 **Descriptions By:** Dave Straccia	**Well ID:** P18-08 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
985								
0							Brown CLAY, trace fine to coarse Gravel, stiff, dry.	
	1	0-5	NA					Borehole backfilled with Bentonite Pellets.
980								
5					CL			
	2	5-10	NA					
975								
10								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

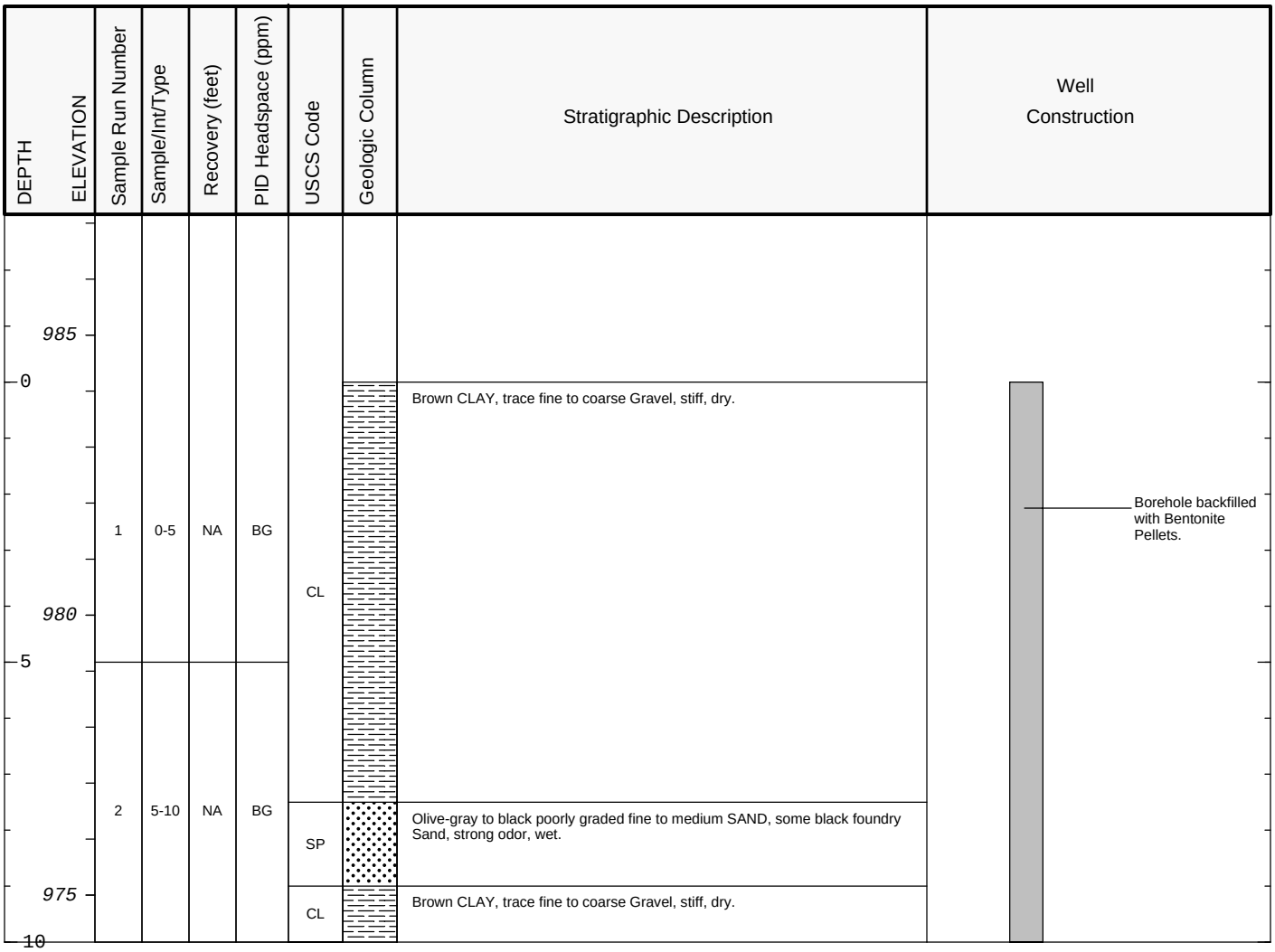
Date Start/Finish: 8/4/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 425244.21 **Easting:** 13414390.96 **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** 984.13 **Descriptions By:** Dave Straccia	**Well ID:** P18-09 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
985								
0								
	1	0-5	NA				Brown CLAY, trace fine to coarse Gravel, stiff, dry.	Borehole backfilled with Bentonite Pellets.
980								
5					CL			
	2	5-10	NA					
975								
10								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/4/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 425262.07 **Easting:** 13414456.23 **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** 984.16 **Descriptions By:** Dave Straccia	**Well ID:** P18-10 **Client:** GM **Location:** GM Pontiac North Campus



Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/5/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 425311.48 **Easting:** 13414471.99 **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** 984.0 **Descriptions By:** 984.02	**Well ID:** P18-11 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
985								
0								
	1	0-5	NA		SP		Brown poorly graded fine to medium SAND, moist.	Borehole backfilled with Bentonite Pellets.
980							Brown CLAY, trace fine to coarse Gravel, stiff, dry.	
5								
	2	5-10	NA		CL			
975								
10								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/5/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 425383.43 **Easting:** 13414474.78 **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** 984.39 **Descriptions By:** Dave Straccia	**Well ID:** P18-12 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
985								
0								
	1		NA	BG			Brown CLAY, trace fine to coarse Gravel, stiff, dry.	Borehole backfilled with Bentonite Pellets.
980								
5					CL			
	2		NA	BG			Slight odor, no staining or sheen at 6.0' from 8.5' bgs.	
975								
10								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/5/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** 425455.88 **Easting:** 13414475.47 **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** 983.85 **Descriptions By:** Dave Straccia	**Well ID:** P18-13 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
985								
0					SP		Brown poorly graded fine to medium SAND, dry.	
							Brown CLAY, trace fine to coarse Gravel, stiff, dry.	
	1	0-5	NA					Borehole backfilled with Bentonite Pellets.
980								
5					CL			
	2	5-10	NA				Gray color, medium plasticity at 8.2' bgs.	
975								
10								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/5/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 15' below grade **Surface Elevation:** NA **Descriptions By:** Dave Straccia	**Well ID:** P18-15 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 0	1	0-5	NA	BG	CL		Brown CLAY, trace fine to coarse Gravel, stiff, dry.	Borehole backfilled with Bentonite Pellets.
5 / -5	2	5-10	NA	BG			Brown-gray color at 8.0' bgs.	
10 / -10							Slight odor from 9.8' - 10.2' bgs.	
	3	10-15	NA	BG			Medium plasticity below 13' bgs.	
15 / -15								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/5/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** NA **Descriptions By:** Dave Straccia	**Well ID:** P18-16 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 0								
	1	0-5	NA		CL		Brown CLAY, trace fine to coarse Gravel, stiff, dry.	Borehole backfilled with Bentonite Pellets.
5 / -5	2	5-10	NA				Gray color, medium plasticity below 9.0' bgs.	
10 / -10								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/5/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Dan O'Mara **Drilling Method:** Geoprobe **Sampler Size:** 60 inches	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 10' below grade **Surface Elevation:** NA **Descriptions By:** Dave Straccia	**Well ID:** P18-17 **Client:** GM **Location:** GM Pontiac North Campus

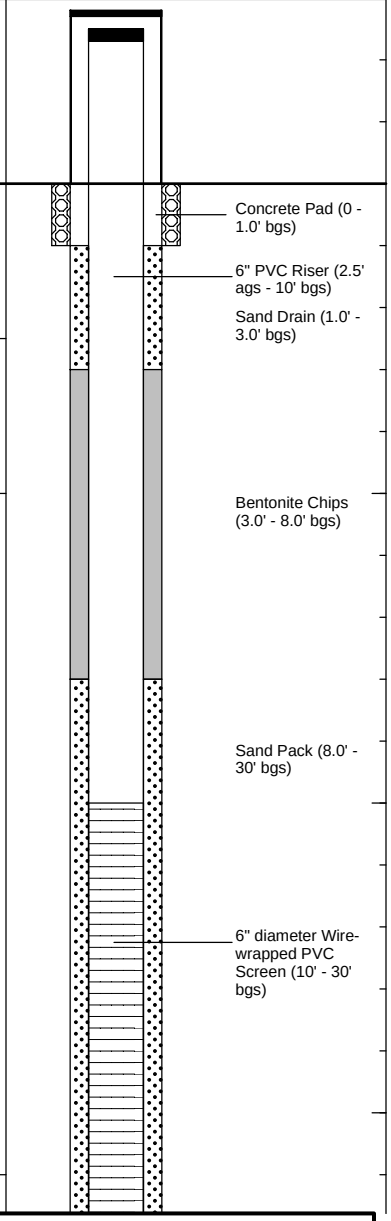
DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 0	1	0-5	NA	BG	CL		Brown CLAY, trace fine to coarse Gravel, stiff, dry.	Borehole backfilled with Bentonite Pellets.
5 / -5	2	5-10	NA	BG			Moderated odor below 4.0' bgs.	
10 / -10								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/30/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 424162.75 **Easting:** 13413147.59 **Casing Elevation:** 970.33 **Borehole Depth:** 37' below grade **Surface Elevation:** 967.86 **Descriptions By:** Wayne Patterson	**Well ID:** RWW8-01 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
970 / 0					SM		Brown Silty fine SAND, trace coarse Sand, trace fine Gravel, very dense, dry.
965 / 5	1	0-7	NA	NA	SP		Brown very fine to fine SAND, little medium to coarse Sand, little Clay, trace Silt, loose, dry.
					CL		Dark gray-brown Silty CLAY, few fine to coarse Sand, few fine Gravel, some mottling with gray color, slightly plastic, stiff, damp to moist.
960 / 10	2	7-17	NA	NA			
955 / 15	2	7-17	NA	NA			Dark gray Silty CLAY, few fine to coarse Sand, few fine Gravel, some mottling with gray color, slightly plastic, stiff, damp to moist.



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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: RWW8-01

Borehole Depth: 37' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950								Sand Pack (8.0' - 30' bgs)
20					CL			6" diameter Wire-wrapped PVC Screen (10' - 30' bgs)
	3	17-27	NA	NA			Medium stiff, moderately plastic at 22' bgs.	
945							Rare Cobble at 23' bgs.	
25					ML		Dark gray SILT, product (LNAPL) on water, saturated.	
					CL		Dark gray Silty CLAY, few fine to coarse Sand, few fine Gravel, some mottling with gray color, slightly plastic, stiff, damp to moist.	
940								
30								
	4	27-37	NA	NA				Bentonite (30' - 37' bgs)
935								
35								
	4	27-37	NA	NA	CL		Dark gray Silty CLAY, few fine to coarse Sand, few fine Gravel, some mottling with gray color, slightly plastic, stiff, damp to moist.	Bentonite (30' - 37' bgs)

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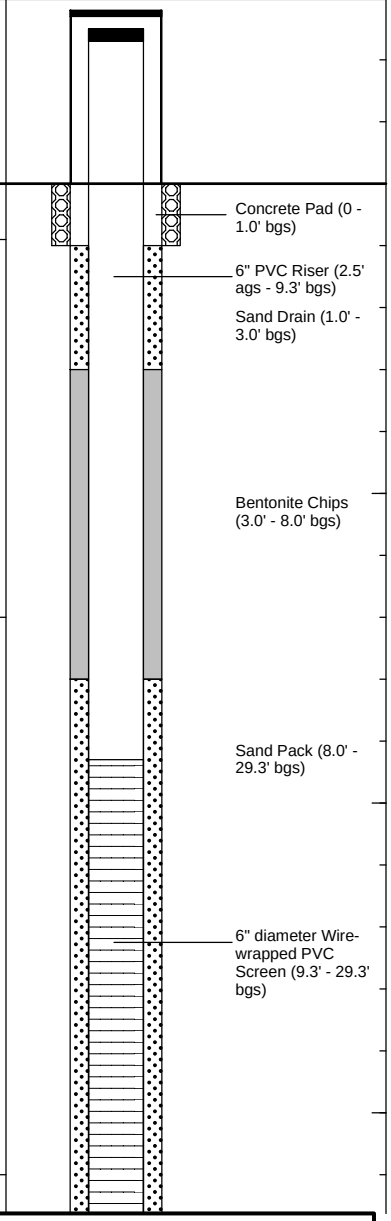
Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/30/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 424205.24 **Easting:** 13413260.37 **Casing Elevation:** 970.75 **Borehole Depth:** 32' below grade **Surface Elevation:** 967.94 **Descriptions By:** Wayne Patterson	**Well ID:** RWW8-02 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description
970							
0							CONCRETE.
							Light brown Sandy CLAY, some coarse Sand, trace fine Gravel, medium plasticity, moist. [FILL]
965	1	0-7		NA			
5							
					CL		Dark gray Silty CLAY, few fine to coarse Sand, few fine Gravel, slight odor, medium stiff, medium plastic, moist.
960							
10							
	2	7-17		NA			
955							
15							
	2	7-17		NA			Dark gray Silty CLAY, few fine to coarse Sand, few fine Gravel, slight odor, medium stiff, medium plastic, moist.



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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: RWW8-02

Borehole Depth: 32' below grade

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950					CL		Saturated with LNAPL at 17' bgs.	Sand Pack (8.0' - 29.3' bgs)
20	3	17-27		NA			Increased Silt content at 21.5' bgs.	6" diameter Wire-wrapped PVC Screen (9.3' - 29.3' bgs)
945					ML		Dark gray SILT, strong odor, saturated with LNAPL.	
25								
940					CL		Dark gray Silty CLAY, few fine to coarse Sand, few fine Gravel, slight odor, medium stiff, medium plastic, moist. Becoming stiff, slightly plastic, no odor, damp at 27' bgs.	
30	4	27-32		NA				Bentonite (29.3' - 32' bgs)

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/22/03
Drilling Company: Prosonic Corporation
Driller's Name: Mike Bond
Drilling Method: Rotosonic
Sampler Size: 10 feet

Northing: 424777.47
Easting: 13412863.96
Casing Elevation: NA

Borehole Depth: 46.5' below grade
Surface Elevation: 967.71

Descriptions By: Wayne Patterson

Well ID: SBMWM5-02

Client: GM

Location: GM Pontiac North Campus

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
980								
0							ASPHALT.	
					SP		Brown fine to medium SAND, loose, moist.	
							Dark gray Silty CLAY, few fine to coarse Sand, few fine to coarse Gravel, slightly plastic, stiff, dry to damp.	Borehole backfilled with Bentonite Pellets.
975	1	0-6.5	NA					
							Black stained, some Wood fragments from 4.5' - 6.5' bgs.	
5								
							Increased plasticity, moist from 6.5' - 11.5' bgs.	
970					CL			
10								
	2	6.5-16.5	NA					
965								
15								
	2	6.5-16.5	NA				Dark gray Silty CLAY, few fine to coarse Sand, few fine to coarse Gravel, slightly plastic, stiff, dry to damp.	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: SBMWM5-02

Borehole Depth: 46.5' below grade

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
960								Borehole backfilled with Bentonite Pellets.
20	3	16.5-26.5	NA					
955								
25					CL			
950								
30	4	26.5-36.5	NA					
945								
35								
	4	26.5-36.5	NA				Dark gray Silty CLAY, few fine to coarse Sand, few fine to coarse Gravel, increased plasticity, stiff, moist.	

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: SBMWM5-02

Borehole Depth: 46.5' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
40 / 935	5	36.5-46.5	NA		CL			Borehole backfilled with Bentonite Pellets.
45								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 4/28/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10' corebarrel	**Northing:** 425576.80 **Easting:** 13414324.12 **Casing Elevation:** NA **Borehole Depth:** 52' **Surface Elevation:** 985.04 **Descriptions By:** Wayne Patterson	**Well ID:** SBMWP9-01 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 985							Concrete.	
	1	0-7'		BG	SM		Brown nonplastic fine to medium SILTY SAND, little clay, some odor, moist, loose, little black staining towards base, fill.	
5 980							Brown and dark gray mottled weakly plastic SILTY CLAY, little medium to coarse Sand, few fine to coarse Gravel, rare cobble, medium stiff.	
							At 7' color change to dark gray.	
10 975	2	7-12'		BG			At 8-11' bgs lenses of fine silty sand.	Cement and bentonite grout (0-52' bgs)
	3	12-17'		BG				
15 970								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: SBMWP9-01

Borehole Depth: 52'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20 / 965					CL		At 17-22' bgs moist.	
	4	17-27'		BG			At 22-27' bgs becoming stiff, damp.	
25 / 960							Dry, very stiff, few sand	
30 / 955	5	27-37'		BG				Cement and bentonite grout (0-52' bgs)
35 / 950								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: SBMWP9-01

Borehole Depth: 52'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
40 945	6	37-52'		BG				Cement and bentonite grout (0-52' bgs)
45 940					SP		Gray nonplastic medium to coarse SAND, some fine to coarse Gravel, few cobbles, dry to damp.	
50 935								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 4/29/03
Drilling Company: Prosonic Corporation
Driller's Name: Mike Bond
Drilling Method: Rotosonic
Sampler Size: 4" diameter x 10'

Northing: 425539.77
Easting: 13414460.72
Casing Elevation: NA

Borehole Depth: 37' below grade
Surface Elevation: 986.27

Descriptions By: Wayne Patterson

Well ID: SBMWP9-02

Client: GM

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 985	1	0-5	NA	BG	CL		Brown SILTY CLAY, few fine to coarse Sand, few fine to coarse Gravel, Roots present to 1.0' bgs, slightly plastic, soft, moist.	
							6" Concrete layer with black stained soil at base at 4.0' bgs.	
5 / 980							Color change to brown becoming stiff, dry below 4.7' bgs.	Borehole Tremmie Grouted to grade.
							Medium stiff and damp below 7.0' bgs.	
10 / 975	2	5-17	NA	BG			2" layer of Concrete at 11' bgs. Rubble, Native Clay Till below 11.2' bgs.	
15 / 970							Brown SILTY CLAY, few fine to coarse Sand, few fine to coarse Gravel, slightly plastic, medium stiff, damp.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: SBMWP9-02

Borehole Depth: 37' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
	2	5-17	NA	BG			Increased Gravel content to little	
20								
965								Borehole Tremmie Grouted to grade.
	3	17-27	NA	BG				
25								
960					CL		Becoming stiff to very stiff below 27' bgs.	
30								
955	4	27-37	NA	BG				
35								
950	4	27-37	NA	BG	CL		Brown SILTY CLAY, few fine to coarse Sand, few fine to coarse Gravel, slightly plastic, stiff to very stiff, damp.	Borehole Tremmie Grouted to grade.

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 05/06/03
Drilling Company: Prosonic Corporation
Driller's Name: Mike Bond
Drilling Method: Rotosonic
Sampler Size: 10' corebarrel

Northing: 425160.71
Easting: 13414053.58
Casing Elevation: NA

Borehole Depth: 37'
Surface Elevation: 986.00

Descriptions By: Wayne Patterson

Well ID: SBMWP10-02

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0	985	1	0-3'		BG	CL		Concrete. Gray and brown mottled slightly plastic becoming weakly plastic SILTY CLAY, few fine to coarse Sand, few fine to medium Gravel, damp becoming dry at 2', dark gray within top 1', medium stiff becoming stiff.	
5	980								
10	975	2	3-17'		BG				Cement and bentonite grout (0-37' bgs)
15	970								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: SBMWP10-02

Borehole Depth: 37'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20 / 965	3	17-27'		BG	CL			
25 / 960								
30 / 955	4	27-37'		BG				
35 / 950								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 4/30/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10' corebarrel	**Northing:** 425927.58 **Easting:** 13414104.42 **Casing Elevation:** **Borehole Depth:** 37' **Surface Elevation:** 985.52 **Descriptions By:** Wayne Patterson	**Well ID:** SBMWP10-04 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 985	1	0-5'		BG	CL		Asphalt. 10 YR 5/1 gray and 10 YR 4/3 brown mottled slightly plastic becoming weakly plastic SILTY LEAN CLAY (CL), few fine to coarse subangular to subrounded sand, few fine to medium subangular to subrounded gravel, no odor, damp becoming dry at 2', 10 YR 4/1 dark gray within top 1', medium stiff becoming stiff.	
5 / 980	2	5-17'		BG			Increased gravel content to little.	Cement and bentonite grout (0-37' bgs)
10 / 975								
15 / 970							Color becomes 10 YR 4/1 dark gray.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: SBMWP10-04

Borehole Depth: 37'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20 / 965	3	17-27'		BG				
25 / 960								
30 / 955	4	27-37'		BG			1' lense of 10 YR 4/1 dark gray nonplastic fine to medium subangular sand, few fine to medium subrounded gravel, dry, no odor, loose.	
35 / 950							Increased silt content.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 4/30/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10' corebarrel	**Northing:** 425393.84 **Easting:** 13413945.41 **Casing Elevation:** NA **Borehole Depth:** 37' **Surface Elevation:** 986.29 **Descriptions By:** Wayne Patterson	**Well ID:** SBMWP10-06 **Client:** General Motors Corporation **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 985	1	0-3'		BG			Reinforced concrete.	
							Brown and dark gray mottled weakly plastic SILTY CLAY, few fine to coarse Sand, few fine to medium Gravel, dry to damp, stiff.	
5 / 980	2	3-17'		BG				
10 / 975								Cement and bentonite grout (0-37' bgs)
15 / 970					CL			

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.000
Data File: SBMWP10-06.dat

Template: I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 05/28/03

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: SBMWP10-06

Borehole Depth: 37'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20 / 965	3	17-27'		BG			Becoming predominantly dark gray in color, becoming medium stiff and slightly plastic.	
25 / 960							4" lense of fine to medium silty sand, little clay, dry.	
							Dark gray, increased gravel content to little, rare cobble, becoming very stiff.	
30 / 955	4	27-37'		BG				
35 / 950								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Encore Environmental Consortium, LLC

Date Start/Finish: 4/30/03
Drilling Company: Prosonic Corporation
Driller's Name: Mike Bond
Drilling Method: Rotosonic
Sampler Size: 10' corebarrel

Northing: 425706.53
Easting: 13413861.86
Casing Elevation: NA

Borehole Depth: 37'
Surface Elevation: 971.11

Descriptions By: Wayne Patterson

Well ID: SBMWP11-03

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 970							Concrete.	
					GC		GRAVEL AGGREGATE (GC), some Silty Clay , fill.	
	1	0-5'		BG			Brown and Dark gray mottled slightly plastic, SILTY CLAY, few fine to coarse Sand, few fine to coarse Gravel, rare cobble, damp, medium stiff, fill.	
5 / 965								
	2	5-11'		BG				
10 / 960								Cement and bentonite grout (0-37' bgs)
	3	11-17'		BG				
15 / 955					CL		No mottling, dark gray, native clay till.	
							Becoming stiff, dry, weakly plastic.	

EEC Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Project: 64411.000
Data File: SBMWP11-03.dat

Template: I:\rockware\logplot\logfiles\Templates\Geoprobe2003EEC.ldf
Date: 05/28/03

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: SBMWP11-03

Borehole Depth: 37'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20 / 950	4	17-27'		BG			At 23.5 - 24.5' dark gray nonplastic medium to coarse Sand, few fine to coarse Gravel, dry, interbedded with clay as at 3-23.5'.	
25 / 945							At 28-31' sand as at 23.5-24.5', increased amount of gravel to some.	
30 / 940	5	27-37'		BG			Some gravel and cobbles.	
35 / 935								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 7/28/03
Drilling Company: Prosonic Corporation
Driller's Name: Mike Bond
Drilling Method: Rotosonic
Sampler Size: 10 feet

Northing: 424162.75
Easting: 13413147.59
Casing Elevation: NA

Borehole Depth: 37' below grade
Surface Elevation: 967.86

Descriptions By: Wayne Patterson

Well ID: SBRWW8-01

Client: GM

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0					SM		Brown Silty fine SAND, trace coarse Sand, trace fine Gravel, very dense, dry.	
965		0-7	NA	NA	SP		Brown very fine to fine SAND, little medium to coarse Sand, little Clay, trace Silt, loose, dry.	Borehole backfilled with Bentonite Pellets to grade.
5					SM		Brown Silty very fine to fine SAND, some Clay, medium dense, dry. Large piece of Wood at 5.0' bgs.	
960					CL		Dark gray Silty CLAY, few fine to coarse SAND, few fine Gravel, some coarse Sand from 7.0' - 7.5' bgs, slight odor, moderately plastic, medium stiff, wet.	
10		7-17	NA	NA			Increased Sand to some from 11' - 12' bgs. Slightly plastic, stiff, damp at 12' bgs.	
955							1/2" Steel plate at 14' bgs.	
15		7-17	NA	NA			Dark gray Silty CLAY, few fine to coarse SAND, few fine Gravel, slight odor, moderately plastic, medium stiff, wet.	

EEC Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: SBRWW8-01

Borehole Depth: 37' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950								Borehole backfilled with Bentonite Pellets to grade.
20					CL			
		17-27	NA	NA				
945								
25					ML		Dark gray SILT, saturated.	
940							Dark gray Silty CLAY, few fine to coarse SAND, few fine Gravel, slightly plastic, medium stiff, damp to moist.	
30					CL			
		27-37	NA	NA				
935								
35								
		27-37	NA	NA	CL		Dark gray Silty CLAY, few fine to coarse SAND, few fine Gravel, slightly plastic, medium stiff, damp to moist.	Borehole backfilled with Bentonite Pellets to grade.

EEC
Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 05/29/03
Drilling Company: Prosonic Corporation
Driller's Name: Mike Bond
Drilling Method: Rotosonic
Sampler Size: 10' corebarrel

Northing: 424174
Easting: 13412656
Casing Elevation: NA

Borehole Depth: 67'
Surface Elevation: 967.75

Descriptions By: Wayne Patterson

Well ID: SBMWW8-13

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0							Concrete.	
	1	0-2'					Yellow-brown fine SAND (SP), few fine gravel, nonplastic, no odor, dry, fill.	
							Black fine SAND (SP), some gravel, few clay, nonplastic.	
965				BG	SP			Borehole backfilled with grout (0 - 67' bgs).
5								
							Dark gray SILTY CLAY (CL), weakly plastic, no odor, damp, stiff.	
960								
	2	8-10'						
10								
				BG	CL			
955								
15								
	3	15-17'						

EEC
Encore Environmental Consortium, LLC

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: SBMWW8-13

Borehole Depth: 67'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950								
20					SP		Dark gray fine to medium SAND (SP), few fine gravel, little clay, nonplastic, strong sweet odor, wet with free product, loose.	
				BG				
945								
25							Dark gray SILTY CLAY (CL), few fine to coarse sand, few fine to medium gravel, moderately plastic, no odor, damp, moderately stiff.	
940								
30					CL			
				BG				
935								
35								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: SBMWW8-13

Borehole Depth: 67'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
930								
40							at 41' 6" lense of increased sand to some.	
				BG				
925								
45					CL			
							at 47-52' increased gravel content to some, few cobbles.	
920								
50								
				BG				
915								
55								
							at 57' becoming very stiff.	
910								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: SBMWW8-13

Borehole Depth: 67'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
60				BG	CL			
905								
					GP		Dark gray fine to coarse SAND and GRAVEL (GP), moist, no odor, medium dense.	
65					CL		Dark gray SILTY CLAY (CL), few fine to coarse sand, few fine to medium gravel, moderately plastic, no odor, damp, moderately stiff.	

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 10/11/03
Drilling Company: Prosonic Corporation
Driller's Name: Mike Bond
Drilling Method: Rotosonic
Sampler Size: 10' corebarrel

Northing: 424243.96
Easting: 13413222.19
Casing Elevation: NA

Borehole Depth: 31.5'
Surface Elevation: 968.01

Descriptions By: Wayne Patterson

Well ID: SBMWW8-17

Client: General Motors Corporation

Location: GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
970								
0							Concrete.	
							No recovery, rock in corebarrel.	
965	1	0-7'	100%	NA				Borehole backfilled to ground surface with bentonite chip.
5							Dark gray SILTY CLAY (CL), few fine to coarse subangular sand, few fine to coarse subangular gravel, rare cobble, moderately plastic, soft-medium stiff, slight odor, moist, fill.	
960								
10								
955	2	7-17'	100%	NA				
15								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
General Motors Corporation

Site Location:
GM Pontiac North Campus

Boring ID: SBMWW8-17

Borehole Depth: 31.5'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
950					CL			
20								
945	3	17-31.5	100%	NA				
25								
940							Clay is saturated with NAPL, slight odor.	
30								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Date Start/Finish: 8/18/03 **Drilling Company:** Prosonic Corporation **Driller's Name:** Mike Bond **Drilling Method:** Rotosonic **Sampler Size:** 10 feet	**Northing:** 423787.18 **Easting:** 13412738.11 **Casing Elevation:** 971.14' **Borehole Depth:** 37' bgs **Surface Elevation:** 970.79' **Descriptions By:** D. Deitner	**Well ID:** TWW9-01 **Client:** GM **Location:** GM Pontiac North Campus

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
0 / 970							CONCRETE.	Concrete Pad (0 - 1.0' bgs)
				BG	SP		Light brown fine poorly graded SAND (SP), trace Silt, compact, moist. [FILL]	
	1	0-7	100				Black, trace fine rounded Gravel below 3.0' bgs.	2" PVC Riser (3.0' ags - 21' bgs)
5 / 965				BG			Foundry SAND and fine poorly graded SAND (SP) mixture.	Bentonite Chips (0 - 18' bgs)
				BG	SP			
10 / 960	2	7-17	100					
				BG				
15 / 955								
	2	7-17	100	BG			Foundry SAND and fine poorly graded SAND (SP) mixture.	Bentonite Chips (0 - 18' bgs)

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: TWW9-01

Borehole Depth: 37' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
20 / 950				BG				2" PVC Riser (3.0' ags - 21' bgs)
	3	17-27	100		SP			K&E Sand and Gravel #1 Well Gravel (18' - 31' bgs)
25 / 945				BG			Wet at 26.5' bgs.	2" diameter #10 slot PVC Screen (21' - 31' bgs)
30 / 940				BG			Slight sheen and faint odor at 30.5' bgs.	
	4	27-37	100		ML		Brownish-gray SILT (ML), trace Clay, trace fine Sand, strong odor, loose, very moist to wet.	
				BG	CL		Gray Silty CLAY (CL), trace fine rounded Gravel, firm, low plasticity, moist.	Natural Collapse (31' - 37' bgs)
35 / 935								
	4	27-37	100	BG	CL		Gray Silty CLAY (CL), trace fine rounded Gravel, firm, low plasticity, moist.	Natural Collapse (31' - 37' bgs)

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Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Client:
GM

Site Location:
GM Pontiac North Campus

Boring ID: TWW9-01

Borehole Depth: 37' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Well Construction
40 / 930								
45 / 925								
50 / 920								
55 / 915								

Remarks:

BG = background
ppm = parts per million
bgs = below ground surface

Appendix C

Analytical Data Summaries

ENCORE
Environmental Corporate Remediation

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	F-7 MWF7-03 7 - 9 07/24/03	F-7 MWF7-03 11 - 13 07/24/03
VOCs			
1,1,1-Trichloroethane	ug/kg	5.2 U	6.1 U
1,1,2,2-Tetrachloroethane	ug/kg	5.2 U	6.1 U
1,1,2-Trichloroethane	ug/kg	5.2 U	6.1 U
1,1-Dichloroethane	ug/kg	5.2 U	6.1 U
1,1-Dichloroethene	ug/kg	5.2 U	6.1 U
1,2,4-Trichlorobenzene	ug/kg	5.2 U	6.1 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	10 U	12 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	5.2 U	6.1 U
1,2-Dichlorobenzene	ug/kg	5.2 U	6.1 U
1,2-Dichloroethane	ug/kg	5.2 U	6.1 U
1,2-Dichloropropane	ug/kg	5.2 U	6.1 U
1,3-Dichlorobenzene	ug/kg	5.2 U	6.1 U
1,4-Dichlorobenzene	ug/kg	5.2 U	6.1 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	21 U	24 U
2-Hexanone	ug/kg	21 U	24 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	21 U	24 U
Acetone	ug/kg	19 J	12 J
Benzene	ug/kg	5.2 U	6.1 U
Bromodichloromethane	ug/kg	5.2 U	6.1 U
Bromoform	ug/kg	5.2 U	6.1 U
Bromomethane (Methyl Bromide)	ug/kg	10 U	12 U
Carbon disulfide	ug/kg	5.2 U	6.1 U
Carbon tetrachloride	ug/kg	5.2 U	6.1 U
Chlorobenzene	ug/kg	5.2 U	6.1 U
Chloroethane	ug/kg	10 U	12 U
Chloroform (Trichloromethane)	ug/kg	5.2 U	6.1 U
Chloromethane (Methyl Chloride)	ug/kg	10 U	12 U
cis-1,2-Dichloroethene	ug/kg	5.2 U	6.1 U
cis-1,3-Dichloropropene	ug/kg	5.2 U	6.1 U
Cyclohexane	ug/kg	10 U	12 U
Dibromochloromethane	ug/kg	5.2 U	6.1 U
Dichlorodifluoromethane (CFC-12)	ug/kg	10 U	12 U
Ethylbenzene	ug/kg	5.2 U	6.1 U
Isopropylbenzene	ug/kg	5.2 U	6.1 U
Methyl acetate	ug/kg	10 U	12 U
Methyl cyclohexane	ug/kg	10 U	12 U
Methyl Tert Butyl Ether	ug/kg	21 U	24 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	F-7 MWF7-03 7 - 9 07/24/03	F-7 MWF7-03 11 - 13 07/24/03
Methylene chloride	ug/kg	5.2 U	6.1 U
Styrene	ug/kg	5.2 U	6.1 U
Tetrachloroethene	ug/kg	5.2 U	6.1 U
Toluene	ug/kg	0.38 J	0.6 J
Total Xylenes	ug/kg	10 U	12 U
trans-1,2-Dichloroethene	ug/kg	5.2 U	6.1 U
trans-1,3-Dichloropropene	ug/kg	5.2 U	6.1 U
Trichloroethene	ug/kg	5.2 U	6.1 U
Trichlorofluoromethane (CFC-11)	ug/kg	10 U	12 U
Trifluorotrichloroethane (Freon 113)	ug/kg	5.2 U	6.1 U
Vinyl chloride	ug/kg	10 U	12 U
SVOCs			
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	380 U	350 U
2,4,5-Trichlorophenol	ug/kg	380 U	350 U
2,4,6-Trichlorophenol	ug/kg	380 U	350 U
2,4-Dichlorophenol	ug/kg	R	R
2,4-Dimethylphenol	ug/kg	380 U	350 U
2,4-Dinitrophenol	ug/kg	R	R
2,4-Dinitrotoluene	ug/kg	380 U	350 U
2,6-Dinitrotoluene	ug/kg	380 U	350 U
2-Chloronaphthalene	ug/kg	380 U	350 U
2-Chlorophenol	ug/kg	380 U	350 U
2-Methylnaphthalene	ug/kg	380 U	350 U
2-Methylphenol	ug/kg	380 U	350 U
2-Nitroaniline	ug/kg	2000 U	1800 U
2-Nitrophenol	ug/kg	380 U	350 U
3,3'-Dichlorobenzidine	ug/kg	2300 U	2100 U
3-Nitroaniline	ug/kg	2000 U	1800 U
4,6-Dinitro-2-methylphenol	ug/kg	R	R
4-Bromophenyl phenyl ether	ug/kg	380 U	350 U
4-Chloro-3-methylphenol	ug/kg	380 U	350 U
4-Chloroaniline	ug/kg	1500 U	1400 U
4-Chlorophenyl phenyl ether	ug/kg	380 U	350 U
4-Methylphenol	ug/kg	380 U	350 U
4-Nitroaniline	ug/kg	2000 U	1800 U
4-Nitrophenol	ug/kg	2000 U	1800 U
Acenaphthene	ug/kg	380 U	350 U
Acenaphthylene	ug/kg	380 U	350 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	F-7 MWF7-03 7 - 9 07/24/03	F-7 MWF7-03 11 - 13 07/24/03
Acetophenone	ug/kg	380 U	350 U
Anthracene	ug/kg	380 U	350 U
Atrazine	ug/kg	380 U	350 U
Benzaldehyde	ug/kg	380 U	350 U
Benzo(a)anthracene	ug/kg	380 U	350 U
Benzo(a)pyrene	ug/kg	380 U	350 U
Benzo(b)fluoranthene	ug/kg	380 U	350 U
Benzo(g,h,i)perylene	ug/kg	380 U	350 U
Benzo(k)fluoranthene	ug/kg	380 U	350 U
Biphenyl	ug/kg	380 U	350 U
bis(2-Chloroethoxy)methane	ug/kg	R	R
bis(2-Chloroethyl)ether	ug/kg	380 U	350 U
bis(2-Ethylhexyl)phthalate	ug/kg	380 U	350 U
Butyl benzylphthalate	ug/kg	380 U	350 U
Caprolactam	ug/kg	380 U	350 U
Carbazole	ug/kg	380 U	350 U
Chrysene	ug/kg	380 U	350 U
Di-n-butylphthalate	ug/kg	380 U	350 U
Di-n-octyl phthalate	ug/kg	380 U	350 U
Dibenz(a,h)anthracene	ug/kg	380 U	350 U
Dibenzofuran	ug/kg	380 U	350 U
Diethyl phthalate	ug/kg	380 U	350 U
Dimethyl phthalate	ug/kg	380 U	350 U
Fluoranthene	ug/kg	380 U	350 U
Fluorene	ug/kg	380 U	350 U
Hexachlorobenzene	ug/kg	380 U	350 U
Hexachlorobutadiene	ug/kg	380 U	350 U
Hexachlorocyclopentadiene	ug/kg	380 U	350 U
Hexachloroethane	ug/kg	R	R
Indeno(1,2,3-cd)pyrene	ug/kg	380 U	350 U
Isophorone	ug/kg	380 U	350 U
N-Nitrosodi-n-propylamine	ug/kg	380 U	350 U
N-Nitrosodiphenylamine	ug/kg	380 U	350 U
Naphthalene	ug/kg	R	R
Nitrobenzene	ug/kg	380 U	350 U
Pentachlorophenol	ug/kg	4000 U	3600 U
Phenanthrene	ug/kg	380 U	350 U
Phenol	ug/kg	380 U	350 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	F-7 MWF7-03 7 - 9 07/24/03	F-7 MWF7-03 11 - 13 07/24/03
Pyrene	ug/kg	380 U	350 U
Pests/PCBs			
Aroclor-1016 (PCB-1016)	ug/kg	38 U	35 U
Aroclor-1221 (PCB-1221)	ug/kg	38 UJ	35 UJ
Aroclor-1232 (PCB-1232)	ug/kg	38 U	35 U
Aroclor-1242 (PCB-1242)	ug/kg	38 U	35 U
Aroclor-1248 (PCB-1248)	ug/kg	38 U	35 U
Aroclor-1254 (PCB-1254)	ug/kg	38 U	35 U
Aroclor-1260 (PCB-1260)	ug/kg	38 U	35 U
Inorganics			
Antimony	ug/kg	434 J	2100 UJ
Arsenic	ug/kg	6960	1010
Barium	ug/kg	35700	13100
Beryllium	ug/kg	176 J	105 UJ
Cadmium	ug/kg	583 U	524 U
Chromium Total	ug/kg	14200 J	4760 J
Cobalt	ug/kg	7970	3410
Copper	ug/kg	18800 J	7300 J
Lead	ug/kg	7870 J	3830 J
Manganese	ug/kg	284000	101000
Mercury	ug/kg	38.5 U	34.6 U
Nickel	ug/kg	20500	7870
Selenium	ug/kg	583 U	524 U
Silver	ug/kg	583 U	524 U
Thallium	ug/kg	1140 J	379 J
Vanadium	ug/kg	19100 J	7760 J
Zinc	ug/kg	44600 J	12500 J
Miscellaneous			
Total Solids	%	85.8	95.4

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		F-8
Sample ID:		SF8-01
Sample Depth(ft BGS):		0 - 2
Date Collected:	Units	08/19/02
VOCs		
1,1,1-Trichloroethane	ug/kg	5.5 U
1,1,2,2-Tetrachloroethane	ug/kg	5.5 U
1,1,2-Trichloroethane	ug/kg	5.5 U
1,1-Dichloroethane	ug/kg	5.5 U
1,1-Dichloroethene	ug/kg	5.5 U
1,2,4-Trichlorobenzene	ug/kg	5.5 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	11 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	5.5 U
1,2-Dichlorobenzene	ug/kg	5.5 U
1,2-Dichloroethane	ug/kg	5.5 U
1,2-Dichloropropane	ug/kg	5.5 U
1,3-Dichlorobenzene	ug/kg	5.5 U
1,4-Dichlorobenzene	ug/kg	5.5 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	3.4 J
2-Hexanone	ug/kg	22 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	22 U
Acetone	ug/kg	8.7 J
Benzene	ug/kg	5.5 U
Bromodichloromethane	ug/kg	5.5 U
Bromoform	ug/kg	5.5 U
Bromomethane (Methyl Bromide)	ug/kg	11 U
Carbon disulfide	ug/kg	5.5 U
Carbon tetrachloride	ug/kg	5.5 U
Chlorobenzene	ug/kg	5.5 U
Chloroethane	ug/kg	11 U
Chloroform (Trichloromethane)	ug/kg	5.5 U
Chloromethane (Methyl Chloride)	ug/kg	11 U
cis-1,2-Dichloroethene	ug/kg	5.5 U
cis-1,3-Dichloropropene	ug/kg	5.5 U
Cyclohexane	ug/kg	11 U
Dibromochloromethane	ug/kg	5.5 U
Dichlorodifluoromethane (CFC-12)	ug/kg	11 U
Ethylbenzene	ug/kg	5.5 U
Isopropylbenzene	ug/kg	5.5 U
Methyl acetate	ug/kg	11 U
Methyl cyclohexane	ug/kg	1.1 J
Methyl Tert Butyl Ether	ug/kg	22 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		F-8
Sample ID:		SF8-01
Sample Depth(ft BGS):		0 - 2
Date Collected:	Units	08/19/02
Methylene chloride	ug/kg	5.5 U
Styrene	ug/kg	5.5 U
Tetrachloroethene	ug/kg	5.5 U
Toluene	ug/kg	1.2 J
Total Xylenes	ug/kg	11 U
trans-1,2-Dichloroethene	ug/kg	5.5 U
trans-1,3-Dichloropropene	ug/kg	5.5 U
Trichloroethene	ug/kg	5.5 U
Trichlorofluoromethane (CFC-11)	ug/kg	11 U
Trifluorotrichloroethane (Freon 113)	ug/kg	5.5 U
Vinyl chloride	ug/kg	11 U
SVOCs		
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	390 U
2,4,5-Trichlorophenol	ug/kg	390 U
2,4,6-Trichlorophenol	ug/kg	390 U
2,4-Dichlorophenol	ug/kg	390 U
2,4-Dimethylphenol	ug/kg	390 U
2,4-Dinitrophenol	ug/kg	2000 U
2,4-Dinitrotoluene	ug/kg	390 U
2,6-Dinitrotoluene	ug/kg	390 U
2-Chloronaphthalene	ug/kg	390 U
2-Chlorophenol	ug/kg	390 U
2-Methylnaphthalene	ug/kg	390 U
2-Methylphenol	ug/kg	390 U
2-Nitroaniline	ug/kg	2000 U
2-Nitrophenol	ug/kg	390 U
3,3'-Dichlorobenzidine	ug/kg	2400 U
3-Nitroaniline	ug/kg	2000 U
4,6-Dinitro-2-methylphenol	ug/kg	2000 U
4-Bromophenyl phenyl ether	ug/kg	390 U
4-Chloro-3-methylphenol	ug/kg	390 U
4-Chloroaniline	ug/kg	1500 U
4-Chlorophenyl phenyl ether	ug/kg	390 U
4-Methylphenol	ug/kg	390 U
4-Nitroaniline	ug/kg	2000 U
4-Nitrophenol	ug/kg	2000 U
Acenaphthene	ug/kg	390 U
Acenaphthylene	ug/kg	390 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		F-8
Sample ID:		SF8-01
Sample Depth(ft BGS):		0 - 2
Date Collected:	Units	08/19/02
Acetophenone	ug/kg	390 U
Anthracene	ug/kg	390 U
Atrazine	ug/kg	390 U
Benzaldehyde	ug/kg	390 U
Benzo(a)anthracene	ug/kg	390 U
Benzo(a)pyrene	ug/kg	390 U
Benzo(b)fluoranthene	ug/kg	390 U
Benzo(g,h,i)perylene	ug/kg	390 U
Benzo(k)fluoranthene	ug/kg	390 U
Biphenyl	ug/kg	390 U
bis(2-Chloroethoxy)methane	ug/kg	390 U
bis(2-Chloroethyl)ether	ug/kg	390 U
bis(2-Ethylhexyl)phthalate	ug/kg	390 U
Butyl benzylphthalate	ug/kg	390 UJ
Caprolactam	ug/kg	390 U
Carbazole	ug/kg	390 U
Chrysene	ug/kg	390 U
Di-n-butylphthalate	ug/kg	390 U
Di-n-octyl phthalate	ug/kg	390 U
Dibenz(a,h)anthracene	ug/kg	390 U
Dibenzofuran	ug/kg	390 U
Diethyl phthalate	ug/kg	390 U
Dimethyl phthalate	ug/kg	390 U
Fluoranthene	ug/kg	390 U
Fluorene	ug/kg	390 U
Hexachlorobenzene	ug/kg	390 U
Hexachlorobutadiene	ug/kg	390 U
Hexachlorocyclopentadiene	ug/kg	390 U
Hexachloroethane	ug/kg	120 U
Indeno(1,2,3-cd)pyrene	ug/kg	390 U
Isophorone	ug/kg	390 U
N-Nitrosodi-n-propylamine	ug/kg	390 U
N-Nitrosodiphenylamine	ug/kg	390 U
Naphthalene	ug/kg	390 U
Nitrobenzene	ug/kg	390 U
Pentachlorophenol	ug/kg	4000 U
Phenanthrene	ug/kg	390 U
Phenol	ug/kg	270 J

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	F-8 / SF8-01 / 0 - 2 / 08/19/02
Pyrene	ug/kg	390 U
Pests/PCBs		
Aroclor-1016 (PCB-1016)	ug/kg	39 U
Aroclor-1221 (PCB-1221)	ug/kg	39 U
Aroclor-1232 (PCB-1232)	ug/kg	39 U
Aroclor-1242 (PCB-1242)	ug/kg	39 U
Aroclor-1248 (PCB-1248)	ug/kg	39 U
Aroclor-1254 (PCB-1254)	ug/kg	39 U
Aroclor-1260 (PCB-1260)	ug/kg	39 U
Inorganics		
Antimony	ug/kg	2350 U
Arsenic	ug/kg	2220
Barium	ug/kg	6150
Beryllium	ug/kg	82.4 J
Cadmium	ug/kg	93.2 J
Chromium Total	ug/kg	3860
Cobalt	ug/kg	7530
Copper	ug/kg	7900
Lead	ug/kg	2820
Manganese	ug/kg	115000
Mercury	ug/kg	38.8 U
Nickel	ug/kg	4850 J
Selenium	ug/kg	588 U
Silver	ug/kg	588 U
Thallium	ug/kg	1180 U
Vanadium	ug/kg	5880
Zinc	ug/kg	21000
Miscellaneous		
Total Solids	%	85

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	F-15 BF15-03 0 - 2 07/23/03	F-15 BF15-03 8 - 10 07/23/03	F-15 BF15-03 27 - 29 07/23/03	F-15 BF15-04 0 - 2 07/23/03	F-15 BF15-04 6 - 8 07/23/03	F-15 BF15-04 26 - 28 07/29/03	F-15 BF15-05 0 - 2 07/29/03	F-15 BF15-05 10 - 12 07/29/03	F-15 BF15-05 12 - 13 07/29/03	F-15 BF15-05 30 - 32 07/29/03
VOCs											
1,1,1-Trichloroethane	ug/kg	700	5.4 U	4.9 U	2100	300 U	5.8 U	1400	43 J	230 U	5.7 U
1,1,2,2-Tetrachloroethane	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
1,1,2-Trichloroethane	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
1,1-Dichloroethane	ug/kg	200 J	120 J	4.9 U	1100	510	5.8 U	200 J	1700	1000	5.7 U
1,1-Dichloroethene	ug/kg	310 U	16	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
1,2,4-Trichlorobenzene	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	610 U	11 U	9.7 U	1400 U	610 U	12 U	500 U	480 U	450 U	11 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
1,2-Dichlorobenzene	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
1,2-Dichloroethane	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
1,2-Dichloropropane	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
1,3-Dichlorobenzene	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
1,4-Dichlorobenzene	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	1200 U	2.2 J	19 U	2800 U	1200 U	23 U	1000 U	380 J	900 U	23 U
2-Hexanone	ug/kg	1200 U	22 U	19 U	2800 U	1200 U	23 U	1000 U	960 U	900 U	23 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	1200 U	22 U	19 U	2800 U	1200 U	23 U	1000 U	960 U	900 U	23 U
Acetone	ug/kg	1200 U	13 J	7.5 J	2800 U	1200 U	5.9 J	1000 U	960 U	900 U	4.3 J
Benzene	ug/kg	310 U	0.86 J	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
Bromodichloromethane	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
Bromoform	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
Bromomethane (Methyl Bromide)	ug/kg	610 U	11 U	9.7 U	1400 U	610 U	12 U	500 U	480 U	450 U	11 U
Carbon disulfide	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
Carbon tetrachloride	ug/kg	R	5.4 U	4.9 U	R	R	5.8 U	250 U	240 U	230 U	5.7 U
Chlorobenzene	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
Chloroethane	ug/kg	610 U	8.4 J	9.7 U	1400 U	610 U	12 U	500 U	1500	1300	11 U
Chloroform (Trichloromethane)	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
Chloromethane (Methyl Chloride)	ug/kg	610 U	11 U	9.7 U	1400 U	610 U	12 U	500 U	480 U	450 U	11 U
cis-1,2-Dichloroethene	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
cis-1,3-Dichloropropene	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
Cyclohexane	ug/kg	610 U	11 U	9.7 U	63 J	610 U	12 U	500 U	480 U	450 U	11 U
Dibromochloromethane	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
Dichlorodifluoromethane (CFC-12)	ug/kg	610 U	11 U	9.7 U	1400 U	610 U	12 U	500 U	480 U	450 U	11 U
Ethylbenzene	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
Isopropylbenzene	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
Methyl acetate	ug/kg	610 U	11 U	9.7 U	1400 U	270 J	12 U	500 U	210 J	450 U	11 U
Methyl cyclohexane	ug/kg	610 U	11 U	9.7 U	150 J	610 U	12 U	500 U	480 U	450 U	11 U
Methyl Tert Butyl Ether	ug/kg	1200 U	22 U	19 U	2800 U	1200 U	23 U	1000 U	960 U	900 U	23 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	F-15 BF15-03 0 - 2 07/23/03	F-15 BF15-03 8 - 10 07/23/03	F-15 BF15-03 27 - 29 07/23/03	F-15 BF15-04 0 - 2 07/23/03	F-15 BF15-04 6 - 8 07/23/03	F-15 BF15-04 26 - 28 07/29/03	F-15 BF15-05 0 - 2 07/29/03	F-15 BF15-05 10 - 12 07/29/03	F-15 BF15-05 12 - 13 07/29/03	F-15 BF15-05 30 - 32 07/29/03
Methylene chloride	ug/kg	310 U	2 J	4.9 U	690 U	300 U	5.8 U	140 J	150 J	130 J	5.7 U
Styrene	ug/kg	R	5.4 U	4.9 U	R	R	5.8 U	250 U	240 U	230 U	5.7 U
Tetrachloroethene	ug/kg	1300	22	4.9 U	21000	130 J	5.8 U	3500	240 U	230 U	5.7 U
Toluene	ug/kg	310 U	0.9 J	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
Total Xylenes	ug/kg	610 U	11 U	9.7 U	150 J	610 U	12 U	500 U	480 U	450 U	11 U
trans-1,2-Dichloroethene	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
trans-1,3-Dichloropropene	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
Trichloroethene	ug/kg	310 U	2.3 J	4.9 U	210 J	46 J	5.8 U	48 J	240 U	230 U	5.7 U
Trichlorofluoromethane (CFC-11)	ug/kg	610 U	11 U	9.7 U	1400 U	610 U	12 U	500 U	480 U	450 U	11 U
Trifluorotrichloroethane (Freon 113)	ug/kg	310 U	5.4 U	4.9 U	690 U	300 U	5.8 U	250 U	240 U	230 U	5.7 U
Vinyl chloride	ug/kg	610 U	7.7 J	9.7 U	1400 U	610 U	12 U	500 U	110 J	97 J	11 U
Miscellaneous											
Total Solids	%	95	74.5	87.5	81.9	84	80	96.3	81.1	84.1	83.9

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	W-1 BW1-11a 0 - 2 07/30/03	W-1 BW1-11a 6 - 8 07/30/03	W-1 MWW1-06 0 - 2 07/30/02	W-1 MWW1-06 2 - 4 07/30/02
VOCs					
1,1,1-Trichloroethane	ug/kg	250 U	220 UJ	5.1 U	5.1 U
1,1,2,2-Tetrachloroethane	ug/kg	250 U	220 UJ	5.1 U	5.1 U
1,1,2-Trichloroethane	ug/kg	250 U	220 UJ	5.1 U	5.1 U
1,1-Dichloroethane	ug/kg	250 U	220 UJ	5.1 U	5.1 U
1,1-Dichloroethene	ug/kg	250 U	220 UJ	5.1 U	5.1 U
1,2,4-Trichlorobenzene	ug/kg	250 U	220 UJ	5.1 U	5.1 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	500 U	440 UJ	10 U	10 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	250 U	220 UJ	5.1 U	5.1 U
1,2-Dichlorobenzene	ug/kg	250 U	450 J	5.1 U	5.1 U
1,2-Dichloroethane	ug/kg	250 U	220 UJ	5.1 U	5.1 U
1,2-Dichloropropane	ug/kg	250 U	220 UJ	5.1 U	5.1 U
1,3-Dichlorobenzene	ug/kg	250 U	220 UJ	5.1 U	5.1 U
1,4-Dichlorobenzene	ug/kg	250 U	220 UJ	5.1 U	5.1 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	1000 U	880 UJ	21 U	21 U
2-Hexanone	ug/kg	1000 U	880 UJ	21 UJ	21 UJ
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	1000 U	880 UJ	21 U	21 U
Acetone	ug/kg	1000 U	880 U	21 UJ	21 U
Benzene	ug/kg	250	62 J	5.1 U	5.1 U
Bromodichloromethane	ug/kg	250 U	220 UJ	5.1 U	5.1 U
Bromoform	ug/kg	250 U	220 UJ	5.1 U	5.1 U
Bromomethane (Methyl Bromide)	ug/kg	500 U	440 UJ	10 U	10 U
Carbon disulfide	ug/kg	250 U	220 UJ	5.1 U	5.1 U
Carbon tetrachloride	ug/kg	250 U	220 UJ	5.1 U	5.1 U
Chlorobenzene	ug/kg	250 U	220 UJ	5.1 U	5.1 U
Chloroethane	ug/kg	500 U	440 UJ	10 U	10 U
Chloroform (Trichloromethane)	ug/kg	250 U	220 UJ	5.1 U	5.1 U
Chloromethane (Methyl Chloride)	ug/kg	500 U	440 UJ	10 U	10 U
cis-1,2-Dichloroethene	ug/kg	250 U	220 UJ	5.1 U	5.1 U
cis-1,3-Dichloropropene	ug/kg	250 U	220 UJ	5.1 U	5.1 U
Cyclohexane	ug/kg	130 J	230 J	10 U	10 U
Dibromochloromethane	ug/kg	250 U	220 UJ	5.1 U	5.1 U
Dichlorodifluoromethane (CFC-12)	ug/kg	500 U	440 UJ	10 U	10 U
Ethylbenzene	ug/kg	110 J	640 J	5.1 U	5.1 U
Isopropylbenzene	ug/kg	250 U	350 J	5.1 U	5.1 U
Methyl acetate	ug/kg	210 J	440 UJ	10 U	10 U
Methyl cyclohexane	ug/kg	290 J	1000 J	0.64 J	10 U
Methyl Tert Butyl Ether	ug/kg	1000 U	880 UJ	21 U	21 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	W-1 BW1-11a 0 - 2 07/30/03	W-1 BW1-11a 6 - 8 07/30/03	W-1 MWW1-06 0 - 2 07/30/02	W-1 MWW1-06 2 - 4 07/30/02
Methylene chloride	ug/kg	250 U	220 U	5.1 U	5.1 U
Styrene	ug/kg	250 U	220 UJ	5.1 U	5.1 U
Tetrachloroethene	ug/kg	250 U	220 UJ	5.1 U	5.1 U
Toluene	ug/kg	250 U	570 J	0.85 J	5.1 U
Total Xylenes	ug/kg	490 J	3000 J	10 U	10 U
trans-1,2-Dichloroethene	ug/kg	250 U	220 UJ	5.1 U	5.1 U
trans-1,3-Dichloropropene	ug/kg	250 U	220 UJ	5.1 U	5.1 U
Trichloroethene	ug/kg	250 U	220 UJ	5.1 U	5.1 U
Trichlorofluoromethane (CFC-11)	ug/kg	500 U	440 UJ	10 U	10 U
Trifluorotrichloroethane (Freon 113)	ug/kg	250 U	220 UJ	5.1 U	5.1 U
Vinyl chloride	ug/kg	500 U	440 UJ	10 U	10 U
SVOCs					
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	1800 U	38000 U	350 U	390 U
2,4,5-Trichlorophenol	ug/kg	1800 U	38000 U	350 U	390 U
2,4,6-Trichlorophenol	ug/kg	1800 U	38000 U	350 U	390 U
2,4-Dichlorophenol	ug/kg	1800 U	38000 U	350 U	390 U
2,4-Dimethylphenol	ug/kg	1800 U	38000 U	350 U	390 U
2,4-Dinitrophenol	ug/kg	9200 U	200000 UJ	1800 U	2000 U
2,4-Dinitrotoluene	ug/kg	1800 U	38000 U	350 U	390 U
2,6-Dinitrotoluene	ug/kg	1800 U	38000 U	350 U	390 U
2-Chloronaphthalene	ug/kg	1800 U	38000 U	350 U	390 U
2-Chlorophenol	ug/kg	1800 U	38000 U	350 U	390 U
2-Methylnaphthalene	ug/kg	2700	29000 J	71 J	390 U
2-Methylphenol	ug/kg	340 J	38000 U	350 U	390 U
2-Nitroaniline	ug/kg	9200 U	200000 U	1800 U	2000 U
2-Nitrophenol	ug/kg	1800 U	38000 U	350 U	390 U
3,3'-Dichlorobenzidine	ug/kg	11000 U	230000 U	2100 U	2400 U
3-Nitroaniline	ug/kg	9200 U	200000 U	1800 U	2000 U
4,6-Dinitro-2-methylphenol	ug/kg	9200 U	200000 U	1800 U	2000 U
4-Bromophenyl phenyl ether	ug/kg	1800 U	38000 U	350 U	390 U
4-Chloro-3-methylphenol	ug/kg	1800 U	38000 U	350 U	390 U
4-Chloroaniline	ug/kg	7000 U	150000 U	1400 U	1600 U
4-Chlorophenyl phenyl ether	ug/kg	1800 U	38000 U	350 U	390 U
4-Methylphenol	ug/kg	150 J	38000 U	350 U	390 U
4-Nitroaniline	ug/kg	9200 U	200000 U	1800 U	2000 U
4-Nitrophenol	ug/kg	9200 UJ	200000 U	1800 UJ	2000 UJ
Acenaphthene	ug/kg	1800 U	38000 U	350 U	390 U
Acenaphthylene	ug/kg	1800 U	38000 U	58 J	390 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	W-1 BW1-11a 0 - 2 07/30/03	W-1 BW1-11a 6 - 8 07/30/03	W-1 MWW1-06 0 - 2 07/30/02	W-1 MWW1-06 2 - 4 07/30/02
Acetophenone	ug/kg	1800 U	38000 U	350 U	390 U
Anthracene	ug/kg	170 J	38000 U	350 U	390 U
Atrazine	ug/kg	1800 U	38000 U	96 J	390 U
Benzaldehyde	ug/kg	1800 U	38000 U	350 U	390 U
Benzo(a)anthracene	ug/kg	140 J	38000 U	190 J	390 U
Benzo(a)pyrene	ug/kg	1800 U	38000 U	320 J	390 U
Benzo(b)fluoranthene	ug/kg	140 J	38000 U	570	390 U
Benzo(g,h,i)perylene	ug/kg	1800 U	38000 U	330 J	390 U
Benzo(k)fluoranthene	ug/kg	1800 U	38000 U	210 J	390 U
Biphenyl	ug/kg	300 J	3400 J	350 U	390 U
bis(2-Chloroethoxy)methane	ug/kg	1800 U	38000 U	350 U	390 U
bis(2-Chloroethyl)ether	ug/kg	1800 U	38000 U	350 UJ	390 UJ
bis(2-Ethylhexyl)phthalate	ug/kg	140 J	38000 U	350 U	390 U
Butyl benzylphthalate	ug/kg	94 J	38000 U	96 J	390 U
Caprolactam	ug/kg	1800 U	38000 U	350 U	390 U
Carbazole	ug/kg	1800 U	38000 U	350 U	390 U
Chrysene	ug/kg	180 J	38000 U	260 J	390 U
Di-n-butylphthalate	ug/kg	1800 U	11000 J	350 U	390 U
Di-n-octyl phthalate	ug/kg	1800 U	38000 U	350 U	390 U
Dibenz(a,h)anthracene	ug/kg	1800 U	38000 U	75 J	390 U
Dibenzofuran	ug/kg	230 J	38000 U	350 U	390 U
Diethyl phthalate	ug/kg	1800 U	38000 U	350 U	390 U
Dimethyl phthalate	ug/kg	1800 U	38000 U	350 U	390 U
Fluoranthene	ug/kg	280 J	38000 U	270 J	390 U
Fluorene	ug/kg	1800 U	38000 U	350 U	390 U
Hexachlorobenzene	ug/kg	1800 U	38000 U	350 U	390 U
Hexachlorobutadiene	ug/kg	1800 U	38000 U	350 U	390 U
Hexachlorocyclopentadiene	ug/kg	1800 U	38000 U	350 U	390 U
Hexachloroethane	ug/kg	540 U	11000 U	100 U	120 U
Indeno(1,2,3-cd)pyrene	ug/kg	1800 U	38000 U	300 J	390 U
Isophorone	ug/kg	1800 U	38000 U	350 U	390 U
N-Nitrosodi-n-propylamine	ug/kg	1800 U	38000 U	350 U	390 U
N-Nitrosodiphenylamine	ug/kg	1800 U	38000 U	350 U	390 U
Naphthalene	ug/kg	1500 J	4600 J	48 J	390 U
Nitrobenzene	ug/kg	1800 U	38000 U	350 U	390 U
Pentachlorophenol	ug/kg	18000 U	390000 U	3600 U	4100 U
Phenanthrene	ug/kg	800 J	10000 J	88 J	390 U
Phenol	ug/kg	860 J	38000 U	350 U	390 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	W-1 BW1-11a 0 - 2 07/30/03	W-1 BW1-11a 6 - 8 07/30/03	W-1 MWW1-06 0 - 2 07/30/02	W-1 MWW1-06 2 - 4 07/30/02
Pyrene	ug/kg	310 J	38000 U	330 J	390 U
Pests/PCBs					
Aroclor-1016 (PCB-1016)	ug/kg	36 U	38 U	35 U	39 U
Aroclor-1221 (PCB-1221)	ug/kg	36 UJ	38 UJ	35 U	39 U
Aroclor-1232 (PCB-1232)	ug/kg	36 U	38 U	35 U	39 U
Aroclor-1242 (PCB-1242)	ug/kg	36 U	38 U	35 U	39 U
Aroclor-1248 (PCB-1248)	ug/kg	140	63	35 U	39 U
Aroclor-1254 (PCB-1254)	ug/kg	36 U	89	35 U	39 U
Aroclor-1260 (PCB-1260)	ug/kg	93	38 U	35 U	39 U
Inorganics					
Antimony	ug/kg	1880 J	3370 J	2090 U	2390 U
Arsenic	ug/kg	5070	15700	9000	8230
Barium	ug/kg	48700	224000	30400 J	39900 J
Beryllium	ug/kg	282	216	297	350
Cadmium	ug/kg	3570	2870 UJ	197 J	468 J
Chromium Total	ug/kg	114000	340000	9080 J	13600 J
Cobalt	ug/kg	3850	11400	NA	6430
Copper	ug/kg	112000	616000	16100 J	21300 J
Lead	ug/kg	210000	41900	NA	28100
Manganese	ug/kg	1750000	7260000	267000 J	274000 J
Mercury	ug/kg	74	208	30.7 J	39.4 U
Nickel	ug/kg	32500	103000	11900	13100
Selenium	ug/kg	2710 U	2870 U	523 U	598 U
Silver	ug/kg	332 J	2870 U	523 U	598 U
Thallium	ug/kg	5420 U	5750 U	1050 U	1200 U
Vanadium	ug/kg	6550 J	22600 J	14200	19300
Zinc	ug/kg	3670000	54400	48500	69500
Miscellaneous					
Total Solids	%	92.3	87	95.6	83.7

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		W-8	W-8	W-8	W-8	W-8	W-8	W-8	W-8	W-8	W-8	W-8
Sample ID:		BW8-03	BW8-03	BW8-03	BW8-04	BW8-04	BW8-05	BW8-05	BW8-06	BW8-06	BW8-06	MWW8-13
Sample Depth(ft BGS):		0 - 2	3 - 5	8 - 10	0 - 2	5 - 7	0 - 2	7 - 9	0 - 2	2 - 4	6 - 8	0 - 2
Date Collected:	Units	07/28/03	07/28/03	07/28/03	07/22/03	07/22/03	07/22/03	07/22/03	07/28/03	07/28/03	07/28/03	05/29/03
VOCs												
1,1,1-Trichloroethane	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
1,1,2,2-Tetrachloroethane	ug/kg	4.5 U	6.1 UJ	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
1,1,2-Trichloroethane	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
1,1-Dichloroethane	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
1,1-Dichloroethene	ug/kg	4.5 U	0.68 J	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	1 J	5.9 U
1,2,4-Trichlorobenzene	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	9 U	12 U	9 U	10 U	480 U	9.6 U	8.7 U	610 U	640 U	10 U	12 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
1,2-Dichlorobenzene	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	6.3	4.3 U	300 U	320 U	5 U	5.9 U
1,2-Dichloroethane	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
1,2-Dichloropropane	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
1,3-Dichlorobenzene	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
1,4-Dichlorobenzene	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	1.1 J	4.3 U	300 U	320 U	5 U	5.9 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	18 U	14 J	18 U	21 U	960 U	2.2 J	17 U	1200 U	1300 U	20 U	24 U
2-Hexanone	ug/kg	18 U	24 U	18 U	21 U	960 UJ	19 U	17 U	1200 U	1300 U	20 U	24 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	3.1 J	3.4 J	18 U	21 U	960 U	19 U	17 U	1200 U	1300 U	20 U	24 U
Acetone	ug/kg	29 J	47	18 U	21 U	240 J	5.7 J	3.4 J	1200 UJ	1300 U	20 U	7.3 J
Benzene	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	57 J	1.4 J	5.9 U
Bromodichloromethane	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
Bromoform	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
Bromomethane (Methyl Bromide)	ug/kg	9 U	12 U	9 U	10 U	480 U	9.6 U	8.7 U	610 U	640 U	10 U	12 U
Carbon disulfide	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	0.31 J	4.3 U	300 U	320 U	5 U	5.9 U
Carbon tetrachloride	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
Chlorobenzene	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
Chloroethane	ug/kg	9 U	12 U	9 U	10 U	480 U	9.6 U	8.7 U	610 U	640 U	10 U	12 U
Chloroform (Trichloromethane)	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
Chloromethane (Methyl Chloride)	ug/kg	9 U	12 U	9 U	10 UJ	480 U	9.6 UJ	8.7 U	610 U	640 U	10 U	12 U
cis-1,2-Dichloroethene	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
cis-1,3-Dichloropropene	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
Cyclohexane	ug/kg	9 U	12 U	9 U	10 U	83 J	9.6 U	8.7 U	610 U	39 J	10 U	12 U
Dibromochloromethane	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
Dichlorodifluoromethane (CFC-12)	ug/kg	9 U	12 U	9 U	10 UJ	480 U	9.6 UJ	8.7 U	610 U	640 U	10 U	12 U
Ethylbenzene	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	130 J	4.8 U	4.3 U	42 J	98 J	1.9 J	5.9 U
Isopropylbenzene	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	27 J	46 J	5 U	5.9 U
Methyl acetate	ug/kg	9 U	12 U	9 U	10 U	110 J	9.6 U	8.7 U	110 J	230 J	10 U	12 U
Methyl cyclohexane	ug/kg	9 U	12 U	9 U	10 U	98 J	9.6 U	8.7 U	610 U	78 J	10 U	12 U
Methyl Tert Butyl Ether	ug/kg	18 UJ	24 UJ	18 U	21 U	960 U	19 U	17 U	1200 U	1300 U	20 U	24 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		W-8	W-8	W-8	W-8	W-8	W-8	W-8	W-8	W-8	W-8	W-8
Sample ID:		BW8-03	BW8-03	BW8-03	BW8-04	BW8-04	BW8-05	BW8-05	BW8-06	BW8-06	BW8-06	MWW8-13
Sample Depth(ft BGS):		0 - 2	3 - 5	8 - 10	0 - 2	5 - 7	0 - 2	7 - 9	0 - 2	2 - 4	6 - 8	0 - 2
Date Collected:	Units	07/28/03	07/28/03	07/28/03	07/22/03	07/22/03	07/22/03	07/22/03	07/28/03	07/28/03	07/28/03	05/29/03
Methylene chloride	ug/kg	1.7 J	6.1 U	2.3 J	5.1 U	240 U	4.8 U	1.5 J	300 U	75 J	5 U	5.9 U
Styrene	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	R	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
Tetrachloroethene	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
Toluene	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
Total Xylenes	ug/kg	9 U	12 U	9 U	10 U	770	9.6 U	8.7 U	340 J	480 J	1.2 J	12 U
trans-1,2-Dichloroethene	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
trans-1,3-Dichloropropene	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
Trichloroethene	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
Trichlorofluoromethane (CFC-11)	ug/kg	9 U	12 U	9 U	10 U	480 U	9.6 U	8.7 U	610 U	640 U	10 U	12 U
Trifluorotrichloroethane (Freon 113)	ug/kg	4.5 U	6.1 U	4.5 U	5.1 U	240 U	4.8 U	4.3 U	300 U	320 U	5 U	5.9 U
Vinyl chloride	ug/kg	9 U	12 U	9 U	10 U	480 U	9.6 U	8.7 U	610 U	640 U	10 U	12 U
SVOCs												
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
2,4,5-Trichlorophenol	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
2,4,6-Trichlorophenol	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
2,4-Dichlorophenol	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
2,4-Dimethylphenol	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
2,4-Dinitrophenol	ug/kg	37000 U	40000 U	2000 U	1800 UJ	2000 U	1900 UJ	1900 UJ	100000 UJ	38000 UJ	1900 U	1800 U
2,4-Dinitrotoluene	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
2,6-Dinitrotoluene	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
2-Chloronaphthalene	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
2-Chlorophenol	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
2-Methylnaphthalene	ug/kg	1200 J	590 J	380 U	350 U	430	370 U	370 U	20000 U	7400 U	370 U	25 J
2-Methylphenol	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
2-Nitroaniline	ug/kg	37000 U	40000 U	2000 U	1800 U	2000 U	1900 U	1900 U	100000 U	38000 U	1900 U	1800 U
2-Nitrophenol	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
3,3'-Dichlorobenzidine	ug/kg	43000 U	47000 U	2300 U	2100 U	2300 U	2200 U	2200 U	120000 U	45000 U	2300 U	2200 U
3-Nitroaniline	ug/kg	37000 U	40000 U	2000 U	1800 U	2000 U	1900 U	1900 U	100000 U	38000 U	1900 U	1800 U
4,6-Dinitro-2-methylphenol	ug/kg	37000 U	40000 U	2000 U	1800 U	2000 U	1900 U	1900 UJ	100000 UJ	38000 UJ	1900 U	1800 U
4-Bromophenyl phenyl ether	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
4-Chloro-3-methylphenol	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
4-Chloroaniline	ug/kg	28000 U	31000 U	1500 U	1400 U	1500 U	1500 U	1400 U	77000 U	29000 U	1500 U	1400 U
4-Chlorophenyl phenyl ether	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
4-Methylphenol	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
4-Nitroaniline	ug/kg	37000 U	40000 U	2000 U	1800 U	2000 U	1900 U	1900 U	100000 U	38000 U	1900 U	1800 U
4-Nitrophenol	ug/kg	37000 U	40000 U	2000 U	1800 U	2000 U	1900 U	1900 U	100000 U	38000 U	1900 U	1800 U
Acenaphthene	ug/kg	630 J	7800 U	380 U	350 U	40 J	27 J	370 U	20000 U	470 J	370 U	360 U
Acenaphthylene	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		W-8	W-8	W-8	W-8	W-8	W-8	W-8	W-8	W-8	W-8	W-8
Sample ID:		BW8-03	BW8-03	BW8-03	BW8-04	BW8-04	BW8-05	BW8-05	BW8-06	BW8-06	BW8-06	MWW8-13
Sample Depth(ft BGS):		0 - 2	3 - 5	8 - 10	0 - 2	5 - 7	0 - 2	7 - 9	0 - 2	2 - 4	6 - 8	0 - 2
Date Collected:	Units	07/28/03	07/28/03	07/28/03	07/22/03	07/22/03	07/22/03	07/22/03	07/28/03	07/28/03	07/28/03	05/29/03
Acetophenone	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
Anthracene	ug/kg	2300 J	810 J	380 U	350 U	270 J	22 J	370 U	20000 U	770 J	370 U	32 J
Atrazine	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
Benzaldehyde	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
Benzo(a)anthracene	ug/kg	1300 J	7800 U	380 UJ	36 J	280 J	37 J	370 U	20000 U	3900 J	23 J	110 J
Benzo(a)pyrene	ug/kg	7200 U	7800 U	380 U	40 J	210 J	370 U	370 U	20000 U	6100 J	57 J	81 J
Benzo(b)fluoranthene	ug/kg	570 J	7800 U	380 U	51 J	270 J	31 J	370 U	20000 U	6900 J	62 J	130 J
Benzo(g,h,i)perylene	ug/kg	7200 U	7800 U	380 U	32 J	39 J	370 U	370 U	20000 U	3400 J	370 U	62 J
Benzo(k)fluoranthene	ug/kg	7200 U	7800 U	380 U	27 J	160 J	370 U	370 U	20000 U	3300 J	60 J	67 J
Biphenyl	ug/kg	7200 U	7800 U	380 U	350 U	34 J	370 U	370 U	20000 U	7400 U	370 U	360 U
bis(2-Chloroethoxy)methane	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
bis(2-Chloroethyl)ether	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
bis(2-Ethylhexyl)phthalate	ug/kg	7200 U	7800 U	380 U	350 U	25 J	370 U	370 U	20000 U	7400 U	370 U	360 U
Butyl benzylphthalate	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
Caprolactam	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
Carbazole	ug/kg	1000 J	7800 U	380 U	350 U	65 J	370 U	370 U	20000 U	7400 U	370 U	360 U
Chrysene	ug/kg	1400 J	7800 U	380 UJ	52 J	370 J	77 J	370 U	2300 J	5900 J	35 J	140 J
Di-n-butylphthalate	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	3600 J	370 U	360 U
Di-n-octyl phthalate	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
Dibenz(a,h)anthracene	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	1000 J	370 U	360 U
Dibenzofuran	ug/kg	550 J	7800 U	380 U	350 U	38 J	31 J	370 U	20000 U	7400 U	370 U	57 J
Diethyl phthalate	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
Dimethyl phthalate	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
Fluoranthene	ug/kg	4300 J	1400 J	380 U	68 J	810	110 J	370 U	2000 J	6900 J	110 J	290 J
Fluorene	ug/kg	2700 J	980 J	380 U	350 U	57 J	370 U	370 U	20000 U	660 J	370 U	360 U
Hexachlorobenzene	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
Hexachlorobutadiene	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
Hexachlorocyclopentadiene	ug/kg	7200 U	7800 U	380 U	350 U	380 UJ	370 U	370 U	20000 UJ	7400 UJ	370 U	360 U
Hexachloroethane	ug/kg	2200 U	2400 U	120 U	100 U	120 U	110 U	110 U	5900 U	2200 U	110 U	110 U
Indeno(1,2,3-cd)pyrene	ug/kg	7200 U	7800 U	380 U	27 J	71 J	370 U	370 U	20000 U	2900 J	370 U	55 J
Isophorone	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
N-Nitrosodi-n-propylamine	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
N-Nitrosodiphenylamine	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
Naphthalene	ug/kg	660 J	7800 U	380 U	350 U	130 J	26 J	370 U	20000 U	7400 U	28 J	24 J
Nitrobenzene	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U
Pentachlorophenol	ug/kg	R	R	R	3600 U	3900 U	3800 U	3800 U	200000 U	76000 U	R	3700 U
Phenanthrene	ug/kg	14000	5000 J	380 U	25 J	350 J	170 J	370 U	1800 J	3600 J	81 J	270 J
Phenol	ug/kg	7200 U	7800 U	380 U	350 U	380 U	370 U	370 U	20000 U	7400 U	370 U	360 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		W-8	W-8	W-8	W-8	W-8	W-8	W-8	W-8	W-8	W-8	W-8
Sample ID:		BW8-03	BW8-03	BW8-03	BW8-04	BW8-04	BW8-05	BW8-05	BW8-06	BW8-06	BW8-06	MWW8-13
Sample Depth(ft BGS):		0 - 2	3 - 5	8 - 10	0 - 2	5 - 7	0 - 2	7 - 9	0 - 2	2 - 4	6 - 8	0 - 2
Date Collected:	Units	07/28/03	07/28/03	07/28/03	07/22/03	07/22/03	07/22/03	07/22/03	07/28/03	07/28/03	07/28/03	05/29/03
Pyrene	ug/kg	11000	3300 J	380 UJ	80 J	970	81 J	370 U	2700 J	8300	66 J	180 J
Pests/PCBs												
Aroclor-1016 (PCB-1016)	ug/kg	36 U	39 U	38 U	35 U	38 U	37 U	37 U	39 U	37 U	37 U	36 U
Aroclor-1221 (PCB-1221)	ug/kg	36 U	39 U	38 U	35 U	38 U	37 U	37 U	39 U	37 U	37 U	36 U
Aroclor-1232 (PCB-1232)	ug/kg	36 U	39 U	38 U	35 U	38 U	37 U	37 U	39 U	37 U	37 U	36 U
Aroclor-1242 (PCB-1242)	ug/kg	36 U	39 U	38 U	35 U	38 U	37 U	37 U	39 U	37 U	37 U	36 U
Aroclor-1248 (PCB-1248)	ug/kg	36 U	76	38 U	35 U	240	37 U	37 U	30 J	95	37 U	36
Aroclor-1254 (PCB-1254)	ug/kg	36 U	39 U	38 U	48	38 U	37 U	37 U	39 U	37 U	37 U	36 U
Aroclor-1260 (PCB-1260)	ug/kg	11 J	61	38 U	35 U	82	37 U	37 U	39 U	38	37 U	36 U
Inorganics												
Antimony	ug/kg	1970 J	1520 J	301 J	220 J	1730 J	179 J	262 J	5330 J	31500 J	101000 J	722 J
Arsenic	ug/kg	7200	7080	5300	7480	5670 J	3910	3640	25500	16100	54000	3420
Barium	ug/kg	99500	131000	38600	30900	79200	46300	31600	432000	4040000	429000	28700
Beryllium	ug/kg	161	419	182	93 J	116 UJ	95.5 J	45.4 J	119 U	44 J	113 U	108 UJ
Cadmium	ug/kg	2720 U	357 J	39.6 J	157 J	592	559 U	555 U	5940 U	38500	11300 U	252 J
Chromium Total	ug/kg	153000 J	16400 J	13400 J	10100 J	40700 J	12000 J	10900 J	726000 J	363000 J	123000 J	21500 J
Cobalt	ug/kg	5630	4510	6800	4360	5120 J	6650	4390	20200	7790	64200	2900
Copper	ug/kg	92900	44900	16200	11200 J	24400 J	12400 J	10700 J	1570000	4930000	25800000	24600
Lead	ug/kg	39800	56300	6780	9620 J	81600 J	5530 J	5010 J	179000	2820000	8440000	21900
Manganese	ug/kg	1660000	276000	349000	397000	744000 J	276000	187000	1990000	777000	1600000	507000
Mercury	ug/kg	45	201	20.3 J	34.6 U	40.4	36.9 U	36.7 U	269	6550	22.3 J	46.1
Nickel	ug/kg	82000	27500	18200	10800	13600 J	14600	12200	424000	251000	151000	15000
Selenium	ug/kg	2720 U	880	580 U	525 U	578 U	559 U	555 U	5940 U	11200 U	4890 J	541 UJ
Silver	ug/kg	543 U	59.6 J	580 U	525 U	578 U	559 U	555 U	594 U	765	2610	541 U
Thallium	ug/kg	5430 UJ	566 J	461 J	422 J	826 J	476 J	704 J	11900 UJ	22400 UJ	22700 UJ	1570 J
Vanadium	ug/kg	14500	17700	18200	13200 J	35800 J	15300 J	15600 J	25300	25100	52000	10000
Zinc	ug/kg	68800	63200	40900	35800 J	98600 J	36300 J	28300 J	192000	5820000	5080000	29900 J
Miscellaneous												
Total Solids	%	92	85.1	86.3	95.3	86.6	89.5	90	84.1	89.1	88.1	92.5

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	W-8 MWW8-13 8 - 10 05/29/03	W-8 MWW8-13 15 - 17 05/29/03
VOCs			
1,1,1-Trichloroethane	ug/kg	250 U	5.1 U
1,1,2,2-Tetrachloroethane	ug/kg	250 U	5.1 U
1,1,2-Trichloroethane	ug/kg	250 U	5.1 U
1,1-Dichloroethane	ug/kg	250 U	5.1 U
1,1-Dichloroethene	ug/kg	250 U	5.1 U
1,2,4-Trichlorobenzene	ug/kg	250 U	5.1 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	500 U	10 UJ
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	250 U	5.1 U
1,2-Dichlorobenzene	ug/kg	250 U	5.1 U
1,2-Dichloroethane	ug/kg	250 U	5.1 U
1,2-Dichloropropane	ug/kg	250 U	5.1 U
1,3-Dichlorobenzene	ug/kg	250 U	5.1 U
1,4-Dichlorobenzene	ug/kg	250 U	5.1 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	1000 U	2.4 J
2-Hexanone	ug/kg	1000 U	20 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	1000 U	20 U
Acetone	ug/kg	120 J	9.7 J
Benzene	ug/kg	250 U	5.1 U
Bromodichloromethane	ug/kg	250 U	5.1 U
Bromoform	ug/kg	250 U	5.1 U
Bromomethane (Methyl Bromide)	ug/kg	500 U	10 UJ
Carbon disulfide	ug/kg	250 U	5.1 U
Carbon tetrachloride	ug/kg	250 U	5.1 U
Chlorobenzene	ug/kg	250 U	5.1 U
Chloroethane	ug/kg	500 U	10 U
Chloroform (Trichloromethane)	ug/kg	250 U	5.1 U
Chloromethane (Methyl Chloride)	ug/kg	500 U	10 U
cis-1,2-Dichloroethene	ug/kg	250 U	5.1 U
cis-1,3-Dichloropropene	ug/kg	250 U	5.1 U
Cyclohexane	ug/kg	500 U	10 U
Dibromochloromethane	ug/kg	250 U	5.1 U
Dichlorodifluoromethane (CFC-12)	ug/kg	500 U	10 U
Ethylbenzene	ug/kg	18 J	5.1 U
Isopropylbenzene	ug/kg	250 U	5.1 U
Methyl acetate	ug/kg	40 J	10 U
Methyl cyclohexane	ug/kg	25 J	10 U
Methyl Tert Butyl Ether	ug/kg	1000 U	20 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	W-8 MWW8-13 8 - 10 05/29/03	W-8 MWW8-13 15 - 17 05/29/03
Methylene chloride	ug/kg	250 U	5.1 U
Styrene	ug/kg	250 U	5.1 U
Tetrachloroethene	ug/kg	250 U	5.1 U
Toluene	ug/kg	15 J	5.1 U
Total Xylenes	ug/kg	110 J	10 U
trans-1,2-Dichloroethene	ug/kg	250 U	5.1 U
trans-1,3-Dichloropropene	ug/kg	250 U	5.1 U
Trichloroethene	ug/kg	250 U	5.1 U
Trichlorofluoromethane (CFC-11)	ug/kg	500 U	10 U
Trifluorotrichloroethane (Freon 113)	ug/kg	250 U	5.1 U
Vinyl chloride	ug/kg	500 U	10 U
SVOCs			
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	3900 U	400 U
2,4,5-Trichlorophenol	ug/kg	3900 U	400 U
2,4,6-Trichlorophenol	ug/kg	3900 U	400 U
2,4-Dichlorophenol	ug/kg	3900 U	400 U
2,4-Dimethylphenol	ug/kg	3900 U	400 U
2,4-Dinitrophenol	ug/kg	20000 U	2000 UJ
2,4-Dinitrotoluene	ug/kg	3900 U	400 U
2,6-Dinitrotoluene	ug/kg	3900 U	400 U
2-Chloronaphthalene	ug/kg	3900 U	400 U
2-Chlorophenol	ug/kg	3900 U	400 U
2-Methylnaphthalene	ug/kg	440 J	400 U
2-Methylphenol	ug/kg	3900 U	400 U
2-Nitroaniline	ug/kg	20000 U	2000 U
2-Nitrophenol	ug/kg	3900 U	400 U
3,3'-Dichlorobenzidine	ug/kg	23000 U	2400 U
3-Nitroaniline	ug/kg	20000 U	2000 U
4,6-Dinitro-2-methylphenol	ug/kg	20000 U	2000 UJ
4-Bromophenyl phenyl ether	ug/kg	3900 U	400 U
4-Chloro-3-methylphenol	ug/kg	3900 U	400 U
4-Chloroaniline	ug/kg	15000 U	1600 U
4-Chlorophenyl phenyl ether	ug/kg	3900 U	400 U
4-Methylphenol	ug/kg	3900 U	400 U
4-Nitroaniline	ug/kg	20000 U	2000 U
4-Nitrophenol	ug/kg	20000 U	2000 U
Acenaphthene	ug/kg	3900 U	400 U
Acenaphthylene	ug/kg	3900 U	400 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	W-8 MWW8-13 8 - 10 05/29/03	W-8 MWW8-13 15 - 17 05/29/03
Acetophenone	ug/kg	3900 U	400 U
Anthracene	ug/kg	3900 U	400 U
Atrazine	ug/kg	3900 U	400 U
Benzaldehyde	ug/kg	3900 U	400 U
Benzo(a)anthracene	ug/kg	3900 U	400 U
Benzo(a)pyrene	ug/kg	3900 U	400 U
Benzo(b)fluoranthene	ug/kg	3900 U	400 U
Benzo(g,h,i)perylene	ug/kg	3900 U	400 U
Benzo(k)fluoranthene	ug/kg	3900 U	400 U
Biphenyl	ug/kg	3900 U	400 U
bis(2-Chloroethoxy)methane	ug/kg	3900 U	400 U
bis(2-Chloroethyl)ether	ug/kg	3900 U	400 U
bis(2-Ethylhexyl)phthalate	ug/kg	3900 U	400 U
Butyl benzylphthalate	ug/kg	3900 U	400 U
Caprolactam	ug/kg	3900 U	400 U
Carbazole	ug/kg	3900 U	400 U
Chrysene	ug/kg	3900 U	400 U
Di-n-butylphthalate	ug/kg	3900 U	400 U
Di-n-octyl phthalate	ug/kg	3900 U	400 U
Dibenz(a,h)anthracene	ug/kg	3900 U	400 U
Dibenzofuran	ug/kg	3900 U	400 U
Diethyl phthalate	ug/kg	3900 U	400 U
Dimethyl phthalate	ug/kg	3900 U	400 U
Fluoranthene	ug/kg	3900 U	400 U
Fluorene	ug/kg	3900 U	400 U
Hexachlorobenzene	ug/kg	3900 U	400 U
Hexachlorobutadiene	ug/kg	3900 U	400 U
Hexachlorocyclopentadiene	ug/kg	3900 U	400 U
Hexachloroethane	ug/kg	1200 U	120 U
Indeno(1,2,3-cd)pyrene	ug/kg	3900 U	400 U
Isophorone	ug/kg	3900 U	400 U
N-Nitrosodi-n-propylamine	ug/kg	3900 U	400 U
N-Nitrosodiphenylamine	ug/kg	3900 U	400 U
Naphthalene	ug/kg	3900 U	400 U
Nitrobenzene	ug/kg	3900 U	400 U
Pentachlorophenol	ug/kg	40000 U	4100 U
Phenanthrene	ug/kg	560 J	400 U
Phenol	ug/kg	3900 U	400 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	W-8 MWW8-13 8 - 10 05/29/03	W-8 MWW8-13 15 - 17 05/29/03
Pyrene	ug/kg	3900 U	400 U
Pests/PCBs			
Aroclor-1016 (PCB-1016)	ug/kg	77 U	40 U
Aroclor-1221 (PCB-1221)	ug/kg	77 U	40 U
Aroclor-1232 (PCB-1232)	ug/kg	77 U	40 U
Aroclor-1242 (PCB-1242)	ug/kg	77 U	40 U
Aroclor-1248 (PCB-1248)	ug/kg	880	40 U
Aroclor-1254 (PCB-1254)	ug/kg	77 U	40 U
Aroclor-1260 (PCB-1260)	ug/kg	77 U	40 U
Inorganics			
Antimony	ug/kg	353 J	381 J
Arsenic	ug/kg	4820	5110
Barium	ug/kg	43000	46100
Beryllium	ug/kg	171 J	144 J
Cadmium	ug/kg	274 J	263 J
Chromium Total	ug/kg	16300 J	16500 J
Cobalt	ug/kg	7880	6710
Copper	ug/kg	16700	16900
Lead	ug/kg	7910	7670
Manganese	ug/kg	652000	535000
Mercury	ug/kg	38.7 U	24.9 J
Nickel	ug/kg	19000	18800
Selenium	ug/kg	586 UJ	600 UJ
Silver	ug/kg	586 U	600 U
Thallium	ug/kg	2120 J	2100 J
Vanadium	ug/kg	22400	22700
Zinc	ug/kg	44300 J	46700 J
Miscellaneous			
Total Solids	%	85.4	83.3

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9
Sample ID:		BW9-03	BW9-03	BW9-03	BW9-04	BW9-04	BW9-05	BW9-05	BW9-05	BW9-06	BW9-06	BW9-11
Sample Depth(ft BGS):		0 - 2	3 - 5	8 - 10	0 - 2	4.5 - 6.5	0 - 2	8 - 10	10 - 12	0 - 2	6 - 8	0 - 2
Date Collected:	Units	07/28/03	07/28/03	07/28/03	07/22/03	07/22/03	07/22/03	07/22/03	07/22/03	07/22/03	07/22/03	07/31/03
VOCs												
1,1,1-Trichloroethane	ug/kg	5.8 U	1.5 J	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
1,1,2,2-Tetrachloroethane	ug/kg	5.8 UJ	5.9 UJ	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
1,1,2-Trichloroethane	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
1,1-Dichloroethane	ug/kg	5.8 U	1.2 J	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
1,1-Dichloroethene	ug/kg	0.79 J	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
1,2,4-Trichlorobenzene	ug/kg	5.8 UJ	5.9 UJ	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	12 UJ	12 UJ	9.4 U	9.2 U	9.3 U	13 U	12 U	12 U	13 U	10 U	9.7 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
1,2-Dichlorobenzene	ug/kg	5.8 UJ	5.9 UJ	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
1,2-Dichloroethane	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
1,2-Dichloropropane	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
1,3-Dichlorobenzene	ug/kg	5.8 UJ	5.9 UJ	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
1,4-Dichlorobenzene	ug/kg	5.8 UJ	5.9 UJ	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	23 U	24 U	19 U	18 U	19 U	25 U	24 U	24 U	26 U	20 U	2.3 J
2-Hexanone	ug/kg	23 U	24 U	19 U	18 U	19 U	25 U	24 U	24 U	26 U	20 U	19 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	23 U	24 U	19 U	18 U	19 U	25 U	24 U	24 U	26 U	20 U	19 U
Acetone	ug/kg	23 U	24 U	19 U	18 U	19 U	25 U	24 U	4.2 J	26 U	20 U	13 J
Benzene	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	0.37 J
Bromodichloromethane	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
Bromoform	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
Bromomethane (Methyl Bromide)	ug/kg	12 U	12 U	9.4 U	9.2 U	9.3 U	13 U	12 U	12 U	13 U	10 U	9.7 U
Carbon disulfide	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	0.42 J
Carbon tetrachloride	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
Chlorobenzene	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 UJ
Chloroethane	ug/kg	12 U	12 U	9.4 U	9.2 U	9.3 U	13 U	12 U	12 U	13 U	10 U	9.7 U
Chloroform (Trichloromethane)	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
Chloromethane (Methyl Chloride)	ug/kg	12 U	12 U	9.4 U	9.2 UJ	9.3 UJ	13 U	12 U	12 U	13 UJ	10 UJ	9.7 U
cis-1,2-Dichloroethene	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
cis-1,3-Dichloropropene	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
Cyclohexane	ug/kg	12 U	12 U	9.4 U	9.2 U	9.3 U	13 U	12 U	12 U	13 U	10 U	9.7 U
Dibromochloromethane	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
Dichlorodifluoromethane (CFC-12)	ug/kg	12 U	12 U	9.4 U	9.2 UJ	9.3 UJ	13 U	12 U	12 U	13 UJ	10 UJ	9.7 U
Ethylbenzene	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
Isopropylbenzene	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
Methyl acetate	ug/kg	12 U	12 U	9.4 U	9.2 U	9.3 U	13 U	12 U	12 U	13 U	10 U	9.7 U
Methyl cyclohexane	ug/kg	12 U	12 U	9.4 U	9.2 U	9.3 U	13 U	12 U	12 U	13 U	10 U	9.7 U
Methyl Tert Butyl Ether	ug/kg	23 UJ	24 U	19 U	18 U	19 U	25 U	24 U	24 U	26 U	20 U	19 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9
Sample ID:		BW9-03	BW9-03	BW9-03	BW9-04	BW9-04	BW9-05	BW9-05	BW9-05	BW9-06	BW9-06	BW9-11
Sample Depth(ft BGS):		0 - 2	3 - 5	8 - 10	0 - 2	4.5 - 6.5	0 - 2	8 - 10	10 - 12	0 - 2	6 - 8	0 - 2
Date Collected:	Units	07/28/03	07/28/03	07/28/03	07/22/03	07/22/03	07/22/03	07/22/03	07/22/03	07/22/03	07/22/03	07/31/03
Methylene chloride	ug/kg	5.8 U	5.9 U	1.8 J	4.6 U	4.7 U	6.3 U	2.8 J	2.4 J	6.4 U	5.1 U	4.9 U
Styrene	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
Tetrachloroethene	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
Toluene	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 UJ
Total Xylenes	ug/kg	12 U	12 U	9.4 U	9.2 U	9.3 U	13 U	12 U	12 U	13 U	10 U	9.7 U
trans-1,2-Dichloroethene	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
trans-1,3-Dichloropropene	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
Trichloroethene	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 UJ
Trichlorofluoromethane (CFC-11)	ug/kg	12 U	12 U	9.4 U	9.2 U	9.3 U	13 U	12 U	12 U	13 U	10 U	9.7 U
Trifluorotrichloroethane (Freon 113)	ug/kg	5.8 U	5.9 U	4.7 U	4.6 U	4.7 U	6.3 U	6 U	6.1 U	6.4 U	5.1 U	4.9 U
Vinyl chloride	ug/kg	12 U	12 U	9.4 U	9.2 U	9.3 U	13 U	12 U	12 U	13 U	10 U	9.7 U
SVOCs												
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
2,4,5-Trichlorophenol	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
2,4,6-Trichlorophenol	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
2,4-Dichlorophenol	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
2,4-Dimethylphenol	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
2,4-Dinitrophenol	ug/kg	46000 U	1800 U	2000 U	2000 U	1900 U	1800 U	1800 U	1900 U	R	2000 UJ	18000 UJ
2,4-Dinitrotoluene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
2,6-Dinitrotoluene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	R	390 U	3500 U
2-Chloronaphthalene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
2-Chlorophenol	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
2-Methylnaphthalene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	R	390 U	3500 U
2-Methylphenol	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
2-Nitroaniline	ug/kg	46000 U	1800 U	2000 U	2000 U	1900 U	1800 U	1800 U	1900 U	1800 U	2000 U	18000 U
2-Nitrophenol	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
3,3'-Dichlorobenzidine	ug/kg	54000 U	2100 U	2300 U	2300 U	2200 U	2100 U	2200 U	2300 U	2200 U	2400 U	21000 U
3-Nitroaniline	ug/kg	46000 U	1800 U	2000 U	2000 U	1900 U	1800 U	1800 U	1900 U	1800 U	2000 U	18000 UJ
4,6-Dinitro-2-methylphenol	ug/kg	46000 U	1800 U	2000 U	2000 U	1900 U	1800 U	1800 U	1900 U	1800 U	2000 U	18000 UJ
4-Bromophenyl phenyl ether	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
4-Chloro-3-methylphenol	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
4-Chloroaniline	ug/kg	35000 U	1400 U	1500 U	1500 U	1500 U	1400 U	1400 U	1500 U	1400 U	1500 U	14000 U
4-Chlorophenyl phenyl ether	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	R	390 U	3500 U
4-Methylphenol	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
4-Nitroaniline	ug/kg	46000 U	1800 U	2000 U	2000 U	1900 U	1800 U	1800 U	1900 U	1800 U	2000 U	18000 UJ
4-Nitrophenol	ug/kg	46000 U	1800 U	2000 U	2000 U	1900 U	1800 U	1800 U	1900 U	1800 U	2000 U	18000 UJ
Acenaphthene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Acenaphthylene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	R	390 U	3500 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9
Sample ID:		BW9-03	BW9-03	BW9-03	BW9-04	BW9-04	BW9-05	BW9-05	BW9-05	BW9-06	BW9-06	BW9-11
Sample Depth(ft BGS):		0 - 2	3 - 5	8 - 10	0 - 2	4.5 - 6.5	0 - 2	8 - 10	10 - 12	0 - 2	6 - 8	0 - 2
Date Collected:	Units	07/28/03	07/28/03	07/28/03	07/22/03	07/22/03	07/22/03	07/22/03	07/22/03	07/22/03	07/22/03	07/31/03
Acetophenone	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Anthracene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Atrazine	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Benzaldehyde	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Benzo(a)anthracene	ug/kg	8800 U	350 UJ	380 UJ	380 U	370 U	350 U	360 U	380 U	360 U	390 U	240 J
Benzo(a)pyrene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Benzo(b)fluoranthene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	210 J
Benzo(g,h,i)perylene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Benzo(k)fluoranthene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Biphenyl	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
bis(2-Chloroethoxy)methane	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
bis(2-Chloroethyl)ether	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
bis(2-Ethylhexyl)phthalate	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Butyl benzylphthalate	ug/kg	3100 J	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Caprolactam	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Carbazole	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Chrysene	ug/kg	8800 U	350 UJ	380 UJ	380 U	370 U	350 U	360 U	380 U	360 U	390 U	260 J
Di-n-butylphthalate	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Di-n-octyl phthalate	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Dibenz(a,h)anthracene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Dibenzofuran	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Diethyl phthalate	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Dimethyl phthalate	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Fluoranthene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	410 J
Fluorene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	R	390 U	3500 U
Hexachlorobenzene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Hexachlorobutadiene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Hexachlorocyclopentadiene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 UJ
Hexachloroethane	ug/kg	2700 U	110 U	120 U	120 U	110 U	110 U	110 U	110 U	110 U	120 U	1100 U
Indeno(1,2,3-cd)pyrene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Isophorone	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
N-Nitrosodi-n-propylamine	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
N-Nitrosodiphenylamine	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Naphthalene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	R	390 U	3500 U
Nitrobenzene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U
Pentachlorophenol	ug/kg	R	R	R	4000 U	3800 U	3600 U	3700 U	3900 U	3700 U	4000 U	36000 UJ
Phenanthrene	ug/kg	8800 U	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	290 J
Phenol	ug/kg	950 J	350 U	380 U	380 U	370 U	350 U	360 U	380 U	360 U	390 U	3500 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9
Sample ID:		BW9-03	BW9-03	BW9-03	BW9-04	BW9-04	BW9-05	BW9-05	BW9-05	BW9-06	BW9-06	BW9-11
Sample Depth(ft BGS):		0 - 2	3 - 5	8 - 10	0 - 2	4.5 - 6.5	0 - 2	8 - 10	10 - 12	0 - 2	6 - 8	0 - 2
Date Collected:	Units	07/28/03	07/28/03	07/28/03	07/22/03	07/22/03	07/22/03	07/22/03	07/22/03	07/22/03	07/22/03	07/31/03
Pyrene	ug/kg	8800 U	350 UJ	380 UJ	380 U	370 U	20 J	360 U	380 U	360 U	390 U	390 J
Pests/PCBs												
Aroclor-1016 (PCB-1016)	ug/kg	180 U	35 U	38 U	38 U	37 U	35 U	36 U	38 U	36 U	39 U	35 U
Aroclor-1221 (PCB-1221)	ug/kg	180 U	35 U	38 U	38 U	37 U	35 UJ	36 UJ	38 U	36 U	39 U	35 U
Aroclor-1232 (PCB-1232)	ug/kg	180 U	35 U	38 U	38 U	37 U	35 U	36 U	38 U	36 U	39 U	35 U
Aroclor-1242 (PCB-1242)	ug/kg	180 U	35 U	38 U	38 U	37 U	35 U	36 U	38 U	36 U	39 U	35 U
Aroclor-1248 (PCB-1248)	ug/kg	390	35 U	38 U	38 U	37 U	35 U	36 U	38 U	36 U	39 U	190 J
Aroclor-1254 (PCB-1254)	ug/kg	180 U	35 U	38 U	38 U	37 U	31 J	36 U	38 U	36 U	39 U	35 U
Aroclor-1260 (PCB-1260)	ug/kg	280	35 U	38 U	38 U	37 U	35 U	36 U	38 U	36 U	39 U	66 J
Inorganics												
Antimony	ug/kg	1150 J	127 J	192 J	283 J	308 J	187 J	129 J	174 J	261 J	199 J	1030 J
Arsenic	ug/kg	5750	1010	4900	4540	5620	4870	3050	3590	4420	3380	2810
Barium	ug/kg	116000	10800	54000	38800	36600	29600	7390	10600	13300	11500	31700
Beryllium	ug/kg	445	106 U	327	110 J	77.4 J	63.5 J	108 UJ	115 UJ	108 UJ	118 UJ	107 U
Cadmium	ug/kg	483 J	529 U	54.3 J	581 U	562 U	531 U	46.1 J	243 J	45.4 J	58.7 J	110 J
Chromium Total	ug/kg	86600 J	5080 J	17500 J	17800 J	12100 J	10500 J	4380 J	4520 J	6130 J	4810 J	26000
Cobalt	ug/kg	4360	776 J	7260	5890	5940	4330	2550	5460	3480	2840	2730
Copper	ug/kg	63100	2310	16700	20600 J	18100 J	11400 J	8590 J	9760 J	13200 J	9710 J	18900
Lead	ug/kg	67200	5580	7680	68700 J	6680 J	5840 J	3320 J	3900 J	4830 J	3670 J	69000
Manganese	ug/kg	3680000	232000	256000	351000	331000	261000	179000	409000	263000	227000	630000
Mercury	ug/kg	50.5	34.9 U	38.4 U	38.4 U	38.1	35.1 U	35.8 U	37.8 U	35.7 U	38.8 U	180
Nickel	ug/kg	22500	2080 J	20600	26200	15400	10600	5880	11400	9160	6300	12500
Selenium	ug/kg	2680 U	529 U	582 U	581 U	562 U	531 U	542 U	573 U	541 U	588 U	535 U
Silver	ug/kg	2680 U	529 U	582 U	581 U	562 U	531 U	542 U	573 U	541 U	588 U	535 U
Thallium	ug/kg	5360 UJ	1060 UJ	449 J	838 J	812 J	892 J	591 J	847 J	588 J	710 J	1070 U
Vanadium	ug/kg	12900	4480	21300	17000 J	16700 J	11600 J	7910 J	8440 J	10700 J	9090 J	9350 J
Zinc	ug/kg	131000	5190	41400	37400 J	38300 J	34000 J	25200 J	29800 J	33600 J	25800 J	30300
Miscellaneous												
Total Solids	%	93.2	94.5	85.9	86	89	94.1	92.2	87.3	92.5	85	93.4

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9
Sample ID:		BW9-11	BW9-11	BW9-12	BW9-12	BW9-12	BW9-16	MWW9-01	MWW9-01	MWW9-01	MWW9-02
Sample Depth(ft BGS):		5 - 7	7 - 9	0 - 2	8 - 10	20 - 22	14 - 16	0 - 2	8 - 10	24.5 - 26.5	0 - 2
Date Collected:	Units	07/31/03	07/31/03	07/30/03	07/30/03	07/30/03	09/09/03	07/28/03	07/28/03	07/28/03	07/28/03
VOCs											
1,1,1-Trichloroethane	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 U	5.7 U	4.9 U
1,1,2,2-Tetrachloroethane	ug/kg	4.5 U	4.6 UJ	5.8 U	6.4 UJ	5 UJ	5.1 UJ	4.8 U	5.7 UJ	5.7 UJ	4.9 U
1,1,2-Trichloroethane	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 UJ	5.7 U	4.9 U
1,1-Dichloroethane	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 U	5.7 U	4.9 U
1,1-Dichloroethene	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 U	5.7 U	4.9 U
1,2,4-Trichlorobenzene	ug/kg	4.5 U	4.6 UJ	5.8 U	6.4 UJ	5 UJ	5.1 UJ	4.8 U	5.7 UJ	5.7 UJ	4.9 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	9 U	9.3 UJ	12 U	13 UJ	10 UJ	10 UJ	9.6 U	11 UJ	11 UJ	9.7 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 UJ	5.7 U	4.9 U
1,2-Dichlorobenzene	ug/kg	4.5 U	4.6 UJ	5.8 U	6.4 UJ	5 UJ	5.1 UJ	4.8 U	5.7 UJ	5.7 UJ	4.9 U
1,2-Dichloroethane	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 U	5.7 U	4.9 U
1,2-Dichloropropane	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 U	5.7 U	4.9 U
1,3-Dichlorobenzene	ug/kg	4.5 U	4.6 UJ	5.8 U	6.4 UJ	5 UJ	5.1 UJ	4.8 U	5.7 UJ	5.7 UJ	4.9 U
1,4-Dichlorobenzene	ug/kg	4.5 U	4.6 UJ	5.8 U	6.4 UJ	5 UJ	5.1 UJ	4.8 U	5.7 UJ	5.7 UJ	4.9 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	4.8 J	4.4 J	23 U	26 U	7.8 J	21 U	19 U	23 U	23 U	19 U
2-Hexanone	ug/kg	18 U	19 U	23 U	26 U	20 U	21 UJ	19 U	23 UJ	23 U	19 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	18 U	19 U	23 U	26 U	20 U	21 UJ	19 U	23 U	23 U	19 U
Acetone	ug/kg	23	18 J	23 U	26 U	44	21 U	19 U	23 U	23 U	19 U
Benzene	ug/kg	4.5 UJ	0.44 J	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 U	0.53 J	4.9 U
Bromodichloromethane	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 U	5.7 U	4.9 U
Bromoform	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 UJ	5.7 U	4.9 U
Bromomethane (Methyl Bromide)	ug/kg	9 U	9.3 U	12 U	13 U	10 U	10 UJ	9.6 U	11 U	11 U	9.7 U
Carbon disulfide	ug/kg	0.41 J	1.2 J	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 U	5.7 U	4.9 U
Carbon tetrachloride	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 U	5.7 U	4.9 U
Chlorobenzene	ug/kg	4.5 UJ	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 UJ	5.7 U	4.9 U
Chloroethane	ug/kg	9 U	9.3 U	12 U	13 U	10 U	10 UJ	9.6 U	11 U	11 U	9.7 U
Chloroform (Trichloromethane)	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 U	5.7 U	4.9 U
Chloromethane (Methyl Chloride)	ug/kg	9 U	9.3 U	12 U	13 U	10 U	10 U	9.6 U	11 U	11 U	9.7 U
cis-1,2-Dichloroethene	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 U	5.7 U	4.9 U
cis-1,3-Dichloropropene	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 U	5.7 U	4.9 U
Cyclohexane	ug/kg	9 U	1.1 J	12 U	13 U	10 U	10 U	9.6 U	11 U	11 U	9.7 U
Dibromochloromethane	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 UJ	5.7 U	4.9 U
Dichlorodifluoromethane (CFC-12)	ug/kg	9 U	9.3 U	12 U	13 U	10 U	10 U	9.6 U	11 U	11 U	9.7 U
Ethylbenzene	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 UJ	5.7 U	4.9 U
Isopropylbenzene	ug/kg	4.5 U	0.53 J	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 UJ	5.7 U	4.9 U
Methyl acetate	ug/kg	9 U	9.3 U	12 U	13 U	10 U	10 UJ	9.6 U	11 U	11 U	9.7 U
Methyl cyclohexane	ug/kg	9 U	9.3 U	12 U	13 U	10 U	10 U	9.6 U	11 U	1.8 J	9.7 U
Methyl Tert Butyl Ether	ug/kg	18 U	19 U	23 U	26 U	20 U	21 U	19 U	23 U	23 U	19 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9
Sample ID:		BW9-11	BW9-11	BW9-12	BW9-12	BW9-12	BW9-16	MWW9-01	MWW9-01	MWW9-01	MWW9-02
Sample Depth(ft BGS):		5 - 7	7 - 9	0 - 2	8 - 10	20 - 22	14 - 16	0 - 2	8 - 10	24.5 - 26.5	0 - 2
Date Collected:	Units	07/31/03	07/31/03	07/30/03	07/30/03	07/30/03	09/09/03	07/28/03	07/28/03	07/28/03	07/28/03
Methylene chloride	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	1.7 J	2.2 J	5.7 U	4.9 U
Styrene	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 UJ	5.7 U	4.9 U
Tetrachloroethene	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 UJ	5.7 U	4.9 U
Toluene	ug/kg	4.5 UJ	0.61 J	5.8 U	6.4 U	5 U	0.81 J	4.8 U	0.45 J	1.7 J	4.9 U
Total Xylenes	ug/kg	9 U	9.3 U	12 U	13 U	10 U	10 U	9.6 U	11 UJ	11 U	9.7 U
trans-1,2-Dichloroethene	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 U	5.7 U	4.9 U
trans-1,3-Dichloropropene	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 UJ	5.7 U	4.9 U
Trichloroethene	ug/kg	4.5 UJ	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 U	5.7 U	4.9 U
Trichlorofluoromethane (CFC-11)	ug/kg	9 U	9.3 U	12 U	13 U	10 U	10 U	9.6 U	11 U	11 U	9.7 U
Trifluorotrichloroethane (Freon 113)	ug/kg	4.5 U	4.6 U	5.8 U	6.4 U	5 U	5.1 U	4.8 U	5.7 U	5.7 U	4.9 U
Vinyl chloride	ug/kg	9 U	9.3 U	12 U	13 U	10 U	10 U	9.6 U	11 U	11 U	9.7 U
SVOCs											
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
2,4,5-Trichlorophenol	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
2,4,6-Trichlorophenol	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
2,4-Dichlorophenol	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
2,4-Dimethylphenol	ug/kg	7300 U	7800 U	340 U	350 U	62 J	1500 U	370 U	350 U	350 U	360 U
2,4-Dinitrophenol	ug/kg	38000 UJ	40000 UJ	1700 U	1800 U	2000 UJ	7500 U	1900 U	1800 U	1800 U	1900 U
2,4-Dinitrotoluene	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
2,6-Dinitrotoluene	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
2-Chloronaphthalene	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
2-Chlorophenol	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
2-Methylnaphthalene	ug/kg	7300 U	7800 U	340 U	120 J	210 J	160 J	370 U	36 J	100 J	27 J
2-Methylphenol	ug/kg	7300 U	7800 U	340 U	350 U	38 J	1500 U	370 U	350 U	350 U	360 U
2-Nitroaniline	ug/kg	38000 U	40000 U	1700 U	1800 U	2000 U	7500 U	1900 U	1800 U	1800 U	1900 U
2-Nitrophenol	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
3,3'-Dichlorobenzidine	ug/kg	44000 U	47000 U	2100 U	2100 U	2300 U	8800 U	2200 U	2100 U	2100 U	2200 U
3-Nitroaniline	ug/kg	38000 UJ	40000 UJ	1700 U	1800 U	2000 U	7500 U	1900 U	1800 U	1800 U	1900 U
4,6-Dinitro-2-methylphenol	ug/kg	38000 UJ	40000 UJ	1700 U	1800 U	2000 U	R	1900 U	1800 U	1800 U	1900 U
4-Bromophenyl phenyl ether	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
4-Chloro-3-methylphenol	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
4-Chloroaniline	ug/kg	29000 U	31000 U	1300 U	1400 U	1500 U	5700 U	1400 U	1400 U	1400 U	1400 U
4-Chlorophenyl phenyl ether	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
4-Methylphenol	ug/kg	7300 U	7800 U	340 U	350 U	73 J	1500 U	370 U	350 U	350 U	360 U
4-Nitroaniline	ug/kg	38000 UJ	40000 UJ	1700 U	1800 U	2000 U	7500 U	1900 U	1800 U	1800 U	1900 U
4-Nitrophenol	ug/kg	38000 UJ	40000 UJ	1700 U	1800 U	2000 U	7500 U	1900 U	1800 U	1800 U	1900 U
Acenaphthene	ug/kg	7300 U	7800 U	340 U	350 U	31 J	1500 U	370 U	350 U	350 U	360 U
Acenaphthylene	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9
Sample ID:		BW9-11	BW9-11	BW9-12	BW9-12	BW9-12	BW9-16	MWW9-01	MWW9-01	MWW9-01	MWW9-02
Sample Depth(ft BGS):		5 - 7	7 - 9	0 - 2	8 - 10	20 - 22	14 - 16	0 - 2	8 - 10	24.5 - 26.5	0 - 2
Date Collected:	Units	07/31/03	07/31/03	07/30/03	07/30/03	07/30/03	09/09/03	07/28/03	07/28/03	07/28/03	07/28/03
Acetophenone	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
Anthracene	ug/kg	7300 U	7800 U	340 U	32 J	87 J	1500 U	74 J	350 U	65 J	360 U
Atrazine	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
Benzaldehyde	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
Benzo(a)anthracene	ug/kg	7300 U	7800 U	340 U	210 J	480	1500 U	50 J	47 J	18 J	32 J
Benzo(a)pyrene	ug/kg	7300 U	7800 U	340 U	300 J	630	1500 U	84 J	27 J	41 J	33 J
Benzo(b)fluoranthene	ug/kg	7300 U	7800 U	340 U	360	700	1500 U	100 J	40 J	49 J	55 J
Benzo(g,h,i)perylene	ug/kg	7300 U	7800 U	340 U	220 J	470	140 J	35 J	24 J	350 U	29 J
Benzo(k)fluoranthene	ug/kg	7300 U	7800 U	340 U	200 J	430	1500 U	66 J	20 J	48 J	360 U
Biphenyl	ug/kg	7300 U	7800 U	340 U	68 J	71 J	300 J	370 U	350 U	71 J	360 U
bis(2-Chloroethoxy)methane	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
bis(2-Chloroethyl)ether	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
bis(2-Ethylhexyl)phthalate	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
Butyl benzylphthalate	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	36 J	350 U	350 U	360 U
Caprolactam	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
Carbazole	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
Chrysene	ug/kg	7300 U	7800 U	340 U	280 J	560	1500 U	66 J	35 J	31 J	46 J
Di-n-butylphthalate	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
Di-n-octyl phthalate	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
Dibenz(a,h)anthracene	ug/kg	7300 U	7800 U	340 U	74 J	190 J	1500 U	370 U	350 U	350 U	360 U
Dibenzofuran	ug/kg	7300 U	7800 U	340 U	67 J	100 J	1500 U	370 U	350 U	20 J	360 U
Diethyl phthalate	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
Dimethyl phthalate	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
Fluoranthene	ug/kg	910 J	7800 U	340 U	170 J	330 J	1500 U	160 J	28 J	93 J	61 J
Fluorene	ug/kg	7300 U	7800 U	340 U	350 U	73 J	1500 U	370 U	350 U	350 U	360 U
Hexachlorobenzene	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
Hexachlorobutadiene	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
Hexachlorocyclopentadiene	ug/kg	7300 UJ	7800 UJ	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
Hexachloroethane	ug/kg	2200 U	2400 U	100 U	100 U	120 U	440 U	110 U	110 U	110 U	110 U
Indeno(1,2,3-cd)pyrene	ug/kg	7300 U	7800 U	340 U	190 J	450	1500 U	30 J	350 U	350 U	24 J
Isophorone	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
N-Nitrosodi-n-propylamine	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
N-Nitrosodiphenylamine	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
Naphthalene	ug/kg	7300 U	7800 U	340 U	92 J	160 J	1500 U	370 U	27 J	45 J	360 U
Nitrobenzene	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U
Pentachlorophenol	ug/kg	76000 UJ	80000 UJ	3500 U	3600 U	4000 U	15000 U	R	R	R	R
Phenanthrene	ug/kg	7300 U	7800 U	340 U	230 J	430	160 J	110 J	35 J	120 J	53 J
Phenol	ug/kg	7300 U	7800 U	340 U	350 U	390 U	1500 U	370 U	350 U	350 U	360 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9	W-9
Sample ID:		BW9-11	BW9-11	BW9-12	BW9-12	BW9-12	BW9-16	MWW9-01	MWW9-01	MWW9-01	MWW9-02
Sample Depth(ft BGS):		5 - 7	7 - 9	0 - 2	8 - 10	20 - 22	14 - 16	0 - 2	8 - 10	24.5 - 26.5	0 - 2
Date Collected:	Units	07/31/03	07/31/03	07/30/03	07/30/03	07/30/03	09/09/03	07/28/03	07/28/03	07/28/03	07/28/03
Pyrene	ug/kg	1700 J	7800 U	340 U	170 J	370 J	140 J	95 J	29 J	30 J	57 J
Pests/PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	180 U	78 U	34 U	35 U	39 U	36 U	37 U	35 U	35 U	36 U
Aroclor-1221 (PCB-1221)	ug/kg	180 U	78 U	34 UJ	35 UJ	39 UJ	36 U	37 U	35 U	35 U	36 U
Aroclor-1232 (PCB-1232)	ug/kg	180 U	78 U	34 U	35 U	39 U	36 U	37 U	35 U	35 U	36 U
Aroclor-1242 (PCB-1242)	ug/kg	180 U	78 U	34 U	35 U	39 U	36 U	37 U	35 U	35 U	36 U
Aroclor-1248 (PCB-1248)	ug/kg	2800 J	1300 J	34 U	35 U	39 U	9.4 J	64	35 U	35 U	34 J
Aroclor-1254 (PCB-1254)	ug/kg	180 U	78 U	34 U	35 U	39 U	36 U	37 U	35 U	35 U	36 U
Aroclor-1260 (PCB-1260)	ug/kg	180 U	78 U	34 U	35 U	39 U	36 U	42	35 U	35 U	14 J
Inorganics											
Antimony	ug/kg	1380 J	840 J	177 J	334 J	503 J	3700	1120 J	249 J	6200 J	866 J
Arsenic	ug/kg	6280	3460	3140	1790	2500	3500	6430	1450	2640	4710
Barium	ug/kg	96700	57500	7460	18500	37800	32400	96500	16400	15100	59600
Beryllium	ug/kg	111 U	51.5 J	103 U	55.1 J	77.5 J	241	157	107 U	105 U	143
Cadmium	ug/kg	566 J	136 J	54.7 J	524 U	586 U	697 J	1220	24.4 J	527 U	85.6 J
Chromium Total	ug/kg	161000	16400	4120 J	14900	27500	25400	33100 J	7290 J	15000 J	38900 J
Cobalt	ug/kg	4640	4100	2440	1390	2440	3080	5150	1340	2360	5060
Copper	ug/kg	74800	24300	6580	11600	16600	23300	45300	7360	14400	66900
Lead	ug/kg	84600	34100	3160	23500	88000	248000	89500	65200	308000	46700
Manganese	ug/kg	1690000	403000	154000	147000	781000	490000	504000	141000	137000	869000
Mercury	ug/kg	36.7	26.1 J	33.9 U	37.6	207	89.3	65.2	35.3 U	42.2	122
Nickel	ug/kg	29500	14400	5880 J	16600	31800	18800	40900	7650	12900	26500
Selenium	ug/kg	1110 U	589 U	513 U	524 U	586 U	297 J	557 U	534 U	527 U	547 U
Silver	ug/kg	556 U	589 U	513 U	524 U	586 U	551 U	557 U	534 U	527 U	547 U
Thallium	ug/kg	2220 U	1180 U	1030 U	1050 U	1170 U	1100 U	483 J	1070 UJ	1050 UJ	388 J
Vanadium	ug/kg	23200 J	12600 J	6330 J	6540 J	8480 J	9730	13700	5930	7380	10600
Zinc	ug/kg	122000	34800	24200 J	15700	20500	22100 J	136000	14300	14400	44200
Miscellaneous											
Total Solids	%	89.9	85	97.5	95.5	85.4	90.7	89.8	93.6	94.8	91.4

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	W-9 MWW9-02 8 - 10 07/28/03	W-9 MWW9-02 23 - 25 07/28/03
VOCs			
1,1,1-Trichloroethane	ug/kg	5.3 U	5.1 U
1,1,2,2-Tetrachloroethane	ug/kg	5.3 UJ	5.1 U
1,1,2-Trichloroethane	ug/kg	5.3 U	5.1 U
1,1-Dichloroethane	ug/kg	5.3 U	5.1 U
1,1-Dichloroethene	ug/kg	5.3 U	5.1 U
1,2,4-Trichlorobenzene	ug/kg	5.3 UJ	5.1 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	11 UJ	10 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	5.3 U	5.1 U
1,2-Dichlorobenzene	ug/kg	5.3 UJ	5.1 U
1,2-Dichloroethane	ug/kg	5.3 U	5.1 U
1,2-Dichloropropane	ug/kg	5.3 U	5.1 U
1,3-Dichlorobenzene	ug/kg	5.3 UJ	5.1 U
1,4-Dichlorobenzene	ug/kg	5.3 UJ	5.1 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	21 U	20 U
2-Hexanone	ug/kg	21 U	20 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	21 U	20 U
Acetone	ug/kg	21 U	20 U
Benzene	ug/kg	5.3 U	5.1 U
Bromodichloromethane	ug/kg	5.3 U	5.1 U
Bromoform	ug/kg	5.3 U	5.1 U
Bromomethane (Methyl Bromide)	ug/kg	11 U	10 U
Carbon disulfide	ug/kg	5.3 U	0.31 J
Carbon tetrachloride	ug/kg	5.3 U	5.1 U
Chlorobenzene	ug/kg	5.3 U	5.1 U
Chloroethane	ug/kg	11 U	10 U
Chloroform (Trichloromethane)	ug/kg	5.3 U	5.1 U
Chloromethane (Methyl Chloride)	ug/kg	11 U	10 U
cis-1,2-Dichloroethene	ug/kg	5.3 U	5.1 U
cis-1,3-Dichloropropene	ug/kg	5.3 U	5.1 U
Cyclohexane	ug/kg	0.83 J	10 U
Dibromochloromethane	ug/kg	5.3 U	5.1 U
Dichlorodifluoromethane (CFC-12)	ug/kg	11 U	10 U
Ethylbenzene	ug/kg	5.3 U	5.1 U
Isopropylbenzene	ug/kg	5.3 U	5.1 U
Methyl acetate	ug/kg	11 U	10 U
Methyl cyclohexane	ug/kg	0.55 J	10 U
Methyl Tert Butyl Ether	ug/kg	21 U	20 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	W-9 MWW9-02 8 - 10 07/28/03	W-9 MWW9-02 23 - 25 07/28/03
Methylene chloride	ug/kg	2.1 J	1.8 J
Styrene	ug/kg	5.3 U	5.1 U
Tetrachloroethene	ug/kg	5.3 U	5.1 U
Toluene	ug/kg	0.79 J	0.56 J
Total Xylenes	ug/kg	11 U	10 U
trans-1,2-Dichloroethene	ug/kg	5.3 U	5.1 U
trans-1,3-Dichloropropene	ug/kg	5.3 U	5.1 U
Trichloroethene	ug/kg	5.3 U	5.1 U
Trichlorofluoromethane (CFC-11)	ug/kg	0.84 J	10 U
Trifluorotrichloroethane (Freon 113)	ug/kg	5.3 U	5.1 U
Vinyl chloride	ug/kg	11 U	10 U
SVOCs			
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	360 U	350 U
2,4,5-Trichlorophenol	ug/kg	360 U	350 U
2,4,6-Trichlorophenol	ug/kg	360 U	350 U
2,4-Dichlorophenol	ug/kg	360 U	350 U
2,4-Dimethylphenol	ug/kg	360 U	350 U
2,4-Dinitrophenol	ug/kg	1900 U	1800 U
2,4-Dinitrotoluene	ug/kg	360 U	350 U
2,6-Dinitrotoluene	ug/kg	360 U	350 U
2-Chloronaphthalene	ug/kg	360 U	350 U
2-Chlorophenol	ug/kg	360 U	350 U
2-Methylnaphthalene	ug/kg	72 J	97 J
2-Methylphenol	ug/kg	360 U	350 U
2-Nitroaniline	ug/kg	1900 U	1800 U
2-Nitrophenol	ug/kg	360 U	350 U
3,3'-Dichlorobenzidine	ug/kg	2200 U	2100 U
3-Nitroaniline	ug/kg	1900 U	1800 U
4,6-Dinitro-2-methylphenol	ug/kg	1900 U	1800 U
4-Bromophenyl phenyl ether	ug/kg	360 U	350 U
4-Chloro-3-methylphenol	ug/kg	360 U	350 U
4-Chloroaniline	ug/kg	1400 U	1400 U
4-Chlorophenyl phenyl ether	ug/kg	360 U	350 U
4-Methylphenol	ug/kg	360 U	350 U
4-Nitroaniline	ug/kg	1900 U	1800 U
4-Nitrophenol	ug/kg	1900 U	1800 U
Acenaphthene	ug/kg	360 U	350 U
Acenaphthylene	ug/kg	360 U	350 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	W-9 MWW9-02 8 - 10 07/28/03	W-9 MWW9-02 23 - 25 07/28/03
Acetophenone	ug/kg	360 U	350 U
Anthracene	ug/kg	21 J	71 J
Atrazine	ug/kg	360 U	350 U
Benzaldehyde	ug/kg	360 U	350 U
Benzo(a)anthracene	ug/kg	210 J	130 J
Benzo(a)pyrene	ug/kg	350 J	230 J
Benzo(b)fluoranthene	ug/kg	480	310 J
Benzo(g,h,i)perylene	ug/kg	230 J	150 J
Benzo(k)fluoranthene	ug/kg	190 J	160 J
Biphenyl	ug/kg	360 U	75 J
bis(2-Chloroethoxy)methane	ug/kg	360 U	350 U
bis(2-Chloroethyl)ether	ug/kg	360 U	350 U
bis(2-Ethylhexyl)phthalate	ug/kg	360 U	350 U
Butyl benzylphthalate	ug/kg	360 U	350 U
Caprolactam	ug/kg	360 U	350 U
Carbazole	ug/kg	360 U	54 J
Chrysene	ug/kg	270 J	190 J
Di-n-butylphthalate	ug/kg	360 U	350 U
Di-n-octyl phthalate	ug/kg	360 U	350 U
Dibenz(a,h)anthracene	ug/kg	90 J	74 J
Dibenzofuran	ug/kg	30 J	20 J
Diethyl phthalate	ug/kg	360 U	350 U
Dimethyl phthalate	ug/kg	360 U	350 U
Fluoranthene	ug/kg	190 J	200 J
Fluorene	ug/kg	360 U	350 U
Hexachlorobenzene	ug/kg	360 U	350 U
Hexachlorobutadiene	ug/kg	360 U	350 U
Hexachlorocyclopentadiene	ug/kg	360 U	350 U
Hexachloroethane	ug/kg	110 U	110 U
Indeno(1,2,3-cd)pyrene	ug/kg	230 J	120 J
Isophorone	ug/kg	360 U	350 U
N-Nitrosodi-n-propylamine	ug/kg	360 U	350 U
N-Nitrosodiphenylamine	ug/kg	360 U	350 U
Naphthalene	ug/kg	55 J	36 J
Nitrobenzene	ug/kg	360 U	350 U
Pentachlorophenol	ug/kg	R	R
Phenanthrene	ug/kg	140 J	150 J
Phenol	ug/kg	360 U	350 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	W-9 MWW9-02 8 - 10 07/28/03	W-9 MWW9-02 23 - 25 07/28/03
Pyrene	ug/kg	190 J	150 J
Pests/PCBs			
Aroclor-1016 (PCB-1016)	ug/kg	36 U	35 U
Aroclor-1221 (PCB-1221)	ug/kg	36 U	35 U
Aroclor-1232 (PCB-1232)	ug/kg	36 U	35 U
Aroclor-1242 (PCB-1242)	ug/kg	36 U	35 U
Aroclor-1248 (PCB-1248)	ug/kg	36 U	35 U
Aroclor-1254 (PCB-1254)	ug/kg	36 U	35 U
Aroclor-1260 (PCB-1260)	ug/kg	14 J	4.8 J
Inorganics			
Antimony	ug/kg	707 J	551 J
Arsenic	ug/kg	3820	3730
Barium	ug/kg	50600	44000
Beryllium	ug/kg	123	63.7 J
Cadmium	ug/kg	546 U	73.4 J
Chromium Total	ug/kg	41600 J	37400 J
Cobalt	ug/kg	3150	3240
Copper	ug/kg	26700	32400
Lead	ug/kg	153000	237000
Manganese	ug/kg	1030000	756000
Mercury	ug/kg	318	238
Nickel	ug/kg	48900	34000
Selenium	ug/kg	256 J	532 U
Silver	ug/kg	546 U	532 U
Thallium	ug/kg	1090 UJ	478 J
Vanadium	ug/kg	10300	9850
Zinc	ug/kg	24600	28900
Miscellaneous			
Total Solids	%	91.6	94

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2
Sample ID:		MWM2-15	MWM2-15	MWM2-15	MWM2-16	MWM2-16	MWM2-16	MWM2-17	MWM2-17	MWM2-17
Sample Depth(ft BGS):		0 - 2	8 - 10	15 - 16	0 - 2	8 - 10	15 - 16	0 - 2	8 - 10	18 - 20
Date Collected:	Units	06/01/03	06/01/03	06/01/03	06/01/03	06/01/03	06/01/03	04/24/03	04/24/03	04/24/03
VOCs										
1,1,1-Trichloroethane	ug/kg	5.1 U	4.7 U	1.1 J	5.7 U	5.7 U	0.44 J	15 J	31 J	18 J
1,1,2,2-Tetrachloroethane	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 UJ	5 U	5 U	6.2 U
1,1,2-Trichloroethane	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
1,1-Dichloroethane	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	1.8 J	6.6	6.2 U
1,1-Dichloroethene	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	1.8 J	6.2 U
1,2,4-Trichlorobenzene	ug/kg	5.1 UJ	4.7 UJ	6.5 UJ	5.7 UJ	5.7 U	5.3 UJ	5 U	5 U	6.2 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	10 UJ	9.4 UJ	13 UJ	11 UJ	11 UJ	11 UJ	9.9 U	9.9 U	12 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
1,2-Dichlorobenzene	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 UJ	5 U	5 U	6.2 U
1,2-Dichloroethane	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 UJ	5 UJ	6.2 UJ
1,2-Dichloropropane	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
1,3-Dichlorobenzene	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 UJ	5 U	5 U	6.2 U
1,4-Dichlorobenzene	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 UJ	5 U	5 U	6.2 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	21 U	19 U	26 U	23 U	23 U	12 J	20 UJ	20 UJ	25 UJ
2-Hexanone	ug/kg	21 U	19 U	26 U	23 U	23 U	21 U	20 U	20 U	25 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	21 U	19 U	26 U	23 U	23 U	1.2 J	20 U	20 U	25 U
Acetone	ug/kg	21 U	19 U	26 U	23 U	23 UJ	64	3.1 J	20 UJ	25 UJ
Benzene	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
Bromodichloromethane	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
Bromoform	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
Bromomethane (Methyl Bromide)	ug/kg	10 U	9.4 U	13 U	11 U	11 UJ	11 U	9.9 U	9.9 U	12 U
Carbon disulfide	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	0.67 J	5 U	5 U	6.2 U
Carbon tetrachloride	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 UJ	5 UJ	6.2 UJ
Chlorobenzene	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
Chloroethane	ug/kg	10 U	9.4 U	13 U	11 U	11 UJ	11 U	9.9 U	9.9 U	12 U
Chloroform (Trichloromethane)	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	2.2 J	4.4 J	6.2 U
Chloromethane (Methyl Chloride)	ug/kg	10 U	9.4 U	13 U	11 U	11 U	11 U	9.9 U	9.9 U	12 U
cis-1,2-Dichloroethene	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
cis-1,3-Dichloropropene	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
Cyclohexane	ug/kg	10 U	9.4 U	13 U	11 U	11 U	0.6 J	9.9 U	9.9 U	12 U
Dibromochloromethane	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
Dichlorodifluoromethane (CFC-12)	ug/kg	10 U	9.4 U	13 U	11 U	11 U	11 U	9.9 UJ	9.9 UJ	12 UJ
Ethylbenzene	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
Isopropylbenzene	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 UJ	5 U	5 U	6.2 U
Methyl acetate	ug/kg	10 U	9.4 U	13 U	11 U	11 U	11 U	9.9 U	9.9 U	12 U
Methyl cyclohexane	ug/kg	10 U	9.4 U	13 U	11 U	11 U	0.66 J	9.9 U	9.9 U	12 U
Methyl Tert Butyl Ether	ug/kg	21 U	19 U	26 U	23 U	23 U	21 U	20 U	20 U	25 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	M-2 MWM2-15 0 - 2 06/01/03	M-2 MWM2-15 8 - 10 06/01/03	M-2 MWM2-15 15 - 16 06/01/03	M-2 MWM2-16 0 - 2 06/01/03	M-2 MWM2-16 8 - 10 06/01/03	M-2 MWM2-16 15 - 16 06/01/03	M-2 MWM2-17 0 - 2 04/24/03	M-2 MWM2-17 8 - 10 04/24/03	M-2 MWM2-17 18 - 20 04/24/03
Methylene chloride	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5.5	2.8 J	6.3
Styrene	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
Tetrachloroethene	ug/kg	5.1 U	4.7 U	0.92 J	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
Toluene	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	0.7 J	1.1 J	0.4 J	0.71 J
Total Xylenes	ug/kg	10 U	9.4 U	13 U	11 U	11 U	11 U	9.9 U	9.9 U	12 U
trans-1,2-Dichloroethene	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
trans-1,3-Dichloropropene	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
Trichloroethene	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
Trichlorofluoromethane (CFC-11)	ug/kg	10 U	9.4 U	13 U	11 U	11 U	11 U	9.9 U	9.9 U	12 U
Trifluorotrichloroethane (Freon 113)	ug/kg	5.1 U	4.7 U	6.5 U	5.7 U	5.7 U	5.3 U	5 U	5 U	6.2 U
Vinyl chloride	ug/kg	10 U	9.4 U	13 U	11 U	11 U	11 U	9.9 U	9.9 U	12 U
SVOCs										
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
2,4,5-Trichlorophenol	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
2,4,6-Trichlorophenol	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
2,4-Dichlorophenol	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
2,4-Dimethylphenol	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
2,4-Dinitrophenol	ug/kg	1900 UJ	9800 UJ	1800 UJ	35000 UJ	1700 UJ	1700 U	2000 U	2000 U	2000 U
2,4-Dinitrotoluene	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
2,6-Dinitrotoluene	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
2-Chloronaphthalene	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
2-Chlorophenol	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
2-Methylnaphthalene	ug/kg	190 J	100 J	350 U	6900 U	340 U	35 J	380 U	380 U	390 U
2-Methylphenol	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
2-Nitroaniline	ug/kg	1900 U	9800 U	1800 U	35000 U	1700 U	1700 U	2000 U	2000 U	2000 U
2-Nitrophenol	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
3,3'-Dichlorobenzidine	ug/kg	2300 U	11000 U	2100 U	42000 U	2000 U	2100 UJ	2300 U	2300 U	2400 U
3-Nitroaniline	ug/kg	1900 U	9800 U	1800 U	35000 U	1700 U	1700 U	2000 U	2000 U	2000 U
4,6-Dinitro-2-methylphenol	ug/kg	1900 U	9800 U	1800 U	35000 U	1700 U	1700 U	2000 U	2000 U	2000 U
4-Bromophenyl phenyl ether	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
4-Chloro-3-methylphenol	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
4-Chloroaniline	ug/kg	1500 U	7500 U	1400 U	27000 U	1300 U	1300 U	1500 U	1500 U	1600 U
4-Chlorophenyl phenyl ether	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
4-Methylphenol	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
4-Nitroaniline	ug/kg	1900 U	9800 U	1800 U	35000 U	1700 U	1700 U	2000 U	2000 U	2000 U
4-Nitrophenol	ug/kg	1900 U	9800 U	1800 U	35000 U	1700 U	1700 U	2000 U	2000 U	2000 U
Acenaphthene	ug/kg	370 U	280 J	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Acenaphthylene	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	M-2 MWM2-15 0 - 2 06/01/03	M-2 MWM2-15 8 - 10 06/01/03	M-2 MWM2-15 15 - 16 06/01/03	M-2 MWM2-16 0 - 2 06/01/03	M-2 MWM2-16 8 - 10 06/01/03	M-2 MWM2-16 15 - 16 06/01/03	M-2 MWM2-17 0 - 2 04/24/03	M-2 MWM2-17 8 - 10 04/24/03	M-2 MWM2-17 18 - 20 04/24/03
Acetophenone	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Anthracene	ug/kg	370 U	1200 J	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Atrazine	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Benzaldehyde	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Benzo(a)anthracene	ug/kg	36 J	1400 J	350 U	6900 U	340 U	43 J	380 U	380 U	390 U
Benzo(a)pyrene	ug/kg	31 J	910 J	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Benzo(b)fluoranthene	ug/kg	45 J	1200 J	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Benzo(g,h,i)perylene	ug/kg	370 U	460 J	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Benzo(k)fluoranthene	ug/kg	21 J	560 J	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Biphenyl	ug/kg	28 J	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
bis(2-Chloroethoxy)methane	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
bis(2-Chloroethyl)ether	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
bis(2-Ethylhexyl)phthalate	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 UJ	380 U	19 J	390 U
Butyl benzylphthalate	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 UJ	380 U	380 U	390 U
Caprolactam	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Carbazole	ug/kg	370 U	310 J	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Chrysene	ug/kg	51 J	1400 J	350 U	6900 U	340 U	120 J	380 U	380 U	390 U
Di-n-butylphthalate	ug/kg	370 U	1900 U	350 U	6900 U	340 U	33 J	380 U	380 U	390 U
Di-n-octyl phthalate	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Dibenz(a,h)anthracene	ug/kg	370 U	170 J	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Dibenzofuran	ug/kg	31 J	350 J	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Diethyl phthalate	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Dimethyl phthalate	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Fluoranthene	ug/kg	53 J	4100	350 U	6900 U	340 U	140 J	380 U	380 U	390 U
Fluorene	ug/kg	370 U	380 J	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Hexachlorobenzene	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Hexachlorobutadiene	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Hexachlorocyclopentadiene	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Hexachloroethane	ug/kg	110 U	570 U	110 U	2100 U	100 U	100 U	120 U	120 U	120 U
Indeno(1,2,3-cd)pyrene	ug/kg	370 U	460 J	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Isophorone	ug/kg	370 U	1900 U	350 U	6900 U	340 U	69 J	380 U	380 U	390 U
N-Nitrosodi-n-propylamine	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
N-Nitrosodiphenylamine	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Naphthalene	ug/kg	280 J	1900 U	350 U	6900 U	340 U	24 J	380 U	380 U	390 U
Nitrobenzene	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U
Pentachlorophenol	ug/kg	3800 U	20000 U	3600 U	71000 U	3500 U	3500 U	3900 U	3900 U	4100 U
Phenanthrene	ug/kg	77 J	4800	350 U	6900 U	23 J	87 J	380 U	380 U	390 U
Phenol	ug/kg	370 U	1900 U	350 U	6900 U	340 U	340 U	380 U	380 U	390 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	M-2 MWM2-15 0 - 2 06/01/03	M-2 MWM2-15 8 - 10 06/01/03	M-2 MWM2-15 15 - 16 06/01/03	M-2 MWM2-16 0 - 2 06/01/03	M-2 MWM2-16 8 - 10 06/01/03	M-2 MWM2-16 15 - 16 06/01/03	M-2 MWM2-17 0 - 2 04/24/03	M-2 MWM2-17 8 - 10 04/24/03	M-2 MWM2-17 18 - 20 04/24/03
Pyrene	ug/kg	47 J	2600	350 U	6900 U	340 U	100 J	380 U	380 U	390 U
Pests/PCBs										
Aroclor-1016 (PCB-1016)	ug/kg	37 U	38 U	35 U	34 U	34 U	34 U	38 U	38 U	39 U
Aroclor-1221 (PCB-1221)	ug/kg	37 U	38 U	35 U	34 U	34 U	34 U	38 U	38 U	39 U
Aroclor-1232 (PCB-1232)	ug/kg	37 U	38 U	35 U	34 U	34 U	34 U	38 U	38 U	39 U
Aroclor-1242 (PCB-1242)	ug/kg	37 U	38 U	35 U	34 U	34 U	34 U	38 U	38 U	39 U
Aroclor-1248 (PCB-1248)	ug/kg	37 U	38 U	35 U	34 U	34 U	34 U	38 U	38 U	39 U
Aroclor-1254 (PCB-1254)	ug/kg	37 U	38 U	35 U	34 U	34 U	34 U	38 U	38 U	39 U
Aroclor-1260 (PCB-1260)	ug/kg	37 U	38 U	35 U	24 J	34 U	34 U	38 U	38 U	39 U
Inorganics										
Antimony	ug/kg	695 J	543 J	2130 UJ	2220 J	1470 J	1150 J	225 J	437 J	R
Arsenic	ug/kg	5210 J	6130 J	705 J	6950 J	6120 J	5580 J	2750	4210	596 J
Barium	ug/kg	107000	44600 J	3970 J	112000 J	11600 J	76200 J	41400	52500	3810
Beryllium	ug/kg	116 J	71.4 J	106 UJ	104 UJ	102 UJ	103 UJ	115 U	213	119 U
Cadmium	ug/kg	346 J	304 J	97.5 J	142 J	1020 UJ	85.3 J	577 U	577 U	597 U
Chromium Total	ug/kg	14400 J	17500 J	3840 J	99400 J	36800 J	57000 J	10100	16100	3810
Cobalt	ug/kg	5490	5330	1410	8060	3860	5120	5600	7720	1460
Copper	ug/kg	23400	20500	4280	205000	79700	145000	5280 J	20000	11900
Lead	ug/kg	26200 J	9930 J	2080 J	183000 J	6990 J	70000 J	9320	9540	2100
Manganese	ug/kg	690000	356000	75800	893000	365000	681000	373000	259000	74500
Mercury	ug/kg	82.6	28.1 J	35.1 U	563	33.8 U	494	38.1 U	38.1 U	39.4 U
Nickel	ug/kg	15900	16300	5240	108000	34700	75900	50000	21500	8230
Selenium	ug/kg	566 U	574 UJ	531 UJ	1040 UJ	1020 UJ	1030 UJ	577 U	577 U	597 U
Silver	ug/kg	566 U	574 U	531 U	191 J	512 U	93.1 J	577 U	577 U	597 U
Thallium	ug/kg	2280 J	1510 J	339 J	2710 J	811 J	2130 J	814 J	733 J	1190 U
Vanadium	ug/kg	18700	19100	5730	13200	11800	10900	15700	20200	5260
Zinc	ug/kg	64700 J	38600 J	15600 J	82400 J	6690 J	46600 J	30100 J	46000 J	15100 J
Miscellaneous										
Total Solids	%	88.4	87.2	94.1	95.8	97.6	97.4	86.6	86.7	83.8

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	M-2 MWM2-19 0 - 2 05/18/03	M-2 MWM2-19 8 - 10 05/18/03	M-2 MWM2-19 16 - 17 05/18/03	M-2 MWM2-22 0 - 2 05/18/03	M-2 MWM2-22 8 - 10 05/18/03	M-2 MWM2-22 15 05/18/03
VOCs							
1,1,1-Trichloroethane	ug/kg	2.4 J	1 J	7.1	320 U	5 J	0.96 J
1,1,2,2-Tetrachloroethane	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
1,1,2-Trichloroethane	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
1,1-Dichloroethane	ug/kg	5 U	5.7 U	3.9 J	58 J	1.7 J	7.6
1,1-Dichloroethene	ug/kg	5 U	5.7 U	0.79 J	320 U	5.7 U	6.3 U
1,2,4-Trichlorobenzene	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	10 U	11 U	13 U	630 U	11 U	13 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
1,2-Dichlorobenzene	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
1,2-Dichloroethane	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
1,2-Dichloropropane	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
1,3-Dichlorobenzene	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
1,4-Dichlorobenzene	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	20 U	23 U	26 U	150 J	23 U	25 U
2-Hexanone	ug/kg	20 U	23 U	26 U	1300 U	23 U	25 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	20 U	23 U	26 U	830 J	23 U	25 U
Acetone	ug/kg	20 U	23 U	26 U	450 J	23 U	25 U
Benzene	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
Bromodichloromethane	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
Bromoform	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
Bromomethane (Methyl Bromide)	ug/kg	10 U	11 U	13 U	630 U	11 U	13 U
Carbon disulfide	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
Carbon tetrachloride	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
Chlorobenzene	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
Chloroethane	ug/kg	10 U	11 U	13 U	630 U	11 U	13 U
Chloroform (Trichloromethane)	ug/kg	5 U	5.7 U	1.5 J	320 U	5.7 U	6.3 U
Chloromethane (Methyl Chloride)	ug/kg	10 U	11 U	13 U	630 U	11 U	13 U
cis-1,2-Dichloroethene	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	5.7 J
cis-1,3-Dichloropropene	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
Cyclohexane	ug/kg	10 U	11 U	13 U	18 J	11 U	13 U
Dibromochloromethane	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
Dichlorodifluoromethane (CFC-12)	ug/kg	10 U	11 U	13 U	630 U	11 U	13 U
Ethylbenzene	ug/kg	5 U	5.7 U	6.5 U	22 J	5.7 U	6.3 U
Isopropylbenzene	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
Methyl acetate	ug/kg	10 U	11 U	13 U	430 J	11 U	13 U
Methyl cyclohexane	ug/kg	10 U	11 U	13 U	21 J	11 U	13 U
Methyl Tert Butyl Ether	ug/kg	20 U	23 U	26 U	1300 U	23 U	25 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	M-2 MWM2-19 0 - 2 05/18/03	M-2 MWM2-19 8 - 10 05/18/03	M-2 MWM2-19 16 - 17 05/18/03	M-2 MWM2-22 0 - 2 05/18/03	M-2 MWM2-22 8 - 10 05/18/03	M-2 MWM2-22 15 05/18/03
Methylene chloride	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
Styrene	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
Tetrachloroethene	ug/kg	5 U	5.7 U	1.5 J	95 J	3.8 J	6.5
Toluene	ug/kg	5 U	5.7 U	6.5 U	170 J	5.7 U	6.3 U
Total Xylenes	ug/kg	10 U	11 U	13 U	170 J	11 U	13 U
trans-1,2-Dichloroethene	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
trans-1,3-Dichloropropene	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
Trichloroethene	ug/kg	5 U	5.7 U	6.5 U	320 U	22	12
Trichlorofluoromethane (CFC-11)	ug/kg	10 U	11 U	13 U	630 U	11 U	13 U
Trifluorotrichloroethane (Freon 113)	ug/kg	5 U	5.7 U	6.5 U	320 U	5.7 U	6.3 U
Vinyl chloride	ug/kg	10 U	11 U	13 U	630 U	11 U	13 U
SVOCs							
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
2,4,5-Trichlorophenol	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
2,4,6-Trichlorophenol	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
2,4-Dichlorophenol	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
2,4-Dimethylphenol	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
2,4-Dinitrophenol	ug/kg	1900 U	2000 U	2000 U	310000 U	2100 U	1800 U
2,4-Dinitrotoluene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
2,6-Dinitrotoluene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
2-Chloronaphthalene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
2-Chlorophenol	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
2-Methylnaphthalene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
2-Methylphenol	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
2-Nitroaniline	ug/kg	1900 U	2000 U	2000 U	310000 U	2100 U	1800 U
2-Nitrophenol	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
3,3'-Dichlorobenzidine	ug/kg	2300 U	2400 U	2400 U	360000 U	2500 U	2100 U
3-Nitroaniline	ug/kg	1900 U	2000 U	2000 U	310000 U	2100 U	1800 U
4,6-Dinitro-2-methylphenol	ug/kg	1900 U	2000 U	2000 U	310000 U	2100 U	1800 U
4-Bromophenyl phenyl ether	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
4-Chloro-3-methylphenol	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
4-Chloroaniline	ug/kg	1500 U	1600 U	1500 U	230000 U	1600 U	1300 U
4-Chlorophenyl phenyl ether	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
4-Methylphenol	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
4-Nitroaniline	ug/kg	1900 U	2000 U	2000 U	310000 U	2100 U	1800 U
4-Nitrophenol	ug/kg	1900 U	2000 U	2000 U	310000 U	2100 U	1800 U
Acenaphthene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Acenaphthylene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	M-2 MWM2-19 0 - 2 05/18/03	M-2 MWM2-19 8 - 10 05/18/03	M-2 MWM2-19 16 - 17 05/18/03	M-2 MWM2-22 0 - 2 05/18/03	M-2 MWM2-22 8 - 10 05/18/03	M-2 MWM2-22 15 05/18/03
Acetophenone	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Anthracene	ug/kg	370 U	400 U	390 U	3200 J	410 U	340 U
Atrazine	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Benzaldehyde	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Benzo(a)anthracene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Benzo(a)pyrene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Benzo(b)fluoranthene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Benzo(g,h,i)perylene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Benzo(k)fluoranthene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Biphenyl	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
bis(2-Chloroethoxy)methane	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
bis(2-Chloroethyl)ether	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
bis(2-Ethylhexyl)phthalate	ug/kg	370 U	24 J	26 J	60000 U	410 U	340 U
Butyl benzylphthalate	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Caprolactam	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Carbazole	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Chrysene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Di-n-butylphthalate	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Di-n-octyl phthalate	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Dibenz(a,h)anthracene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Dibenzofuran	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Diethyl phthalate	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Dimethyl phthalate	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Fluoranthene	ug/kg	370 U	400 U	390 U	5100 J	410 U	340 U
Fluorene	ug/kg	370 U	400 U	390 U	7400 J	410 U	340 U
Hexachlorobenzene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Hexachlorobutadiene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Hexachlorocyclopentadiene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Hexachloroethane	ug/kg	110 U	120 U	120 U	18000 U	120 U	100 U
Indeno(1,2,3-cd)pyrene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Isophorone	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
N-Nitrosodi-n-propylamine	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
N-Nitrosodiphenylamine	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Naphthalene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Nitrobenzene	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U
Pentachlorophenol	ug/kg	3800 U	4100 U	4000 U	610000 U	4200 U	3500 U
Phenanthrene	ug/kg	370 U	400 U	390 U	10000 J	410 U	340 U
Phenol	ug/kg	370 U	400 U	390 U	60000 U	410 U	340 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	M-2 MWM2-19 0 - 2 05/18/03	M-2 MWM2-19 8 - 10 05/18/03	M-2 MWM2-19 16 - 17 05/18/03	M-2 MWM2-22 0 - 2 05/18/03	M-2 MWM2-22 8 - 10 05/18/03	M-2 MWM2-22 15 05/18/03
Pyrene	ug/kg	370 U	400 U	390 U	7600 J	410 U	340 U
Pests/PCBs							
Aroclor-1016 (PCB-1016)	ug/kg	37 U	40 U	39 U	73 U	41 U	34 U
Aroclor-1221 (PCB-1221)	ug/kg	37 U	40 U	39 U	73 U	41 U	34 U
Aroclor-1232 (PCB-1232)	ug/kg	37 U	40 U	39 U	73 U	41 U	34 U
Aroclor-1242 (PCB-1242)	ug/kg	37 U	40 U	39 U	760	41 U	34 U
Aroclor-1248 (PCB-1248)	ug/kg	37 U	40 U	39 U	73 U	41 U	34 U
Aroclor-1254 (PCB-1254)	ug/kg	37 U	40 U	39 U	73 U	41 U	34 U
Aroclor-1260 (PCB-1260)	ug/kg	37 U	40 U	39 U	640	41 U	34 U
Inorganics							
Antimony	ug/kg	2260 U	2410 U	2380 U	22200 U	2470 U	2070 U
Arsenic	ug/kg	4130	6400	1740	13500	4410	2490
Barium	ug/kg	39700 J	75200 J	5270 J	7740 J	40200 J	5930 J
Beryllium	ug/kg	319	582	93.5 J	1110 U	436	94.5 J
Cadmium	ug/kg	92 J	196 J	70.7 J	1850 J	235 J	41.3 J
Chromium Total	ug/kg	9650	19300	6610	136000	14800	4170
Cobalt	ug/kg	4720	13100	2150	13000	7790	1770
Copper	ug/kg	8360	17500	13000	178000	16800	6160
Lead	ug/kg	6290	10400	3210	5660	6850	2640
Manganese	ug/kg	448000	1040000	128000	1320000	366000	81000
Mercury	ug/kg	23 J	34.9 J	28.2 J	29 J	25.6 J	34.1 U
Nickel	ug/kg	13700	2620000	690000	127000	20100	5100
Selenium	ug/kg	564 U	602 U	594 U	3830 J	618 U	516 U
Silver	ug/kg	564 U	602 U	594 U	5550 U	618 U	516 U
Thallium	ug/kg	1130 U	1200 U	1190 U	11100 U	1240 U	1030 U
Vanadium	ug/kg	15300	23400	7900	9690 J	18900	5950
Zinc	ug/kg	35100	79700	22300	32400	40400	15000
Miscellaneous							
Total Solids	%	88.6	83	84.2	90.1	80.9	96.8

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:	Units	M-7
Sample ID:		BM7-04
Sample Depth(ft BGS):		0 - 1
Date Collected:		03/28/03
VOCs		
1,1,1-Trichloroethane	ug/kg	230 U
1,1,2,2-Tetrachloroethane	ug/kg	230 U
1,1,2-Trichloroethane	ug/kg	R
1,1-Dichloroethane	ug/kg	230 U
1,1-Dichloroethene	ug/kg	230 U
1,2,4-Trichlorobenzene	ug/kg	230 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	460 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	230 U
1,2-Dichlorobenzene	ug/kg	230 U
1,2-Dichloroethane	ug/kg	230 U
1,2-Dichloropropane	ug/kg	230 U
1,3-Dichlorobenzene	ug/kg	230 U
1,4-Dichlorobenzene	ug/kg	230 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	920 U
2-Hexanone	ug/kg	920 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	920 U
Acetone	ug/kg	920 U
Benzene	ug/kg	230 U
Bromodichloromethane	ug/kg	230 U
Bromoform	ug/kg	230 U
Bromomethane (Methyl Bromide)	ug/kg	460 U
Carbon disulfide	ug/kg	230 U
Carbon tetrachloride	ug/kg	230 U
Chlorobenzene	ug/kg	230 U
Chloroethane	ug/kg	460 U
Chloroform (Trichloromethane)	ug/kg	230 U
Chloromethane (Methyl Chloride)	ug/kg	460 U
cis-1,2-Dichloroethene	ug/kg	230 U
cis-1,3-Dichloropropene	ug/kg	230 U
Cyclohexane	ug/kg	460 U
Dibromochloromethane	ug/kg	230 U
Dichlorodifluoromethane (CFC-12)	ug/kg	460 U
Ethylbenzene	ug/kg	230 U
Isopropylbenzene	ug/kg	230 U
Methyl acetate	ug/kg	460 U
Methyl cyclohexane	ug/kg	460 U
Methyl Tert Butyl Ether	ug/kg	920 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:	Units	M-7
Sample ID:		BM7-04
Sample Depth(ft BGS):		0 - 1
Date Collected:		03/28/03
Methylene chloride	ug/kg	230 U
Styrene	ug/kg	R
Tetrachloroethene	ug/kg	410
Toluene	ug/kg	230 U
Total Xylenes	ug/kg	460 U
trans-1,2-Dichloroethene	ug/kg	230 U
trans-1,3-Dichloropropene	ug/kg	230 U
Trichloroethene	ug/kg	230 U
Trichlorofluoromethane (CFC-11)	ug/kg	460 U
Trifluorotrichloroethane (Freon 113)	ug/kg	230 U
Vinyl chloride	ug/kg	460 U
SVOCs		
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	380 U
2,4,5-Trichlorophenol	ug/kg	380 U
2,4,6-Trichlorophenol	ug/kg	380 U
2,4-Dichlorophenol	ug/kg	380 U
2,4-Dimethylphenol	ug/kg	380 U
2,4-Dinitrophenol	ug/kg	1900 U
2,4-Dinitrotoluene	ug/kg	380 U
2,6-Dinitrotoluene	ug/kg	380 U
2-Chloronaphthalene	ug/kg	380 U
2-Chlorophenol	ug/kg	380 U
2-Methylnaphthalene	ug/kg	380 U
2-Methylphenol	ug/kg	380 U
2-Nitroaniline	ug/kg	1900 U
2-Nitrophenol	ug/kg	380 U
3,3'-Dichlorobenzidine	ug/kg	2300 U
3-Nitroaniline	ug/kg	1900 U
4,6-Dinitro-2-methylphenol	ug/kg	1900 U
4-Bromophenyl phenyl ether	ug/kg	380 U
4-Chloro-3-methylphenol	ug/kg	380 U
4-Chloroaniline	ug/kg	1500 U
4-Chlorophenyl phenyl ether	ug/kg	380 U
4-Methylphenol	ug/kg	380 U
4-Nitroaniline	ug/kg	1900 U
4-Nitrophenol	ug/kg	1900 U
Acenaphthene	ug/kg	380 U
Acenaphthylene	ug/kg	380 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		M-7
Sample ID:		BM7-04
Sample Depth(ft BGS):		0 - 1
Date Collected:	Units	03/28/03
Acetophenone	ug/kg	380 U
Anthracene	ug/kg	380 U
Atrazine	ug/kg	380 U
Benzaldehyde	ug/kg	380 U
Benzo(a)anthracene	ug/kg	380 U
Benzo(a)pyrene	ug/kg	380 U
Benzo(b)fluoranthene	ug/kg	380 U
Benzo(g,h,i)perylene	ug/kg	380 U
Benzo(k)fluoranthene	ug/kg	380 U
Biphenyl	ug/kg	380 U
bis(2-Chloroethoxy)methane	ug/kg	380 U
bis(2-Chloroethyl)ether	ug/kg	380 U
bis(2-Ethylhexyl)phthalate	ug/kg	70 J
Butyl benzylphthalate	ug/kg	380 U
Caprolactam	ug/kg	380 U
Carbazole	ug/kg	380 U
Chrysene	ug/kg	380 U
Di-n-butylphthalate	ug/kg	380 U
Di-n-octyl phthalate	ug/kg	380 U
Dibenz(a,h)anthracene	ug/kg	380 U
Dibenzofuran	ug/kg	380 U
Diethyl phthalate	ug/kg	380 U
Dimethyl phthalate	ug/kg	380 U
Fluoranthene	ug/kg	380 U
Fluorene	ug/kg	380 U
Hexachlorobenzene	ug/kg	380 U
Hexachlorobutadiene	ug/kg	380 U
Hexachlorocyclopentadiene	ug/kg	380 U
Hexachloroethane	ug/kg	110 U
Indeno(1,2,3-cd)pyrene	ug/kg	380 U
Isophorone	ug/kg	380 U
N-Nitrosodi-n-propylamine	ug/kg	380 U
N-Nitrosodiphenylamine	ug/kg	380 U
Naphthalene	ug/kg	380 U
Nitrobenzene	ug/kg	380 U
Pentachlorophenol	ug/kg	3900 U
Phenanthrene	ug/kg	53 J
Phenol	ug/kg	380 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	M-7 / BM7-04 / 0 - 1 / 03/28/03
Pyrene	ug/kg	380 U
Pests/PCBs		
Aroclor-1016 (PCB-1016)	ug/kg	38 U
Aroclor-1221 (PCB-1221)	ug/kg	38 U
Aroclor-1232 (PCB-1232)	ug/kg	38 U
Aroclor-1242 (PCB-1242)	ug/kg	38 U
Aroclor-1248 (PCB-1248)	ug/kg	38 U
Aroclor-1254 (PCB-1254)	ug/kg	38 U
Aroclor-1260 (PCB-1260)	ug/kg	38 U
Inorganics		
Antimony	ug/kg	358 J
Arsenic	ug/kg	5270
Barium	ug/kg	27200 J
Beryllium	ug/kg	153
Cadmium	ug/kg	249 J
Chromium Total	ug/kg	15400 J
Cobalt	ug/kg	5980 J
Copper	ug/kg	13900
Lead	ug/kg	7510 J
Manganese	ug/kg	285000 J
Mercury	ug/kg	37.5 U
Nickel	ug/kg	17500 J
Selenium	ug/kg	324 J
Silver	ug/kg	568 U
Thallium	ug/kg	825 J
Vanadium	ug/kg	17100
Zinc	ug/kg	42400
Miscellaneous		
Total Solids	%	88

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		M-9
Sample ID:		SM9-01
Sample Depth(ft BGS):		0 - 2
Date Collected:	Units	08/19/02
VOCs		
1,1,1-Trichloroethane	ug/kg	4.8 U
1,1,2,2-Tetrachloroethane	ug/kg	4.8 UJ
1,1,2-Trichloroethane	ug/kg	4.8 UJ
1,1-Dichloroethane	ug/kg	9
1,1-Dichloroethene	ug/kg	4.8 U
1,2,4-Trichlorobenzene	ug/kg	4.8 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	9.6 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	4.8 UJ
1,2-Dichlorobenzene	ug/kg	4.8 UJ
1,2-Dichloroethane	ug/kg	4.8 U
1,2-Dichloropropane	ug/kg	4.8 U
1,3-Dichlorobenzene	ug/kg	4.8 UJ
1,4-Dichlorobenzene	ug/kg	4.8 UJ
2-Butanone (Methyl Ethyl Ketone)	ug/kg	5.8 J
2-Hexanone	ug/kg	19 UJ
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	19 U
Acetone	ug/kg	23
Benzene	ug/kg	9.7
Bromodichloromethane	ug/kg	4.8 U
Bromoform	ug/kg	4.8 UJ
Bromomethane (Methyl Bromide)	ug/kg	9.6 U
Carbon disulfide	ug/kg	4.8 U
Carbon tetrachloride	ug/kg	4.8 U
Chlorobenzene	ug/kg	4.8 UJ
Chloroethane	ug/kg	9.6 U
Chloroform (Trichloromethane)	ug/kg	4.8 U
Chloromethane (Methyl Chloride)	ug/kg	9.6 U
cis-1,2-Dichloroethene	ug/kg	4.8 U
cis-1,3-Dichloropropene	ug/kg	4.8 U
Cyclohexane	ug/kg	2.2 J
Dibromochloromethane	ug/kg	4.8 UJ
Dichlorodifluoromethane (CFC-12)	ug/kg	9.6 U
Ethylbenzene	ug/kg	56 J
Isopropylbenzene	ug/kg	46
Methyl acetate	ug/kg	9.6 U
Methyl cyclohexane	ug/kg	4.9 J
Methyl Tert Butyl Ether	ug/kg	19 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	M-9 / SM9-01 / 0 - 2 / 08/19/02
Methylene chloride	ug/kg	4.8 U
Styrene	ug/kg	4.8 UJ
Tetrachloroethene	ug/kg	38 J
Toluene	ug/kg	29 J
Total Xylenes	ug/kg	200 J
trans-1,2-Dichloroethene	ug/kg	4.8 U
trans-1,3-Dichloropropene	ug/kg	4.8 UJ
Trichloroethene	ug/kg	27
Trichlorofluoromethane (CFC-11)	ug/kg	9.6 U
Trifluorotrichloroethane (Freon 113)	ug/kg	4.8 U
Vinyl chloride	ug/kg	9.6 U
SVOCs		
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	20000 U
2,4,5-Trichlorophenol	ug/kg	20000 U
2,4,6-Trichlorophenol	ug/kg	20000 U
2,4-Dichlorophenol	ug/kg	20000 U
2,4-Dimethylphenol	ug/kg	20000 U
2,4-Dinitrophenol	ug/kg	100000 U
2,4-Dinitrotoluene	ug/kg	20000 U
2,6-Dinitrotoluene	ug/kg	20000 U
2-Chloronaphthalene	ug/kg	20000 U
2-Chlorophenol	ug/kg	20000 U
2-Methylnaphthalene	ug/kg	20000 U
2-Methylphenol	ug/kg	20000 U
2-Nitroaniline	ug/kg	100000 U
2-Nitrophenol	ug/kg	20000 U
3,3'-Dichlorobenzidine	ug/kg	120000 U
3-Nitroaniline	ug/kg	100000 U
4,6-Dinitro-2-methylphenol	ug/kg	100000 U
4-Bromophenyl phenyl ether	ug/kg	20000 U
4-Chloro-3-methylphenol	ug/kg	20000 U
4-Chloroaniline	ug/kg	77000 U
4-Chlorophenyl phenyl ether	ug/kg	20000 U
4-Methylphenol	ug/kg	20000 U
4-Nitroaniline	ug/kg	100000 UJ
4-Nitrophenol	ug/kg	100000 U
Acenaphthene	ug/kg	20000 U
Acenaphthylene	ug/kg	20000 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		M-9
Sample ID:		SM9-01
Sample Depth(ft BGS):		0 - 2
Date Collected:	Units	08/19/02
Acetophenone	ug/kg	20000 U
Anthracene	ug/kg	20000 U
Atrazine	ug/kg	20000 U
Benzaldehyde	ug/kg	20000 U
Benzo(a)anthracene	ug/kg	20000 U
Benzo(a)pyrene	ug/kg	20000 U
Benzo(b)fluoranthene	ug/kg	20000 U
Benzo(g,h,i)perylene	ug/kg	20000 U
Benzo(k)fluoranthene	ug/kg	20000 U
Biphenyl	ug/kg	20000 U
bis(2-Chloroethoxy)methane	ug/kg	20000 U
bis(2-Chloroethyl)ether	ug/kg	20000 U
bis(2-Ethylhexyl)phthalate	ug/kg	2400 J
Butyl benzylphthalate	ug/kg	20000 UJ
Caprolactam	ug/kg	20000 U
Carbazole	ug/kg	20000 U
Chrysene	ug/kg	20000 U
Di-n-butylphthalate	ug/kg	20000 U
Di-n-octyl phthalate	ug/kg	20000 U
Dibenz(a,h)anthracene	ug/kg	20000 U
Dibenzofuran	ug/kg	20000 U
Diethyl phthalate	ug/kg	20000 U
Dimethyl phthalate	ug/kg	20000 U
Fluoranthene	ug/kg	2200 J
Fluorene	ug/kg	20000 U
Hexachlorobenzene	ug/kg	20000 U
Hexachlorobutadiene	ug/kg	20000 U
Hexachlorocyclopentadiene	ug/kg	20000 U
Hexachloroethane	ug/kg	5900 U
Indeno(1,2,3-cd)pyrene	ug/kg	20000 U
Isophorone	ug/kg	20000 U
N-Nitrosodi-n-propylamine	ug/kg	20000 U
N-Nitrosodiphenylamine	ug/kg	20000 U
Naphthalene	ug/kg	20000 U
Nitrobenzene	ug/kg	20000 U
Pentachlorophenol	ug/kg	200000 U
Phenanthrene	ug/kg	6600 J
Phenol	ug/kg	20000 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		M-9
Sample ID:		SM9-01
Sample Depth(ft BGS):		0 - 2
Date Collected:	Units	08/19/02
Pyrene	ug/kg	2800 J
Pests/PCBs		
Aroclor-1016 (PCB-1016)	ug/kg	39 U
Aroclor-1221 (PCB-1221)	ug/kg	39 U
Aroclor-1232 (PCB-1232)	ug/kg	39 U
Aroclor-1242 (PCB-1242)	ug/kg	39 U
Aroclor-1248 (PCB-1248)	ug/kg	39 U
Aroclor-1254 (PCB-1254)	ug/kg	63
Aroclor-1260 (PCB-1260)	ug/kg	39 U
Inorganics		
Antimony	ug/kg	2370 U
Arsenic	ug/kg	3500
Barium	ug/kg	23400
Beryllium	ug/kg	167
Cadmium	ug/kg	363 J
Chromium Total	ug/kg	48200
Cobalt	ug/kg	106000
Copper	ug/kg	17300
Lead	ug/kg	11900
Manganese	ug/kg	182000
Mercury	ug/kg	131
Nickel	ug/kg	13500
Selenium	ug/kg	593 U
Silver	ug/kg	145 J
Thallium	ug/kg	399 J
Vanadium	ug/kg	9420
Zinc	ug/kg	250000
Miscellaneous		
Total Solids	%	84.3

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		M-16
Sample ID:		MWM16-07
Sample Depth(ft BGS):		0 - 2
Date Collected:	Units	08/18/03
VOCs		
1,1,1-Trichloroethane	ug/kg	4.2 U
1,1,2,2-Tetrachloroethane	ug/kg	4.2 U
1,1,2-Trichloroethane	ug/kg	4.2 U
1,1-Dichloroethane	ug/kg	4.2 U
1,1-Dichloroethene	ug/kg	4.2 U
1,2,4-Trichlorobenzene	ug/kg	4.2 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	8.5 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	4.2 U
1,2-Dichlorobenzene	ug/kg	4.2 U
1,2-Dichloroethane	ug/kg	4.2 U
1,2-Dichloropropane	ug/kg	4.2 U
1,3-Dichlorobenzene	ug/kg	4.2 U
1,4-Dichlorobenzene	ug/kg	4.2 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	2.8 J
2-Hexanone	ug/kg	17 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	17 UJ
Acetone	ug/kg	13 J
Benzene	ug/kg	4.2 U
Bromodichloromethane	ug/kg	4.2 U
Bromoform	ug/kg	4.2 U
Bromomethane (Methyl Bromide)	ug/kg	8.5 UJ
Carbon disulfide	ug/kg	4.2 U
Carbon tetrachloride	ug/kg	4.2 U
Chlorobenzene	ug/kg	4.2 U
Chloroethane	ug/kg	8.5 UJ
Chloroform (Trichloromethane)	ug/kg	4.2 U
Chloromethane (Methyl Chloride)	ug/kg	8.5 U
cis-1,2-Dichloroethene	ug/kg	4.2 U
cis-1,3-Dichloropropene	ug/kg	4.2 U
Cyclohexane	ug/kg	8.5 U
Dibromochloromethane	ug/kg	4.2 U
Dichlorodifluoromethane (CFC-12)	ug/kg	8.5 U
Ethylbenzene	ug/kg	4.2 U
Isopropylbenzene	ug/kg	4.2 U
Methyl acetate	ug/kg	8.5 UJ
Methyl cyclohexane	ug/kg	0.57 J
Methyl Tert Butyl Ether	ug/kg	17 UJ

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	M-16 MWM16-07 0 - 2 08/18/03
Methylene chloride	ug/kg	4.2 U
Styrene	ug/kg	4.2 U
Tetrachloroethene	ug/kg	4.2 U
Toluene	ug/kg	0.57 J
Total Xylenes	ug/kg	8.5 U
trans-1,2-Dichloroethene	ug/kg	4.2 U
trans-1,3-Dichloropropene	ug/kg	4.2 U
Trichloroethene	ug/kg	4.2 U
Trichlorofluoromethane (CFC-11)	ug/kg	8.5 U
Trifluorotrichloroethane (Freon 113)	ug/kg	4.2 U
Vinyl chloride	ug/kg	8.5 U
SVOCs		
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	360 U
2,4,5-Trichlorophenol	ug/kg	360 U
2,4,6-Trichlorophenol	ug/kg	360 U
2,4-Dichlorophenol	ug/kg	360 U
2,4-Dimethylphenol	ug/kg	360 U
2,4-Dinitrophenol	ug/kg	1900 U
2,4-Dinitrotoluene	ug/kg	360 U
2,6-Dinitrotoluene	ug/kg	360 U
2-Chloronaphthalene	ug/kg	360 U
2-Chlorophenol	ug/kg	360 U
2-Methylnaphthalene	ug/kg	360 U
2-Methylphenol	ug/kg	360 U
2-Nitroaniline	ug/kg	1900 U
2-Nitrophenol	ug/kg	360 U
3,3'-Dichlorobenzidine	ug/kg	2200 U
3-Nitroaniline	ug/kg	1900 U
4,6-Dinitro-2-methylphenol	ug/kg	1900 U
4-Bromophenyl phenyl ether	ug/kg	360 U
4-Chloro-3-methylphenol	ug/kg	360 U
4-Chloroaniline	ug/kg	1400 U
4-Chlorophenyl phenyl ether	ug/kg	360 U
4-Methylphenol	ug/kg	360 U
4-Nitroaniline	ug/kg	1900 U
4-Nitrophenol	ug/kg	1900 U
Acenaphthene	ug/kg	360 U
Acenaphthylene	ug/kg	360 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	M-16 / MWM16-07 / 0 - 2 / 08/18/03
Acetophenone	ug/kg	360 U
Anthracene	ug/kg	360 U
Atrazine	ug/kg	360 U
Benzaldehyde	ug/kg	360 U
Benzo(a)anthracene	ug/kg	360 U
Benzo(a)pyrene	ug/kg	360 UJ
Benzo(b)fluoranthene	ug/kg	360 UJ
Benzo(g,h,i)perylene	ug/kg	57 J
Benzo(k)fluoranthene	ug/kg	360 UJ
Biphenyl	ug/kg	360 U
bis(2-Chloroethoxy)methane	ug/kg	360 U
bis(2-Chloroethyl)ether	ug/kg	360 U
bis(2-Ethylhexyl)phthalate	ug/kg	360 U
Butyl benzylphthalate	ug/kg	360 U
Caprolactam	ug/kg	360 U
Carbazole	ug/kg	360 U
Chrysene	ug/kg	360 U
Di-n-butylphthalate	ug/kg	360 U
Di-n-octyl phthalate	ug/kg	360 U
Dibenz(a,h)anthracene	ug/kg	360 UJ
Dibenzofuran	ug/kg	360 U
Diethyl phthalate	ug/kg	360 U
Dimethyl phthalate	ug/kg	360 U
Fluoranthene	ug/kg	43 J
Fluorene	ug/kg	360 U
Hexachlorobenzene	ug/kg	360 U
Hexachlorobutadiene	ug/kg	360 U
Hexachlorocyclopentadiene	ug/kg	360 U
Hexachloroethane	ug/kg	110 U
Indeno(1,2,3-cd)pyrene	ug/kg	39 J
Isophorone	ug/kg	360 U
N-Nitrosodi-n-propylamine	ug/kg	360 U
N-Nitrosodiphenylamine	ug/kg	360 U
Naphthalene	ug/kg	360 U
Nitrobenzene	ug/kg	360 U
Pentachlorophenol	ug/kg	3700 U
Phenanthrene	ug/kg	360 U
Phenol	ug/kg	360 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	M-16 MWM16-07 0 - 2 08/18/03
Pyrene	ug/kg	81 J
Pests/PCBs		
Aroclor-1016 (PCB-1016)	ug/kg	36 U
Aroclor-1221 (PCB-1221)	ug/kg	36 U
Aroclor-1232 (PCB-1232)	ug/kg	36 U
Aroclor-1242 (PCB-1242)	ug/kg	36 U
Aroclor-1248 (PCB-1248)	ug/kg	36 U
Aroclor-1254 (PCB-1254)	ug/kg	45
Aroclor-1260 (PCB-1260)	ug/kg	36 U
Inorganics		
Antimony	ug/kg	224 J
Arsenic	ug/kg	4130
Barium	ug/kg	44300 J
Beryllium	ug/kg	880 J
Cadmium	ug/kg	373 J
Chromium Total	ug/kg	13400 J
Cobalt	ug/kg	5710
Copper	ug/kg	25700 J
Lead	ug/kg	9000
Manganese	ug/kg	394000 J
Mercury	ug/kg	36.3 U
Nickel	ug/kg	15800
Selenium	ug/kg	551 U
Silver	ug/kg	551 U
Thallium	ug/kg	336 J
Vanadium	ug/kg	13700
Zinc	ug/kg	36800
Miscellaneous		
Total Solids	%	90.8

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		BP9-01	BP9-01	BP9-02	BP9-02	BP9-03	BP9-03	BP9-04	BP9-04	BP9-05	BP9-05	BP9-06
Sample Depth(ft BGS):		0 - 2	7 - 9	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2
Date Collected:	Units	04/28/03	04/28/03	04/28/03	04/29/03	04/29/03	04/29/03	04/30/03	04/30/03	04/29/03	04/29/03	04/28/03
VOCs												
1,1,1-Trichloroethane	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 U	4 UJ	4.1 UJ	4.6 U	4.5 U	4.9 U
1,1,2,2-Tetrachloroethane	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 UJ	4 U	4.1 U	4.6 U	4.5 UJ	4.9 U
1,1,2-Trichloroethane	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 U	4 U	4.1 U	4.6 U	4.5 U	4.9 U
1,1-Dichloroethane	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 U	4 U	4.1 U	4.6 U	4.5 U	4.9 U
1,1-Dichloroethene	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 U	4 U	4.1 U	4.6 U	4.5 U	4.9 U
1,2,4-Trichlorobenzene	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 UJ	4 U	4.1 U	4.6 U	4.5 UJ	4.9 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	9.4 U	8.4 U	8.5 U	8.3 U	8.7 U	8.5 UJ	7.9 U	8.3 U	9.2 U	9 UJ	9.9 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 UJ	4 U	4.1 U	4.6 U	4.5 U	4.9 U
1,2-Dichlorobenzene	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 UJ	4 U	4.1 U	4.6 U	4.5 UJ	4.9 U
1,2-Dichloroethane	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 U	4 U	4.1 U	4.6 U	4.5 U	4.9 U
1,2-Dichloropropane	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 U	4 U	4.1 U	4.6 U	4.5 U	4.9 U
1,3-Dichlorobenzene	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 UJ	4 U	4.1 U	4.6 U	4.5 UJ	4.9 U
1,4-Dichlorobenzene	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 UJ	4 U	4.1 U	4.6 U	4.5 UJ	4.9 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	19 UJ	17 UJ	17 UJ	17 UJ	17 UJ	17 UJ	16 UJ	17 UJ	18 UJ	18 UJ	20 UJ
2-Hexanone	ug/kg	19 UJ	17 UJ	17 UJ	17 U	17 U	17 UJ	16 UJ	17 UJ	18 U	18 U	20 UJ
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	19 UJ	17 UJ	17 UJ	17 U	2 J	17 U	16 UJ	17 UJ	18 U	18 U	20 UJ
Acetone	ug/kg	19 UJ	5.9 J	17 UJ	17 UJ	10 J	3.7 J	2.9 J	17 UJ	9.4 J	8.8 J	20 UJ
Benzene	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 U	4 U	4.1 U	4.6 U	4.5 U	4.9 U
Bromodichloromethane	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 U	4 U	4.1 U	4.6 U	4.5 U	4.9 U
Bromoform	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 UJ	4 U	4.1 U	4.6 U	4.5 U	4.9 U
Bromomethane (Methyl Bromide)	ug/kg	9.4 U	8.4 U	8.5 U	8.3 UJ	8.7 UJ	8.5 UJ	7.9 UJ	8.3 UJ	9.2 UJ	9 UJ	9.9 U
Carbon disulfide	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 U	4 U	4.1 U	4.6 U	4.5 U	4.9 U
Carbon tetrachloride	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 U	4 UJ	4.1 UJ	4.6 U	4.5 U	4.9 U
Chlorobenzene	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 UJ	4 U	4.1 U	4.6 U	4.5 U	4.9 U
Chloroethane	ug/kg	9.4 U	8.4 U	8.5 U	8.3 U	8.7 U	8.5 U	7.9 U	8.3 U	9.2 U	9 U	9.9 U
Chloroform (Trichloromethane)	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 U	4 U	4.1 U	4.6 U	4.5 U	4.9 U
Chloromethane (Methyl Chloride)	ug/kg	9.4 U	8.4 U	8.5 U	8.3 U	8.7 U	8.5 U	7.9 UJ	8.3 UJ	9.2 U	9 U	9.9 U
cis-1,2-Dichloroethene	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 U	4 U	4.1 U	4.6 U	4.5 U	4.9 U
cis-1,3-Dichloropropene	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 U	4 U	4.1 U	4.6 U	4.5 U	4.9 U
Cyclohexane	ug/kg	9.4 U	8.4 U	8.5 U	8.3 U	8.7 U	8.5 U	7.9 U	8.3 U	9.2 U	9 U	9.9 U
Dibromochloromethane	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 UJ	4 U	4.1 U	4.6 U	4.5 U	4.9 U
Dichlorodifluoromethane (CFC-12)	ug/kg	9.4 UJ	8.4 UJ	8.5 UJ	8.3 UJ	8.7 UJ	8.5 UJ	7.9 UJ	8.3 UJ	9.2 UJ	9 UJ	9.9 UJ
Ethylbenzene	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 UJ	4 U	4.1 U	4.6 U	4.5 U	4.9 U
Isopropylbenzene	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 UJ	4 U	4.1 U	4.6 U	4.5 U	4.9 U
Methyl acetate	ug/kg	9.4 U	8.4 U	8.5 U	8.3 U	8.7 U	8.5 U	7.9 U	8.3 U	9.2 U	9 U	9.9 U
Methyl cyclohexane	ug/kg	9.4 U	8.4 U	8.5 U	8.3 U	8.7 U	8.5 U	7.9 U	8.3 U	9.2 U	9 U	9.9 U
Methyl Tert Butyl Ether	ug/kg	19 U	17 U	17 U	17 U	17 U	17 U	16 U	17 U	18 U	18 U	20 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		BP9-01	BP9-01	BP9-02	BP9-02	BP9-03	BP9-03	BP9-04	BP9-04	BP9-05	BP9-05	BP9-06
Sample Depth(ft BGS):		0 - 2	7 - 9	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2
Date Collected:	Units	04/28/03	04/28/03	04/28/03	04/29/03	04/29/03	04/29/03	04/30/03	04/30/03	04/29/03	04/29/03	04/28/03
Methylene chloride	ug/kg	6.4	12	5	5.5	4.3 U	3.8 J	4 U	4.1 U	4.6 U	8.9	6.7
Styrene	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 UJ	4 U	4.1 U	4.6 U	4.5 U	4.9 U
Tetrachloroethene	ug/kg	4.7 U	4.2 U	0.49 J	4.1 U	4.3 U	4.2 UJ	4 U	4.1 U	4.6 U	4.5 U	4.9 U
Toluene	ug/kg	0.36 J	1.3 J	1.1 J	0.65 J	2.5 J	0.94 J	0.6 J	4.1 U	1.2 J	1.2 J	4.9 U
Total Xylenes	ug/kg	9.4 U	8.4 U	8.5 U	8.3 U	8.7 U	8.5 UJ	7.9 U	8.3 U	9.2 U	9 U	9.9 U
trans-1,2-Dichloroethene	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 U	4 U	4.1 U	4.6 U	4.5 U	4.9 U
trans-1,3-Dichloropropene	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 UJ	4 U	4.1 U	4.6 U	4.5 U	4.9 U
Trichloroethene	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 U	4 U	4.1 U	4.6 U	4.5 U	4.9 U
Trichlorofluoromethane (CFC-11)	ug/kg	9.4 U	8.4 U	8.5 U	8.3 U	8.7 U	8.5 U	7.9 UJ	8.3 UJ	9.2 U	9 U	9.9 U
Trifluorotrichloroethane (Freon 113)	ug/kg	4.7 U	4.2 U	4.3 U	4.1 U	4.3 U	4.2 U	4 U	4.1 U	4.6 U	4.5 U	4.9 U
Vinyl chloride	ug/kg	9.4 U	8.4 U	8.5 U	8.3 U	8.7 U	8.5 U	7.9 U	8.3 U	9.2 U	9 U	9.9 U
SVOCs												
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
2,4,5-Trichlorophenol	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
2,4,6-Trichlorophenol	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
2,4-Dichlorophenol	ug/kg	380 U	370 U	1500 U	R	R	R	R	R	R	R	3600 U
2,4-Dimethylphenol	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
2,4-Dinitrophenol	ug/kg	1900 U	1900 U	7500 U	1900 U	1900 U	1900 U	7700 U	1900 U	19000 U	2000 U	18000 U
2,4-Dinitrotoluene	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
2,6-Dinitrotoluene	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
2-Chloronaphthalene	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
2-Chlorophenol	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
2-Methylnaphthalene	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	740 J	68 J	340 J
2-Methylphenol	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
2-Nitroaniline	ug/kg	1900 U	1900 U	7500 U	1900 U	1900 U	1900 U	7700 U	1900 U	19000 U	2000 U	18000 U
2-Nitrophenol	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
3,3'-Dichlorobenzidine	ug/kg	2300 U	2200 U	8900 U	2200 U	2200 U	2200 U	9100 U	2200 U	23000 U	2400 U	22000 U
3-Nitroaniline	ug/kg	1900 U	1900 U	7500 U	1900 U	1900 U	1900 U	7700 U	1900 U	19000 U	2000 U	18000 U
4,6-Dinitro-2-methylphenol	ug/kg	1900 U	1900 U	7500 U	1900 U	1900 U	1900 U	7700 U	1900 U	19000 U	2000 U	18000 U
4-Bromophenyl phenyl ether	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
4-Chloro-3-methylphenol	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
4-Chloroaniline	ug/kg	1500 U	1400 U	5800 U	1500 U	1400 U	1400 U	5900 U	1500 U	15000 U	1500 U	14000 U
4-Chlorophenyl phenyl ether	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
4-Methylphenol	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
4-Nitroaniline	ug/kg	1900 U	1900 U	7500 U	1900 U	1900 U	1900 U	7700 U	1900 U	19000 U	2000 U	18000 U
4-Nitrophenol	ug/kg	1900 U	1900 U	7500 U	1900 U	1900 U	1900 U	7700 U	1900 U	19000 U	2000 U	18000 U
Acenaphthene	ug/kg	44 J	370 U	200 J	370 U	370 U	370 U	65 J	370 U	610 J	390 U	1700 J
Acenaphthylene	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		BP9-01	BP9-01	BP9-02	BP9-02	BP9-03	BP9-03	BP9-04	BP9-04	BP9-05	BP9-05	BP9-06
Sample Depth(ft BGS):		0 - 2	7 - 9	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2
Date Collected:	Units	04/28/03	04/28/03	04/28/03	04/29/03	04/29/03	04/29/03	04/30/03	04/30/03	04/29/03	04/29/03	04/28/03
Acetophenone	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
Anthracene	ug/kg	110 J	370 U	310 J	370 U	370 U	370 U	380 J	370 U	900 J	69 J	2600 J
Atrazine	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
Benzaldehyde	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
Benzo(a)anthracene	ug/kg	390	370 U	1600	370 U	370 U	370 U	990 J	370 U	840 J	390 U	6200
Benzo(a)pyrene	ug/kg	420	370 U	1300 J	370 U	370 U	370 U	760 J	370 U	220 J	390 U	6300
Benzo(b)fluoranthene	ug/kg	580	370 U	1700	370 U	370 U	370 U	910 J	370 U	230 J	390 U	8700
Benzo(g,h,i)perylene	ug/kg	280 J	370 U	590 J	370 U	370 U	370 U	450 J	370 U	3800 U	390 U	3600
Benzo(k)fluoranthene	ug/kg	250 J	370 U	1000 J	370 U	370 U	370 U	600 J	370 U	3800 U	390 U	3600
Biphenyl	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	920 J	84 J	3600 U
bis(2-Chloroethoxy)methane	ug/kg	380 U	370 U	1500 U	R	R	R	R	R	R	R	3600 U
bis(2-Chloroethyl)ether	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	R	R	3800 U	390 U	3600 U
bis(2-Ethylhexyl)phthalate	ug/kg	65 J	30 J	770 J	370 U	370 U	370 U	680	370 U	3800 U	390 U	640 J
Butyl benzylphthalate	ug/kg	37 J	370 U	180 J	R	R	R	140 J	370 U	R	R	2600 J
Caprolactam	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
Carbazole	ug/kg	59 J	370 U	140 J	370 U	370 U	370 U	350 J	370 U	3800 U	390 U	1600 J
Chrysene	ug/kg	440	370 U	1900	370 U	370 U	370 U	940 J	370 U	280 J	390 U	6800
Di-n-butylphthalate	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
Di-n-octyl phthalate	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
Dibenz(a,h)anthracene	ug/kg	76 J	370 U	170 J	370 U	370 U	370 U	130 J	370 U	3800 U	390 U	1100 J
Dibenzofuran	ug/kg	27 J	370 U	120 J	370 U	370 U	370 U	1500 U	370 U	520 J	390 U	880 J
Diethyl phthalate	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
Dimethyl phthalate	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
Fluoranthene	ug/kg	730	370 U	2900	370 U	370 U	370 U	1400 J	370 U	1100 J	31 J	15000
Fluorene	ug/kg	37 J	370 U	130 J	370 U	370 U	370 U	370 J	370 U	1600 J	390 U	1400 J
Hexachlorobenzene	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
Hexachlorobutadiene	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	R	R	3800 U	390 U	3600 U
Hexachlorocyclopentadiene	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
Hexachloroethane	ug/kg	110 U	110 U	440 U	110 U	110 U	110 U	R	R	1100 U	120 U	1100 U
Indeno(1,2,3-cd)pyrene	ug/kg	260 J	370 U	570 J	370 U	370 U	370 U	440 J	370 U	3800 U	390 U	3500 J
Isophorone	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
N-Nitrosodi-n-propylamine	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
N-Nitrosodiphenylamine	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U
Naphthalene	ug/kg	380 U	370 U	84 J	R	R	R	R	R	2600 J	45 J	1600 J
Nitrobenzene	ug/kg	380 U	370 U	1500 U	R	R	R	R	R	R	R	3600 U
Pentachlorophenol	ug/kg	3900 U	3800 U	15000 U	3800 U	3800 U	3800 U	15000 U	3800 U	39000 U	4000 U	37000 U
Phenanthrene	ug/kg	460	370 U	1300 J	370 U	370 U	370 U	580 J	370 U	2300 J	53 J	11000
Phenol	ug/kg	380 U	370 U	1500 U	370 U	370 U	370 U	1500 U	370 U	3800 U	390 U	3600 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		BP9-01	BP9-01	BP9-02	BP9-02	BP9-03	BP9-03	BP9-04	BP9-04	BP9-05	BP9-05	BP9-06
Sample Depth(ft BGS):		0 - 2	7 - 9	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2
Date Collected:	Units	04/28/03	04/28/03	04/28/03	04/29/03	04/29/03	04/29/03	04/30/03	04/30/03	04/29/03	04/29/03	04/28/03
Pyrene	ug/kg	630	370 U	4700	370 U	370 U	370 U	1200 J	370 U	760 J	28 J	12000
Pests/PCBs												
Aroclor-1016 (PCB-1016)	ug/kg	38 U	37 U	370 U	37 U	37 U	37 U	370 U	37 U	38 U	39 U	360 U
Aroclor-1221 (PCB-1221)	ug/kg	38 U	37 U	370 U	37 U	37 U	37 U	370 U	37 U	38 U	39 U	360 U
Aroclor-1232 (PCB-1232)	ug/kg	38 U	37 U	370 U	37 U	37 U	37 U	370 U	37 U	38 U	39 U	360 U
Aroclor-1242 (PCB-1242)	ug/kg	38 U	37 U	370 U	37 U	37 U	37 U	370 U	37 U	480	28 J	360 U
Aroclor-1248 (PCB-1248)	ug/kg	410	37 U	2400	37 U	37 U	37 U	1900	37 U	38 U	39 U	1800
Aroclor-1254 (PCB-1254)	ug/kg	38 U	37 U	370 U	37 U	37 U	37 U	370 U	37 U	38 U	39 U	360 U
Aroclor-1260 (PCB-1260)	ug/kg	98	37 U	280 J	37 U	37 U	37 U	370 U	37 U	38	39 U	320 J
Inorganics												
Antimony	ug/kg	2270 U	218 J	237 J	317 J	391 J	399 J	R	R	658 J	439 J	193 J
Arsenic	ug/kg	4090	6810	4050	4070	4120	5020	2130	3550	4500	4460	2900
Barium	ug/kg	30100	22300	72700	36800	40600	35000	58700	32700	18900	55600	51800
Beryllium	ug/kg	114 U	52.5 J	111 U	102 J	105 J	120	187	320	114 U	209	108 U
Cadmium	ug/kg	569 U	557 U	52.6 J	288 J	281 J	322 J	162 J	560 U	610	398 J	53.5 J
Chromium Total	ug/kg	7520	8810	9180	11900	11700	10700	4980	9820	30200	16600	7060
Cobalt	ug/kg	3160	3670	3370	6350	5510	6210	1820 J	4590 J	5140	7650	2300
Copper	ug/kg	10200	8650	11200	12900	12400	12300	5630	10500	23900	16600	8930
Lead	ug/kg	9130	4760	18800	5220	6130	5410	11600 J	4450	15900	8030	12400
Manganese	ug/kg	186000	220000	214000	350000	295000	274000	152000	238000	338000	318000	156000
Mercury	ug/kg	18.9 J	36.8 U	44	37 U	30.4 J	19.1 J	71.2	37 U	28.3 J	39.3 U	27.9 J
Nickel	ug/kg	9580	12400	9630	16700	13500	15400	5360	13300	16300	22000	6400
Selenium	ug/kg	569 U	557 U	554 U	422 J	460 J	487 J	566 U	560 U	937	703	542 U
Silver	ug/kg	569 U	557 U	554 U	561 U	557 U	557 U	566 U	560 U	570 U	595 U	542 U
Thallium	ug/kg	772 J	647 J	687 J	877 J	921 J	776 J	1130 UJ	1120 UJ	697 J	918 J	572 J
Vanadium	ug/kg	10100	12200	10600	17100	15900	15000	5470	14200	13100	22400	8110
Zinc	ug/kg	32000 J	27100 J	67800 J	34700	35100	33800	43400 J	29400 J	44800	45800	55100 J
Miscellaneous												
Total Solids	%	88	89.8	90.3	89.2	89.8	89.7	88.3	89.3	87.7	84	92.3

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SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		BP9-06	BP9-07	BP9-07	BP9-08	BP9-09	BP9-09	BP9-10	BP9-10	BP9-10	BP9-11	BP9-11
Sample Depth(ft BGS):		8 - 10	0 - 2	8 - 10	0 - 2	0 - 2	2 - 4	0 - 2	8 - 10	13 - 15	0 - 2	8 - 10
Date Collected:	Units	04/28/03	04/28/03	04/28/03	04/28/03	04/29/03	04/29/03	05/08/03	05/08/03	05/08/03	08/23/03	08/23/03
VOCs												
1,1,1-Trichloroethane	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 UJ	4.6 UJ	4.9 U	4.8 U	4.4 U	NA	NA
1,1,2,2-Tetrachloroethane	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
1,1,2-Trichloroethane	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
1,1-Dichloroethane	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
1,1-Dichloroethene	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
1,2,4-Trichlorobenzene	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	7.8 U	9.2 U	8.3 U	9.4 U	8.5 U	9.2 U	9.8 U	9.7 U	8.9 U	NA	NA
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
1,2-Dichlorobenzene	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
1,2-Dichloroethane	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
1,2-Dichloropropane	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
1,3-Dichlorobenzene	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
1,4-Dichlorobenzene	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
2-Butanone (Methyl Ethyl Ketone)	ug/kg	16 UJ	18 UJ	17 UJ	19 U	17 UJ	18 UJ	20 UJ	1.5 J	18 UJ	NA	NA
2-Hexanone	ug/kg	16 UJ	18 UJ	17 UJ	19 U	17 UJ	18 UJ	20 U	19 U	18 U	NA	NA
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	16 UJ	18 UJ	17 UJ	19 U	17 UJ	18 UJ	20 U	19 U	18 U	NA	NA
Acetone	ug/kg	3.3 J	18 UJ	7.7 J	19 U	17 UJ	18 UJ	20 UJ	29 J	7.8 J	NA	NA
Benzene	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	0.41 J	4.4 U	NA	NA
Bromodichloromethane	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
Bromoform	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
Bromomethane (Methyl Bromide)	ug/kg	7.8 U	9.2 U	8.3 U	9.4 U	8.5 UJ	9.2 UJ	9.8 UJ	9.7 UJ	8.9 UJ	NA	NA
Carbon disulfide	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
Carbon tetrachloride	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 UJ	4.6 UJ	4.9 U	4.8 U	4.4 U	NA	NA
Chlorobenzene	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
Chloroethane	ug/kg	7.8 U	9.2 U	8.3 U	9.4 U	8.5 U	9.2 U	9.8 U	9.7 U	8.9 U	NA	NA
Chloroform (Trichloromethane)	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
Chloromethane (Methyl Chloride)	ug/kg	7.8 U	9.2 U	8.3 U	9.4 UJ	8.5 U	9.2 U	9.8 U	9.7 U	8.9 U	NA	NA
cis-1,2-Dichloroethene	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
cis-1,3-Dichloropropene	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
Cyclohexane	ug/kg	7.8 U	9.2 U	0.84 J	9.4 U	8.5 U	9.2 U	9.8 U	0.7 J	8.9 U	NA	NA
Dibromochloromethane	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
Dichlorodifluoromethane (CFC-12)	ug/kg	7.8 UJ	9.2 UJ	8.3 UJ	9.4 UJ	8.5 UJ	9.2 UJ	9.8 U	9.7 U	8.9 U	NA	NA
Ethylbenzene	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
Isopropylbenzene	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
Methyl acetate	ug/kg	7.8 U	9.2 U	8.3 U	9.4 U	8.5 U	9.2 U	9.8 U	9.7 U	8.9 U	NA	NA
Methyl cyclohexane	ug/kg	7.8 U	9.2 U	1.2 J	9.4 U	8.5 U	9.2 U	9.8 U	0.62 J	8.9 U	NA	NA
Methyl Tert Butyl Ether	ug/kg	16 U	18 U	17 U	19 U	17 U	18 U	20 U	19 U	18 U	NA	NA

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		BP9-06	BP9-07	BP9-07	BP9-08	BP9-09	BP9-09	BP9-10	BP9-10	BP9-10	BP9-11	BP9-11
Sample Depth(ft BGS):		8 - 10	0 - 2	8 - 10	0 - 2	0 - 2	2 - 4	0 - 2	8 - 10	13 - 15	0 - 2	8 - 10
Date Collected:	Units	04/28/03	04/28/03	04/28/03	04/28/03	04/29/03	04/29/03	05/08/03	05/08/03	05/08/03	08/23/03	08/23/03
Methylene chloride	ug/kg	8.9	4.6 U	14	2.3 J	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
Styrene	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
Tetrachloroethene	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	0.56 J	4.4 U	NA	NA
Toluene	ug/kg	1.1 J	4.6 U	1.9 J	1.4 J	0.68 J	4.6 U	4.9 U	0.94 J	4.4 U	NA	NA
Total Xylenes	ug/kg	7.8 U	9.2 U	8.3 U	1.3 J	8.5 U	9.2 U	9.8 U	9.7 U	8.9 U	NA	NA
trans-1,2-Dichloroethene	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
trans-1,3-Dichloropropene	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
Trichloroethene	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
Trichlorofluoromethane (CFC-11)	ug/kg	7.8 U	9.2 U	8.3 U	9.4 U	8.5 UJ	9.2 UJ	9.8 U	9.7 U	8.9 U	NA	NA
Trifluorotrichloroethane (Freon 113)	ug/kg	3.9 U	4.6 U	4.1 U	4.7 U	4.2 U	4.6 U	4.9 U	4.8 U	4.4 U	NA	NA
Vinyl chloride	ug/kg	7.8 U	9.2 U	8.3 U	9.4 U	8.5 U	9.2 U	9.8 U	9.7 U	8.9 U	NA	NA
SVOCs												
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
2,4,5-Trichlorophenol	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
2,4,6-Trichlorophenol	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
2,4-Dichlorophenol	ug/kg	370 U	7400 U	370 U	18000 U	R	R	1500 U	390 U	380 U	NA	NA
2,4-Dimethylphenol	ug/kg	370 U	7400 U	370 U	18000 U	720 U	140 J	1500 U	390 U	380 U	NA	NA
2,4-Dinitrophenol	ug/kg	1900 U	38000 U	1900 U	94000 U	3700 U	1900 U	7800 U	2000 U	1900 U	NA	NA
2,4-Dinitrotoluene	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
2,6-Dinitrotoluene	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
2-Chloronaphthalene	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
2-Chlorophenol	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
2-Methylnaphthalene	ug/kg	370 U	7400 U	370 U	1000 J	110 J	72 J	430 J	390 U	380 U	NA	NA
2-Methylphenol	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
2-Nitroaniline	ug/kg	1900 U	38000 U	1900 U	94000 U	3700 U	1900 U	7800 U	2000 U	1900 U	NA	NA
2-Nitrophenol	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
3,3'-Dichlorobenzidine	ug/kg	2200 U	45000 U	2200 U	110000 U	4400 U	2200 U	9200 U	2300 U	2300 U	NA	NA
3-Nitroaniline	ug/kg	1900 U	38000 U	1900 U	94000 U	3700 U	1900 U	7800 U	2000 U	1900 U	NA	NA
4,6-Dinitro-2-methylphenol	ug/kg	1900 U	38000 U	1900 U	94000 U	3700 U	1900 U	7800 U	2000 U	1900 U	NA	NA
4-Bromophenyl phenyl ether	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
4-Chloro-3-methylphenol	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
4-Chloroaniline	ug/kg	1400 U	29000 U	1500 U	72000 U	2800 U	1400 U	6000 U	1500 U	1500 U	NA	NA
4-Chlorophenyl phenyl ether	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
4-Methylphenol	ug/kg	370 U	7400 U	370 U	18000 U	720 U	220 J	1500 U	390 U	380 U	NA	NA
4-Nitroaniline	ug/kg	1900 U	38000 U	1900 U	94000 U	3700 U	1900 U	7800 U	2000 U	1900 U	NA	NA
4-Nitrophenol	ug/kg	1900 U	38000 U	1900 U	94000 U	3700 U	1900 U	7800 U	2000 U	1900 U	NA	NA
Acenaphthene	ug/kg	370 U	2300 J	370 U	8000 J	34 J	67 J	230 J	39 J	380 U	NA	NA
Acenaphthylene	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		BP9-06	BP9-07	BP9-07	BP9-08	BP9-09	BP9-09	BP9-10	BP9-10	BP9-10	BP9-11	BP9-11
Sample Depth(ft BGS):		8 - 10	0 - 2	8 - 10	0 - 2	0 - 2	2 - 4	0 - 2	8 - 10	13 - 15	0 - 2	8 - 10
Date Collected:	Units	04/28/03	04/28/03	04/28/03	04/28/03	04/29/03	04/29/03	05/08/03	05/08/03	05/08/03	08/23/03	08/23/03
Acetophenone	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
Anthracene	ug/kg	370 U	6500 J	370 U	7700 J	190 J	180 J	580 J	80 J	380 U	NA	NA
Atrazine	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
Benzaldehyde	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
Benzo(a)anthracene	ug/kg	370 U	13000	370 U	15000 J	440 J	430	2200	180 J	380 U	NA	NA
Benzo(a)pyrene	ug/kg	370 U	11000	18 J	12000 J	360 J	430	2100	190 J	380 U	61 J	360 U
Benzo(b)fluoranthene	ug/kg	370 U	15000	22 J	17000 J	420 J	560	2500	190 J	380 U	NA	NA
Benzo(g,h,i)perylene	ug/kg	370 U	5700 J	19 J	7700 J	230 J	230 J	1300 J	140 J	380 U	NA	NA
Benzo(k)fluoranthene	ug/kg	370 U	6500 J	370 U	11000 J	230 J	240 J	1700	130 J	380 U	NA	NA
Biphenyl	ug/kg	370 U	7400 U	370 U	18000 U	720 U	79 J	1500 U	390 U	380 U	NA	NA
bis(2-Chloroethoxy)methane	ug/kg	370 U	7400 U	370 U	18000 U	R	R	1500 U	390 U	380 U	NA	NA
bis(2-Chloroethyl)ether	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
bis(2-Ethylhexyl)phthalate	ug/kg	370 U	450 J	34 J	870 J	720 U	370 U	630 J	64 J	380 U	NA	NA
Butyl benzylphthalate	ug/kg	370 U	7400 U	370 U	18000 U	R	R	110 J	390 U	380 U	NA	NA
Caprolactam	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
Carbazole	ug/kg	370 U	920 J	370 U	1900 J	170 J	150 J	330 J	46 J	380 U	NA	NA
Chrysene	ug/kg	370 U	13000	28 J	16000 J	400 J	460	2100	170 J	380 U	NA	NA
Di-n-butylphthalate	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
Di-n-octyl phthalate	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
Dibenz(a,h)anthracene	ug/kg	370 U	1800 J	370 U	2500 J	66 J	74 J	430 J	41 J	380 U	NA	NA
Dibenzofuran	ug/kg	370 U	1700 J	370 U	9400 J	720 U	32 J	170 J	20 J	380 U	NA	NA
Diethyl phthalate	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
Dimethyl phthalate	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
Fluoranthene	ug/kg	370 U	32000	46 J	46000	700 J	850	3200	370 J	380 U	NA	NA
Fluorene	ug/kg	370 U	2600 J	370 U	5500 J	180 J	130 J	250 J	38 J	380 U	NA	NA
Hexachlorobenzene	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
Hexachlorobutadiene	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
Hexachlorocyclopentadiene	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
Hexachloroethane	ug/kg	110 U	2200 U	110 U	5500 U	220 U	110 U	460 U	120 U	110 U	NA	NA
Indeno(1,2,3-cd)pyrene	ug/kg	370 U	5600 J	370 U	7500 J	220 J	220 J	1200 J	130 J	380 U	NA	NA
Isophorone	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
N-Nitrosodi-n-propylamine	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
N-Nitrosodiphenylamine	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA
Naphthalene	ug/kg	370 U	7400 U	370 U	1600 J	R	38 J	1100 J	390 U	380 U	NA	NA
Nitrobenzene	ug/kg	370 U	7400 U	370 U	18000 U	R	R	1500 U	390 U	380 U	NA	NA
Pentachlorophenol	ug/kg	3800 U	76000 U	3800 U	190000 U	7400 U	3800 U	16000 U	4000 U	3900 U	NA	NA
Phenanthrene	ug/kg	370 U	25000	47 J	64000	330 J	580	2100	290 J	380 U	NA	NA
Phenol	ug/kg	370 U	7400 U	370 U	18000 U	720 U	370 U	1500 U	390 U	380 U	NA	NA

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		BP9-06	BP9-07	BP9-07	BP9-08	BP9-09	BP9-09	BP9-10	BP9-10	BP9-10	BP9-11	BP9-11
Sample Depth(ft BGS):		8 - 10	0 - 2	8 - 10	0 - 2	0 - 2	2 - 4	0 - 2	8 - 10	13 - 15	0 - 2	8 - 10
Date Collected:	Units	04/28/03	04/28/03	04/28/03	04/28/03	04/29/03	04/29/03	05/08/03	05/08/03	05/08/03	08/23/03	08/23/03
Pyrene	ug/kg	370 U	24000	39 J	34000	510 J	680	3600	300 J	380 U	NA	NA
Pests/PCBs												
Aroclor-1016 (PCB-1016)	ug/kg	37 U	370 U	37 U	730 U	360 U	370 U	380 U	77 U	38 U	NA	NA
Aroclor-1221 (PCB-1221)	ug/kg	37 U	370 U	37 U	730 U	360 U	370 U	380 U	77 U	38 U	NA	NA
Aroclor-1232 (PCB-1232)	ug/kg	37 U	370 U	37 U	730 U	360 U	370 U	380 U	77 U	38 U	NA	NA
Aroclor-1242 (PCB-1242)	ug/kg	37 U	370 U	37 U	730 U	360 U	370 U	380 U	77 U	38 U	NA	NA
Aroclor-1248 (PCB-1248)	ug/kg	37 U	1500	37 U	7600	1200	1100	4400	490	38 U	NA	NA
Aroclor-1254 (PCB-1254)	ug/kg	37 U	370 U	37 U	730 U	360 U	370 U	380 U	77 U	38 U	NA	NA
Aroclor-1260 (PCB-1260)	ug/kg	37 U	260 J	37 U	730	360 UJ	370 UJ	340 J	74 J	38 U	NA	NA
Inorganics												
Antimony	ug/kg	197 J	592 J	R	220 J	470 J	521 J	R	R	R	NA	NA
Arsenic	ug/kg	3370	6020	3140	3550	3580	3450	4120	4010	4480	NA	NA
Barium	ug/kg	28000	101000	20300	77600	76900	44900	132000	35300	26800	NA	NA
Beryllium	ug/kg	61.9 J	134	112 U	111 U	109 U	111 U	189	209	287	NA	NA
Cadmium	ug/kg	555 U	91.3 J	560 U	172 J	329 J	417 J	505 J	275 J	573 J	NA	NA
Chromium Total	ug/kg	9590	12900	8550	10100	10600	8140	10300	8840	10900	NA	NA
Cobalt	ug/kg	3560	3780	3480	2110	3660	2440	3640 J	3710 J	5640 J	NA	NA
Copper	ug/kg	9080	140000	8530	11800	11400	10100	16400	16500	16500	NA	NA
Lead	ug/kg	4730	44900	5010	20600	17000	20300	34500	27300	6220	NA	NA
Manganese	ug/kg	194000	253000	206000	159000	198000	173000	222000	297000	231000 J	NA	NA
Mercury	ug/kg	36.6 U	68.6	37 U	63.3	25.4 J	36.6 U	29.7 J	38.6 U	37.6 U	NA	NA
Nickel	ug/kg	11600	23200	10000	6460	9180	7440	9810 J	10000 J	18400 J	NA	NA
Selenium	ug/kg	555 U	562 U	560 U	553 U	321 J	276 J	576 U	584 U	914	NA	NA
Silver	ug/kg	555 U	562 U	560 U	553 U	544 U	554 U	576 U	584 U	570 U	NA	NA
Thallium	ug/kg	766 J	799 J	764 J	534 J	624 J	727 J	1150 UJ	1170 UJ	429 J	NA	NA
Vanadium	ug/kg	14100	11900	10600	7530	10400	8430	10100	10300	17500	NA	NA
Zinc	ug/kg	31600 J	87200 J	22700 J	67900 J	70700	75000	103000	43400	48200 J	NA	NA
Miscellaneous												
Total Solids	%	90.1	88.9	89.2	90.4	91.9	90.2	86.8	85.6	87.8	91.5	90.4

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		BP9-12	BP9-12	BP9-13	BP9-13	MWP9-01	MWP9-01	MWP9-02	MWP9-02	MWP9-03	MWP9-03
Sample Depth(ft BGS):		0 - 2	8 - 10	0 - 2	6 - 8	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10
Date Collected:	Units	08/23/03	08/23/03	08/23/03	08/23/03	04/28/03	04/28/03	04/29/03	04/29/03	04/29/03	04/29/03
VOCs											
1,1,1-Trichloroethane	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 UJ	4.3 U	4.6 U	4.9 U
1,1,2,2-Tetrachloroethane	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
1,1,2-Trichloroethane	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
1,1-Dichloroethane	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
1,1-Dichloroethene	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
1,2,4-Trichlorobenzene	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	NA	NA	NA	NA	9.7 U	9.4 U	9.2 U	8.5 U	9.2 U	9.8 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
1,2-Dichlorobenzene	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
1,2-Dichloroethane	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
1,2-Dichloropropane	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
1,3-Dichlorobenzene	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	0.6 J	4.6 U	4.9 U
1,4-Dichlorobenzene	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	NA	NA	NA	NA	8.9 J	19 UJ	18 UJ	17 UJ	18 UJ	20 UJ
2-Hexanone	ug/kg	NA	NA	NA	NA	19 UJ	19 UJ	18 UJ	17 U	18 UJ	20 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	NA	NA	NA	NA	19 UJ	0.9 J	18 UJ	17 U	18 U	20 U
Acetone	ug/kg	NA	NA	NA	NA	37 J	17 J	18 UJ	6 J	18 UJ	14 J
Benzene	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
Bromodichloromethane	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
Bromoform	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
Bromomethane (Methyl Bromide)	ug/kg	NA	NA	NA	NA	9.7 U	9.4 U	9.2 UJ	8.5 UJ	9.2 U	9.8 UJ
Carbon disulfide	ug/kg	NA	NA	NA	NA	11	3.2 J	4.6 U	4.3 U	4.6 U	4.9 U
Carbon tetrachloride	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 UJ	4.3 U	4.6 U	4.9 U
Chlorobenzene	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
Chloroethane	ug/kg	NA	NA	NA	NA	9.7 U	9.4 U	9.2 U	8.5 U	9.2 U	9.8 U
Chloroform (Trichloromethane)	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
Chloromethane (Methyl Chloride)	ug/kg	NA	NA	NA	NA	9.7 U	9.4 U	9.2 U	8.5 U	9.2 U	9.8 U
cis-1,2-Dichloroethene	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
cis-1,3-Dichloropropene	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
Cyclohexane	ug/kg	NA	NA	NA	NA	9.7 U	9.4 U	9.2 U	8.5 U	9.2 U	9.8 U
Dibromochloromethane	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
Dichlorodifluoromethane (CFC-12)	ug/kg	NA	NA	NA	NA	9.7 UJ	9.4 UJ	9.2 UJ	8.5 UJ	9.2 UJ	9.8 UJ
Ethylbenzene	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
Isopropylbenzene	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
Methyl acetate	ug/kg	NA	NA	NA	NA	9.7 U	9.4 U	9.2 U	8.5 U	9.2 U	9.8 U
Methyl cyclohexane	ug/kg	NA	NA	NA	NA	9.7 U	0.73 J	9.2 U	8.5 U	9.2 U	9.8 U
Methyl Tert Butyl Ether	ug/kg	NA	NA	NA	NA	19 U	19 U	18 U	17 U	18 U	20 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		BP9-12	BP9-12	BP9-13	BP9-13	MWP9-01	MWP9-01	MWP9-02	MWP9-02	MWP9-03	MWP9-03
Sample Depth(ft BGS):		0 - 2	8 - 10	0 - 2	6 - 8	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10
Date Collected:	Units	08/23/03	08/23/03	08/23/03	08/23/03	04/28/03	04/28/03	04/29/03	04/29/03	04/29/03	04/29/03
Methylene chloride	ug/kg	NA	NA	NA	NA	12	6.8	4.6 U	3.3 J	5.3	3.2 J
Styrene	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
Tetrachloroethene	ug/kg	NA	NA	NA	NA	0.54 J	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
Toluene	ug/kg	NA	NA	NA	NA	3.1 J	0.95 J	1.1 J	1.2 J	1 J	1.3 J
Total Xylenes	ug/kg	NA	NA	NA	NA	9.7 U	9.4 U	9.2 U	8.5 U	9.2 U	9.8 U
trans-1,2-Dichloroethene	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
trans-1,3-Dichloropropene	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
Trichloroethene	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
Trichlorofluoromethane (CFC-11)	ug/kg	NA	NA	NA	NA	9.7 U	9.4 U	9.2 UJ	8.5 U	9.2 U	9.8 U
Trifluorotrichloroethane (Freon 113)	ug/kg	NA	NA	NA	NA	4.8 U	4.7 U	4.6 U	4.3 U	4.6 U	4.9 U
Vinyl chloride	ug/kg	NA	NA	NA	NA	9.7 U	9.4 U	9.2 U	8.5 U	9.2 U	9.8 U
SVOCs											
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
2,4,5-Trichlorophenol	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
2,4,6-Trichlorophenol	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
2,4-Dichlorophenol	ug/kg	NA	NA	NA	NA	7400 U	370 U	R	R	R	R
2,4-Dimethylphenol	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
2,4-Dinitrophenol	ug/kg	NA	NA	NA	NA	38000 U	1900 U	13000 U	1900 U	1900 U	2000 U
2,4-Dinitrotoluene	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
2,6-Dinitrotoluene	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
2-Chloronaphthalene	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
2-Chlorophenol	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
2-Methylnaphthalene	ug/kg	NA	NA	NA	NA	7400 U	26 J	2400 U	370 U	370 U	380 U
2-Methylphenol	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
2-Nitroaniline	ug/kg	NA	NA	NA	NA	38000 U	1900 U	13000 U	1900 U	1900 U	2000 U
2-Nitrophenol	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
3,3'-Dichlorobenzidine	ug/kg	NA	NA	NA	NA	45000 U	2200 U	15000 U	2200 U	2300 U	2300 U
3-Nitroaniline	ug/kg	NA	NA	NA	NA	38000 U	1900 U	13000 U	1900 U	1900 U	2000 U
4,6-Dinitro-2-methylphenol	ug/kg	NA	NA	NA	NA	38000 U	1900 U	13000 U	1900 U	1900 U	2000 U
4-Bromophenyl phenyl ether	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
4-Chloro-3-methylphenol	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
4-Chloroaniline	ug/kg	NA	NA	NA	NA	29000 U	1400 U	9600 U	1500 U	1500 U	1500 U
4-Chlorophenyl phenyl ether	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
4-Methylphenol	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
4-Nitroaniline	ug/kg	NA	NA	NA	NA	38000 U	1900 U	13000 U	1900 U	1900 U	2000 U
4-Nitrophenol	ug/kg	NA	NA	NA	NA	38000 U	1900 U	13000 U	1900 U	1900 U	2000 U
Acenaphthene	ug/kg	NA	NA	NA	NA	7400 U	370 U	240 J	370 U	370 U	380 U
Acenaphthylene	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		BP9-12	BP9-12	BP9-13	BP9-13	MWP9-01	MWP9-01	MWP9-02	MWP9-02	MWP9-03	MWP9-03
Sample Depth(ft BGS):		0 - 2	8 - 10	0 - 2	6 - 8	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10
Date Collected:	Units	08/23/03	08/23/03	08/23/03	08/23/03	04/28/03	04/28/03	04/29/03	04/29/03	04/29/03	04/29/03
Acetophenone	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
Anthracene	ug/kg	NA	NA	NA	NA	7400 U	49 J	950 J	370 U	85 J	380 U
Atrazine	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
Benzaldehyde	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
Benzo(a)anthracene	ug/kg	NA	NA	NA	NA	7400 U	370 U	3200	370 U	170 J	83 J
Benzo(a)pyrene	ug/kg	380 U	360 U	220 J	77 J	7400 U	370 U	2700	370 U	140 J	31 J
Benzo(b)fluoranthene	ug/kg	NA	NA	NA	NA	7400 U	370 U	2900	370 U	150 J	47 J
Benzo(g,h,i)perylene	ug/kg	NA	NA	NA	NA	7400 U	370 U	1300 J	370 U	120 J	28 J
Benzo(k)fluoranthene	ug/kg	NA	NA	NA	NA	7400 U	370 U	1900 J	370 U	110 J	380 U
Biphenyl	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
bis(2-Chloroethoxy)methane	ug/kg	NA	NA	NA	NA	7400 U	370 U	R	R	R	R
bis(2-Chloroethyl)ether	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
bis(2-Ethylhexyl)phthalate	ug/kg	NA	NA	NA	NA	7400 U	23 J	1300 J	370 U	370 U	380 U
Butyl benzylphthalate	ug/kg	NA	NA	NA	NA	7400 U	370 U	430 J	R	33 J	R
Caprolactam	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
Carbazole	ug/kg	NA	NA	NA	NA	7400 U	370 U	750 J	370 U	81 J	380 U
Chrysene	ug/kg	NA	NA	NA	NA	7400 U	370 U	3500	370 U	150 J	34 J
Di-n-butylphthalate	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
Di-n-octyl phthalate	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
Dibenz(a,h)anthracene	ug/kg	NA	NA	NA	NA	7400 U	370 U	500 J	370 U	370 U	380 U
Dibenzofuran	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
Diethyl phthalate	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
Dimethyl phthalate	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
Fluoranthene	ug/kg	NA	NA	NA	NA	7400 U	80 J	4200	370 U	230 J	50 J
Fluorene	ug/kg	NA	NA	NA	NA	7400 U	46 J	680 J	370 U	89 J	380 U
Hexachlorobenzene	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
Hexachlorobutadiene	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
Hexachlorocyclopentadiene	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
Hexachloroethane	ug/kg	NA	NA	NA	NA	2300 U	110 U	740 U	110 U	110 U	120 U
Indeno(1,2,3-cd)pyrene	ug/kg	NA	NA	NA	NA	7400 U	370 U	1400 J	370 U	110 J	24 J
Isophorone	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
N-Nitrosodi-n-propylamine	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
N-Nitrosodiphenylamine	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U
Naphthalene	ug/kg	NA	NA	NA	NA	7400 U	370 U	R	R	R	R
Nitrobenzene	ug/kg	NA	NA	NA	NA	7400 U	370 U	R	R	R	R
Pentachlorophenol	ug/kg	NA	NA	NA	NA	77000 U	3800 U	25000 U	3800 U	3900 U	3900 U
Phenanthrene	ug/kg	NA	NA	NA	NA	7400 U	250 J	2100 J	370 U	110 J	380 U
Phenol	ug/kg	NA	NA	NA	NA	7400 U	370 U	2400 U	370 U	370 U	380 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		BP9-12	BP9-12	BP9-13	BP9-13	MWP9-01	MWP9-01	MWP9-02	MWP9-02	MWP9-03	MWP9-03
Sample Depth(ft BGS):		0 - 2	8 - 10	0 - 2	6 - 8	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10
Date Collected:	Units	08/23/03	08/23/03	08/23/03	08/23/03	04/28/03	04/28/03	04/29/03	04/29/03	04/29/03	04/29/03
Pyrene	ug/kg	NA	NA	NA	NA	920 J	120 J	5900	370 U	200 J	57 J
Pests/PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	NA	NA	NA	NA	37 U	37 U	1800 U	37 U	37 U	38 U
Aroclor-1221 (PCB-1221)	ug/kg	NA	NA	NA	NA	37 U	37 U	1800 U	37 U	37 U	38 U
Aroclor-1232 (PCB-1232)	ug/kg	NA	NA	NA	NA	37 U	37 U	1800 U	37 U	37 U	38 U
Aroclor-1242 (PCB-1242)	ug/kg	NA	NA	NA	NA	37 U	37 U	1800 U	37 U	37 U	38 U
Aroclor-1248 (PCB-1248)	ug/kg	NA	NA	NA	NA	37	37 U	20000	37 U	57	52
Aroclor-1254 (PCB-1254)	ug/kg	NA	NA	NA	NA	37 U	37 U	1800 U	37 U	37 U	38 U
Aroclor-1260 (PCB-1260)	ug/kg	NA	NA	NA	NA	37 U	37 U	2300	37 U	37 UJ	38 U
Inorganics											
Antimony	ug/kg	NA	NA	NA	NA	2250 U	2220 U	1230 J	305 J	680 J	278 J
Arsenic	ug/kg	NA	NA	NA	NA	2990	3590	4010	3400	6380	4570
Barium	ug/kg	NA	NA	NA	NA	9310	28000	180000	32700	76400	16200
Beryllium	ug/kg	NA	NA	NA	NA	113 U	155	111 U	91.6 J	210 J	116 U
Cadmium	ug/kg	NA	NA	NA	NA	563 U	554 U	583	286 J	469 J	198 J
Chromium Total	ug/kg	NA	NA	NA	NA	5380	10600	11200	10200	23300	6110
Cobalt	ug/kg	NA	NA	NA	NA	2130	5450	3450	4980	6680	3230
Copper	ug/kg	NA	NA	NA	NA	5970	10900	13200	10900	43200	9290
Lead	ug/kg	NA	NA	NA	NA	3400	5020	38400	4780	17400 J	8390
Manganese	ug/kg	NA	NA	NA	NA	173000	229000	231000	305000	537000 J	181000
Mercury	ug/kg	NA	NA	NA	NA	37.2 U	36.6 U	180	37 U	40.7	38.2 U
Nickel	ug/kg	NA	NA	NA	NA	5940	16400	9480	13000	23400	7810
Selenium	ug/kg	NA	NA	NA	NA	563 U	554 U	296 J	280 J	845	256 J
Silver	ug/kg	NA	NA	NA	NA	563 U	554 U	554 U	561 U	567 U	579 U
Thallium	ug/kg	NA	NA	NA	NA	460 J	856 J	781 J	649 J	953 J	663 J
Vanadium	ug/kg	NA	NA	NA	NA	6500	14300	11800	15200	20700	9310
Zinc	ug/kg	NA	NA	NA	NA	21000 J	31900 J	166000	31100	62600 J	24200
Miscellaneous											
Total Solids	%	87.8	90.5	90.4	90.9	88.8	90.3	90.2	89.1	88.1	86.4

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		MWP9-03	MWP9-04	MWP9-04	MWP9-04	P18-01	P18-01	P18-02	P18-02	P18-02	P18-03
Sample Depth(ft BGS):		15 - 17	0 - 2	8 - 10	14 - 16	0 - 2	6 - 8	0 - 2	6 - 8	8 - 10	0 - 2
Date Collected:	Units	04/29/03	08/23/03	05/08/03	05/08/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03
VOCs											
1,1,1-Trichloroethane	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
1,1,2,2-Tetrachloroethane	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 UJ	5.1 U
1,1,2-Trichloroethane	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
1,1-Dichloroethane	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
1,1-Dichloroethene	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
1,2,4-Trichlorobenzene	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 UJ	5.1 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	9.7 U	NA	9.4 U	8.8 U	10 U	9.3 U	10 U	9 U	9.5 UJ	10 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
1,2-Dichlorobenzene	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 UJ	5.1 U
1,2-Dichloroethane	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
1,2-Dichloropropane	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
1,3-Dichlorobenzene	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 UJ	5.1 U
1,4-Dichlorobenzene	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 UJ	5.1 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	19 UJ	NA	19 UJ	18 UJ	21 U	19 U	1.9 J	1.8 J	5.9 J	2.9 J
2-Hexanone	ug/kg	19 U	NA	19 U	18 U	21 UJ	19 UJ	21 UJ	18 UJ	19 UJ	20 UJ
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	19 U	NA	19 U	18 U	21 U	19 U	21 U	18 U	19 U	20 U
Acetone	ug/kg	3.8 J	NA	4 J	18 UJ	21 UJ	19 UJ	21 UJ	18 UJ	19 UJ	20 UJ
Benzene	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
Bromodichloromethane	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
Bromoform	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
Bromomethane (Methyl Bromide)	ug/kg	9.7 UJ	NA	9.4 UJ	8.8 UJ	10 U	9.3 U	10 U	9 U	9.5 U	10 U
Carbon disulfide	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
Carbon tetrachloride	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
Chlorobenzene	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
Chloroethane	ug/kg	9.7 U	NA	9.4 U	8.8 U	10 U	9.3 U	10 U	9 U	9.5 U	10 U
Chloroform (Trichloromethane)	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
Chloromethane (Methyl Chloride)	ug/kg	9.7 U	NA	9.4 U	8.8 U	10 U	9.3 U	10 U	9 U	9.5 U	10 U
cis-1,2-Dichloroethene	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
cis-1,3-Dichloropropene	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
Cyclohexane	ug/kg	9.7 U	NA	9.4 U	8.8 U	10 U	9.3 U	10 U	9 U	0.77 J	10 U
Dibromochloromethane	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
Dichlorodifluoromethane (CFC-12)	ug/kg	9.7 UJ	NA	9.4 U	8.8 U	10 U	9.3 U	10 U	9 U	9.5 U	10 U
Ethylbenzene	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	2.6 J	4.5 U	1.2 J	5.1 U
Isopropylbenzene	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	1.4 J	5.1 U
Methyl acetate	ug/kg	9.7 U	NA	9.4 U	8.8 U	10 U	9.3 U	10 U	9 U	9.5 U	10 U
Methyl cyclohexane	ug/kg	9.7 U	NA	9.4 U	8.8 U	10 U	9.3 U	10 U	9 U	1 J	10 U
Methyl Tert Butyl Ether	ug/kg	19 U	NA	19 U	18 U	21 U	19 U	21 U	18 U	19 U	20 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		MWP9-03	MWP9-04	MWP9-04	MWP9-04	P18-01	P18-01	P18-02	P18-02	P18-02	P18-03
Sample Depth(ft BGS):		15 - 17	0 - 2	8 - 10	14 - 16	0 - 2	6 - 8	0 - 2	6 - 8	8 - 10	0 - 2
Date Collected:	Units	04/29/03	08/23/03	05/08/03	05/08/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03
Methylene chloride	ug/kg	4.9	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
Styrene	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
Tetrachloroethene	ug/kg	1.9 J	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
Toluene	ug/kg	1.6 J	NA	0.34 J	4.4 U	5.2 U	4.6 U	5.6	0.5 J	1.4 J	5.1 U
Total Xylenes	ug/kg	9.7 U	NA	9.4 U	8.8 U	10 U	9.3 U	12	1.7 J	8.4 J	10 U
trans-1,2-Dichloroethene	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
trans-1,3-Dichloropropene	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
Trichloroethene	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
Trichlorofluoromethane (CFC-11)	ug/kg	9.7 U	NA	9.4 U	8.8 U	10 U	9.3 U	10 U	9 U	9.5 U	10 U
Trifluorotrichloroethane (Freon 113)	ug/kg	4.9 U	NA	4.7 U	4.4 U	5.2 U	4.6 U	5.2 U	4.5 U	4.7 U	5.1 U
Vinyl chloride	ug/kg	9.7 U	NA	9.4 U	8.8 U	10 U	9.3 U	10 U	9 U	9.5 U	10 U
SVOCs											
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
2,4,5-Trichlorophenol	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
2,4,6-Trichlorophenol	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
2,4-Dichlorophenol	ug/kg	R	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
2,4-Dimethylphenol	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
2,4-Dinitrophenol	ug/kg	1900 U	NA	2000 U	1900 U	2000 U	2000 U	5200 U	97000 U	98000 U	2000 U
2,4-Dinitrotoluene	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
2,6-Dinitrotoluene	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
2-Chloronaphthalene	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
2-Chlorophenol	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
2-Methylnaphthalene	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	1100 J	390 U
2-Methylphenol	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
2-Nitroaniline	ug/kg	1900 U	NA	2000 U	1900 U	2000 U	2000 U	5200 U	97000 U	98000 U	2000 U
2-Nitrophenol	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
3,3'-Dichlorobenzidine	ug/kg	2200 U	NA	2300 U	2300 U	2400 U	2400 U	6100 U	110000 U	120000 U	2300 U
3-Nitroaniline	ug/kg	1900 U	NA	2000 U	1900 U	2000 U	2000 U	5200 U	97000 U	98000 U	2000 U
4,6-Dinitro-2-methylphenol	ug/kg	1900 U	NA	2000 U	1900 U	2000 U	2000 U	5200 U	97000 U	98000 U	2000 U
4-Bromophenyl phenyl ether	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
4-Chloro-3-methylphenol	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
4-Chloroaniline	ug/kg	1400 U	NA	1500 U	1500 U	1500 U	1600 U	4000 U	74000 U	75000 U	1500 U
4-Chlorophenyl phenyl ether	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
4-Methylphenol	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
4-Nitroaniline	ug/kg	1900 U	NA	2000 U	1900 U	2000 U	2000 U	5200 U	97000 U	98000 U	2000 U
4-Nitrophenol	ug/kg	1900 U	NA	2000 U	1900 U	2000 U	2000 U	5200 U	97000 U	98000 U	2000 U
Acenaphthene	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	69 J	19000 U	19000 U	390 U
Acenaphthylene	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		MWP9-03	MWP9-04	MWP9-04	MWP9-04	P18-01	P18-01	P18-02	P18-02	P18-02	P18-03
Sample Depth(ft BGS):		15 - 17	0 - 2	8 - 10	14 - 16	0 - 2	6 - 8	0 - 2	6 - 8	8 - 10	0 - 2
Date Collected:	Units	04/29/03	08/23/03	05/08/03	05/08/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03
Acetophenone	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Anthracene	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	160 J	19000 U	19000 U	390 U
Atrazine	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Benzaldehyde	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Benzo(a)anthracene	ug/kg	70 J	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Benzo(a)pyrene	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Benzo(b)fluoranthene	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Benzo(g,h,i)perylene	ug/kg	370 U	NA	380 U	370 U	36 J	400 U	1000 U	19000 U	19000 U	390 U
Benzo(k)fluoranthene	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Biphenyl	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
bis(2-Chloroethoxy)methane	ug/kg	R	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
bis(2-Chloroethyl)ether	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
bis(2-Ethylhexyl)phthalate	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Butyl benzylphthalate	ug/kg	R	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Caprolactam	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Carbazole	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Chrysene	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Di-n-butylphthalate	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Di-n-octyl phthalate	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Dibenz(a,h)anthracene	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Dibenzofuran	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Diethyl phthalate	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Dimethyl phthalate	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Fluoranthene	ug/kg	29 J	NA	22 J	370 U	390 U	400 U	170 J	19000 U	19000 U	51 J
Fluorene	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1500	19000 U	19000 U	390 U
Hexachlorobenzene	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Hexachlorobutadiene	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Hexachlorocyclopentadiene	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Hexachloroethane	ug/kg	110 U	NA	120 U	110 U	120 U	120 U	310 U	5700 U	5800 U	120 U
Indeno(1,2,3-cd)pyrene	ug/kg	370 U	NA	380 U	370 U	26 J	400 U	1000 U	19000 U	19000 U	390 U
Isophorone	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
N-Nitrosodi-n-propylamine	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
N-Nitrosodiphenylamine	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Naphthalene	ug/kg	R	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Nitrobenzene	ug/kg	R	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U
Pentachlorophenol	ug/kg	3800 U	NA	4000 U	3800 U	4000 U	4100 U	10000 U	190000 U	200000 U	4000 U
Phenanthrene	ug/kg	27 J	NA	24 J	370 U	390 U	400 U	1500	4200 J	8600 J	40 J
Phenol	ug/kg	370 U	NA	380 U	370 U	390 U	400 U	1000 U	19000 U	19000 U	390 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		MWP9-03	MWP9-04	MWP9-04	MWP9-04	P18-01	P18-01	P18-02	P18-02	P18-02	P18-03
Sample Depth(ft BGS):		15 - 17	0 - 2	8 - 10	14 - 16	0 - 2	6 - 8	0 - 2	6 - 8	8 - 10	0 - 2
Date Collected:	Units	04/29/03	08/23/03	05/08/03	05/08/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03
Pyrene	ug/kg	29 J	NA	380 U	370 U	23 J	400 U	150 J	19000 U	1300 J	45 J
Pests/PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	37 U	390 U	38 U	37 U	39 U	40 U	41 U	38 U	38 U	39 U
Aroclor-1221 (PCB-1221)	ug/kg	37 U	390 U	38 U	37 U	39 U	40 U	41 U	38 U	38 U	39 U
Aroclor-1232 (PCB-1232)	ug/kg	37 U	390 U	38 U	37 U	39 U	40 U	41 U	38 U	38 U	39 U
Aroclor-1242 (PCB-1242)	ug/kg	37 U	390 U	38 U	37 U	39 U	40 U	41 U	38 U	38 U	39 U
Aroclor-1248 (PCB-1248)	ug/kg	37 U	3900	38 U	37 U	340	40 U	41 U	25 J	38 U	39 U
Aroclor-1254 (PCB-1254)	ug/kg	37 U	390 U	38 U	37 U	39 U	40 U	41 U	38 U	38 U	39 U
Aroclor-1260 (PCB-1260)	ug/kg	37 U	390 U	38 U	37 U	39 U	40 U	41 U	38 U	38 U	39 U
Inorganics											
Antimony	ug/kg	254 J	NA	R	R	287 J	383 J	295 J	392 J	311 J	287 J
Arsenic	ug/kg	3630	NA	5150	6290	3420 J	4260 J	5940	4000	3660	6090
Barium	ug/kg	25600	NA	46800	41000	10300	48800	49700	41000	42500	48700
Beryllium	ug/kg	111 U	NA	319	284	105 J	357	576	315	287	418
Cadmium	ug/kg	223 J	NA	333 J	292 J	103 J	260 J	248 J	262 J	198 J	246 J
Chromium Total	ug/kg	8290	NA	11200	11200	5010 J	11600 J	16800	10100	10600	14100
Cobalt	ug/kg	4170	NA	6530 J	5400 J	2220	6900	7990	6110	5310	7530
Copper	ug/kg	10700	NA	21000	13800	7380	16500	18500	16000	12500	15900
Lead	ug/kg	6190	NA	6560	6680	4020 J	6540 J	8060	5790	4630	6400
Manganese	ug/kg	237000	NA	404000	279000	295000	356000	462000	324000	252000	333000
Mercury	ug/kg	21.3 J	NA	38.5 U	37.3 U	39.1 U	39.8 U	21.7 J	37.8 U	38.1 U	26.6 J
Nickel	ug/kg	10000	NA	17400 J	14100 J	6080	18400	21000 J	16500 J	12800 J	18400 J
Selenium	ug/kg	377 J	NA	583 U	565 U	R	R	614 U	572 U	578 U	587 U
Silver	ug/kg	553 U	NA	583 U	565 U	R	R	614 U	572 U	578 U	587 U
Thallium	ug/kg	726 J	NA	1170 UJ	1130 UJ	1180 U	426 J	514 J	412 J	1160 U	397 J
Vanadium	ug/kg	12600	NA	14900	15800	6410	14800	21500	14300	15700	18900
Zinc	ug/kg	30800	NA	41100	33500	20000	39200	41800 J	37400 J	32300 J	38700 J
Miscellaneous											
Total Solids	%	90.4	84.5	85.8	88.5	84.4	83	81.4	87.4	86.5	85.1

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		P18-03	P18-03	P18-04	P18-04	P18-05	P18-05	P18-06B	P18-06B	P18-07	P18-07	P18-07
Sample Depth(ft BGS):		6 - 8	8 - 10	0 - 2	6 - 8	0 - 2	8 - 10	0 - 2	6 - 8	0 - 2	6 - 8	8 - 10
Date Collected:	Units	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03
VOCs												
1,1,1-Trichloroethane	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	17	4.5 U	4.1 U	4.1 U	4.5 U	4 U
1,1,2,2-Tetrachloroethane	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
1,1,2-Trichloroethane	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
1,1-Dichloroethane	ug/kg	4.5 U	4 U	4.2 U	4.3 U	1.5 J	18	4.5 U	4.1 U	4.1 U	0.53 J	0.73 J
1,1-Dichloroethene	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	1 J	4.5 U	4.1 U	4.1 U	4.5 U	4 U
1,2,4-Trichlorobenzene	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	9.1 U	8.1 U	8.5 U	8.6 U	8.6 U	7.5 U	8.9 U	8.2 U	8.3 U	9 U	8 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
1,2-Dichlorobenzene	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
1,2-Dichloroethane	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
1,2-Dichloropropane	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
1,3-Dichlorobenzene	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
1,4-Dichlorobenzene	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	18 U	3.3 J	3.3 J	2.6 J	2.7 J	15 U	18 U	16 U	17 U	2.1 J	1.8 J
2-Hexanone	ug/kg	18 UJ	16 UJ	17 UJ	17 UJ	17 UJ	15 UJ	18 UJ	16 UJ	17 UJ	18 UJ	16 UJ
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	18 U	16 U	17 U	17 U	17 U	15 U	18 U	16 U	17 U	18 U	16 U
Acetone	ug/kg	18 UJ	16 UJ	19 J	9.7 J	6.1 J	15 UJ	18 UJ	16 UJ	17 UJ	18 UJ	16 UJ
Benzene	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
Bromodichloromethane	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
Bromoform	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
Bromomethane (Methyl Bromide)	ug/kg	9.1 U	8.1 U	8.5 U	8.6 U	8.6 U	7.5 U	8.9 U	8.2 U	8.3 U	9 U	8 U
Carbon disulfide	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
Carbon tetrachloride	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
Chlorobenzene	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
Chloroethane	ug/kg	9.1 U	8.1 U	8.5 U	8.6 U	8.6 U	7.5 U	8.9 U	8.2 U	8.3 U	9 U	8 U
Chloroform (Trichloromethane)	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
Chloromethane (Methyl Chloride)	ug/kg	9.1 U	8.1 U	8.5 U	8.6 U	8.6 U	7.5 U	8.9 U	8.2 U	8.3 U	9 U	8 U
cis-1,2-Dichloroethene	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.2 J	6.1
cis-1,3-Dichloropropene	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
Cyclohexane	ug/kg	9.1 U	8.1 U	8.5 U	8.6 U	8.6 U	7.5 U	8.9 U	8.2 U	8.3 U	9 U	8 U
Dibromochloromethane	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
Dichlorodifluoromethane (CFC-12)	ug/kg	9.1 U	8.1 U	8.5 U	8.6 U	8.6 U	7.5 U	8.9 U	8.2 U	8.3 U	9 U	8 U
Ethylbenzene	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	0.35 J
Isopropylbenzene	ug/kg	4.5 U	0.31 J	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	0.45 J
Methyl acetate	ug/kg	9.1 U	8.1 U	8.5 U	8.6 U	8.6 U	7.5 U	8.9 U	8.2 U	8.3 U	9 U	8 U
Methyl cyclohexane	ug/kg	9.1 U	8.1 U	8.5 U	8.6 U	8.6 U	7.5 U	8.9 U	8.2 U	8.3 U	9 U	8 U
Methyl Tert Butyl Ether	ug/kg	18 U	16 U	17 U	17 U	17 U	15 U	18 U	16 U	17 U	18 U	16 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	P-9 P18-03 6 - 8 08/04/03	P-9 P18-03 8 - 10 08/04/03	P-9 P18-04 0 - 2 08/04/03	P-9 P18-04 6 - 8 08/04/03	P-9 P18-05 0 - 2 08/04/03	P-9 P18-05 8 - 10 08/04/03	P-9 P18-06B 0 - 2 08/04/03	P-9 P18-06B 6 - 8 08/04/03	P-9 P18-07 0 - 2 08/04/03	P-9 P18-07 6 - 8 08/04/03	P-9 P18-07 8 - 10 08/04/03
Methylene chloride	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
Styrene	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
Tetrachloroethene	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	0.6 J
Toluene	ug/kg	4.5 U	0.52 J	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	0.67 J
Total Xylenes	ug/kg	9.1 U	8.1 U	8.5 U	8.6 U	8.6 U	7.5 U	8.9 U	8.2 U	8.3 U	9 U	8 U
trans-1,2-Dichloroethene	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
trans-1,3-Dichloropropene	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
Trichloroethene	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	0.62 J	1.9 J
Trichlorofluoromethane (CFC-11)	ug/kg	9.1 U	8.1 U	8.5 U	8.6 U	8.6 U	7.5 U	8.9 U	8.2 U	8.3 U	9 U	8 U
Trifluorotrichloroethane (Freon 113)	ug/kg	4.5 U	4 U	4.2 U	4.3 U	4.3 U	3.7 U	4.5 U	4.1 U	4.1 U	4.5 U	4 U
Vinyl chloride	ug/kg	9.1 U	8.1 U	8.5 U	8.6 U	8.6 U	7.5 U	8.9 U	8.2 U	8.3 U	9 U	8 U
SVOCs												
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
2,4,5-Trichlorophenol	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
2,4,6-Trichlorophenol	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
2,4-Dichlorophenol	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
2,4-Dimethylphenol	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
2,4-Dinitrophenol	ug/kg	1900 U	37000 U	38000 U	1900 U	24000 U	1900 U	1900 U	1900 U	1900 U	94000 U	38000 U
2,4-Dinitrotoluene	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
2,6-Dinitrotoluene	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
2-Chloronaphthalene	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
2-Chlorophenol	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
2-Methylnaphthalene	ug/kg	370 U	1100 J	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
2-Methylphenol	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
2-Nitroaniline	ug/kg	1900 U	37000 U	38000 U	1900 U	24000 U	1900 U	1900 U	1900 U	1900 U	94000 U	38000 U
2-Nitrophenol	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
3,3'-Dichlorobenzidine	ug/kg	2200 U	44000 U	45000 U	2200 U	29000 U	2200 U	2300 U	2200 U	2200 U	110000 U	44000 U
3-Nitroaniline	ug/kg	1900 U	37000 U	38000 U	1900 U	24000 U	1900 U	1900 U	1900 U	1900 U	94000 U	38000 U
4,6-Dinitro-2-methylphenol	ug/kg	1900 U	37000 U	38000 U	1900 U	24000 U	1900 U	1900 U	1900 U	1900 U	94000 U	38000 U
4-Bromophenyl phenyl ether	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
4-Chloro-3-methylphenol	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
4-Chloroaniline	ug/kg	1500 U	28000 U	29000 U	1400 U	19000 U	1400 U	1500 U	1400 U	1500 U	72000 U	29000 U
4-Chlorophenyl phenyl ether	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
4-Methylphenol	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
4-Nitroaniline	ug/kg	1900 U	37000 U	38000 U	1900 U	24000 U	1900 U	1900 U	1900 U	1900 U	94000 U	38000 U
4-Nitrophenol	ug/kg	1900 U	37000 U	38000 U	1900 U	24000 U	1900 U	1900 U	1900 U	1900 U	94000 U	38000 U
Acenaphthene	ug/kg	370 U	420 J	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Acenaphthylene	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		P18-03	P18-03	P18-04	P18-04	P18-05	P18-05	P18-06B	P18-06B	P18-07	P18-07	P18-07
Sample Depth(ft BGS):		6 - 8	8 - 10	0 - 2	6 - 8	0 - 2	8 - 10	0 - 2	6 - 8	0 - 2	6 - 8	8 - 10
Date Collected:	Units	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03
Acetophenone	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Anthracene	ug/kg	36 J	1700 J	630 J	360 U	4700 U	360 U	370 U	360 U	370 U	1200 J	1100 J
Atrazine	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Benzaldehyde	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Benzo(a)anthracene	ug/kg	19 J	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Benzo(a)pyrene	ug/kg	370 U	7200 U	7400 U	360 U	200 J	360 U	370 U	360 U	370 U	18000 U	7300 U
Benzo(b)fluoranthene	ug/kg	370 U	7200 U	7400 U	360 U	200 J	360 U	370 U	360 U	370 U	18000 U	7300 U
Benzo(g,h,i)perylene	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	26 J	18000 U	7300 U
Benzo(k)fluoranthene	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Biphenyl	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
bis(2-Chloroethoxy)methane	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
bis(2-Chloroethyl)ether	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
bis(2-Ethylhexyl)phthalate	ug/kg	370 U	7200 U	7400 U	360 U	530 J	360 U	370 U	360 U	370 U	18000 U	7300 U
Butyl benzylphthalate	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Caprolactam	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Carbazole	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Chrysene	ug/kg	21 J	7200 U	7400 U	360 U	210 J	360 U	370 U	360 U	370 U	18000 U	7300 U
Di-n-butylphthalate	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Di-n-octyl phthalate	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Dibenz(a,h)anthracene	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Dibenzofuran	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Diethyl phthalate	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Dimethyl phthalate	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Fluoranthene	ug/kg	83 J	1800 J	1100 J	360 U	340 J	360 U	370 U	360 U	370 U	1300 J	1100 J
Fluorene	ug/kg	46 J	2700 J	4000 J	36 J	4700 U	360 U	370 U	360 U	370 U	4400 J	3500 J
Hexachlorobenzene	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Hexachlorobutadiene	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Hexachlorocyclopentadiene	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Hexachloroethane	ug/kg	110 U	2200 U	2200 U	110 U	1400 U	110 U	110 U	110 U	110 U	5600 U	2200 U
Indeno(1,2,3-cd)pyrene	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Isophorone	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
N-Nitrosodi-n-propylamine	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
N-Nitrosodiphenylamine	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Naphthalene	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Nitrobenzene	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U
Pentachlorophenol	ug/kg	3800 U	74000 U	76000 U	3700 U	49000 U	3700 U	3800 U	3800 U	3800 U	190000 U	75000 U
Phenanthrene	ug/kg	140 J	10000	4500 J	41 J	4700 U	360 U	370 U	360 U	370 U	7600 J	7200 J
Phenol	ug/kg	370 U	7200 U	7400 U	360 U	4700 U	360 U	370 U	360 U	370 U	18000 U	7300 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		P18-03	P18-03	P18-04	P18-04	P18-05	P18-05	P18-06B	P18-06B	P18-07	P18-07	P18-07
Sample Depth(ft BGS):		6 - 8	8 - 10	0 - 2	6 - 8	0 - 2	8 - 10	0 - 2	6 - 8	0 - 2	6 - 8	8 - 10
Date Collected:	Units	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03
Pyrene	ug/kg	110 J	2200 J	1200 J	23 J	490 J	360 U	23 J	360 U	370 U	1600 J	1600 J
Pests/PCBs												
Aroclor-1016 (PCB-1016)	ug/kg	37 U	36 U	37 U	36 U	38 U	36 U	37 U	36 U	37 U	37 U	73 U
Aroclor-1221 (PCB-1221)	ug/kg	37 U	36 U	37 U	36 U	38 U	36 U	37 U	36 U	37 U	37 U	73 U
Aroclor-1232 (PCB-1232)	ug/kg	37 U	36 U	18 J	36 U	38 U	36 U	37 U	36 U	37 U	37 U	73 U
Aroclor-1242 (PCB-1242)	ug/kg	37 U	36 U	37 U	36 U	38 U	36 U	37 U	36 U	37 U	37 U	73 U
Aroclor-1248 (PCB-1248)	ug/kg	37 U	7.9 J	37 U	36 U	38 U	36 U	37 U	36 U	37 U	250	280
Aroclor-1254 (PCB-1254)	ug/kg	37 U	36 U	37 U	36 U	38 U	36 U	37 U	36 U	37 U	37 U	73 U
Aroclor-1260 (PCB-1260)	ug/kg	37 U	2.3 J	37 U	36 U	38 U	36 U	37 U	36 U	37 U	37 U	73 U
Inorganics												
Antimony	ug/kg	196 J	202 J	273 J	230 J	256 J	R	219 J	245 J	195 J	190 J	171 J
Arsenic	ug/kg	4540	6170	3980 J	4250 J	4730 J	4570 J	4250	4520	4800	4120	3760
Barium	ug/kg	38800	39100	32100	44800	49000	25400	41100	32900	46700	36300	31800
Beryllium	ug/kg	317	249	325	323	410	194	354	270	291	280	266
Cadmium	ug/kg	287 J	234 J	221 J	266 J	310 J	179 J	291 J	238 J	262 J	210 J	217 J
Chromium Total	ug/kg	9900	9130	10800 J	10600 J	13800 J	7630 J	10900	10200	48600	10500	9320
Cobalt	ug/kg	5850	5490	4830	6490	7130	3830	7280	5080	5450	5790	5130
Copper	ug/kg	18200	12600	12300	16800	17700	9850	18400	12700	13300	13200	12500
Lead	ug/kg	6440	5100	5880 J	5990 J	6880 J	5220 J	6340	4700	5970	5260	4520
Manganese	ug/kg	300000	315000	235000	353000	360000	225000	378000	258000	285000	272000	230000
Mercury	ug/kg	37 U	36.1 U	36.8 U	36.3 U	37.7 U	36.2 U	37.3 U	36.4 U	36.8 U	36.7 U	36.5 U
Nickel	ug/kg	14500 J	13300 J	12400	16600	18900	9130	17800 J	13000 J	13000 J	15400 J	13900 J
Selenium	ug/kg	561 U	547 U	R	R	R	R	565 U	552 U	558 U	555 U	552 U
Silver	ug/kg	561 U	547 U	R	R	R	R	565 U	552 U	558 U	555 U	552 U
Thallium	ug/kg	1120 U	1090 U	1110 U	1100 U	1140 U	1100 U	478 J	1100 U	351 J	1110 U	1100 U
Vanadium	ug/kg	13200	13700	15500	14000	17100	11700	14600	14700	14700	15000	13900
Zinc	ug/kg	40700 J	30600 J	32100	38000	41100	24200	43100 J	31200 J	33500 J	32400 J	29600 J
Miscellaneous												
Total Solids	%	89.1	91.5	89.7	91	87.5	91.2	88.5	90.6	89.7	90	90.5

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		P18-08	P18-08	P18-09	P18-09	P18-10	P18-10	P18-10	P18-11	P18-11	P18-12	P18-12
Sample Depth(ft BGS):		0 - 2	6 - 8	0 - 2	6 - 8	0 - 2	6 - 8	8 - 10	0 - 2	6 - 8	0 - 2	6 - 8
Date Collected:	Units	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/05/03	08/05/03	08/05/03	08/05/03
VOCs												
1,1,1-Trichloroethane	ug/kg	4 U	3.6 J	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
1,1,2,2-Tetrachloroethane	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
1,1,2-Trichloroethane	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
1,1-Dichloroethane	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
1,1-Dichloroethene	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
1,2,4-Trichlorobenzene	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	8.1 U	8.3 U	9.3 U	8.5 U	8.4 U	9.3 U	480 U	12 U	450 U	9 U	8.6 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
1,2-Dichlorobenzene	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
1,2-Dichloroethane	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
1,2-Dichloropropane	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
1,3-Dichlorobenzene	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
1,4-Dichlorobenzene	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	16 U	17 U	19 U	17 U	17 U	19 U	950 U	24 U	910 U	18 U	17 U
2-Hexanone	ug/kg	16 UJ	17 U	19 U	17 U	17 UJ	19 UJ	950 UJ	24 U	910 U	18 U	17 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	16 U	17 U	19 U	17 U	17 U	19 U	950 U	24 U	910 U	18 U	17 U
Acetone	ug/kg	16 UJ	17 U	19 U	17 U	17 UJ	19 UJ	950 UJ	24 U	910 U	18 U	17 U
Benzene	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
Bromodichloromethane	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
Bromoform	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
Bromomethane (Methyl Bromide)	ug/kg	8.1 U	8.3 U	9.3 U	8.5 U	8.4 U	9.3 U	480 U	12 U	450 U	9 U	8.6 U
Carbon disulfide	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
Carbon tetrachloride	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
Chlorobenzene	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
Chloroethane	ug/kg	8.1 U	8.3 U	9.3 U	8.5 U	8.4 U	9.3 U	480 U	12 U	450 U	9 U	8.6 U
Chloroform (Trichloromethane)	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
Chloromethane (Methyl Chloride)	ug/kg	8.1 U	8.3 U	9.3 U	8.5 U	8.4 U	9.3 U	480 U	12 U	450 U	9 U	8.6 U
cis-1,2-Dichloroethene	ug/kg	4 U	4.2 U	4.7 U	4.3 U	2.1 J	24	90 J	5.9 U	210 J	3.4 J	36
cis-1,3-Dichloropropene	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
Cyclohexane	ug/kg	8.1 U	8.3 U	9.3 U	8.5 U	8.4 U	9.3 U	480 U	12 U	450 U	9 U	8.6 U
Dibromochloromethane	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
Dichlorodifluoromethane (CFC-12)	ug/kg	8.1 U	8.3 U	9.3 U	8.5 U	8.4 U	9.3 U	480 U	12 U	450 U	9 U	8.6 U
Ethylbenzene	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
Isopropylbenzene	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
Methyl acetate	ug/kg	8.1 U	8.3 U	9.3 U	8.5 U	8.4 U	9.3 U	480 U	12 U	450 U	9 U	8.6 U
Methyl cyclohexane	ug/kg	8.1 U	8.3 U	9.3 U	8.5 U	8.4 U	9.3 U	480 U	12 U	450 U	9 U	8.6 U
Methyl Tert Butyl Ether	ug/kg	16 U	17 UJ	19 UJ	17 UJ	17 U	19 U	950 U	24 U	910 U	18 U	17 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		P18-08	P18-08	P18-09	P18-09	P18-10	P18-10	P18-10	P18-11	P18-11	P18-12	P18-12
Sample Depth(ft BGS):		0 - 2	6 - 8	0 - 2	6 - 8	0 - 2	6 - 8	8 - 10	0 - 2	6 - 8	0 - 2	6 - 8
Date Collected:	Units	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/05/03	08/05/03	08/05/03	08/05/03
Methylene chloride	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
Styrene	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	R	4.5 U	4.3 U
Tetrachloroethene	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
Toluene	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
Total Xylenes	ug/kg	8.1 U	8.3 U	9.3 U	8.5 U	8.4 U	9.3 U	480 U	12 U	450 U	9 U	8.6 U
trans-1,2-Dichloroethene	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
trans-1,3-Dichloropropene	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
Trichloroethene	ug/kg	4 U	4.2 U	0.55 J	4.3 U	6.6	0.97 J	470	3.6 J	4400	67	150
Trichlorofluoromethane (CFC-11)	ug/kg	8.1 U	8.3 U	9.3 U	8.5 U	8.4 U	9.3 U	480 U	12 U	450 U	9 U	8.6 U
Trifluorotrichloroethane (Freon 113)	ug/kg	4 U	4.2 U	4.7 U	4.3 U	4.2 U	4.7 U	240 U	5.9 U	230 U	4.5 U	4.3 U
Vinyl chloride	ug/kg	8.1 U	8.3 U	9.3 U	8.5 U	8.4 U	1.7 J	480 U	12 U	450 U	9 U	1.8 J
SVOCs												
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
2,4,5-Trichlorophenol	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
2,4,6-Trichlorophenol	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
2,4-Dichlorophenol	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
2,4-Dimethylphenol	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
2,4-Dinitrophenol	ug/kg	1900 U	1900 U	2000 U	1900 U	1900 U	2000 U	40000 U	1800 U	1900 U	2000 U	19000 U
2,4-Dinitrotoluene	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
2,6-Dinitrotoluene	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
2-Chloronaphthalene	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
2-Chlorophenol	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
2-Methylnaphthalene	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
2-Methylphenol	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
2-Nitroaniline	ug/kg	1900 U	1900 U	2000 U	1900 U	1900 U	2000 U	40000 U	1800 U	1900 U	2000 U	19000 U
2-Nitrophenol	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
3,3'-Dichlorobenzidine	ug/kg	2200 U	2200 U	2300 U	2200 U	2300 U	2400 U	47000 U	2100 U	2200 U	2300 U	23000 U
3-Nitroaniline	ug/kg	1900 U	1900 U	2000 U	1900 U	1900 U	2000 U	40000 U	1800 U	1900 U	2000 U	19000 U
4,6-Dinitro-2-methylphenol	ug/kg	1900 U	1900 U	2000 U	1900 U	1900 U	2000 U	40000 U	1800 U	1900 U	2000 U	19000 U
4-Bromophenyl phenyl ether	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
4-Chloro-3-methylphenol	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
4-Chloroaniline	ug/kg	1400 U	1400 U	1500 U	1500 U	1500 U	1600 U	31000 U	1400 U	1500 U	1500 U	15000 U
4-Chlorophenyl phenyl ether	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
4-Methylphenol	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
4-Nitroaniline	ug/kg	1900 U	1900 U	2000 U	1900 U	1900 U	2000 U	40000 U	1800 U	1900 U	2000 U	19000 U
4-Nitrophenol	ug/kg	1900 U	1900 U	2000 U	1900 U	1900 U	2000 U	40000 U	1800 U	1900 U	2000 U	19000 U
Acenaphthene	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Acenaphthylene	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		P18-08	P18-08	P18-09	P18-09	P18-10	P18-10	P18-10	P18-11	P18-11	P18-12	P18-12
Sample Depth(ft BGS):		0 - 2	6 - 8	0 - 2	6 - 8	0 - 2	6 - 8	8 - 10	0 - 2	6 - 8	0 - 2	6 - 8
Date Collected:	Units	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/05/03	08/05/03	08/05/03	08/05/03
Acetophenone	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Anthracene	ug/kg	360 U	370 U	33 J	35 J	370 U	400 U	7800 U	350 U	370 U	380 U	200 J
Atrazine	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Benzaldehyde	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Benzo(a)anthracene	ug/kg	360 U	370 U	83 J	370 U	52 J	29 J	7800 U	67 J	370 U	380 U	3700 U
Benzo(a)pyrene	ug/kg	360 U	370 U	73 J	370 U	72 J	42 J	7800 U	63 J	370 U	380 U	3700 U
Benzo(b)fluoranthene	ug/kg	360 U	370 U	84 J	370 U	80 J	50 J	7800 U	82 J	370 U	380 U	3700 U
Benzo(g,h,i)perylene	ug/kg	360 U	370 U	41 J	370 U	94 J	57 J	7800 U	47 J	370 U	380 U	3700 U
Benzo(k)fluoranthene	ug/kg	360 U	370 U	31 J	370 U	48 J	23 J	7800 U	55 J	370 U	380 U	3700 U
Biphenyl	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
bis(2-Chloroethoxy)methane	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
bis(2-Chloroethyl)ether	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
bis(2-Ethylhexyl)phthalate	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Butyl benzylphthalate	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Caprolactam	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Carbazole	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Chrysene	ug/kg	360 U	370 U	82 J	370 U	72 J	38 J	7800 U	68 J	370 U	380 U	3700 U
Di-n-butylphthalate	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Di-n-octyl phthalate	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Dibenz(a,h)anthracene	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Dibenzofuran	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Diethyl phthalate	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Dimethyl phthalate	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Fluoranthene	ug/kg	360 U	370 U	170 J	42 J	120 J	65 J	7800 U	140 J	370 U	40 J	350 J
Fluorene	ug/kg	360 U	370 U	380 U	200 J	370 U	400 U	7800 U	350 U	370 U	380 U	270 J
Hexachlorobenzene	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Hexachlorobutadiene	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Hexachlorocyclopentadiene	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Hexachloroethane	ug/kg	110 U	110 U	120 U	110 U	110 U	120 U	2400 U	110 U	110 U	110 U	1100 U
Indeno(1,2,3-cd)pyrene	ug/kg	360 U	370 U	39 J	370 U	69 J	41 J	7800 U	44 J	370 U	380 U	3700 U
Isophorone	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
N-Nitrosodi-n-propylamine	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
N-Nitrosodiphenylamine	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Naphthalene	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Nitrobenzene	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U
Pentachlorophenol	ug/kg	3700 U	3800 U	3900 U	3800 U	3800 U	4100 U	80000 U	3600 U	3800 U	3900 U	39000 U
Phenanthrene	ug/kg	360 U	370 U	110 J	73 J	61 J	32 J	7800 U	71 J	370 U	26 J	960 J
Phenol	ug/kg	360 U	370 U	380 U	370 U	370 U	400 U	7800 U	350 U	370 U	380 U	3700 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		P18-08	P18-08	P18-09	P18-09	P18-10	P18-10	P18-10	P18-11	P18-11	P18-12	P18-12
Sample Depth(ft BGS):		0 - 2	6 - 8	0 - 2	6 - 8	0 - 2	6 - 8	8 - 10	0 - 2	6 - 8	0 - 2	6 - 8
Date Collected:	Units	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/05/03	08/05/03	08/05/03	08/05/03
Pyrene	ug/kg	360 U	370 U	150 J	39 J	120 J	66 J	7800 U	120 J	370 U	32 J	430 J
Pests/PCBs												
Aroclor-1016 (PCB-1016)	ug/kg	36 U	37 U	38 U	37 U	37 U	40 U	390 U	35 U	37 U	38 U	190 U
Aroclor-1221 (PCB-1221)	ug/kg	36 U	37 U	38 U	37 U	37 U	40 U	390 U	35 U	37 U	38 U	190 U
Aroclor-1232 (PCB-1232)	ug/kg	36 U	37 U	38 U	37 U	37 U	40 U	390 U	35 U	37 U	38 U	190 U
Aroclor-1242 (PCB-1242)	ug/kg	36 U	37 U	38 U	37 U	37 U	40 U	390 U	35 U	37 U	38 U	1600
Aroclor-1248 (PCB-1248)	ug/kg	36 U	37 U	38 U	37 U	37 U	40 U	390 U	35 U	37 U	38 U	190 U
Aroclor-1254 (PCB-1254)	ug/kg	36 U	37 U	38 U	37 U	37 U	40 U	390 U	35 U	37 U	38 U	190 U
Aroclor-1260 (PCB-1260)	ug/kg	36 U	37 U	38 U	37 U	37 U	40 U	390 U	35 U	37 U	38 U	190 U
Inorganics												
Antimony	ug/kg	147 J	185 J	389 J	173 J	268 J	371 J	360 J	260 J	259 J	R	R
Arsenic	ug/kg	4460 J	4480 J	6310 J	4290 J	3470	7670	3910	3270	4690	4230	5970
Barium	ug/kg	32400	33300	37000	47000	39100	62200	30200	9770	33900	53700	32800
Beryllium	ug/kg	310	282	453	375	346	542	262	106 U	112 U	147	98.6 J
Cadmium	ug/kg	256 J	223 J	250 J	286 J	112 J	181 J	84 J	83.5 J	93.3 J	135 J	222 J
Chromium Total	ug/kg	10300 J	10400 J	14600 J	12600 J	11100	18200	11500	5740 J	10200 J	12900 J	11100 J
Cobalt	ug/kg	6120	4850	8640	6840	5210	6850	4290	2590	5510	6470	5150
Copper	ug/kg	14400	12500	11800	16100	8560	16300	9600	7880	12100	16300	13100
Lead	ug/kg	5320 J	5650 J	8400 J	6250 J	8870	8300	5390	4430 J	4990 J	7320 J	5860 J
Manganese	ug/kg	307000	245000	314000	362000	214000	357000	145000	257000	274000	349000	272000
Mercury	ug/kg	36.1 U	36.6 U	38 U	37.1 U	37.1 U	28 J	38.8 U	35 U	36.9 U	37.9 U	37.4 U
Nickel	ug/kg	14600	12400	14600	18000	9690 J	22500 J	11600 J	6760	13600	17000	13900
Selenium	ug/kg	R	R	R	R	563 U	599 U	588 U	530 U	559 U	574 U	566 U
Silver	ug/kg	R	R	R	R	563 U	599 U	588 U	530 U	559 U	574 U	566 U
Thallium	ug/kg	1090 U	1110 U	405 J	353 J	1130 U	428 J	358 J	564 J	657 J	549 J	753 J
Vanadium	ug/kg	14300	14800	20600	15900	16700	23300	15200	7050	13800	16400	14100
Zinc	ug/kg	33300	30500	32000	39000	29500 J	41200 J	26300 J	29900	31500	41600	33800
Miscellaneous												
Total Solids	%	91.5	90.3	86.9	88.9	88.9	83.5	85.1	94.3	89.4	87.1	88.3

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9
Sample ID:		P18-13	P18-13	P18-17	TPP9-01
Sample Depth(ft BGS):		0 - 2	6 - 8	4 - 5	3.5 - 4
Date Collected:	Units	08/05/03	08/05/03	08/05/03	09/10/03
VOCs					
1,1,1-Trichloroethane	ug/kg	5.1 U	4 U	4.4 U	4.6 U
1,1,2,2-Tetrachloroethane	ug/kg	5.1 U	4 U	4.4 UJ	4.6 U
1,1,2-Trichloroethane	ug/kg	5.1 U	4 U	4.4 U	4.6 U
1,1-Dichloroethane	ug/kg	5.1 U	4 U	7.7	4.6 U
1,1-Dichloroethene	ug/kg	5.1 U	4 U	4.4 U	4.6 U
1,2,4-Trichlorobenzene	ug/kg	5.1 U	4 U	4.4 UJ	4.6 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	10 U	8 U	8.7 UJ	9.3 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	5.1 U	4 U	4.4 U	4.6 U
1,2-Dichlorobenzene	ug/kg	5.1 U	4 U	0.48 J	4.6 U
1,2-Dichloroethane	ug/kg	5.1 U	4 U	4.4 U	4.6 U
1,2-Dichloropropane	ug/kg	5.1 U	4 U	4.4 U	4.6 U
1,3-Dichlorobenzene	ug/kg	5.1 U	4 U	4.4 UJ	4.6 U
1,4-Dichlorobenzene	ug/kg	5.1 U	4 U	4.4 UJ	4.6 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	20 U	16 U	1.5 J	19 U
2-Hexanone	ug/kg	20 U	16 U	17 U	19 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	20 U	16 U	17 U	19 U
Acetone	ug/kg	20 U	16 U	12 J	19 U
Benzene	ug/kg	5.1 U	4 U	4.4 U	4.6 U
Bromodichloromethane	ug/kg	5.1 U	4 U	4.4 U	4.6 U
Bromoform	ug/kg	5.1 U	4 U	4.4 U	4.6 U
Bromomethane (Methyl Bromide)	ug/kg	10 U	8 U	8.7 U	9.3 U
Carbon disulfide	ug/kg	5.1 U	4 U	4.4 U	4.6 U
Carbon tetrachloride	ug/kg	5.1 U	4 U	4.4 U	4.6 U
Chlorobenzene	ug/kg	5.1 U	4 U	4.4 U	4.6 U
Chloroethane	ug/kg	10 U	8 U	8.7 U	9.3 U
Chloroform (Trichloromethane)	ug/kg	5.1 U	4 U	4.4 U	4.6 U
Chloromethane (Methyl Chloride)	ug/kg	10 U	8 U	8.7 U	9.3 U
cis-1,2-Dichloroethene	ug/kg	5.1 U	4 U	4.4 U	4.6 U
cis-1,3-Dichloropropene	ug/kg	5.1 U	4 U	4.4 U	4.6 U
Cyclohexane	ug/kg	10 U	8 U	8.7 U	9.3 U
Dibromochloromethane	ug/kg	5.1 U	4 U	4.4 U	4.6 U
Dichlorodifluoromethane (CFC-12)	ug/kg	10 U	8 U	8.7 U	9.3 U
Ethylbenzene	ug/kg	5.1 U	4 U	1.5 J	4.6 U
Isopropylbenzene	ug/kg	5.1 U	4 U	0.75 J	4.6 U
Methyl acetate	ug/kg	10 U	8 U	8.7 U	9.3 U
Methyl cyclohexane	ug/kg	10 U	8 U	8.7 U	9.3 U
Methyl Tert Butyl Ether	ug/kg	20 U	16 U	17 U	19 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	P-9 P18-13 0 - 2 08/05/03	P-9 P18-13 6 - 8 08/05/03	P-9 P18-17 4 - 5 08/05/03	P-9 TPP9-01 3.5 - 4 09/10/03
Methylene chloride	ug/kg	5.1 U	4 U	4.4 U	4.6 U
Styrene	ug/kg	5.1 U	4 U	4.4 U	4.6 U
Tetrachloroethene	ug/kg	5.1 U	4 U	4.4 U	4.6 U
Toluene	ug/kg	5.1 U	4 U	0.88 J	4.6 U
Total Xylenes	ug/kg	10 U	8 U	5.9 J	9.3 U
trans-1,2-Dichloroethene	ug/kg	5.1 U	4 U	4.4 U	4.6 U
trans-1,3-Dichloropropene	ug/kg	5.1 U	4 U	4.4 U	4.6 U
Trichloroethene	ug/kg	5.1 U	4 U	4.4 U	12
Trichlorofluoromethane (CFC-11)	ug/kg	10 U	8 U	8.7 U	9.3 U
Trifluorotrichloroethane (Freon 113)	ug/kg	5.1 U	4 U	4.4 U	4.6 U
Vinyl chloride	ug/kg	10 U	8 U	8.7 U	9.3 U
SVOCs					
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	380 U	370 U	370 U	380 U
2,4,5-Trichlorophenol	ug/kg	380 U	370 U	370 U	380 U
2,4,6-Trichlorophenol	ug/kg	380 U	370 U	370 U	380 U
2,4-Dichlorophenol	ug/kg	380 U	370 U	370 U	R
2,4-Dimethylphenol	ug/kg	380 U	370 U	370 U	380 U
2,4-Dinitrophenol	ug/kg	2000 U	1900 U	1900 U	1900 U
2,4-Dinitrotoluene	ug/kg	380 U	370 U	370 U	380 U
2,6-Dinitrotoluene	ug/kg	380 U	370 U	370 U	380 U
2-Chloronaphthalene	ug/kg	380 U	370 U	370 U	380 U
2-Chlorophenol	ug/kg	380 U	370 U	370 U	380 U
2-Methylnaphthalene	ug/kg	380 U	370 U	130 J	R
2-Methylphenol	ug/kg	380 U	370 U	370 U	380 U
2-Nitroaniline	ug/kg	2000 U	1900 U	1900 U	1900 U
2-Nitrophenol	ug/kg	380 U	370 U	370 U	R
3,3'-Dichlorobenzidine	ug/kg	2300 U	2200 U	2200 U	2300 U
3-Nitroaniline	ug/kg	2000 U	1900 U	1900 U	1900 U
4,6-Dinitro-2-methylphenol	ug/kg	2000 U	1900 U	1900 U	1900 U
4-Bromophenyl phenyl ether	ug/kg	380 U	370 U	370 U	380 U
4-Chloro-3-methylphenol	ug/kg	380 U	370 U	370 U	380 U
4-Chloroaniline	ug/kg	1500 U	1400 U	1500 U	1500 U
4-Chlorophenyl phenyl ether	ug/kg	380 U	370 U	370 U	380 U
4-Methylphenol	ug/kg	380 U	370 U	370 U	380 U
4-Nitroaniline	ug/kg	2000 U	1900 U	1900 U	1900 U
4-Nitrophenol	ug/kg	2000 U	1900 U	1900 U	1900 U
Acenaphthene	ug/kg	380 U	370 U	370 U	380 U
Acenaphthylene	ug/kg	380 U	370 U	370 U	380 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9
Sample ID:		P18-13	P18-13	P18-17	TPP9-01
Sample Depth(ft BGS):		0 - 2	6 - 8	4 - 5	3.5 - 4
Date Collected:	Units	08/05/03	08/05/03	08/05/03	09/10/03
Acetophenone	ug/kg	380 U	370 U	370 U	380 U
Anthracene	ug/kg	380 U	370 U	640	380 U
Atrazine	ug/kg	380 U	370 U	370 U	380 U
Benzaldehyde	ug/kg	380 U	370 U	370 U	380 U
Benzo(a)anthracene	ug/kg	380 U	370 U	35 J	380 U
Benzo(a)pyrene	ug/kg	380 U	370 U	370 U	380 U
Benzo(b)fluoranthene	ug/kg	380 U	370 U	370 U	380 U
Benzo(g,h,i)perylene	ug/kg	380 U	370 U	370 U	380 U
Benzo(k)fluoranthene	ug/kg	380 U	370 U	370 U	380 U
Biphenyl	ug/kg	380 U	370 U	93 J	380 U
bis(2-Chloroethoxy)methane	ug/kg	380 U	370 U	370 U	R
bis(2-Chloroethyl)ether	ug/kg	380 U	370 U	370 U	380 U
bis(2-Ethylhexyl)phthalate	ug/kg	31 J	370 U	370 U	380 U
Butyl benzylphthalate	ug/kg	380 U	370 U	370 U	380 U
Caprolactam	ug/kg	380 U	370 U	370 U	380 U
Carbazole	ug/kg	380 U	370 U	370 U	380 U
Chrysene	ug/kg	380 U	370 U	59 J	380 U
Di-n-butylphthalate	ug/kg	380 U	370 U	370 U	380 U
Di-n-octyl phthalate	ug/kg	380 U	370 U	370 U	380 U
Dibenz(a,h)anthracene	ug/kg	380 U	370 U	370 U	380 U
Dibenzofuran	ug/kg	380 U	370 U	370 U	380 U
Diethyl phthalate	ug/kg	380 U	370 U	370 U	380 U
Dimethyl phthalate	ug/kg	380 U	370 U	370 U	380 U
Fluoranthene	ug/kg	380 U	370 U	230 J	380 U
Fluorene	ug/kg	380 U	370 U	5100	380 U
Hexachlorobenzene	ug/kg	380 U	370 U	370 U	380 U
Hexachlorobutadiene	ug/kg	380 U	370 U	370 U	380 U
Hexachlorocyclopentadiene	ug/kg	380 U	370 U	370 U	380 U
Hexachloroethane	ug/kg	110 U	110 U	110 U	110 U
Indeno(1,2,3-cd)pyrene	ug/kg	380 U	370 U	370 U	380 U
Isophorone	ug/kg	380 U	370 U	370 U	380 U
N-Nitrosodi-n-propylamine	ug/kg	380 U	370 U	370 U	380 U
N-Nitrosodiphenylamine	ug/kg	380 U	370 U	370 U	380 U
Naphthalene	ug/kg	380 U	370 U	25 J	R
Nitrobenzene	ug/kg	380 U	370 U	370 U	380 U
Pentachlorophenol	ug/kg	3900 U	3800 U	3800 U	3900 U
Phenanthrene	ug/kg	380 U	370 U	4200	380 U
Phenol	ug/kg	380 U	370 U	370 U	380 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9
Sample ID:		P18-13	P18-13	P18-17	TPP9-01
Sample Depth(ft BGS):		0 - 2	6 - 8	4 - 5	3.5 - 4
Date Collected:	Units	08/05/03	08/05/03	08/05/03	09/10/03
Pyrene	ug/kg	380 U	370 U	87 J	380 U
Pests/PCBs					
Aroclor-1016 (PCB-1016)	ug/kg	38 U	37 U	37 U	38 U
Aroclor-1221 (PCB-1221)	ug/kg	38 U	37 U	37 U	38 U
Aroclor-1232 (PCB-1232)	ug/kg	38 U	37 U	37 U	38 U
Aroclor-1242 (PCB-1242)	ug/kg	10 J	37 U	37 U	38 U
Aroclor-1248 (PCB-1248)	ug/kg	38 U	37 U	37 U	38 U
Aroclor-1254 (PCB-1254)	ug/kg	38 U	37 U	37 U	38 U
Aroclor-1260 (PCB-1260)	ug/kg	38 U	37 U	37 U	38 U
Inorganics					
Antimony	ug/kg	R	156 J	216 J	398 J
Arsenic	ug/kg	3800	6220	4510	2610
Barium	ug/kg	23800	38900	35700	21200
Beryllium	ug/kg	77.5 J	95.5 J	90.2 J	169
Cadmium	ug/kg	187 J	187 J	177 J	131 J
Chromium Total	ug/kg	7380 J	9420 J	10800 J	7030
Cobalt	ug/kg	4310	4760	4840	3240
Copper	ug/kg	11100	11800	11800	8510
Lead	ug/kg	4930 J	5070 J	5210 J	4340
Manganese	ug/kg	260000	231000	236000	163000
Mercury	ug/kg	37.9 U	36.7 U	36.8 U	22.9 J
Nickel	ug/kg	11300	12300	12900 J	8320
Selenium	ug/kg	574 U	556 U	558 U	572 U
Silver	ug/kg	574 U	556 U	558 U	572 U
Thallium	ug/kg	425 J	445 J	552 J	1140 U
Vanadium	ug/kg	10200	13300	15200	9950
Zinc	ug/kg	31900	30500	32900 J	21100
Miscellaneous					
Total Solids	%	87.1	89.9	89.6	87.4

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	P-10 MWP10-01 0 - 2 05/01/03	P-10 MWP10-01 8 - 10 05/01/03	P-10 MWP10-02 0 - 2 05/06/03	P-10 MWP10-02 8 - 10 05/06/03	P-10 MWP10-03 0 - 2 05/07/03	P-10 MWP10-03 8 - 10 05/07/03	P-10 MWP10-04 0 - 2 04/30/03	P-10 MWP10-04 8 - 10 04/30/03
SVOCs									
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
2,4,5-Trichlorophenol	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
2,4,6-Trichlorophenol	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
2,4-Dichlorophenol	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	R	R
2,4-Dimethylphenol	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
2,4-Dinitrophenol	ug/kg	1800 U	1900 U	1900 U	1900 U	1800 U	1900 U	2000 U	1900 U
2,4-Dinitrotoluene	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
2,6-Dinitrotoluene	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
2-Chloronaphthalene	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
2-Chlorophenol	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
2-Methylnaphthalene	ug/kg	65 J	68 J	370 U	370 U	360 U	28 J	390 U	440
2-Methylphenol	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
2-Nitroaniline	ug/kg	1800 U	1900 U	1900 U	1900 U	1800 U	1900 U	2000 U	1900 U
2-Nitrophenol	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
3,3'-Dichlorobenzidine	ug/kg	2200 U	2300 U	2300 U	2200 U	2200 U	2200 U	2400 U	2200 UJ
3-Nitroaniline	ug/kg	1800 U	1900 U	1900 U	1900 U	1800 U	1900 U	2000 U	1900 U
4,6-Dinitro-2-methylphenol	ug/kg	1800 U	1900 U	1900 U	1900 U	1800 U	1900 U	2000 U	1900 UJ
4-Bromophenyl phenyl ether	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
4-Chloro-3-methylphenol	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
4-Chloroaniline	ug/kg	1400 U	1500 U	1500 U	1500 U	1400 U	1400 U	1500 U	1400 U
4-Chlorophenyl phenyl ether	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
4-Methylphenol	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
4-Nitroaniline	ug/kg	1800 U	1900 U	1900 U	1900 U	1800 U	1900 U	2000 U	1900 U
4-Nitrophenol	ug/kg	1800 U	1900 U	1900 U	1900 U	1800 U	1900 U	2000 U	1900 U
Acenaphthene	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	180 J
Acenaphthylene	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
Acetophenone	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
Anthracene	ug/kg	360 U	67 J	370 U	370 U	360 U	360 U	390 U	800
Atrazine	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
Benzaldehyde	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
Benzo(a)anthracene	ug/kg	91 J	100 J	370 UJ	370 UJ	41 J	73 J	390 U	180 J
Benzo(a)pyrene	ug/kg	56 J	46 J	370 UJ	370 UJ	53 J	120 J	390 U	370 UJ
Benzo(b)fluoranthene	ug/kg	70 J	56 J	370 UJ	370 UJ	61 J	150 J	390 U	370 UJ
Benzo(g,h,i)perylene	ug/kg	45 J	30 J	370 U	370 U	34 J	93 J	390 U	370 UJ
Benzo(k)fluoranthene	ug/kg	35 J	31 J	370 UJ	370 UJ	45 J	61 J	390 U	370 UJ
Biphenyl	ug/kg	76 J	80 J	370 U	370 U	39 J	42 J	390 U	93 J
bis(2-Chloroethoxy)methane	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	R	R

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	P-10 MWP10-01 0 - 2 05/01/03	P-10 MWP10-01 8 - 10 05/01/03	P-10 MWP10-02 0 - 2 05/06/03	P-10 MWP10-02 8 - 10 05/06/03	P-10 MWP10-03 0 - 2 05/07/03	P-10 MWP10-03 8 - 10 05/07/03	P-10 MWP10-04 0 - 2 04/30/03	P-10 MWP10-04 8 - 10 04/30/03
bis(2-Chloroethyl)ether	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	R	R
bis(2-Ethylhexyl)phthalate	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 UJ
Butyl benzylphthalate	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 UJ
Caprolactam	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
Carbazole	ug/kg	360 U	67 J	370 U	370 U	360 U	360 U	67 J	370 UJ
Chrysene	ug/kg	49 J	56 J	370 UJ	370 UJ	63 J	110 J	390 U	120 J
Di-n-butylphthalate	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 UJ
Di-n-octyl phthalate	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 UJ
Dibenz(a,h)anthracene	ug/kg	360 U	370 U	370 U	370 U	360 U	34 J	390 U	370 UJ
Dibenzofuran	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
Diethyl phthalate	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
Dimethyl phthalate	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
Fluoranthene	ug/kg	39 J	66 J	370 UJ	370 UJ	41 J	65 J	24 J	1200 J
Fluorene	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	1500
Hexachlorobenzene	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 UJ
Hexachlorobutadiene	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	R	R
Hexachlorocyclopentadiene	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
Hexachloroethane	ug/kg	110 U	110 U	110 U	110 U	110 U	110 U	R	R
Indeno(1,2,3-cd)pyrene	ug/kg	36 J	29 J	370 U	370 U	34 J	77 J	390 U	370 UJ
Isophorone	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
N-Nitrosodi-n-propylamine	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
N-Nitrosodiphenylamine	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 UJ
Naphthalene	ug/kg	360 U	370 U	370 U	370 U	360 U	23 J	R	59 J
Nitrobenzene	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	R	R
Pentachlorophenol	ug/kg	3700 U	3900 U	3800 U	3800 U	3700 UJ	3700 UJ	4000 U	3800 UJ
Phenanthrene	ug/kg	33 J	58 J	370 UJ	370 UJ	48 J	59 J	390 U	4900
Phenol	ug/kg	360 U	370 U	370 U	370 U	360 U	360 U	390 U	370 U
Pyrene	ug/kg	33 J	51 J	370 UJ	370 UJ	42 J	72 J	390 U	590 J
Pests/PCBs									
Aroclor-1016 (PCB-1016)	ug/kg	36 U	37 U	37 U	37 U	36 U	36 U	39 U	37 U
Aroclor-1221 (PCB-1221)	ug/kg	36 U	37 U	37 U	37 U	36 U	36 U	39 U	37 U
Aroclor-1232 (PCB-1232)	ug/kg	36 U	37 U	37 U	37 U	36 U	36 U	39 U	37 U
Aroclor-1242 (PCB-1242)	ug/kg	36 U	37 U	37 U	37 U	36 U	36 U	39 U	37 U
Aroclor-1248 (PCB-1248)	ug/kg	36 U	37 U	37 U	37 U	36 U	36 U	39 U	37 U
Aroclor-1254 (PCB-1254)	ug/kg	36 U	37 U	37 U	37 U	36 U	36 U	39 U	37 U
Aroclor-1260 (PCB-1260)	ug/kg	36 U	37 U	37 U	37 U	36 U	36 U	39 U	37 U
Miscellaneous									
Total Solids	%	91.9	88.2	88.7	89.1	92.8	91.6	85	89.7

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	P-10 MWP10-05 0 - 2 05/07/03	P-10 MWP10-05 8 - 10 05/07/03	P-10 MWP10-06 0 - 2 04/30/03	P-10 MWP10-06 8 - 10 04/30/03
SVOCs					
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	370 U	930 U	360 U	370 U
2,4,5-Trichlorophenol	ug/kg	370 U	930 U	360 U	370 U
2,4,6-Trichlorophenol	ug/kg	370 U	930 U	360 U	370 U
2,4-Dichlorophenol	ug/kg	370 U	930 U	R	R
2,4-Dimethylphenol	ug/kg	370 U	930 U	360 U	370 U
2,4-Dinitrophenol	ug/kg	1900 U	4800 U	1900 U	1900 U
2,4-Dinitrotoluene	ug/kg	370 U	930 U	360 U	370 U
2,6-Dinitrotoluene	ug/kg	370 U	930 U	360 U	370 U
2-Chloronaphthalene	ug/kg	370 U	930 U	360 U	370 U
2-Chlorophenol	ug/kg	370 U	930 U	360 U	370 U
2-Methylnaphthalene	ug/kg	19 J	930 U	360 U	370 U
2-Methylphenol	ug/kg	370 U	930 U	360 U	370 U
2-Nitroaniline	ug/kg	1900 U	4800 U	1900 U	1900 U
2-Nitrophenol	ug/kg	370 U	930 U	360 U	370 U
3,3'-Dichlorobenzidine	ug/kg	2300 U	5700 U	2200 U	2300 U
3-Nitroaniline	ug/kg	1900 U	4800 U	1900 U	1900 U
4,6-Dinitro-2-methylphenol	ug/kg	1900 U	4800 U	1900 U	1900 U
4-Bromophenyl phenyl ether	ug/kg	370 U	930 U	360 U	370 U
4-Chloro-3-methylphenol	ug/kg	370 U	930 U	360 U	370 U
4-Chloroaniline	ug/kg	1500 U	3700 U	1400 U	1500 U
4-Chlorophenyl phenyl ether	ug/kg	370 U	930 U	360 U	370 U
4-Methylphenol	ug/kg	370 U	930 U	360 U	370 U
4-Nitroaniline	ug/kg	1900 U	4800 U	1900 U	1900 U
4-Nitrophenol	ug/kg	1900 U	4800 U	1900 U	1900 U
Acenaphthene	ug/kg	77 J	930 U	360 U	370 U
Acenaphthylene	ug/kg	370 U	930 U	360 U	370 U
Acetophenone	ug/kg	370 U	930 U	360 U	370 U
Anthracene	ug/kg	130 J	930 U	360 U	370 U
Atrazine	ug/kg	370 U	930 U	360 U	370 U
Benzaldehyde	ug/kg	370 U	930 U	360 U	370 U
Benzo(a)anthracene	ug/kg	490	930 U	360 U	370 U
Benzo(a)pyrene	ug/kg	360 J	930 U	360 U	370 U
Benzo(b)fluoranthene	ug/kg	390	930 U	360 U	370 U
Benzo(g,h,i)perylene	ug/kg	200 J	930 U	360 U	370 U
Benzo(k)fluoranthene	ug/kg	300 J	930 U	360 U	370 U
Biphenyl	ug/kg	370 U	930 U	360 U	370 U
bis(2-Chloroethoxy)methane	ug/kg	370 U	930 U	R	R

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	P-10 MWP10-05 0 - 2 05/07/03	P-10 MWP10-05 8 - 10 05/07/03	P-10 MWP10-06 0 - 2 04/30/03	P-10 MWP10-06 8 - 10 04/30/03
bis(2-Chloroethyl)ether	ug/kg	370 U	930 U	R	R
bis(2-Ethylhexyl)phthalate	ug/kg	100 J	930 U	360 U	370 U
Butyl benzylphthalate	ug/kg	470	930 U	360 U	370 U
Caprolactam	ug/kg	370 U	930 U	360 U	370 U
Carbazole	ug/kg	72 J	930 U	360 U	370 U
Chrysene	ug/kg	460	930 U	360 U	370 U
Di-n-butylphthalate	ug/kg	370 U	930 U	360 U	370 U
Di-n-octyl phthalate	ug/kg	370 U	930 U	360 U	370 U
Dibenz(a,h)anthracene	ug/kg	74 J	930 U	360 U	370 U
Dibenzofuran	ug/kg	41 J	930 U	360 U	370 U
Diethyl phthalate	ug/kg	370 U	930 U	360 U	370 U
Dimethyl phthalate	ug/kg	370 U	930 U	360 U	370 U
Fluoranthene	ug/kg	740	54 J	360 U	370 U
Fluorene	ug/kg	72 J	930 U	360 U	370 U
Hexachlorobenzene	ug/kg	370 U	930 U	360 U	370 U
Hexachlorobutadiene	ug/kg	370 U	930 U	R	R
Hexachlorocyclopentadiene	ug/kg	370 U	930 U	360 U	370 U
Hexachloroethane	ug/kg	110 U	280 U	R	R
Indeno(1,2,3-cd)pyrene	ug/kg	210 J	930 U	360 U	370 U
Isophorone	ug/kg	370 U	930 U	360 U	370 U
N-Nitrosodi-n-propylamine	ug/kg	370 U	930 U	360 U	370 U
N-Nitrosodiphenylamine	ug/kg	370 U	930 U	360 U	370 U
Naphthalene	ug/kg	46 J	930 U	R	R
Nitrobenzene	ug/kg	370 U	930 U	R	R
Pentachlorophenol	ug/kg	3800 U	9600 UJ	3700 U	3800 U
Phenanthrene	ug/kg	520	930 U	360 U	27 J
Phenol	ug/kg	370 U	930 U	360 U	370 U
Pyrene	ug/kg	830	930 U	360 U	370 U
Pests/PCBs					
Aroclor-1016 (PCB-1016)	ug/kg	190 U	37 U	36 U	37 U
Aroclor-1221 (PCB-1221)	ug/kg	190 U	37 U	36 U	37 U
Aroclor-1232 (PCB-1232)	ug/kg	190 U	37 U	36 U	37 U
Aroclor-1242 (PCB-1242)	ug/kg	190 U	37 U	36 U	37 U
Aroclor-1248 (PCB-1248)	ug/kg	540	13 J	36 U	37 U
Aroclor-1254 (PCB-1254)	ug/kg	190 U	37 U	36 U	37 U
Aroclor-1260 (PCB-1260)	ug/kg	190 U	37 U	36 U	37 U
Miscellaneous					
Total Solids	%	88.6	88.4	90.7	88.9

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11
Sample ID:		BP11-01	BP11-01	BP11-02	BP11-02	BP11-03	BP11-03	BP11-04	BP11-04	BP11-05	BP11-05	BP11-05
Sample Depth(ft BGS):		0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	12.8 - 14
Date Collected:	Units	05/01/03	05/01/03	05/01/03	05/01/03	05/01/03	05/01/03	04/30/03	04/30/03	04/30/03	04/30/03	04/30/03
VOCs												
1,1,1-Trichloroethane	ug/kg	5.2 UJ	4.4 UJ	4.7 UJ	4.7 UJ	4.7 UJ	4.6 UJ	4.7 UJ	4.1 U	4.5 UJ	4.9 UJ	4.6 U
1,1,2,2-Tetrachloroethane	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
1,1,2-Trichloroethane	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
1,1-Dichloroethane	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
1,1-Dichloroethene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
1,2,4-Trichlorobenzene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 UJ	4.5 U	4.9 U	4.6 UJ
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	10 U	8.7 U	9.5 U	9.4 U	9.4 U	9.2 U	9.5 U	8.2 UJ	8.9 U	9.8 U	9.2 UJ
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
1,2-Dichlorobenzene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
1,2-Dichloroethane	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
1,2-Dichloropropane	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
1,3-Dichlorobenzene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
1,4-Dichlorobenzene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	21 U	17 U	19 U	19 U	19 U	18 U	19 U	16 U	18 U	20 U	1.8 J
2-Hexanone	ug/kg	21 U	17 U	19 U	19 U	19 U	18 U	19 U	16 U	18 U	20 U	18 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	21 U	17 U	19 U	19 U	19 U	18 U	19 U	16 U	18 U	20 U	1.3 J
Acetone	ug/kg	3.5 J	3.9 J	19 UJ	14 J	19 UJ	15 J	14 J	16 U	11 J	11 J	9.1 J
Benzene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
Bromodichloromethane	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
Bromoform	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
Bromomethane (Methyl Bromide)	ug/kg	10 UJ	8.7 UJ	9.5 UJ	9.4 UJ	9.4 UJ	9.2 UJ	9.5 U	8.2 U	8.9 U	9.8 U	9.2 U
Carbon disulfide	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	0.25 J
Carbon tetrachloride	ug/kg	5.2 UJ	4.4 UJ	4.7 UJ	4.7 UJ	4.7 UJ	4.6 UJ	4.7 UJ	4.1 U	4.5 UJ	4.9 UJ	4.6 U
Chlorobenzene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
Chloroethane	ug/kg	10 U	8.7 U	9.5 U	9.4 U	9.4 U	9.2 U	9.5 U	8.2 U	8.9 U	9.8 U	9.2 U
Chloroform (Trichloromethane)	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
Chloromethane (Methyl Chloride)	ug/kg	10 U	8.7 U	9.5 U	9.4 U	9.4 U	9.2 U	9.5 U	8.2 U	8.9 U	9.8 U	9.2 U
cis-1,2-Dichloroethene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
cis-1,3-Dichloropropene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
Cyclohexane	ug/kg	10 U	8.7 U	9.5 U	9.4 U	9.4 U	9.2 U	9.5 U	8.2 U	8.9 U	9.8 U	9.2 U
Dibromochloromethane	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
Dichlorodifluoromethane (CFC-12)	ug/kg	10 U	8.7 U	9.5 U	9.4 U	9.4 U	9.2 U	9.5 U	8.2 U	8.9 U	9.8 U	9.2 U
Ethylbenzene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
Isopropylbenzene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
Methyl acetate	ug/kg	10 U	8.7 U	9.5 U	9.4 U	9.4 U	9.2 U	9.5 U	8.2 U	8.9 U	9.8 U	1.3 J
Methyl cyclohexane	ug/kg	10 U	8.7 U	9.5 U	9.4 U	9.4 U	9.2 U	9.5 U	8.2 U	8.9 U	9.8 U	9.2 U
Methyl Tert Butyl Ether	ug/kg	21 U	17 U	19 U	19 U	19 U	18 U	19 U	16 U	18 U	20 U	18 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11
Sample ID:		BP11-01	BP11-01	BP11-02	BP11-02	BP11-03	BP11-03	BP11-04	BP11-04	BP11-05	BP11-05	BP11-05
Sample Depth(ft BGS):		0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	12.8 - 14
Date Collected:	Units	05/01/03	05/01/03	05/01/03	05/01/03	05/01/03	05/01/03	04/30/03	04/30/03	04/30/03	04/30/03	04/30/03
Methylene chloride	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	2.4 J	4.9 U	4.6 U
Styrene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
Tetrachloroethene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
Toluene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	0.41 J
Total Xylenes	ug/kg	10 U	8.7 U	9.5 U	9.4 U	9.4 U	9.2 U	9.5 U	8.2 U	8.9 U	9.8 U	9.2 U
trans-1,2-Dichloroethene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
trans-1,3-Dichloropropene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
Trichloroethene	ug/kg	5.2 U	4.4 U	4.7 U	4.7 UJ	4.7 U	4.6 UJ	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
Trichlorofluoromethane (CFC-11)	ug/kg	10 UJ	8.7 UJ	9.5 UJ	9.4 U	9.4 UJ	9.2 U	9.5 UJ	8.2 U	8.9 UJ	9.8 UJ	9.2 U
Trifluorotrichloroethane (Freon 113)	ug/kg	5.2 U	4.4 U	4.7 U	4.7 U	4.7 U	4.6 U	4.7 U	4.1 U	4.5 U	4.9 U	4.6 U
Vinyl chloride	ug/kg	10 U	8.7 U	9.5 U	9.4 U	9.4 U	9.2 U	9.5 U	8.2 U	8.9 U	9.8 U	9.2 U
SVOCs												
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
2,4,5-Trichlorophenol	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
2,4,6-Trichlorophenol	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
2,4-Dichlorophenol	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	R	R	R	R	R
2,4-Dimethylphenol	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
2,4-Dinitrophenol	ug/kg	1800 U	1900 U	1800 U	2000 U	1800 U	1900 U	2000 U	1900 U	2000 U	2000 U	1900 U
2,4-Dinitrotoluene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
2,6-Dinitrotoluene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
2-Chloronaphthalene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
2-Chlorophenol	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
2-Methylnaphthalene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	100 J
2-Methylphenol	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
2-Nitroaniline	ug/kg	1800 U	1900 U	1800 U	2000 U	1800 U	1900 U	2000 U	1900 U	2000 U	2000 U	1900 U
2-Nitrophenol	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
3,3'-Dichlorobenzidine	ug/kg	2100 U	2300 U	2100 U	2400 U	2100 U	2300 U	2400 U	2200 U	2300 U	2300 U	2300 U
3-Nitroaniline	ug/kg	1800 U	1900 U	1800 U	2000 U	1800 U	1900 U	2000 U	1900 U	2000 U	2000 U	1900 U
4,6-Dinitro-2-methylphenol	ug/kg	1800 U	1900 U	1800 U	2000 U	1800 U	1900 U	2000 U	1900 U	2000 U	2000 U	1900 U
4-Bromophenyl phenyl ether	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
4-Chloro-3-methylphenol	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
4-Chloroaniline	ug/kg	1400 U	1500 U	1400 U	1500 U	1400 U	1500 U	1600 U	1400 U	1500 U	1500 U	1500 U
4-Chlorophenyl phenyl ether	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
4-Methylphenol	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
4-Nitroaniline	ug/kg	1800 U	1900 U	1800 U	2000 U	1800 U	1900 U	2000 U	1900 U	2000 U	2000 U	1900 U
4-Nitrophenol	ug/kg	1800 U	1900 U	1800 U	2000 U	1800 U	1900 U	2000 U	1900 U	2000 U	2000 U	1900 U
Acenaphthene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	45 J
Acenaphthylene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11
Sample ID:		BP11-01	BP11-01	BP11-02	BP11-02	BP11-03	BP11-03	BP11-04	BP11-04	BP11-05	BP11-05	BP11-05
Sample Depth(ft BGS):		0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	12.8 - 14
Date Collected:	Units	05/01/03	05/01/03	05/01/03	05/01/03	05/01/03	05/01/03	04/30/03	04/30/03	04/30/03	04/30/03	04/30/03
Acetophenone	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Anthracene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Atrazine	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Benzaldehyde	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Benzo(a)anthracene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Benzo(a)pyrene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Benzo(b)fluoranthene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Benzo(g,h,i)perylene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Benzo(k)fluoranthene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Biphenyl	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	91 J
bis(2-Chloroethoxy)methane	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	R	R	R	R	R
bis(2-Chloroethyl)ether	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	R	R	R	R	R
bis(2-Ethylhexyl)phthalate	ug/kg	96 J	370 U	340 U	390 U	350 U	89 J	400 U	360 U	380 U	380 U	380 U
Butyl benzylphthalate	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Caprolactam	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Carbazole	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	110 J
Chrysene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Di-n-butylphthalate	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Di-n-octyl phthalate	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Dibenz(a,h)anthracene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Dibenzofuran	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	50 J
Diethyl phthalate	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Dimethyl phthalate	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Fluoranthene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Fluorene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	110 J
Hexachlorobenzene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Hexachlorobutadiene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	R	R	R	R	R
Hexachlorocyclopentadiene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Hexachloroethane	ug/kg	110 U	110 U	100 U	120 U	110 U	110 U	R	R	R	R	R
Indeno(1,2,3-cd)pyrene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Isophorone	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
N-Nitrosodi-n-propylamine	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
N-Nitrosodiphenylamine	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Naphthalene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	R	R	R	R	82 J
Nitrobenzene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	R	R	R	R	R
Pentachlorophenol	ug/kg	3600 U	3900 U	3500 U	4000 U	3600 U	3800 U	4100 U	3700 U	3900 U	3900 U	3900 U
Phenanthrene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	37 J
Phenol	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11
Sample ID:		BP11-01	BP11-01	BP11-02	BP11-02	BP11-03	BP11-03	BP11-04	BP11-04	BP11-05	BP11-05	BP11-05
Sample Depth(ft BGS):		0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	0 - 2	8 - 10	12.8 - 14
Date Collected:	Units	05/01/03	05/01/03	05/01/03	05/01/03	05/01/03	05/01/03	04/30/03	04/30/03	04/30/03	04/30/03	04/30/03
Pyrene	ug/kg	350 U	370 U	340 U	390 U	350 U	370 U	400 U	360 U	380 U	380 U	380 U
Pests/PCBs												
Aroclor-1016 (PCB-1016)	ug/kg	35 U	37 U	34 U	39 U	35 U	37 U	40 U	36 U	38 U	38 U	38 U
Aroclor-1221 (PCB-1221)	ug/kg	35 U	37 U	34 U	39 U	35 U	37 U	40 U	36 U	38 U	38 U	38 U
Aroclor-1232 (PCB-1232)	ug/kg	35 U	37 U	34 U	39 U	35 U	37 U	40 U	36 U	38 U	38 U	38 U
Aroclor-1242 (PCB-1242)	ug/kg	35 U	37 U	34 U	39 U	35 U	37 U	40 U	36 U	38 U	38 U	38 U
Aroclor-1248 (PCB-1248)	ug/kg	35 U	37 U	34 U	39 U	35 U	37 U	40 U	36 U	38 U	38 U	38 U
Aroclor-1254 (PCB-1254)	ug/kg	35 U	37 U	34 U	39 U	35 U	37 U	40 U	36 U	38 U	38 U	38 U
Aroclor-1260 (PCB-1260)	ug/kg	35 U	37 U	34 U	39 U	35 U	37 U	40 U	36 U	38 U	38 U	38 U
Inorganics												
Antimony	ug/kg	2120 UJ	2270 UJ	2080 UJ	2380 UJ	2130 UJ	2260 UJ	R	R	R	R	R
Arsenic	ug/kg	2810 J	3740 J	2570 J	6170 J	2490 J	4880 J	3700	3490	6540	4410	5240
Barium	ug/kg	7430 J	44800 J	4680 J	56500 J	6800 J	86800 J	52100	38800	46200	45500	18000
Beryllium	ug/kg	110 J	366 J	95.1 J	535 J	94.8 J	642 J	483	329	400	381	205
Cadmium	ug/kg	24.9 J	18.8 J	21.2 J	594 UJ	36.6 J	123 J	600 U	20.2 J	578 U	13.9 J	60.3 J
Chromium Total	ug/kg	4000 J	11100 J	3730 J	16500 J	3940 J	13500 J	14500	10400	11700	11600	6030 J
Cobalt	ug/kg	1940 J	6380 J	1720 J	8700 J	1810 J	5910 J	5120 J	4990 J	6700 J	7570 J	3410 J
Copper	ug/kg	4710 J	14100 J	4220 J	22400 J	5120 J	16400 J	14600	11900	12700	15200	11200
Lead	ug/kg	2990 J	6110 J	2290 J	8590 J	2660 J	13100 J	7030	4980	7700	6500	5620 J
Manganese	ug/kg	156000	333000	141000	411000	150000	337000	214000	236000	465000	370000	219000
Mercury	ug/kg	35 U	37.4 U	34.4 U	28.6 J	35.2 U	52.1	23.9 J	36.2 U	45.7	37.9 U	37.5 U
Nickel	ug/kg	4920 J	17800 J	4620 J	24600 J	4710 J	16700 J	16900	13000	16000	17700	10900 J
Selenium	ug/kg	530 UJ	567 UJ	521 UJ	594 UJ	533 UJ	565 UJ	600 U	549 U	578 U	574 U	569 U
Silver	ug/kg	530 UJ	567 UJ	521 UJ	594 UJ	533 UJ	565 UJ	600 U	549 U	578 U	574 U	569 U
Thallium	ug/kg	1060 UJ	1130 UJ	1040 UJ	1190 UJ	1070 UJ	1130 UJ	1200 UJ	1100 UJ	1160 UJ	1150 UJ	1140 UJ
Vanadium	ug/kg	5400 J	14900 J	5150 J	21400 J	4730 J	17700 J	19700	14900	18000	15700	9710
Zinc	ug/kg	17800 J	35900 J	15900	47800	15600	45200 J	39300 J	34300 J	42600 J	36800 J	34100 J
Miscellaneous												
Total Solids	%	94.3	88.1	96.1	84.2	93.9	88.5	83.4	91.1	86.5	87.1	88

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11
Sample ID:		BP11-06	BP11-06	MWP11-01	MWP11-01	MWP11-01	MWP11-02	MWP11-02	MWP11-03	MWP11-03
Sample Depth(ft BGS):		0 - 2	8 - 10	0 - 2	8 - 10	14 - 16	0 - 2	8 - 10	0 - 2	8 - 10
Date Collected:	Units	04/30/03	04/30/03	05/06/03	05/06/03	05/06/03	05/06/03	05/06/03	04/30/03	04/30/03
VOCs										
1,1,1-Trichloroethane	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 UJ	4.9 UJ
1,1,2,2-Tetrachloroethane	ug/kg	240 U	5.9 U	R	R	R	R	R	5.2 U	4.9 U
1,1,2-Trichloroethane	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
1,1-Dichloroethane	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
1,1-Dichloroethene	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
1,2,4-Trichlorobenzene	ug/kg	240 U	5.9 UJ	4.6 UJ	6 UJ	5 UJ	5 UJ	5.2 UJ	5.2 U	4.9 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	480 UJ	12 UJ	9.3 UJ	12 UJ	10 UJ	10 UJ	10 UJ	10 U	9.7 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
1,2-Dichlorobenzene	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
1,2-Dichloroethane	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
1,2-Dichloropropane	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
1,3-Dichlorobenzene	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
1,4-Dichlorobenzene	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	970 UJ	23 U	1.4 J	24 UJ	20 UJ	20 UJ	1.8 J	15 J	19 U
2-Hexanone	ug/kg	970 UJ	23 U	19 UJ	24 UJ	20 UJ	20 UJ	21 UJ	21 UJ	19 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	970 UJ	23 U	19 UJ	3 J	20 UJ	20 UJ	21 UJ	1.3 J	19 U
Acetone	ug/kg	970 UJ	9.1 J	4.9 J	24 UJ	20 UJ	20 UJ	4.6 J	92 J	4.9 J
Benzene	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	1.7 J	5.2 U	4.9 U
Bromodichloromethane	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
Bromoform	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
Bromomethane (Methyl Bromide)	ug/kg	480 U	12 U	9.3 U	12 U	10 U	10 U	10 U	10 UJ	9.7 U
Carbon disulfide	ug/kg	240 U	0.34 J	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
Carbon tetrachloride	ug/kg	240 UJ	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 UJ	4.9 UJ
Chlorobenzene	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
Chloroethane	ug/kg	480 U	12 U	9.3 U	12 U	10 U	10 U	10 U	10 U	9.7 U
Chloroform (Trichloromethane)	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
Chloromethane (Methyl Chloride)	ug/kg	480 U	12 U	9.3 U	12 U	10 U	10 U	10 U	10 UJ	9.7 U
cis-1,2-Dichloroethene	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
cis-1,3-Dichloropropene	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
Cyclohexane	ug/kg	480 U	12 U	9.3 U	12 U	10 U	10 U	10 U	10 U	9.7 U
Dibromochloromethane	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
Dichlorodifluoromethane (CFC-12)	ug/kg	480 UJ	12 U	9.3 U	12 U	10 U	10 U	10 U	10 UJ	9.7 U
Ethylbenzene	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
Isopropylbenzene	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
Methyl acetate	ug/kg	110 J	12 U	9.3 U	12 U	10 U	3.4 J	1.4 J	10 U	9.7 U
Methyl cyclohexane	ug/kg	480 U	12 U	9.3 U	0.77 J	10 U	10 U	0.69 J	10 U	9.7 U
Methyl Tert Butyl Ether	ug/kg	970 U	23 U	19 U	24 U	20 U	20 U	21 U	21 U	19 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	P-11 BP11-06 0 - 2 04/30/03	P-11 BP11-06 8 - 10 04/30/03	P-11 MWP11-01 0 - 2 05/06/03	P-11 MWP11-01 8 - 10 05/06/03	P-11 MWP11-01 14 - 16 05/06/03	P-11 MWP11-02 0 - 2 05/06/03	P-11 MWP11-02 8 - 10 05/06/03	P-11 MWP11-03 0 - 2 04/30/03	P-11 MWP11-03 8 - 10 04/30/03
Methylene chloride	ug/kg	240 U	5.9 U	4.6 UJ	6 UJ	5 UJ	5 UJ	5.2 UJ	5.2 U	4.9 U
Styrene	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
Tetrachloroethene	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	0.57 J	5.2 U	5.2 U	4.9 U
Toluene	ug/kg	18 J	5.9 U	4.6 U	6 U	5 U	5 U	0.93 J	0.37 J	4.9 U
Total Xylenes	ug/kg	480 U	12 U	9.3 U	12 U	10 U	10 U	10 U	10 U	9.7 U
trans-1,2-Dichloroethene	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
trans-1,3-Dichloropropene	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
Trichloroethene	ug/kg	1100	5.9 U	4.6 UJ	6 UJ	5 UJ	5 UJ	5.2 UJ	5.2 U	4.9 U
Trichlorofluoromethane (CFC-11)	ug/kg	480 U	12 U	9.3 U	12 U	10 U	10 U	10 U	10 U	9.7 UJ
Trifluorotrichloroethane (Freon 113)	ug/kg	240 U	5.9 U	4.6 U	6 U	5 U	5 U	5.2 U	5.2 U	4.9 U
Vinyl chloride	ug/kg	480 U	12 U	9.3 U	12 U	10 U	10 U	10 U	10 U	9.7 U
SVOCs										
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
2,4,5-Trichlorophenol	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
2,4,6-Trichlorophenol	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
2,4-Dichlorophenol	ug/kg	R	R	950 U	360 U	380 U	370 U	380 U	R	R
2,4-Dimethylphenol	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
2,4-Dinitrophenol	ug/kg	2000 U	2000 U	4900 U	1800 U	2000 U	1900 U	1900 U	53000 U	1900 U
2,4-Dinitrotoluene	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
2,6-Dinitrotoluene	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
2-Chloronaphthalene	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
2-Chlorophenol	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
2-Methylnaphthalene	ug/kg	73 J	390 U	84 J	360 U	380 U	370 U	39 J	1600 J	360 U
2-Methylphenol	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
2-Nitroaniline	ug/kg	2000 U	2000 U	4900 U	1800 U	2000 U	1900 U	1900 U	53000 U	1900 U
2-Nitrophenol	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
3,3'-Dichlorobenzidine	ug/kg	2400 U	2300 U	5700 U	2200 U	2300 U	2300 U	2300 U	63000 U	2200 U
3-Nitroaniline	ug/kg	2000 U	2000 U	4900 U	1800 U	2000 U	1900 U	1900 U	53000 U	1900 U
4,6-Dinitro-2-methylphenol	ug/kg	2000 U	2000 U	4900 U	1800 U	2000 U	1900 U	1900 U	53000 U	1900 U
4-Bromophenyl phenyl ether	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
4-Chloro-3-methylphenol	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
4-Chloroaniline	ug/kg	1500 U	1500 U	3700 U	1400 U	1500 U	1500 U	1500 U	41000 U	1400 U
4-Chlorophenyl phenyl ether	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
4-Methylphenol	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
4-Nitroaniline	ug/kg	2000 U	2000 U	4900 U	1800 U	2000 U	1900 U	1900 U	53000 U	1900 U
4-Nitrophenol	ug/kg	2000 U	2000 U	4900 U	1800 U	2000 U	1900 U	1900 U	53000 U	1900 U
Acenaphthene	ug/kg	390 U	390 U	360 J	360 U	380 U	47 J	130 J	10000 U	360 U
Acenaphthylene	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11	P-11
Sample ID:		BP11-06	BP11-06	MWP11-01	MWP11-01	MWP11-01	MWP11-02	MWP11-02	MWP11-03	MWP11-03
Sample Depth(ft BGS):		0 - 2	8 - 10	0 - 2	8 - 10	14 - 16	0 - 2	8 - 10	0 - 2	8 - 10
Date Collected:	Units	04/30/03	04/30/03	05/06/03	05/06/03	05/06/03	05/06/03	05/06/03	04/30/03	04/30/03
Acetophenone	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
Anthracene	ug/kg	390 U	390 U	630 J	360 U	380 U	98 J	190 J	2300 J	360 U
Atrazine	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
Benzaldehyde	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
Benzo(a)anthracene	ug/kg	84 J	390 U	1300 J	360 UJ	380 UJ	420 J	300 J	2800 J	360 U
Benzo(a)pyrene	ug/kg	25 J	390 U	1200 J	360 UJ	380 UJ	400 J	270 J	1200 J	360 U
Benzo(b)fluoranthene	ug/kg	26 J	390 U	1600 J	360 UJ	380 UJ	540 J	350 J	1000 J	360 U
Benzo(g,h,i)perylene	ug/kg	22 J	390 U	590 J	360 U	380 U	240 J	160 J	860 J	360 U
Benzo(k)fluoranthene	ug/kg	390 U	390 U	650 J	360 UJ	380 UJ	250 J	130 J	790 J	360 U
Biphenyl	ug/kg	84 J	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
bis(2-Chloroethoxy)methane	ug/kg	R	R	950 U	360 U	380 U	370 U	380 U	R	R
bis(2-Chloroethyl)ether	ug/kg	R	R	950 U	360 U	380 U	370 U	380 U	R	R
bis(2-Ethylhexyl)phthalate	ug/kg	390 U	390 U	220 J	360 U	380 U	120 J	380 U	10000 U	360 U
Butyl benzylphthalate	ug/kg	390 U	390 U	140 J	360 U	380 U	38 J	380 U	42000	360 U
Caprolactam	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
Carbazole	ug/kg	390 U	390 U	310 J	360 U	380 U	51 J	120 J	2200 J	360 U
Chrysene	ug/kg	34 J	390 U	1400 J	360 UJ	380 UJ	470 J	320 J	1300 J	360 U
Di-n-butylphthalate	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	1600 J	360 U
Di-n-octyl phthalate	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
Dibenz(a,h)anthracene	ug/kg	390 U	390 U	190 J	360 U	380 U	62 J	45 J	10000 U	360 U
Dibenzofuran	ug/kg	390 U	390 U	210 J	360 U	380 U	27 J	86 J	10000 U	360 U
Diethyl phthalate	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
Dimethyl phthalate	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
Fluoranthene	ug/kg	26 J	390 U	2900 J	360 UJ	380 UJ	690 J	830	2900 J	360 U
Fluorene	ug/kg	390 U	390 U	330 J	360 U	380 U	40 J	120 J	2600 J	360 U
Hexachlorobenzene	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
Hexachlorobutadiene	ug/kg	R	R	950 U	360 U	380 U	370 U	380 U	R	R
Hexachlorocyclopentadiene	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
Hexachloroethane	ug/kg	R	R	290 U	110 U	120 U	110 U	110 U	R	R
Indeno(1,2,3-cd)pyrene	ug/kg	390 U	390 U	600 J	360 U	380 U	220 J	150 J	840 J	360 U
Isophorone	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
N-Nitrosodi-n-propylamine	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
N-Nitrosodiphenylamine	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U
Naphthalene	ug/kg	R	R	310 J	360 U	380 U	23 J	170 J	530 J	R
Nitrobenzene	ug/kg	R	R	950 U	360 U	380 U	370 U	380 U	R	R
Pentachlorophenol	ug/kg	4000 U	4000 U	9800 U	3700 U	4000 U	3800 U	3900 U	110000 U	3700 U
Phenanthrene	ug/kg	41 J	390 U	2600 J	360 UJ	380 UJ	430 J	920 J	3000 J	360 U
Phenol	ug/kg	390 U	390 U	950 U	360 U	380 U	370 U	380 U	10000 U	360 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	P-11 BP11-06 0 - 2 04/30/03	P-11 BP11-06 8 - 10 04/30/03	P-11 MWP11-01 0 - 2 05/06/03	P-11 MWP11-01 8 - 10 05/06/03	P-11 MWP11-01 14 - 16 05/06/03	P-11 MWP11-02 0 - 2 05/06/03	P-11 MWP11-02 8 - 10 05/06/03	P-11 MWP11-03 0 - 2 04/30/03	P-11 MWP11-03 8 - 10 04/30/03
Pyrene	ug/kg	390 U	390 U	2900 J	360 UJ	380 UJ	740 J	570 J	1900 J	360 U
Pests/PCBs										
Aroclor-1016 (PCB-1016)	ug/kg	39 U	39 U	380 U	36 U	38 U	370 U	38 U	41 U	36 U
Aroclor-1221 (PCB-1221)	ug/kg	39 U	39 U	380 U	36 U	38 U	370 U	38 U	41 U	36 U
Aroclor-1232 (PCB-1232)	ug/kg	39 U	39 U	380 U	36 U	38 U	370 U	38 U	41 U	36 U
Aroclor-1242 (PCB-1242)	ug/kg	39 U	39 U	380 U	36 U	38 U	370 U	38 U	41 U	36 U
Aroclor-1248 (PCB-1248)	ug/kg	39 U	39 U	3400	13 J	38 U	5300	38 U	41 U	36 U
Aroclor-1254 (PCB-1254)	ug/kg	39 U	39 U	380 U	36 U	38 U	370 U	38 U	41 U	36 U
Aroclor-1260 (PCB-1260)	ug/kg	39 U	39 U	380 U	36 U	38 U	370 U	38 U	41 U	36 U
Inorganics										
Antimony	ug/kg	R	R	251 J	2180 UJ	2330 UJ	302 J	2290 UJ	R	R
Arsenic	ug/kg	5350	6170	3770 J	2980 J	3140 J	3770 J	4580 J	5630	5580
Barium	ug/kg	72500	45100	125000 J	9640 J	4380 J	192000 J	55300 J	80900	31700
Beryllium	ug/kg	974	332	288 J	131 J	120 J	277 J	338 J	676	331
Cadmium	ug/kg	2950 UJ	585 U	323 J	544 UJ	581 UJ	286 J	573 UJ	65.2 J	31.6 J
Chromium Total	ug/kg	73400	9450	10300 J	6580 J	4160 J	10800 J	10800 J	11500	10400
Cobalt	ug/kg	4140 J	5220 J	3790 J	2470 J	1900 J	3390 J	5030 J	4160 J	5160 J
Copper	ug/kg	55600	13300	12900 J	5200 J	4440 J	12400 J	13200 J	14400	12100
Lead	ug/kg	60800	6280	30600 J	2650 J	2940 J	47700 J	11000 J	20400	5440
Manganese	ug/kg	3260000	223000	226000	139000	129000	225000	293000	439000	224000
Mercury	ug/kg	68.8	38.6 U	45.2	35.9 U	38.4 U	79.5	37.8 U	31 J	36 U
Nickel	ug/kg	30900	17000	10600 J	6390 J	4870 J	9630 J	13500 J	12000	16200
Selenium	ug/kg	2950 UJ	585 U	574 UJ	544 UJ	581 UJ	563 UJ	573 UJ	627 U	545 U
Silver	ug/kg	2950 UJ	585 U	574 UJ	544 UJ	581 UJ	563 UJ	573 UJ	627 U	545 U
Thallium	ug/kg	5900 UJ	1170 UJ	1150 UJ	1090 UJ	1160 UJ	1130 UJ	1150 UJ	1250 UJ	1090 UJ
Vanadium	ug/kg	12200	14300	12400 J	9090 J	5620 J	10600 J	14500 J	15100	14200
Zinc	ug/kg	28900 J	39400 J	105000	20600	17500	149000	46100	52200 J	36600 J
Miscellaneous										
Total Solids	%	84.8	85.5	87.1	92	86	88.8	87.2	79.7	91.7

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	P-11 MWP11-04 0 - 2 04/29/03	P-11 MWP11-04 8 - 10 04/29/03	P-11 MWP11-04 15 - 17 04/29/03
VOCs				
1,1,1-Trichloroethane	ug/kg	4.4 U	4.6 U	4.3 U
1,1,2,2-Tetrachloroethane	ug/kg	4.4 UJ	4.6 UJ	4.3 UJ
1,1,2-Trichloroethane	ug/kg	4.4 UJ	4.6 U	4.3 U
1,1-Dichloroethane	ug/kg	4.4 U	4.6 U	4.3 U
1,1-Dichloroethene	ug/kg	4.4 U	4.6 U	4.3 U
1,2,4-Trichlorobenzene	ug/kg	4.4 UJ	4.6 UJ	4.3 UJ
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	8.8 UJ	9.1 UJ	8.6 UJ
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	4.4 UJ	4.6 UJ	4.3 UJ
1,2-Dichlorobenzene	ug/kg	4.4 UJ	4.6 UJ	4.3 UJ
1,2-Dichloroethane	ug/kg	4.4 U	4.6 U	4.3 U
1,2-Dichloropropane	ug/kg	4.4 U	4.6 U	4.3 U
1,3-Dichlorobenzene	ug/kg	4.4 UJ	4.6 UJ	4.3 UJ
1,4-Dichlorobenzene	ug/kg	4.4 UJ	4.6 UJ	4.3 UJ
2-Butanone (Methyl Ethyl Ketone)	ug/kg	18 UJ	18 UJ	17 UJ
2-Hexanone	ug/kg	18 UJ	18 UJ	17 UJ
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	18 U	18 U	17 U
Acetone	ug/kg	7.9 J	5.1 J	8.6 J
Benzene	ug/kg	4.4 U	0.77 J	4.3 U
Bromodichloromethane	ug/kg	4.4 U	4.6 U	4.3 U
Bromoform	ug/kg	4.4 UJ	4.6 UJ	4.3 UJ
Bromomethane (Methyl Bromide)	ug/kg	8.8 UJ	9.1 UJ	8.6 UJ
Carbon disulfide	ug/kg	4.4 U	4.6 U	4.3 U
Carbon tetrachloride	ug/kg	4.4 U	4.6 U	4.3 U
Chlorobenzene	ug/kg	4.4 UJ	4.6 UJ	4.3 UJ
Chloroethane	ug/kg	8.8 U	9.1 U	8.6 U
Chloroform (Trichloromethane)	ug/kg	4.4 U	4.6 U	4.3 U
Chloromethane (Methyl Chloride)	ug/kg	8.8 U	9.1 U	8.6 U
cis-1,2-Dichloroethene	ug/kg	4.4 U	4.6 U	4.3 U
cis-1,3-Dichloropropene	ug/kg	4.4 U	4.6 U	4.3 U
Cyclohexane	ug/kg	8.8 U	9.1 U	8.6 U
Dibromochloromethane	ug/kg	4.4 UJ	4.6 UJ	4.3 UJ
Dichlorodifluoromethane (CFC-12)	ug/kg	8.8 UJ	9.1 UJ	8.6 UJ
Ethylbenzene	ug/kg	4.4 UJ	0.92 J	4.3 UJ
Isopropylbenzene	ug/kg	4.4 UJ	4.6 UJ	4.3 UJ
Methyl acetate	ug/kg	8.8 U	9.1 U	8.6 U
Methyl cyclohexane	ug/kg	8.8 U	9.1 U	8.6 U
Methyl Tert Butyl Ether	ug/kg	18 U	18 U	17 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	P-11 MWP11-04 0 - 2 04/29/03	P-11 MWP11-04 8 - 10 04/29/03	P-11 MWP11-04 15 - 17 04/29/03
Methylene chloride	ug/kg	4.4 U	4.6 U	4.3 U
Styrene	ug/kg	4.4 UJ	4.6 UJ	4.3 UJ
Tetrachloroethene	ug/kg	4.4 UJ	4.6 UJ	4.3 UJ
Toluene	ug/kg	4.4 UJ	4.6 UJ	4.3 UJ
Total Xylenes	ug/kg	8.8 UJ	9.1 UJ	8.6 UJ
trans-1,2-Dichloroethene	ug/kg	4.4 U	4.6 U	4.3 U
trans-1,3-Dichloropropene	ug/kg	4.4 UJ	4.6 UJ	4.3 UJ
Trichloroethene	ug/kg	4.4 U	4.6 U	4.3 U
Trichlorofluoromethane (CFC-11)	ug/kg	8.8 U	9.1 U	8.6 U
Trifluorotrichloroethane (Freon 113)	ug/kg	4.4 U	4.6 U	4.3 U
Vinyl chloride	ug/kg	8.8 U	9.1 U	8.6 U
SVOCs				
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	370 U	370 U	360 U
2,4,5-Trichlorophenol	ug/kg	370 U	370 U	360 U
2,4,6-Trichlorophenol	ug/kg	370 U	370 U	360 U
2,4-Dichlorophenol	ug/kg	R	R	R
2,4-Dimethylphenol	ug/kg	370 U	370 U	360 U
2,4-Dinitrophenol	ug/kg	1900 U	1900 U	1900 U
2,4-Dinitrotoluene	ug/kg	370 U	370 U	360 U
2,6-Dinitrotoluene	ug/kg	370 U	370 U	360 U
2-Chloronaphthalene	ug/kg	370 U	370 U	360 U
2-Chlorophenol	ug/kg	370 U	370 U	360 U
2-Methylnaphthalene	ug/kg	60 J	75 J	63 J
2-Methylphenol	ug/kg	370 U	370 U	360 U
2-Nitroaniline	ug/kg	1900 U	1900 U	1900 U
2-Nitrophenol	ug/kg	370 U	370 U	360 U
3,3'-Dichlorobenzidine	ug/kg	2300 U	2300 U	2200 U
3-Nitroaniline	ug/kg	1900 U	1900 U	1900 U
4,6-Dinitro-2-methylphenol	ug/kg	1900 U	1900 U	1900 U
4-Bromophenyl phenyl ether	ug/kg	370 U	370 U	360 U
4-Chloro-3-methylphenol	ug/kg	370 U	370 U	360 U
4-Chloroaniline	ug/kg	1500 U	1500 U	1400 U
4-Chlorophenyl phenyl ether	ug/kg	370 U	370 U	360 U
4-Methylphenol	ug/kg	370 U	370 U	360 U
4-Nitroaniline	ug/kg	1900 U	1900 U	1900 U
4-Nitrophenol	ug/kg	1900 U	1900 U	1900 U
Acenaphthene	ug/kg	370 U	370 U	360 U
Acenaphthylene	ug/kg	370 U	370 U	360 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	P-11 MWP11-04 0 - 2 04/29/03	P-11 MWP11-04 8 - 10 04/29/03	P-11 MWP11-04 15 - 17 04/29/03
Acetophenone	ug/kg	370 U	370 U	360 U
Anthracene	ug/kg	370 U	370 U	360 U
Atrazine	ug/kg	370 U	370 U	360 U
Benzaldehyde	ug/kg	370 U	370 U	360 U
Benzo(a)anthracene	ug/kg	70 J	370 U	360 U
Benzo(a)pyrene	ug/kg	17 J	370 U	360 U
Benzo(b)fluoranthene	ug/kg	370 U	370 U	360 U
Benzo(g,h,i)perylene	ug/kg	370 U	370 U	360 U
Benzo(k)fluoranthene	ug/kg	370 U	370 U	360 U
Biphenyl	ug/kg	79 J	370 U	360 U
bis(2-Chloroethoxy)methane	ug/kg	R	R	R
bis(2-Chloroethyl)ether	ug/kg	370 U	370 U	360 U
bis(2-Ethylhexyl)phthalate	ug/kg	370 U	370 U	360 U
Butyl benzylphthalate	ug/kg	R	R	R
Caprolactam	ug/kg	370 U	370 U	360 U
Carbazole	ug/kg	370 U	370 U	360 U
Chrysene	ug/kg	370 U	370 U	360 U
Di-n-butylphthalate	ug/kg	370 U	370 U	360 U
Di-n-octyl phthalate	ug/kg	370 U	370 U	360 U
Dibenz(a,h)anthracene	ug/kg	370 U	370 U	360 U
Dibenzofuran	ug/kg	370 U	370 U	360 U
Diethyl phthalate	ug/kg	370 U	370 U	360 U
Dimethyl phthalate	ug/kg	370 U	370 U	360 U
Fluoranthene	ug/kg	370 U	370 U	360 U
Fluorene	ug/kg	370 U	370 U	360 U
Hexachlorobenzene	ug/kg	370 U	370 U	360 U
Hexachlorobutadiene	ug/kg	370 U	370 U	360 U
Hexachlorocyclopentadiene	ug/kg	370 U	370 U	360 U
Hexachloroethane	ug/kg	110 U	110 U	110 U
Indeno(1,2,3-cd)pyrene	ug/kg	370 U	370 U	360 U
Isophorone	ug/kg	370 U	370 U	360 U
N-Nitrosodi-n-propylamine	ug/kg	370 U	370 U	360 U
N-Nitrosodiphenylamine	ug/kg	370 U	370 U	360 U
Naphthalene	ug/kg	R	R	R
Nitrobenzene	ug/kg	R	R	R
Pentachlorophenol	ug/kg	3800 U	3800 U	3700 U
Phenanthrene	ug/kg	370 U	370 U	360 U
Phenol	ug/kg	370 U	370 U	360 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	P-11 MWP11-04 0 - 2 04/29/03	P-11 MWP11-04 8 - 10 04/29/03	P-11 MWP11-04 15 - 17 04/29/03
Pyrene	ug/kg	370 U	370 U	360 U
Pests/PCBs				
Aroclor-1016 (PCB-1016)	ug/kg	37 U	37 U	36 U
Aroclor-1221 (PCB-1221)	ug/kg	37 U	37 U	36 U
Aroclor-1232 (PCB-1232)	ug/kg	37 U	37 U	36 U
Aroclor-1242 (PCB-1242)	ug/kg	37 U	37 U	36 U
Aroclor-1248 (PCB-1248)	ug/kg	37 U	37 U	36 U
Aroclor-1254 (PCB-1254)	ug/kg	37 U	37 U	36 U
Aroclor-1260 (PCB-1260)	ug/kg	37 U	37 U	36 U
Inorganics				
Antimony	ug/kg	536 J	445 J	327 J
Arsenic	ug/kg	3840	7390	3930
Barium	ug/kg	37300	43400	35200
Beryllium	ug/kg	118	151	97.6 J
Cadmium	ug/kg	337 J	537 J	311 J
Chromium Total	ug/kg	17900	11700	9430
Cobalt	ug/kg	4840	6650	4440
Copper	ug/kg	17700	17800	11800
Lead	ug/kg	45000	6900	5070
Manganese	ug/kg	593000	296000	274000
Mercury	ug/kg	21 J	18.6 J	36.4 U
Nickel	ug/kg	17500	19300	12400
Selenium	ug/kg	561 J	708	364 J
Silver	ug/kg	564 U	563 U	551 U
Thallium	ug/kg	826 J	940 J	767 J
Vanadium	ug/kg	13900	19200	14200
Zinc	ug/kg	171000	56600	36400
Miscellaneous				
Total Solids	%	88.7	88.8	90.7

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		SWDF	SWDF	SWDF	SWDF	SWDF	SWDF	SWDF
Sample ID:		DP-03	DP-04	MW-01	MW-01	MW-02	MW-02	MW-03
Sample Depth(ft BGS):		2.5 - 5	3.5 - 5	1 - 3	8 - 10	1 - 3	8 - 10	1 - 3
Date Collected:	Units	10/03/02	10/03/02	10/04/02	10/04/02	10/04/02	10/04/02	10/04/02
VOCs								
1,1,1-Trichloroethane	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
1,1,2,2-Tetrachloroethane	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
1,1,2-Trichloroethane	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
1,1-Dichloroethane	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
1,1-Dichloroethene	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
1,2,4-Trichlorobenzene	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	10 U	9.4 U	10 U	9.7 U	9.4 U	9.9 U	10 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
1,2-Dichlorobenzene	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
1,2-Dichloroethane	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
1,2-Dichloropropane	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
1,3-Dichlorobenzene	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
1,4-Dichlorobenzene	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	21 U	19 U	21 U	19 U	19 U	20 U	21 U
2-Hexanone	ug/kg	21 U	19 U	21 U	19 U	19 U	20 U	21 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	21 U	19 U	21 U	19 U	19 U	20 U	21 U
Acetone	ug/kg	21 U	19 U	21 U	19 U	19 U	20 U	21 U
Benzene	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
Bromodichloromethane	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
Bromoform	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
Bromomethane (Methyl Bromide)	ug/kg	10 U	9.4 U	10 U	9.7 U	9.4 U	9.9 U	10 U
Carbon disulfide	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
Carbon tetrachloride	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
Chlorobenzene	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
Chloroethane	ug/kg	10 U	9.4 U	10 U	9.7 U	9.4 U	9.9 U	10 U
Chloroform (Trichloromethane)	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
Chloromethane (Methyl Chloride)	ug/kg	10 U	9.4 U	10 U	9.7 U	9.4 U	9.9 U	10 U
cis-1,2-Dichloroethene	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
cis-1,3-Dichloropropene	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
Cyclohexane	ug/kg	10 U	9.4 U	10 U	9.7 U	9.4 U	9.9 U	10 U
Dibromochloromethane	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
Dichlorodifluoromethane (CFC-12)	ug/kg	10 U	9.4 U	10 U	9.7 U	9.4 U	9.9 U	10 U
Ethylbenzene	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
Isopropylbenzene	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
Methyl acetate	ug/kg	10 UJ	9.4 UJ	10 UJ	9.7 UJ	9.4 UJ	9.9 UJ	10 UJ
Methyl cyclohexane	ug/kg	10 U	9.4 U	10 U	9.7 U	9.4 U	9.9 U	10 U
Methyl Tert Butyl Ether	ug/kg	21 U	19 U	21 U	19 U	19 U	20 U	21 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	SWDF DP-03 2.5 - 5 10/03/02	SWDF DP-04 3.5 - 5 10/03/02	SWDF MW-01 1 - 3 10/04/02	SWDF MW-01 8 - 10 10/04/02	SWDF MW-02 1 - 3 10/04/02	SWDF MW-02 8 - 10 10/04/02	SWDF MW-03 1 - 3 10/04/02
Methylene chloride	ug/kg	3.2 J	25	5.2 U	4.9 U	4.7 U	5 U	5.2 U
Styrene	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
Tetrachloroethene	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
Toluene	ug/kg	2 J	0.64 J	0.39 J	4.9 U	0.43 J	5 U	5.2 U
Total Xylenes	ug/kg	1.7 J	1.2 J	10 U	9.7 U	1.7 J	9.9 U	10 U
trans-1,2-Dichloroethene	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
trans-1,3-Dichloropropene	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
Trichloroethene	ug/kg	5.1 U	4.7 U	1.7 J	4.9 U	4.7 U	5 U	5.2 U
Trichlorofluoromethane (CFC-11)	ug/kg	10 U	9.4 U	10 U	9.7 U	9.4 U	9.9 U	10 U
Trifluorotrichloroethane (Freon 113)	ug/kg	5.1 U	4.7 U	5.2 U	4.9 U	4.7 U	5 U	5.2 U
Vinyl chloride	ug/kg	10 U	9.4 U	10 U	9.7 U	9.4 U	9.9 U	10 U
SVOCs								
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
2,4,5-Trichlorophenol	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
2,4,6-Trichlorophenol	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
2,4-Dichlorophenol	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
2,4-Dimethylphenol	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
2,4-Dinitrophenol	ug/kg	1900 U	1900 U	1900 U	2000 U	1900 U	2000 U	1800 U
2,4-Dinitrotoluene	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
2,6-Dinitrotoluene	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
2-Chloronaphthalene	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
2-Chlorophenol	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
2-Methylnaphthalene	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
2-Methylphenol	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
2-Nitroaniline	ug/kg	1900 U	1900 U	1900 U	2000 U	1900 U	2000 U	1800 U
2-Nitrophenol	ug/kg	370 U	380 U	370 U	390 U	360 UJ	380 UJ	340 U
3,3'-Dichlorobenzidine	ug/kg	2300 U	2300 U	2300 U	2300 U	2200 U	2300 U	2100 U
3-Nitroaniline	ug/kg	1900 U	1900 U	1900 U	2000 U	1900 U	2000 U	1800 U
4,6-Dinitro-2-methylphenol	ug/kg	1900 U	1900 U	1900 U	2000 U	1900 U	2000 U	1800 U
4-Bromophenyl phenyl ether	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
4-Chloro-3-methylphenol	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
4-Chloroaniline	ug/kg	1500 U	1500 U	1500 U	1500 U	1400 U	1500 U	1300 U
4-Chlorophenyl phenyl ether	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
4-Methylphenol	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
4-Nitroaniline	ug/kg	1900 U	1900 U	1900 U	2000 U	1900 U	2000 U	1800 U
4-Nitrophenol	ug/kg	1900 U	1900 U	1900 UJ	2000 UJ	1900 U	2000 U	1800 UJ
Acenaphthene	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Acenaphthylene	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	SWDF DP-03 2.5 - 5 10/03/02	SWDF DP-04 3.5 - 5 10/03/02	SWDF MW-01 1 - 3 10/04/02	SWDF MW-01 8 - 10 10/04/02	SWDF MW-02 1 - 3 10/04/02	SWDF MW-02 8 - 10 10/04/02	SWDF MW-03 1 - 3 10/04/02
Acetophenone	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Anthracene	ug/kg	370 U	380 U	370 U	390 U	360 U	68 J	340 U
Atrazine	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Benzaldehyde	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Benzo(a)anthracene	ug/kg	370 U	380 U	370 U	390 U	360 U	150 J	340 U
Benzo(a)pyrene	ug/kg	370 U	380 U	370 U	390 U	360 U	140 J	340 U
Benzo(b)fluoranthene	ug/kg	370 U	380 U	370 U	390 U	360 U	180 J	340 U
Benzo(g,h,i)perylene	ug/kg	370 U	380 U	370 U	390 U	360 U	110 J	340 U
Benzo(k)fluoranthene	ug/kg	370 U	380 U	370 U	390 U	360 U	84 J	340 U
Biphenyl	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
bis(2-Chloroethoxy)methane	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
bis(2-Chloroethyl)ether	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
bis(2-Ethylhexyl)phthalate	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Butyl benzylphthalate	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Caprolactam	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Carbazole	ug/kg	370 U	380 U	370 U	390 U	360 U	42 J	340 U
Chrysene	ug/kg	370 U	380 U	370 U	390 U	360 U	180 J	340 U
Di-n-butylphthalate	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Di-n-octyl phthalate	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Dibenz(a,h)anthracene	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Dibenzofuran	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Diethyl phthalate	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Dimethyl phthalate	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Fluoranthene	ug/kg	370 U	380 U	370 U	390 U	54 J	330 J	340 U
Fluorene	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Hexachlorobenzene	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Hexachlorobutadiene	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Hexachlorocyclopentadiene	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Hexachloroethane	ug/kg	110 U	110 U	110 U	120 U	110 U	120 U	100 U
Indeno(1,2,3-cd)pyrene	ug/kg	370 U	380 U	370 U	390 U	360 U	85 J	340 U
Isophorone	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
N-Nitrosodi-n-propylamine	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
N-Nitrosodiphenylamine	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Naphthalene	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Nitrobenzene	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U
Pentachlorophenol	ug/kg	3800 U	3900 U	3900 U	4000 U	3700 U	4000 U	3500 U
Phenanthrene	ug/kg	370 U	380 U	370 U	390 U	42 J	280 J	340 U
Phenol	ug/kg	370 U	380 U	370 U	390 U	360 U	380 U	340 U

APPENDIX C - SOILS
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	SWDF DP-03 2.5 - 5 10/03/02	SWDF DP-04 3.5 - 5 10/03/02	SWDF MW-01 1 - 3 10/04/02	SWDF MW-01 8 - 10 10/04/02	SWDF MW-02 1 - 3 10/04/02	SWDF MW-02 8 - 10 10/04/02	SWDF MW-03 1 - 3 10/04/02
Pyrene	ug/kg	370 U	380 U	370 U	390 U	46 J	290 J	340 U
Pests/PCBs								
Aroclor-1016 (PCB-1016)	ug/kg	37 U	38 U	37 U	39 U	36 U	38 U	34 U
Aroclor-1221 (PCB-1221)	ug/kg	37 U	38 U	37 U	39 U	36 U	38 U	34 U
Aroclor-1232 (PCB-1232)	ug/kg	37 U	38 U	37 U	39 U	36 U	38 U	34 U
Aroclor-1242 (PCB-1242)	ug/kg	37 U	38 U	37 U	39 U	36 U	37 J	34 U
Aroclor-1248 (PCB-1248)	ug/kg	37 U	38 U	6.3 J	39 U	19 J	38 U	34 U
Aroclor-1254 (PCB-1254)	ug/kg	37 U	38 U	37 U	39 U	36 U	38 U	34 U
Aroclor-1260 (PCB-1260)	ug/kg	37 U	38 U	37 U	39 U	10 J	12 J	34 U
Inorganics								
Antimony	ug/kg	2250 U	2280 U	2270 U	2340 U	2200 U	304 J	2060 U
Arsenic	ug/kg	4420	5160	2440	5630	9300	6180	4030
Barium	ug/kg	69400	53700	19800	47900	60200	57900	7100
Beryllium	ug/kg	113 U	141	114 U	251	220	117 U	103 U
Cadmium	ug/kg	233 J	329 J	72.8 J	552 J	847	578 J	167 J
Chromium Total	ug/kg	14100	13500	4700	14100	20600	12900	4120
Cobalt	ug/kg	5350	7030	4000	6640	7460	4840	2410
Copper	ug/kg	16500	17400	6450	14500	27200	23500	6860
Lead	ug/kg	471000	8430	3270	9330	21300	20400	3080
Manganese	ug/kg	NA	383000	136000	269000	694000	271000	147000
Mercury	ug/kg	77.2	37.5 U	37.5 U	38.6 U	56.4	155	34 U
Nickel	ug/kg	131000	18400	5990	15700	22900	15400	4720
Selenium	ug/kg	563 U	569 U	568 U	585 U	549 U	583 U	516 U
Silver	ug/kg	563 U	569 U	568 U	585 U	549 U	583 U	516 U
Thallium	ug/kg	1130 U	1140 U	1140 U	1170 U	1100 U	1170 U	1030 U
Vanadium	ug/kg	14900	17600	7150	20400	21700	15200	6790
Zinc	ug/kg	NA	42500	17600	39400	49800	51800	18800
Miscellaneous								
n-Hexane Extractable Material	mg/kg	372 U	375 U	375 U	386 U	362 U	808	340 U
Total Solids	%	88.7	87.9	88.1	85.5	91.1	85.8	96.9

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI:		F-7	F-7	F-7
Sample ID:		MWF7-01	MWF7-02	MWF7-03
Sample Depth(ft BGS):		20 - 30	18 - 28	22 - 32
Date Collected:	Units	08/11/03	08/11/03	08/11/03
VOCs				
1,1-Dichloroethene	ug/L	1.8	13	1 U
Tetrachloroethene	ug/L	0.56 J	6.2	1 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(): / Date Collected:	Units	W-1 DWD13 11/13/02	W-1 MWW1-04 07/17/02	W-1 MWW1-04 11/10/03	W-1 MWW1-05 08/19/02
VOCs					
1,1,1-Trichloroethane	ug/L	1 U	NA	NA	NA
1,1,2,2-Tetrachloroethane	ug/L	1 U	NA	NA	NA
1,1,2-Trichloroethane	ug/L	1 U	NA	NA	NA
1,1-Dichloroethane	ug/L	1 U	NA	NA	NA
1,1-Dichloroethene	ug/L	1 U	NA	NA	NA
1,2,4-Trichlorobenzene	ug/L	1 U	NA	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	2 U	NA	NA	NA
1,2-Dibromoethane (Ethylene Dibromide)	ug/L	1 U	NA	NA	NA
1,2-Dichlorobenzene	ug/L	1 U	NA	NA	NA
1,2-Dichloroethane	ug/L	1 U	NA	NA	NA
1,2-Dichloropropane	ug/L	1 U	NA	NA	NA
1,3-Dichlorobenzene	ug/L	1 U	NA	NA	NA
1,4-Dichlorobenzene	ug/L	1 U	NA	NA	NA
2-Butanone (Methyl Ethyl Ketone)	ug/L	10 U	NA	NA	NA
2-Hexanone	ug/L	10 UJ	NA	NA	NA
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/L	R	NA	NA	NA
Acetone	ug/L	10 U	NA	NA	NA
Benzene	ug/L	1 U	NA	NA	NA
Bromodichloromethane	ug/L	1 U	NA	NA	NA
Bromoform	ug/L	1 U	NA	NA	NA
Bromomethane (Methyl Bromide)	ug/L	R	NA	NA	NA
Carbon disulfide	ug/L	9.4	NA	NA	NA
Carbon tetrachloride	ug/L	1 U	NA	NA	NA
Chlorobenzene	ug/L	1 U	NA	NA	NA
Chloroethane	ug/L	1 U	NA	NA	NA
Chloroform (Trichloromethane)	ug/L	1 U	NA	NA	NA
Chloromethane (Methyl Chloride)	ug/L	1 U	NA	NA	NA
cis-1,2-Dichloroethene	ug/L	0.5 U	NA	NA	NA
cis-1,3-Dichloropropene	ug/L	1 U	NA	NA	NA
Cyclohexane	ug/L	1 U	NA	NA	NA
Dibromochloromethane	ug/L	1 U	NA	NA	NA
Dichlorodifluoromethane (CFC-12)	ug/L	2 U	NA	NA	NA
Ethylbenzene	ug/L	1 U	NA	NA	NA
Isopropylbenzene	ug/L	1 U	NA	NA	NA
Methyl acetate	ug/L	10 U	NA	NA	NA
Methyl cyclohexane	ug/L	1 U	NA	NA	NA
Methyl Tert Butyl Ether	ug/L	5 U	NA	NA	NA
Methylene chloride	ug/L	1 U	NA	1 U	NA
Styrene	ug/L	1 U	NA	NA	NA
Tetrachloroethene	ug/L	1 U	NA	NA	NA
Toluene	ug/L	1 U	NA	NA	NA

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(): Date Collected:	Units	W-1 DWD13 11/13/02	W-1 MWW1-04 07/17/02	W-1 MWW1-04 11/10/03	W-1 MWW1-05 08/19/02
Total Xylenes	ug/L	1 U	NA	NA	NA
trans-1,2-Dichloroethene	ug/L	0.5 U	NA	NA	NA
trans-1,3-Dichloropropene	ug/L	1 U	NA	NA	NA
Trichloroethene	ug/L	1 U	NA	NA	NA
Trichlorofluoromethane (CFC-11)	ug/L	1 U	NA	NA	NA
Trifluorotrichloroethane (Freon 113)	ug/L	1 U	NA	NA	NA
Vinyl chloride	ug/L	1 U	NA	NA	NA
SVOCs					
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/L	5 U	NA	NA	NA
2,4,5-Trichlorophenol	ug/L	5 U	NA	NA	NA
2,4,6-Trichlorophenol	ug/L	5 U	NA	NA	NA
2,4-Dichlorophenol	ug/L	10 U	NA	NA	NA
2,4-Dimethylphenol	ug/L	5 U	NA	NA	NA
2,4-Dinitrophenol	ug/L	20 U	NA	NA	NA
2,4-Dinitrotoluene	ug/L	5 U	NA	NA	NA
2,6-Dinitrotoluene	ug/L	5 U	NA	NA	NA
2-Chloronaphthalene	ug/L	5 U	NA	NA	NA
2-Chlorophenol	ug/L	5 U	NA	NA	NA
2-Methylnaphthalene	ug/L	5 U	NA	NA	NA
2-Methylphenol	ug/L	5 U	NA	NA	NA
2-Nitroaniline	ug/L	20 U	NA	NA	NA
2-Nitrophenol	ug/L	5 U	NA	NA	NA
3,3'-Dichlorobenzidine	ug/L	20 U	NA	NA	NA
3-Nitroaniline	ug/L	20 U	NA	NA	NA
4,6-Dinitro-2-methylphenol	ug/L	20 U	NA	NA	NA
4-Bromophenyl phenyl ether	ug/L	5 U	NA	NA	NA
4-Chloro-3-methylphenol	ug/L	5 U	NA	NA	NA
4-Chloroaniline	ug/L	10 U	NA	NA	NA
4-Chlorophenyl phenyl ether	ug/L	5 U	NA	NA	NA
4-Methylphenol	ug/L	5 U	NA	NA	NA
4-Nitroaniline	ug/L	20 U	NA	NA	NA
4-Nitrophenol	ug/L	20 U	NA	NA	NA
Acenaphthene	ug/L	5 U	NA	NA	NA
Acenaphthylene	ug/L	5 U	NA	NA	NA
Acetophenone	ug/L	10 U	NA	NA	NA
Anthracene	ug/L	5 U	NA	NA	NA
Atrazine	ug/L	5 U	NA	NA	NA
Benzaldehyde	ug/L	10 U	NA	NA	NA
Benzo(a)anthracene	ug/L	5 U	NA	NA	NA
Benzo(a)pyrene	ug/L	5 U	NA	NA	NA
Benzo(b)fluoranthene	ug/L	5 U	NA	NA	NA
Benzo(g,h,i)perylene	ug/L	5 U	NA	NA	NA

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(): Date Collected:	Units	W-1 DWD13 11/13/02	W-1 MWW1-04 07/17/02	W-1 MWW1-04 11/10/03	W-1 MWW1-05 08/19/02
Benzo(k)fluoranthene	ug/L	5 U	NA	NA	NA
Biphenyl	ug/L	10 U	NA	NA	NA
bis(2-Chloroethoxy)methane	ug/L	5 U	NA	NA	NA
bis(2-Chloroethyl)ether	ug/L	5 U	NA	NA	NA
bis(2-Ethylhexyl)phthalate	ug/L	5 U	NA	NA	NA
Butyl benzylphthalate	ug/L	5 U	NA	NA	NA
Caprolactam	ug/L	10 U	NA	NA	NA
Carbazole	ug/L	10 U	NA	NA	NA
Chrysene	ug/L	5 U	NA	NA	NA
Di-n-butylphthalate	ug/L	5 U	NA	NA	NA
Di-n-octyl phthalate	ug/L	5 U	NA	NA	NA
Dibenz(a,h)anthracene	ug/L	5 U	NA	NA	NA
Dibenzofuran	ug/L	5 U	NA	NA	NA
Diethyl phthalate	ug/L	5 U	NA	NA	NA
Dimethyl phthalate	ug/L	5 U	NA	NA	NA
Fluoranthene	ug/L	5 U	NA	NA	NA
Fluorene	ug/L	5 U	NA	NA	NA
Hexachlorobenzene	ug/L	5 U	NA	NA	NA
Hexachlorobutadiene	ug/L	5 U	NA	NA	NA
Hexachlorocyclopentadiene	ug/L	5 U	NA	NA	NA
Hexachloroethane	ug/L	5 U	NA	NA	NA
Indeno(1,2,3-cd)pyrene	ug/L	5 U	NA	NA	NA
Isophorone	ug/L	5 U	NA	NA	NA
N-Nitrosodi-n-propylamine	ug/L	5 U	NA	NA	NA
N-Nitrosodiphenylamine	ug/L	5 U	NA	NA	NA
Naphthalene	ug/L	5 U	NA	NA	NA
Nitrobenzene	ug/L	5 U	NA	NA	NA
Pentachlorophenol	ug/L	5 U	NA	NA	NA
Phenanthrene	ug/L	5 U	NA	NA	NA
Phenol	ug/L	5.9	NA	NA	NA
Pyrene	ug/L	5 U	NA	NA	NA
Pests/PCBs					
Aroclor-1016 (PCB-1016)	ug/L	0.2 U	0.2 U	NA	0.2 U
Aroclor-1221 (PCB-1221)	ug/L	0.2 U	0.2 U	NA	0.2 U
Aroclor-1232 (PCB-1232)	ug/L	0.4 U	0.4 U	NA	0.4 U
Aroclor-1242 (PCB-1242)	ug/L	0.2 U	0.2 U	NA	0.2 U
Aroclor-1248 (PCB-1248)	ug/L	0.2 U	0.51	NA	0.2 U
Aroclor-1254 (PCB-1254)	ug/L	0.2 U	0.2 U	NA	0.2 U
Aroclor-1260 (PCB-1260)	ug/L	0.2 U	0.2 U	NA	0.2 U
Inorganics					
Antimony	ug/L	25 U	NA	NA	NA
Arsenic	ug/L	5.2 J	NA	NA	NA

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(): Date Collected:	Units	W-1 DWD13 11/13/02	W-1 MWW1-04 07/17/02	W-1 MWW1-04 11/10/03	W-1 MWW1-05 08/19/02
Barium	ug/L	145	NA	NA	NA
Beryllium	ug/L	1 U	NA	NA	NA
Cadmium	ug/L	5 U	NA	NA	NA
Chromium Total	ug/L	5.7 J	NA	NA	NA
Cobalt	ug/L	0.9 J	NA	NA	NA
Copper	ug/L	5 U	NA	NA	NA
Lead	ug/L	3 U	NA	NA	NA
Manganese	ug/L	10 U	NA	NA	NA
Mercury	ug/L	0.2 U	NA	NA	NA
Nickel	ug/L	4.4 J	NA	NA	NA
Selenium	ug/L	5 U	NA	NA	NA
Silver	ug/L	5 U	NA	NA	NA
Thallium	ug/L	1 U	NA	NA	NA
Vanadium	ug/L	10 U	NA	NA	NA
Zinc	ug/L	20 U	NA	NA	NA

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(): / Date Collected:	Units	W-8 MWW8-08 11/14/02	W-8 MWW8-10 11/12/02	W-8 MWW8-11 11/12/02	W-8 MWW8-12 11/12/02	W-8 MWW8-13 19 - 29 08/25/03
VOCs						
1,1,1-Trichloroethane	ug/L	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	ug/L	1 U	1 U	1 U	1 U	1 UJ
1,1,2-Trichloroethane	ug/L	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	ug/L	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	ug/L	1 U	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	ug/L	1 UJ	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	2 U	2 UJ	2 UJ	2 UJ	2 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/L	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	ug/L	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	ug/L	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	ug/L	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	ug/L	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	ug/L	1 U	1 U	1 U	1 U	1 U
2-Butanone (Methyl Ethyl Ketone)	ug/L	10 U	10 UJ	10 UJ	10 UJ	10 U
2-Hexanone	ug/L	10 UJ	10 UJ	10 UJ	10 UJ	10 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/L	10 U	0.69 J	R	2.5 J	4.9 J
Acetone	ug/L	10 U	10 UJ	10 UJ	10 UJ	10 U
Benzene	ug/L	1 U	0.41 J	1 U	1 U	0.47 J
Bromodichloromethane	ug/L	1 U	1 U	1 U	1 U	1 U
Bromoform	ug/L	1 U	1 U	1 U	1 U	1 U
Bromomethane (Methyl Bromide)	ug/L	1 U	R	R	R	1 U
Carbon disulfide	ug/L	0.25 J	0.45 J	1 U	0.32 J	1.1
Carbon tetrachloride	ug/L	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	ug/L	1 U	1 U	1 U	1 U	1 U
Chloroethane	ug/L	1 U	1 U	1 U	1 U	1 U
Chloroform (Trichloromethane)	ug/L	1 U	1 U	1 U	1 U	1 U
Chloromethane (Methyl Chloride)	ug/L	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,3-Dichloropropene	ug/L	1 U	1 U	1 U	1 U	1 U
Cyclohexane	ug/L	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	ug/L	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (CFC-12)	ug/L	2 U	2 U	2 U	2 U	2 UJ
Ethylbenzene	ug/L	1 U	1 U	1 U	1 U	0.7 J
Isopropylbenzene	ug/L	1 U	1 U	1 U	1 U	1 U
Methyl acetate	ug/L	10 U	10 U	10 U	10 U	10 U
Methyl cyclohexane	ug/L	1 UJ	1 U	1 U	1 U	1 U
Methyl Tert Butyl Ether	ug/L	5 U	5 U	5 U	5 U	5 U
Methylene chloride	ug/L	R	1 UJ	1 UJ	1 UJ	1 UJ
Styrene	ug/L	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	ug/L	1 U	1 U	1 U	1 U	1 U
Toluene	ug/L	1 U	0.66 J	1 U	1 U	2

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(): Date Collected:	Units	W-8 MWW8-08 11/14/02	W-8 MWW8-10 11/12/02	W-8 MWW8-11 11/12/02	W-8 MWW8-12 11/12/02	W-8 MWW8-13 19 - 29 08/25/03
Total Xylenes	ug/L	1 U	1 U	1 U	1 U	2.8
trans-1,2-Dichloroethene	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,3-Dichloropropene	ug/L	1 U	1 U	1 U	1 U	R
Trichloroethene	ug/L	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane (CFC-11)	ug/L	1 U	1 U	1 U	1 U	1 U
Trifluorotrichloroethane (Freon 113)	ug/L	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	ug/L	1 U	1 U	1 U	1 U	1 UJ
SVOCs						
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/L	100 U	25 U	5 U	50 U	1000 U
2,4,5-Trichlorophenol	ug/L	100 U	25 U	5 U	50 U	1000 U
2,4,6-Trichlorophenol	ug/L	100 U	25 U	5 U	50 U	1000 U
2,4-Dichlorophenol	ug/L	200 U	50 U	10 U	100 U	2000 U
2,4-Dimethylphenol	ug/L	100 U	25 U	5 U	50 U	2500
2,4-Dinitrophenol	ug/L	400 UJ	100 U	20 U	200 U	4000 UJ
2,4-Dinitrotoluene	ug/L	100 U	25 U	5 U	50 U	1000 U
2,6-Dinitrotoluene	ug/L	100 U	25 U	5 U	50 U	1000 U
2-Chloronaphthalene	ug/L	100 U	25 U	5 U	50 U	1000 U
2-Chlorophenol	ug/L	100 U	25 U	5 U	50 U	1000 U
2-Methylnaphthalene	ug/L	100 U	25 U	5 U	50 U	1000 U
2-Methylphenol	ug/L	100 U	25 U	5 U	50 U	1000 U
2-Nitroaniline	ug/L	400 U	100 U	20 U	200 U	4000 U
2-Nitrophenol	ug/L	100 U	25 U	5 U	50 U	1000 U
3,3'-Dichlorobenzidine	ug/L	400 U	100 U	20 U	200 U	4000 U
3-Nitroaniline	ug/L	400 U	100 U	20 U	200 U	4000 U
4,6-Dinitro-2-methylphenol	ug/L	400 U	100 U	20 U	200 U	4000 U
4-Bromophenyl phenyl ether	ug/L	100 U	25 U	5 U	50 U	1000 U
4-Chloro-3-methylphenol	ug/L	100 U	25 U	5 U	50 U	1000 U
4-Chloroaniline	ug/L	200 U	50 U	10 U	100 U	2000 U
4-Chlorophenyl phenyl ether	ug/L	100 U	25 U	5 U	50 U	1000 U
4-Methylphenol	ug/L	100 U	25 U	5 U	50 U	4600 J
4-Nitroaniline	ug/L	400 U	100 U	20 U	200 U	4000 U
4-Nitrophenol	ug/L	400 U	100 U	20 U	200 U	4000 U
Acenaphthene	ug/L	100 U	25 U	3.1 J	50 U	1000 U
Acenaphthylene	ug/L	100 U	25 U	5 U	50 U	1000 U
Acetophenone	ug/L	200 U	50 U	10 U	100 U	2000 U
Anthracene	ug/L	100 U	25 U	5 U	50 U	1000 U
Atrazine	ug/L	100 U	25 U	5 U	50 U	1000 U
Benzaldehyde	ug/L	200 U	50 U	10 U	100 U	2000 U
Benzo(a)anthracene	ug/L	100 U	25 U	5 U	50 U	1000 U
Benzo(a)pyrene	ug/L	100 U	25 U	5 U	50 U	1000 U
Benzo(b)fluoranthene	ug/L	100 U	25 U	5 U	50 U	1000 U
Benzo(g,h,i)perylene	ug/L	100 U	25 U	5 U	50 U	1000 UJ

AOI: / Sample ID: / Sample Depth(): / Date Collected:	Units	W-8 MWW8-08 11/14/02	W-8 MWW8-10 11/12/02	W-8 MWW8-11 11/12/02	W-8 MWW8-12 11/12/02	W-8 MWW8-13 19 - 29 08/25/03
Benzo(k)fluoranthene	ug/L	100 U	25 U	5 U	50 U	1000 U
Biphenyl	ug/L	200 U	50 U	10 U	100 U	2000 U
bis(2-Chloroethoxy)methane	ug/L	100 U	25 U	5 U	50 U	1000 U
bis(2-Chloroethyl)ether	ug/L	100 U	25 U	5 U	50 U	1000 U
bis(2-Ethylhexyl)phthalate	ug/L	100 U	25 U	5 U	50 U	1000 U
Butyl benzylphthalate	ug/L	100 U	25 U	5 U	50 U	1000 U
Caprolactam	ug/L	5500	50 U	10 U	100 U	2000 U
Carbazole	ug/L	200 U	50 U	10 U	100 U	2000 U
Chrysene	ug/L	100 U	25 U	5 U	50 U	1000 U
Di-n-butylphthalate	ug/L	100 U	25 U	5 U	50 U	1000 U
Di-n-octyl phthalate	ug/L	100 U	25 U	5 U	50 U	1000 U
Dibenz(a,h)anthracene	ug/L	100 U	25 U	5 U	50 U	1000 UJ
Dibenzofuran	ug/L	100 U	25 U	5 U	50 U	1000 U
Diethyl phthalate	ug/L	100 U	25 U	5 U	50 U	1000 U
Dimethyl phthalate	ug/L	100 U	25 U	5 U	50 U	1000 U
Fluoranthene	ug/L	100 U	25 U	5 U	50 U	1000 U
Fluorene	ug/L	100 U	25 U	17	50 U	1000 U
Hexachlorobenzene	ug/L	100 U	25 U	5 U	50 U	1000 U
Hexachlorobutadiene	ug/L	100 U	25 U	5 U	50 U	1000 U
Hexachlorocyclopentadiene	ug/L	R	25 U	5 U	50 U	1000 U
Hexachloroethane	ug/L	100 U	25 U	5 U	50 U	1000 U
Indeno(1,2,3-cd)pyrene	ug/L	100 U	25 U	5 U	50 U	1000 UJ
Isophorone	ug/L	100 U	25 U	5 U	50 U	1000 U
N-Nitrosodi-n-propylamine	ug/L	100 U	25 U	5 U	50 U	1000 U
N-Nitrosodiphenylamine	ug/L	100 U	25 U	5 U	50 U	1000 U
Naphthalene	ug/L	100 U	25 U	5 U	50 U	1000 U
Nitrobenzene	ug/L	100 U	25 U	5 U	50 U	1000 U
Pentachlorophenol	ug/L	100 U	25 U	5 U	50 U	1000 U
Phenanthrene	ug/L	28 J	4.4 J	5 U	50 U	1000 U
Phenol	ug/L	100 U	25 U	5 U	46 J	1200
Pyrene	ug/L	100 U	25 U	5 U	50 U	1000 U
Pests/PCBs						
Aroclor-1016 (PCB-1016)	ug/L	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U
Aroclor-1221 (PCB-1221)	ug/L	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U
Aroclor-1232 (PCB-1232)	ug/L	0.4 U	0.4 UJ	0.4 U	0.4 U	0.4 U
Aroclor-1242 (PCB-1242)	ug/L	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U
Aroclor-1248 (PCB-1248)	ug/L	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U
Aroclor-1254 (PCB-1254)	ug/L	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U
Aroclor-1260 (PCB-1260)	ug/L	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 UJ
Inorganics						
Antimony	ug/L	25 U	25 U	25 U	25 U	25 U
Arsenic	ug/L	84.9	9.2 J	35.1	6.3 J	18.8

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(): / Date Collected:	Units	W-8 MWW8-08 11/14/02	W-8 MWW8-10 11/12/02	W-8 MWW8-11 11/12/02	W-8 MWW8-12 11/12/02	W-8 MWW8-13 19 - 29 08/25/03
Barium	ug/L	1030	382	45.8	31.9	10 U
Beryllium	ug/L	5.4	1 U	1 U	1 U	1 U
Cadmium	ug/L	3.9 J	5 U	5 U	5 U	5 U
Chromium Total	ug/L	295	10 U	5 J	10 U	10 U
Cobalt	ug/L	87.9	20 U	20 U	20 U	20 U
Copper	ug/L	214	5 U	5 U	5 U	5 U
Lead	ug/L	122	3 U	3 U	3 U	3 U
Manganese	ug/L	5410	167	3570	3.5 J	48.5 J
Mercury	ug/L	0.15 J	0.2 U	0.2 U	0.2 U	0.11 J
Nickel	ug/L	307	16.9 J	7 J	16.4 J	31.5
Selenium	ug/L	5 U	5 U	5 U	5 U	5 U
Silver	ug/L	5 U	5 U	5 U	5 U	5 U
Thallium	ug/L	3	1 U	1 U	1 U	1 U
Vanadium	ug/L	239	10 U	10 U	11.9	6.5 J
Zinc	ug/L	631	20 U	20 U	20 U	20 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(): / Date Collected:	Units	W-9 DWD12 10/31/03	W-9 MWW9-01 22 - 32 08/25/03	W-9 MWW9-03 09/30/03	W-9 MWW9-06 09/30/03	W-9 TWW9-01 09/30/03
VOCs						
1,1,1-Trichloroethane	ug/L	NA	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	ug/L	NA	1 UJ	1 U	1 U	1 U
1,1,2-Trichloroethane	ug/L	NA	1 U	1 U	1 U	1 U
1,1-Dichloroethane	ug/L	NA	1 U	1 U	1 U	1 U
1,1-Dichloroethene	ug/L	NA	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	ug/L	NA	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	NA	2 U	2 U	2 U	2 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/L	NA	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	ug/L	NA	1 U	1 U	1 U	1 U
1,2-Dichloroethane	ug/L	NA	1 U	1 U	1 U	1 U
1,2-Dichloropropane	ug/L	NA	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	ug/L	NA	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	ug/L	NA	1 U	1 U	1 U	1 U
2-Butanone (Methyl Ethyl Ketone)	ug/L	NA	10 U	10 UJ	10 UJ	2.1 J
2-Hexanone	ug/L	NA	10 U	10 UJ	10 UJ	10 UJ
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/L	NA	10 U	R	R	2.6 J
Acetone	ug/L	NA	10 U	10 UJ	10 UJ	16 J
Benzene	ug/L	NA	1 U	1 U	1 U	0.29 J
Bromodichloromethane	ug/L	NA	1 U	1 U	1 U	1 U
Bromoform	ug/L	NA	1 U	1 U	1 U	1 U
Bromomethane (Methyl Bromide)	ug/L	NA	1 U	1 U	1 U	1 U
Carbon disulfide	ug/L	NA	1 U	1 U	1 U	1.5
Carbon tetrachloride	ug/L	NA	1 U	1 U	1 U	1 U
Chlorobenzene	ug/L	NA	1 U	1 U	1 U	1 U
Chloroethane	ug/L	NA	1 U	1 U	1 U	1 U
Chloroform (Trichloromethane)	ug/L	NA	1 U	1 U	1 U	1 U
Chloromethane (Methyl Chloride)	ug/L	NA	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	ug/L	NA	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,3-Dichloropropene	ug/L	NA	1 U	1 U	1 U	1 U
Cyclohexane	ug/L	NA	1 U	1 U	1 U	0.73 J
Dibromochloromethane	ug/L	NA	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (CFC-12)	ug/L	NA	2 UJ	2 U	2 U	2 U
Ethylbenzene	ug/L	NA	1 U	1 U	1 U	1 U
Isopropylbenzene	ug/L	NA	1 U	1 U	1 U	0.26 J
Methyl acetate	ug/L	NA	10 U	10 U	10 U	10 U
Methyl cyclohexane	ug/L	NA	1 U	1 U	1 U	0.85 J
Methyl Tert Butyl Ether	ug/L	NA	5 U	5 U	5 U	5 U
Methylene chloride	ug/L	1 UJ	1 UJ	1 U	1 U	1 U
Styrene	ug/L	NA	1 U	1 U	1 U	1 U
Tetrachloroethene	ug/L	NA	1 U	1 U	1 U	1 U
Toluene	ug/L	NA	1 U	1 U	1 U	0.29 J

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(): Date Collected:	Units	W-9 DWD12 10/31/03	W-9 MWW9-01 22 - 32 08/25/03	W-9 MWW9-03 09/30/03	W-9 MWW9-06 09/30/03	W-9 TWW9-01 09/30/03
Total Xylenes	ug/L	NA	1 U	1 U	1 U	1.3
trans-1,2-Dichloroethene	ug/L	NA	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,3-Dichloropropene	ug/L	NA	R	1 U	1 U	1 U
Trichloroethene	ug/L	NA	1 U	1 U	1 U	1 U
Trichlorofluoromethane (CFC-11)	ug/L	NA	1 U	1 U	1 U	1 U
Trifluorotrichloroethane (Freon 113)	ug/L	NA	1 U	1 U	1 U	1 U
Vinyl chloride	ug/L	NA	1 UJ	1 UJ	1 UJ	1 UJ
SVOCs						
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/L	NA	5 U	25 U	5 U	25 U
2,4,5-Trichlorophenol	ug/L	NA	5 U	25 U	5 U	25 U
2,4,6-Trichlorophenol	ug/L	NA	5 U	25 U	5 U	25 U
2,4-Dichlorophenol	ug/L	NA	10 U	50 U	10 U	50 U
2,4-Dimethylphenol	ug/L	NA	5 U	25 U	5 U	9.8 J
2,4-Dinitrophenol	ug/L	NA	20 U	100 U	20 U	100 U
2,4-Dinitrotoluene	ug/L	NA	5 U	25 U	5 U	25 U
2,6-Dinitrotoluene	ug/L	NA	5 U	25 U	5 U	25 U
2-Chloronaphthalene	ug/L	NA	5 U	25 U	5 U	25 U
2-Chlorophenol	ug/L	NA	5 U	25 U	5 U	25 U
2-Methylnaphthalene	ug/L	NA	5 U	25 U	5 U	25 U
2-Methylphenol	ug/L	NA	5 U	25 U	5 U	25 U
2-Nitroaniline	ug/L	NA	20 U	100 U	20 U	100 U
2-Nitrophenol	ug/L	NA	5 U	25 U	5 U	25 U
3,3'-Dichlorobenzidine	ug/L	NA	20 U	100 UJ	20 UJ	100 UJ
3-Nitroaniline	ug/L	NA	20 U	100 UJ	20 UJ	100 UJ
4,6-Dinitro-2-methylphenol	ug/L	NA	20 U	100 U	20 U	100 U
4-Bromophenyl phenyl ether	ug/L	NA	5 U	25 U	5 U	25 U
4-Chloro-3-methylphenol	ug/L	NA	5 U	25 U	5 U	25 U
4-Chloroaniline	ug/L	NA	10 U	50 UJ	10 UJ	50 UJ
4-Chlorophenyl phenyl ether	ug/L	NA	5 U	25 U	5 U	25 U
4-Methylphenol	ug/L	NA	5 U	25 U	5 U	25 U
4-Nitroaniline	ug/L	NA	20 U	100 UJ	20 UJ	100 UJ
4-Nitrophenol	ug/L	NA	20 U	100 U	20 U	100 U
Acenaphthene	ug/L	NA	5 U	25 U	5 U	25 U
Acenaphthylene	ug/L	NA	5 U	25 U	5 U	25 U
Acetophenone	ug/L	NA	10 U	50 U	10 U	50 U
Anthracene	ug/L	NA	5 U	25 U	5 U	25 U
Atrazine	ug/L	NA	5 U	25 U	5 U	25 U
Benzaldehyde	ug/L	NA	10 U	50 U	10 U	50 U
Benzo(a)anthracene	ug/L	NA	5 U	25 U	5 U	25 U
Benzo(a)pyrene	ug/L	NA	5 U	25 U	5 U	25 U
Benzo(b)fluoranthene	ug/L	NA	5 U	25 U	5 U	25 U
Benzo(g,h,i)perylene	ug/L	NA	5 U	25 U	5 U	25 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(): / Date Collected:	Units	W-9 DWD12 10/31/03	W-9 MWW9-01 22 - 32 08/25/03	W-9 MWW9-03 09/30/03	W-9 MWW9-06 09/30/03	W-9 TWW9-01 09/30/03
Benzo(k)fluoranthene	ug/L	NA	5 U	25 U	5 U	25 U
Biphenyl	ug/L	NA	10 U	50 U	10 U	50 U
bis(2-Chloroethoxy)methane	ug/L	NA	5 U	25 U	5 U	25 U
bis(2-Chloroethyl)ether	ug/L	NA	5 U	25 U	5 U	25 U
bis(2-Ethylhexyl)phthalate	ug/L	NA	5 U	25 U	0.58 J	25 U
Butyl benzylphthalate	ug/L	NA	5 U	25 U	5 U	25 U
Caprolactam	ug/L	NA	10 U	50 U	10 U	50 U
Carbazole	ug/L	NA	10 U	50 U	10 U	50 U
Chrysene	ug/L	NA	5 U	25 U	5 U	25 U
Di-n-butylphthalate	ug/L	NA	5 U	25 U	5 U	25 U
Di-n-octyl phthalate	ug/L	NA	5 U	25 U	5 U	25 U
Dibenz(a,h)anthracene	ug/L	NA	5 U	25 U	5 U	25 U
Dibenzofuran	ug/L	NA	5 U	25 U	5 U	25 U
Diethyl phthalate	ug/L	NA	5 U	25 U	5 U	25 U
Dimethyl phthalate	ug/L	NA	5 U	25 U	5 U	25 U
Fluoranthene	ug/L	NA	5 U	25 U	5 U	25 U
Fluorene	ug/L	NA	5 U	25 U	5 U	25 U
Hexachlorobenzene	ug/L	NA	5 U	25 U	5 U	25 U
Hexachlorobutadiene	ug/L	NA	5 U	25 U	5 U	25 U
Hexachlorocyclopentadiene	ug/L	NA	5 U	25 UJ	5 UJ	25 UJ
Hexachloroethane	ug/L	NA	5 U	25 U	5 U	25 U
Indeno(1,2,3-cd)pyrene	ug/L	NA	5 U	25 U	5 U	25 U
Isophorone	ug/L	NA	5 U	25 U	5 U	25 U
N-Nitrosodi-n-propylamine	ug/L	NA	5 U	25 U	5 U	25 U
N-Nitrosodiphenylamine	ug/L	NA	5 U	25 UJ	5 UJ	25 UJ
Naphthalene	ug/L	NA	5 U	25 U	5 U	25 U
Nitrobenzene	ug/L	NA	5 U	25 U	5 U	25 U
Pentachlorophenol	ug/L	NA	5 U	25 U	5 U	25 U
Phenanthrene	ug/L	NA	5 U	25 U	5 U	25 U
Phenol	ug/L	NA	5 U	25 U	5 U	25 U
Pyrene	ug/L	NA	5 U	25 U	5 U	25 U
Pests/PCBs						
Aroclor-1016 (PCB-1016)	ug/L	NA	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1221 (PCB-1221)	ug/L	NA	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1232 (PCB-1232)	ug/L	NA	0.4 U	0.4 U	0.4 U	0.4 U
Aroclor-1242 (PCB-1242)	ug/L	NA	0.2 UJ	0.2 U	0.2 U	0.2 U
Aroclor-1248 (PCB-1248)	ug/L	NA	0.2 UJ	0.2 U	0.2 U	0.2 U
Aroclor-1254 (PCB-1254)	ug/L	NA	0.2 UJ	0.2 U	0.2 U	0.2 U
Aroclor-1260 (PCB-1260)	ug/L	NA	0.2 UJ	0.2 U	0.2 U	0.2 U
Inorganics						
Antimony	ug/L	NA	25 U	25 U	25 U	25 U
Arsenic	ug/L	NA	3.7 J	15.4	10 U	11

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(): / Date Collected:	Units	W-9 DWD12 10/31/03	W-9 MWW9-01 22 - 32 08/25/03	W-9 MWW9-03 09/30/03	W-9 MWW9-06 09/30/03	W-9 TWW9-01 09/30/03
Barium	ug/L	NA	420	17.3	107	161
Beryllium	ug/L	NA	1 U	1 U	1 U	1 U
Cadmium	ug/L	NA	5 U	5 U	5 U	5 U
Chromium Total	ug/L	NA	56.8	10 U	10 U	10 U
Cobalt	ug/L	NA	2.7 J	20 U	20 U	2.3 J
Copper	ug/L	NA	5 U	5 U	5 U	2.6 J
Lead	ug/L	NA	39.1	3 U	3 U	3 U
Manganese	ug/L	NA	187 J	670	663	66.6
Mercury	ug/L	NA	0.2 U	0.2 U	0.2 U	0.072 J
Nickel	ug/L	NA	38.5	20 U	20 U	4.9 J
Selenium	ug/L	NA	5 U	5 U	5 U	5 U
Silver	ug/L	NA	5 U	5 U	5 U	5 U
Thallium	ug/L	NA	1 U	1 U	1 U	1 U
Vanadium	ug/L	NA	1.9 J	10 U	10 U	4.2 J
Zinc	ug/L	NA	54.4	20 U	20 U	20 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(): / Date Collected:	Units	W-10 MWW10-02 11/14/02	W-10 MWW10-03 11/14/02	W-10 MWW10-04 11/14/02	W-10 MWW10-06 11/14/02
VOCs					
1,1,1-Trichloroethane	ug/L	1 U	1 U	0.41 J	1 U
1,1,2,2-Tetrachloroethane	ug/L	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	ug/L	1 U	1 U	1 U	1 U
1,1-Dichloroethane	ug/L	1 U	1 U	1.2	1 U
1,1-Dichloroethene	ug/L	1 U	1 U	1 U	1 U
1,2,4-Trichlorobenzene	ug/L	1 UJ	1 UJ	1 UJ	1 UJ
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	2 U	2 U	2 U	2 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/L	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	ug/L	1 U	1 U	1 U	1 U
1,2-Dichloroethane	ug/L	1 U	1 U	1 U	1 U
1,2-Dichloropropane	ug/L	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	ug/L	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	ug/L	1 U	1 U	1 U	1 U
2-Butanone (Methyl Ethyl Ketone)	ug/L	10 U	10 U	10 U	10 U
2-Hexanone	ug/L	10 UJ	10 UJ	10 UJ	10 UJ
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/L	10 U	10 U	10 U	10 U
Acetone	ug/L	10 U	10 U	10 U	10 U
Benzene	ug/L	1 U	1 U	1 U	1 U
Bromodichloromethane	ug/L	1 U	1 U	1 U	1 U
Bromoform	ug/L	1 U	1 U	1 U	1 U
Bromomethane (Methyl Bromide)	ug/L	1 U	1 U	1 U	1 U
Carbon disulfide	ug/L	1 U	1 U	1 U	1 U
Carbon tetrachloride	ug/L	1 U	1 U	1 U	1 U
Chlorobenzene	ug/L	1 U	1 U	1 U	1 U
Chloroethane	ug/L	1 U	1 U	1 U	1 U
Chloroform (Trichloromethane)	ug/L	1 U	1 U	1 U	1 U
Chloromethane (Methyl Chloride)	ug/L	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	ug/L	0.5 U	0.5 U	0.5 U	0.5 U
cis-1,3-Dichloropropene	ug/L	1 U	1 U	1 U	1 U
Cyclohexane	ug/L	1 U	1 U	1 U	1 U
Dibromochloromethane	ug/L	1 U	1 U	1 U	1 U
Dichlorodifluoromethane (CFC-12)	ug/L	2 U	2 U	2 U	2 U
Ethylbenzene	ug/L	1 U	1 U	1 U	1 U
Isopropylbenzene	ug/L	1 U	1 U	1 U	1 U
Methyl acetate	ug/L	10 U	10 U	10 U	10 U
Methyl cyclohexane	ug/L	1 UJ	1 UJ	1 UJ	1 UJ
Methyl Tert Butyl Ether	ug/L	5 U	5 U	5 U	21
Methylene chloride	ug/L	R	R	R	R
Styrene	ug/L	1 U	1 U	1 U	1 U
Tetrachloroethene	ug/L	1 U	1 U	1 U	1 U
Toluene	ug/L	1 U	1 U	1 U	1 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(): Date Collected:	Units	W-10 MWW10-02 11/14/02	W-10 MWW10-03 11/14/02	W-10 MWW10-04 11/14/02	W-10 MWW10-06 11/14/02
Total Xylenes	ug/L	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	ug/L	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,3-Dichloropropene	ug/L	1 U	1 U	1 U	1 U
Trichloroethene	ug/L	1 U	1 U	1 U	1 U
Trichlorofluoromethane (CFC-11)	ug/L	1 U	1 U	1 U	1 U
Trifluorotrichloroethane (Freon 113)	ug/L	1 U	1 U	1 U	1 U
Vinyl chloride	ug/L	1 U	1 U	1 U	1 U
SVOCs					
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/L	5 U	5 U	5 U	5 U
2,4,5-Trichlorophenol	ug/L	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol	ug/L	5 U	5 U	5 U	5 U
2,4-Dichlorophenol	ug/L	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	ug/L	5 U	5 U	5 U	5 U
2,4-Dinitrophenol	ug/L	20 UJ	20 UJ	20 UJ	20 UJ
2,4-Dinitrotoluene	ug/L	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene	ug/L	5 U	5 U	5 U	5 U
2-Chloronaphthalene	ug/L	5 U	5 U	5 U	5 U
2-Chlorophenol	ug/L	5 U	5 U	5 U	5 U
2-Methylnaphthalene	ug/L	5 U	5 U	5 U	5 U
2-Methylphenol	ug/L	5 U	5 U	5 U	5 U
2-Nitroaniline	ug/L	20 U	20 U	20 U	20 U
2-Nitrophenol	ug/L	5 U	5 U	5 U	5 U
3,3'-Dichlorobenzidine	ug/L	20 U	20 U	20 U	20 U
3-Nitroaniline	ug/L	20 U	20 U	20 U	20 U
4,6-Dinitro-2-methylphenol	ug/L	20 U	20 U	20 U	20 U
4-Bromophenyl phenyl ether	ug/L	5 U	5 U	5 U	5 U
4-Chloro-3-methylphenol	ug/L	5 U	5 U	5 U	5 U
4-Chloroaniline	ug/L	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	ug/L	5 U	5 U	5 U	5 U
4-Methylphenol	ug/L	5 U	5 U	5 U	5 U
4-Nitroaniline	ug/L	20 U	20 U	20 U	20 U
4-Nitrophenol	ug/L	20 U	20 U	20 U	20 U
Acenaphthene	ug/L	5 U	5 U	5 U	5 U
Acenaphthylene	ug/L	5 U	5 U	5 U	5 U
Acetophenone	ug/L	10 U	10 U	10 U	10 U
Anthracene	ug/L	5 U	5 U	5 U	5 U
Atrazine	ug/L	5 U	5 U	5 U	5 U
Benzaldehyde	ug/L	10 U	10 U	10 U	10 U
Benzo(a)anthracene	ug/L	5 U	5 U	5 U	5 U
Benzo(a)pyrene	ug/L	5 U	5 U	5 U	5 U
Benzo(b)fluoranthene	ug/L	5 U	5 U	5 U	5 U
Benzo(g,h,i)perylene	ug/L	5 U	5 U	5 U	5 U

AOI: Sample ID: Sample Depth(): Date Collected:	Units	W-10 MWW10-02 11/14/02	W-10 MWW10-03 11/14/02	W-10 MWW10-04 11/14/02	W-10 MWW10-06 11/14/02
Benzo(k)fluoranthene	ug/L	5 U	5 U	5 U	5 U
Biphenyl	ug/L	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane	ug/L	5 U	5 U	5 U	5 U
bis(2-Chloroethyl)ether	ug/L	5 U	5 U	5 U	5 U
bis(2-Ethylhexyl)phthalate	ug/L	5 U	5 U	5 U	5 U
Butyl benzylphthalate	ug/L	5 U	5 U	5 U	5 U
Caprolactam	ug/L	10 U	10 U	10 U	10 U
Carbazole	ug/L	10 U	10 U	10 U	10 U
Chrysene	ug/L	5 U	5 U	5 U	5 U
Di-n-butylphthalate	ug/L	5 U	5 U	5 U	5 U
Di-n-octyl phthalate	ug/L	5 U	5 U	5 U	5 U
Dibenz(a,h)anthracene	ug/L	5 U	5 U	5 U	5 U
Dibenzofuran	ug/L	5 U	5 U	5 U	5 U
Diethyl phthalate	ug/L	5 U	5 U	5 U	5 U
Dimethyl phthalate	ug/L	5 U	5 U	5 U	5 U
Fluoranthene	ug/L	5 U	5 U	5 U	5 U
Fluorene	ug/L	5 U	5 U	5 U	5 U
Hexachlorobenzene	ug/L	5 U	5 U	5 U	5 U
Hexachlorobutadiene	ug/L	5 U	5 U	5 U	5 U
Hexachlorocyclopentadiene	ug/L	R	R	R	R
Hexachloroethane	ug/L	5 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	ug/L	5 U	5 U	5 U	5 U
Isophorone	ug/L	5 U	5 U	5 U	5 U
N-Nitrosodi-n-propylamine	ug/L	5 U	5 U	5 U	5 U
N-Nitrosodiphenylamine	ug/L	5 U	5 U	5 U	5 U
Naphthalene	ug/L	5 U	5 U	5 U	5 U
Nitrobenzene	ug/L	5 U	5 U	5 U	5 U
Pentachlorophenol	ug/L	5 U	5 U	5 U	5 U
Phenanthrene	ug/L	5 U	5 U	5 U	5 U
Phenol	ug/L	5 U	5 U	5 U	5 U
Pyrene	ug/L	5 U	5 U	5 U	5 U
Dioxins/Furans					
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/L	50 U	50 U	50 U	50 U
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/L	50 U	50 U	50 U	50 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/L	25 U	25 U	25 U	25 U
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/L	25 U	25 U	25 U	25 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/L	25 U	25 U	25 U	25 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/L	25 U	25 U	25 U	25 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/L	25 U	25 U	25 U	25 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/L	25 U	25 U	25 U	25 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/L	25 U	25 U	25 U	25 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/L	25 U	25 U	25 U	25 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(): Date Collected:	Units	W-10 MWW10-02 11/14/02	W-10 MWW10-03 11/14/02	W-10 MWW10-04 11/14/02	W-10 MWW10-06 11/14/02
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/L	25 U	25 U	25 U	25 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/L	10 U	10 U	10 U	10 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/L	10 U	10 U	10 U	10 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/L	25 U	25 U	25 U	25 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/L	10 U	10 U	10 U	10 U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/L	10 U	10 U	10 U	10 U
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/L	10 U	10 U	10 U	10 U
Pests/PCBs					
Aroclor-1016 (PCB-1016)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1221 (PCB-1221)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1232 (PCB-1232)	ug/L	0.4 U	0.4 U	0.4 U	0.4 U
Aroclor-1242 (PCB-1242)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1248 (PCB-1248)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1254 (PCB-1254)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1260 (PCB-1260)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
Inorganics					
Antimony	ug/L	25 U	25 U	25 U	25 U
Arsenic	ug/L	10 U	10 U	5.6 J	7.9 J
Barium	ug/L	15	79	219	51.2
Beryllium	ug/L	1 U	1 U	1 U	1 U
Cadmium	ug/L	5 U	5 U	5 U	5 U
Chromium Total	ug/L	18.4	10 U	10 U	10 U
Cobalt	ug/L	1.3 J	20 U	1.3 J	20 U
Copper	ug/L	5 U	5 U	5 U	5 U
Lead	ug/L	3 U	3 U	3 U	3 U
Manganese	ug/L	18.7	13.9	511	268
Mercury	ug/L	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	ug/L	8.3 J	20 U	20 U	4.6 J
Selenium	ug/L	5 U	5 U	5 U	5 U
Silver	ug/L	5 U	5 U	5 U	5 U
Thallium	ug/L	1 U	1 U	1 U	1 U
Vanadium	ug/L	10 U	10 U	10 U	10 U
Zinc	ug/L	20 U	20 U	20 U	20 U

AOI:		M-1	M-1	M-1	M-1	M-1
Sample ID:		MWM1-02	MWM1-03	MWM1-04	MWM1-05	MWM1-06
Sample Depth():				15 - 25	15 - 25	15 - 25
Date Collected:	Units	08/12/03	08/12/03	08/12/03	08/12/03	08/12/03
Inorganics						
Cyanide (total)	ug/L	10 U	1300	10 U	47.6	489

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI:		M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2
Sample ID:		MWM2-01	MWM2-01	MWM2-02	MWM2-02	MWM2-03	MWM2-03	MWM2-04	MWM2-04	MWM2-05	MWM2-05	MWM2-07
Sample Depth():											14 - 24	
Date Collected:	Units	11/12/02	06/23/03	11/12/02	06/23/03	11/12/02	06/23/03	11/12/02	06/24/03	11/12/02	06/23/03	11/12/02
VOCs												
1,1,1-Trichloroethane	ug/L	27	34	12	3.2	50	33	550	600	81	25	2.5 U
1,1,2,2-Tetrachloroethane	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
1,1,2-Trichloroethane	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	20 J	2.9 U	1 U	2.5 U
1,1-Dichloroethane	ug/L	2.7	3.5	1.2	0.53 J	20	2.8	1900	1500	12	8.9	62
1,1-Dichloroethene	ug/L	1 U	0.33 J	1 U	1 U	1.4 J	1.2	91	87	2.6 J	1.1	1.3 J
1,2,4-Trichlorobenzene	ug/L	1 UJ	1 U	1 UJ	1 U	2 UJ	1 U	62 UJ	40 U	2.9 UJ	1 U	2.5 UJ
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	2 U	2 U	2 U	2 U	4 U	2 U	120 U	80 U	5.7 U	2 U	5 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
1,2-Dichlorobenzene	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
1,2-Dichloroethane	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	1.5 J
1,2-Dichloropropane	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
1,3-Dichlorobenzene	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
1,4-Dichlorobenzene	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
2-Butanone (Methyl Ethyl Ketone)	ug/L	10 UJ	10 U	10 UJ	10 U	20 UJ	10 U	620 UJ	400 U	29 UJ	10 U	25 UJ
2-Hexanone	ug/L	10 UJ	10 U	10 UJ	10 U	20 UJ	10 U	620 UJ	400 U	29 UJ	10 U	25 UJ
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/L	10 U	10 U	10 U	10 U	20 U	10 U	620 U	400 U	29 U	10 U	25 U
Acetone	ug/L	10 UJ	1.5 J	10 UJ	1.5 J	20 UJ	10 U	620 UJ	400 U	29 UJ	1.9 J	25 UJ
Benzene	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Bromodichloromethane	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Bromoform	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Bromomethane (Methyl Bromide)	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Carbon disulfide	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Carbon tetrachloride	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Chlorobenzene	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Chloroethane	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	52
Chloroform (Trichloromethane)	ug/L	1.3	1.2	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Chloromethane (Methyl Chloride)	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
cis-1,2-Dichloroethene	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U	31 U	20 U	1.4 U	0.5 U	90
cis-1,3-Dichloropropene	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Cyclohexane	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Dibromochloromethane	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Dichlorodifluoromethane (CFC-12)	ug/L	2 U	2 U	2 U	2 U	4 U	2 U	120 U	80 U	5.7 U	2 U	5 U
Ethylbenzene	ug/L	R	1 U	R	1 U	R	1 U	R	40 U	R	1 U	R
Isopropylbenzene	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Methyl acetate	ug/L	10 U	10 U	10 U	10 U	20 U	10 U	620 U	400 U	29 U	10 U	25 U
Methyl cyclohexane	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Methyl Tert Butyl Ether	ug/L	5 U	5 U	5 U	5 U	10 U	5 U	310 U	200 U	14 U	5 U	12 U
Methylene chloride	ug/L	1 U	1 U	1 U	1 U	0.91 J	1 U	24 J	40 U	1 J	1 U	1.5 J
Styrene	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Tetrachloroethene	ug/L	1 U	1 U	1 U	1 U	2 U	0.72 J	62 U	40 U	2.9 U	1 U	2.5 U
Toluene	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI:		M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2
Sample ID:		MWM2-01	MWM2-01	MWM2-02	MWM2-02	MWM2-03	MWM2-03	MWM2-04	MWM2-04	MWM2-05	MWM2-05	MWM2-07
Sample Depth():											14 - 24	
Date Collected:	Units	11/12/02	06/23/03	11/12/02	06/23/03	11/12/02	06/23/03	11/12/02	06/24/03	11/12/02	06/23/03	11/12/02
Total Xylenes	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
trans-1,2-Dichloroethene	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U	31 U	20 U	1.4 U	0.5 U	4.3
trans-1,3-Dichloropropene	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Trichloroethene	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.7
Trichlorofluoromethane (CFC-11)	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Trifluorotrichloroethane (Freon 113)	ug/L	1 U	1 U	0.63 J	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	2.5 U
Vinyl chloride	ug/L	1 U	1 U	1 U	1 U	2 U	1 U	62 U	40 U	2.9 U	1 U	27
SVOCs												
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4,5-Trichlorophenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dichlorophenol	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1 J	5 U	5 U	5 U
2,4-Dinitrophenol	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4-Dinitrotoluene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chloronaphthalene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chlorophenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Methylnaphthalene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Methylphenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Nitroaniline	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2-Nitrophenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
3,3'-Dichlorobenzidine	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
3-Nitroaniline	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4,6-Dinitro-2-methylphenol	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Bromophenyl phenyl ether	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Chloro-3-methylphenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Chloroaniline	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methylphenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Nitroaniline	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Nitrophenol	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Acenaphthene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acenaphthylene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetophenone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Atrazine	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzaldehyde	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(a)pyrene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(b)fluoranthene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(g,h,i)perylene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI:		M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2
Sample ID:		MWM2-01	MWM2-01	MWM2-02	MWM2-02	MWM2-03	MWM2-03	MWM2-04	MWM2-04	MWM2-05	MWM2-05	MWM2-07
Sample Depth():											14 - 24	
Date Collected:	Units	11/12/02	06/23/03	11/12/02	06/23/03	11/12/02	06/23/03	11/12/02	06/24/03	11/12/02	06/23/03	11/12/02
Benzo(k)fluoranthene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Biphenyl	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
bis(2-Chloroethyl)ether	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
bis(2-Ethylhexyl)phthalate	ug/L	5 U	5 U	5 U	5 U	24	5 U	5 U	4.4 J	5 U	5 U	5 U
Butyl benzylphthalate	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Caprolactam	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Di-n-butylphthalate	ug/L	5 U	0.57 J	5 U	5 U	5 U	5 U	5 U	0.44 J	5 U	5 U	5 U
Di-n-octyl phthalate	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibenz(a,h)anthracene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibenzofuran	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Diethyl phthalate	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.69 J	5 U	5 U	5 U
Dimethyl phthalate	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Fluoranthene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Fluorene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	2.2 J	2.6 J	5 U	5 U	5 U
Hexachlorobenzene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobutadiene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorocyclopentadiene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isophorone	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-Nitrosodi-n-propylamine	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-Nitrosodiphenylamine	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Naphthalene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Nitrobenzene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Pentachlorophenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5	4.7 J	5 U	5 U	5 U
Phenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Pyrene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Pests/PCBs												
Aroclor-1016 (PCB-1016)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1221 (PCB-1221)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1232 (PCB-1232)	ug/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Aroclor-1242 (PCB-1242)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1248 (PCB-1248)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1254 (PCB-1254)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1260 (PCB-1260)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Inorganics												
Antimony	ug/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Arsenic	ug/L	10 U	10 U	2.5 J	10 U	10 U	10 U	3.9 J	3.9 J	6.4 J	6.4 J	3.7 J

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SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(): / Date Collected:	Units	M-2 MWM2-01 11/12/02	M-2 MWM2-01 06/23/03	M-2 MWM2-02 11/12/02	M-2 MWM2-02 06/23/03	M-2 MWM2-03 11/12/02	M-2 MWM2-03 06/23/03	M-2 MWM2-04 11/12/02	M-2 MWM2-04 06/24/03	M-2 MWM2-05 11/12/02	M-2 MWM2-05 14 - 24 06/23/03	M-2 MWM2-07 11/12/02
Barium	ug/L	46.6	62.8	32.5	16.2	65.4	69	116	57.6	62.2	34.5	58.4
Beryllium	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	ug/L	0.29 J	5 U	5 U	5 U	5 U	5 U	0.29 J	5 U	5 U	5 U	5 U
Chromium Total	ug/L	2.5 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	ug/L	20 U	2.6 J	19.5 J	9.2 J	20 U	2.5 J	30.5	17.7 J	20 U	2.3 J	4.3 J
Copper	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cyanide (total)	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	550	NA	5.1 J
Lead	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Manganese	ug/L	22.6	10 U	124	93.4	179	220	745	482	130	85.9	439
Mercury	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	ug/L	13.4 J	4.6 J	10.7 J	20 U	7.1 J	5.8 J	180	55	12.8 J	9.6 J	10400
Selenium	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Silver	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	1 J	5 U	5 U	5 U	1.1 J
Thallium	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vanadium	ug/L	10 U	10 U	10 U	10 U	5.4 J	5.3 J	10 U	10 U	10 U	1 J	10 U
Zinc	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U

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PONTIAC NORTH CAMPUS

AOI:		M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2	M-2
Sample ID:		MWM2-07	MWM2-08	MWM2-15	MWM2-16	MWM2-17	MWM2-18	MWM2-19	MWM2-20	MWM2-22	MWM2-23	MWM2-24
Sample Depth():		15 - 25		15 - 25	14 - 24	18 - 28	18 - 28	15 - 25	19 - 29	15 - 25	15 - 25	20 - 30
Date Collected:	Units	06/23/03	11/12/02	06/24/03	06/24/03	06/23/03	06/24/03	06/23/03	06/23/03	06/23/03	06/23/03	06/23/03
VOCs												
1,1,1-Trichloroethane	ug/L	1 U	100	0.45 J	1 U	6.4	4 U	7	240	5.6	1.7 U	4.2
1,1,2,2-Tetrachloroethane	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
1,1,2-Trichloroethane	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
1,1-Dichloroethane	ug/L	23	410	0.77 J	2.3	0.75 J	67	7.5	450	91	51	15
1,1-Dichloroethene	ug/L	0.9 J	8.1 J	1 U	1 U	1 U	4.1	1 U	29	3.5	1.2 J	1.7
1,2,4-Trichlorobenzene	ug/L	1 U	14 UJ	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	2 U	29 U	2 U	2 U	2 U	8 U	2 U	33 U	6.7 U	3.3 U	2 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
1,2-Dichlorobenzene	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
1,2-Dichloroethane	ug/L	0.69 J	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	0.9 J	1 U
1,2-Dichloropropane	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
1,3-Dichlorobenzene	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
1,4-Dichlorobenzene	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
2-Butanone (Methyl Ethyl Ketone)	ug/L	10 U	140 UJ	10 U	10 U	10 U	40 U	10 U	170 U	33 U	17 U	10 U
2-Hexanone	ug/L	10 U	140 UJ	10 U	10 U	10 U	40 U	10 U	170 U	33 U	17 U	10 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/L	10 U	140 U	10 U	10 U	10 U	1 J	10 U	170 U	33 U	17 U	10 U
Acetone	ug/L	10 U	140 UJ	10 U	10 U	1.3 J	40 U	1.1 J	170 U	5.1 J	2.7 J	2.2 J
Benzene	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Bromodichloromethane	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Bromoform	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Bromomethane (Methyl Bromide)	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Carbon disulfide	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Carbon tetrachloride	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Chlorobenzene	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Chloroethane	ug/L	36	14 U	1 U	1 U	1 U	2.7 J	1 U	17 U	3.3 U	58	1 U
Chloroform (Trichloromethane)	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	0.9 J	17 U	3.3 U	1.7 U	1 U
Chloromethane (Methyl Chloride)	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
cis-1,2-Dichloroethene	ug/L	13	7.1 U	0.5 U	0.58	0.5 U	1.5 J	0.5 U	8.3 U	28	11	2.6
cis-1,3-Dichloropropene	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Cyclohexane	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Dibromochloromethane	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Dichlorodifluoromethane (CFC-12)	ug/L	2 U	29 U	2 U	2 U	2 U	8 U	2 U	33 U	6.7 U	3.3 U	2 U
Ethylbenzene	ug/L	1 U	R	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Isopropylbenzene	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Methyl acetate	ug/L	10 U	140 U	10 U	10 U	10 U	40 U	10 U	170 U	33 U	17 U	10 U
Methyl cyclohexane	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Methyl Tert Butyl Ether	ug/L	5 U	71 U	5 U	5 U	5 U	20 U	5 U	83 U	17 U	8.4 U	5 U
Methylene chloride	ug/L	0.39 J	7.6 J	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	0.62 J	1 U
Styrene	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Tetrachloroethene	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	7.5 J	2.7 J	1.3 J	0.72 J
Toluene	ug/L	1 U	14 U	1 U	1 U	1 U	2 J	1 U	17 U	3.3 U	1.7 U	1 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(): / Date Collected:	Units	M-2 MWM2-07 15 - 25 06/23/03	M-2 MWM2-08 11/12/02	M-2 MWM2-15 15 - 25 06/24/03	M-2 MWM2-16 14 - 24 06/24/03	M-2 MWM2-17 18 - 28 06/23/03	M-2 MWM2-18 18 - 28 06/24/03	M-2 MWM2-19 15 - 25 06/23/03	M-2 MWM2-20 19 - 29 06/23/03	M-2 MWM2-22 15 - 25 06/23/03	M-2 MWM2-23 15 - 25 06/23/03	M-2 MWM2-24 20 - 30 06/23/03
Total Xylenes	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
trans-1,2-Dichloroethene	ug/L	0.55	7.1 U	0.5 U	0.5 U	0.5 U	2 U	0.5 U	8.3 U	1.7 U	0.84 U	0.5 U
trans-1,3-Dichloropropene	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Trichloroethene	ug/L	2.5	14 U	2.3	1.4	1 U	5.5	1 U	17 U	56	3	11
Trichlorofluoromethane (CFC-11)	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Trifluorotrichloroethane (Freon 113)	ug/L	1 U	14 U	1 U	1 U	1 U	4 U	1 U	17 U	3.3 U	1.7 U	1 U
Vinyl chloride	ug/L	3.5	14 U	1 U	1 U	1 U	3.4 J	1.4	17 U	3.3 U	2.3	0.38 J
SVOCs												
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4,5-Trichlorophenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dichlorophenol	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.3 J	5 U	5 U	5 U
2,4-Dinitrophenol	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2,4-Dinitrotoluene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chloronaphthalene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chlorophenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Methylnaphthalene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	2.1 J	5 U	5 U	1.1 J
2-Methylphenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Nitroaniline	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2-Nitrophenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
3,3'-Dichlorobenzidine	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
3-Nitroaniline	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4,6-Dinitro-2-methylphenol	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Bromophenyl phenyl ether	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Chloro-3-methylphenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Chloroaniline	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methylphenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Nitroaniline	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
4-Nitrophenol	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Acenaphthene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acenaphthylene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetophenone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Atrazine	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzaldehyde	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(a)pyrene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(b)fluoranthene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(g,h,i)perylene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

APPENDIX C - GROUNDWATER
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PONTIAC NORTH CAMPUS

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Benzo(k)fluoranthene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Biphenyl	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
bis(2-Chloroethyl)ether	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
bis(2-Ethylhexyl)phthalate	ug/L	5 U	5 U	1.4 J	1.5 J	5 U	1.1 J	5 U	5 U	5 U	5 U	5 U
Butyl benzylphthalate	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Caprolactam	ug/L	10 U	10 U	10 U	0.49 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Di-n-butylphthalate	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.47 J	5 U	5 U	5 U
Di-n-octyl phthalate	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibenz(a,h)anthracene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibenzofuran	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Diethyl phthalate	ug/L	5 U	5 U	5 U	5 U	5 U	0.55 J	5 U	2.4 J	5 U	5 U	5 U
Dimethyl phthalate	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Fluoranthene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Fluorene	ug/L	5 U	5 U	5 U	5 U	5 U	1.2 J	5 U	3.1 J	5 U	5 U	5 U
Hexachlorobenzene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorobutadiene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachlorocyclopentadiene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isophorone	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-Nitrosodi-n-propylamine	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-Nitrosodiphenylamine	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Naphthalene	ug/L	5 U	5 U	5 U	5 U	5 U	1.5 J	5 U	1.6 J	5 U	5 U	5 U
Nitrobenzene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Pentachlorophenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	ug/L	5 U	5 U	5 U	5 U	5 U	1.2 J	5 U	4.5 J	5 U	5 U	0.91 J
Phenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Pyrene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Pests/PCBs												
Aroclor-1016 (PCB-1016)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1221 (PCB-1221)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1232 (PCB-1232)	ug/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Aroclor-1242 (PCB-1242)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1248 (PCB-1248)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1254 (PCB-1254)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1260 (PCB-1260)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Inorganics												
Antimony	ug/L	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Arsenic	ug/L	10 U	10 U	3.9 J	3.7 J	2.8 J	2.5 J	10 U	4.4 J	5.8 J	10 U	4.7 J

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SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

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Barium	ug/L	68.4	258	83.7	92.4	75.4	80.1	65	48	88.2	98.4	77.3
Beryllium	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	ug/L	5 U	0.38 J	0.35 J	0.28 J	5 U	5 U	5 U	0.3 J	5 U	5 U	5 U
Chromium Total	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1.7 J	10 U	1.9 J
Cobalt	ug/L	2.5 J	19.7 J	0.98 J	1.3 J	1.7 J	2.5 J	1.2 J	8.8 J	0.97 J	1.8 J	0.8 J
Copper	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cyanide (total)	ug/L	NA	10.7	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Manganese	ug/L	335	322	183	150	148	271	230	158	205	286	241
Mercury	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	ug/L	5040	93.3	95.2	45.6	64.4	4850	1930	79.6	1060	3960	1700
Selenium	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Silver	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Thallium	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vanadium	ug/L	10 U	10 U	10 U	10 U	1.9 J	10 U	10 U	10 U	10 U	10 U	10 U
Zinc	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	554	20 U	20 U	20 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI:		M-4	M-4	M-4	M-4	M-4	M-4	M-4	M-4	M-4	M-4	M-4
Sample ID:		MWM4-01	MWM4-01	MWM4-02	MWM4-02	MWM4-03	MWM4-03	MWM4-04	MWM4-04	MWM4-05	MWM4-05	MWM4-07
Sample Depth():									9 - 19		10 - 20	28 - 38
Date Collected:	Units	11/14/02	09/30/03	11/14/02	10/01/03	11/14/02	09/30/03	11/14/02	09/30/03	11/14/02	10/01/03	10/01/03
VOCs												
1,1,1-Trichloroethane	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
1,1,2,2-Tetrachloroethane	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
1,1,2-Trichloroethane	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
1,1-Dichloroethane	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
1,1-Dichloroethene	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
1,2,4-Trichlorobenzene	ug/L	1 UJ	NA	1 UJ	NA	1 UJ	NA	33 UJ	NA	1 UJ	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	2 U	NA	2 U	NA	2 U	NA	67 U	NA	2 U	NA	NA
1,2-Dibromoethane (Ethylene Dibromide)	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
1,2-Dichlorobenzene	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
1,2-Dichloroethane	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
1,2-Dichloropropane	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
1,3-Dichlorobenzene	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
1,4-Dichlorobenzene	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
2-Butanone (Methyl Ethyl Ketone)	ug/L	10 U	NA	10 U	NA	10 U	NA	330 U	NA	10 U	NA	NA
2-Hexanone	ug/L	10 UJ	NA	10 UJ	NA	10 UJ	NA	330 UJ	NA	10 UJ	NA	NA
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/L	10 U	NA	10 U	NA	10 U	NA	330 U	NA	10 U	NA	NA
Acetone	ug/L	10 U	NA	10 U	NA	10 U	NA	330 U	NA	10 U	NA	NA
Benzene	ug/L	1 U	1 U	3.7	1 U	1 U	1 U	620	980	1 U	1 U	1 U
Bromodichloromethane	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
Bromoform	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
Bromomethane (Methyl Bromide)	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
Carbon disulfide	ug/L	1 U	NA	1 U	NA	2.1	NA	33 U	NA	1 U	NA	NA
Carbon tetrachloride	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
Chlorobenzene	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
Chloroethane	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
Chloroform (Trichloromethane)	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
Chloromethane (Methyl Chloride)	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
cis-1,2-Dichloroethene	ug/L	0.5 U	NA	0.5 U	NA	0.5 U	NA	17 U	NA	0.5 U	NA	NA
cis-1,3-Dichloropropene	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
Cyclohexane	ug/L	1 U	NA	1 U	NA	1 U	NA	220	NA	1 U	NA	NA
Dibromochloromethane	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
Dichlorodifluoromethane (CFC-12)	ug/L	2 U	NA	2 U	NA	2 U	NA	67 U	NA	2 U	NA	NA
Ethylbenzene	ug/L	1 U	1 U	2.3	0.27 J	1 U	1 U	110	1500	1 U	1 U	1 U
Isopropylbenzene	ug/L	1 U	NA	2.9	NA	1 U	NA	33 U	NA	1 U	NA	NA
Methyl acetate	ug/L	10 U	NA	10 U	NA	10 U	NA	330 U	NA	10 U	NA	NA
Methyl cyclohexane	ug/L	1 UJ	NA	1 UJ	NA	1 UJ	NA	18 J	NA	1 UJ	NA	NA
Methyl Tert Butyl Ether	ug/L	5 U	NA	5 U	NA	5 U	NA	170 U	NA	5 U	NA	NA
Methylene chloride	ug/L	R	NA	R	NA	R	NA	R	NA	R	NA	NA
Styrene	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
Tetrachloroethene	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
Toluene	ug/L	0.42 J	1 U	1 U	1 U	1 U	1 U	26 J	57	1 U	1 U	1 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(): / Date Collected:	Units	M-4 MWM4-01 11/14/02	M-4 MWM4-01 09/30/03	M-4 MWM4-02 11/14/02	M-4 MWM4-02 10/01/03	M-4 MWM4-03 11/14/02	M-4 MWM4-03 09/30/03	M-4 MWM4-04 11/14/02	M-4 MWM4-04 9 - 19 09/30/03	M-4 MWM4-05 11/14/02	M-4 MWM4-05 10 - 20 10/01/03	M-4 MWM4-07 28 - 38 10/01/03
Total Xylenes	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	300	1400	1 U	1 U	1 U
trans-1,2-Dichloroethene	ug/L	0.5 U	NA	0.5 U	NA	0.5 U	NA	17 U	NA	0.5 U	NA	NA
trans-1,3-Dichloropropene	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
Trichloroethene	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
Trichlorofluoromethane (CFC-11)	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
Trifluorotrichloroethane (Freon 113)	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
Vinyl chloride	ug/L	1 U	NA	1 U	NA	1 U	NA	33 U	NA	1 U	NA	NA
Inorganics												
Lead	ug/L	NA	NA	NA	NA	NA	NA	3 U	NA	3 U	NA	NA

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	M-5 MW-2-99 8 - 15 08/12/03	M-5 MWM5-01 08/12/03	M-5 MWM5-02 17 - 27 08/12/03	M-5 MWM5-03 24 - 34 08/12/03	M-5 MWM5-04 20 - 30 08/12/03
Pests/PCBs						
Aroclor-1016 (PCB-1016)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1221 (PCB-1221)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1232 (PCB-1232)	ug/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Aroclor-1242 (PCB-1242)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1248 (PCB-1248)	ug/L	0.2 U	0.2 U	0.2 U	0.59	0.29
Aroclor-1254 (PCB-1254)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1260 (PCB-1260)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Inorganics						
Barium	ug/L	1440	2200	691	660	205
Manganese	ug/L	1160	125	679	675	287

AOI: Sample ID: Sample Depth(): Date Collected:	Units	M-9 MWM9-02 11/14/02
VOCs		
1,1,1-Trichloroethane	ug/L	1 U
1,1,2,2-Tetrachloroethane	ug/L	1 U
1,1,2-Trichloroethane	ug/L	1 U
1,1-Dichloroethane	ug/L	1 U
1,1-Dichloroethene	ug/L	1 U
1,2,4-Trichlorobenzene	ug/L	1 UJ
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	2 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/L	1 U
1,2-Dichlorobenzene	ug/L	1 U
1,2-Dichloroethane	ug/L	1 U
1,2-Dichloropropane	ug/L	1 U
1,3-Dichlorobenzene	ug/L	1 U
1,4-Dichlorobenzene	ug/L	1 U
2-Butanone (Methyl Ethyl Ketone)	ug/L	10 U
2-Hexanone	ug/L	10 UJ
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/L	10 U
Acetone	ug/L	10 U
Benzene	ug/L	1 U
Bromodichloromethane	ug/L	1 U
Bromoform	ug/L	1 U
Bromomethane (Methyl Bromide)	ug/L	1 U
Carbon disulfide	ug/L	0.25 J
Carbon tetrachloride	ug/L	1 U
Chlorobenzene	ug/L	1 U
Chloroethane	ug/L	1 U
Chloroform (Trichloromethane)	ug/L	1 U
Chloromethane (Methyl Chloride)	ug/L	1 U
cis-1,2-Dichloroethene	ug/L	0.5 U
cis-1,3-Dichloropropene	ug/L	1 U
Cyclohexane	ug/L	1 U
Dibromochloromethane	ug/L	1 U
Dichlorodifluoromethane (CFC-12)	ug/L	2 U
Ethylbenzene	ug/L	1 U
Isopropylbenzene	ug/L	1 U
Methyl acetate	ug/L	10 U
Methyl cyclohexane	ug/L	1 UJ
Methyl Tert Butyl Ether	ug/L	5 U
Methylene chloride	ug/L	R
Styrene	ug/L	1 U
Tetrachloroethene	ug/L	1 U
Toluene	ug/L	1 U

AOI: Sample ID: Sample Depth(): Date Collected:	Units	M-9 MWM9-02 11/14/02
Total Xylenes	ug/L	1 U
trans-1,2-Dichloroethene	ug/L	0.5 U
trans-1,3-Dichloropropene	ug/L	1 U
Trichloroethene	ug/L	1 U
Trichlorofluoromethane (CFC-11)	ug/L	1 U
Trifluorotrichloroethane (Freon 113)	ug/L	1 U
Vinyl chloride	ug/L	1 U
SVOCs		
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/L	5 U
2,4,5-Trichlorophenol	ug/L	5 U
2,4,6-Trichlorophenol	ug/L	5 U
2,4-Dichlorophenol	ug/L	10 U
2,4-Dimethylphenol	ug/L	5 U
2,4-Dinitrophenol	ug/L	20 UJ
2,4-Dinitrotoluene	ug/L	5 U
2,6-Dinitrotoluene	ug/L	5 U
2-Chloronaphthalene	ug/L	5 U
2-Chlorophenol	ug/L	5 U
2-Methylnaphthalene	ug/L	5 U
2-Methylphenol	ug/L	5 U
2-Nitroaniline	ug/L	20 U
2-Nitrophenol	ug/L	5 U
3,3'-Dichlorobenzidine	ug/L	20 U
3-Nitroaniline	ug/L	20 U
4,6-Dinitro-2-methylphenol	ug/L	20 U
4-Bromophenyl phenyl ether	ug/L	5 U
4-Chloro-3-methylphenol	ug/L	5 U
4-Chloroaniline	ug/L	10 U
4-Chlorophenyl phenyl ether	ug/L	5 U
4-Methylphenol	ug/L	5 U
4-Nitroaniline	ug/L	20 U
4-Nitrophenol	ug/L	20 U
Acenaphthene	ug/L	5 U
Acenaphthylene	ug/L	5 U
Acetophenone	ug/L	10 U
Anthracene	ug/L	5 U
Atrazine	ug/L	5 U
Benzaldehyde	ug/L	10 U
Benzo(a)anthracene	ug/L	5 U
Benzo(a)pyrene	ug/L	5 U
Benzo(b)fluoranthene	ug/L	5 U
Benzo(g,h,i)perylene	ug/L	5 U

AOI: Sample ID: Sample Depth(): Date Collected:	Units	M-9 MWM9-02 11/14/02
Benzo(k)fluoranthene	ug/L	5 U
Biphenyl	ug/L	10 U
bis(2-Chloroethoxy)methane	ug/L	5 U
bis(2-Chloroethyl)ether	ug/L	5 U
bis(2-Ethylhexyl)phthalate	ug/L	5 U
Butyl benzylphthalate	ug/L	5 U
Caprolactam	ug/L	10 U
Carbazole	ug/L	10 U
Chrysene	ug/L	5 U
Di-n-butylphthalate	ug/L	5 U
Di-n-octyl phthalate	ug/L	5 U
Dibenz(a,h)anthracene	ug/L	5 U
Dibenzofuran	ug/L	5 U
Diethyl phthalate	ug/L	5 U
Dimethyl phthalate	ug/L	5 U
Fluoranthene	ug/L	5 U
Fluorene	ug/L	5 U
Hexachlorobenzene	ug/L	5 U
Hexachlorobutadiene	ug/L	5 U
Hexachlorocyclopentadiene	ug/L	R
Hexachloroethane	ug/L	5 U
Indeno(1,2,3-cd)pyrene	ug/L	5 U
Isophorone	ug/L	5 U
N-Nitrosodi-n-propylamine	ug/L	5 U
N-Nitrosodiphenylamine	ug/L	5 U
Naphthalene	ug/L	5 U
Nitrobenzene	ug/L	5 U
Pentachlorophenol	ug/L	5 U
Phenanthrene	ug/L	5 U
Phenol	ug/L	5 U
Pyrene	ug/L	5 U
Pests/PCBs		
Aroclor-1016 (PCB-1016)	ug/L	0.2 U
Aroclor-1221 (PCB-1221)	ug/L	0.2 U
Aroclor-1232 (PCB-1232)	ug/L	0.4 U
Aroclor-1242 (PCB-1242)	ug/L	0.2 U
Aroclor-1248 (PCB-1248)	ug/L	0.2 U
Aroclor-1254 (PCB-1254)	ug/L	0.2 U
Aroclor-1260 (PCB-1260)	ug/L	0.2 U
Inorganics		
Antimony	ug/L	25 U
Arsenic	ug/L	10 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(): Date Collected:	Units	M-9 MWM9-02 11/14/02
Barium	ug/L	569
Beryllium	ug/L	1 U
Cadmium	ug/L	0.29 J
Chromium Total	ug/L	10 U
Cobalt	ug/L	2.4 J
Copper	ug/L	5 U
Lead	ug/L	3 U
Manganese	ug/L	4.3 J
Mercury	ug/L	0.2 U
Nickel	ug/L	7.3 J
Selenium	ug/L	5 U
Silver	ug/L	5 U
Thallium	ug/L	1 U
Vanadium	ug/L	1 J
Zinc	ug/L	82.3

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	M-16 MWM16-01 22 - 32 08/11/03	M-16 MWM16-02 11/13/02	M-16 MWM16-02 19 - 29 08/11/03	M-16 MWM16-04 17 - 27 08/11/03
VOCs					
1,1,1-Trichloroethane	ug/L	NA	2.9	NA	NA
1,1,2,2-Tetrachloroethane	ug/L	NA	1 U	NA	NA
1,1,2-Trichloroethane	ug/L	NA	1 U	NA	NA
1,1-Dichloroethane	ug/L	NA	1 U	NA	NA
1,1-Dichloroethene	ug/L	NA	1 U	NA	NA
1,2,4-Trichlorobenzene	ug/L	NA	1 U	NA	NA
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	NA	2 U	NA	NA
1,2-Dibromoethane (Ethylene Dibromide)	ug/L	NA	1 U	NA	NA
1,2-Dichlorobenzene	ug/L	NA	1 U	NA	NA
1,2-Dichloroethane	ug/L	NA	1 U	NA	NA
1,2-Dichloropropane	ug/L	NA	1 U	NA	NA
1,3-Dichlorobenzene	ug/L	NA	1 U	NA	NA
1,4-Dichlorobenzene	ug/L	NA	1 U	NA	NA
2-Butanone (Methyl Ethyl Ketone)	ug/L	NA	10 U	NA	NA
2-Hexanone	ug/L	NA	10 UJ	NA	NA
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/L	NA	R	NA	NA
Acetone	ug/L	NA	10 U	NA	NA
Benzene	ug/L	NA	1 U	NA	NA
Bromodichloromethane	ug/L	NA	1 U	NA	NA
Bromoform	ug/L	NA	1 U	NA	NA
Bromomethane (Methyl Bromide)	ug/L	NA	R	NA	NA
Carbon disulfide	ug/L	NA	1 U	NA	NA
Carbon tetrachloride	ug/L	NA	1 U	NA	NA
Chlorobenzene	ug/L	NA	1 U	NA	NA
Chloroethane	ug/L	NA	1 U	NA	NA
Chloroform (Trichloromethane)	ug/L	NA	1 U	NA	NA
Chloromethane (Methyl Chloride)	ug/L	NA	1 U	NA	NA
cis-1,2-Dichloroethene	ug/L	NA	0.5 U	NA	NA
cis-1,3-Dichloropropene	ug/L	NA	1 U	NA	NA
Cyclohexane	ug/L	NA	1 U	NA	NA
Dibromochloromethane	ug/L	NA	1 U	NA	NA
Dichlorodifluoromethane (CFC-12)	ug/L	NA	2 U	NA	NA
Ethylbenzene	ug/L	NA	1 U	NA	NA
Isopropylbenzene	ug/L	NA	1 U	NA	NA
Methyl acetate	ug/L	NA	10 U	NA	NA
Methyl cyclohexane	ug/L	NA	1 U	NA	NA
Methyl Tert Butyl Ether	ug/L	NA	5 U	NA	NA
Methylene chloride	ug/L	NA	1 U	NA	NA
Styrene	ug/L	NA	1 U	NA	NA
Tetrachloroethene	ug/L	NA	1 U	NA	NA
Toluene	ug/L	NA	1 U	NA	NA

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	M-16 MWM16-01 22 - 32 08/11/03	M-16 MWM16-02 11/13/02	M-16 MWM16-02 19 - 29 08/11/03	M-16 MWM16-04 17 - 27 08/11/03
Total Xylenes	ug/L	NA	1 U	NA	NA
trans-1,2-Dichloroethene	ug/L	NA	0.5 U	NA	NA
trans-1,3-Dichloropropene	ug/L	NA	1 U	NA	NA
Trichloroethene	ug/L	NA	1 U	NA	NA
Trichlorofluoromethane (CFC-11)	ug/L	NA	1 U	NA	NA
Trifluorotrichloroethane (Freon 113)	ug/L	NA	1 U	NA	NA
Vinyl chloride	ug/L	14 J	1 U	R	R
SVOCs					
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/L	NA	5 U	NA	NA
2,4,5-Trichlorophenol	ug/L	NA	5 U	NA	NA
2,4,6-Trichlorophenol	ug/L	NA	5 U	NA	NA
2,4-Dichlorophenol	ug/L	NA	10 U	NA	NA
2,4-Dimethylphenol	ug/L	NA	5 U	NA	NA
2,4-Dinitrophenol	ug/L	NA	20 U	NA	NA
2,4-Dinitrotoluene	ug/L	NA	5 U	NA	NA
2,6-Dinitrotoluene	ug/L	NA	5 U	NA	NA
2-Chloronaphthalene	ug/L	NA	5 U	NA	NA
2-Chlorophenol	ug/L	NA	5 U	NA	NA
2-Methylnaphthalene	ug/L	NA	5 U	NA	NA
2-Methylphenol	ug/L	NA	5 U	NA	NA
2-Nitroaniline	ug/L	NA	20 U	NA	NA
2-Nitrophenol	ug/L	NA	5 U	NA	NA
3,3'-Dichlorobenzidine	ug/L	NA	20 U	NA	NA
3-Nitroaniline	ug/L	NA	20 U	NA	NA
4,6-Dinitro-2-methylphenol	ug/L	NA	20 U	NA	NA
4-Bromophenyl phenyl ether	ug/L	NA	5 U	NA	NA
4-Chloro-3-methylphenol	ug/L	NA	5 U	NA	NA
4-Chloroaniline	ug/L	NA	10 U	NA	NA
4-Chlorophenyl phenyl ether	ug/L	NA	5 U	NA	NA
4-Methylphenol	ug/L	NA	5 U	NA	NA
4-Nitroaniline	ug/L	NA	20 U	NA	NA
4-Nitrophenol	ug/L	NA	20 U	NA	NA
Acenaphthene	ug/L	NA	5 U	NA	NA
Acenaphthylene	ug/L	NA	5 U	NA	NA
Acetophenone	ug/L	NA	10 U	NA	NA
Anthracene	ug/L	NA	5 U	NA	NA
Atrazine	ug/L	NA	5 U	NA	NA
Benzaldehyde	ug/L	NA	10 U	NA	NA
Benzo(a)anthracene	ug/L	NA	5 U	NA	NA
Benzo(a)pyrene	ug/L	NA	5 U	NA	NA
Benzo(b)fluoranthene	ug/L	NA	5 U	NA	NA
Benzo(g,h,i)perylene	ug/L	NA	5 U	NA	NA

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	M-16 MWM16-01 22 - 32 08/11/03	M-16 MWM16-02 11/13/02	M-16 MWM16-02 19 - 29 08/11/03	M-16 MWM16-04 17 - 27 08/11/03
Benzo(k)fluoranthene	ug/L	NA	5 U	NA	NA
Biphenyl	ug/L	NA	10 U	NA	NA
bis(2-Chloroethoxy)methane	ug/L	NA	5 U	NA	NA
bis(2-Chloroethyl)ether	ug/L	NA	5 U	NA	NA
bis(2-Ethylhexyl)phthalate	ug/L	NA	5 U	NA	NA
Butyl benzylphthalate	ug/L	NA	5 U	NA	NA
Caprolactam	ug/L	NA	10 U	NA	NA
Carbazole	ug/L	NA	10 U	NA	NA
Chrysene	ug/L	NA	5 U	NA	NA
Di-n-butylphthalate	ug/L	NA	5 U	NA	NA
Di-n-octyl phthalate	ug/L	NA	5 U	NA	NA
Dibenz(a,h)anthracene	ug/L	NA	5 U	NA	NA
Dibenzofuran	ug/L	NA	5 U	NA	NA
Diethyl phthalate	ug/L	NA	5 U	NA	NA
Dimethyl phthalate	ug/L	NA	5 U	NA	NA
Fluoranthene	ug/L	NA	5 U	NA	NA
Fluorene	ug/L	NA	5 U	NA	NA
Hexachlorobenzene	ug/L	NA	5 U	NA	NA
Hexachlorobutadiene	ug/L	NA	5 U	NA	NA
Hexachlorocyclopentadiene	ug/L	NA	5 U	NA	NA
Hexachloroethane	ug/L	NA	5 U	NA	NA
Indeno(1,2,3-cd)pyrene	ug/L	NA	5 U	NA	NA
Isophorone	ug/L	NA	5 U	NA	NA
N-Nitrosodi-n-propylamine	ug/L	NA	5 U	NA	NA
N-Nitrosodiphenylamine	ug/L	NA	5 U	NA	NA
Naphthalene	ug/L	NA	5 U	NA	NA
Nitrobenzene	ug/L	NA	5 U	NA	NA
Pentachlorophenol	ug/L	NA	5 U	NA	NA
Phenanthrene	ug/L	NA	5 U	NA	NA
Phenol	ug/L	NA	5 U	NA	NA
Pyrene	ug/L	NA	5 U	NA	NA
Pests/PCBs					
Aroclor-1016 (PCB-1016)	ug/L	NA	0.2 U	NA	NA
Aroclor-1221 (PCB-1221)	ug/L	NA	0.2 U	NA	NA
Aroclor-1232 (PCB-1232)	ug/L	NA	0.4 U	NA	NA
Aroclor-1242 (PCB-1242)	ug/L	NA	0.2 U	NA	NA
Aroclor-1248 (PCB-1248)	ug/L	NA	0.2 U	NA	NA
Aroclor-1254 (PCB-1254)	ug/L	NA	0.2 U	NA	NA
Aroclor-1260 (PCB-1260)	ug/L	NA	0.2 U	NA	NA
Inorganics					
Antimony	ug/L	NA	25 U	NA	NA
Arsenic	ug/L	NA	10 U	NA	NA

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	M-16 MWM16-01 22 - 32 08/11/03	M-16 MWM16-02 11/13/02	M-16 MWM16-02 19 - 29 08/11/03	M-16 MWM16-04 17 - 27 08/11/03
Barium	ug/L	NA	36	NA	NA
Beryllium	ug/L	NA	1 U	NA	NA
Cadmium	ug/L	NA	5 U	NA	NA
Chromium Total	ug/L	NA	1.6 J	NA	NA
Cobalt	ug/L	NA	20 U	NA	NA
Copper	ug/L	NA	5 U	NA	NA
Lead	ug/L	NA	3 U	NA	NA
Manganese	ug/L	NA	10 U	NA	NA
Mercury	ug/L	NA	0.2 U	NA	NA
Nickel	ug/L	NA	20 U	NA	NA
Selenium	ug/L	NA	5 U	NA	NA
Silver	ug/L	NA	5 U	NA	NA
Thallium	ug/L	NA	1 U	NA	NA
Vanadium	ug/L	NA	10 U	NA	NA
Zinc	ug/L	NA	20 U	NA	NA

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI:		M-25
Sample ID:		MWM25-02
Sample Depth(ft BGS):		16 - 26
Date Collected:	Units	08/11/03
VOCs		
1,1,1-Trichloroethane	ug/L	1 U
1,1,2,2-Tetrachloroethane	ug/L	1 U
1,1,2-Trichloroethane	ug/L	1 U
1,1-Dichloroethane	ug/L	1 U
1,1-Dichloroethene	ug/L	1 U
1,2,4-Trichlorobenzene	ug/L	1 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	2 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/L	1 U
1,2-Dichlorobenzene	ug/L	1 U
1,2-Dichloroethane	ug/L	1 U
1,2-Dichloropropane	ug/L	1 U
1,3-Dichlorobenzene	ug/L	1 U
1,4-Dichlorobenzene	ug/L	1 U
2-Butanone (Methyl Ethyl Ketone)	ug/L	10 U
2-Hexanone	ug/L	R
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/L	R
Acetone	ug/L	10 UJ
Benzene	ug/L	1 U
Bromodichloromethane	ug/L	1 U
Bromoform	ug/L	1 U
Bromomethane (Methyl Bromide)	ug/L	1 UJ
Carbon disulfide	ug/L	0.3 J
Carbon tetrachloride	ug/L	1 U
Chlorobenzene	ug/L	1 U
Chloroethane	ug/L	1 U
Chloroform (Trichloromethane)	ug/L	1 U
Chloromethane (Methyl Chloride)	ug/L	1 U
cis-1,2-Dichloroethene	ug/L	0.5 U
cis-1,3-Dichloropropene	ug/L	1 U
Cyclohexane	ug/L	1 U
Dibromochloromethane	ug/L	1 U
Dichlorodifluoromethane (CFC-12)	ug/L	2 U
Ethylbenzene	ug/L	R
Isopropylbenzene	ug/L	1 U
Methyl acetate	ug/L	10 UJ
Methyl cyclohexane	ug/L	1 UJ
Methyl Tert Butyl Ether	ug/L	5 U
Methylene chloride	ug/L	1 U
Styrene	ug/L	R
Tetrachloroethene	ug/L	1 U
Toluene	ug/L	1 U

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	M-25 / MWM25-02 / 16 - 26 / 08/11/03
Total Xylenes	ug/L	R
trans-1,2-Dichloroethene	ug/L	0.5 U
trans-1,3-Dichloropropene	ug/L	1 U
Trichloroethene	ug/L	1 U
Trichlorofluoromethane (CFC-11)	ug/L	1 U
Trifluorotrichloroethane (Freon 113)	ug/L	1 U
Vinyl chloride	ug/L	R
SVOCs		
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/L	5 U
2,4,5-Trichlorophenol	ug/L	5 U
2,4,6-Trichlorophenol	ug/L	5 U
2,4-Dichlorophenol	ug/L	10 U
2,4-Dimethylphenol	ug/L	5 U
2,4-Dinitrophenol	ug/L	20 U
2,4-Dinitrotoluene	ug/L	5 U
2,6-Dinitrotoluene	ug/L	5 U
2-Chloronaphthalene	ug/L	5 U
2-Chlorophenol	ug/L	5 U
2-Methylnaphthalene	ug/L	5 U
2-Methylphenol	ug/L	5 U
2-Nitroaniline	ug/L	20 U
2-Nitrophenol	ug/L	5 U
3,3'-Dichlorobenzidine	ug/L	R
3-Nitroaniline	ug/L	20 U
4,6-Dinitro-2-methylphenol	ug/L	20 U
4-Bromophenyl phenyl ether	ug/L	5 U
4-Chloro-3-methylphenol	ug/L	5 U
4-Chloroaniline	ug/L	10 U
4-Chlorophenyl phenyl ether	ug/L	5 U
4-Methylphenol	ug/L	5 U
4-Nitroaniline	ug/L	20 U
4-Nitrophenol	ug/L	20 U
Acenaphthene	ug/L	5 U
Acenaphthylene	ug/L	5 U
Acetophenone	ug/L	10 U
Anthracene	ug/L	5 U
Atrazine	ug/L	5 U
Benzaldehyde	ug/L	10 U
Benzo(a)anthracene	ug/L	5 U
Benzo(a)pyrene	ug/L	5 U
Benzo(b)fluoranthene	ug/L	5 U
Benzo(g,h,i)perylene	ug/L	5 U

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	M-25 MWM25-02 16 - 26 08/11/03
Benzo(k)fluoranthene	ug/L	5 U
Biphenyl	ug/L	10 U
bis(2-Chloroethoxy)methane	ug/L	5 U
bis(2-Chloroethyl)ether	ug/L	5 U
bis(2-Ethylhexyl)phthalate	ug/L	5 U
Butyl benzylphthalate	ug/L	5 U
Caprolactam	ug/L	1.4 J
Carbazole	ug/L	10 U
Chrysene	ug/L	5 U
Di-n-butylphthalate	ug/L	5 U
Di-n-octyl phthalate	ug/L	5 U
Dibenz(a,h)anthracene	ug/L	5 U
Dibenzofuran	ug/L	5 U
Diethyl phthalate	ug/L	5 U
Dimethyl phthalate	ug/L	5 U
Fluoranthene	ug/L	5 U
Fluorene	ug/L	5 U
Hexachlorobenzene	ug/L	5 U
Hexachlorobutadiene	ug/L	5 U
Hexachlorocyclopentadiene	ug/L	5 U
Hexachloroethane	ug/L	5 U
Indeno(1,2,3-cd)pyrene	ug/L	5 U
Isophorone	ug/L	5 U
N-Nitrosodi-n-propylamine	ug/L	5 U
N-Nitrosodiphenylamine	ug/L	5 U
Naphthalene	ug/L	5 U
Nitrobenzene	ug/L	5 U
Pentachlorophenol	ug/L	5 U
Phenanthrene	ug/L	5 U
Phenol	ug/L	5 U
Pyrene	ug/L	5 U
Pests/PCBs		
Aroclor-1016 (PCB-1016)	ug/L	0.2 U
Aroclor-1221 (PCB-1221)	ug/L	0.2 U
Aroclor-1232 (PCB-1232)	ug/L	0.4 U
Aroclor-1242 (PCB-1242)	ug/L	0.2 U
Aroclor-1248 (PCB-1248)	ug/L	0.2 U
Aroclor-1254 (PCB-1254)	ug/L	0.2 U
Aroclor-1260 (PCB-1260)	ug/L	0.2 U
Inorganics		
Antimony	ug/L	25 U
Arsenic	ug/L	4.5 J

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	M-25 / MWM25-02 / 16 - 26 / 08/11/03
Barium	ug/L	88.6
Beryllium	ug/L	1 U
Cadmium	ug/L	5 U
Chromium Total	ug/L	10 U
Cobalt	ug/L	3.3 J
Copper	ug/L	5 U
Lead	ug/L	3 U
Manganese	ug/L	541
Mercury	ug/L	0.2 U
Nickel	ug/L	7 J
Selenium	ug/L	5 U
Silver	ug/L	5 U
Thallium	ug/L	0.022 J
Vanadium	ug/L	10 U
Zinc	ug/L	20 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI:		P-6	P-6	P-6	P-6	P-6	P-6	P-6	P-6	P-6	P-6
Sample ID:		MWP6-01	MWP6-01	MWP6-02	MWP6-02	MWP6-03	MWP6-03	MWP6-04	MWP6-04	MWP6-07	MWP6-07
Sample Depth():											
Date Collected:	Units	11/13/02	05/20/03	11/13/02	05/20/03	11/13/02	05/27/03	11/13/02	05/20/03	11/14/02	05/20/03
VOCs											
1,1,1-Trichloroethane	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
1,1,2,2-Tetrachloroethane	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
1,1,2-Trichloroethane	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
1,1-Dichloroethane	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
1,1-Dichloroethene	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
1,2,4-Trichlorobenzene	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 UJ	NA
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	2 U	NA	120 U	NA	2 U	NA	2 U	NA	2 U	NA
1,2-Dibromoethane (Ethylene Dibromide)	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
1,2-Dichlorobenzene	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
1,2-Dichloroethane	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
1,2-Dichloropropane	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
1,3-Dichlorobenzene	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
1,4-Dichlorobenzene	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
2-Butanone (Methyl Ethyl Ketone)	ug/L	10 U	NA	620 U	NA	10 U	NA	10 U	NA	10 U	NA
2-Hexanone	ug/L	10 UJ	NA	620 UJ	NA	10 UJ	NA	10 UJ	NA	10 UJ	NA
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/L	R	NA	R	NA	R	NA	R	NA	10 U	NA
Acetone	ug/L	10 U	NA	620 U	NA	10 U	NA	10 U	NA	10 U	NA
Benzene	ug/L	23	40	340	280	1.8	4.3	1 U	1 U	0.8 J	1 U
Bromodichloromethane	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
Bromoform	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
Bromomethane (Methyl Bromide)	ug/L	R	NA	R	NA	R	NA	R	NA	1 U	NA
Carbon disulfide	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
Carbon tetrachloride	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
Chlorobenzene	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
Chloroethane	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
Chloroform (Trichloromethane)	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
Chloromethane (Methyl Chloride)	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
cis-1,2-Dichloroethene	ug/L	0.5 U	NA	31 U	NA	0.5 U	NA	0.5 U	NA	0.5 U	NA
cis-1,3-Dichloropropene	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
Cyclohexane	ug/L	1 U	NA	110	NA	1 U	NA	1 U	NA	1 U	NA
Dibromochloromethane	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
Dichlorodifluoromethane (CFC-12)	ug/L	2 U	NA	120 U	NA	2 U	NA	2 U	NA	2 U	NA
Ethylbenzene	ug/L	2.2	2.7	1600	1000	1 U	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	ug/L	1 U	NA	39 J	NA	1 U	NA	1 U	NA	1 U	NA
Methyl acetate	ug/L	10 U	NA	620 U	NA	10 U	NA	10 U	NA	10 U	NA
Methyl cyclohexane	ug/L	1 U	NA	78	NA	1 U	NA	1 U	NA	1 UJ	NA
Methyl Tert Butyl Ether	ug/L	5 U	NA	310 U	NA	5 U	NA	5 U	NA	0.54 J	NA
Methylene chloride	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	R	NA
Styrene	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
Tetrachloroethene	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
Toluene	ug/L	1 U	1 U	110	65	1 U	2.7	1 U	1 U	1 U	1 U

AOI:		P-6	P-6	P-6	P-6	P-6	P-6	P-6	P-6	P-6	P-6
Sample ID:		MWP6-01	MWP6-01	MWP6-02	MWP6-02	MWP6-03	MWP6-03	MWP6-04	MWP6-04	MWP6-07	MWP6-07
Sample Depth():											
Date Collected:	Units	11/13/02	05/20/03	11/13/02	05/20/03	11/13/02	05/27/03	11/13/02	05/20/03	11/14/02	05/20/03
Total Xylenes	ug/L	1 U	1 U	1100	750	1 U	1.8	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	ug/L	0.5 U	NA	31 U	NA	0.5 U	NA	0.5 U	NA	0.5 U	NA
trans-1,3-Dichloropropene	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
Trichloroethene	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
Trichlorofluoromethane (CFC-11)	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
Trifluorotrichloroethane (Freon 113)	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
Vinyl chloride	ug/L	1 U	NA	62 U	NA	1 U	NA	1 U	NA	1 U	NA
SVOCs											
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) eth	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
2,4,5-Trichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
2,4,6-Trichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
2,4-Dichlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA
2,4-Dimethylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
2,4-Dinitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	20 UJ	NA
2,4-Dinitrotoluene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
2,6-Dinitrotoluene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
2-Chloronaphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
2-Chlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
2-Methylnaphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
2-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
2-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	20 U	NA
2-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
3,3'-Dichlorobenzidine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	20 U	NA
3-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	20 U	NA
4,6-Dinitro-2-methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	20 U	NA
4-Bromophenyl phenyl ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
4-Chloro-3-methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
4-Chloroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA
4-Chlorophenyl phenyl ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
4-Methylphenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
4-Nitroaniline	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	20 U	NA
4-Nitrophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	20 U	NA
Acenaphthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Acenaphthylene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Acetophenone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA
Anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Atrazine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Benzaldehyde	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA
Benzo(a)anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Benzo(a)pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Benzo(b)fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Benzo(g,h,i)perylene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI:		P-6	P-6	P-6	P-6	P-6	P-6	P-6	P-6	P-6	P-6
Sample ID:		MWP6-01	MWP6-01	MWP6-02	MWP6-02	MWP6-03	MWP6-03	MWP6-04	MWP6-04	MWP6-07	MWP6-07
Sample Depth():											
Date Collected:	Units	11/13/02	05/20/03	11/13/02	05/20/03	11/13/02	05/27/03	11/13/02	05/20/03	11/14/02	05/20/03
Benzo(k)fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Biphenyl	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA
bis(2-Chloroethoxy)methane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
bis(2-Chloroethyl)ether	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
bis(2-Ethylhexyl)phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Butyl benzylphthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Caprolactam	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	12	NA
Carbazole	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	10 U	NA
Chrysene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Di-n-butylphthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Di-n-octyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Dibenz(a,h)anthracene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Dibenzofuran	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Diethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Dimethyl phthalate	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Fluoranthene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Fluorene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Hexachlorobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Hexachlorobutadiene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Hexachlorocyclopentadiene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	R	NA
Hexachloroethane	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Indeno(1,2,3-cd)pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Isophorone	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
N-Nitrosodi-n-propylamine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
N-Nitrosodiphenylamine	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Naphthalene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Nitrobenzene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Pentachlorophenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Phenanthrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Phenol	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Pyrene	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	5 U	NA
Inorganics											
Lead	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	3 U	NA

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI:		P-9	P-9	P-9	P-9	P-9	P-9
Sample ID:		MWP9-01	MWP9-01	MWP9-03	MWP9-03	MWP9-04	MWP9-04
Sample Depth(ft BGS):		3 - 8	3 - 8	15 - 25	15 - 25	13 - 23	13 - 23
Date Collected:	Units	06/15/03	09/08/03	06/15/03	09/08/03	06/15/03	09/08/03
VOCs							
1,1,1-Trichloroethane	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
1,1,2,2-Tetrachloroethane	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
1,1,2-Trichloroethane	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
1,1-Dichloroethane	ug/L	0.78 J	1.1	R	5.7 U	0.54 J	0.69 J
1,1-Dichloroethene	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
1,2,4-Trichlorobenzene	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	2 U	2 U	22 U	11 U	2 U	2 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
1,2-Dichlorobenzene	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
1,2-Dichloroethane	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
1,2-Dichloropropane	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
1,3-Dichlorobenzene	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
1,4-Dichlorobenzene	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
2-Butanone (Methyl Ethyl Ketone)	ug/L	2.5 J	9 J	110 J	46 J	10 UJ	10 UJ
2-Hexanone	ug/L	10 U	10 U	110 U	57 U	10 U	10 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/L	0.98 J	2.7 J	24 J	29 J	10 U	10 U
Acetone	ug/L	25 J	65 J	710 J	220 J	2.4 J	10 UJ
Benzene	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
Bromodichloromethane	ug/L	R	1 U	R	5.7 U	R	1 U
Bromoform	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
Bromomethane (Methyl Bromide)	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
Carbon disulfide	ug/L	0.34 J	0.3 J	11 U	5.7 U	1 U	1 U
Carbon tetrachloride	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
Chlorobenzene	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
Chloroethane	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
Chloroform (Trichloromethane)	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
Chloromethane (Methyl Chloride)	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
cis-1,2-Dichloroethene	ug/L	R	0.5 U	5.6 U	2.9 U	R	0.5 U
cis-1,3-Dichloropropene	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
Cyclohexane	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
Dibromochloromethane	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
Dichlorodifluoromethane (CFC-12)	ug/L	2 U	2 UJ	22 U	11 UJ	2 U	2 UJ
Ethylbenzene	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
Isopropylbenzene	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
Methyl acetate	ug/L	10 U	10 U	110 U	57 U	10 U	10 U
Methyl cyclohexane	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
Methyl Tert Butyl Ether	ug/L	5 U	5 U	56 U	29 U	5 U	5 U
Methylene chloride	ug/L	1 U	1 UJ	11 U	5.7 UJ	1 U	1 UJ
Styrene	ug/L	R	1 U	11 U	5.7 U	R	1 U
Tetrachloroethene	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
Toluene	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	P-9 MWP9-01 3 - 8 06/15/03	P-9 MWP9-01 3 - 8 09/08/03	P-9 MWP9-03 15 - 25 06/15/03	P-9 MWP9-03 15 - 25 09/08/03	P-9 MWP9-04 13 - 23 06/15/03	P-9 MWP9-04 13 - 23 09/08/03
Total Xylenes	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
trans-1,2-Dichloroethene	ug/L	0.5 U	0.5 U	5.6 U	2.9 U	0.5 U	0.5 U
trans-1,3-Dichloropropene	ug/L	1 U	R	R	5.7 U	1 U	R
Trichloroethene	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
Trichlorofluoromethane (CFC-11)	ug/L	1 U	1 UJ	11 U	5.7 UJ	1 U	1 UJ
Trifluorotrichloroethane (Freon 113)	ug/L	1 U	1 U	11 U	5.7 U	1 U	1 U
Vinyl chloride	ug/L	R	1 U	11 U	5.7 U	R	1 U
SVOCs							
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
2,4,5-Trichlorophenol	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
2,4,6-Trichlorophenol	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
2,4-Dichlorophenol	ug/L	10 U	40 U	500 U	500 U	25 U	10 U
2,4-Dimethylphenol	ug/L	5 U	20 U	300	600	12 U	5 U
2,4-Dinitrophenol	ug/L	20 UJ	80 U	1000 U	1000 U	50 U	20 U
2,4-Dinitrotoluene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
2,6-Dinitrotoluene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
2-Chloronaphthalene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
2-Chlorophenol	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
2-Methylnaphthalene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
2-Methylphenol	ug/L	5 U	20 U	79 J	100 J	12 U	5 U
2-Nitroaniline	ug/L	20 UJ	80 U	1000 UJ	1000 U	50 UJ	20 U
2-Nitrophenol	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
3,3'-Dichlorobenzidine	ug/L	R	80 U	R	1000 U	R	20 U
3-Nitroaniline	ug/L	R	80 U	R	1000 U	R	20 U
4,6-Dinitro-2-methylphenol	ug/L	20 U	80 U	1000 U	1000 U	50 U	20 U
4-Bromophenyl phenyl ether	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
4-Chloro-3-methylphenol	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
4-Chloroaniline	ug/L	R	40 U	R	500 U	R	10 U
4-Chlorophenyl phenyl ether	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
4-Methylphenol	ug/L	1.7 J	4.5 J	1200	1100 J	12 U	5 U
4-Nitroaniline	ug/L	20 U	80 U	1000 U	1000 U	50 U	20 U
4-Nitrophenol	ug/L	20 U	80 U	1000 U	1000 U	50 U	20 U
Acenaphthene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Acenaphthylene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Acetophenone	ug/L	10 U	40 U	500 U	500 U	25 U	10 U
Anthracene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Atrazine	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Benzaldehyde	ug/L	10 U	40 U	500 U	500 U	25 U	10 U
Benzo(a)anthracene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Benzo(a)pyrene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Benzo(b)fluoranthene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Benzo(g,h,i)perylene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	P-9 MWP9-01 3 - 8 06/15/03	P-9 MWP9-01 3 - 8 09/08/03	P-9 MWP9-03 15 - 25 06/15/03	P-9 MWP9-03 15 - 25 09/08/03	P-9 MWP9-04 13 - 23 06/15/03	P-9 MWP9-04 13 - 23 09/08/03
Benzo(k)fluoranthene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Biphenyl	ug/L	10 U	40 U	500 U	500 U	25 U	10 U
bis(2-Chloroethoxy)methane	ug/L	5 UJ	20 U	250 UJ	250 U	12 UJ	5 U
bis(2-Chloroethyl)ether	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
bis(2-Ethylhexyl)phthalate	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Butyl benzylphthalate	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Caprolactam	ug/L	10 U	40 U	500 U	500 U	25 U	10 U
Carbazole	ug/L	10 U	40 U	500 U	32 J	25 U	10 U
Chrysene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Di-n-butylphthalate	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Di-n-octyl phthalate	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Dibenz(a,h)anthracene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Dibenzofuran	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Diethyl phthalate	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Dimethyl phthalate	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Fluoranthene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Fluorene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Hexachlorobenzene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Hexachlorobutadiene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Hexachlorocyclopentadiene	ug/L	R	R	R	R	R	R
Hexachloroethane	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Indeno(1,2,3-cd)pyrene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Isophorone	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
N-Nitrosodi-n-propylamine	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
N-Nitrosodiphenylamine	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Naphthalene	ug/L	5 UJ	20 U	75 J	99 J	12 UJ	5 U
Nitrobenzene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Pentachlorophenol	ug/L	5 UJ	20 U	250 UJ	250 U	12 UJ	5 U
Phenanthrene	ug/L	5 U	2.7 J	250 U	250 U	12 U	5 U
Phenol	ug/L	3.3 J	31	1500	1600	12 U	5 U
Pyrene	ug/L	5 U	20 U	250 U	250 U	12 U	5 U
Pests/PCBs							
Aroclor-1016 (PCB-1016)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1221 (PCB-1221)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1232 (PCB-1232)	ug/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Aroclor-1242 (PCB-1242)	ug/L	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1248 (PCB-1248)	ug/L	0.2 U	0.2 UJ	0.24	0.2 U	0.2 U	0.2 U
Aroclor-1254 (PCB-1254)	ug/L	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U
Aroclor-1260 (PCB-1260)	ug/L	0.2 UJ	0.2 UJ	0.2 UJ	0.2 U	0.2 UJ	0.2 U
Inorganics							
Antimony	ug/L	25 U	25 U	9.4 J	13.1 J	25 U	25 U
Arsenic	ug/L	24.1	22.5	44.9	33.1	10 U	3.2 J

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	P-9 MWP9-01 3 - 8 06/15/03	P-9 MWP9-01 3 - 8 09/08/03	P-9 MWP9-03 15 - 25 06/15/03	P-9 MWP9-03 15 - 25 09/08/03	P-9 MWP9-04 13 - 23 06/15/03	P-9 MWP9-04 13 - 23 09/08/03
Barium	ug/L	3.1 J	22.7	13.4	26.9	41.6	51.6
Beryllium	ug/L	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	ug/L	5 U	5 U	5 U	5 U	5 U	5 U
Chromium Total	ug/L	5.3 J	10 U	10 U	10 U	10 U	10 U
Cobalt	ug/L	20 U	20 U	20 U	1.2 J	20 U	1.6 J
Copper	ug/L	6.7	4.4 J	5 U	5 U	5 U	5 U
Lead	ug/L	3 U	2.5 J	3 U	3 U	3 U	3 U
Manganese	ug/L	3.8 J	10 U	8.1 J	10 U	29.4	43.6
Mercury	ug/L	0.2 UJ	0.2 U	0.2 UJ	0.2 U	0.2 UJ	0.2 U
Nickel	ug/L	20 U	10.5 J	128	82.1	5.6 J	10.8 J
Selenium	ug/L	60.7	14.2	5 U	4.4 J	5 U	5 U
Silver	ug/L	5 U	5 U	5 U	5 U	5 U	5 U
Thallium	ug/L	1 U	1 U	1 U	1 U	1 U	1 U
Vanadium	ug/L	578	82.3	11.5	8.7 J	10 U	10 U
Zinc	ug/L	20.2	20 U	20 U	20 U	20 U	20 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	P-11 MWP11-01 9 - 19 06/15/03	P-11 MWP11-04 10 - 20 06/15/03
VOCs			
1,1,1-Trichloroethane	ug/L	5 U	1 U
1,1,2,2-Tetrachloroethane	ug/L	5 U	1 UJ
1,1,2-Trichloroethane	ug/L	5 U	1 U
1,1-Dichloroethane	ug/L	5 U	1 U
1,1-Dichloroethene	ug/L	5 U	1 U
1,2,4-Trichlorobenzene	ug/L	5 U	1 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	10 U	2 U
1,2-Dibromoethane (Ethylene Dibromide)	ug/L	5 U	1 U
1,2-Dichlorobenzene	ug/L	5 U	1 U
1,2-Dichloroethane	ug/L	5 U	1 U
1,2-Dichloropropane	ug/L	5 U	1 U
1,3-Dichlorobenzene	ug/L	5 U	1 U
1,4-Dichlorobenzene	ug/L	5 U	1 U
2-Butanone (Methyl Ethyl Ketone)	ug/L	50 UJ	10 U
2-Hexanone	ug/L	50 U	10 UJ
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/L	2.3 J	10 U
Acetone	ug/L	20 J	10 UJ
Benzene	ug/L	5 U	1 U
Bromodichloromethane	ug/L	R	1 U
Bromoform	ug/L	5 U	1 U
Bromomethane (Methyl Bromide)	ug/L	5 U	1 U
Carbon disulfide	ug/L	5 U	1 U
Carbon tetrachloride	ug/L	5 U	1 U
Chlorobenzene	ug/L	5 U	1 U
Chloroethane	ug/L	5 U	1 U
Chloroform (Trichloromethane)	ug/L	5 U	1 U
Chloromethane (Methyl Chloride)	ug/L	5 U	1 U
cis-1,2-Dichloroethene	ug/L	R	0.5 U
cis-1,3-Dichloropropene	ug/L	5 U	1 U
Cyclohexane	ug/L	5 U	1 U
Dibromochloromethane	ug/L	5 U	1 U
Dichlorodifluoromethane (CFC-12)	ug/L	10 U	2 U
Ethylbenzene	ug/L	5 U	R
Isopropylbenzene	ug/L	5 U	1 U
Methyl acetate	ug/L	50 U	10 U
Methyl cyclohexane	ug/L	5 U	1 U
Methyl Tert Butyl Ether	ug/L	25 U	5 U
Methylene chloride	ug/L	5 U	1 U
Styrene	ug/L	R	R
Tetrachloroethene	ug/L	5 U	R
Toluene	ug/L	5 U	1 U

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	P-11 MWP11-01 9 - 19 06/15/03	P-11 MWP11-04 10 - 20 06/15/03
Total Xylenes	ug/L	5 U	1 U
trans-1,2-Dichloroethene	ug/L	2.5 U	0.5 U
trans-1,3-Dichloropropene	ug/L	5 U	1 U
Trichloroethene	ug/L	5 U	1 U
Trichlorofluoromethane (CFC-11)	ug/L	5 U	1 U
Trifluorotrichloroethane (Freon 113)	ug/L	5 U	1 U
Vinyl chloride	ug/L	R	1 U
SVOCs			
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/L	50 U	5 U
2,4,5-Trichlorophenol	ug/L	50 U	5 U
2,4,6-Trichlorophenol	ug/L	50 U	5 U
2,4-Dichlorophenol	ug/L	100 U	10 U
2,4-Dimethylphenol	ug/L	50 U	5 U
2,4-Dinitrophenol	ug/L	200 U	20 U
2,4-Dinitrotoluene	ug/L	50 U	5 U
2,6-Dinitrotoluene	ug/L	50 U	5 U
2-Chloronaphthalene	ug/L	50 U	5 U
2-Chlorophenol	ug/L	50 U	5 U
2-Methylnaphthalene	ug/L	50 U	5 U
2-Methylphenol	ug/L	50 U	5 U
2-Nitroaniline	ug/L	200 UJ	20 UJ
2-Nitrophenol	ug/L	50 U	5 U
3,3'-Dichlorobenzidine	ug/L	R	R
3-Nitroaniline	ug/L	R	R
4,6-Dinitro-2-methylphenol	ug/L	200 U	20 U
4-Bromophenyl phenyl ether	ug/L	50 U	5 U
4-Chloro-3-methylphenol	ug/L	50 U	5 U
4-Chloroaniline	ug/L	R	R
4-Chlorophenyl phenyl ether	ug/L	50 U	5 U
4-Methylphenol	ug/L	50 U	5 U
4-Nitroaniline	ug/L	200 U	20 U
4-Nitrophenol	ug/L	200 U	20 U
Acenaphthene	ug/L	50 U	5 U
Acenaphthylene	ug/L	50 U	5 U
Acetophenone	ug/L	100 U	10 U
Anthracene	ug/L	50 U	5 U
Atrazine	ug/L	50 U	5 U
Benzaldehyde	ug/L	100 U	10 U
Benzo(a)anthracene	ug/L	50 U	5 U
Benzo(a)pyrene	ug/L	50 U	5 U
Benzo(b)fluoranthene	ug/L	50 U	5 U
Benzo(g,h,i)perylene	ug/L	50 U	5 U

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	P-11 MWP11-01 9 - 19 06/15/03	P-11 MWP11-04 10 - 20 06/15/03
Benzo(k)fluoranthene	ug/L	50 U	5 U
Biphenyl	ug/L	100 U	10 U
bis(2-Chloroethoxy)methane	ug/L	50 UJ	5 UJ
bis(2-Chloroethyl)ether	ug/L	50 U	5 U
bis(2-Ethylhexyl)phthalate	ug/L	50 U	5 U
Butyl benzylphthalate	ug/L	50 U	5 U
Caprolactam	ug/L	100 U	10 U
Carbazole	ug/L	100 U	10 U
Chrysene	ug/L	50 U	5 U
Di-n-butylphthalate	ug/L	50 U	5 U
Di-n-octyl phthalate	ug/L	50 U	5 U
Dibenz(a,h)anthracene	ug/L	50 U	5 U
Dibenzofuran	ug/L	50 U	5 U
Diethyl phthalate	ug/L	50 U	5 U
Dimethyl phthalate	ug/L	50 U	5 U
Fluoranthene	ug/L	50 U	5 U
Fluorene	ug/L	50 U	5 U
Hexachlorobenzene	ug/L	50 U	5 U
Hexachlorobutadiene	ug/L	50 U	5 U
Hexachlorocyclopentadiene	ug/L	R	R
Hexachloroethane	ug/L	50 U	5 U
Indeno(1,2,3-cd)pyrene	ug/L	50 U	5 U
Isophorone	ug/L	50 U	5 U
N-Nitrosodi-n-propylamine	ug/L	50 U	5 U
N-Nitrosodiphenylamine	ug/L	50 U	5 U
Naphthalene	ug/L	50 UJ	5 UJ
Nitrobenzene	ug/L	50 U	5 U
Pentachlorophenol	ug/L	50 UJ	R
Phenanthrene	ug/L	50 U	5 U
Phenol	ug/L	50 U	5 U
Pyrene	ug/L	50 U	5 U
Pests/PCBs			
Aroclor-1016 (PCB-1016)	ug/L	0.2 U	0.2 U
Aroclor-1221 (PCB-1221)	ug/L	0.2 U	0.2 U
Aroclor-1232 (PCB-1232)	ug/L	0.4 U	0.4 U
Aroclor-1242 (PCB-1242)	ug/L	0.2 U	0.2 U
Aroclor-1248 (PCB-1248)	ug/L	0.2 U	0.2 U
Aroclor-1254 (PCB-1254)	ug/L	0.2 U	0.2 U
Aroclor-1260 (PCB-1260)	ug/L	0.2 UJ	0.2 UJ
Inorganics			
Antimony	ug/L	25 U	25 U
Arsenic	ug/L	3.3 J	23.6

AOI: Sample ID: Sample Depth(ft BGS): Date Collected:	Units	P-11 MWP11-01 9 - 19 06/15/03	P-11 MWP11-04 10 - 20 06/15/03
Barium	ug/L	41.5	397
Beryllium	ug/L	1 U	1 U
Cadmium	ug/L	5 U	5 U
Chromium Total	ug/L	10 U	10 U
Cobalt	ug/L	51.4	20 U
Copper	ug/L	10	5 U
Lead	ug/L	3 U	3 U
Manganese	ug/L	481	31.1
Mercury	ug/L	0.2 UJ	0.2 UJ
Nickel	ug/L	9.4 J	20 U
Selenium	ug/L	5 U	5 U
Silver	ug/L	5 U	5 U
Thallium	ug/L	1 U	1 U
Vanadium	ug/L	0.86 J	10 U
Zinc	ug/L	20 U	20 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI:		SWDF	SWDF	SWDF	SWDF	SWDF	SWDF	SWDF	SWDF	SWDF	SWDF	SWDF
Sample ID:		DP-01	DP-02	DP-03	DP-05	DP-06	DP-07	DP-08	DPGWMW-01	DPGWMW-01	MW-02	MW-03
Sample Depth(ft BGS):		4 - 7	4 - 7	5 - 6	1 - 4	1 - 5	1 - 3	1 - 3			10 - 20	5 - 15
Date Collected:	Units	10/03/02	10/03/02	10/03/02	10/03/02	10/04/02	10/04/02	10/04/02	10/07/02	10/08/02	10/04/02	10/04/02
VOCs												
1,1,1-Trichloroethane	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
1,1,2,2-Tetrachloroethane	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
1,1,2-Trichloroethane	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
1,1-Dichloroethane	ug/L	1 U	0.54 J	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
1,1-Dichloroethene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
1,2,4-Trichlorobenzene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	2 U	2 U	2 U	2 U	2 UJ	2 UJ	2 UJ	2 U	NA	2 UJ	2 UJ
1,2-Dibromoethane (Ethylene Dibromide)	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
1,2-Dichlorobenzene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
1,2-Dichloroethane	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
1,2-Dichloropropane	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
1,3-Dichlorobenzene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
1,4-Dichlorobenzene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
2-Butanone (Methyl Ethyl Ketone)	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1.3 J	NA	10 U	10 U
2-Hexanone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	NA	10 U	10 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/L	10 U	3.3 J	2 J	2.7 J	3 J	1.7 J	0.78 J	R	NA	10 U	10 U
Acetone	ug/L	10 U	10 U	10 U	10 U	2.1 J	5.5 J	10 U	2.9 J	NA	10 U	10 U
Benzene	ug/L	1 U	0.45 J	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Bromodichloromethane	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Bromoform	ug/L	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ	1 U	NA	1 UJ	1 UJ
Bromomethane (Methyl Bromide)	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Carbon disulfide	ug/L	2.2	2.3	1 U	1 U	0.3 J	0.74 J	0.3 J	1 U	NA	1 U	1 U
Carbon tetrachloride	ug/L	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ	1 U	NA	1 UJ	1 UJ
Chlorobenzene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Chloroethane	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Chloroform (Trichloromethane)	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Chloromethane (Methyl Chloride)	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
cis-1,2-Dichloroethene	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	0.5 U	0.5 U
cis-1,3-Dichloropropene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Cyclohexane	ug/L	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ	1 U	NA	1 UJ	1 UJ
Dibromochloromethane	ug/L	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ	1 U	NA	1 U	1 UJ
Dichlorodifluoromethane (CFC-12)	ug/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U
Ethylbenzene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Isopropylbenzene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Methyl acetate	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	10 U	10 U
Methyl cyclohexane	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Methyl Tert Butyl Ether	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	5 U
Methylene chloride	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Styrene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Tetrachloroethene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Toluene	ug/L	0.62 J	0.95 J	1 U	0.74 J	0.72 J	0.54 J	0.62 J	0.47 J	NA	0.54 J	1 U

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	SWDF DP-01 4 - 7 10/03/02	SWDF DP-02 4 - 7 10/03/02	SWDF DP-03 5 - 6 10/03/02	SWDF DP-05 1 - 4 10/03/02	SWDF DP-06 1 - 5 10/04/02	SWDF DP-07 1 - 3 10/04/02	SWDF DP-08 1 - 3 10/04/02	SWDF DPGWMW-01 10/07/02	SWDF DPGWMW-01 10/08/02	SWDF MW-02 10 - 20 10/04/02	SWDF MW-03 5 - 15 10/04/02
Total Xylenes	ug/L	1 U	1 U	0.67 J	1.5	1	0.61 J	0.52 J	1 U	NA	0.75 J	1 U
trans-1,2-Dichloroethene	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	0.5 U	0.5 U
trans-1,3-Dichloropropene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Trichloroethene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Trichlorofluoromethane (CFC-11)	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Trifluorotrichloroethane (Freon 113)	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
Vinyl chloride	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U
SVOCs												
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
2,4,5-Trichlorophenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
2,4,6-Trichlorophenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
2,4-Dichlorophenol	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	25 U	10 U	NA	10 U	10 U
2,4-Dimethylphenol	ug/L	1.3 J	15	7.2	2 J	3.5 J	3 J	6.1 J	5 U	NA	5 U	5 U
2,4-Dinitrophenol	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	50 U	20 UJ	NA	20 U	20 U
2,4-Dinitrotoluene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
2,6-Dinitrotoluene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
2-Chloronaphthalene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
2-Chlorophenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
2-Methylnaphthalene	ug/L	5 U	0.72 J	5 U	0.71 J	5 U	5 U	12 U	5 U	NA	5 U	5 U
2-Methylphenol	ug/L	5 U	1.5 J	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
2-Nitroaniline	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	50 U	20 U	NA	20 U	20 U
2-Nitrophenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
3,3'-Dichlorobenzidine	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	50 U	20 U	NA	20 U	20 U
3-Nitroaniline	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	50 U	20 U	NA	20 U	20 U
4,6-Dinitro-2-methylphenol	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	50 U	20 UJ	NA	20 U	20 U
4-Bromophenyl phenyl ether	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
4-Chloro-3-methylphenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
4-Chloroaniline	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	25 U	10 U	NA	10 U	10 U
4-Chlorophenyl phenyl ether	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
4-Methylphenol	ug/L	1.9 J	16	6.5	4.8 J	5.7	5.1	9.5 J	5 U	NA	5 U	5 U
4-Nitroaniline	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	50 U	20 U	NA	20 U	20 U
4-Nitrophenol	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	50 U	20 U	NA	20 U	20 U
Acenaphthene	ug/L	5 U	1.2 J	5 U	1.3 J	0.86 J	5 U	12 U	5 U	NA	5 U	5 U
Acenaphthylene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Acetophenone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	25 U	10 U	NA	10 U	10 U
Anthracene	ug/L	5 U	0.74 J	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Atrazine	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Benzaldehyde	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	25 U	10 U	NA	10 U	10 U
Benzo(a)anthracene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Benzo(a)pyrene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Benzo(b)fluoranthene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Benzo(g,h,i)perylene	ug/L	5 U	5 U	5 U	5 U	5 UJ	5 UJ	12 UJ	5 U	NA	5 UJ	5 UJ

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	SWDF DP-01 4 - 7 10/03/02	SWDF DP-02 4 - 7 10/03/02	SWDF DP-03 5 - 6 10/03/02	SWDF DP-05 1 - 4 10/03/02	SWDF DP-06 1 - 5 10/04/02	SWDF DP-07 1 - 3 10/04/02	SWDF DP-08 1 - 3 10/04/02	SWDF DPGWMW-01 10/07/02	SWDF DPGWMW-01 10/08/02	SWDF MW-02 10 - 20 10/04/02	SWDF MW-03 5 - 15 10/04/02
Benzo(k)fluoranthene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Biphenyl	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	25 U	10 U	NA	10 U	10 U
bis(2-Chloroethoxy)methane	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
bis(2-Chloroethyl)ether	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
bis(2-Ethylhexyl)phthalate	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Butyl benzylphthalate	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Caprolactam	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	25 U	10 U	NA	10 U	10 U
Carbazole	ug/L	10 U	4.7 J	2.3 J	2.4 J	1.7 J	1 J	25 U	10 U	NA	10 U	10 U
Chrysene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Di-n-butylphthalate	ug/L	5 U	5 U	0.77 J	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Di-n-octyl phthalate	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Dibenz(a,h)anthracene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Dibenzofuran	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Diethyl phthalate	ug/L	1.9 J	5 U	0.8 J	5 U	5 U	5 U	12 U	1.1 J	NA	2.3 J	5 U
Dimethyl phthalate	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Fluoranthene	ug/L	5 U	5 U	5 U	0.91 J	5 U	5 U	12 U	5 U	NA	5 U	5 U
Fluorene	ug/L	5 U	1.7 J	5 U	1.6 J	5 U	5 U	12 U	5 U	NA	5 U	5 U
Hexachlorobenzene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Hexachlorobutadiene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Hexachlorocyclopentadiene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 UJ	NA	5 U	5 U
Hexachloroethane	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Indeno(1,2,3-cd)pyrene	ug/L	5 U	5 U	5 U	5 U	5 UJ	5 UJ	12 UJ	5 U	NA	5 UJ	5 UJ
Isophorone	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
N-Nitrosodi-n-propylamine	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
N-Nitrosodiphenylamine	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Naphthalene	ug/L	0.76 J	3.6 J	1.8 J	2.8 J	2.6 J	1.3 J	12 U	5 U	NA	5 U	5 U
Nitrobenzene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Pentachlorophenol	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Phenanthrene	ug/L	5 U	2.1 J	5 U	2.2 J	1.2 J	0.91 J	12 U	5 U	NA	5 U	5 U
Phenol	ug/L	43	23	2.7 J	5 U	5 U	26	94	5 U	NA	5 U	5 U
Pyrene	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	12 U	5 U	NA	5 U	5 U
Pests/PCBs												
Aroclor-1016 (PCB-1016)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	0.2 U	0.2 U
Aroclor-1221 (PCB-1221)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	0.2 U	0.2 U
Aroclor-1232 (PCB-1232)	ug/L	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	NA	0.4 U	0.4 U
Aroclor-1242 (PCB-1242)	ug/L	0.17 J	1.1	0.63 J	1.7	0.93 J	0.28 J	0.34 J	0.2 U	NA	R	R
Aroclor-1248 (PCB-1248)	ug/L	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 UJ	0.2 UJ	R	0.2 U	NA	0.1 J	R
Aroclor-1254 (PCB-1254)	ug/L	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 UJ	0.2 UJ	R	0.2 U	NA	R	0.19 J
Aroclor-1260 (PCB-1260)	ug/L	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 UJ	0.2 UJ	R	0.2 U	NA	R	R
Inorganics												
Antimony	ug/L	25 U	25 U	6.7 J	25 U	25 U	12.9 J	25 U	NA	NA	25 U	25 U
Arsenic	ug/L	12.7	19.4	16.3	4.4 J	3.4 J	9.7 J	12.8	NA	NA	30.6	4.3 J

APPENDIX C - GROUNDWATER
SUPPLEMENTAL RFI NO. 1-
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(ft BGS): / Date Collected:	Units	SWDF DP-01 4 - 7 10/03/02	SWDF DP-02 4 - 7 10/03/02	SWDF DP-03 5 - 6 10/03/02	SWDF DP-05 1 - 4 10/03/02	SWDF DP-06 1 - 5 10/04/02	SWDF DP-07 1 - 3 10/04/02	SWDF DP-08 1 - 3 10/04/02	SWDF DPGWMW-01 10/07/02	SWDF DPGWMW-01 10/08/02	SWDF MW-02 10 - 20 10/04/02	SWDF MW-03 5 - 15 10/04/02
Barium	ug/L	68.4	98.8	134	54.4	52.2	34.6	47.9	NA	NA	413	18.7
Beryllium	ug/L	1 U	1 U	1 U	1 U	0.89 J	1 U	0.9 J	NA	NA	0.69 J	1 U
Cadmium	ug/L	0.54 J	0.65 J	0.59 J	0.35 J	0.41 J	0.5 J	0.87 J	NA	NA	6.7	4.3 J
Chromium Total	ug/L	10 U	6.1 J	11	10 U	10 U	10 U	4.7 J	NA	NA	90	4.9 J
Cobalt	ug/L	1.1 J	2.5 J	4.9 J	20 U	20 U	20 U	0.98 J	NA	NA	28	1.3 J
Copper	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	NA	156	5 U
Lead	ug/L	3 U	3	73.7	3 U	3 U	1.7 J	7.8	NA	NA	164	16.4
Manganese	ug/L	152	484	396	10 U	10 U	10 U	58.3	NA	NA	1640	58.2
Mercury	ug/L	0.2 U	0.2 U	0.16 J	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	0.93	0.2 U
Nickel	ug/L	3 J	10.3 J	29.6	3.9 J	4.8 J	7.6 J	10.1 J	NA	NA	98.4	5.6 J
Selenium	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	NA	5 U	5 U
Silver	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	NA	5 U	5 U
Thallium	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA	0.25 J	1 U
Vanadium	ug/L	4 J	13.5	29.4	7.2 J	5 J	1.4 J	3 J	NA	NA	87	4.9 J
Zinc	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	223	NA	NA	395	20 U
Inorganics-Filtered												
Antimony (Dissolved)	ug/L	25 U	13.3 J	8.2 J	25 U	25 U	22.3 J	25 U	NA	25 U	NA	NA
Arsenic (Dissolved)	ug/L	13.8	11.1	11	3 J	10 U	11	16.4	NA	5.4 J	NA	NA
Barium (Dissolved)	ug/L	71.3	60.1	77.9	386	384	329	324	NA	158	NA	NA
Beryllium (Dissolved)	ug/L	1 U	1 U	1 U	1 U	0.61 J	1 U	0.62 J	NA	1 U	NA	NA
Cadmium (Dissolved)	ug/L	0.38 J	0.39 J	5 U	0.47 J	0.43 J	0.4 J	5 U	NA	5 U	NA	NA
Chromium Total (Dissolved)	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	10 U	NA	NA
Cobalt (Dissolved)	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	NA	1.4 J	NA	NA
Copper (Dissolved)	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	8.5	NA	NA
Lead (Dissolved)	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	NA	3 U	NA	NA
Manganese (Dissolved)	ug/L	86.6	25.2	40.4	10 U	10 U	10 U	10 U	NA	1020	NA	NA
Mercury (Dissolved)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NA	0.2 U	NA	NA
Nickel (Dissolved)	ug/L	20 U	14.5 J	7.3 J	2.9 J	4.3 J	6.7 J	4.5 J	NA	7.5 J	NA	NA
Selenium (Dissolved)	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	NA	NA
Silver (Dissolved)	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	5 U	NA	NA
Thallium (Dissolved)	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	NA	NA
Vanadium (Dissolved)	ug/L	1 J	9.2 J	11.6	7.1 J	4.8 J	0.99 J	1.2 J	NA	10 U	NA	NA
Zinc (Dissolved)	ug/L	20 U	20 U	20 U	20 U	20 U	20 U	20 U	NA	35.9	NA	NA
Miscellaneous												
n-Hexane Extractable Material	mg/L	2.9 J	1.3 J	2.4 J	1.5 J	2.5 J	6.3	8.7	NA	3.3 J	1.7 J	5 U

APPENDIX C - OIL/LNAPL
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(): Date Collected:	Units	M-2 MWM2-06 09/10/02	M-4 MWM4-06 07/29/03
VOCs			
1,1,1-Trichloroethane	ug/kg	4400	1300 U
1,1,2,2-Tetrachloroethane	ug/kg	1300 U	1300 U
1,1,2-Trichloroethane	ug/kg	1300 U	1300 U
1,1-Dichloroethane	ug/kg	21000	1300 U
1,1-Dichloroethene	ug/kg	2400	1300 U
1,2,4-Trichlorobenzene	ug/kg	1300 U	1300 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/kg	2800 UJ	2800 UJ
1,2-Dibromoethane (Ethylene Dibromide)	ug/kg	1300 U	1300 U
1,2-Dichlorobenzene	ug/kg	1300 U	1300 U
1,2-Dichloroethane	ug/kg	1300 U	1300 U
1,2-Dichloropropane	ug/kg	1300 U	1300 U
1,3-Dichlorobenzene	ug/kg	1300 U	1300 U
1,4-Dichlorobenzene	ug/kg	1300 U	1300 U
2-Butanone (Methyl Ethyl Ketone)	ug/kg	5500 UJ	5600 U
2-Hexanone	ug/kg	5500 UJ	5600 U
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	ug/kg	340 J	5600 U
Acetone	ug/kg	5500 UJ	5600 U
Benzene	ug/kg	1300 U	140 J
Bromodichloromethane	ug/kg	1300 U	1300 U
Bromoform	ug/kg	1300 UJ	1300 U
Bromomethane (Methyl Bromide)	ug/kg	2800 U	2800 U
Carbon disulfide	ug/kg	1300 U	1300 U
Carbon tetrachloride	ug/kg	1300 UJ	1300 U
Chlorobenzene	ug/kg	1300 U	1300 U
Chloroethane	ug/kg	2800 U	2800 U
Chloroform (Trichloromethane)	ug/kg	420 J	1300 U
Chloromethane (Methyl Chloride)	ug/kg	2800 U	2800 U
cis-1,2-Dichloroethene	ug/kg	680 U	300 J
cis-1,3-Dichloropropene	ug/kg	1300 U	1300 U
Cyclohexane	ug/kg	2800 U	730 J
Dibromochloromethane	ug/kg	1300 U	1300 U
Dichlorodifluoromethane (CFC-12)	ug/kg	2800 U	2800 U
Ethylbenzene	ug/kg	2700	7100
Isopropylbenzene	ug/kg	790 J	610 J
Methyl acetate	ug/kg	1300 U	480 J
Methyl cyclohexane	ug/kg	270 J	1900
Methyl Tert Butyl Ether	ug/kg	5500 U	5600 U

APPENDIX C - OIL/LNAPL
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(): / Date Collected:	Units	M-2 MWM2-06 09/10/02	M-4 MWM4-06 07/29/03
Methylene chloride	ug/kg	1300 J	1300 U
Styrene	ug/kg	1300 UJ	1300 U
Tetrachloroethene	ug/kg	11000	220 J
Toluene	ug/kg	3300	12000
Total Xylenes	ug/kg	10000 J	39000
trans-1,2-Dichloroethene	ug/kg	680 U	690 U
trans-1,3-Dichloropropene	ug/kg	1300 U	1300 U
Trichloroethene	ug/kg	1400	530 J
Trichlorofluoromethane (CFC-11)	ug/kg	2800 U	2800 UJ
Trifluorotrichloroethane (Freon 113)	ug/kg	2800 U	2800 U
Vinyl chloride	ug/kg	2800 U	2800 U
SVOCs			
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	ug/kg	500000 U	1000000 U
2,4,5-Trichlorophenol	ug/kg	500000 U	1000000 U
2,4,6-Trichlorophenol	ug/kg	500000 U	1000000 U
2,4-Dichlorophenol	ug/kg	500000 U	1000000 U
2,4-Dimethylphenol	ug/kg	500000 U	1000000 U
2,4-Dinitrophenol	ug/kg	2400000 U	4800000 U
2,4-Dinitrotoluene	ug/kg	500000 U	1000000 U
2,6-Dinitrotoluene	ug/kg	500000 U	1000000 U
2-Chloronaphthalene	ug/kg	500000 U	1000000 U
2-Chlorophenol	ug/kg	500000 U	1000000 U
2-Methylnaphthalene	ug/kg	59000 J	1000000 U
2-Methylphenol	ug/kg	500000 U	1000000 U
2-Nitroaniline	ug/kg	2400000 U	4800000 U
2-Nitrophenol	ug/kg	500000 U	1000000 U
3,3'-Dichlorobenzidine	ug/kg	2400000 U	4800000 U
3-Nitroaniline	ug/kg	2400000 U	4800000 U
4,6-Dinitro-2-methylphenol	ug/kg	2400000 U	4800000 U
4-Bromophenyl phenyl ether	ug/kg	500000 U	1000000 U
4-Chloro-3-methylphenol	ug/kg	500000 U	1000000 U
4-Chloroaniline	ug/kg	500000 U	1000000 U
4-Chlorophenyl phenyl ether	ug/kg	500000 U	1000000 U
4-Methylphenol	ug/kg	500000 U	1000000 U
4-Nitroaniline	ug/kg	2400000 U	4800000 U
4-Nitrophenol	ug/kg	2400000 U	4800000 U
Acenaphthene	ug/kg	500000 U	1000000 U
Acenaphthylene	ug/kg	500000 U	1000000 U

APPENDIX C - OIL/LNAPL
SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: / Sample ID: / Sample Depth(): / Date Collected:	Units	M-2 MWM2-06 09/10/02	M-4 MWM4-06 07/29/03
Acetophenone	ug/kg	500000 U	1000000 U
Anthracene	ug/kg	120000 J	1000000 U
Atrazine	ug/kg	500000 U	1000000 U
Benzaldehyde	ug/kg	500000 U	1000000 U
Benzo(a)anthracene	ug/kg	500000 U	1000000 U
Benzo(a)pyrene	ug/kg	500000 U	1000000 U
Benzo(b)fluoranthene	ug/kg	500000 U	1000000 U
Benzo(g,h,i)perylene	ug/kg	500000 U	1000000 U
Benzo(k)fluoranthene	ug/kg	500000 U	1000000 U
Biphenyl	ug/kg	500000 U	1000000 U
bis(2-Chloroethoxy)methane	ug/kg	500000 U	1000000 U
bis(2-Chloroethyl)ether	ug/kg	500000 U	1000000 U
bis(2-Ethylhexyl)phthalate	ug/kg	500000 U	530000 J
Butyl benzylphthalate	ug/kg	500000 U	400000 J
Caprolactam	ug/kg	500000 U	1000000 U
Carbazole	ug/kg	500000 U	1000000 U
Chrysene	ug/kg	500000 U	1000000 U
Di-n-butylphthalate	ug/kg	500000 U	1000000 U
Di-n-octyl phthalate	ug/kg	500000 U	1000000 U
Dibenz(a,h)anthracene	ug/kg	500000 U	1000000 U
Dibenzofuran	ug/kg	500000 U	1000000 U
Diethyl phthalate	ug/kg	500000 U	1000000 U
Dimethyl phthalate	ug/kg	500000 U	1000000 U
Fluoranthene	ug/kg	130000 J	1000000 U
Fluorene	ug/kg	170000 J	140000 J
Hexachlorobenzene	ug/kg	500000 U	1000000 U
Hexachlorobutadiene	ug/kg	500000 U	1000000 U
Hexachlorocyclopentadiene	ug/kg	2400000 U	4800000 U
Hexachloroethane	ug/kg	500000 U	1000000 U
Indeno(1,2,3-cd)pyrene	ug/kg	500000 U	1000000 U
Isophorone	ug/kg	500000 U	1000000 U
N-Nitrosodi-n-propylamine	ug/kg	500000 U	1000000 U
N-Nitrosodiphenylamine	ug/kg	500000 U	1000000 U
Naphthalene	ug/kg	500000 U	1000000 U
Nitrobenzene	ug/kg	500000 U	1000000 U
Pentachlorophenol	ug/kg	500000 U	1000000 U
Phenanthrene	ug/kg	660000	250000 J
Phenol	ug/kg	500000 U	1000000 U

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SUPPLEMENTAL RFI NO. 1
PONTIAC NORTH CAMPUS

AOI: Sample ID: Sample Depth(): Date Collected:	Units	M-2 MWM2-06 09/10/02	M-4 MWM4-06 07/29/03
Pyrene	ug/kg	170000 J	1000000 U
Pests/PCBs			
Aroclor-1016 (PCB-1016)	ug/kg	10000 U	10000 U
Aroclor-1221 (PCB-1221)	ug/kg	10000 U	10000 U
Aroclor-1232 (PCB-1232)	ug/kg	10000 U	10000 U
Aroclor-1242 (PCB-1242)	ug/kg	170000	83000
Aroclor-1248 (PCB-1248)	ug/kg	10000 U	10000 U
Aroclor-1254 (PCB-1254)	ug/kg	10000 U	10000 U
Aroclor-1260 (PCB-1260)	ug/kg	10000 U	10000 U
Inorganics			
Antimony	mg/kg	0.48 J	0.27 J
Arsenic	mg/kg	6.5	11.1
Barium	mg/kg	20 U	20 U
Beryllium	mg/kg	0.5 U	0.5 U
Cadmium	mg/kg	0.5 U	0.089 J
Chromium Total	mg/kg	2.7	2.9
Cobalt	mg/kg	0.084 J	0.19 J
Copper	mg/kg	3.2 J	4.1
Cyanide (total)	mg/kg	0.12 J	NA
Lead	mg/kg	0.83	14
Manganese	mg/kg	1.5 U	1.5 U
Mercury	mg/kg	0.1 U	0.1 U
Nickel	mg/kg	91.7	1.3 J
Selenium	mg/kg	0.5 U	0.5 U
Silver	mg/kg	0.11 J	1 U
Thallium	mg/kg	1 U	1 U
Vanadium	mg/kg	5 U	3.1 J
Zinc	mg/kg	1.9 J	27.9

Appendix D

Data Usability Summary Reports

ENCORE
Environmental Corporate Remediation

FIERO

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): F-07

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI F-07 obtained from the following Sample Delivery Groups (SDG): 3G23168 and 3H12254.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Inductively Coupled Plasma Metals	SW846 6010B	6 month analysis
Mercury in Solid Waste	SW846 7471A	28 day analysis
Polychlorinated Biphenyls	SW846 8082	14 day ext./40 day post ext.
Semivolatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post ext.
Volatile Organics by GC/MS	SW846 8260B	14 day analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

> All AOI project samples met preservation and holding time compliance, therefore no qualification of the data was recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

> In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. Generally, the calibration procedures implemented by the laboratory were consistent with USEPA guidance. However, during the analysis of polychlorinated biphenyls (EPA Method 8082), the initial calibration acceptance criteria for several target compounds were greater than the EPA guidance criteria of: two single component peaks may exceed 20% RSD, but must be less than or equal to 30% RSD.

In cases where target compounds were detected and reported from a non-compliant initial calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated. Table 1 summarizes the data qualification applied for all AOI non-compliant target compounds identified.

Table 1. Initial Calibration Non-Compliance

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
P5	08/01/03 0934	Aroclor-1221, 30%	BW905S(8-10) BW905S(0-2) MWF703S(7-9) MWF703S(11-13)	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated reporting limit.

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

For all AOI project samples the concentration of target analytes identified, in any blank sample, was greater than the calculated action level, therefore, no qualification of the data was required.

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any

inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, therefore, no qualification of the data was required.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

Table 2 summarizes the data qualification applied for all AOI non-compliant target compounds identified.

Table 2. LCS/MS Non-Compliance

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS Batch: 3206274	bis(2-Chloroethoxy)methane	59-110	57	MWF703S(7-9) MWF703(11-13)
	bis(2-Chloroisopropyl)ethane	53-115	52	
	2,4-Dichlorophenol	60-111	58	
	Hexachloroethane	61-110	60	
	Naphthalene	59-110	57	
	Nitrobenzene	62-110	60	
	2,4-Dintrophenol	15-131	14	
	4,6-Dinitrophenol-2-methylphenol	37-126	32	
Batch: 3212115	Antimony	75-125	47	MWF703S(7-9) MWF703S(11-13)
	Beryllium	75-125	68	
	Chromium	75-125	524	
	Copper	75-125	185	
	Lead	75-125	68	
	Vanadium	75-125	478	
	Zinc	75-125	71	

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target

compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria without exception. No qualification of the data was recommended.

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified "J", estimated and non-detects as "UJ", estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a "J" as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J" as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria, therefore, no qualification of the data was recommended.

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of "J" for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): F-08

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI F-08 obtained from the following Sample Delivery Group(s) (SDG): 2H20119.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Inductively Coupled Plasma Metals	SW846 6010B	6 month analysis
Mercury in Solid Waste	SW846 7471A	28 day analysis
Polychlorinated Biphenyls	SW846 8082	14 day ext./40 day post ext.
Semivolatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post ext.
Volatile Organics by GC/MS	SW846 8260B	14 day analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

> All AOI project samples met preservation and holding time compliance, therefore no qualification of the data was recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

> In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

> In all instances, the initial and continuing calibration procedures, for project samples analyzed for this AOI, fell within method specific criteria without exception. No qualification of the data was recommended.

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times

(5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

> For all AOI project samples the concentration of target analytes identified, in any blank sample, was greater than the calculated action level, therefore, no qualification of the data was required.

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

> For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, therefore, no qualification of the data was required.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS

recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

For all AOI project samples compound recoveries in the LCS and MS samples met acceptance criteria, therefore, no qualification of the data was required.

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria without exception. No qualification of the data was recommended.

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified "J", estimated and non-detects as "UJ", estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a "J" as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J" as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria, therefore, no qualification of the data was recommended.

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of “J” for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): F-15

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI f-15 obtained from the following Sample Delivery Group(s) (SDG): 3G23168 and 3G30257.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Volatile Organics by GC/MS	SW846 8260B	14 day analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as

grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All AOI project samples met preservation and holding time compliance, therefore no qualification of the data was recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

Table 1 summarizes the calibration non-compliance for AOI project samples.

Table 1. Continuing Calibration Non-Compliance.

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
UX9	08/01 2010	Dichlorodifluoromethane, 28%	BF15-0-3S(8-10)	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated reporting limit.

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was

calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

Table 2 summarizes target compounds identified in method blanks analyzed concurrently with AOI project samples.

Table 2. Blank Contamination

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank FVH461AA	Acetone	230 ug/kg	BF15-04-S(0-2)	2300 ug/kg
	Methylene chloride	70 ug/kg	BF15-04-S(6-8)	700 ug/kg
	Styrene	56 ug/kg	BF15-03-S(0-2)	280 ug/kg
	Toluene	72 ug/kg	BF15-03-S(8-10)	360 ug/kg
Method Blank FVLDH1AA	Acetone	240 ug/kg	BF15-05-S(0-2)	2400 ug/kg
	Toluene	49 ug/kg	BF15-05-S(10-12)	245 ug/kg
			BF15-05-S(12-13)	

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, therefore, no qualification of the data was required.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

Table 3 summarizes the data qualification applied for all AOI non-compliant target compounds identified.

Table 3. LCS/MS Non-Compliance

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS Batch: 3213526	Styrene	80-114	77	*Batch: 3213526* BF15-04-S(0-2) BF15-04-S(6-8) BF15-03-(0-2)
BF1503MS(8-10) Matrix Spike	Carbon tetrachloride	32-143	25	*Batch: 3213526* BF15-04-S(0-2) BF15-04-S(6-8) BF15-03-S(0-2)
BF1503MS(8-10) Matrix Spike Dup.	1,1-Dichloroethane Tetrachloroethene	56-130 31-137	350 235	*Batch: 3216506* BF15-03-S(8-10) Re.

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria without exception. No qualification of the data was recommended.

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified "J", estimated and non-detects as "UJ", estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a "J" as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J" as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria, therefore, no qualification of the data was recommended.

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of “J” for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

DEMOLITION AREA

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): W-01

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI W-01 obtained from the following Sample Delivery Group(s) (SDG): 2G18115, 2G31179, 2H20118, 2K09219, 2K13190, 2K14196, 2K20255, 3E20236, 3E22284, and 3G30257.

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**	**Holding Time Criteria**
Metals by Inductively Coupled Plasma (ICP)	SW846 6010B	6 month analysis
and ICP/MS	SW846 6020	6 month analysis
Mercury in Liquid Waste	SW846 7470A	28 day analysis
Mercury in Solid Waste	SW846 7471A	28 day analysis
Polychlorinated Biphenyls by GC-ECD	SW846 8082	14 day ext./40 day post ext.
Semi volatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post ext.
Volatile Organic Compoundss by GC/MS	SW846 8260B	14 day analysis
Total Dioxins and Furans	SW846 8290	30 days extract/180 days analyze

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

Sample ID.	Comments	Corrective Action
MWF1201W (15-25)	Insufficient ice to keep cooler within appropriate temperature range	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
MWF1202W (15-25)		
MWW102W (1-11)		
MWW103W (1-11)		
MW4099W (11-16)		
DUP061W (0-0)		
DWD10W (141-151)		
MWF1W (24-34)		
DWD10EB (141-151)		
DWD10TB (141-151)		
MWW1003W (6-16)		
GWD9W (72-82)		

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

In all instances, the initial and continuing calibration procedures, for project samples analyzed for this AOI, fell within method specific criteria, with the following exception(s):

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
ux10	06/30/03 2137	Acetone, 46	MWM902RB(23-25) TB073003	Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".
UX10	11/18/2002 11:12	2-Butanone, 33.8 Bromomethane, 31.3 Acetone, 41.1 2-Hexanone, 34.8	MWD6-GW IWD7-GW MWF1-GW MWF12-01-GW MWF12-02-GW DWD13-GW MWM16-02-GW DUP201-GW MWP6-01-GW MWP6-02-GW MWP6-03-GW MWP6-04-GW MWW1-06-GW DWD13-EB TB-111302	

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
UX10	5/28/03 2154	Bromomethane, 32.1	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16)	Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".
UX10	5/29/03 1004	Bromomethane, 56.8	GWD9W (72-82)	
UX10	5/30/03 2256	1,2,4 – Trichlorobenzene, 33.3	MWP601W (10-20) MWP602W (10-20) MWP604W (18-28) MWP607W (20-30) GWD11W (86-96) DWD12W (115-125) IWP5EB (52-62) IWP5W (52-62) GWP3W (97-107) GWP6W (82-92) GWP6TB (82-92)	

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
A4HP 9	5/26/03 1030	Hexachlorocyclopentadiene , 27.3	DWD10W (141-151) MWF1W (24-34) MWW1003W (6-16) GWD9W (72-82) DWD10EB (141-151)	Qualify positive results as “J”, estimated and non-detected analytes as “UJ”, estimated undetected.
A4HP 9	5/26/03 1030	4,6-Dinitro-2-methylphenol, 35.3	DWD10W (141-151) MWF1W (24-34) MWW1003W (6-16) GWD9W (72-82) DWD10EB (141-151)	

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
A2HP 2	5/23/03 2313	Aroclor-1260 (4), 36.9	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16) GWD11W (86-96)	Flag “UJ” where the target analyte was non-detect and flag “J” for concentrations detected above the reporting limit.
A2HP 2	5/23/03 2313	Aroclor-1260 (5), 45.5		

Inst.	Date/Time	Target Analyte	%RSD	Associated Samples	Corrective Action
P5	08/01/03 0942	Aroclor-1221	31 (3 out)	BW111S(0-2) BW111S(6-8) BW912S(0-2) BW912S(8-10) BW912S(20-22)	Flag “UJ” where the target analyte was non-detect and flag “J” for concentrations detected above the reporting limit.

Inst.	Date/Time	Target Analyte	%D	Associated Samples	Corrective Action
ux8	08/05/03 0914	Trichlorofluoromethane 1,2-Dibromo-3-chloropropane	27 28	MWM406N	Qualify positive results as “J”, estimated and non-detected analytes as “UJ”, estimated undetected.
ux10	08/06/03 1646	2-Hexanone Acetone 2-Butanone 1,2,4-Trichlorobenzene	52 154 74 34	MWM902RB(23-25) TB073003	

Inst.	Date/Time	Target Analyte	%D	Associated Samples	Corrective Action
hp7	08/09/03 1103	4-Nitrophenol	47	BW111S(0-2) BW911S(0-2)	Qualify positive results as “J”, estimated and non-detected analytes as “UJ”, estimated undetected.

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

For all AOI project samples the concentration of target analytes identified, in any blank sample, was greater than the calculated action level, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method	Manganese	6.5	MWD6-GW IWD7-GW MWF1-GW MWF12-01-GW MWF12-02-GW DWD13-GW MWM16-02-GW DUP201-GW MWP6-01-GW MWP6-02-GW	65
Method FPK521AA	Acetone	1.4	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16)	14

Method FPQ161AA	Bromomethane	0.45	MWP601W (10-20) MWP602W (10-20) MWP604W (18-28) MWP607W (20-30) GWD11W (86-96) DWD12W (115-125) IWP5EB (52-62) IWP5W (52-62) GWP3W (97-107) GWP6W (82-92) GWP6TB (82-92)	2.25
Method FN3WM1AA	Bis (2-Ethylhexyl) phthalate	2.8	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16)	28
GWD8EB(62-72)	Acetone Diethyl phthalate	3.2 0.89	IWD7W(29-39) MWD6W(5-15) GWD8W(62-72) MWW106W(3-13) MWW104W(3-13)	32 4.45
TB-052103	Acetone 2-Butanone	2.9 1.3	IWD7W(29-39) MWD6W(5-15) GWD8W(62-72) GWD8EB(62-72) MWW106W(3-13) MWW104W(3-13)	29 6.5
FVQMT1AA	Methyl acetate Methylene chloride Toluene 1,2,4-Trichlorobenzene	69 160 310 88	MWM406N	345 800 1550 440
FVLDH1AA	Acetone Toluene	240 49	BF1505S(0-2) BF1505S(10-12) BF1505S(12-13)	2400 490
FV17G1AA	Methylene chloride	3.0	BF1504S(26-28) BF1505S(30-32) BW912S(0-2) BW912S(8-10) BW912S(20-22)	30
FV3121AA	Acetone Methylene chloride Toluene	170 120 94	BW111S(0-2) BW111S(6-8)	1700 1200 470
FVFRK1AA	bis (2-Ethylhexyl)phthalate	0.47	MWM902RB(23-25)	2.35
MB Batch: 3218113	Zinc	15.0	MWM902RB(23-25)	150

MB Batch: 3219127	Barium Copper Manganese	0.39 0.40 0.99	MWM406N	3.9 4.0 9.9
MB Batch: 3219129	Barium Copper Manganese	249 101 61.3	BW111S(0-2) BW111S(6-8) BW912S(0-2) BW912S(8-10) BW912S(20-22) BW911S(0-2) BW911S(5-7) BW911S(7-9)	2490 1010 613

Blank ID	Date and Time	Target Analyte	Concn. (ppb)	Associated Samples	Flag sample results with a "U" if £ to this value
Method 3141098	5/22/03 1336	Barium	1.0	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) GWD9W (72-82) MWF1W (24-34) MWW1003W (6-16) GWD11W (86-96)	10
Method 3142105	5/23/03 1339	Antimony	8.4	GWD11W (86-96)	84

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, therefore, no qualification of the data was required.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the

sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

For all AOI project samples compound recoveries in the LCS and MS samples met acceptance criteria, with the following exception(s):

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
MWD6-GW MS/MSD	Bromomethane	55-145	51	If the MS/MSD is from a project sample apply the qualifiers "J" for detects and "UJ" for non detects to the samples of the same matrix.
	2-Butanone	71-132	63	
	2-Hexanone	81-128	71	
MS/MSD	3, 3'-Dichlorobenzidine	10-110	0	MWD6-GW
Batch: 3216413	4-Methyl-2-pentanone	68-142	67	BF1505S(0-2) BF1505S(10-12) BF1505S(12-13)
Batch: 3221225	Styrene 1,2-Dichloroethane 1,1,2-Trichloroethane	80-114 78-121 82-116	78 75 80	BF1504S(26-28) BF1505S(30-32) BW912S(0-2) BW912S(8-10) BW912S(20-22)
Batch: 3219502	1,1,2,2-Tetrachloroethane	85-118	120	MWM902RB(23-25) TB073003
FN6LW1AC	Hexachlorocyclopentadiene	10-114	9	GWD11W (86-96) DWD12W (115-125) IWP5EB (52-62) IWP5W (52-62) GWP3W (97-107) GWP6W (82-92)
BW911S(5-7)	Trichloroethene Benzene Toluene Chlorobenzene	46-143 55-138 46-147 49-139	26 25 37 39	BW911S(0-2) BW911S(5-7)

Batch: 3212529	bis(2- Chloroethoxy)methane bis(2-Chloroethyl)ether bis(2-Ethylhexyl) phthalate Naphthalene N-Nitrosodiphenylamine Isophorone Nitrobenzene	54-112 59-114 53-118 49-112 56-119 54-111 56-119	46 44 33 43 46 52 49	MWM902RB(23-25)
BW911S(5-7)MS/MSD	4-Nitrophenol 2-Chloronaphthalene 3,3'-Dichlorobenzidine 4,6-Dinitro-2-methylphenol 2,4-Dinitrophenol Hexachlorocyclopentadiene 2-Nitroaniline 3-Nitroaniline 4-Nitroaniline N-Nitrosodiphenylamine Pentachlorophenol bis(2-Ethylhexyl) phthalate	10-148 43-125 10-110 10-142 10-149 10-110 42-126 17-113 14-125 37-135 10-144 36-131	0 145 235 0 0 0 140 0 0 205 0 149	BW911S(0-2) BW911S(5-7 BW911S(7-9)

Project Batch ID	Target Analyte	%R Criteria	%R	Affected Samples
BW911S (5-7)	Aroclor 1016 Aroclor 1260	26-144 37-138	452 151	BW911S(0-2) BW911S(5-7) BW911S(7-9)

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS FPK521AC	Styrene	85-117	82	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16)
LCS FPK521AD			81	
LCS FPQ161AC	Styrene	85-117	79	MWP601W (10-20) MWP602W (10-20) MWP604W (18-28) MWP607W (20-30) GWD11W (86-96) DWD12W (115-125) IWP5EB (52-62) IWP5W (52-62) GWP3W (97-107) GWP6W (82-92) GWP6TB (82-92)
LCS FPQ161AD			78	

MS/MSD FN3KX1AJ	Styrene	83-120	80	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151)
MS/MSD FN3KX1AK			78	MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16)
MS/MSD FN5331AC	Styrene, Ethylbenzene, Xylenes	83-120, 86-132, 89-121	77, 53, 80	MWP601W (10-20) MWP602W (10-20) MWP604W (18-28) MWP607W (20-30) GWD11W (86-96) DWD12W (115-125) IWP5EB (52-62) IWP5W (52-62) GWP3W (97-107) GWP6W (82-92) GWP6TB (82-92)
MS/MSD FN5331AD	Ethylbenzene, Xylenes	86-132, 89-121	53, 86	

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Batch: 3219129	Antimony Cadmium Lead Vanadium	75-125 75-125 75-125 75-125	35 71 22300 46	BW111S(0-2) BW111S(6-8) BW912S(0-2) BW912S(8-10) BW912S(20-22) BW911S(0-2) BW911S(5-7) BW911S(7-9)

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
BW911S(7-9)	1,4-Dichlorobenzene-d4	Lower	1,2-Dibromo-3-chloropropane 1,2-Dichlorobenzene 1,3- Dichlorobenzene 1,4- Dichlorobenzene 1,1,2,2-Tetrachloroethane 1,2,4-Trichlorobenzene
BW912S(8-10) BW912S(20-22)	1,4-Dichlorobenzene-d4	Lower	

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified “J”, estimated and non-detects as “UJ”, estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a “J” as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J” as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria, therefore, no qualification of the data was recommended.

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
Batch: 3219127	Vanadium	11.9	MWM406N	Qualify results greater than the MDL as estimated “J”, and non-detects as estimated “UJ”.

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of "J" for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): W-08

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI W-08 obtained from the following Sample Delivery Group(s) (SDG): 2K13190, 2K15256, 3E30272, 3G23168, 3G29201, and 3H26156.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Inductively Coupled Plasma Metals	SW846 6010B	6 month analysis
ICP/MS	SW846 6020	6 month analysis
Mercury in Liquid Waste	SW846 7470A	28 day analysis
Mercury in Solid Waste	SW846 7471A	28 day analysis
Polychlorinated Biphenyls	SW846 8082	14 day ext./40 day post ext.
Semivolatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post ext.
Volatile Organics by GC/MS	SW846 8260B	14 day analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All AOI project samples met preservation and holding time compliance, therefore no qualification of the data was recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

In all instances, the initial and continuing calibration procedures, for project samples analyzed for this AOI, fell within method specific criteria, with the following exception(s):

Inst.	Date/ Time	Target Analyte	Associated Samples	Corrective Action
7	11/18 0812	Acetone 2-Butanone 1,2-Dibromo-3-chloropropane 2-Hexanone Methylene chloride	MWW8-10-GW02 MWW8-11-GW02 MWW8-12-GW02	Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".
10	11/22 2037	2-Hexanone Methylcyclohexane 1,2,4-Trichlorobenzene	MWW8-08-GW02	

UX8	06/10 1202	Bromomethane 1,2-Dibromo-3-chloropropane	MWW8-13-S(15-17)	
HP6	06/07 0750	2,4-Dinitrophenol 4,6-Dinitro-2-methylphenol	MWW8-13-S(15-17)	
UX8	07/25/03 0946	Chloromethane Dichlorodifluoromethane	BW8-04-S(0-2) BW8-05-S(0-2)	
UX8	07/29/03 1123	2-Hexanone Acetone	BW8-04-S(5-7) DUP070	
HP6	07/25 1440	2,4-Dinitrophenol, 4,6-Dinitro-2-methylphenol	BW8-05-S(7-9)	
HP6	07/28 0715	2,4-Dinitrophenol	BW8-04-S(0-2) BW8-05-S(0-2)	
HP6	08/03 0824	Hexachlorocyclopentadiene	BW8-04-S(5-7)	
a3ux8	8/1/03 19:51	Acetone Methyl tert-butyl ether	BW8-03-S(0-2)	
a3ux8	8/6/03 10:52	Acetone Vinyl acetate	BW8-06-S(0-2) BW8-06-S(2-4)	
a3ux9	8/5/03 08:00	1,1,2,2-Tetrachloroethane Methyl tert-butyl ether	BW8-03-S(3-5)	
a4hp6	8/4/03 07:27	Hexachlorocyclopentadiene 2,4-Dintirophenol 4,6-Dinitro-2-methylphenol	BW8-06-S(0-2) BW8-06-S(2-4)	
a4hp8	8/5/03 11:37	bis (2-Chloroisopropyl) ether Pyrene Benzo (a) Anthracene Chrysene	BW8-06-S(6-8) BW8-03-S(8-10)	
10	8/20 17:04	Methylene chloride Dichlorodifluoromethane	MWW8-13-GW(19-29)	
6	9/5 07:38	2,4-Dinitrophenol Indeno(1,2,3 cd)pyrene Dibenze(a,h)anthracene Benzo(g,h,i)perylene	MWW8-13-GW(19-29)	

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

For all AOI project samples the concentration of target analytes identified, in any blank sample, was greater than the calculated action level, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Trip Blank TB-111202	Acetone 2-Butanone	1.9 ug/L 1.2 ug/L	MWW8-10-GW02 MWW8-11-GW02 MWW8-12-GW02	19 ug/L 12 ug/L
Trip Blank TB-111402	Acetone 2-Butanone	2.6 ug/L 1.3 ug/L	MWW8-08-GW02	26 ug/L 13 ug/L
Method Blank	Trichloroethene	14 ug/kg	MWW8-13-S(8-10)	70 ug/kg
Method Blank	Barium Manganese Selenium	331 ug/kg 116 ug/kg 240 ug/kg	MWW8-13-S(0-2) MWW8-13-S(8-10) MWW8-13-S(15-17)	3310 ug/kg 1160 ug/kg 2400 ug/kg
Method Blank	Methylene chloride Toluene	1.6 ug/kg 1.2 ug/kg	BW8-04-S(0-2) BW8-05-S(0-2)	16 ug/kg 6.0 ug/kg
Method Blank	Methylene chloride Toluene	110 ug/kg 69 ug/kg	BW8-04-S(5-7) DUP070	1100 ug/kg 345 ug/kg
Method Blank	Toluene	0.45 ug/kg	BW8-05-S(7-9)	2.25 ug/kg
Method Blank	Barium Manganese	187 ug/kg 174 ug/kg	BW8-04-S(5-7) BW8-04-S(0-2) BW8-05-S(7-9) BW8-05-S(0-2) DUP070	1870 ug/kg 1740 ug/kg
Trip Blank TB072803	Acetone 2-Butanone	2.4 ug/L 0.98 ug/L	BW8-06-S(0-2) BW8-06-S(2-4) BW8-06-S(6-8) BW8-03-S(0-2) BW8-03-S(8-10) BW8-03-S(3-5)	24 ug/L 9.8 ug/L
Method Blank: (FVVH31AA)	Acetone Toluene Trichloroethene	310 ug/kg 84 ug/kg 22 ug/kg	BW8-06-S(0-2) BW8-06-S(2-4)	3100 ug/kg 840 ug/kg 110 ug/kg
Method Blank: (FVRE21AA)	Methylene Chloride	1.1 ug/kg	BW8-06-S(6-8) BW8-03-S(3-5)	11 ug/kg
Method Blank	Barium Manganese	99.8 ug/kg 43.2 ug/kg	BW8-06-S(0-2) BW8-06-S(2-4) BW8-06-S(6-8) BW8-03-S(0-2) BW8-03-S(8-10) BW8-03-S(3-5)	998 ug/kg 432 ug/kg
Equipment blank MWW901EB(22-32)	Acetone	3.4 µg/L	MWW8-13-GW(19-29)	34 µg/L
Trip blank TB-082503	Acetone 2-Butanone	4.5 µg/L 1.6 µg/L	MWW8-13-GW(19-29)	45 µg/L 16 µg/L
Equipment blank MWW901EB(22-32)	Benzaldehyde Diethyl phthalate	0.68 µg/L 0.74 µg/L	MWW8-13-GW(19-29)	3.4 µg/L 7.4 µg/L
Equipment blank MWW901EB(22-32)	Barium Copper Manganese	1.4 µg/L 6.6 µg/L 1.5 µg/L	MWW8-13-GW(19-29)	14 µg/L 66 µg/L 15 µg/L
Method blank	Copper Manganese	2.6 µg/L 0.81 µg/L	MWW8-13-GW(19-29)	26 µg/L 8.1 µg/L

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, with the following exception(s):

Project Sample ID	Surrogate	%R	Corrective Action
MWW8-10-GW02	Tetrachloro-m-xylene Decachlorobiphenyl	43 17	Qualify positive results for all Aroclors as "J", estimated and non-detected Aroclors as "UJ", estimated reporting limit.
MWW813GW(19-29)D	Tetrachloro-m-xylene Decachlorobiphenyl	178 9.6	Qualify positive results as "J" and non-detects are not qualified for Aroclors 1016, 1221, and 1232, for project sample.
MWW813GW(19-29)S	Tetrachloro-m-xylene Decachlorobiphenyl	221 4.0	Qualify positive results as "J" and non-detects as "R" for Aroclors 1242, 1248, 1254 and 1260 for project sample.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of

MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

For all AOI project samples compound recoveries in the LCS and MS samples met acceptance criteria, with the following exception(s):

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS	Bromomethane	62-113	56	MWW8-10-GW02 MWW8-11-GW02 MWW8-12-GW02
LCS	Methylene chloride	78-110	76	MWW8-08-GW02
LCS	Hexachlorocyclopentadiene	38-107	6	MWW8-08-GW02
Matrix AutoText entry MWW8-13-S(0-2)	Antimony Beryllium Chromium Thallium Zinc	75-125 75-125 75-125 75-125 75-125	33 74 175 73 61	MWW8-13-S(0-2) MWW8-13-S(8-10) MWW8-13-S(15-17)
LCS	Styrene Acetone	80-114 58-130	73 20	BW8-04-S(5-7) DUP070
Matrix Spike	Antimony Chromium Thallium	75-125	25 167 73	BW8-06-S(0-2) BW8-06-S(2-4) BW8-06-S(6-8) BW8-03-S(0-2) BW8-03-S(8-10) BW8-03-S(3-5)
LCS	Trans-1,3-Dichoropropene	84-130	81	MWW8-13-GW(19-29)
Matrix Spike	Vinyl chloride 2-Butanone 1,1,2,2,-Tetrachloroethane 2-Hexanone	88-126 71-123 88-116 81-128	81 69 85 946	MWW8-13-GW(19-29)

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria, with the following exception(s):

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
BW8-03-S(8-10)	Perylene-d12	> +100%	Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Dibenz(a,h)anthracene Di-n-octylphthlate Indeno(1,2,3-cd) pyrene

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified “J”, estimated and non-detects as “UJ”, estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a “J” as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J” as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria, therefore, no qualification of the data was recommended.

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes

quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of "J" for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): W-09

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI W-09 obtained from the following Sample Delivery Group(s) (SDG): 2B28160, 2C02116, 2K13190, 3E20236, 3G23168, 3G29201, 3G30257, 3H26156, 3I04267, 3J01126, and 3K03129.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Inductively Coupled Plasma Metals	SW846 6010B	6 month analysis
ICP/MS	SW846 6020	6 month analysis
Mercury in Liquid Waste	SW846 7470A	28 day analysis
Mercury in Solid Waste	SW846 7471A	28 day analysis
Polychlorinated Biphenyls	SW846 8082	14 day ext./40 day post ext.
Semivolatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post ext.
Volatile Organics by GC/MS	SW846 8260B	14 day analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- ❑ Preservation and Holding Time Compliance
- ❑ GC/MS Instrument Performance Check
- ❑ Initial Calibration and Continuing Calibration Procedures
- ❑ Field/Method/Preparation Blank Sample Analysis
- ❑ System Monitoring Compound Recoveries
- ❑ Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- ❑ Internal Standard Recoveries
- ❑ Duplicate Sample Analysis
- ❑ ICP Interference Check Sample Performance
- ❑ ICP Serial Dilution Replicate Percent Difference
- ❑ Use of Laboratory Data Qualifiers
- ❑ Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All AOI project samples met preservation and holding time compliance, with the following exception(s):

Sample ID	Matrix	Action
DWD12-GW115-125	AQ	Due to the cooler temperature at greater than the acceptance criteria positive results for methylene chloride should be qualified "J", estimated and non-detected methylene chloride qualified "UJ", as rejected.
TB-103103	AQ	
DWD12-EB115-125	AQ	
DUP78103103	AQ	

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

In all instances, the initial and continuing calibration procedures, for project samples analyzed for this AOI, fell within method specific criteria, with the following exception(s):

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
10	11/15 1213	Acetone 2-Butanone 2-Hexanone 1,2,4-Trichlorobenzene	GWD11-GW DWD12-GW	Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".
2	5/23/03 2313	Aroclor-1260	GWD11-W (86-96) DWD12-W (115-125)	
UX8	07/25/0 3 0946	Chloromethane Dichlorodifluoromethane	BW906S(0-2) BW804S(0-2) BW906S(6-8) BW805S(0-2) BW904S(0-2) BW904S(4.5-6.5)	
HP6	07/28/0 3 0715	2,4-Dinitropheno	BW906S(6-8)	
P5	08/01/0 3 0934	Aroclor-1221	BW905S(8-10) BW905S(0-2)	
a3ux 9	8/5/03 08:00	1,1,2,2-Tetrachloroethane Methyl tert-butyl ether	BW803S(3-5) BW903S(0-2)	
a4hp 8	8/5/03 11:37	bis (2-Chloroisopropyl) ether Pyrene, Benzo (a) Anthracene, Chrysene	BW903S(3-5) BW903S(8-10) MWW901S(0-2) MWW901S(24.5-26.5) MWW902S(23-25)	
hp7	08/14/0 3 1338	2,4-Dinitrophenol	BW912S(20-22)	
hp7	08/09/0 3 1103	4-Nitrophenol	BW911S(0-2)	
10	8/20 17:04	Methylene chloride Dichlorodifluoromethane	MWW901GW(22-32)	
9	09/16 1051	Bromomethane Chloroethane 4-Methyl-2-pentanone 2-Hexanone Methyl acetate	BW9-16-S(14-16)	
11	10/1 08:35	2-Hexanone Acetone 2-Butanone	MWW9-06-GW TWW9-01-GW DUP-077-093003 MWW9-03-GW	
9	10/1 13:04	Hexachlorocyclopentadiene	MWW9-06-GW TWW9-01-GW DUP-077-093003 MWW9-03-GW	

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic

method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

For all AOI project samples the concentration of target analytes identified, in any blank sample, was greater than the calculated action level, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Trip Blank	Acetone 2-Butanone	1.9 ug/L 1.2 ug/L	GWD11-GW DWD12-GW	19 ug/L 12 ug/L
Method Blank	Vanadium Cobalt Copper Zinc	0.71 ug/L 0.8 ug/L 1.9 ug/L 16.3 ug/L	GWD11-GW DWD12-GW	7.1 ug/L 8.0 ug/L 19 ug/L 163 ug/L
Method Blank	Acetone	1.4 ug/L	GWD11W (86-96) DWD12W (115-125)	14 ug/L
Method Blank	Methylene chloride Toluene	1.6 ug/kg 1.2 ug/kg	BW906S(0-2) BW906S(6-8) BW904S(0-2) BW904S(4.5-6.5) BW905S(0-2)	16 ug/kg 6.0 ug/kg
Method Blank	Toluene	0.45 ug/kg	BW905S(10-12) BW905S(8-10)	2.25 ug/kg
Method Blank	Benzaldehyde	23 ug/kg	BW906S(0-2)	115 ug/kg
Method Blank	Barium Manganese	187 ug/kg 174 ug/kg	BW906S(0-2) BW906S(6-8) BW904S(0-2) BW904S(4.5-6.5) BW905S(10-12) BW905S(8-10) BW905S(0-2)	1870 ug/kg 1740 ug/kg
Trip Blank TB072803	Acetone 2-Butanone	2.4 ug/L 0.98 ug/L	BW9-03-S(0-2)072803 BW9-03-S(3-5)072803 BW9-03-S(8-10)072803 DUP-071-072803 MWW9-01-S(0-2)072803 MWW9-01-S(8-10)072803 MWW9-01-S(24.5-26.5)072803 MWW9-02-S(0-2)072803 MWW9-02-S(8-10)072803 MWW9-02-S(23-25)072803	24 ug/L 9.8 ug/L

Method Blank:	Methylene Chloride	1.1 ug/kg	BW806S(6-8) BW803S(3-5) BW903S(0-2) MWW901S(24.5-26.5)	11 ug/kg
Method Blank	Barium Manganese	99.8 ug/kg 43.2 ug/kg	BW903S (0-2) BW903S (3-5) BW903S (8-10) DUP071 MWW901S (0-2) MWW901S (8-10) MWW901S (24.5-26.5) MWW902S (0-2) MWW902S (8-10) MWW902S (23-25)	998 ug/kg 432 ug/kg
Trip Blank TB073003	Acetone 2-Butanone	1.4 ug/L 1.7 ug/L	BW9-12-S(0-2) BW9-12-S(8-10) BW9-12-S(20-22) BW9-11-S(0-2) BW9-11-S(5-7) BW9-11-S(7-9)	14 ug/L 17 ug/L
Method Blank	Methylene chloride	3.0 ug/kg	BW912S(0-2) BW912S(8-10) BW912S(20-22)	30 ug/kg
Method Blank	bis (2-Ethylhexyl)phthalate	0.47 ug/kg	MWM902RB(23-25)	4.7 ug/kg
Method Blank	Zinc	15.0 ug/kg	MWM902RB(23-25)	150 ug/kg
Method Blank	Barium Copper Manganese	249 ug/kg 101 ug/kg 61.3 ug/kg	BW111S(0-2) BW111S(6-8) BW912S(0-2) BW912S(8-10) BW912S(20-22) BW911S(0-2) BW911S(5-7) BW911S(7-9)	2490 ug/kg 1010 ug/kg 613 ug/kg
Equipment blank MWW901EB(22-32)	Acetone	3.4 µg/L	MWW901GW(22-32)	34 µg/L
Trip blank TB-082503	Acetone 2-Butanone	4.5 µg/L 1.6 µg/L	MWW901GW(22-32) MWW901EB(22-32)	45 µg/L 16 µg/L
Equipment blank MWW901EB(22-32)	Benzaldehyde Diethyl phthalate	0.68 µg/L 0.74 µg/L	MWW901GW(22-32)	3.4 µg/L 7.4 µg/L
Equipment blank MWW901EB(22-32)	Barium Copper Manganese	1.4 µg/L 6.6 µg/L 1.5 µg/L	MWW901GW(22-32)	14 µg/L 66 µg/L 15 µg/L
Method blank Prep batch 3247123	Copper Manganese	2.6 µg/L 0.81 µg/L	MWW901GW(22-32) MWW901EB(22-32)	26 µg/L 8.1 µg/L
TB-090903	Acetone (24.69 ng) 2-Butanone (7.75 ng)	4.9 ug/L 1.5 ug/L	BW9-16-S(14-16)	49 ug/L 15 ug/L
Method Blank	Aroclor 1242	8 ug/kg	BW9-16-S(14-16)	40 ug/kg
Method Blank	Barium	88.9 ug/kg	BW9-16-S(14-16)	889 ug/kg

Method Blank	Bromomethane	0.28 µg/L	MWW9-06-GW TWW9-01-GW DUP-077-093003 MWW9-03-GW	1.4 µg/L
Trip Blank	Methylene chloride	0.55 µg/L	MWW9-06-GW TWW9-01-GW DUP-077-093003 MWW9-03-GW	5.5 µg/L

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, with the following exception(s):

Project Sample ID	Surrogate	%R	Corrective Action
MWW901GW(22-32)	Decachlorobiphenyl	11	Qualify positive results as "J" and non-detects as "UJ" for Aroclors 1242, 1248, 1254, and 1260 for project samples.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

For all AOI project samples compound recoveries in the LCS and MS samples met acceptance criteria, with the following exception(s):

Project Sample ID	**Target Analyte**	**%R Criteria**	**%R**	**Affected Samples**
Matrix Spike	Aroclor 1016	26-144	779	BW9-02E17N1-0-2
Matrix Spike	Aroclor 1016 Aroclor 1260	26-144 37-138	328 147	BW9-02E15N1-2-4
LCS	Ethylbenzene	87-112	85	GWD11-GW DWD12-GW
LCS	Acenaphthylene 2,4-Dintrophenol 2,6-Dinitrotoluene 2-Methylnaphthalene 4-Chlorophenyl phenyl ether Fluorene Naphthalene	55-110 60-111 61-121 58-110 59-110 57-110 59-110	51 56 52 56 57 56 58	BW906S(0-2)
Matrix Spike	Antimony Beryllium Chromium Copper Lead Vanadium Zinc	75-125 75-125 75-125 75-125 75-125 75-125 75-125	47 68 524 185 68 478 71	BW906S(0-2) BW906S(6-8) BW904S(0-2) BW904S(4.5-6.5) BW905S(10-12) BW905S(8-10) BW905S(0-2)
Matrix Spike MWW902S(8-10)	Pentachlorophenol	10-144	9.3	BW903S(0-2) BW903S(3-5) BW903S(8-10) DUP071 MWW901S(0-2) MWW901S(24.5-26.5) MWW902S(0-2) MWW902S(8-10) MWW902S(23-25)

Matrix Spike MWW902S(8-10)	Antimony Chromium Thallium	75-125	25 167 73	BW903S (0-2) BW903S (3-5) BW903S (8-10) DUP071 MWW901S(0-2) MWW901S(8-10) MWW901S(24.5-26.5) MWW902S(0-2) MWW902S(8-10) MWW902S(23-25)
LCS	Styrene 1,2-Dichloroethane 1,1,2-Trichloroethane	80-114 78-121 82-116	78 75 80	BW912S(0-2) BW912S(8-10) BW912S(20-22)
Matrix Spike BW911S(5-7)	Trichloroethene Benzene Toluene Chlorobenzene	46-143 55-138 46-147 49-139	26 25 37 39	BW911S(0-2) BW911S(5-7)
LCS	bis(2-Chloroethoxy)methane bis(2-Chloroethyl)ether bis(2-Ethylhexyl) phthalate Naphthalene N-Nitrosodiphenylamine Isophorone Nitrobenzene	54-112 59-114 53-118 49-112 56-119 54-111 56-119	46 44 33 43 46 52 49	MWM902RB(23-25)
Matrix Spike BW911S(5-7)	4-Nitrophenol 2-Chloronaphthalene 3,3'-Dichlorobenzidine 4,6-Dinitro-2-methylphenol 2,4-Dinitrophenol Hexachlorocyclopentadiene 2-Nitroaniline 3-Nitroaniline 4-Nitroaniline N-Nitrosodiphenylamine Pentachlorophenol bis(2-Ethylhexyl) phthalate	10-148 43-125 10-110 10-142 10-149 10-110 42-126 17-113 14-125 37-135 10-144 36-131	0 145 235 0 0 0 140 0 0 205 0 149	BW911S(0-2) BW911S(5-7 BW911S(7-9)
LCS	Aroclor 1016 Aroclor 1260	26-144 37-138	452 151	BW911S(0-2) BW911S(5-7) BW911S(7-9)
Matrix Spike	Antimony Cadmium Lead Vanadium	75-125 75-125 75-125 75-125	35 71 22300 46	BW912S(0-2) BW912S(8-10) BW912S(20-22) BW911S(0-2) BW911S(5-7) BW911S(7-9)
LCS	trans-1,3-Dichoropropene	84-130	81	MWW901GW(22-32) MWW901EB(22-32)
LCS	4,6-dinitro-2-methylphenol Benzoic acid Pyridine	37-126 22-154 70-130	19 9 64	BW9-16-S(14-16)

LCS	4-Methyl-2-pentanone	78-141	75,77	MWW9-06-GW TWW9-01-GW DUP-077-093003 MWW9-03-GW
LCS	Pyridine	70-130	52	MWW9-06-GW TWW9-01-GW DUP-077-093003 MWW9-03-GW
MS MWW9-06GW	Bis(2-Ethylhexyl)phthalate Butyl benzyl phthalate 4-Chloroaniline 3-Nitroaniline 4-Nitroaniline 3,3'-Dichlorobenzidine N-Nitrosodiphenylamine	43-128 41-127 10-110 10-140 20-122 10-110 49-117	129 130 4 0 8 0,0 35	MWW9-06-GW TWW9-01-GW DUP-077-093003 MWW9-03-GW

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria, with the following exception(s):

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
MWW902S(8-10)	1,4-Dichlorobenzene-d4	< -50%	1,2-Dibromo-3-chloropropane 1,2-dichlorobenzene 1,3-dichlorobenzene 1,4-Dichlorobenzene 1,1,2,2,-Tetrachloroethane 1,2,4-Trichlorobenzene
BW903S(3-5)	1,4-Dichlorobenzene-d4	< -50%	
DUP071	1,4-Dichlorobenzene-d4	< -50%	

MWW901S(8-10)	1,4-Dichlorobenzene-d4 Chlorobenzene-d5	< -50% < -50%	1,2-Dibromo-3-chloropropane 1,2-dichlorobenzene 1,3-dichlorobenzene 1,4-Dichlorobenzene 1,1,2,2,-Tetrachloroethane 1,2,4-Trichlorobenzene Bromoform Chlorobenzene Dibromochloromethane 1,2-Dibromomethane Trans-1,3-Dichloropropene Ethylbenzene 2-Hexanone Isopropylbenzene Styrene Tetrachloroethene Toluene 1,1,2-Trichloroethane Xylenes (o and m/p)
BW903S(0-2)	1,4-Dichlorobenzene-d4	< -50%	1,2-Dibromo-3-chloropropane 1,2-dichlorobenzene 1,3-dichlorobenzene 1,4-Dichlorobenzene 1,1,2,2,-Tetrachloroethane 1,2,4-Trichlorobenzene
MWW902S(23-25) MWW901S(24.5-26.5)	Perylene-d12	> +100%	Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Dibenz(a,h)anthracene Di-n-octylphthlate Indeno(1,2,3-cd) pyrene
BW911S(7-9) BW912S(8-10) BW912S(20-22)	1,4-Dichlorobenzene-d4	< -50%	1,2-Dibromo-3-chloropropane 1,2-Dichlorobenzene 1,3- Dichlorobenzene 1,4- Dichlorobenzene 1,1,2,2-Tetrachloroethane 1,2,4-Trichlorobenzene
BW9-16-S(14-16)	1,4-DCB-d4	< -50%	1,2-Dibromo-3-chloropropane 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,1,2,2-Tetrachloroethane 1,2,4-Trichlorobenzene

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with

concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified “J”, estimated and non-detects as “UJ”, estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a “J” as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J” as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria, therefore, no qualification of the data was recommended.

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
BW9-16-S(14-16)	Cadmium Zinc	10.9 11.6	BW9-16-S(14-16)	Qualify results greater than the MDL as estimated “J”, and non-detects as estimated “UJ”.

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of “J” for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): W-10

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI W-10 obtained from the following Sample Delivery Group(s) (SDG): 2K14196, 2K15256, 2K20255, 3E20236, and 3E22284.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Inductively Coupled Plasma Metals	SW846 6010B	6 month analysis
ICP/MS	SW846 6020	6 month analysis
Mercury in Liquid Waste	SW846 7470A	28 day analysis
Polychlorinated Biphenyls	SW846 8082	14 day ext./40 day post ext.
Semivolatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post ext.
Volatile Organics by GC/MS	SW846 8260B	14 day analysis
Dibenzodioxins/Dibenzfurans by GC/MS	SW846 8290	14 day ext./6 months post ext.

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All AOI project samples met preservation and holding time compliance, therefore no qualification of the data was recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

In all instances, the initial and continuing calibration procedures, for project samples analyzed for this AOI, fell within method specific criteria, with the following exception(s):

Inst.	Date/ Time	Target Analyte	Associated Samples	Corrective Action
10	11/18 1112	2-Hexanone	IWD7-GW	Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".
8	11/19 1140	Pyrene	MWD6-GW	

10	11/21 1042	1,2,4-Trichlorobenzene 2-Hexanone Methyl cyclohexane	MWW10-02-GW02 MWW10-03-GW02 MWW10-04-GW02 MWW10-06-GW02 DUP202	
HP8	11/26 12:52	2,4-Dinitrophenol	MWW10-02-GW02 MWW10-03-GW02 MWW10-04-GW02 MWW10-06-GW02 DUP202	
2	5/23/03 2313	Aroclor-1260	MWW1003W (6-16)	

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

For all AOI project samples the concentration of target analytes identified, in any blank sample, was greater than the calculated action level, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank	2-Butanone Acetone	0.95 ug/L 2.5 ug/L	MWD6-GW IWD7-GW	9.5 ug/L 25 ug/L
Method Blank	Acetone	1.4 ug/L	MWW1003W (6-16)	14 ug/L
Equipment Blank GWD8EB(62-72)	Acetone	3.2 ug/L	MWD6-W (5-15') GWD8-W (62-72')	32 ug/L

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to

analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, with the following exception(s):

Project Sample ID	Non-Compliant SMC	% Recovery	Analytes Affected	Corrective Action
MW4099GW	C13-1,2,4,5,6-PeCDD	38	1,2,4,5,6-PentaCDD	Positive results are qualified "J" and non-detects are qualified "UJ".

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

For all AOI project samples compound recoveries in the LCS and MS samples met acceptance criteria, with the following exception(s):

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS	4-Methyl-2-pentanone Bromomethane	75-125 56-127	74 52	MWD6-GW
LCS	Bromomethane Methylene chloride 4-Methyl-2-pentanone	56-127 77-130 75-125	58 73 73	IWD7-GW
Matrix Spike	2-Hexanone	81-128	71	MWD6-GW
Matrix Spike	3,3'-Dichlorobenzidine	10-110	0	MWD6-GW
LCS	Hexachlorocyclopentadiene	34-113	9	MWD6-GW
LCS	Methylene chloride	82-115	76	MWW10-02-GW02 MWW10-03-GW02 MWW10-04-GW02 MWW10-06-GW02 DUP202
LCS	Hexachlorocyclopentadiene	34-142	6	MWW10-02-GW02 MWW10-03-GW02 MWW10-04-GW02 MWW10-06-GW02 DUP202

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria. No qualification of the data was recommended.

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified "J", estimated and non-detects as "UJ", estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a "J" as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J" as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria, therefore, no qualification of the data was recommended.

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of "J" for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

METAL FABRICATION DIVISION

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): M-01

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI M-01 obtained from the following Sample Delivery Group(s) (SDG): 3H12254.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Total Cyanide	SW846 9012	14 day analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All AOI project samples met preservation and holding time compliance, therefore no qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

All AOI project samples conformed to calibration criteria, therefore no qualification of the data was recommended.

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

No target analytes were identified in any AOI project samples, therefore no qualification of the data was recommended.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance

criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a “J” as estimated or “R” if reported as non-detect.

For all AOI project samples, LCS and MS compound recoveries fell within method specific criteria without exception. No qualification of the data was recommended.

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): M-02

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI M-02 obtained from the following Sample Delivery Group(s) (SDG): 2I11201, 2K13190, 3D25280, 3E20110, 3F03102, and 3F24203.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Cyanide	SW846 9012	14 days
Inductively Coupled Plasma Metals	SW846 6010B	6 month analysis
ICP/MS	SW846 6020	6 month analysis
Mercury in Liquid Waste	SW846 7470A	28 day analysis
Mercury in Solid Waste	SW846 7471A	28 day analysis
Polychlorinated Biphenyls	SW846 8082	14 day ext./40 day post ext.
Semivolatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post ext.
Volatile Organics by GC/MS	SW846 8260B	14 day analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All AOI project samples met preservation and holding time compliance, therefore no qualification of the data was recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

In all instances, the initial and continuing calibration procedures, for project samples analyzed for this AOI, fell within method specific criteria, with the following exception(s):

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
7	9/13 1051	Methylene chloride Trichlorofluormethane Acetone 2-Butanone Carbon Tetrachloride 2-Hexanone Bromoform 1,2-Dibromo-3-chloropropane	MWW206NP091002	Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

7	11/15 0824	Acetone 2-Butanone 2-Hexanone 1,2,4-Trichlorobenzene	MWM2-01-GW02 MWM2-02-GW02 MWM2-03-GW02 MWM2-04-GW02 MWM2-05-GW02 MWM2-07-GW02 MWM2-08-GW02 DUP200-GW	
UX9	5/5/03 1003	Dichlorodifluoromethane Acetone 2-Butanone 1,1,1-Trichloroethane Carbon Tetrachloride 1,2-Dichloroethane	MWM2-17-S(0-2') MWM2-17-S(8-10') MWM2-17-S(18-20')	
UX8	06/06/0 3 1046	1,2-Dibromo-3-chloropropane 1,2,4-Trichlorobenzene	MWM215S(0-2) MWM215S(8-10) MWM215S(15-16) MWM216S(0-2) MWM216S(15-16) MWM216DUP01	
UX8	06/07/0 3 1212	Bromomethane Chloroethane Acetone 1,2-Dibromo-3-chloropropane	MWM216S(8-10)	
HP9	06/05/0 3 0903	2,4-Dinitrophenol	MWM215S(0-2) MWM215S(8-10) MWM215S(15-16) MWM216S(0-2) MWM216S(8-10) MWM216DUP01	
UX7	7/1/03 1144	Trichlorofluoromethane Methyl Acetate	MWM204W (11-21) MWM215W (15-25) MWM216W (14-24) MWM218W (18-28)	
HP6	7/1/03 0916	Hexachlorocyclopentadiene 4-Nitrophenol	MWM201W (10-20) MWM202W (12-22) MWM203W (9-19) MWM205W (14-24) MWM207W (15-25) DUP064062303 MWM217W (18-28) MWM219W (15-25) MWM220W (19-29) MWM222W (15-25) MWM223W (15-25) MWM224W (20-30)	
HP9	7/28/03 1029	4-Nitrophenol	MWM216W (14-24) MWM218W (18-28)	
HP9	6/27/03 0916	4-Nitrophenol	MWM204W (11-21) MWM215W (15-25)	

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

For all AOI project samples the concentration of target analytes identified, in any blank sample, was greater than the calculated action level, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank	1,2-Dichloroethane	39 ug/kg	MWW206NP091002	195 ug/kg
Method Blank	Vanadium Cobalt Copper Zinc	0.71 ug/kg 0.8 ug/kg 1.9 ug/kg 16.3 ug/kg	MWM2-01-GW02 MWM2-02-GW02 MWM2-03-GW02 MWM2-04-GW02 MWM2-05-GW02 MWM2-07-GW02 MWM2-08-GW02 DUP200-GW	7.1 ug/kg 8.0 ug/kg 19 ug/kg 163 ug/kg
Method Blank	1,2-Dichlorobenzene 1,2,4-Trichlorobenzene	0.47 ug/kg 1.7 ug/kg	MWM2-17-S(0-2') MWM2-17-S(8-10') MWM2-17-S(18-20')	2.35 ug/kg 8.5 ug/kg
Method Blank	Barium Chromium Manganese Zinc	125 ug/kg 70.5 ug/kg 137 ug/kg 772 ug/kg	MWM2-17-S(0-2') MWM2-17-S(8-10') MWM2-17-S(18-20')	1250 ug/kg 705 ug/kg 1370 ug/kg 7720 ug/kg
Method Blank	Methylene chloride	4.1 ug/kg	MWM222S(15) MWM219S(0-2) MWM219S(8-10) MWM219S(16-17)	41 ug/kg
Method Blank	Barium	129 ug/kg	MWM222S(0-2) MWM222S(8-10) MWM222S(15) MWM219S(0-2) MWM219S(8-10) MWM219S(16-17)	1290 ug/kg

Method Blank	1,2,4-Trichlorobenzene	0.80 ug/kg	MWM215S(0-2) MWM215S(8-10) MWM215S(15-16) MWM216S(0-2) MWM216S(15-16) MWM216DUP01	4.0 ug/kg
Method Blank	1,2,4-Trichlorobenzene	0.66 ug/kg	MWM216S(8-10)	3.3 ug/kg
Method Blank	Barium Manganese Selenium	331 ug/kg 116 ug/kg 240 ug/kg	MWM215S(0-2) MWM215S(8-10) MWM215S(15-16) MWM216S(0-2) MWM216S(8-10) MWM216S(15-16) MWM216DUP01	3310 ug/kg 1160 ug/kg 2400 ug/kg
Method Blank	Acetone 1, 2, 4-Trichlorobenzene	1.7 ug/L 1.7 ug/L	MWM204W (11-21) MWM215W (15-25) MWM216W (14-24) MWM218W (18-28)	17 ug/L 8.5 ug/L
Method Blank	bis (2-Ethylhexyl) phthalate	1.8 ug/L	MWM201W (10-20) MWM202W (12-22) MWM203W (9-19) MWM205W (14-24) MWM207W (15-25) DUP064062303 MWM217W (18-28) MWM219W (15-25) MWM220W (19-29) MWM222W (15-25) MWM223W (15-25) MWM224W (20-30)	18 ug/L
Method Blank	Copper Manganese Zinc	3.1 ug/L 1.7 ug/L 21.5 ug/L	MWM201W (10-20) MWM202W (12-22) MWM203W (9-19) MWM205W (14-24) MWM207W (15-25) DUP064062303 MWM217W (18-28) MWM219W (15-25) MWM220W (19-29) MWM222W (15-25) MWM223W (15-25) MWM224W (20-30) MWM204W (11-21) MWM215W (15-25) MWM216W (14-24) MWM218W (18-28)	31 ug/L 17 ug/L 215 ug/L

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method

8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, therefore, no qualification of the data was required.

Sample ID	Surrogate	%R	Corrective Action
MWM219S(16-17)	Tetra-Chloro-m-xylene	140	Qualify Positive results for Aroclors 1016, 1221, and 1232 as "J", estimated and non-detects should not be qualified.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

For all AOI project samples compound recoveries in the LCS and MS samples met acceptance criteria, with the following exception(s):

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS	Styrene	80-114	119	MWW206NP091002
LCS	Ethylbenzene	86-132	85	MWM2-01-GW02 MWM2-02-GW02 MWM2-03-GW02 MWM2-04-GW02 MWM2-05-GW02 MWM2-07-GW02 MWM2-08-GW02 DUP200-GW
LCS	Pyridine	70-130	63	MWM2-17-S(0-2') MWM2-17-S(8-10') MWM2-17-S(18-20')
Matrix Spike	Antimony Zinc	75-125 75-125	29 202	MWM2-17-S(0-2') MWM2-17-S(8-10') MWM2-17-S(18-20')
Matrix Spike	Antimony Beryllium Chromium Thallium Zinc	75-125 75-125 75-125 75-125 75-125	48 74 175 73 61	MWM215S(0-2) MWM215S(8-10) MWM215S(15-16) MWM216S(0-2) MWM216S(8-10) MWM216S(15-16) MWM216DUP01
Matrix Spike	1, 1-Dichloroethane 1, 1, 2, 2-Tetrachloroethane	88-127 88-116	83 30	MWM204W (11-21) MWM215W (15-25) MWM216W (14-24) MWM218W (18-28)

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria, with the following exception(s):

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
MWM216S(15-16)	1,4-Dichlorobenzene	< -50%	1,2-Dibromo-3-chloropropane 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Isopropylbenzene 1,1,2,2-Tetrachloroethane 1,2,4-Trichlorobenzene
MWM216S(15-16)	Chrysene	> +100%	Benzo(a)anthracene Butylbenzylphthalate Chrysene 3,3'-Dichlorobenzidine bis(2-Ethylhexyl)phthalate Pyrene

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified "J", estimated and non-detects as "UJ", estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a "J" as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J" as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria, therefore, no qualification of the data was recommended.

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
3122120	Copper	26%	MWM2-17-S(0-2') MWM2-17-S(8-10') MWM2-17-S(18-20')	Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of "J" for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): M-04

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI M-04 obtained from the following Sample Delivery Group(s) (SDG): 2K15256, 3J01126 and 3J02139.

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**	**Holding Time Criteria**
Inductively Coupled Plasma Metals	SW846 6010B	6 month analysis
Volatile Organics by GC/MS	SW846 8260B	14 day analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All AOI project samples met preservation and holding time compliance, therefore no qualification of the data was recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

In all instances, the initial and continuing calibration procedures, for project samples analyzed for this AOI, fell within method specific criteria, with the following exception(s):

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
10	11/22 2037	1,2,4-Trichlorobenzene, 25 2-Hexanone, 38 Methyl cyclohexane, 25.1	MWM4-01-GW02 MWM4-02-GW02 MWM4-03-GW02 MWM4-04-GW02 MWM4-05-GW02	Qualify positive results as "J", estimated and non-detected compounds as "UJ", estimated reporting limit.

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

For all AOI project samples the concentration of target analytes identified, in any blank sample, was greater than the calculated action level, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank	2-Butanone	1 ug/L	MWM4-01-GW02 MWM4-02-GW02 MWM4-03-GW02 MWM4-04-GW02 MWM4-05-GW02	10 ug/L

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Method 8260B to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, therefore, no qualification of the data was required.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

For all AOI project samples compound recoveries in the LCS and MS samples met acceptance criteria, with the following exception(s):

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS	Methylene chloride	82-115	76	MWM4-01-GW02 MWM4-02-GW02 MWM4-03-GW02 MWM4-04-GW02 MWM4-05-GW02

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Method 8260B to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria.

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of

20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified “J”, estimated and non-detects as “UJ”, estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a “J” as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J” as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria.

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of “J” for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and

when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): M-05

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI M-05 obtained from the following Sample Delivery Group(s) (SDG): 3H12254.

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**	**Holding Time Criteria**
Inductively Coupled Plasma Metals	SW846 6010B	6 month analysis
Polychlorinated Biphenyls	SW846 8082	14 day ext./40 day post ext.

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

> All AOI project samples met preservation and holding time compliance, therefore no qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

> In all instances, the initial and continuing calibration procedures, for project samples analyzed for this AOI, fell within method specific criteria without exception. No qualification of the data was recommended.

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

> For all AOI project samples the concentration of target analytes identified, in any blank sample, was greater than the calculated action level, therefore, no qualification of the data was required.

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Method 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

> For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, therefore, no qualification of the data was required.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

> For all AOI project samples compound recoveries in the LCS and MS samples met acceptance criteria, therefore, no qualification of the data was required.

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified "J", estimated and non-detects as "UJ", estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a "J" as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J" as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria, therefore, no qualification of the data was recommended.

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of "J" for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): M-07

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI M-07 obtained from the following Sample Delivery Group(s) (SDG): 2F07137 and 3C29183.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Inductively Coupled Plasma Metals	SW846 6010B	6 month analysis
Mercury in Solid Waste	SW846 7471A	28 day analysis
Polychlorinated Biphenyls	SW846 8082	14 day ext./40 day post ext.
Semivolatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post ext.
Volatile Organics by GC/MS	SW846 8260B	14 day analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All AOI project samples met preservation and holding time compliance, therefore no qualification of the data was recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

In all instances, the initial and continuing calibration procedures, for project samples analyzed for this AOI, fell within method specific criteria, with the following exception(s):

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
8	6/10 1609	1,2-Dibromo-3-chloropropane , 43.8 Bromoform, 32.6 Carbon tetrachloride, 29.7	BM7-01-S(1-3)	Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory

sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

For all AOI project samples the concentration of target analytes identified, in any blank sample, was greater than the calculated action level, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank	Acetone Benzene	130 ug/kg 45 ug/kg	BM7-04-S(0-1')	1300 ug/kg 225 ug/kg
Method Blank	Barium Manganese	78.0 ug/kg 39.5 ug/kg	BM7-04-S(0-1')	780 ug/kg 395 ug/kg

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, therefore, no qualification of the data was required.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

For all AOI project samples compound recoveries in the LCS and MS samples met acceptance criteria, with the following exception(s):

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS Batch #: 3093495	1,1,2-Trichloroethane Styrene	82-116 80-114	80 68	BM7-04-S(0-1')
Matrix Spike Batch #: 3094131	Antimony Chromium	75-125 75-125	29 61	BM7-04-S(0-1')

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria, with the following exception(s):

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
BM7-01-S(1-3)	Acenaphthalene-d10 Phenanthrene-d10 Chrysene-d12 Perylene-d12	< -50% < -50% < -50% < -50%	Hexachlorocyclopentadiene Fluorene 4-Chlorophenol phenol ether Acenaphthene Acenaphthylene 2-Chloronaphthalene Dibenzofuran Diethyl phthalate Dimethyl phthalate 2,4-Dinitrophenol 2,4-Dinitrotoluene 2,6-Dinitrotoluene 2-Nitroaniline 3-Nitroaniline 4-Nitroaniline 4-Nitrophenol Anthracene 4-Bromophenol phenol ether Di-n-butyl phthalate 4,6-Dinitro-2-methylphenol Hexachlorobenzene N-Nitrosodiphenylamine Pentachlorophenol Benzo(a)anthracene Bis (2-ethylhexyl) phthalate Butyl benzyl phthalate Chrysene 3,3'-Dichlorobenzidine Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(g,h,i) perylene Benzo(a) pyrene Dibenz(a,h) anthracene DI-n-octyl phthalate Indeno (1,2,3-cd) pyrene

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified “J”, estimated and non-detects as “UJ”, estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a "J" as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J" as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria, with the following exception(s):

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
Batch #: 3094131	Chromium Cobalt Lead Manganese Nickel	10.6 10.6 10.5 10.2 12.9	BM7-04-S(0-1')	Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of "J" for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): M-09

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI M-09 obtained from the following Sample Delivery Group(s) (SDG): 2H20119 and 2K15256.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Inductively Coupled Plasma Metals	SW846 6010B	6 month analysis
ICP/MS	SW846 6020	6 month analysis
Mercury in Liquid Waste	SW846 7470A	28 day analysis
Mercury in Solid Waste	SW846 7471A	28 day analysis
Polychlorinated Biphenyls	SW846 8082	14 day ext./40 day post ext.
Semivolatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post ext.
Volatile Organics by GC/MS	SW846 8260B	14 day analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All AOI project samples met preservation and holding time compliance, therefore no qualification of the data was recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

In all instances, the initial and continuing calibration procedures, for project samples analyzed for this AOI, fell within method specific criteria, with the following exception(s):

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
10	7/18 1740	Acetone, 43.5	SM9-01-(0-2)	Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".
6	8/23 1152	4-Nitroaniline, 26.8	SM9-01-(0-2)	
10	11/22 2037	2-Hexanone, 30.4 Methyl cyclohexane, 25.0 1,2,4-Trichlorobenzene, 25.1	MWM9-02-GW	
8	11/26 1252	2,4-Dinitrophenol, 31.5	MWM9-02-GW	

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

For all AOI project samples the concentration of target analytes identified, in any blank sample, was greater than the calculated action level, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Trip Blank	Acetone 2-Butanone	2.6 ug/L 1.3 ug/L	MWM9-02-GW	26 ug/L 13 ug/L

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, therefore, no qualification of the data was required.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

For all AOI project samples compound recoveries in the LCS and MS samples met acceptance criteria, with the following exception(s):

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS	Methylene chloride	82-115	76	MWM9-02-GW
LCS	Hexachlorocyclopentadiene	65-113	6	MWM9-02-GW

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria, with the following exception(s):

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
SM9-01-(0-2)	Chlorobenzene 1,2-Dichlorobenzene-d4	< -50% < -50%	1,1,2,2-Tetrachloroethene 1,3-Dichlorobenxene 1,4-Dichlorobenzene 1,2-Dichlorobenzene trans-1,3-Dichloropropene 2-Hexanone Tetrachloroethene Dibromochloromethane Chlorobenzene Ethylbenzene Xylenes (Total) Toluene 1,1,2-Tetrachloroethane Styrene Bromoform 1,2-Dibromoethane

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified "J", estimated and non-detects as "UJ", estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a "J" as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte

exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J" as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria, therefore, no qualification of the data was recommended.

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of "J" for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): M-16

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI M-16 obtained from the following Sample Delivery Group(s) (SDG): 2K14196, 2G30257, 3H12254, and 3H19181.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Inorganics by Inductively Coupled Plasma	SW846 6010B	6 month analysis
(ICP)	SW846 7471A	28 day analysis
Total Mercury by Cold Vapor AA	SW846 8082	14 day ext./40 day post ext.
Polychlorinated Biphenyls by GC ECD	SW846 8270C	14 day ext./40 day post ext.
Semi-volatile Organic Compounds by GC/MS	SW846 8260B	14 day analysis
Volatile Organic Compounds by GC/MS		

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All AOI project samples met preservation and holding time compliance, therefore no qualification of the data was recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

Inst.	Date/ Time	Target Analyte, %D	Corrective Action
UX10	11/18/2002 11:12	2-Butanone, 33.8	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
		Bromomethane, 31.3	
		Acetone, 41.1	
		2-Hexanone, 34.8	
	11/19/2002 09:19	Bromomethane, 26.6	
		2-Hexanone, 26.6	

Inst.	Date/ Time	Target Analyte, %D	Corrective Action
HP8	11/19/2002 11:40	Pyrene, 32.7	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

Inst.	Date/Time	Target Analyte	%RSD	Associated Samples	Corrective Action
ux10	06/30/03 2137	Acetone	46	MWM902RB(23-25) TB073003	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

Inst.	Date/Time	Target Analyte	%D	Associated Samples	Corrective Action
ux8	08/05/03 0914	Trichlorofluoromethane 1,2-Dibromo-3-chloropropane	27 28	MWM406N	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
ux10	08/06/03 1646	2-Hexanone Acetone 2-Butanone 1,2,4-Trichlorobenzene	52 154 74 34	MWM902RB(23-25) TB073003	

Inst.	Date/Time	Target Analyte	%RSD	Associated Samples	Corrective Action
hp7	08/14/03 1338	2,4-Dinitrophenol	27	BW111S(6-8) BW912S(20-22)	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

Inst.	Date/Time	Target Analyte	%D	Associated Samples	Corrective Action
hp7	08/09/03 1103	4-Nitrophenol	47	BW111S(0-2) BW911S(0-2)	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

Inst.	Date/Time	Target Analyte	%D	Associated Samples	Corrective Action
P5	08/01/03 0942	Aroclor-1221	31	BW111S(0-2) BW111S(6-8) BW912S(0-2) BW912S(8-10) BW912S(20-22)	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Inst.	Date/Time	Target Analyte, %D	Associated Samples	Corrective Action
UX10	06/30/03 2137	Acetone, 46%	MWM2502GW(16-26) DUP072081103 TB081103	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

Inst.	Date/Time	Target Analyte, %D	Associated Samples	Corrective Action
UX10	08/15/03 1246	Bromomethane, 61% Acetone, 47% Methyl acetate, 27% Methylcyclohexane, 29%	MWM2502GW(16-26) DUP072081103 TB081103	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

Inst.	Date/Time	Target Analyte, %D	Associated Samples	Corrective Action
UX9	08/27/03 2102	Bromomethane, 30% Chloroethane, 25% Acetone, 26% 4-Methyl-2-pentanone, 30% Methyl-tert butyl ether, 26% Methyl acetate, 29%	MWM16-07-S(0-2)	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

Blank	Target Analyte	Concn. (ppb)	Associated Samples	Flag sample results with a "U" if £ to this value
FDD7F1AA	Bromomethane	0.31	MWD6-GW, MWF1-GW, MWF12-01-GW, MWF12-02-GW, DWD13-GW, MWM16-02-GW, DUP201-GW, MWP6-01-GW, MWP6-02-GW, MWP6-03-GW, MWP6-04-GW, DWD13-EB	1.55
	Methylene chloride	0.69		6.9
	1, 2, 4-Trichlorobenzene	0.85		4.25
FDEX91AA	Bromomethane	0.39	IWD7-GW, TB-111302	1.95
	1, 2, 4-Trichlorobenzene	0.86		4.3

TB-111302	2-Butanone Acetone	0.95 2.5	MWD6-GW, MWF1-GW, MWF12-01-GW, MWF12-02-GW, DWD13-GW, MWM16-02-GW, DUP201-GW, MWP6-01-GW, MWP6-02-GW, MWP6-03-GW, MWP6-04-GW, DWD13-EB	9.5 25

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
TB073003	Acetone 2-Butanone	1.4 1.7	BF1505S(0-2) BF1505S(10-12) BF1505S(12-13) BF1504S(26-28) BF1505S(30-32) BW912S(0-2) BW912S(8-10) BW912S(20-22) BW111S(0-2) BW111S(6-8) MWM406N	14 17
FVQMT1AA	Methyl acetate Methylene chloride Toluene 1,2,4-Trichlorobenzene	69 160 310 88	MWM406N	345 800 1550 440
FVLDH1AA	Acetone Toluene	240 49	BF1505S(0-2) BF1505S(10-12) BF1505S(12-13)	2400 490
FV17G1AA	Methylene chloride	3.0	BF1504S(26-28) BF1505S(30-32) BW912S(0-2) BW912S(8-10) BW912S(20-22)	30
FV3121AA	Acetone Methylene chloride Toluene	170 120 94	BW111S(0-2) BW111S(6-8)	1700 1200 470

Blank	Target Compound	Concn.	Associated Samples	Flag sample results "U" if £ to this value
FVFRK1AA	bis (2-Ethylhexyl)phthalate	0.47	MWM902RB(23-25)	2.35

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
MB Batch: 3218113	Zinc	15.0	MWM902RB(23-25)	150
MB Batch: 3219127	Barium Copper	0.39 0.40	MWM406N	3.9 4.0

	Manganese	0.99		9.9
MB Batch: 3219129	Barium Copper Manganese	249 101 61.3	BW111S(0-2) BW111S(6-8) BW912S(0-2) BW912S(8-10) BW912S(20-22) BW911S(0-2) BW911S(5-7) BW911S(7-9)	2490 1010 613

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
TB081103	2-Butanone	1.4	MWM2502GW(16-26) DUP072081103 TB081103	14
FWHCV1AA	Methylene chloride	0.79	MWM2502GW(16-26) DUP072081103 TB081103	7.9

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
FV5QT1AA	bis(2-Ethylhexyl)phthalate	0.64	MWM2502GW(16-26) DUP072081103	3.2

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
MB Batch:3226117	Mercury	0.20	MWM2502GW(16-26) DUP072081103	2.0

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
FW9CG1AA	1,4-Dichlorobenzene 2-Hexanone	0.40 1.0	MWM16-07-S(0-2)	2.0 5.0

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank	Barium	167	MWM16-07-S(0-2)	1670

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the

laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, therefore, no qualification of the data was required.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
MS/MSD	Bromomethane	55-145	51	MWD6-GW
MS/MSD	2-Butanone	71-132	63	
MS/MSD	2-Hexanone	81-128	71	

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
MS/MSD	3, 3'-Dichlorobenzidine	10-110	0	MWD6-GW
Check sample	Hexachlorocyclopentadiene		9	Batch # 2322214

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Batch: 3216413	4-Methyl-2-pentanone	68-142	67	BF1505S(0-2) BF1505S(10-12) BF1505S(12-13)
Batch: 3221225	Styrene 1,2-Dichloroethane 1,1,2-Trichloroethane	80-114 78-121 82-116	78 75 80	BF1504S(26-28) BF1505S(30-32) BW912S(0-2) BW912S(8-10) BW912S(20-22)
Batch: 3219502	1,1,2,2-Tetrachloroethane	85-118	120	MWM902RB(23-25) TB073003
BW911S(5-7)	Trichloroethene Benzene Toluene Chlorobenzene	46-143 55-138 46-147 49-139	26 25 37 39	BW911S(0-2) BW911S(5-7)

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Batch: 3212529	bis(2-Chloroethoxy)methane bis(2-Chloroethyl)ether bis(2-Ethylhexyl) phthalate Naphthalene N-Nitrosodiphenylamine Isophorone Nitrobenzene	54-112 59-114 53-118 49-112 56-119 54-111 56-119	46 44 33 43 46 52 49	MWM902RB(23-25)
BW911S(5-7)	4-Nitrophenol 2-Chloronaphthalene 3,3'-Dichlorobenzidine 4,6-Dinitro-2-methylphenol 2,4-Dinitrophenol Hexachlorocyclopentadiene 2-Nitroaniline 3-Nitroaniline 4-Nitroaniline N-Nitrosodiphenylamine Pentachlorophenol bis(2-Ethylhexyl) phthalate	10-148 43-125 10-110 10-142 10-149 10-110 42-126 17-113 14-125 37-135 10-144 36-131	0 145 235 0 0 0 140 0 0 205 0 149	BW911S(0-2) BW911S(5-7 BW911S(7-9)

Project Batch ID	Target Analyte	%R Criteria	%R	Affected Samples
BW911S (5-7)	Aroclor 1016 Aroclor 1260	26-144 37-138	452 151	BW911S(0-2) BW911S(5-7) BW911S(7-9)

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Batch: 3219129	Antimony	75-125	35	BW111S(0-2)
	Cadmium	75-125	71	BW111S(6-8)
	Lead	75-125	22300	BW912S(0-2)
	Vanadium	75-125	46	BW912S(8-10)
				BW912S(20-22)
				BW911S(0-2)
				BW911S(5-7)
				BW911S(7-9)

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS Batch: 3230618	4-Methyl-2-pentanone	78-141	68	MWM2502GW(16-26) DUP072081103 TB081103
MWM2502GW(16-26)	Vinyl chloride 4-Methyl-2-pentanone 2-Hexanone Ethylbenzene Styrene Xylenes (total)	88-126 82-135 81-128 86-132 83-120 89-121	82 64 61 82 76 85	MWM2502GW(16-26) MWM1601GW(22-32) MWM1602GW(19-29) MWM1604GW(17-27) DUP072081103 TB081103 MWF701GW(20-30) MWF702GW(18-28) MWF703GW(22-32)

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
MWM2502GW(16-26)	3,3'-Dichlorobenzidine	10-110	5	MWM2502GW(16-26) DUP072081103

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Batch: 3238126	Antimony Beryllium Chromium Copper	75-125 75-125 75-125 75-125	39 65 218 525	MWM16-07-S(0-2)

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
BW911S(7-9)	1,4-Dichlorobenzene-d4	Low	1,2-Dibromo-3-chloropropane 1,2-Dichlorobenzene 1,3- Dichlorobenzene 1,4- Dichlorobenzene 1,1,2,2-Tetrachloroethane 1,2,4-Trichlorobenzene
BW912S(8-10) BW912S(20-22)	1,4-Dichlorobenzene-d4	Low	

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified "J", estimated and non-detects as "UJ", estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a "J" as estimated.

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
Batch: 3219127	Vanadium	11.9	MWM406N	Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J" as estimated.

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
MWM16-07-S(0-2)	Manganese	11.8	MWM16-07-S(0-2)	Qualify results greater than the MDL as estimated "J" and non-detects as estimated "UJ".

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of "J" for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): M-25

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI M-25 obtained from the following Sample Delivery Group(s) (SDG): 3H12254.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Inductively Coupled Plasma Metals	SW846 6010B	6 month analysis
ICP/MS	SW846 6020	6 month analysis
Mercury in Liquid Waste	SW846 7470A	28 day analysis
Polychlorinated Biphenyls	SW846 8082	14 day ext./40 day post ext.
Semivolatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post ext.
Volatile Organics by GC/MS	SW846 8260B	14 day analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All AOI project samples met preservation and holding time compliance, therefore no qualification of the data was recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

Table 1 summarizes continuing calibration non-compliance for AOI project samples.

Table1. Continuing Calibration Non-Compliance.

Inst.	Date Time	Target Analyte, %D	Associated Samples	Corrective Action
UX10	08/15/03 1246	Bromomethane, 61% Acetone, 47% Methyl acetate, 27% Methylcyclohexane, 29%	MWM2502GW(16-26) DUP072081103	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated reporting limit.

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

Table 2 summarizes AOI project samples affected by target analytes identified in field/method/trip blank samples.

Table 2. Method Blank Contamination.

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
TB081103 (Trip Blank)	2-Butanone	1.4 ug/L	MWM2502GW(16-26) DUP072081103 TB081103	14 ug/L
FWHCV1AA (Method Blank)	Methylene chloride	0.79 ug/L	MWM2502GW(16-26) DUP072081103 TB081103	7.9 ug/L
FV5QT1AA (Method Blank)	bis(2-Ethylhexyl)phthalate	0.64 ug/L	MWM2502GW(16-26) DUP072081103	6.4 ug/L
Method Blank Batch:3226117	Mercury	0.20 ug/L	MWM2502GW(16-26) DUP072081103	2.0 ug/L

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the

laboratory qualified the reported results of the surrogate compounds with “DIL” indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified “J”, as estimated and non-detected values were flagged ”R”, as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, therefore, no qualification of the data was required.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a “J” as estimated or “UJ” if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a “J” as estimated or “R” if reported as non-detect.

Table 3 summarizes AOI project samples affected by poor analyte recovery in the matrix spike sample.

Table 3. MS Non-Compliance.

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
MWM2502GW(16-26) (Matrix Spike)	Vinyl chloride	88-126	82	MWM2502GW(16-26) DUP072081103
	4-Methyl-2-pentanone	82-135	64	
	2-Hexanone	81-128	61	
	Ethylbenzene	86-132	82	
	Styrene	83-120	76	
	Xylenes (total)	89-121	85	
MWM2502GW(16-26) (Matrix Spike)	3,3’-Dichlorobenzidine	10-110	5	MWM2502GW(16-26) DUP072081103

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria without exception. No qualification of the data was recommended.

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified "J", estimated and non-detects as "UJ", estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a "J" as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J" as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria, therefore, no qualification of the data was recommended.

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of "J" for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

POWERTRAIN

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): P-06

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI P-06 obtained from the following Sample Delivery Group(s) (SDG): 2K14196, 2K15256, 3E20236, and 3E28272.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Inductively Coupled Plasma Metals	SW846 6010B	6 month analysis
Mercury in Solid Waste	SW846 7471A	28 day analysis
Polychlorinated Biphenyls	SW846 8082	14 day ext./40 day post extraction
Semi-volatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post extraction
Volatile Organic Compounds by GC/MS	SW846 8260B	14 day analysis
Total Dioxins and Furans	SW846 8290	14 days extract, 180 days analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All samples analyzed within this AOI met the preservation and holding time criteria with the following exceptions:

Sample ID.	Comments	Corrective Action
MWF1201W (15-25)	Insufficient ice to keep cooler within appropriate temperature range	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated reporting limit.
MWF1202W (15-25)		
MWW102W (1-11)		
MWW103W (1-11)		
MW4099W (11-16)		
DUP061W (0-0)		
DWD10W (141-151)		
MWF1W (24-34)		
DWD10EB (141-151)		
DWD10TB (141-151)		
MWW1003W (6-16)		
GWD9W (72-82)		

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

The initial and continuing calibration procedures for project samples analyzed for this AOI fell within method specific criteria with the following exceptions:

VOCs by EPA 8260B

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
UX10	5/28/03 2154	Bromomethane, 32.1	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16)	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
UX10	5/29/03 1004	Bromomethane, 56.8	GWD9W (72-82)	
UX10	5/30/03 2256	1,2,4 – Trichlorobenzene, 33.3	MWP601W (10-20) MWP602W (10-20) MWP604W (18-28) MWP607W (20-30) GWD11W (86-96) DWD12W (115-125) IWP5EB (52-62) IWP5W (52-62) GWP3W (97-107) GWP6W (82-92) GWP6TB (82-92)	

SVOCs by EPA 8270C

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
A4HP 9	5/26/03 1030	Hexachlorocyclopentadiene, 27.3	DWD10W (141-151) MWF1W (24-34) MWW1003W (6-16) GWD9W (72-82) DWD10EB (141-151)	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
A4HP 9	5/26/03 1030	4,6-Dinitro-2-methylphenol, 35.3	DWD10W (141-151) MWF1W (24-34) MWW1003W (6-16) GWD9W (72-82) DWD10EB (141-151)	
A2HP 2	5/23/03 2313	Aroclor-1260 (4), 36.9	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16) GWD11W (86-96)	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
A2HP 2	5/23/03 2313	Aroclor-1260 (5), 45.5		

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

VOCs by EPA Method 8260B

Blank	Target Analyte	Concn. (ppb)	Associated Samples	Flag sample results with a "U" if £ to this value
Method FPK521AA	Acetone	1.4	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16)	14
Method FPQ161AA	Bromomethane	0.45	MWP601W (10-20) MWP602W (10-20) MWP604W (18-28) MWP607W (20-30) GWD11W (86-96) DWD12W (115-125) IWP5EB (52-62) IWP5W (52-62) GWP3W (97-107) GWP6W (82-92) GWP6TB (82-92)	2.25
	Methylene chloride	0.30		3.0

SVOCs by EPA Method 8270C

Blank Sample Identification	Target Compound	Concentration (ug/L)	Associated Samples	Flag sample results with a "U" if £ to this value
Method FN3WM1AA	Bis (2-Ethylhexyl) phthalate	2.8	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16)	28

Metals by EPA 6010B

Blank ID	Date / Time	Target Analyte	Concn. (ppb)	Associated Samples	Flag sample results with a "U" if £ to this value
Method 31410 98	5/22/03 1336	Barium	1.0	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) GWD9W (72-82) MWF1W (24-34) MWW1003W (6-16) GWD11W (86-96)	10
Method 3142105	5/23/03 1339	Antimony	8.4	GWD11W (86-96)	84

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, therefore, no qualification of the data was required.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

For all AOI project samples compound recoveries in the LCS and MS samples met acceptance criteria with the following exceptions:

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS FN6LW1AC	Hexachlorocyclopentadiene	10-114	9	GWD11W (86-96) DWD12W (115-125) IWP5EB (52-62) IWP5W (52-62) GWP3W (97-107) GWP6W (82-92)
LCS FN6LW1AD				

MS/MSD FN3KX1AN	Chloroaniline	10-110	8	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16)

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria without exception. No qualification of the data was recommended.

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified "J", estimated and non-detects as "UJ", estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a "J" as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J" as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria, therefore, no qualification of the data was recommended.

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of “J” for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): P-9

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI P-9 obtained from the following Sample Delivery Group(s) (SDG): 3D30224, 3D30224, 3E01197, 3E07237, 3F17207, 3H05130, 3H05141, 3H06122, 3H26156, 3I10273, AND 3I11155.

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**	**Holding Time Criteria**
Metals by Inductively Coupled Plasma (ICP)	SW846 6010B	6 month analysis
Total Mercury by CVAA	SW846 7471A	28 day analysis
Polychlorinated Biphenyls by GC-ECD	SW846 8082	14 day ext./40 day post extraction
Semi-volatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post extraction
Volatile Organics by GC/MS	SW846 8260B	14 day analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All AOI project samples met preservation and holding time compliance, no qualification of the data was recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

The initial and continuing calibration procedures, for project samples analyzed for this AOI, fell within method specific criteria with the following exceptions:

Inst.	Date/Time	Target Analyte, %RSD	Associated Samples	Corrective Action
UX8	4/28/03 0801	Acetone, 43% Methylene chloride, 81%	BP1105S(12.8-14)	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
UX10	4/29/03 1503	Acetone, 31%	MWP1104EB(15-17) TB-043003	

Inst.	Date/Time	Target Analyte, %D	Associated Samples	Corrective Action
UX9	5/5/03 1003	Dichlorodifluoromethane, 36% Acetone, 36% 2-Butanone, 29% 1,1,1-Trichloroethane, 31% Carbon Tetrachloride, 42% 1,2-Dichloroethane, 26%	MWM2-17-S(0-2') MWM2-17-S(8-10') MWM2-17-S(18-20')	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
UX9	5/5/03 2152	Acetone, 40% 2-Butanone, 44% 4-Methyl-2-pentanone, 25% 2-Hexanone, 48% Dichlorodifluoromethane, 35%	BP9-07-S(0-2) BP9-07-S(8-10) BP9-01-S(0-2) BP9-01-S(7-9) BP9-06-S(0-2) BP9-06-S(8-10) BP9-02-S(0-2) MWP9-01-S(0-2) MWP9-01-S(8-10)	
UX9	5/6/03 908	Chloromethane, 26% Dichlorodifluoromethane, 38%	BP9-08-S(0-2)	

Inst.	Date/Time	Target Analyte, %D	Associated Samples	Corrective Action
UX9	5/6/03 21:25	Acetone, 36% 2-Butanone, 38% 2-Hexanone, 38% Dichlorodifluoromethane, 34%	MWP9-03-S(0-2')	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
UX9	5/7/03 11:09	Bromomethane, 35% Acetone, 30% 2-Butanone, 27% Dichlorodifluoromethane, 32%	MWP9-03-S(8-10') MWP9-03-S(15-17') MWP9-02-S(8-10') DUP-085-042903 MWP11-04-S(0-2') MWP11-04-S(8-10') MWP11-04-S(15-17') BP9-05-S(0-2) BP9-05-S(8-10) BP9-03-S(0-2) BP9-03-S(8-10) BP9-03-MS(8-10)	
UX9	5/7/03 21:49	Dichlorofluoromethane, 41% Bromomethane, 39% Trichlorofluoromethane, 46% Acetone, 44% 2-Butanone, 41% 1,1,1-Trichloroethane, 27% Carbon Tetrachloride, 32% 4-Methyl-2-pentanone, 25% 2-Hexanone, 32%	MWP9-02-S(0-2') BP9-09-S(0-2') BP9-09-S(2-4')	

Inst.	Date/Time	Target Analyte, %RSD	Associated Samples	Corrective Action
UX8	4/28/03 0801	Acetone, 43% Methylene chloride, 81% 1,2-Dibromo-3-chloropropane, 27%	MWP1102S(8-10) MWP1102S(0-2) MWP1101S(0-2) MWP1101S(14-16) MWP1101S(8-10)	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

Inst.	Date/Time	Target Analyte, %D	Associated Samples	Corrective Action
HP2	5/8/03 1438	AROCLOR-1260, 24%	MWP9-03-S(0-2') BP9-09-S(0-2') BP9-09-S(2-4')	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Inst.	Date/Time	Target Analyte, %D	Associated Samples	Corrective Action
UX8	5/12/03 1158	2-Hexanone, 33% Acetone, 32% Methylene chloride, 32% 2-Butanone, 27% 4-Methyl-2-pentanone, 32% 1,2-Dibromo-3-chloropropane, 36% 1,2,4-Trichlorobenzene, 37%	MWP1102S(8-10) MWP1102S(0-2) MWP1101S(14-16) MWP1101S(8-10)	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
UX9	5/15/03 0904	Bromomethane, 29% Acetone, 41% 2-Butanone, 26%	MWP9-04-S(8-10) MWP9-04-S(14-16) BP9-10-S(0-2) BP9-10-S(8-10) BP9-10-S(13-15)	

Inst.	Date/Time	Target Analyte, %D	Associated Samples	Corrective Action
UX8	5/11/03 1342	1,2-Dibromo-3-chloropropane, 38% 1,2,4-Trichlorobenzene, 35%	BP1105S(12.8-14) BP1106S(8-10) BP1104S(8-10)	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
UX9	5/07/03 2149	Dichlorodifluoromethane, 44% Chloromethane, 28% Bromomethane, 39% Trichlorofluoromethane, 46% Acetone, 44% 2-Butanone, 41% 1,1,1-Trichloroethane, 27% Carbon Tetrachloride, 32% 4-Methyl-2-pentanone, 25% 2-Hexanone, 32%	MWP1103S(0-2) BP904S(0-2) BP904S(8-10)	

UX9	5/09/03 1344	Acetone, 37% 1,1,1-Trichloroethane, 27% Carbon Tetrachloride, 33% Trichlorofluoromethane, 42%	MWP1103S(8-10) BP1104S(0-2) BP1105S(0-2) BP1105S(8-10)	
UX9	5/12/03 1138	Acetone, 55% 2-Butanone, 45% Carbon Tetrachloride, 26% 4-Methyl-2-pentanone, 27% 2-Hexanone, 39% Dichlorodifluoromethane, 26% Trichlorofluoromethane, 29%	BP1106S(0-2)	
UX10	5/07/03 0843	Bromomethane, 28% Acetone, 74% 2-Butanone, 60% Dichlorodifluoromethane, 39% 1,2-Dibromo-3-chloropropane, 26%	MWP1104EB(15-17) TB-043003	

Inst.	Date/Time	Target Analyte, %D	Associated Samples	Corrective Action
HP2	5/08/03 1438	Aroclor-1260, 24%	MWP1104EB(15-17)	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
HP2	5/09/03 2057	Aroclor-1016, 38%	MWP1104EB(15-17)	

Inst.	Date/Time	Target Analyte	%RSD	Associated Samples	Corrective Action
UX10	06/13/03 1136	Acetone	37%	MWP901W(3-8) MWP903W(15-25) MWP904W(13-23) MWP1101W(9-19) DUP063061503	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

Inst.	Date/Time	Target Analyte	%D	Associated Samples	Corrective Action
UX7	06/24/03 2039	2-Hexanone Acetone	26% 34%	MWP1104W(10-20) TB061503	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
UX10	06/23/03 1503	Acetone 2-Butanone	108% 57%	MWP901W(3-8) MWP904W(13-23) MWP1101W(9-19) DUP063061503	
UX10	06/24/03 1635	Acetone 2-Butanone	86% 46%	MWP903W(15-25)	

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
a3ux 8a.i	6-20-03/ 13:59	Acetone, -54.7% 2-Hexanone, 26.7%	P18-02-S (0-2'), P18-02-S (6-8'), P18-02-S (8-10'), P18-03-S (0-2'), P18-03-S (6-8'), P18-03-S (8-10'), P18-06-S (0-2'), P18-06-S (6-8'), P18-07-S (0-2'), P18-07-S (6-8'), P18-07-S (8-10'), P18-10-S (0-2'), P18-10-S (6-8'), P18-10-S (8-10')	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
a3ux8a .i	8-5-03/ 20:59	Acetone, 54.7% 2-Hexanone, 26.7%	P18-02-S (0-2'), P18-02-S (6-8'), P18-02-S (8-10'), P18-03-S (0-2'), P18-03-S (6-8'), P18-03-S (8-10'), P18-06-S (0-2'), P18-06-S (6-8'), P18-07-S (0-2'), P18-07-S (6-8'), P18-07-S (8-10'), P18-10-S (0-2'), P18-10-S (6-8'),. P18-10-S (8-10')	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

Inst.	Date/Time	Target Analyte, %D	Associated Samples	Corrective Action
UX8	08/05/03 2059	2-Hexanone, 27% Acetone, 55%	P1801S(0-2') P1801S(6-8') P1804S(0-2') P1804S(6-8') P1805S(0-2') P1805S(8-10') P1808S(0-2')	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
UX9	08/06/03 0807	Methyl tert butyl ether, 26%	P1808S(6-8') P1809S(0-2') P1809S(6-8')	

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
10	8/20 17:04	Methylene chloride, 31.445	MWW901GW(22-32) MWW813GW(19-29) MWW901EB(22-32) TB-082503 MWP901GW(3-8) MWP904GW(13-23) MWP903GW(15-25) DUP075090803 TRIP BLANK	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
10	9/2 10:08	Dichlorodifluoromethane, 28.7	MWW901GW(22-32) MWW813GW(19-29) MWW901EB(22-32) TB-082503	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
6	9/5 07:38	2,4-Dinitrophenol, 37.93980 Indeno(1,2,3 cd)pyrene, -25.45690 Dibenze(a,h)anthracene, -32.81330 Benzo(g,h,i)perylene, -29.32868	**MWW813GW(19-29)**	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
4	8/29 10:53	Aroclor-1221(1), 20.649 Aroclor-1221(2), 21.396 Aroclor-1248(1), 21.430 Aroclor-1254(1), 21.110	**MWP904S(0-2)**	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
4	8/29 10:53	Aroclor-1221(1), 20.649 Aroclor-1221(2), 21.396 Aroclor-1248(1), 21.430 Aroclor-1254(1), 21.110	**MWP904S(0-2)**	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
10	9/12/03 10:57	Acetone, 80.4 2-Butanone, 32.8 Dichlorodifluromethane, 26.2 Trichlorofluoromethane, 33.0	MWP901GW(3-8) MWP904GW(13-23) MWP903GW(15-25) DUP075090803 TRIP BLANK	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.

Inst.	Date/ Time	Target Analyte, %RSD	Associated Samples	Corrective Action
7	9/12/03 13:06	None		Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
9	9/9/03 10:24	Hexachlorocyclopentadiene, 35.967 4,6-Dinitro-2-methylphenol, 36.326	DUP075090803	

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated.

In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
FM8DP1AA	1,2-Dichlorobenzene 1,2,4-Trichlorobenzene	0.47 1.7	MWM2-17-S(0-2') MWM2-17-S(8-10') MWM2-17-S(18-20')	2.35 8.5
FM8CC1AA	1,2-Dichlorobezene 1,4-Dichlorobenzene 1,2,4-Trichlorobenzene	0.51 0.56 1.6	BP9-07-S(0-2) BP9-07-S(8-10) BP9-01-S(0-2) BP9-01-S(7-9) BP9-06-S(0-2) BP9-06-S(8-10) BP9-02-S(0-2) MWP9-01-S(0-2) MWP9-01-S(8-10)	2.55 2.80 8.0
FM80R1AA	1,2,4-Trichlorobenzene	1.1	BP9-08-S(0-2)	5.5
FNAT91AA	1,2-Dibromo-3-chloropropane 1,4-Dichlorobenzene 1,2,4-Trichlorobenzene	1.4 0.57 1.6	MWP9-03-S(0-2')	7.0 2.85 8.0
FNA8F1AA	1,2-Dichlorobenzene 1,4-Dichlorobenzene	0.43 0.51	MWP9-03-S(8-10') MWP9-03-S(15-17') MWP9-02-S(8-10') DUP-085-042903 MWP11-04-S(0-2') MWP11-04-S(8-10') MWP11-04-S(15-17') BP9-05-S(0-2) BP9-05-S(8-10) BP9-02-MS(8-10)	2.15 2.55

FND3P1AA	1,4-Dichlorobenzene 1,2,4-Trichlorobenzene	0.56 1.3	MWP9-02-S(0-2') BP9-03-S(0-2) BP9-03-S(8-10) BP9-09-S(0-2') BP9-09-S(2-4')	2.8 6.5
Method Blank	Barium Chromium Manganese Zinc	125 70.5 137 772	MWM2-17-S(0-2') MWM2-17-S(8-10') MWM2-17-S(18-20') BP9-07-S(0-2) BP9-07-S(8-10) BP9-01-S(0-2) BP9-01-S(7-9) BP9-06-S(0-2) BP9-06-S(8-10) BP9-08-S(0-2) BP9-02-S(0-2) MWP9-01-S(0-2) MWP9-01-S(8-10)	1250 705 1370 7720
FM1NW1AA	Bis (2-Ethylhexyl)phthalate	54	DUP-085-042903	270

Metals by ICP (SDG #3D30224)

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Prep Blank: 3121106 batch	Barium	1,000	All samples	10,000

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
FND3P1AA	1,4-Dichlorobenzene 1,2,4-Trichlorobenzene	0.56 0.13	MWP1103S(0-2) BP904S(0-2) BP904S(8-10)	2.8 6.5
FNKWN1AA	1,4-Dichlorobenzene 1,2,4-Trichlorobenzene	0.49 1.6	MWP1103S(8-10) BP1104S(0-2) BP1105S(0-2) BP1105S(8-10)	2.45 8.0
FNCPM1AA	Bromomethane	0.32	MWP1104EB(15-17) TB-043003	1.6
TB-043003	Acetone 2-Butanone	3.0 2.5	All samples in group	15 12.5

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
FVWKN1AA	Acetone	280	P1811S(6-8') P1814SD	2800

FVWHV1AA	Methylene chloride	2.6	P1811S(0-2') P1812S(0-2') P1812S(6-8') P1813S(0-2') P1813S(6-8') DUP1 P1817S(4-5')	26

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
FM1NX1AA	Bis(2-Ethylhexyl)phthalate	21	MWP1103S(8-10) MWP1103S(0-2) MWP1006S(0-2) MWP1006S(8-10) MWP1004S(0-2) MWP1004S(8-10) BP904S(0-2) BP904S(8-10) BP1106S(0-2) BP1106S(8-10) BP1104S(0-2) BP1104S(8-10) BP1105S(0-2) BP1105S(8-10) BP1105S(12.8-14)	105
MWP1104EB(15-17)	Bis(2-Ethylhexyl)phthalate	4.1	All samples in group	20.5

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank	Manganese	1.2	MWP1104EB(15-17)	12
Method Blank	Manganese Barium	94 256	MWP1103S(8-10) MWP1103S(0-2) BP904S(0-2) BP904S(8-10) BP1106S(0-2) BP1106S(8-10) BP1104S(0-2) BP1104S(8-10) BP1105S(0-2) BP1105S(8-10) BP1105S(12.8-14)	940 2560

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
FNV3D1AA	1,2-Dichlorobenzene 1,4-Dichlorobenzene	0.44 0.47	MWP-04-S(8-10) MWP9-04-S(14-16) BP9-10-S(0-2) BP9-10-S(8-10) BP9-10-S(13-15)	2.2 2.35

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
TB061503	2-Butanone	1.1	MWP901W(3-8) MWP903W(15-25) MWP904W(13-23) MWP1101W(9-19) DUP063061503 MWP1104W(10-20)	22 11
FQ5W51AA	Acetone	1.8	MWP1104W(10-20) TB061503	18

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
FQNKX1AA	bis(2-Ethylhexyl)phthalate	1.2	All samples	6.0

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Blank Batch:3175101	Thallium	0.037	MWP901W(3-8) MWP903W(15-25) MWP904W(13-23) MWP1101W(9-19) DUP063061503 MWP1104W(10-20)	0.37

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank	Methylene chloride 1,2,4-Trichlorobenzene	0.37 J ug/L 0.28 J ug/L	TB-080403	3.7 1.4

Method Blank	1,2,4- Trichlorobenzene	0.73 J ug/Kg	P18-02-S (0-2'), P18-02-S (6-8'), P18-02-S (8-10'), P18-03-S (0-2'), P18-03-S (6-8'), P18-03-S (8-10'), P18-06-S (0-2'), P18-06-S (6-8'), P18-07-S (0-2'), P18-07-S (6-8'), P18-07-S (8-10'), P18-10-S (0-2'), P18-10-S (6-8'),.	7.3
TB080403	Acetone 2-Butanone	3.2 J ug/L 1.1 J ug/L	P18-01-S (0-2'), P18-01-S (6-8'), P1802S (0-2'), P1802S (6-8'), P1802S (8-10'), P1803S (0-2'), P1803S (6-8'), P1803S (8-10'), P18-04-S (0-2'), P18-04-S (6-8'), P18-05-S (0-2') P18-05-S (8-10') P18-06-S (0-2'), P18-06-S (6-8'), P18-07-S (0-2'), P18-07-S (6-8'), P18-07-S (8-10'), P18-O8-S (0-2') P18-08-S (6-8') P18-09-S (0-2') P18-09-S (6-8') P18-10-S (0-2'), P18-10-S (6-8'), P18-10-S (8-10')	32 11

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank	Barium Copper Manganese Nickel	260 ug/kg 248 38.7 79.4	P18-02-S (0-2'), P18-02-S (6-8'), P18-02-S (8-10'), P18-03-S (0-2'), P18-03-S (6-8'), P18-03-S (8-10'), P18-06-S (0-2'), P18-06-S (6-8'), P18-07-S (0-2'), P18-07-S (6-8'), P18-07-S (8-10'), P18-10-S (0-2'), P18-10-S (6-8'),. P18-10-S (8-10')	2,600 2,480 387 794

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
FVPDR1AA	1,2,4-Trichlorobenzene	0.73	P1801S(0-2') P1801S(6-8') P1804S(0-2') P1804S(6-8') P1805S(0-2') P1805S(8-10') P1808S(0-2')	3.65

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
MB Batch: 3217273	Barium Copper Manganese Nickel	77.7 257 56.9 90.2	P1801S(0-2') P1801S(6-8') P1804S(0-2') P1804S(6-8') P1805S(0-2') P1805S(8-10') P1808S(0-2') P1808S(6-8') P1809S(0-2') P1809S(6-8')	777 2570 569 902

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
FVWKN1AA	Acetone	280	P1811S(6-8') P1814SD	2800
FVWHV1AA	Methylene chloride	2.6	P1811S(0-2') P1812S(0-2') P1812S(6-8') P1813S(0-2') P1813S(6-8') DUP1 P1817S(4-5')	26

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Equipment blank MWW901EB(22-32)	Acetone	3.4 µg/L	**MWW901GW(22-32) MWW813GW(19-29)**	34 µg/L
Trip blank TB-082503	Acetone 2-Butanone	4.5 µg/L 1.6 µg/L	**MWW901GW(22-32) MWW813GW(19-29) MWW901EB(22-32)**	45 µg/L 16 µg/L

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Equipment blank MWW901EB(22-32)	Benzaldehyde Diethyl phthalate	0.68 µg/L 0.74 µg/L	**MWW901GW(22-32) MWW813GW(19-29)**	3.4 µg/L 7.4 µg/L

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Equipment blank MWW901EB(22-32)	Barium Copper Manganese	1.4 µg/L 6.6 µg/L 1.5 µg/L	**MWW901GW(22-32) MWW813GW(19-29)**	14 µg/L 66 µg/L 15 µg/L
Method blank Prep batch 3247123	Copper Manganese	2.6 µg/L 0.81 µg/L	**MWW901GW(22-32) MWW813GW(19-29) MWW901EB(22-32)**	26 µg/L 8.1 µg/L

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method blank, I6 9/12, 08:01	Bis(2-Ethylhexyl) phthalate	100 µg/kg	**TPP9-01-091003**	1000 µg/kg

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method blank Prep batch 3254291	Barium	88.9 µg/kg	**TPP9-01-091003**	889 µg/kg

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I-10 9/12/03, 12:28 Prep Batch 3258449	None		MWP901GW(3-8) MWP904GW(13-23)	
Method Blank, I-10 9/15/03, 11:29 Prep Batch 3259320	1,2-4-Trichlorobenzene	.42 µg/L	MWP903GW(15-25) DUP075090803 TRIP BLANK	2.10 µg/L
TRIP BLANK	Acetone	4.1 µg/L	MWP901GW(3-8) MWP904GW(13-23) MWP903GW(15-25) DUP075090803	41 µg/L

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank, I-9 9/12/03, 09:38 Prep Batch 3253515	Benzo(a) anthracene Bis (2-Ethylhexyl) phthalate	0.75 µg/L 0.90 µg/L	DUP075090803	3.75 µg/L 4.50 µg/L
Method Blank, I-7 9/15/03, 10:54 Prep Batch 3254153	Bis (2-Ethylhexyl) phthalate	0.59 µg/L	MWP901GW(3-8) MWP903GW(15-25) MWP904GW(13-23)	2.95 µg/L

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank Prep Batch 3255118	Manganese Zinc	2.9 µg/L 17.9 µg/L	MWP901GW(3-8) MWP903GW(15-25) MWP904GW(13-23) DUP075090803	29 µg/L 179 µg/L

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the

detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

Project Sample ID	SRG01 %R	SRG02 %R	Corrective Action
MWW901GW(22-32)	50	**11**	Qualify positive results as "J" and non-detects as "UJ" for Aroclors 1242, 1248, 1254, and 1260 for project samples.
MWW901EB(22-32)	67	**10**	
MWW813GW(19-29)D	**178**	**9.6**	Qualify positive results as "J" and non-detects are not qualified for Aroclors 1016, 1221, and 1232, for project sample. Qualify positive results as "J" and non-detects as "R" for Aroclors 1242, 1248, 1254 and 1260 for project samples..
MWW813GW(19-29)S	**221**	**4.0**	

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

Metals by ICP (SDG#3D30224)

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Prep Batch: 3121106	Antimony	75-125	33	All Samples

Prep Batch 3122120	Antimony Zinc	75-125 75-125	29 202	MWM2-17-S(0-2') MWM2-17-S(8-10') MWM2-17-S(18-20') BP9-07-S(0-2) BP9-07-S(8-10) BP9-01-S(0-2) BP9-01-S(7-9) BP9-06-S(0-2) BP9-06-S(8-10) BP9-08-S(0-2) BP9-02-S(0-2) MWP9-01-S(0-2) MWP9-01-S(8-10)

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Batch: 31251118	Antimony Cobalt Thallium Zinc	75-125 75-125 75-125 75-125	26% 73% 74% 71%	MWP1103S(8-10) MWP1103S(0-2) BP904S(0-2) BP904S(8-10) BP1106S(0-2) BP1106S(8-10) BP1104S(0-2) BP1104S(8-10) BP1105S(0-2) BP1105S(8-10) BP1105S(12.8-14)

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Batch: 3217273	Antimony Arsenic Barium Cadmium Chromium Copper Lead Selenium Silver	75-125 75-125 75-125 75-125 75-125 75-125 75-125 75-125 75-125	60 45 50 45 68 129 55 45 51	P1801S(0-2') P1801S(6-8') P1804S(0-2') P1804S(6-8') P1805S(0-2') P1805S(8-10') P1808S(0-2') P1808S(6-8') P1809S(0-2') P1809S(6-8')

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS Batch:3220360	Bromodichloromethane	87-130	84	TRIP BLANK
LCS Batch:3220181	Styrene	80-114	78	P1811S(6-8')

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Laboratory Control Sample	bis(2-Chloroethoxy)methane 2,4-Dichlorophenol Butyl benzyl phthalate Naphthalene Nitrobenzene	59-110 60-111 54-113 59-110 62-110	58 57 48 58 60	MWP9-03-S(0-2') MWP9-03-S(8-10') MWP9-03-S(15-17') MWP9-02-S(0-2') MWP9-02-S(8-10') MWP11-04-S(0-2') MWP11-04-S(8-10') MWP11-04-S(15-17') BP9-05-S(0-2) BP9-05-S(8-10) BP9-03-S(0-2) BP9-03-S(8-10) BP9-03-MS(8-10) BP9-09-S(0-2') BP9-09-S(2-4')

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS batch: 3128531	1,1,1-Trichloroethane	67-123	124	MWP1103S(0-2) BP904S(0-2) BP904S(8-10)
LCS batch: 3132637	1,2-Dichloroethane 1,1,1-Trichloroethane	78-121 67-123	122 129	MWP1103S(8-10) BP1104S(0-2) BP1105S(0-2) BP1105S(8-10)
LCS batch: 3133552	Styrene	80-114	79	BP1106S(0-2)
LCS batch: 3128318	Bromomethane Bromoform	64-129 76-150	62 73	MWP1104EB(15-17) TB-043003
LCS batch: 3122131	bis(2-Chloroethoxy)methane bis(2-Chloroethyl)ether 2,4-Dichlorophenol Hexachlorobutadiene Hexachloroethane Naphthalene Nitrobenzene	61-110 60-110 59-110 62-111 60-111 56-113 61-110	57 54 55 58 58 53 56	MWP1103S(8-10) MWP1103S(0-2) MWP1006S(0-2) MWP1006S(8-10) MWP1004S(0-2) MWP1004S(8-10) BP904S(0-2) BP904S(8-10) BP1106S(0-2) BP1106S(8-10) BP1104S(0-2) BP1104S(8-10) BP1105S(0-2) BP1105S(8-10) BP1105S(12.8-14)

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
MWP1102S(0-2)	Trichloroethene 1,1,2,2-Tetrachloroethane	27 RPD 33-162	48 RPD 9	MWP1102S(8-10) MWP1102S(0-2) MWP1101S(0-2) MWP1101S(14-16) MWP1101S(8-10)

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS batch:3176212	Tetrachloroethene Ethylbenzene Styrene	88-113 86-116 85-117	85 85 82	MWP1104W(10-20) TB061503
LSD batch:3176212	1,1,2,2-Tetrachloroethane	85-118	119	
LCS batch:3175476	Bromodichloromethane Styrene	87-130 85-117	85 83	MWP901W(3-8) MWP904W(13-23)
LSCD batch:3175476	cis-1,2-Dichloroethene	85-113	84	MWP1101W(9-19) DUP063061503
LCS batch:3176511	1,1-Dichloroethane Bromodichloromethane trans-1,3-Dichloropropene	86-123 87-130 84-130	85 82 82	MWP903W(15-25)
MWP1101W(9-19) Batch:3175476	Vinyl chloride Acetone 2-Butanone	88-126 45-128 71-123	74 148 132	MWP901W(3-8) MWP904W(13-23) MWP1101W(9-19) DUP063061503

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS batch:3176212	Tetrachloroethene Ethylbenzene Styrene	88-113 86-116 85-117	85 85 82	MWP1104W(10-20) TB061503
LSD batch:3176212	1,1,2,2-Tetrachloroethane	85-118	119	
LCS batch:3175476	Bromodichloromethane Styrene	87-130 85-117	85 83	MWP901W(3-8) MWP904W(13-23)
LSCD batch:3175476	cis-1,2-Dichloroethene	85-113	84	MWP1101W(9-19) DUP063061503
LCS batch:3176511	1,1-Dichloroethane Bromodichloromethane trans-1,3-Dichloropropene	86-123 87-130 84-130	85 82 82	MWP903W(15-25)
MWP1101W(9-19) Batch:3175476	Vinyl chloride Acetone 2-Butanone	88-126 45-128 71-123	74 148 132	MWP901W(3-8) MWP904W(13-23) MWP1101W(9-19) DUP063061503

Project Batch ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS batch:3168423	Aroclor 1260	61-124	59	MWP901W(3-8) MWP903W(15-25) MWP904W(13-23) MWP1101W(9-19) DUP063061503 MWP1104W(10-20)

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Batch:3175101	Mercury	53-135	37	MWP901W(3-8) MWP903W(15-25) MWP904W(13-23) MWP1101W(9-19) DUP063061503 MWP1104W(10-20)

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
P1812S(0-2')	4-Nitrophenol	10-148	127	P1811S(0-2') P1811S(6-8') P1812S(0-2') P1812S(6-8') P1813S(0-2') P1813S(6-8') P1814SD DUP1 P1817S(4-5')

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Batch: 3218249	Antimony Chromium Lead	75-125 75-125 75-125	26 210 132	P1811S(0-2') P1811S(6-8') P1812S(0-2') P1812S(6-8') P1813S(0-2') P1813S(6-8') P1814SD DUP1 P1817S(4-5')

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lab Check Sample Prep Batch 3246279	Trans-1,3-Dichoropropene	84-130	81	MWW901GW(22-32) MWW813GW(19-29) MWW901EB(22-32) TB-082503
MWW813GW(19-29)	Vinyl chloride 2-Butanone 1,1,2,2,-Tetrachloroethane	88-126 71-123 88-116	81 69 85	MWW901GW(22-32) MWW813GW(19-29) MWW901EB(22-32) TB-082503
	2-Hexanone	81-128	946	MWW901GW(22-32) MWW813GW(19-29) MWW901EB(22-32) TB-082503

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lab Check Sample Prep Batch 3238410	Bis(2-Chloroethoxy)methane	59-110	58	**BP913S(0-2)** **BP913S(6-8)** **BP911S(8-10)** **BP912S(0-2)** **BP911S(0-2)** **BP912S(8-10)** **MWP904S(0-2)**
	2,4-Dichlorophenol	60-111	54	
	2-Methylnaphthalene	58-110	56	
	2-Nitrophenol	55-118	51	
	Napthalene	59-110	56	
	Nitrobenzene	62-110	60	
	Pyridine	70-130	52	
Lab Check Sample Duplicate Prep Batch 3238410	Pyridine	70-130	57	

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
MWW813GW(19-29)	Aroclor 1260	31-138	11 10	**MWW901GW(22-32)** **MWW901EB(22-32)**

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lab Check Sample Prep Batch 3254278	Bis(2-Chloroethoxy)methane	59-110	58	**TPP9-01-091003**
	2,4-Dichlorophenol	60-111	53	
	2-Methylnaphthalene	58-110	56	
	2-Nitrophenol	55-118	53	
	Napthalene	59-110	55	
	Pyridine	70-130	53	
	4,6-Dinitro-2-methylphenol	37-126	34	
	Benzoic acid	22-154	19	
	Pyridine	70-130	53	

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lab Check Sample Prep Batch: 3258449	Trans-1,3-Dichloropropene	84-130	83	MWP901GW(3-8) MWP904GW(13-23)
Lab MS Duplicate Prep Batch: 3258449	2-Hexanone cis-1,2-Dichloroethene	81-128 87-114	79 118	None, lab sample
Lab MSD Duplicate Prep Batch: 3258449	2-Hexanone cis-1,2-Dichloroethene	81-128 87-114	80 70	None, lab sample
Lab MS Duplicate Prep Batch: 3259320	Vinyl Chloride	88-126	80	None, lab sample
Lab MSD Duplicate Prep Batch: 3259320	Vinyl Chloride	88-126	77	None, lab sample

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Lab Check Sample Prep Batch 3254153	Hexachlorocyclopentadiene	10 –114 10-114	5.3 5.5	MWP901GW(3-8) MWP903GW(15-25) MWP904GW(13-23)

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
MWP9-04-S(8-10)	1,4-Dichlorobenzene-d4	Below	Bromobenzene 1,2-Dibromo-3-chloropropane 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene Hexachlorobutadiene 1,1,2,2-Tetrachloroethane 1,2,4-Trichlorobenzene
MWP9-04-S(14-16)	1,4-Dichlorobenzene-d4	Below	
MWP9-10-S(13-15)	1,4-Dichlorobenzene-d4	Below	

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
P1802S(8-10')	1,4-Dichlorobenzene-d4	Low but >10%	1,1,2,2-Tetrachloroethane 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 1,2-Dibromo-3-chloropropane 4-Isopropylbenzene 1,2,4-Trichlorobenzene Hexachlorobutadiene

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
P1817S(4-5')	1,4-Dichlorobenzene	Lower	1,2-Dibromo-3-chlorobenzene 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,1,2,2-Tetrachloroethane 1,2,4-Trichlorobenzene

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
P1814SD	Chrysene-d12	above	Benzo(a)anthracene Butylbenzylphthalate Chrysene 3,3'-Dichlorobenzidine bis(2-Ethylhexyl)phthalate Pyrene
P1817S(4-5')	Perylene-d12	above	Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Dibenz(a,h)anthracene Ideno(1,2,3-cd)pyrene

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified "J", estimated and non-detects as "UJ", estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a "J" as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J" as estimated.

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
3122120	Copper	26%	MWM2-17-S(0-2') MWM2-17-S(8-10') MWM2-17-S(18-20') BP9-07-S(0-2) BP9-07-S(8-10) BP9-01-S(0-2) BP9-01-S(7-9) BP9-06-S(0-2) BP9-06-S(8-10) BP9-08-S(0-2) BP9-02-S(0-2) MWP9-01-S(0-2) MWP9-01-S(8-10)	Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of "J" for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): P-10

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI P-10 obtained from the following Sample Delivery Group(s) (SDG): 3E01197, 3E02160 and 3E07237.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Polychlorinated Biphenyls	SW846 8082	14 day ext./40 day post ext.
Semivolatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post ext.

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported

sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All AOI project samples met preservation and holding time compliance, therefore no qualification of the data was recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

In all instances, the initial and continuing calibration procedures, for project samples analyzed for this AOI, fell within method specific criteria, with the following exception(s):

Inst.	Date/Time	Target Analyte, %D	Associated Samples	Corrective Action
HP7	5/12/03 0936	4,6-Dinitro-2-methylphenol, 27%	MWP1005S(0-2)	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated reporting limit.

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank

sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

For all AOI project samples the concentration of target analytes identified, in any blank sample, was greater than the calculated action level, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
FM1NX1AA	Bis(2-Ethylhexyl)phthalate	21 ug/kg	MWP1006S(0-2) MWP1006S(8-10) MWP1004S(0-2) MWP1004S(8-10)	210 ug/kg

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, therefore, no qualification of the data was required.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into

laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

For all AOI project samples compound recoveries in the LCS and MS samples met acceptance criteria, with the following exception(s):

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS batch: 3122131	bis(2-Chloroethoxy)methane bis(2-Chloroethyl)ether 2,4-Dichlorophenol Hexachlorobutadiene Hexachloroethane Naphthalene Nitrobenzene	61-110 60-110 59-110 62-111 60-111 56-113 61-110 59-110 62-110 70-130	57 54 55 58 58 53 56 53 56 44	MWP1006S(0-2) MWP1006S(8-10) MWP1004S(0-2) MWP1004S(8-10)
MWP1102S(0-2)	Benzo(a)anthracene Benzo(b)fluoranthene Benzo(a)pyrene Chrysene Fluoranthene Phenanthrene Pyrene Benzo(k)fluoranthene	30-136 31-139 28-142 28-139 25-150 24-145 10-218 30-133	142 183 145 165 243 171 357 196	MWP1102S(8-10) MWP1002S(0-2) DUP-059-050603 MWP1102S(0-2) MWP1002S(8-10)
MWP1005S(0-2)	Pentachlorophenol	10-144	2	MWP1005S(8-10) MWP1003S(8-10) MWP1003S(0-2) MWP1005S(0-2) DUP-060-050703

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the

corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria, with the following exception(s):

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
MWP1004S(8-10)	Phenanthrene-d10 Chrysene-d12 Perylene-d12	> +100% > +100% > +100%	Anthracene 4-Bromophenyl phenyl ether Carbazole Di-n-butylphthalate 4,6-Dinitro-2-methylphenol Flouranthene Hexachlorobenzene N-Nitrosodiphenylamine Pentachlorophenol Phenanthrene Benzo(a)anthracene Butylbenzylphthalate Chysene 3,3'-Dichlorobenzidine bis(2-Ethylhexyl)phthalate Pyrene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,I)perylene Benzo(k)fluoranthene Dibenz(a,h)anthracene Di-n-octylphthalate Ideno(1,2,3-cd)pyrene

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified "J", estimated and non-detects as "UJ", estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of

the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of "J" for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): P-11

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI P-11 obtained from the following Sample Delivery Group(s) (SDG): 3D30224, 3E01197, 3E-2160, 3E07237, and 3F17207.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Inductively Coupled Plasma Metals	SW846 6010B	6 month analysis
ICP/MS	SW846 6020	6 month analysis
Mercury in Liquid Waste	SW846 7470A	28 day analysis
Mercury in Solid Waste	SW846 7471A	28 day analysis
Polychlorinated Biphenyls	SW846 8082	14 day ext./40 day post ext.
Semivolatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post ext.
Volatile Organics by GC/MS	SW846 8260B	14 day analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All AOI project samples met preservation and holding time compliance, therefore no qualification of the data was recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

In all instances, the initial and continuing calibration procedures, for project samples analyzed for this AOI, fell within method specific criteria, with the following exception(s):

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
UX9	5/7 11:09	Bromomethane, 35% Acetone, 30% 2-Butanone, 27% Dichlorodifluoromethane, 32%	MWP11-04-S(0-2') MWP11-04-S(8-10') MWP11-04-S(15-17')	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated reporting limit.
UX8	4/28 0801	Acetone, 43% Methylene chloride, 81%	BP1105S(12.8-14)	
UX10	4/29 1503	Acetone, 31%	MWP1104EB(15-17) TB-043003	

UX8	5/11 1342	1,2-Dibromo-3-chloropropane, 38% 1,2,4-Trichlorobenzene, 35%	BP1105S(12.8-14) BP1106S(8-10) BP1104S(8-10)	
UX9	5/07 2149	Dichlorodifluoromethane, 44% Chloromethane, 28% Bromomethane, 39% Trichlorofluoromethane, 46% Acetone, 44% 2-Butanone, 41% 1,1,1-Trichloroethane, 27% Carbon Tetrachloride, 32% 4-Methyl-2-pentanone, 25% 2-Hexanone, 32%	MWP1103S(0-2)	
UX9	5/09 1344	Acetone, 37% 1,1,1-Trichloroethane, 27% Carbon Tetrachloride, 33% Trichlorofluoromethane, 42%	MWP1103S(8-10) BP1104S(0-2) BP1105S(0-2) BP1105S(8-10)	
UX9	5/12 1138	Acetone, 55% 2-Butanone, 45% Carbon Tetrachloride, 26% 4-Methyl-2-pentanone, 27% 2-Hexanone, 39% Dichlorodifluoromethane, 26% Trichlorofluoromethane, 29%	BP1106S(0-2)	
UX10	5/07 0843	Bromomethane, 28% Acetone, 74% 2-Butanone, 60% Dichlorodifluoromethane, 39% 1,2-Dibromo-3-chloropropane, 26%	MWP1104EB(15-17) TB-043003	
UX9	05/11 2119	Bromomethane, 28% Acetone, 28% 1,1,1-Trichloroethane, 29% Carbon Tetrachloride, 40% Trichlorofluoromethane, 51%	BP1101S(0-2) BP1101 S(8-10) BP1102 S(0-2) BP1102 S(8-10) BP1103 S(0-2) BP1103 S(8-10)	
UX8	5/12 1158	2-Hexanone, 33% Acetone, 32% Methylene chloride, 32% 2-Butanone, 27% 4-Methyl-2-pentanone, 32% 1,2-Dibromo-3-chloropropane, 36% 1,2,4-Trichlorobenzene, 37%	MWP1102S(8-10) MWP1102S(0-2) MWP1101S(14-16) MWP1101S(8-10)	
UX7	06/24 2039	2-Hexanone, 26% Acetone, 34%	MWP1104W(10-20) TB061503	
UX10	06/23 1503	Acetone, 108% 2-Butanone, 57%	MWP901W(3-8) MWP904W(13-23) MWP1101W(9-19) DUP063061503	

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

For all AOI project samples the concentration of target analytes identified, in any blank sample, was greater than the calculated action level, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank	1,2-Dichlorobenzene 1,4-Dichlorobenzene	0.43 ug/kg 0.51 ug/kg	MWP11-04-S(0-2') MWP11-04-S(8-10') MWP11-04-S(15-17')	2.15 ug/kg 2.55 ug/kg
Method Blank	Barium	1,000 ug/kg	MWP11-04-S(0-2') MWP11-04-S(8-10') MWP11-04-S(15-17')	10,000 ug/kg
Method Blank	1,4-Dichlorobenzene 1,2,4-Trichlorobenzene	0.56 ug/kg 0.13 ug/kg	MWP1103S(0-2)	2.8 ug/kg 6.5 ug/kg
Method Blank	1,4-Dichlorobenzene 1,2,4-Trichlorobenzene	0.49 ug/kg 1.6 ug/kg	MWP1103S(8-10) BP1104S(0-2) BP1105S(0-2) BP1105S(8-10)	2.45 ug/kg 8.0 ug/kg
Method Blank	Bromomethane	0.32 ug/kg	MWP1104EB(15-17) TB-043003	1.6 ug/kg
Trip Blank TB-043003	Acetone 2-Butanone	3.0 ug/L 2.5 ug/L	MWP1103S(8-10) MWP1103S(0-2) BP1106S(0-2) BP1106S(8-10) BP1104S(0-2) BP1104S(8-10) BP1105S(0-2) BP1105S(8-10) BP1105S(12.8-14)	30 ug/kg 25 ug/kg

Method Blank	Bis(2-Ethylhexyl)phthalate	21 ug/kg	MWP1103S(8-10) MWP1103S(0-2) BP1106S(0-2) BP1106S(8-10) BP1104S(0-2) BP1104S(8-10) BP1105S(0-2) BP1105S(8-10) BP1105S(12.8-14)	210 ug/kg
Method Blank	Manganese	1.2 ug/kg	MWP1104EB(15-17)	12 ug/kg
Method Blank	Manganese Barium	94 ug/kg 256 ug/kg	MWP1103S(8-10) MWP1103S(0-2) BP1106S(0-2) BP1106S(8-10) BP1104S(0-2) BP1104S(8-10) BP1105S(0-2) BP1105S(8-10) BP1105S(12.8-14)	940 ug/kg 2560 ug/kg
Method Blank	1,4-Dichlorobenzene 1,2,4-Trichlorobenzene	0.54 ug/kg 1.2 ug/kg	BP1101S(0-2) BP1101 S(8-10) BP1102 S(0-2) BP1102 S(8-10) BP1103 S(0-2) BP1103 S(8-10)	2.7 ug/kg 6.0 ug/kg
Method Blank	Barium	75.0 ug/kg	BP1101S(0-2) BP1101 S(8-10) BP1102 S(0-2) BP1102 S(8-10) BP1103 S(0-2) BP1103 S(8-10) MWP1102S(8-10) MWP1102S(0-2) MWP1101S(0-2) MWP1101S(14-16) MWP1101S(8-10)	750 ug/kg
Trip Blank TB061503	2-Butanone	1.1 ug/L	MWP901W(3-8) MWP903W(15-25) MWP904W(13-23) MWP1101W(9-19) DUP063061503 MWP1104W(10-20)	11 ug/L
Method Blank	Acetone	1.8 ug/L	MWP1104W(10-20) TB061503	18 ug/L
Method Blank	bis(2-Ethylhexyl)phthalate	1.2 ug/L	MWP1101W(9-19) MWP1104W(10-20) DUP063061503	12 ug/L
Method Blank	Thallium	0.037 ug/L	MWP901W(3-8) MWP903W(15-25) MWP904W(13-23) MWP1101W(9-19) DUP063061503 MWP1104W(10-20)	0.37 ug/L

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, therefore, no qualification of the data was required.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

For all AOI project samples compound recoveries in the LCS and MS samples met acceptance criteria, with the following exception(s):

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS	bis(2- Chloroethoxy)methane 2,4-Dichlorophenol Butyl benzyl phthalate Naphthalene Nitrobenzene	59-110 60-111 54-113 59-110 62-110	58 57 48 58 60	MWP11-04-S(0-2') MWP11-04-S(8-10') MWP11-04-S(15-17')
MS	Antimony	75-125	33	MWP11-04-S(0-2') MWP11-04-S(8-10') MWP11-04-S(15-17')
LCS	1,1,1-Trichloroethane	67-123	124	MWP1103S(0-2)
LCS	1,2-Dichloroethane 1,1,1-Trichloroethane	78-121 67-123	122 129	MWP1103S(8-10) BP1104S(0-2) BP1105S(0-2) BP1105S(8-10)
LCS	Styrene	80-114	79	BP1106S(0-2)
LCS	Bromomethane Bromoform	64-129 76-150	62 73	MWP1104EB(15-17) TB-043003
LCS	bis(2- Chloroethoxy)methane bis(2-Chloroethyl)ether 2,4-Dichlorophenol Hexachlorobutadiene Hexachloroethane Naphthalene Nitrobenzene	61-110 60-110 59-110 62-111 60-111 56-113 61-110 59-110 62-110 70-130	57 54 55 58 58 53 56 53 56 44	MWP1103S(8-10) MWP1103S(0-2) BP1106S(0-2) BP1106S(8-10) BP1104S(0-2) BP1104S(8-10) BP1105S(0-2) BP1105S(8-10) BP1105S(12.8-14)
MS	Antimony Arsenic Barium Beryllium Cadmium Chromium Cobalt Copper Lead Nickel Selenium Silver Thallium Vanadium	75-125 75-125 75-125 75-125 75-125 75-125 75-125 75-125 75-125 75-125 75-125 75-125 75-125 75-125	33 62 72 65 61 44 59 57 52 60 65 73 61 58	BP1101S(0-2) BP1101 S(8-10) BP1102 S(0-2) BP1102 S(8-10) BP1103 S(0-2) BP1103 S(8-10) MWP1102S(8-10) MWP1102S(0-2) MWP1101S(0-2) MWP1101S(14-16) MWP1101S(8-10)
MWP1102S(0-2) MS	Benzo(a)anthracene Benzo(b)fluoranthene Benzo(a)pyrene Chrysene Fluoranthene Phenanthrene Pyrene Benzo(k)fluoranthene	30-136 31-139 28-142 28-139 25-150 24-145 10-218 30-133	142 183 145 165 243 171 357 196	MWP1102S(0-2) MWP1101S(0-2) MWP1002S(8-10) MWP1101S(14-16) MWP1101S(8-10)
LCS	Bromodichloromethane Styrene	87-130 85-117	85 83	MWP1101W(9-19) DUP063061503

MWP1101W(9-19) MS	Vinyl chloride Acetone 2-Butanone	88-126 45-128 71-123	74 148 132	MWP1101W(9-19) DUP063061503
LCS	Aroclor 1260	61-124	59	MWP1101W(9-19) DUP063061503 MWP1104W(10-20)
MS	Mercury	53-135	37	MWP901W(3-8) MWP903W(15-25) MWP904W(13-23) MWP1101W(9-19) DUP063061503 MWP1104W(10-20)

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria, with the following exception(s):

Project Sample ID	Non-Compliant IS	% Recovery	Analytes Affected
MWP11-04-S(0-2') MWP11-04-S(8-10') MWP11-04-S(15-17')	1,4-Dichlorobenzene Chlorobenzene-d5	< -50% < -50%	1,2-Dibromo-3-chloropropane 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,1,2,2-Tetrachloroethane 1,2,4-Trichlorobenzene Bromoform Chlorobenzene Dibromochloromethane 1,2-Dibromoethane trans-1,3-Dichloropropene Ethylbenzene 2-Hexanone Isopropylbenzene Styrene Tetrachloroethene Toluene 1,1,2-Trichloroethane Xylenes

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified "J", estimated and non-detects as "UJ", estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a "J" as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J" as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria, therefore, no qualification of the data was recommended.

Sample ID	Target Analyte	Serial Dilution (% D)	Associated Samples	Recommendation
Batch: 3125118	Chromium Cobalt Lead Nickel Zinc	10.3 10.7 10.9 13.5 26.4	BP1106S(0-2) (Cr, Pb) BP1105S(12.8-14)	Qualify results greater than the MDL as estimated "J", and non-detects as estimated "UJ".

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection

limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of "J" for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

SWDF

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): Storm Water Detention Facility

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI –Storm Water Detention Facility obtained from the following Sample Delivery Group(s) (SDG): 2J04205 and 2J10191.

Project samples were analyzed according to the following analytical methods:

Parameter	**Analytical Method**	**Holding Time Criteria**
Inductively Coupled Plasma Metals	SW846 6010B	6 month analysis
Mercury in Solid Waste	SW846 7471A	28 day analysis
Polychlorinated Biphenyls	SW846 8082	14 day ext./40 day post ext.
Semivolatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post ext.
Volatile Organics by GC/MS	SW846 8260B	14 day analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All AOI project samples met preservation and holding time compliance, therefore no qualification of the data was recommended.

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

Initial Calibration Procedures: Percent Relative Standard Deviation (%RSD) must be less than or equal to 30%

Inst.	Date	Target Analyte, %RSD	Associated Samples	Corrective Action
7	7/17 12:51	No target analytes		Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
9	8/13 11:03	No target analytes		
10	10/12 16:26	No target analytes		
12	10/11 21:46	Acetone, 54.1%	DP-03-GW(5-6) DP-05-GW(1-4) DUP-59 TB-95	

Continuing Calibration Procedures: Percent Drift (%D) must be less than or equal to 25%

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
7	10/14 19:39	Bromoform, 57.3% Dibromochloromethane, 29.7% Carbon tetrachloride, 37.1% 1,2-Dibromo-3-chloropropane, 60.0% Cyclohexane, 28.8%	DP-06-GW(1-5) DP-07-GW(1-3) DP-08-GW(1-3) TB-96 MW-02-GW(10-20) MW-03-GW(5-15)	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
9	10/08 19:24	Methyl acetate, 25.1%	DP-03-S(2.5-5.0) DUP-58 DP-04-S(3.5-5.0) MW-01-S(1-3) MW-01-S(8-10) MW-02-S(1-3) MW-02-S(8-10) MW-03-S(1-3)	
12	10/12 11:37	Acetone, 48.7%	DP-03-GW(5-6) DP-05-GW(1-4) DUP-59 TB-95	

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
7	10/09 12:37	4-Nitrophenol, 42.7%	MW-01-S(1-3) MW-01-S(8-10) MW-02-S(1-3) MW-02-S(8-10) MW-03-S(1-3)	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
7	10/11 11:18	Indeno(1,2,3-cd)pyrene, 25.1% Benzo(g,h,i)perylene, 25.5%	DP-06-GW(1-5) DP-07-GW(1-3) DP-08-GW(1-3) MW-02-GW(10-20) MW-03-GW(5-15)	

Inst.	Date	Target Analyte, %D	Associated Samples	Corrective Action
8	10/21 10:10	Hexachlorocyclopentadiene, -26.1% 2,4 Dinitrophenol, 26.9% 4,6-Dinitro-2-methylphenol, -40.8%	DPGWMW01100702	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a "common

laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank UX9, 10/08	Acetone 2-Butanone 1,2,4-Trichlorobenzene	5 µg/kg 2 µg/kg 1 µg/kg	DUP-03-S(2.5-5.0) DUP-58 DP-04-S(3.5-5.0)	50 µg/kg 20 µg/kg 5 µg/kg
Method Blank UX12, 10/12	Methylene chloride	0.42 µg/L	DP-03-GW(5-6) DP-05-GW(1-4) DUP-59 TB-95	4.2 µg/L
TB-95 (Trip Blank)	Acetone 2-Butanone	2.4 µg/L 1.8 µg/L	DP-01-GW(4-7) DP-02-GW(4-7) DP-03-GW(5-6) DP-05-GW(1-4) DUP-59 DP-03-S(2.5-5.0) DUP-58 DP-04-S(3.5-5.0)	24 µg/L 18 µg/L
TB-96 (Trip Blank)	2-Butanone	1.2 µg/L	DP-06-GW(1-5) DP-07-GW(1-3) DP-08-GW(1-3) MW-01-S(1-3) MW-01-S(8-10) MW-02-S(1-3) MW-02-S(8-10) MW-03-S(1-3) MW-02-GW(10-20) MW-03-GW(5-15)	12 µg/L

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank PB: 2280366	Barium Chromium Copper	69.0 µg/kg 68.0 µg/kg 161 µg/kg	DP-03-S(2.5-5.0) DUP-58 DP-04-S(3.5-5.0) MW-01-S(1-3) MW-01-S(8-10) MW-02-S(1-3) MW-02-S(8-10) MW-03-S(1-3)	345 µg/kg 340 µg/kg 1610 µg/kg

Method Blank PB: 2282099	Copper Manganese Zinc	3.9 µg/L 1.4 µg/L 17.8 µg/L	DP-01-GW(4-7) DP-02-GW(4-7) DP-03-GW(5-6) DP-05-GW(1-4) DUP-59 DP-06-GW(1-5) DP-07-GW(1-3) DP-08-GW(1-3) MW-02-GW(10-20) MW-03-GW(5-15)	39 µg/L 7 µg/L 178 µg/L

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method Blank	Manganese	0.90 µg/L	DPGWMW01100802	4.5 µg/L

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

Project Sample ID	SRG01 %R	SRG02 %R	Corrective Action
DP-03-GW(5-6)	OK	20	Flag Aroclor 1242, 1248, 1254, & 1260 detects as "J" Flag Aroclor 1242, 1248, 1254, & 1260 ND as "UJ"
DUP-59	OK	22	Flag Aroclor 1242, 1248, 1254, & 1260 detects as "J" Flag Aroclor 1242, 1248, 1254, & 1260 ND as "UJ"

DP-06-GW(1-5)	OK	13	Flag Aroclor 1242, 1248, 1254, & 1260 detects as "J" Flag Aroclor 1242, 1248, 1254, & 1260 ND as "UJ"
DUP-07-GW(1-3)	OK	11	Flag Aroclor 1242, 1248, 1254, & 1260 detects as "J" Flag Aroclor 1242, 1248, 1254, & 1260 ND as "UJ"
DP-08-GW(1-3)	OK	7.1	Flag Aroclor 1242, 1248, 1254, & 1260 detects as "J" Flag Aroclor 1242, 1248, 1254, & 1260 ND as "R"
MW-02-GW(10-20)	OK	6.4	Flag Aroclor 1242, 1248, 1254, & 1260 detects as "J" Flag Aroclor 1242, 1248, 1254, & 1260 ND as "R"
MW-03-GW(5-15)	OK	9.9	Flag Aroclor 1242, 1248, 1254, & 1260 detects as "J" Flag Aroclor 1242, 1248, 1254, & 1260 ND as "R"

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

Sample	Target Analyte	%R	QC Limits	Associated Samples	Corrective Action
LCS LCSD	4-Methyl-2-pentanone	70 73	78-141 78-141	DPGWMW01100702	Flag "J" where target analyte was detected above the reporting limit and flag "R" for non-detects.

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations

calculated within this sample were qualified with a “J” as estimated and non-detected parameters with a “UJ”, as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an “R” as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria without exception. No qualification of the data was recommended.

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified “J”, estimated and non-detects as “UJ”, estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a "J" as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J" as estimated.

Target Compound	%D	Associated Samples	Corrective Action
Chromium Manganese Zinc	11.2 10.7 13.3	DP-03-S(2.5-5.0) MW-02-S(8-10) MW-03-S(1-3)	Flag reported results as estimated (J).
Copper Manganese Zinc		DP-01-GW(4-7)	

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of "J" for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional

documentation was requested and received from the laboratory as part of the validation process.

SEMI-ANNUAL GROUNDWATER MONITORING (SWHI & AOI F-12)

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): SWHI

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI SWHI obtained from the following Sample Delivery Group(s) (SDG): 2K14196, 2K15256, and 2E20236.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Inductively Coupled Plasma Metals	SW846 6010B	6 month analysis
Mercury in Solid Waste	SW846 7471A	28 day analysis
Polychlorinated Biphenyls	SW846 8082	14 day ext./40 day post ext.
Semivolatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post ext.
Volatile Organics by GC/MS	SW846 8260B	14 day analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

Sample ID.	Comments	Corrective Action
MWF1201W (15-25)	Insufficient ice to keep cooler within appropriate temperature range	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
MWF1202W (15-25)		
MWW102W (1-11)		
MWW103W (1-11)		
MW4099W (11-16)		
DUP061W (0-0)		
DWD10W (141-151)		
MWF1W (24-34)		
DWD10EB (141-151)		
DWD10TB (141-151)		
MWW1003W (6-16)		
GWD9W (72-82)		

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines.

In cases where target compounds were detected and reported from a non-compliant calibration standard, the result was flagged with a "J" as estimated and all reporting limits for the affected parameter were flagged with a "UJ" as estimated.

Inst.	Date/ Time	Target Analyte, %D	Corrective Action
UX10	11/18/2002 11:12	2-Butanone, 33.8	Qualify positive results as “J”, estimated and non-detected analytes as “UJ”, estimated undetected.
		Bromomethane, 31.3	
		Acetone, 41.1	
		2-Hexanone, 34.8	
	11/19/2002 09:19	Bromomethane, 26.6	
		2-Hexanone, 26.6	

Inst.	Date/ Time	Target Analyte, %D	Corrective Action
HP8	11/19/2002 11:40	Pyrene, 32.7	Qualify positive results as “J”, estimated and non-detected analytes as “UJ”, estimated undetected.

Inst.	Date/ Time	Target Analyte, %D	Corrective Action
HP8	11/26/2002 12:52	2, 4-Dinitrophenol, 31.5	Qualify positive results as “J”, estimated and non-detected analytes as “UJ”, estimated undetected.

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
UX10	5/28/03 2154	Bromomethane, 32.1	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16)	Qualify positive results as “J”, estimated and non-detected analytes as “UJ”, estimated undetected.
UX10	5/29/03 1004	Bromomethane, 56.8	GWD9W (72-82)	
UX10	5/30/03 2256	1,2,4 – Trichlorobenzene, 33.3	MWP601W (10-20) MWP602W (10-20) MWP604W (18-28) MWP607W (20-30) GWD11W (86-96) DWD12W (115-125) IWP5EB (52-62) IWP5W (52-62) GWP3W (97-107) GWP6W (82-92) GWP6TB (82-92)	

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
A4HP 9	5/26/03 1030	Hexachlorocyclopentadiene, 27.3	DWD10W (141-151) MWF1W (24-34) MWW1003W (6-16) GWD9W (72-82) DWD10EB (141-151)	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
A4HP 9	5/26/03 1030	4,6-Dinitro-2-methylphenol, 35.3	DWD10W (141-151) MWF1W (24-34) MWW1003W (6-16) GWD9W (72-82) DWD10EB (141-151)	

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
A2HP 2	5/23/03 2313	Aroclor-1260 (4), 36.9	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16) GWD11W (86-96)	Flag "UJ" where the target analyte was non-detect and flag "J" for concentrations detected above the reporting limit.
A2HP 2	5/23/03 2313	Aroclor-1260 (5), 45.5		

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified.

In the case of organic method blank sample analyses, if the target compound detected was identified as a "common laboratory contaminant" by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated.

In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a "U", non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

Blank	Target Analyte	Concn. (ppb)	Associated Samples	Flag sample results with a "U" if £ to this value
FDD7F1AA	Bromomethane	0.31	MWD6-GW, MWF1-GW, MWF12-01-GW, MWF12-02-GW, DWD13-GW, MWM16-02-GW, DUP201-GW, MWP6-01-GW, MWP6-02-GW, MWP6-03-GW, MWP6-04-GW, DWD13-EB	1.55
	Methylene chloride	0.69		6.9
	1, 2, 4-Trichlorobenzene	0.85		4.25
FDEX91AA	Bromomethane	0.39	IWD7-GW, TB-111302	1.95
	1, 2, 4-Trichlorobenzene	0.86		4.3
TB-111302	2-Butanone	0.95	MWD6-GW, MWF1-GW, MWF12-01-GW, MWF12-02-GW, DWD13-GW, MWM16-02-GW, DUP201-GW, MWP6-01-GW, MWP6-02-GW, MWP6-03-GW, MWP6-04-GW, DWD13-EB IWD7-GW, TB-111302	9.5
	Acetone	2.5		25

Blank	Target Analyte	Concn. (ppb)	Associated Samples	Flag sample results with a "U" if £ to this value
Method FPK521AA	Acetone	1.4	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16)	14

Method FPQ161AA	Bromomethane	0.45	MWP601W (10-20) MWP602W (10-20) MWP604W (18-28) MWP607W (20-30) GWD11W (86-96) DWD12W (115-125) IWP5EB (52-62) IWP5W (52-62) GWP3W (97-107) GWP6W (82-92) GWP6TB (82-92)	2.25
	Methylene chloride	0.30		3.0

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a "U" if £ to this value
Method FN3WM1AA	Bis (2-Ethylhexyl) phthalate	2.8	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16)	28

Blank ID	Date and Time	Target Analyte	Concn. (ppb)	Associated Samples	Flag sample results with a "U" if £ to this value
Method 3141098	5/22/03 1336	Barium	1.0	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) GWD9W (72-82) MWF1W (24-34) MWW1003W (6-16) GWD11W (86-96)	10
Method 3142105	5/23/03 1339	Antimony	8.4	GWD11W (86-96)	84

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, therefore, no qualification of the data was required.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
MS/MSD	Bromomethane	55-145	51	MWD6-GW
MS/MSD	2-Butanone	71-132	63	
MS/MSD	2-Hexanone	81-128	71	

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
MS/MSD	3, 3'-Dichlorobenzidine	10-110	0	MWD6-GW
Check sample	Hexachlorocyclopentadiene		9	Batch # 2322214

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
MS/MSD	Bromomethane	55-145	49	GWD8-GW
MS/MSD	2-Butanone	71-123	69	
MS/MSD	2-Hexanone	81-128	69	
MS/MSD	Cis-1, 2-Dichloroethene	87-114	86	
MS/MSD	Methylene chloride	82-115	70	
MS/MSD	Styrene	83-120	80	
MS/MSD	Xylenes (total)	89-121	87	
Check sample	Bromomethane		46	Batch # 2330250
Check sample	Methylene chloride		76	Batch # 2330149

Check sample	4-Methyl-2-pentanone		74	Batch # 2330250

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
Check sample	Hexachlorocyclopentadiene		6	Batch # 2324167

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS FPK521AC	Styrene	85-117	82	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16)
LCS FPK521AD			81	
LCS FPQ161AC	Styrene	85-117	79	MWP601W (10-20) MWP602W (10-20) MWP604W (18-28) MWP607W (20-30) GWD11W (86-96) DWD12W (115-125) IWP5EB (52-62) IWP5W (52-62) GWP3W (97-107) GWP6W (82-92) GWP6TB (82-92)
LCS FPQ161AD			78	
MS/MSD FN3KX1AJ	Styrene	83-120	80	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16)
MS/MSD FN3KX1AK			78	
MS/MSD FN5331AC	Styrene, Ethylbenzene, Xylenes	83-120, 86-132, 89-121	77, 53, 80	MWP601W (10-20) MWP602W (10-20) MWP604W (18-28) MWP607W (20-30) GWD11W (86-96)

MS/MSD FN5331AD	Ethylbenzene, Xylenes	86-132, 89-121	53, 86	DWD12W (115-125) IWP5EB (52-62) IWP5W (52-62) GWP3W (97-107) GWP6W (82-92) GWP6TB (82-92)

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS FN6LW1AC LCS FN6LW1AD	Hexachlorocyclopentadiene	10-114	9	GWD11W (86-96) DWD12W (115-125) IWP5EB (52-62) IWP5W (52-62) GWP3W (97-107) GWP6W (82-92)
MS/MSD FN3KX1AN	Chloroaniline	10-110	8	MWF1201W (15-25) MWF1202W (15-25) MWW102W (1-11) MWW103W (1-11) MW4099W (11-16) DUP061W (0-0) DWD10W (141-151) MWF1W (24-34) DWD10EB (141-151) DWD10TB (141-151) MWW1003W (6-16)

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria without exception. No qualification of the data was recommended.

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified "J", estimated and non-detects as "UJ", estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a "J" as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J" as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria, therefore, no qualification of the data was recommended.

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of "J" for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Data Usability Summary Report (DUSR)
GM Pontiac North Campus – RFI Addendum Sampling Events
Analytical Laboratory: Severn Trent Laboratories, Inc. – North Canton, OH
Area of Investigation (AOI): F-12

This Data Usability Summary Report (DUSR) provides a summary of the data quality issues identified during the assessment of sample data packages provided by Severn Trent Laboratories for RCRA Facility Investigation activities conducted at the General Motors Pontiac North Campus facility. Each section provides a brief description of the procedure used in the evaluation and the corrective action implemented as a result of the assessment. The intent of this document is to assist the data user with an understanding of the data qualification procedures implemented during the reduction of the investigation results and their use in the evaluation of the current site conditions.

Data were assessed in accordance with guidance from the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Data Review (EPA 540/R-99/008), National Functional Guidelines for Inorganic Data Review, Final (EPA 540-R-01-008), and method protocol criteria where applicable as prescribed by "Test Methods for Evaluating Solid Waste", SW846, Update III, 1996. This DUSR pertains to samples collected for AOI F-12 obtained from the following Sample Delivery Group(s) (SDG): 2K14196 and 3E20236.

Project samples were analyzed according to the following analytical methods:

Parameter	Analytical Method	Holding Time Criteria
Inductively Coupled Plasma Metals	SW846 6010B	6 month analysis
ICP/MS	SW846 6020	6 months analysis
Mercury in Liquid Waste	SW846 7470A	28 day analysis
Polychlorinated Biphenyls	SW846 8082	14 day ext./40 day post ext.
Semivolatile Organic Compounds by GC/MS	SW846 8270C	14 day ext./40 day post ext.
Volatile Organics by GC/MS	SW846 8260B	14 day analysis

References:
SW846 – "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", 3rd Edition, November 1986 and its updates.

During the data validation process, the following quality control/ quality assurance (QA/QC) criteria from the analysis of the project samples were reviewed:

- Preservation and Holding Time Compliance
- GC/MS Instrument Performance Check
- Initial Calibration and Continuing Calibration Procedures
- Field/Method/Preparation Blank Sample Analysis
- System Monitoring Compound Recoveries
- Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries
- Internal Standard Recoveries
- Duplicate Sample Analysis
- ICP Interference Check Sample Performance
- ICP Serial Dilution Replicate Percent Difference
- Use of Laboratory Data Qualifiers
- Sample Data Reporting Format

Preservation and Holding Time Compliance

Maximum allowable holding times, for each parameter, was measured from the time of sample collection to the time of sample preparation or analysis for each project sample. When a project sample was identified as analyzed past the USEPA recommended maximum holding time or if the sample cooler temperature was outside the acceptance criteria (4±2ºC), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "UJ" as estimated quantitation limit. When a project sample was identified as grossly exceeding preservation and holding time criteria (e.g., greater than two times the required time for preparation or analysis, or cooler temperature compliance), the reported sample results were qualified with a "J" as estimated and non-detected parameters were qualified with a "R" as rejected.

All AOI project samples met preservation and holding time compliance, with the following exception(s):

Sample ID.	Comments	Corrective Action
MWF1201W (15-25)	Insufficient ice to keep cooler within appropriate temperature range	Qualify positive results as "J", estimated and non-detected analytes as "UJ", estimated undetected.
MWF1202W (15-25)		
MWW102W (1-11)		
MWW103W (1-11)		
MW4099W (11-16)		
DUP061W (0-0)		
DWD10W (141-151)		
MWF1W (24-34)		
DWD10EB (141-151)		
DWD10TB (141-151)		
MWW1003W (6-16)		
GWD9W (72-82)		

GC/MS Instrument Performance Check

GC/MS instrument performance checks were evaluated to ensure proper tuning of the instrument for mass resolution, compound identification, and to some degree sensitivity. It was determined that the analysis of the instrument performance solutions was performed at the beginning of each 12-hour period during which samples or standards were analyzed, and that the instrument performance check met the ion abundance criteria specified by EPA.

In all instances, the GC/MS instrument performance checks for the instruments used in the analysis of AOI project samples fell within method specific criteria without exception. No qualification of the data was recommended.

Initial Calibration and Continuing Calibration Procedures

Instrument calibration procedures for the analysis of project samples were evaluated based on the requirements of the National Functional Guidelines and/or prescribed by the laboratory standard operating procedures (SOPs) when not directly addressed by the guidelines. In cases where target compounds were detected and reported from a non-compliant calibration standard,

the result was flagged with a “J” as estimated and all reporting limits for the affected parameter were flagged with a “UJ” as estimated.

In all instances, the initial and continuing calibration procedures, for project samples analyzed for this AOI, fell within method specific criteria, with the following exception(s):

Inst.	Date/ Time	Target Analyte, %D	Associated Samples	Corrective Action
10	5/28/03 2154	Bromomethane, 32.1	MWF1201W (15-25) MWF1202W (15-25)	Qualify positive results as “J”, estimated and non-detected analytes as “UJ”, estimated reporting limit.
2	5/23/03 2313	Aroclor-1260 (4), 36.9 Aroclor-1260 (5), 45.5	MWF1201W (15-25) MWF1202W (15-25)	

Field/Method/Preparation Blank Sample Analyses

The presence of target compounds in associated method and/or trip blank samples prepared and analyzed concurrently with the project samples was determined as part of each laboratory sample data package (SDG). If target compounds were reported at a concentration above the method detection limit (MDL) for organic parameter analyses or the instrument detection limit (IDL) for inorganic parameter analyses, the sample result was qualified. In the case of organic method blank sample analyses, if the target compound detected was identified as a “common laboratory contaminant” by the USEPA Functional Guidelines, an action level of 10 times (10x) the blank contamination level was calculated. For all other parameters an action level of 5 times (5x) the blank contamination level was calculated. In the case of inorganic method blank sample analyses, an action level of 10 times (10X) the blank contamination level was calculated. In accordance with EPA guidance, if the detection of the blank contaminant in the associated project samples was reported at a concentration between the MDL and the action level, the result was flagged with a “U”, non-detect. This data qualification indicates that the parameter was not present in the sample at a concentration greater than the reported level.

For all AOI project samples the concentration of target analytes identified, in any blank sample, was greater than the calculated action level, with the following exception(s):

Blank	Target Compound	Concn.	Associated Samples	Flag sample results with a “U” if £ to this value
Method Blank	Methylene chloride	0.31 ug/L	MWF12-01-GW MWF12-02-GW DUP201-GW	3.1 ug/L
TB-111302	2-Butanone Acetone	0.95 ug/L 2.5 ug/L	MWF12-01-GW MWF12-02-GW DUP201-GW	9.5 ug/L 25 ug/L
Method Blank	Acetone Bromomethane Methylene chloride	1.4 ug/L 0.45 ug/L 0.30 ug/L	MWF12-01-W(15-25) MWF12-02-W(15-25)	14 ug/L 2.25 ug/L 3.0 ug/L
Method FN3WM1AA	Bis (2-Ethylhexyl) phthalate	2.8 ug/L	MWF1201W (15-25) MWF1202W (15-25)	28 ug/L
Method 3141098	Barium	1.0 ug/L	MWF1201W (15-25) MWF1202W (15-25)	10 ug/L

System Monitoring/Surrogate Compound Recoveries

System monitoring/surrogate compounds were added to each sample prior to analysis of organic parameters by EPA Methods 8260B, 8270C and 8082 to confirm the efficiency of the sample preparation procedures. The calculated recovery for each surrogate compound was evaluated to confirm the accuracy of the reported results. Generally, the calculated recovery of these compounds fell within the laboratory specific quality control criteria. In a few instances, sample extracts prepared for the analysis of semi-volatile organics (SVOCs) by EPA Method 8270C and/or polychlorinated biphenyls (PCBs) by EPA Method 8082 required dilution prior to analysis. This dilution procedure was implemented by the laboratory to either improve instrument performance by minimizing matrix interference or to enable quantification of the detected target analytes within the instrument calibration range. Where applicable, the laboratory qualified the reported results of the surrogate compounds with "DIL" indicating the system monitoring compound recovery could not be calculated due to a sample extract dilution.

The data evaluation process reviewed these samples for chromatographic resolution and target compound quantification. In cases where the instrument resolution remained impaired after dilution, the results above the reporting limit were qualified "J", as estimated and non-detected values were flagged "R", as rejected. In cases where the instrument resolution appeared to be unaffected by the diluted sample matrix, the sample results were accepted without qualification. In each case, the elevated reporting limits were confirmed for the level of dilution. Any inconsistency was brought to the attention of the database manager and corrected results from the laboratory were obtained where applicable.

For all AOI project samples the system monitoring/surrogate compound recoveries met acceptance criteria, therefore, no qualification of the data was required.

Laboratory Control Samples, Matrix Spike/Matrix Spike Duplicate Recoveries

Analytical precision and accuracy were evaluated based on the laboratory control and matrix spike sample analyses performed concurrently with the project samples. For matrix spike samples, after the addition of a known amount of each target analyte to the sample matrix, the sample was analyzed to confirm the ability to identify these compounds within the sample matrix. For LCS analyses, after the addition of a known amount of each target analyte into laboratory reagent water, the sample was analyzed to confirm the ability of the analytical system to accurately quantify the compounds.

The percent recovery calculated for each target analyte was evaluated versus method specific criteria. The reported results were evaluated for compliance. Generally the reported recovery of MS and LCS analyses fell within the laboratory QA acceptance criteria. However, if the MS recovery fell below the acceptance criteria, the result for the non-compliant target analyte from the project sample analysis was qualified with a "J" as estimated or "UJ" if reported as non-detect. If the LCS recovery for a target compound fell below the laboratory QA acceptance criteria, the results for that target compound in each project sample analyzed within the analytical batch were qualified with a "J" as estimated or "R" if reported as non-detect.

For all AOI project samples, compound recoveries in the LCS and MS samples met acceptance criteria, with the following exception(s):

Project Sample ID	Target Analyte	%R Criteria	%R	Affected Samples
LCS	4-Methyl-2-pentanone Bromomethane	75-123 55-145	72 52	MWF12-01-GW MWF12-01-W(15-25) MWF12-02-GW MWF12-02-W(15-25) DUP201-GW
LCS	Styrene	85-117	82	MWF1201W (15-25) MWF1202W (15-25)

Internal Standard (IS) Compound Recoveries

Internal Standard (IS) compounds were added to each sample prior to the analysis of organic parameters by EPA Methods 8260B, and 8270C to quantify the amount of the target compounds detected within the sample matrix. The response of each IS compound was confirmed to be within the QA/QC criteria of +100% and – 50% of the corresponding 12 hour continuing calibration verification (CCV) standard. If the IS response fell above the +100% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters were not qualified. If the IS response fell below the –50% acceptance criteria, the target compound concentrations calculated within this sample were qualified with a "J" as estimated and non-detected parameters with a "UJ", as estimated reporting limit. If the IS response fell to below –90% the corresponding CCV standard, the reported results in the project sample were flagged with an "R" as rejected.

For all AOI project samples, the internal standard compound recoveries fell within method specific criteria without exception. No qualification of the data was recommended.

Duplicate Sample Analysis

During the analysis of metals, duplicate sample analysis was evaluated to demonstrate acceptable method precision by the Laboratory at the time of analysis by using a control limit of 20% for the relative percent difference (RPD) between the original and duplicate sample with concentrations greater than five times (5X) the Contract Required Quantitation Limit. Samples results failing to meet the 20% RPD criteria were qualified "J", estimated and non-detects as "UJ", estimated reporting limit.

For all AOI project samples, duplicate sample RPDs met the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Interference Check Sample Performance

The results of the ICP Interference Check Samples analyzed concurrently with the project samples were evaluated versus an acceptance criteria +/- 20% of true value as prescribed by USEPA guidance. If the calculated recovery an analyte fell outside these criteria, the analyte result for the project samples analyzed concurrently within the analytical batch was flagged with a "J" as estimated.

For all AOI project samples, the ICP check sample recovery fell within the acceptance criteria, therefore, no qualification of the data was recommended.

ICP Serial Dilution Replicate Percent Difference (RPD)

The results of the ICP Serial Dilution samples analyzed concurrently with the project samples were evaluated for compliance with the USEPA protocol criteria of less than 10% replicate percent difference (RPD) between the diluted and undiluted sample, if the analyte concentration was greater than fifty times (50X) the method detection limit in the original sample. If an analyte exhibited a serial dilution RPD greater than 10%, the corresponding sample result was qualified with a "J" as estimated.

For all AOI project samples, the ICP serial dilution RPDs fell within the acceptance criteria, therefore, no qualification of the data was recommended.

Use of Laboratory Data Qualifiers

Sample data was qualified by the laboratory in accordance with laboratory specific SOPs. Data qualification included the reporting of estimated concentrations of target compounds/analytes quantified below the project reporting limit (RL) but above the method or instrument detection limit, the presence of target compounds in corresponding method blank samples, and non-compliant results of associated QA/QC sample analyses (i.e. MS/MSD). Based on a check of the data qualifiers assigned to be project sample results, these flags appeared to be applied to the reported results in accordance with the laboratory specific SOPs. The laboratory specific qualification was amended during the data validation process to be consistent with the guidance provided by the USEPA National Functional Guidelines recommendations.

For example, the laboratory assigned a qualifier of “J” for all organic parameters detected below the reporting limit but above the method detection limit.

Sample Data Reporting Procedures

The reporting results for each SDG was provided in a full Contract Laboratory Protocol (CLP) equivalent deliverables format with Forms I though IX, and applicable instrument raw data including GC/MS instrument tuning and calibration logs, standard and sample chromatograms, and ICP instrument printouts. The data reporting format was evaluated within each SDG and when found to be non-compliant with the project data quality objectives (DQOs) additional documentation was requested and received from the laboratory as part of the validation process.

Appendix E

LNAPL Fingerprinting Reports

ENCORE
Environmental Corporate Remediation

ZymaX FORENSICS

September 13, 2002

Mr. John McKenna
BBL
1920 Opdyke Court
Auburn Hills, MI. 48236

RE: GM Pontiac (MI)

Dear Mr. McKenna,

Enclosed are analytical results for one NAPL sample ID MW-2-06-NP-091002 submitted to ZymaX on September 11, 2002. The data were obtained from GC/MS full scan analysis and viscosity measurement for the NAPL sample.

My preliminary conclusion based on the analytical data indicates that the NAPL is most likely a mixture of a mildly weathered No.2 fuel oil (or No.2 diesel fuel) and highly degraded asphalt. However, it is also possible that the NAPL is a kind of patch asphalt. A detailed interpretive report discussing the chemical data, fuel identification, and how the data can be used to characterize the fuel types and estimate their exposure time can be provided.

The project was performed at ZymaX forensics as Laboratory No. 28880.

Please call us at **805.544.4696** if you have any questions regarding the analytical results, or if you require a cost estimate for the report.

Respectfully,
ZymaX forensics

Shantan Lu, Ph.D.
Director of Petroleum Geochemistry

Chain of Custody Record

Zyman Labs

SEVERN TRENT SERVICES — ~~Severn Trent Laboratories, Inc.~~

STL-4124 (1200)

Client: BBL	Project Manager: John McKenna	Date: 09/10/02	Chain of Custody Number: 069594
Address: 1970 Oakley ct	Telephone Number (Area Code)/Fax Number: (248) 377-9413	Lab Number:	Page ___ of 1
City: Auburn Hills / State: MI / Zip Code: 48326	Site Contact: J. McKenna	Lab Contact: Alan Jeffery	Analysis (Attach list if more space is needed)
Project Name and Location (State): GM Pontiac (MI)	Carrier/Waybill Number:		
Contract/Purchase Order/Quote No.			

Special Instructions/ Conditions of Receipt

Lab# 28880
28880-1

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Aqueous	Sed.	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH		Volatile Organics
	091002	0800								1	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ___ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☑ Other 72 hour

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By	9/10/02	1645	1. Received By: Dan Pahuna	9-11-02	10:46
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments
(✓) 9/10/02 Elevated Temperature = GC/MS Trip Blank - ab

DISTRIBUTION: WHITE - Stays with the Sample, CANARY - Returned to Client with Report, PINK - Field Copy

ZymaX envirotechnology

REPORT OF ANALYTICAL RESULTS

Client:	**John McKenna**
	Blasland, Bouck & Lee, Inc.
	1920 Opdyke Ct.
	Auburn Hills, MI 48326

Lab Number:	28880-1
Collected:	09/10/02
Received:	09/11/02
Matrix:	Product

Project:	**GM Pontiac (MI)**
Project Number:	
Collected by:	**Client**

Sample Description:	**MWW2-06-NP-091002**
Analyzed:	**09/12/02**
Method:	**ASTM D-445**

VISCOSITY @ 70° F

CONSTITUENT	PQL* Cst.	RESULT** Cst.
Viscosity @ 70° F	0.01	84.

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717
***PQL - Practical Quantitation Limit**
****Results listed as ND would have been reported if present at or above the listed PQL.**

Note: Analysis performed by CA Department of Health Services certified laboratory #2438

Submitted by,
ZymaX envirotechnology, inc.

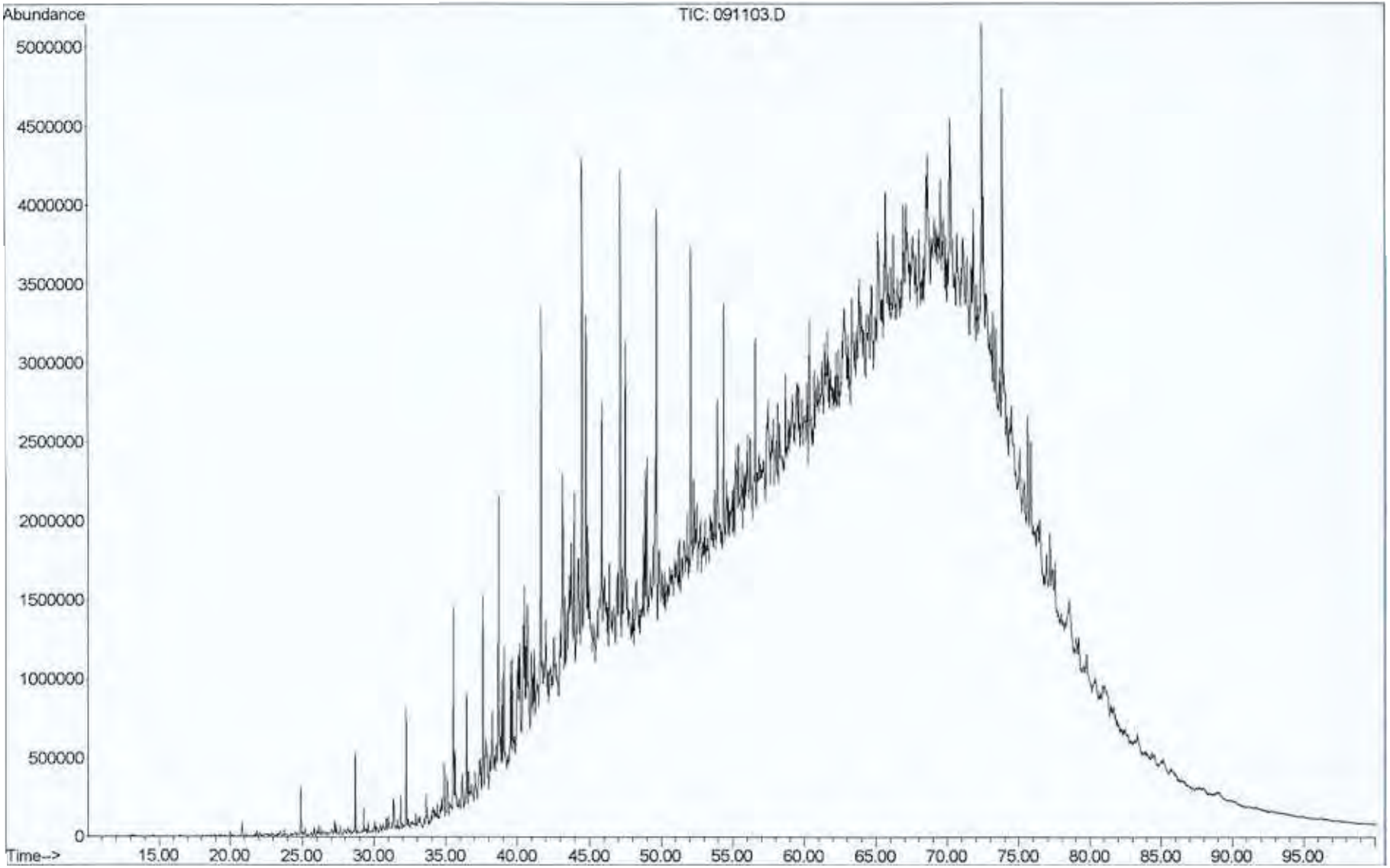
for **Michael Ng**
Assistant Lab Director

28880-1v.xls
MN/sks/jgc

805.544.4696
www.ZymaXusa.com

71 Zaca Lane
San Luis Obispo CA 93401
fax 805.544.8226

mp .me MWW od x5
GM



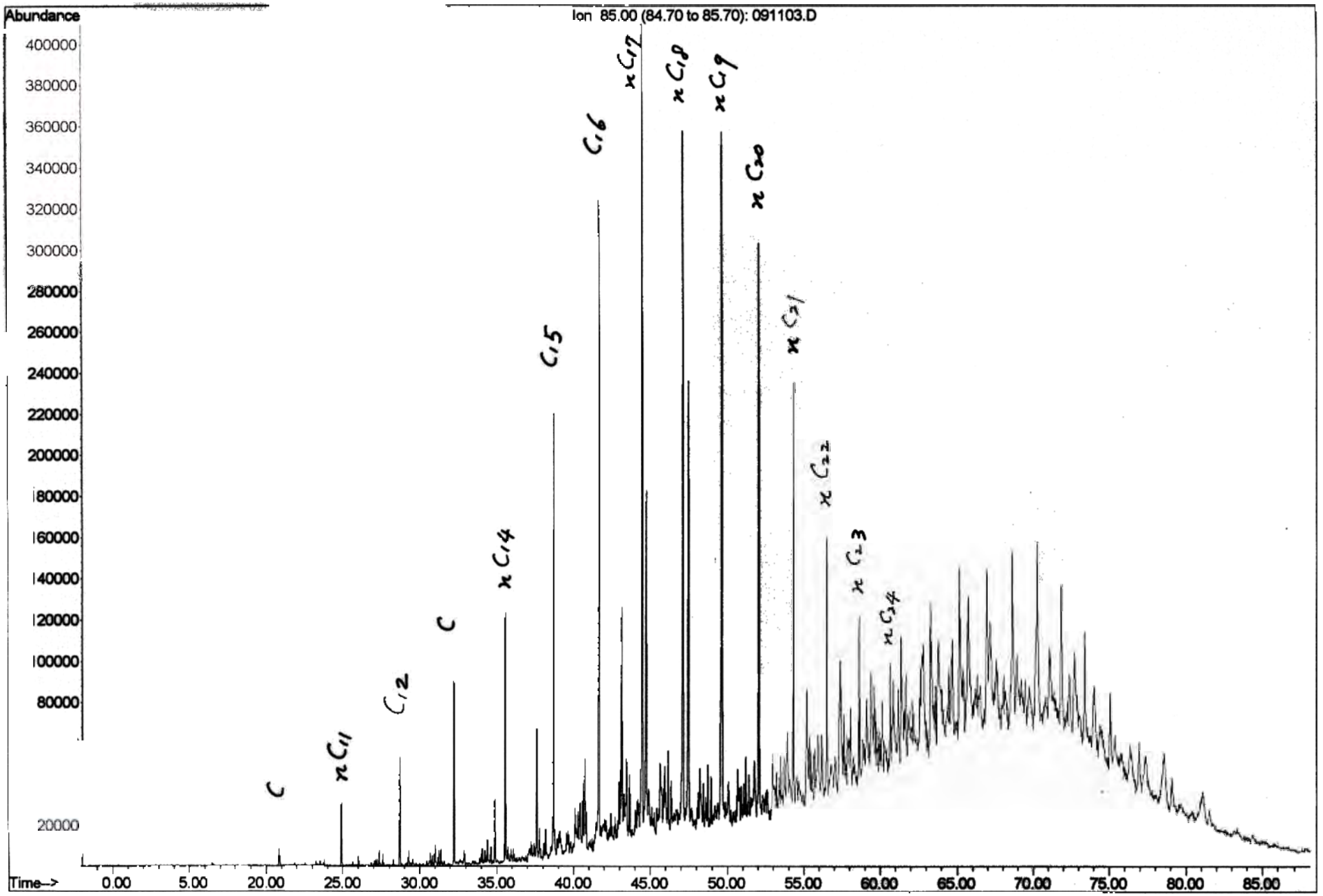
Table

Key to Chromatogram Symbol Identification for m/z 85 and m/z 113 Paraffins and Isoparaffins

Symbol	Detail
i-10	Iso-alkane with 10 carbon atoms
i-15	Farnesane (isoprenoid with 15 carbon atoms)
	Isoprenoid with 16 carbon atoms
Pr	Pristane (isoprenoid with 19 carbon atoms)
Ph	Phytane (isoprenoid with 20 carbon atoms)
nC_8	n-C_8 normal alkane
	n-C_{15} normal alkane
i-8	2,5-(2,4)-Dimethylhexane
i-8'	2,3,4-Trimethylpentane
i-8"	2,3-Dimethylhexane
CH-*n*	Alkylcyclohexane (where *n* indicates number of carbon atoms in the side chain)

MWW

M.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360000
340000
320000
300000
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260000
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160000
140000
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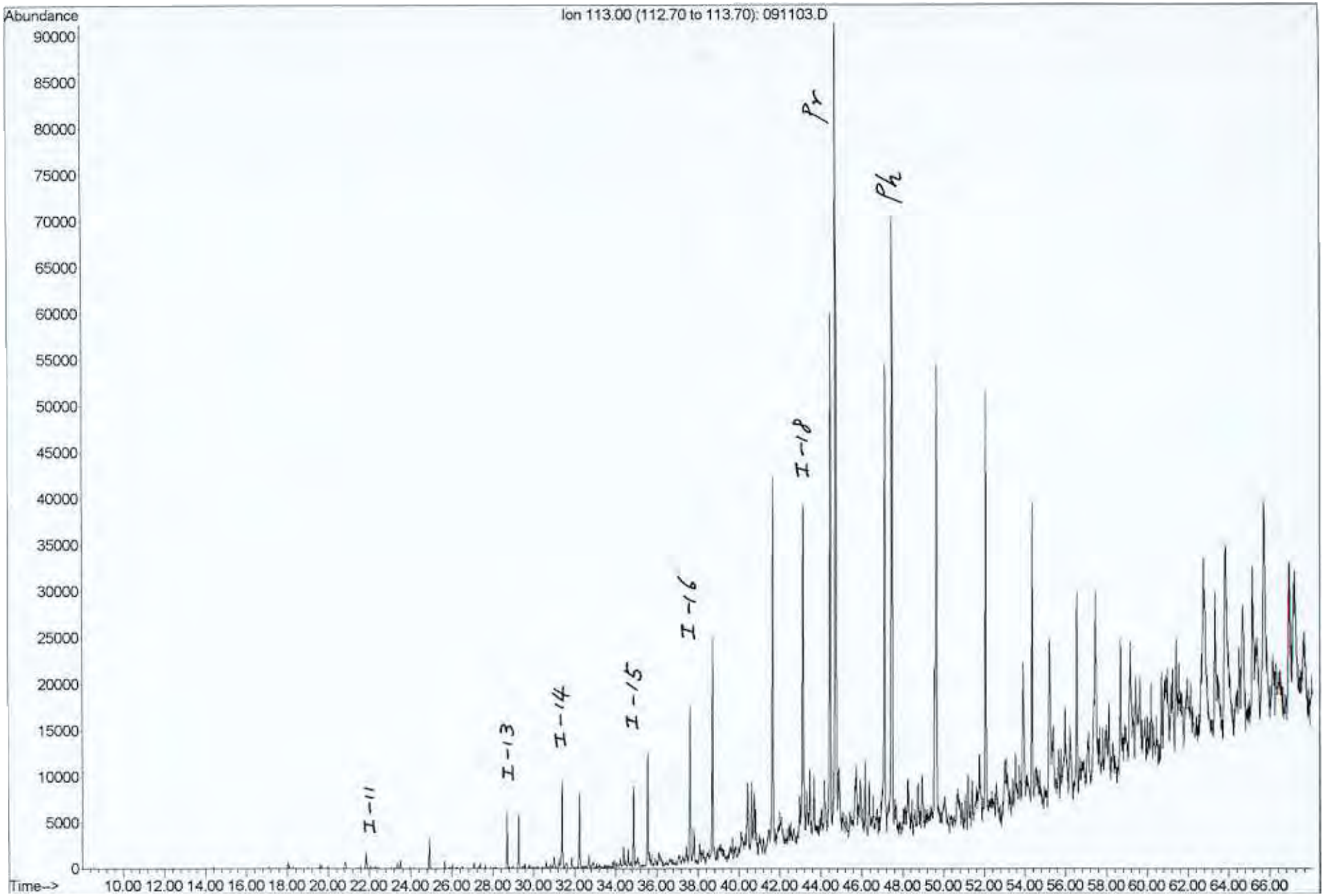
80000
20000
Time-->
0.00
5.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
55.00
60.00
65.00
70.00
75.00
80.00
85.00
C
nC11
C12
C
nC14
C15
C16
nC17
nC18
nC19
nC20
nC21
nC22
nC23
nC24

MWW:

p: od

GM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75000
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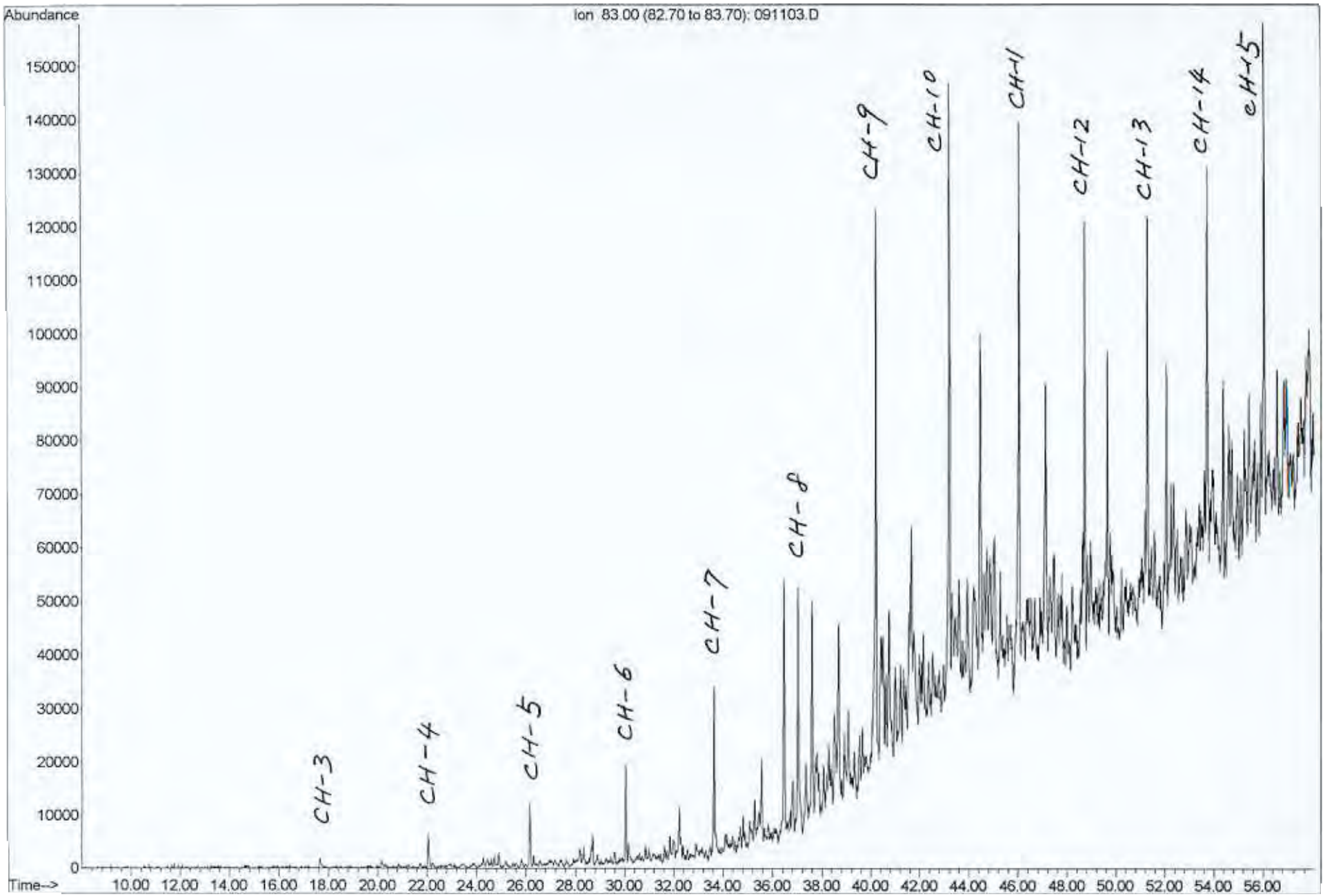
65000
60000
55000
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
Time-->
10.00 12.00 14.00 16.00 18.00 20.00 22.00 24.00 26.00 28.00 30.00 32.00 34.00 36.00 38.00 40.00 42.00 44.00 46.00 48.00 50.00 52.00 54.00 56.00 58.00 60.00 62.00 64.00 66.00
I-11
I-13
I-14
I-15
I-16
I-18
Pr
Ph

Table

Key for Alkylcyclohexanes at m/z 83

Symbol	Detail
	Methylcyclohexane
CH-2:	Ethylcyclohexane
	Propylcylohexane
CH-4:	Butylcyclohexane
CH-5:	Pentylcyclohexane
	Hexylcyclohexane
CH-7:	Heptylcyclohexane
	Octylcyclohexane
CH-9:	Nonylcyclohexane
CH-10:	Decylcyclohexane
CH-11:	Undecylcyclohexane
CH-12:	Dodecylcyclohexane
CH-13:	Tridecylcyclohexane
CH-14:	Tetradecylcyclohexane

MWW N
GM BL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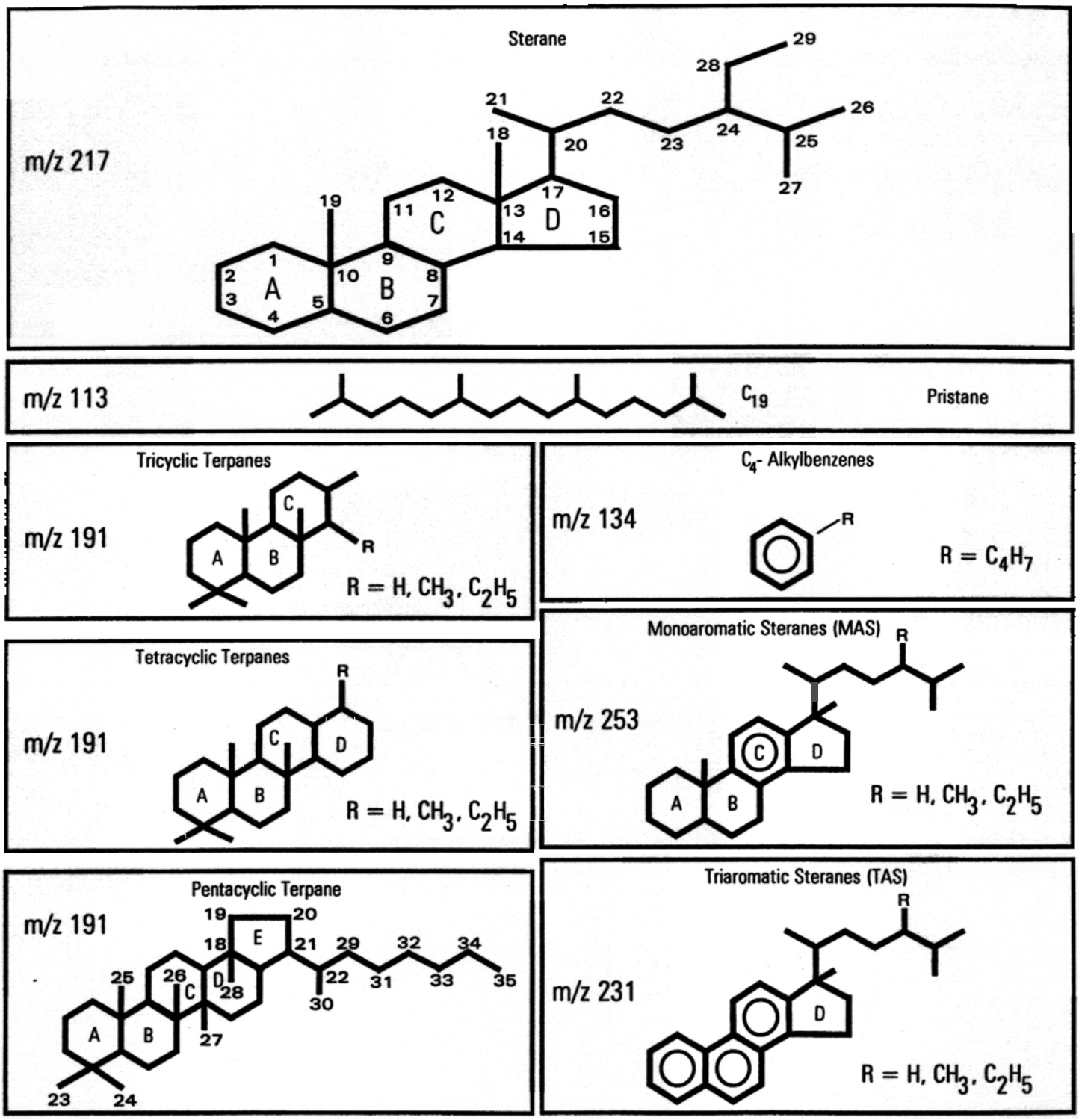
130000
120000
110000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
Time-->
10.00 12.00 14.00 16.00 18.00 20.00 22.00 24.00 26.00 28.00 30.00 32.00 34.00 36.00 38.00 40.00 42.00 44.00 46.00 48.00 50.00 52.00 54.00 56.00
CH-3
CH-4
CH-5
CH-6
CH-7
CH-8
CH-9
CH-10
CH-11
CH-12
CH-13
CH-14
CH-15



The compound structures of pristane, C_4-alkylbenzenes, sterane; terpanes; monoaromatic and triaromatic steranes

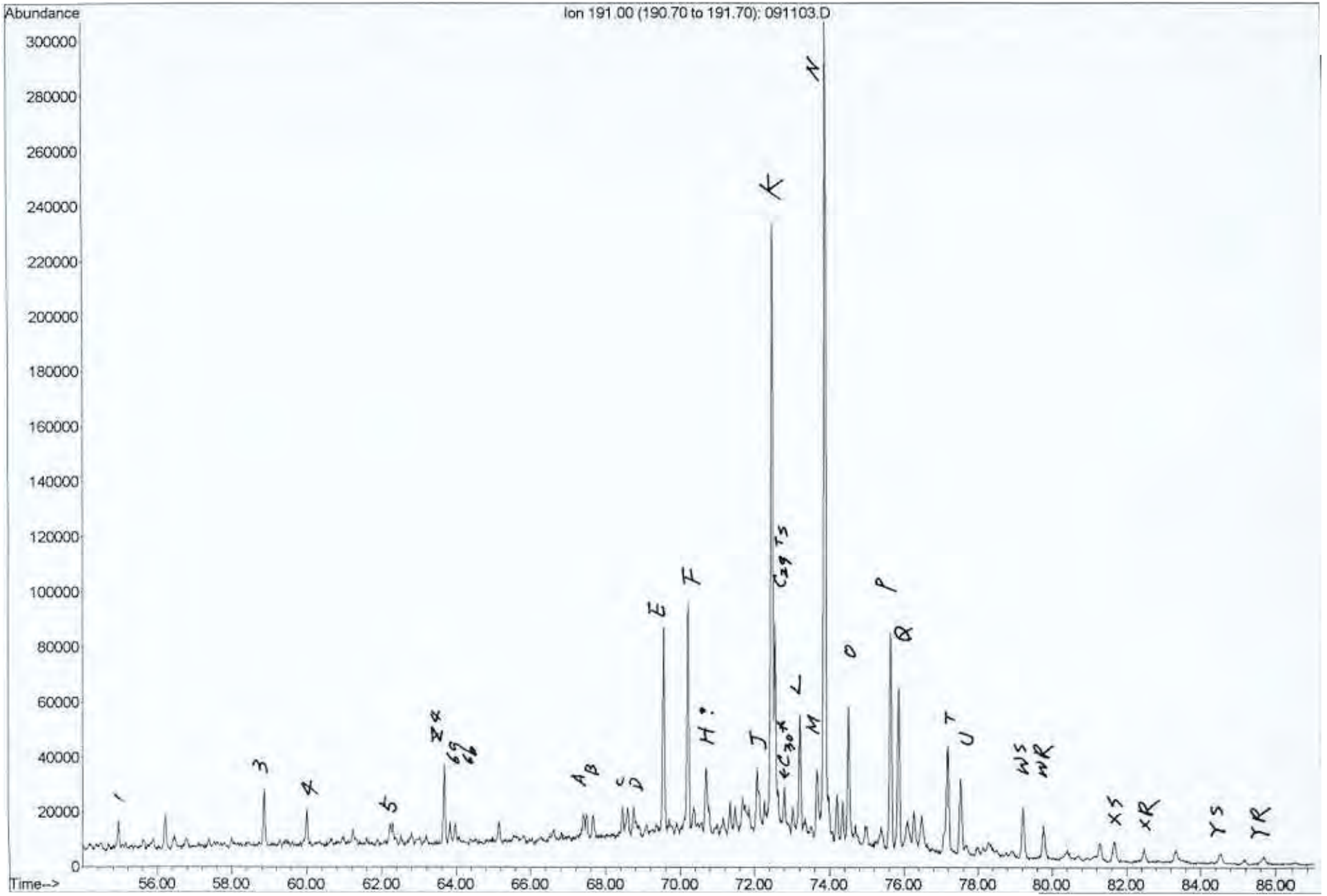
Table

ZymaX FORENSICS

Key for Tricyclic, Tetracyclic, and Pentacyclic Terpanes Identification (m/z 191 mass chromatograms)

Code	Identity	Carbon #
	C_{20}-Tricyclic Terpane	
	C_{21}-Tricyclic Terpane	
	C_{22}-Tricyclic Terpane	
	C_{23}-Tricyclic Terpane	
	C_{24}-Tricyclic Terpane	
	C_{25}-Tricyclic Terpane	
	C_{24}-Tetracyclic Terpane	
	C_{26}-Tricyclic Terpane	
	C_{26}-Tricyclic Terpane	
	C_{27}-Tricyclic Terpane	
	C_{28}-Tricyclic Terpane #1	
	C_{28}-Tricyclic Terpane #2	
	C_{29}-Tricyclic Terpane #1	
	C_{29}-Tricyclic Terpane #2	
	18α-22,29,30-Trisnorneohopane (Ts)	
	17α-22,29,30-Trisnorhopane (Tm)	
	17ß-22,29-30-Trisnorhopane	
	17α-23,28-Bisnorlupane	
	C_{30}-Tricyclic Terpane #1	
	C_{30}-Tricyclic Terpane #2	
	17α-28,30-Bisnorhopane	
11a	C_{31}-Tricyclic Terpane #1	
J	17α-25-Norhopane	
11b	C_{31}-Tricyclic Terpane #2	
K	17α,21ß-30-Norhopane	
C_{29}Ts	18α-30-Norneohopane	
C_{30}*	17α-Diahopane	
L	17ß-21α-30-Normoretane	
Ma	18α-Oleanane	
Mb	18ß-Oleanane	
N	17α,21ß-Hopane	
O	17ß,21α-Moretane	
13a	C_{33}-Tricyclic Terpane #1	
13b	C_{33}-Tricyclic Terpane #2	
P	22S-17α,21ß-30-Homohopane	
Q	22R-17α,21ß-30-Homohopane	
R	Gammacerane	
14a	C_{34}-Tricyclic Terpane #1	
S	17ß,21α-Homomoretane	
14b	C_{34}-Tricyclic Terpane #2	
T	22S-17α,21ß-30-Bishomohopane	
U	22R-17α,21ß-30-Bishomohopane	
15a	C_{35}-Tricyclic Terpane #1	
15b	C_{35}-Tricyclic Terpane #2	
V	17ß,21α-C_{32}-Bishomomoretane	
WS	22S-17α,21ß-30,31,32-Trishomohopane	
WR	22R-17α,21ß-30,31,32-Trishomohopane	
16a	C_{36}-Tricyclic Terpane #1	
16b	C_{36}-Tricyclic Terpane #2	
XS	22S-17α,21ß-30,31,32,33-Tetrahomohopane	
XR	22R-17α,21ß-30,31,32,33-Tetrahomohopane	
YS	22S-17α,21ß-30,31,32,33,34-Pentahomohopane	
YR	22R-17α,21ß-30,31,32,33,34-Pentahomohopane	

MWW2-06-NP-091002 (28880-1 product x50
GM Pontiac (MI), BBL

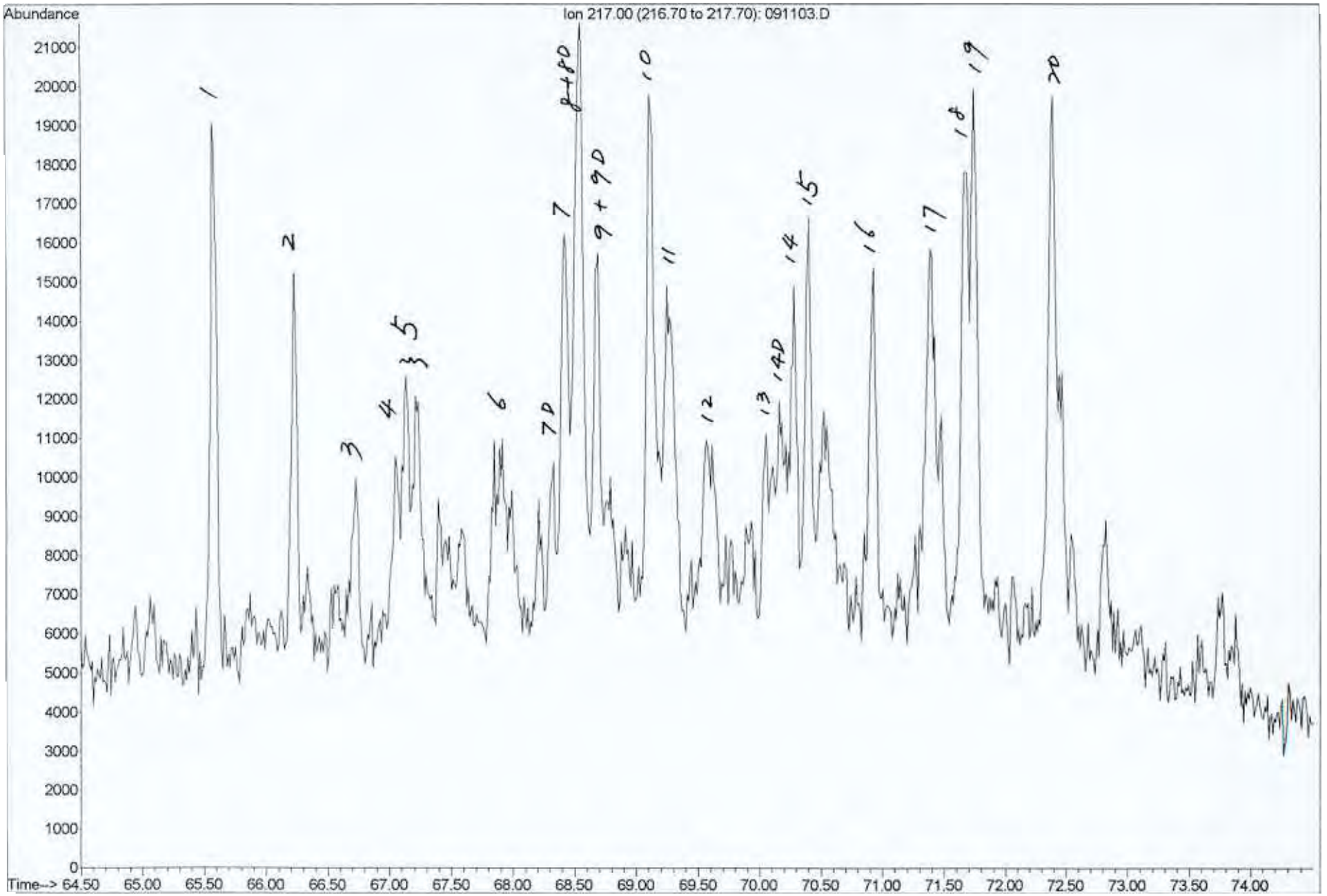


Table

Key for Steranes Identification (m/z 217 Mass Chromatogram)

Code	Identity	Carbon #
1	13ß,17α-diacholestane (20S)	
2	13ß,17α-diacholestane (20R)	
3	13α,17ß-diacholestane (20S)	
4	13α,17ß-diacholestane (20R)	
5	24-methyl-13ß,17α-diacholestane (20S)	
6	24-methyl-13ß,17α-diacholestane (20R)	
7D	24-methyl-13α,17ß-diacholestane (20S)	
7	14α,17α-cholestane (20S)	
8D	24-ethyl-13ß,17α-diacholestane (20S)	
8	14ß,17ß-cholestane (20R)	
9	14ß,17ß-cholestane (20S)	
9D	24-methyl-13α,17ß-diacholestane (20R)	
10	14α,17α-cholestane (20R)	
11	24-ethyl-13ß,17α-diacholestane (20R)	
12	24-ethyl-13α,17ß-diacholestane (20S)	
13	24-methyl-14α,17α-cholestane (20S)	
14D	24-ethyl-13α,17ß-diacholestane (20R)	
14	24-methyl-14ß,17ß-cholestane (20R)	
15	24-methyl-14ß,17ß-cholestane (20S)	
16	24-methyl-14α,17α-cholestane (20R)	
17	24-ethyl-14α-cholestane (20S)	
18	24-ethyl-14ß,17ß-cholestane (20R)	
19	24-ethyl-14ß,17ß-cholestane (20S)	
20	24-ethyl-14α,17α-cholestane (20R)	
21A	24-n-Propylcholestane (20S)	
21B	4-methyl-24-ethylcholestane (20S)	
22A	4α-methyl-24-ethyl-14β,17β-cholestane(20S)	
22B	24-n-propyl-14β,17β-cholestane (20S)	
23A	4α-methyl-24-ethyl-14β,17β-cholestane(20R)	
23B	24-n-propyl-14β,17β-cholestane (20R)	
24A	4α-methyl-24-ethylcholestane(20R)	
24B	24-n-propylcholestane (20R)	

MWW NP od
GM BL

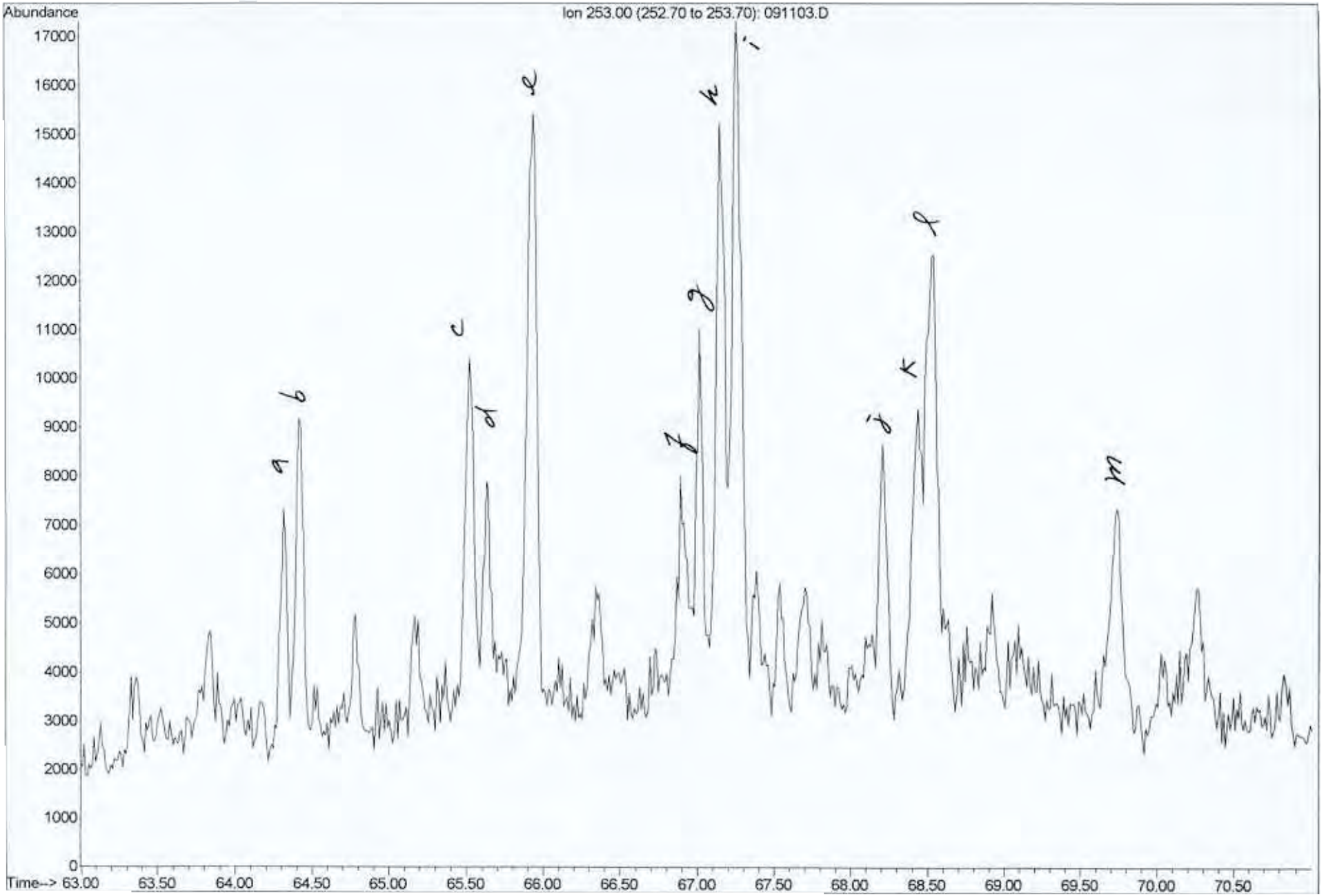


Table

Key for Monoaromatic Steranes Identification (m/z 253 mass chromatogram)

Code	Identity	Elemental Composition
	20S, 5ß C_{27}-Monoaromatic sterane	$C_{27}H_{42}$
	20S, dia C_{27}-Monoaromatic sterane	$C_{27}H_{42}$
c	20R, 5ß C_{27}-Monoaromatic sterane + 20R C_{27} dia MAS	$C_{27}H_{42}$
d	20S, 5α C_{27}-Monoaromatic sterane	$C_{27}H_{42}$
e	20S, 5ß C_{28}-Monoaromatic sterane + 20S C_{28} dia MAS	$C_{28}H_{44}$
f	20R, 5α C_{27}-Monoaromatic sterane	$C_{27}H_{42}$
g	20S, 5α C_{28}-Monoaromatic sterane	$C_{28}H4_4$
h	20R, 5ß C_{28}-Monoaromatic sterane + 20R C_{28} dia MAS	$C_{28}H_{44}$
	20S, 5ß C_{29}-Monoaromatic sterane + 20S C_{29} dia MAS	$C_{29}H_{46}$
j	20S, 5α C_{29}-Monoaromatic sterane	$C_{29}H_{46}$
k	20R, 5α C_{28}-Monoaromatic sterane	$C_{28}H_{44}$
	20R, 5ß C_{29}-Monoaromatic sterane + 20R C_{29} dia MAS	$C_{29}H_{46}$
m	20R, 5α C_{29}-Monoaromatic sterane	$C_{29}H_{46}$

MWW NP
GM

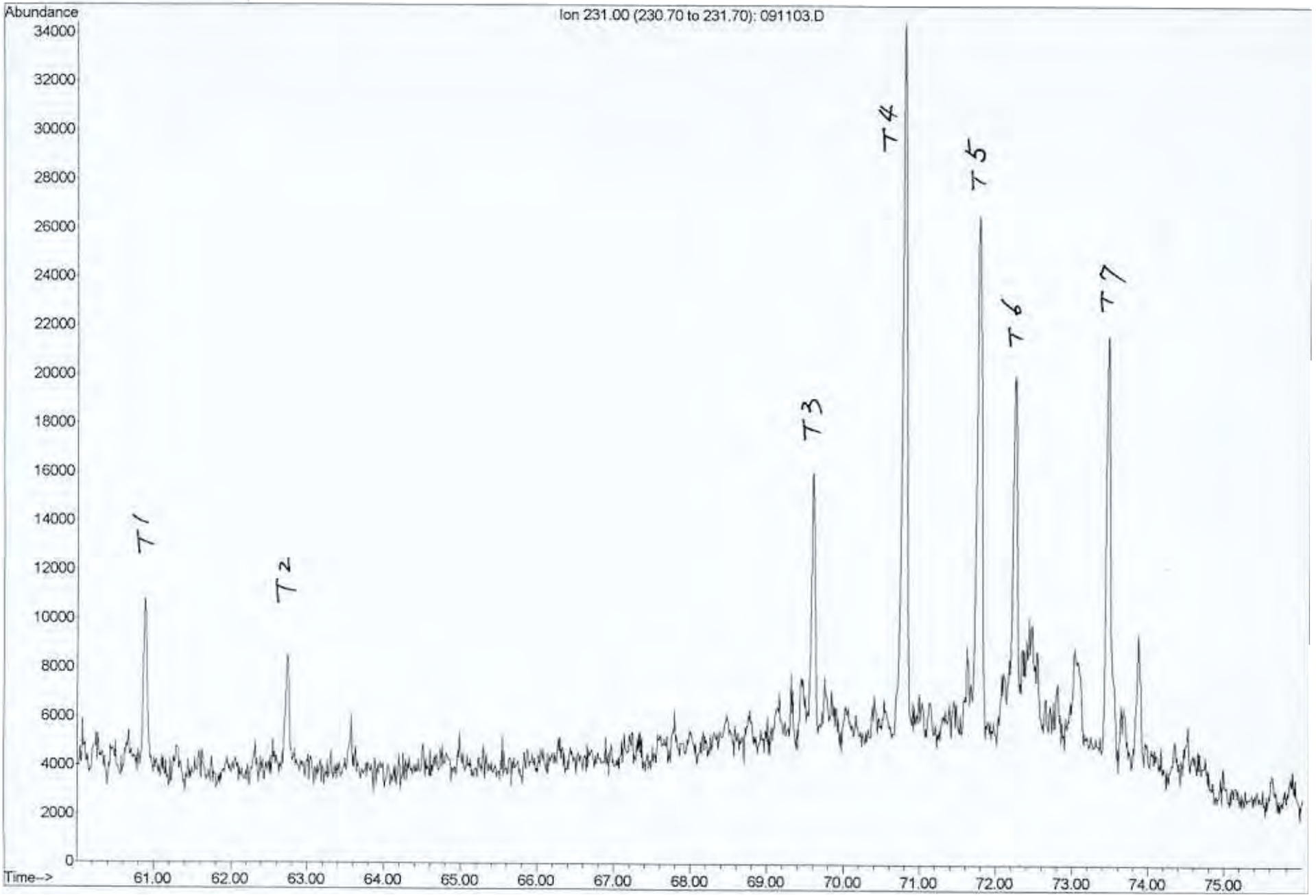

Abundance
Ion 253.00 (252.70 to 253.70): 091103.D
17000
16000
15000
14000
13000
12000
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Time--> 63.00
63.50
64.00
64.50
65.00
65.50
66.00
66.50
67.00
67.50
68.00
68.50
69.00
69.50
70.00
70.50
a
b
c
d
e
f
g
h
i
j
k
l
m

Table

Key for Triaromatic Steranes Identification (m/z 231 chromatogram)

Code	Identity	Elemental Composition
T1	C_{20} Triaromatic sterane	$C_{20}H_{20}$
T2	C_{21} Triaromatic sterane	$C_{21}H_{22}$
T3	20S C_{26} Triaromatic sterane	$C_{26}H_{32}$
T4	20R C_{26} + 20S C_{27}-Triaromatic steranes	$C_{26}H_{32}$ + $C_{27}H_{34}$
T5	20S C_{28}-Triaromatic sterane	$C_{28}H_{36}$
T6	20R C_{27}-Triaromatic sterane	$C_{27}H_{34}$
T7	20R C_{28}-Triaromatic sterane	$C_{28}H_{36}$

MWW2-06-NP-091002 (28880-1 product x50
GM Pontiac (MI), BBL



Table

Key for Aromatic Compounds Identification in Bar Diagram

	C_3-C_6 Alkylbenzenes
NAPH:	C_0-C_4 Naphthalenes
	C_0-C_4 Fluorenes
	C_0-C_2 BP Biphenyl/Dibenzofuran
PHEN:	C_0-C_4 Phenanthrenes
	C_0-C_4 Pyrenes/Fluoranthenes
CHR:	C_0-C_4 Chrysenes
	C_1-C_5 Benzothiophenes
DBT:	C_0-C_4 Dibenzothiophenes
	C_0-C_4 Naphthobenzothiophenes
	Monoaromatic Steranes
	Triaromatic Steranes

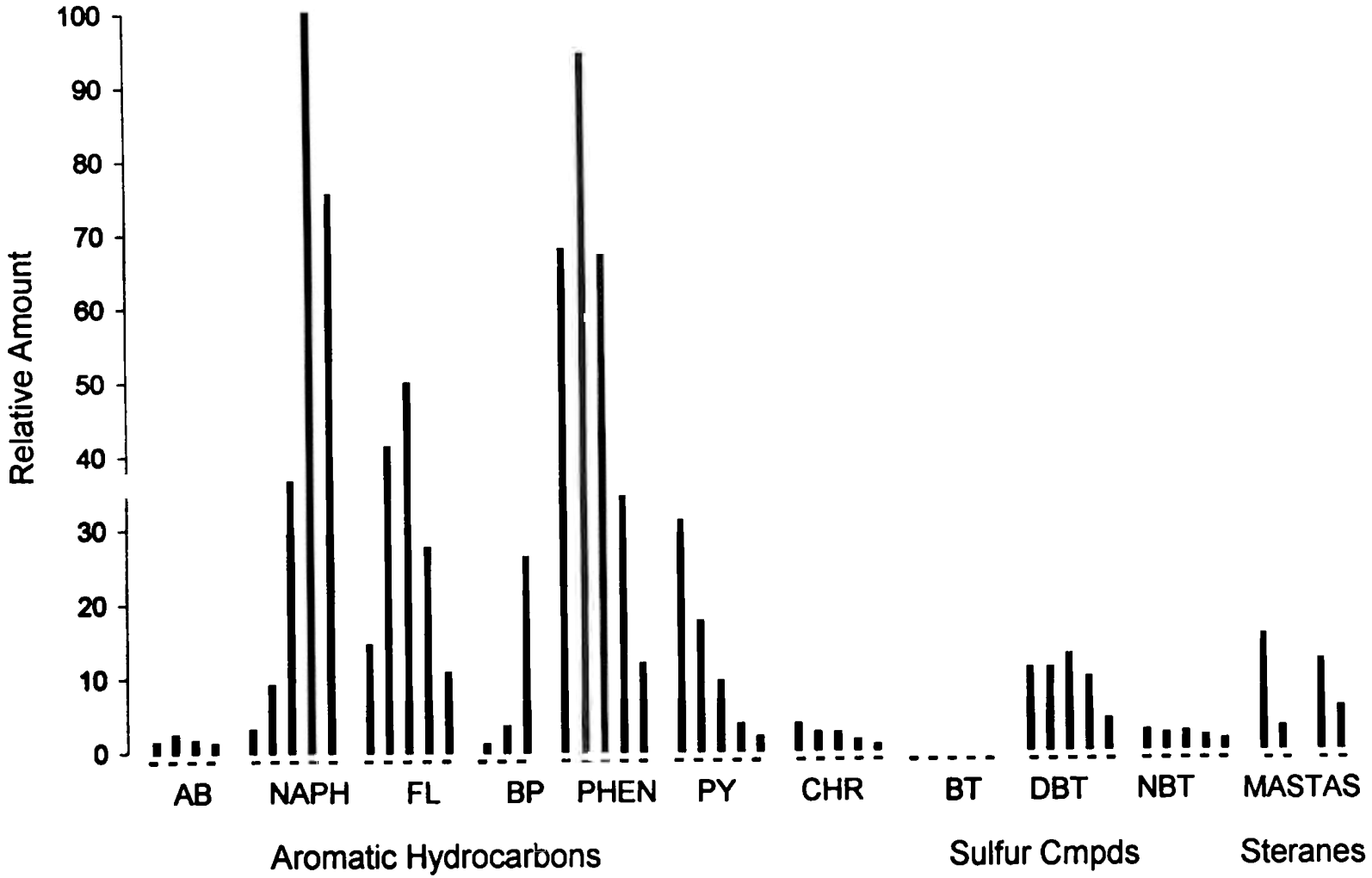
Table

Key for Identifying Aromatic Hydrocarbons at Various m/z Units

No.	m/z	Compound
1		C_3-alkylbenzenes
2		C_4-alkylbenzenes
3		C_5-alkylbenzenes
4		C_6-alkylbenzenes
5		C_0-naphthalene
6		C_1-naphthalenes
7		C_2-naphthalenes
8		C_3-naphthalenes
9		C_4-naphthalenes
10		C_0-fluorene
11		C_1-fluorenes
12		C_2-fluorenes
13		C_3-fluorenes
14		C_4-fluorenes
15		C_0-biphenyl
16		C_1-biphenyls + dibenzofuran
17		C_2-biphenyls + C_1-dibenzofuran
18		C_0-phenanthrene
19		C_1-phenanthrenes
20		C_2-phenanthrenes
21		C_3-phenanthrenes
22		C_4-phenanthrenes
23		C_0-pyrene/fluoranthene
24		C_1-pyrenes/fluoranthenes
25		C_2-pyrenes/fluoranthenes
26		C_3-pyrenes/fluoranthenes
27		C_4-pyrenes/fluoranthenes
28		C_0-chrysene
29		C_1-chrysenes
30		C_2-chrysenes
31		C_3-chrysenes
32		C_4-chrysenes
33		C_1-benzothiophenes
34		C_2-benzothiophenes
35		C_3-benzothiophenes
36		C_4-benzothiophenes
37		C_5-benzothiophenes
28		C_0-dibenzothiophene
39		C_1-dibenzothiophenes
40		C_2-dibenzothiophenes
41		C_3-dibenzothiophenes
42		C_4-dibenzothiophenes
43		C_0-naphthobenzothiophene
44		C_1-naphthobenzothiophenes
45		C_2-naphthobenzothiophenes
46		C_3-naphthobenzothiophenes
47		C_4-naphthobenzothiophenes
48		Monoaromatic steranes
49		Monoaromatic steranes
50		Monoaromatic steranes
51		Triaromatic steranes
52		Triaromatic steranes

Aromatic Hydrocarbon Distribution

MWW2-06-NP-091002



August 13, 2003

Mr. John McKenna
Blasland, Bouck & Lee, Inc.
1920 Opdyke Court, Ste 200
Auburn Hills, MI. 48236-2476

RE: GM PNC RF1 (MI)

Dear Mr. McKenna,

Enclosed are analytical results for one NAPL sample ID MWM4-06-N-072803 submitted to ZymaX on July 29, 2003. Per your request, the following analyses were performed on the sample submitted:

1. Column cleanup
2. GC/MS full scan analysis
3. Specific Gravity
4. Viscosity

My preliminary conclusion based on the analytical data indicates that the NAPL is most likely a mixture of a moderately weathered No.2 fuel oil (or No.2 diesel fuel) and a highly degraded crude oil (or asphalt). In comparison to the previous NAPL sample ID MWM2-06-NP-091002, both samples are similar to each other. Nevertheless, sample MWM4-06-N-072803 is more degraded than the previously analyzed sample.

The project was performed at ZymaX forensics as Laboratory No. 32592.

Please call us at 805.544.4696 if you have any questions regarding the analytical results.

Respectfully,
ZymaX forensics

Shantan Lu, Ph.D.
Director of Petroleum Geochemistry

805.544.4696
www.ZymaXusa.com

71 Zaca Lane
San Luis Obispo CA 93401
fax 805.544.8226

Chain of Custody Record

SEVERN TRENT STL
Severn Trent Laboratories, Inc.

2Y ax

STL-4124 (090

Client: Encore c/o BBL	Project Manager: John McKenna	Date: 7/28/03	Chain of Custody Number: 107916
Address: 1920 Opdyke Crt Suite 200	Telephone Number (Area Code)/Fax Number: 248-377-9162 ext 108 248-890-5445	Lab Number:	Page 1 of 1
City: Auburn Hills / State: MI / Zip Code: 48326	Site Contact: John McKenna	Lab Contact: Alan Jeffery	
Project Name and Location (State): GM PNC RFI (MI)	Carrier/Waybill Number: 836557246301 FEDEX		
Contract/Purchase Order/Quote No.			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Liquid	Containers & Preservatives: Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Analysis (Attach list if more space is needed): Fingerprint Analysis (*)	Viscosity	Specific Gravity				Special Instructions/ Conditions of Receipt
MWM4-06-N-072803	07/28/03	1350					X	3						✓	✓	✓			32592-1		*GC/MS Full Scan & Column Chromatograms

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☒ 21 Days ☐ Other _____ / Std TAT

QC Requirements (Specify)

1. Relinquished By: Beth Lavelle	Date: 7/28/03	Time: 1700	1. Received By:	Date: 7/29/03	Time: 10:20
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE Returned to Client with Report CANARY Stays with the Sample PINK Field Copy

ZymaX envirotechnology

REPORT OF ANALYTICAL RESULTS

Client:	John McKenna Blasland, Bouck & Lee, Inc. 1920 Opdyke Ct., Ste. 200 Auburn Hills, MI 48326-2476

Lab Number:	32592-1
Collected:	07/28/03
Received:	07/29/03
Matrix:	Product

Project:	**GM PNC RFI (MI)**
Project Number:	
Collected by:	**Client**

Sample Description:	MWM4-06-N-072803
Analyzed:	08/04/03
Method:	ASTM D-445

VISCOSITY @ 70° F

CONSTITUENT	PQL* Cst.	RESULT** Cst.
Viscosity @ 70° F	0.01	10.

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717
***PQL - Practical Quantitation Limit**
****Results listed as ND would have been reported if present at or above the listed PQL.**

Note: Analysis performed by CA Department of Health Services certified laboratory #2438

Submitted by,
ZymaX envirotechnology, inc.

Michael Ng
Assistant Lab Director

32592-1v.xls
MN/sks/jgc

REPORT OF ANALYTICAL RESULTS

ZymaX FORENSICS

Client:	John McKenna Blasland, Bouck & Lee, Inc. 1920 Opdyke Ct., Ste. 200 Auburn Hills, MI 48326-2476

Lab Number:	32592-1
Collected:	07/28/03
Received:	07/29/03
Matrix:	Product

Project:	**GM PNC RFI (MI)**
Project Number:	
Collected by:	**Client**

Sample Description:	MWM4-06-N-072803
Extracted:	08/13/03
Method:	ASTM D 287

SPECIFIC GRAVITY

	0.89

Submitted by,
ZymaX FORENSICS

Shan-Tan Lu, Ph.D.
Director, Petroleum Geochemistry

32592-1s.xls
STL/dag

REPORT OF ANALYTICAL RESULTS

ZymaX FORENSICS

Client:	John McKenna Blasland, Bouck & Lee, Inc. 1920 Opdyke Ct., Ste. 200 Auburn Hills, MI 48326-2476

Lab Number:	32592-1
Collected:	07/28/03
Received:	07/29/03
Matrix:	Product

Project:	**GM PNC RFI (MI)**
Project Number:	
Collected by:	**Client**

Sample Description:	See Attached Data
Analyzed:	08/13/03
Method:	GC/MS

GC/MS FULL SCAN

Mass Chromatograms

ION (M/Z)	COMPOUND CLASS
TIC	All compounds
85	n-Alkanes
113	Iso-Alkanes and Isoprenoids
83	Alkylcyclohexanes
134	C_4-benzenes
123	Bicyclanes
191	Terpanes
217	Steranes
253	Monoaromatic steranes
231	Triaromatic steranes
Bar diagram	Aromatic Hydrocarbon Distribution

note: Chromatograms and data follow this cover page.

Submitted by,
ZymaX FORENSICS

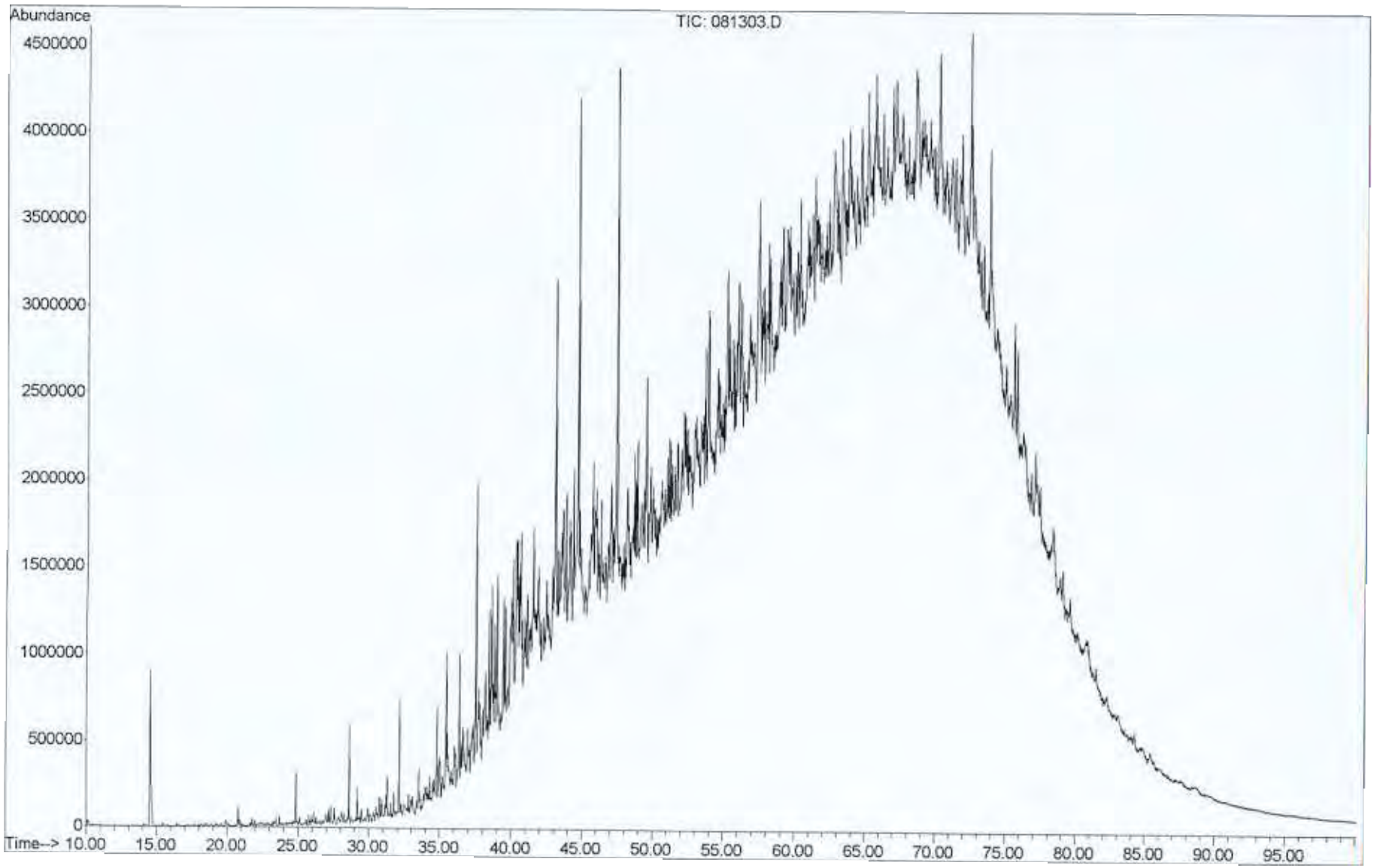
Shan-Tan Lu, Ph.D.
Director, Petroleum Geochemistry

32592-1.xls
STL

805.544.4696
www.ZymaXusa.com

71 Zaca Lane
San Luis Obispo CA 93401
fax 805.544.8226

mp MWM Al Ar
GM PN



Table

Key to Chromatogram Symbol Identification for m/z 85 and m/z 113 Paraffins and Isoparaffins

Symbol	Detail
i-10	Iso-alkane with 10 carbon atoms
i-15	Farnesane (isoprenoid with 15 carbon atoms)
i-16	Isoprenoid with 16 carbon atoms
Pr	Pristane (isoprenoid with 19 carbon atoms)
Ph	Phytane (isoprenoid with 20 carbon atoms)
nC_8	n-C_8 normal alkane
nC_{15}	n-C_{15} normal alkane
i-8	2,5-(2,4)-Dimethylhexane
i-8'	2,3,4-Trimethylpentane
i-8"	2,3-Dimethylhexane
CH-*n*	Alkylcyclohexane (where *n* indicates number of carbon atoms in the side chain)

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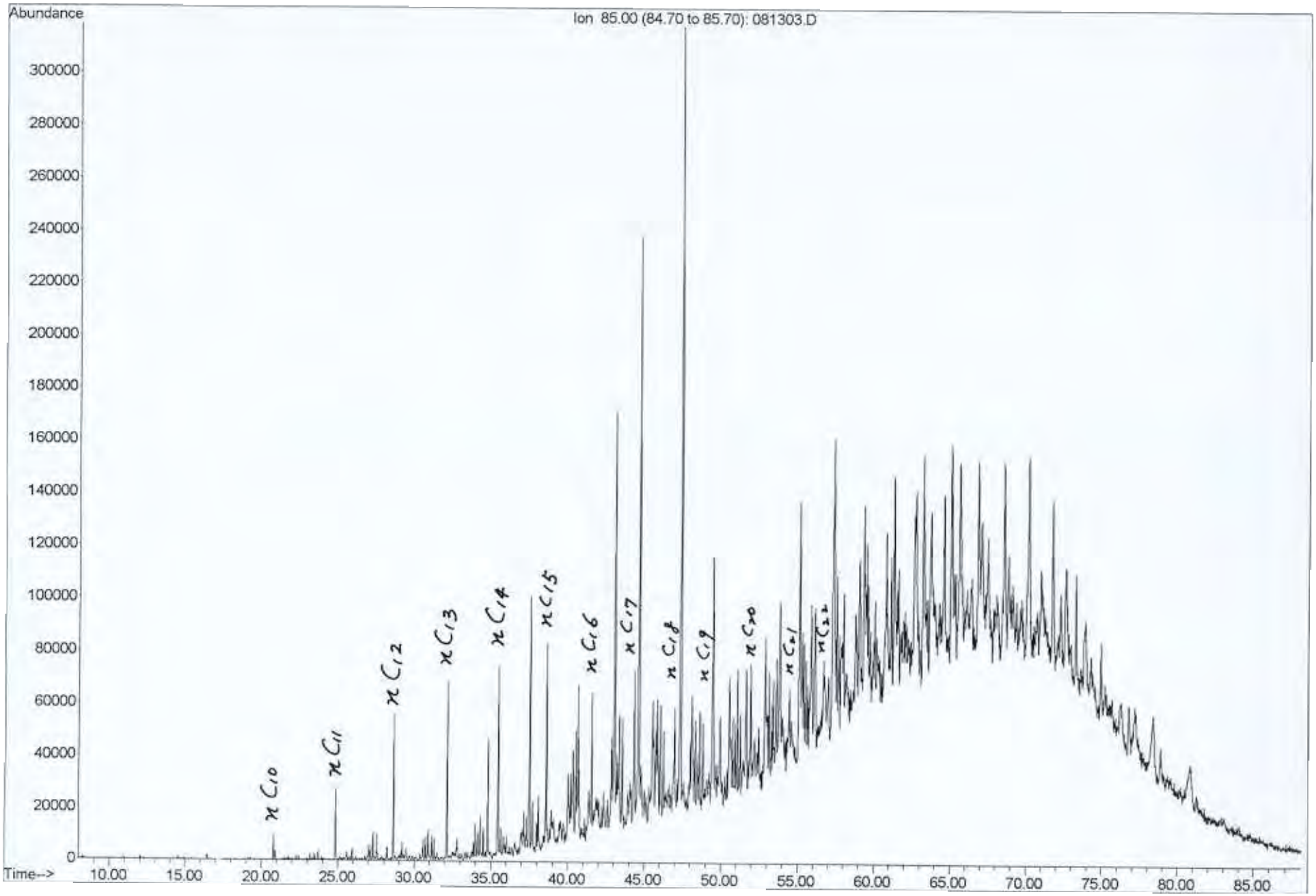
ZymaX FORENSICS



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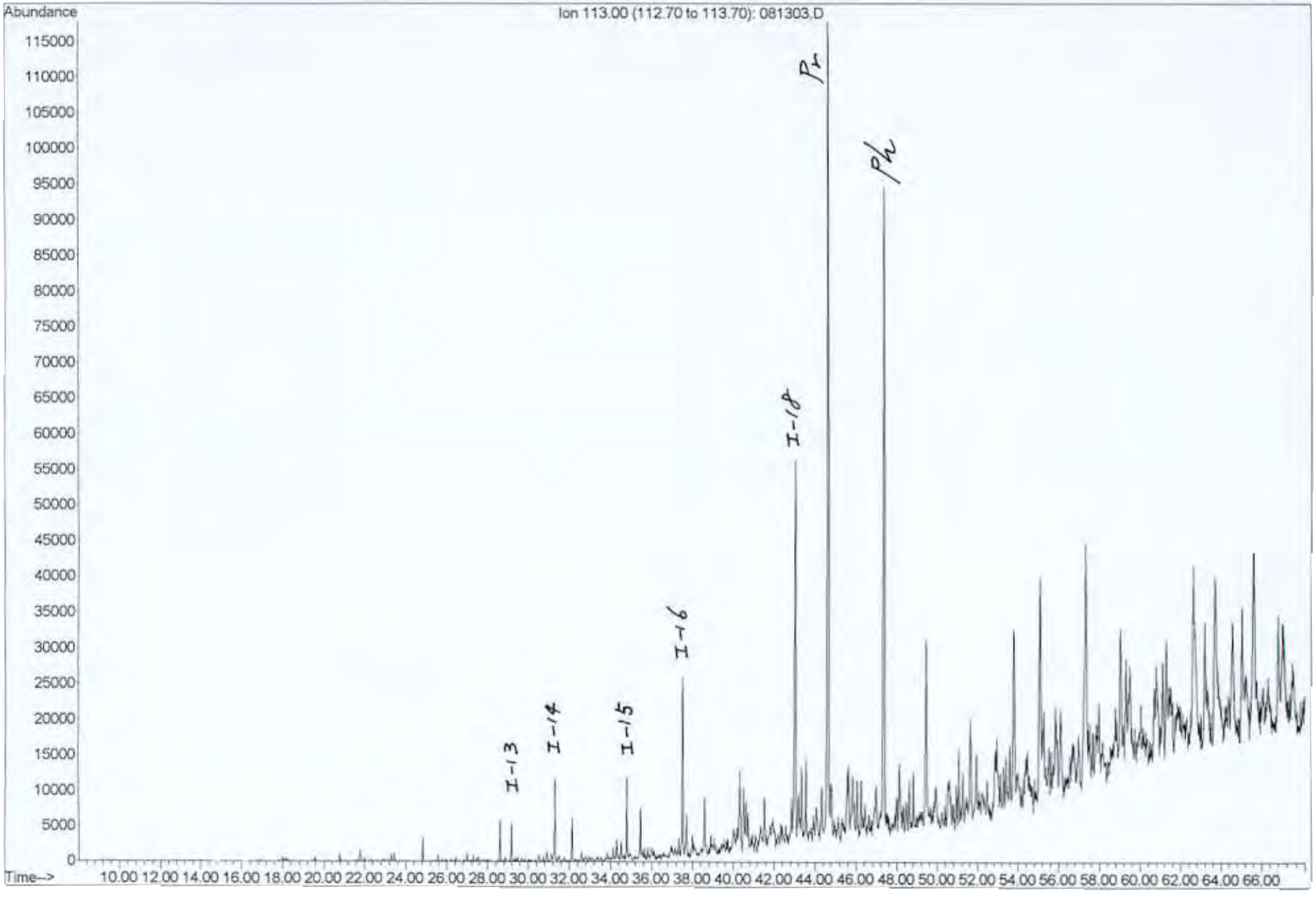
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I-13
I-14
I-15
I-16
I-18
Pr
Pw

Table

Key for Alkylcyclohexanes at m/z 83

Symbol	Detail
	Methylcyclohexane
CH-2:	Ethylcyclohexane
CH-3:	Propylcylohexane
CH-4:	Butylcyclohexane
CH-5:	Pentylcyclohexane
	Hexylcyclohexane
CH-7:	Heptylcyclohexane
	Octylcyclohexane
CH-9:	Nonylcyclohexane
CH-10:	Decylcyclohexane
CH-11:	Undecylcyclohexane
CH-12:	Dodecylcyclohexane
CH-13:	Tridecylcyclohexane
	Tetradecylcyclohexane

MWM
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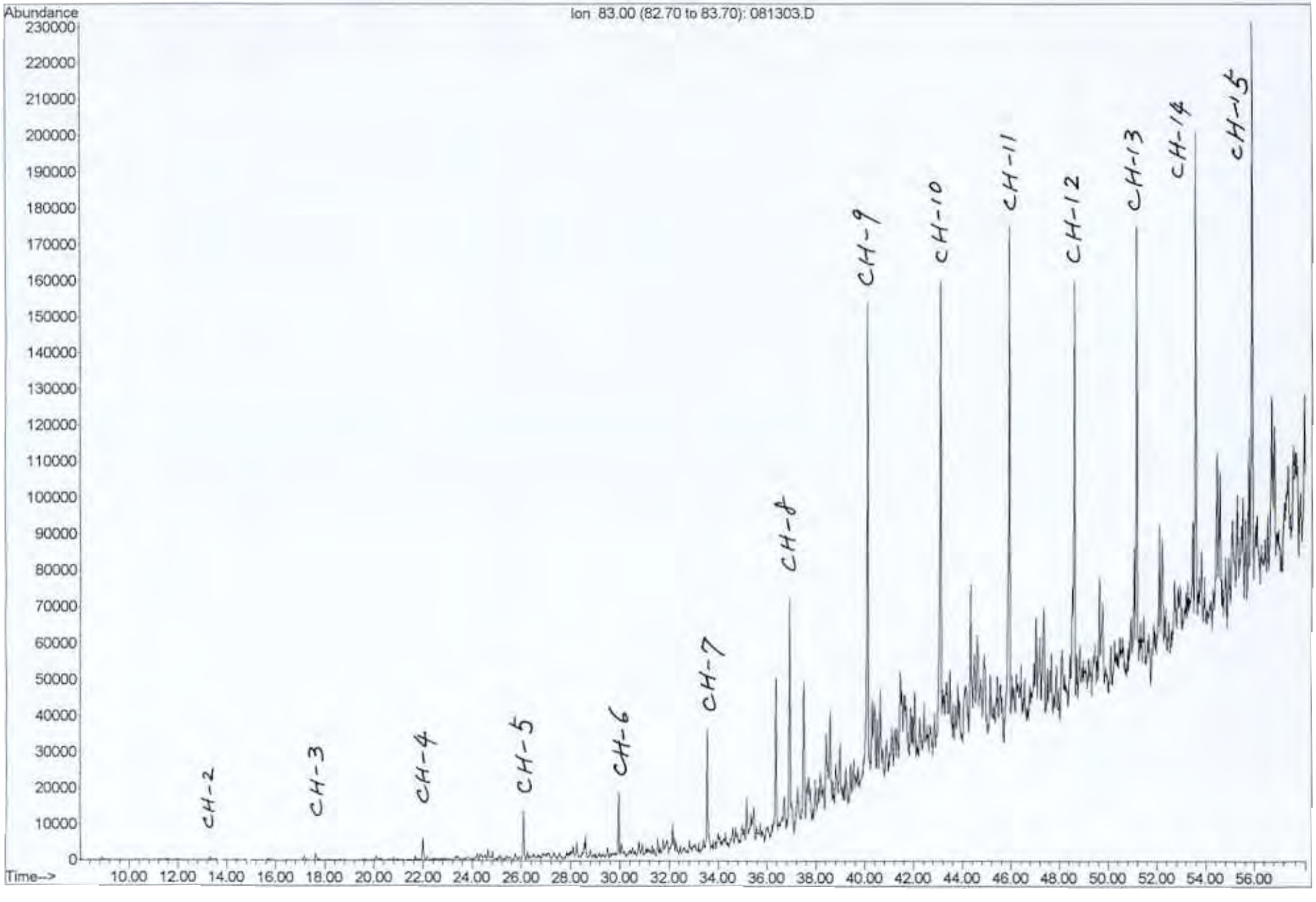
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70000
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40000
30000
20000
10000
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Time-->
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CH-2
CH-3
CH-4
CH-5
CH-6
CH-7
CH-8
CH-9
CH-10
CH-11
CH-12
CH-13
CH-14
CH-15

Key for C_4-Alkylbenzenes (m/z 134 mass chromatograms)

#	Compound
16	Sec-Butylbenzene
17	1-Methyl-3-Isopropylbenzene
18	1-Methyl-4-Isopropylbenzene
19	1-Methyl-2-Isopropylbenzene
20	1,3-Diethylbenzene
21	1-Methyl-3-Propylbenzene
22	Butylbenzene
23	1,3-Dimethyl-5-Ethylbenzene
24	1,2-Diethylbenzene
25	1-Methyl-2-Propylbenzene
26	1,4-Dimethyl-2-Ethylbenzene
27	1,3-Dimethyl-4-Ethylbenzene
28	1,2-Dimethyl-4-Ethylbenzene
29	1,3-Dimethyl-2-Ethylbenzene
30	1,2-Dimethyl-3-Ethylbenzene
31a	1,2,4,5-Tetramethylbenzene
31	1,2,3,5-Tetramethylbenzene
32	1,2,3,4-Tetramethylbenzene

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GM PNC

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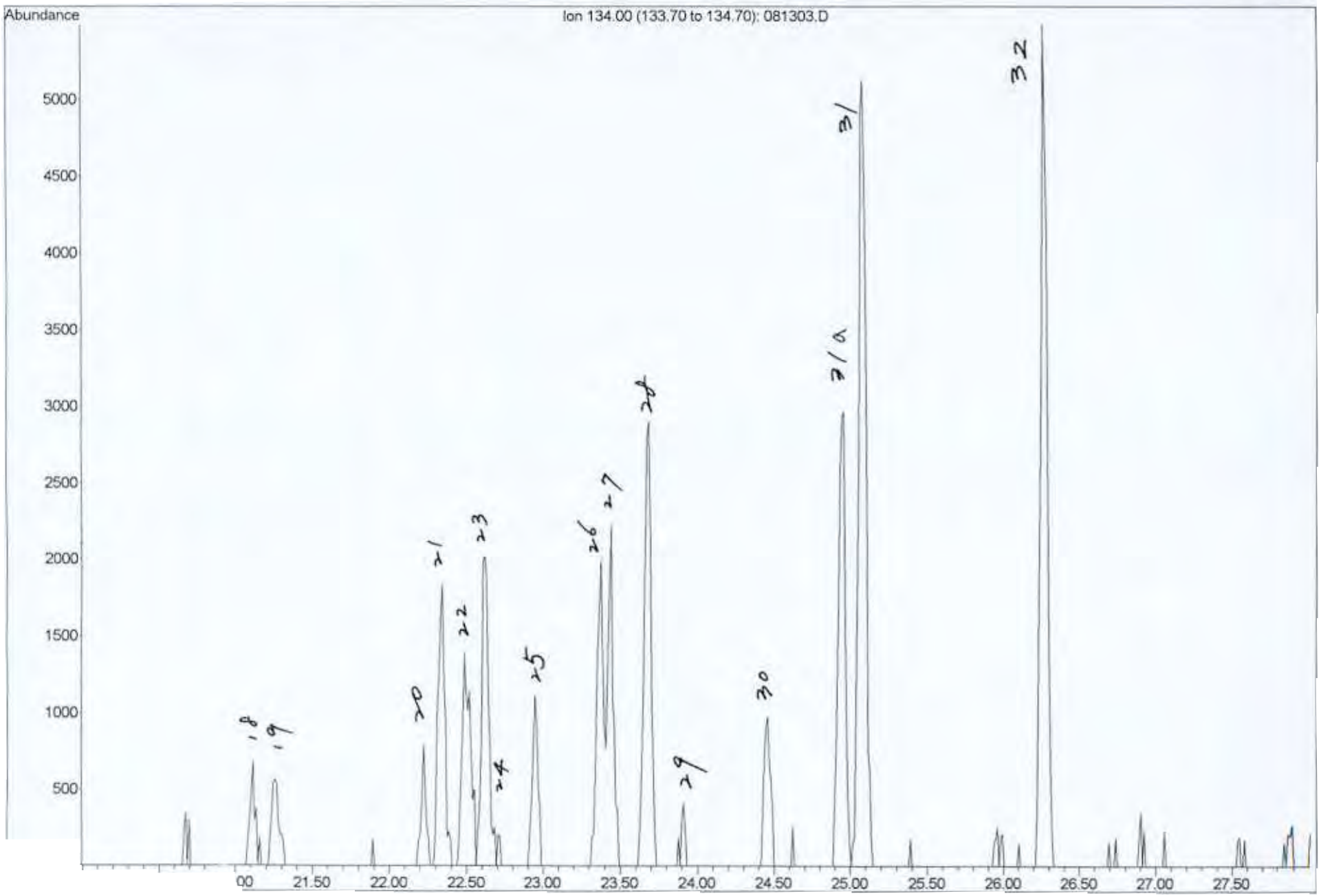
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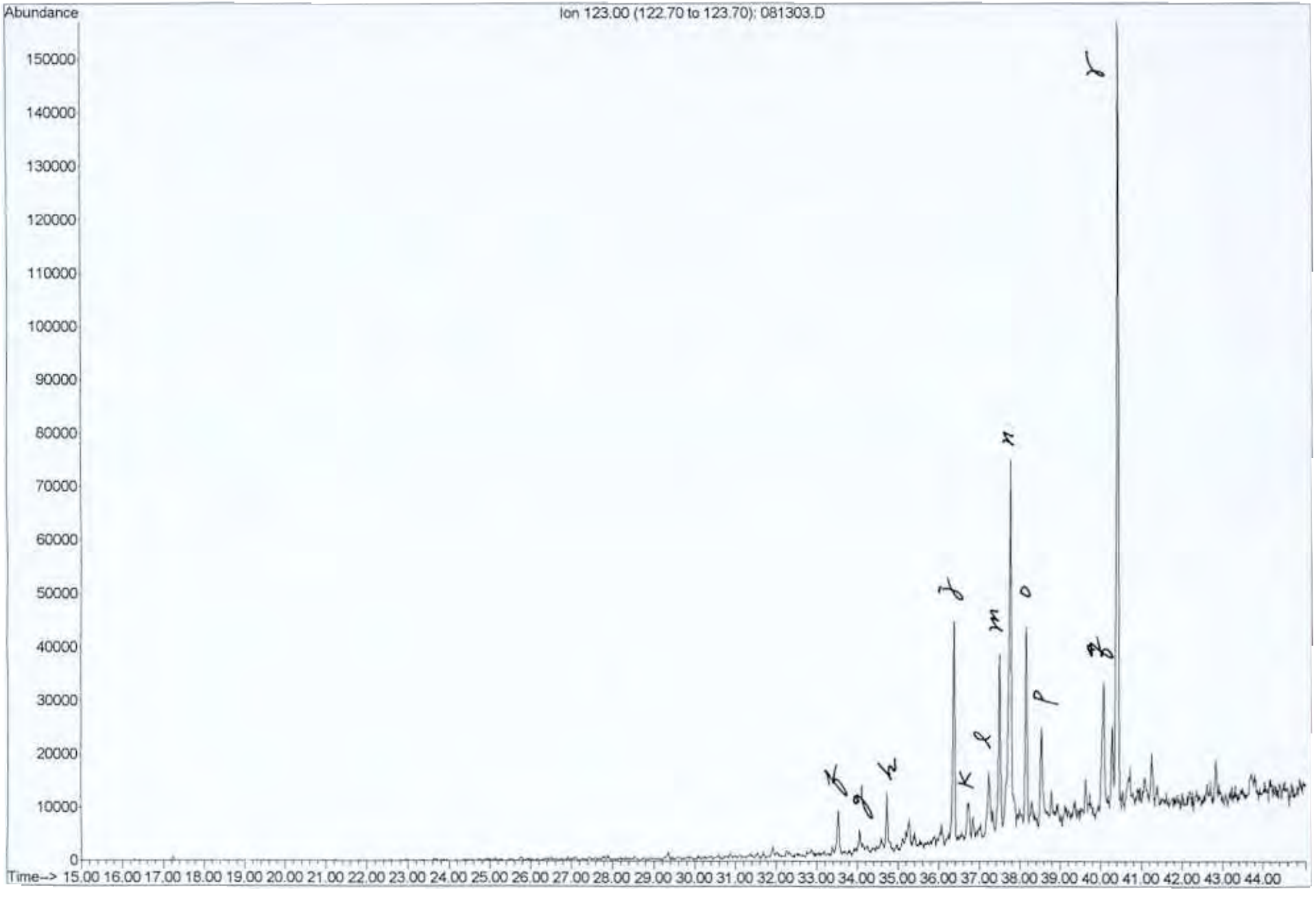
32
00
21.50
22.00
22.50
23.00
23.50
24.00
24.50
25.00
25.50
26.00
26.50
27.00
27.50

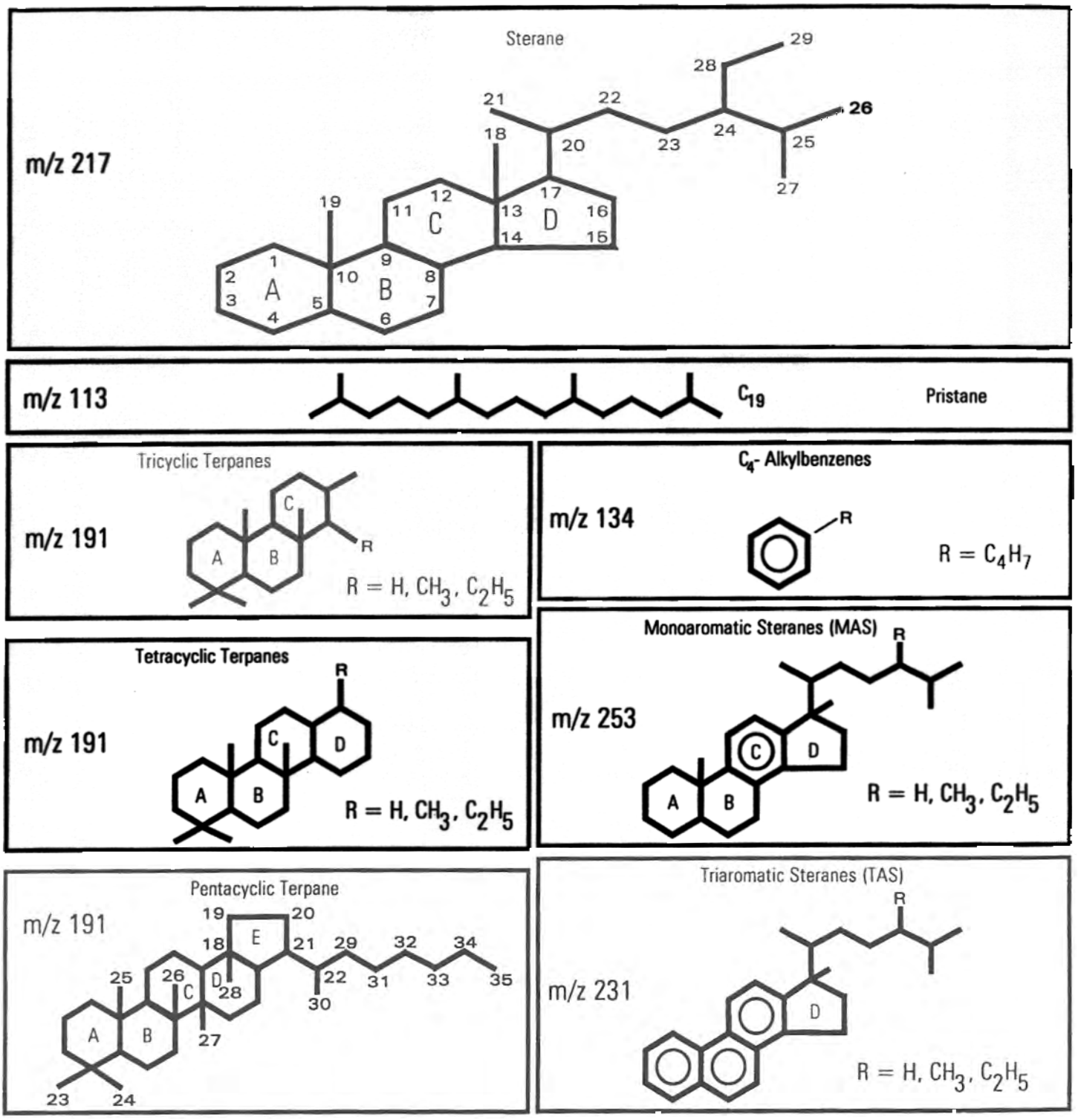
Table

Key for identification of the Bicyclanes (m/z 123 mass chromatograms)

Peak No.	Identity	Formula	M.W.
a	2,2,3-Trimethylbicyloheptane	$C_{10}H_{18}$	138
b	C_{10} bicycloalkane	$C_{10}H_{18}$	
c	3,3,7-Trimethylbicycloheptane	$C_{10}H_{18}$	138
d	C_{11} decalin	$C_{11}H_{20}$	
f	Nordrimane	$C_{14}H_{26}$	194
g	Nordrimane	$C_{14}H_{26}$	194
h	Rearranged drimane	$C_{15}H_{28}$	
	Rearranged drimane	$C_{15}H_{28}$	208
k	Isomer of eudesmane	$C_{15}H_{28}$	208
	4β(H) Eudesmane	$C_{15}H_{28}$	208
m	C_{15} bicyclic sesquiterpane	$C_{15}H_{28}$	208
n	8β(H) Drimane	$C_{15}H_{28}$	208
o	C_{15} bicyclic sesquiterpane	$C_{15}H_{28}$	208
p	C_{16} bicyclic sesquiterpane	$C_{16}H_{30}$	
q	C_{16} bicyclic sesquiterpane	$C_{16}H_{30}$	
r	8β(H) Homodrimane	$C_{16}H_{30}$	222

MWM4-06-N-072803 (32592-1) Ali+Arom
GM PNC RF1 (M1), BBL, 08-13-03





The compound structures of pristane, C_4-alkylbenzenes, sterane; terpanes; monoaromatic and triaromatic steranes

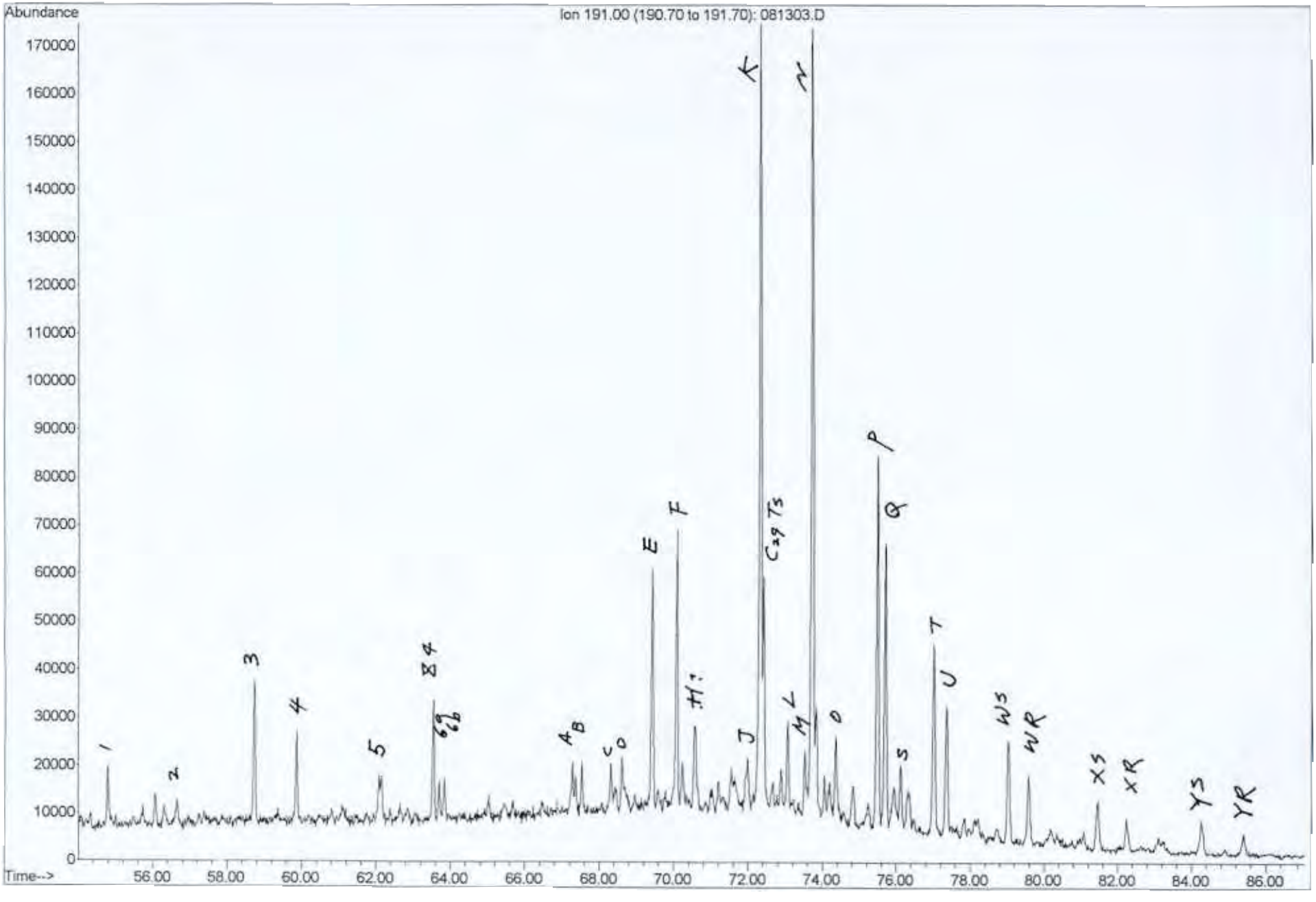
Table

ZymaX FORENSICS

Key for Tricyclic, Tetracyclic, and Pentacyclic Terpanes Identification (m/z 191 mass chromatograms)

Code	Identity	Carbon #
	C_{20}-Tricyclic Terpane	
	C_{21}-Tricyclic Terpane	
	C_{22}-Tricyclic Terpane	
	C_{23}-Tricyclic Terpane	
	C_{24}-Tricyclic Terpane	
	C_{25}-Tricyclic Terpane	
	C_{24}-Tetracyclic Terpane	
	C_{26}-Tricyclic Terpane	
	C_{26}-Tricyclic Terpane	
	C_{27}-Tricyclic Terpane	
	C_{28}-Tricyclic Terpane #1	
	C_{28}-Tricyclic Terpane #2	
	C_{29}-Tricyclic Terpane #1	
	C_{29}-Tricyclic Terpane #2	
	18α-22,29,30-Trisnorneohopane (Ts)	
	17α-22,29,30-Trisnorhopane (Tm)	
	17ß-22,29-30-Trisnorhopane	
	17α-23,28-Bisnorlupane	
	C_{30}-Tricyclic Terpane #1	
	C_{30}-Tricyclic Terpane #2	
	17α-28,30-Bisnorhopane	
11a	C_{31}-Tricyclic Terpane #1	
J	17α-25-Norhopane	
11b	C_{31}-Tricyclic Terpane #2	
K	17α,21ß-30-Norhopane	
C_{29}Ts	18α-30-Norneohopane	
C_{30}*	17α-Diahopane	
L	17ß-21α-30-Normoretane	
Ma	18α-Oleanane	
Mb	18ß-Oleanane	
N	17α,21ß-Hopane	
O	17ß,21α-Moretane	
13a	C_{33}-Tricyclic Terpane #1	
13b	C_{33}-Tricyclic Terpane #2	
P	22S-17α,21ß-30-Homohopane	
Q	22R-17α,21ß-30-Homohopane	
R	Gammacerane	
14a	C_{34}-Tricyclic Terpane #1	
S	17ß,21α-Homomoretane	
14b	C_{34}-Tricyclic Terpane #2	
T	22S-17α,21ß-30-Bishomohopane	
U	22R-17α,21ß-30-Bishomohopane	
15a	C_{35}-Tricyclic Terpane #1	
15b	C_{35}-Tricyclic Terpane #2	
V	17ß,21α-C_{32}-Bishomomoretane	
WS	22S-17α,21ß-30,31,32-Trishomohopane	
WR	22R-17α,21ß-30,31,32-Trishomohopane	
16a	C_{36}-Tricyclic Terpane #1	
16b	C_{36}-Tricyclic Terpane #2	
XS	22S-17α,21ß-30,31,32,33-Tetrahomohopane	
XR	22R-17α,21ß-30,31,32,33-Tetrahomohopane	
YS	22S-17α,21ß-30,31,32,33,34-Pentahomohopane	
YR	22R-17α,21ß-30,31,32,33,34-Pentahomohopane	

MWM4-06-N-072803 (32592-1) Ali+Arom
GM PNC RF1 (M1), BBL, 08-13-03



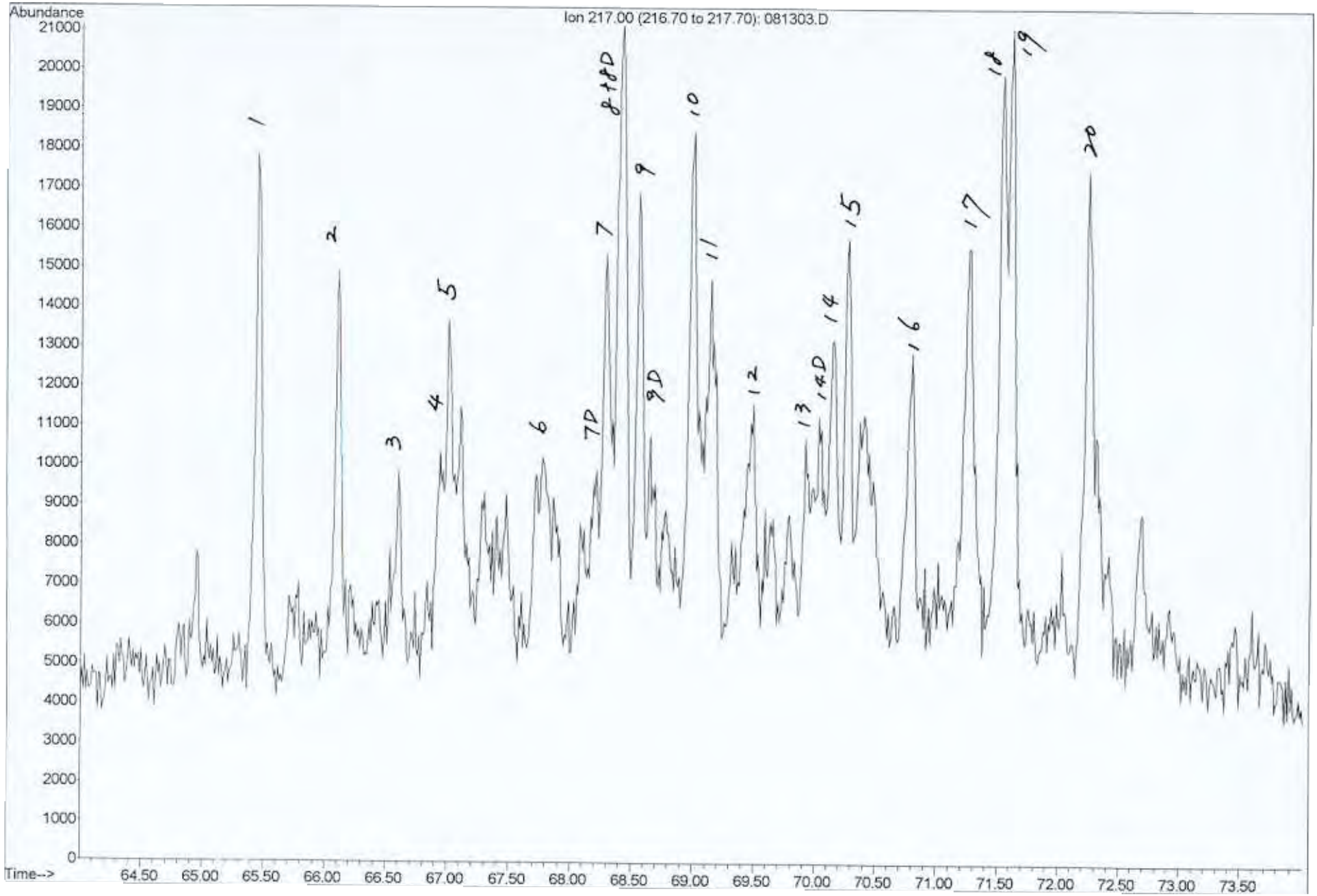
Table

Key for Steranes Identification (m/z 217 Mass Chromatogram)

Code	Identity	Carbon #
	13ß,17α-diacholestane (20S)	
	13ß,17α-diacholestane (20R)	
	13α,17ß-diacholestane (20S)	
	13α,17ß-diacholestane (20R)	
	24-methyl-13ß,17α-diacholestane (20S)	
	24-methyl-13ß,17α-diacholestane (20R)	
	24-methyl-13α,17ß-diacholestane (20S)	
	14α,17α-cholestane (20S)	
	24-ethyl-13ß,17α-diacholestane (20S)	
	14ß,17ß-cholestane (20R)	
	14ß,17ß-cholestane (20S)	
	24-methyl-13α,17ß-diacholestane (20R)	
	14α,17α-cholestane (20R)	
	24-ethyl-13ß,17α-diacholestane (20R)	
	24-ethyl-13α,17ß-diacholestane (20S)	
	24-methyl-14α,17α-cholestane (20S)	
	24-ethyl-13α,17ß-diacholestane (20R)	
	24-methyl-14ß,17ß-cholestane (20R)	
	24-methyl-14ß,17ß-cholestane (20S)	
	24-methyl-14α,17α-cholestane (20R)	
	24-ethyl-14α-cholestane (20S)	
18	24-ethyl-14ß,17ß-cholestane (20R)	
19	24-ethyl-14ß,17ß-cholestane (20S)	
20	24-ethyl-14α,17α-cholestane (20R)	
21A	24-n-Propylcholestane (20S)	
21B	4-methyl-24-ethylcholestane (20S)	
22A	4α-methyl-24-ethyl-14β,17β-cholestane(20S)	
22B	24-n-propyl-14β,17β-cholestane (20S)	
23A	4α-methyl-24-ethyl-14β,17β-cholestane(20R)	
23B	24-n-propyl-14β,17β-cholestane (20R)	
24A	4α-methyl-24-ethylcholestane(20R)	
24B	24-n-propylcholestane (20R)	

A1

GM PN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68.50
69.00
69.50
70.00
70.50
71.00
71.50
72.00
72.50
73.00
73.50
1
2
3
4
5
6
7D
7
8+8D
9
9D
10
11
12
13
14D
14
15
16
17
18
19
20

Table

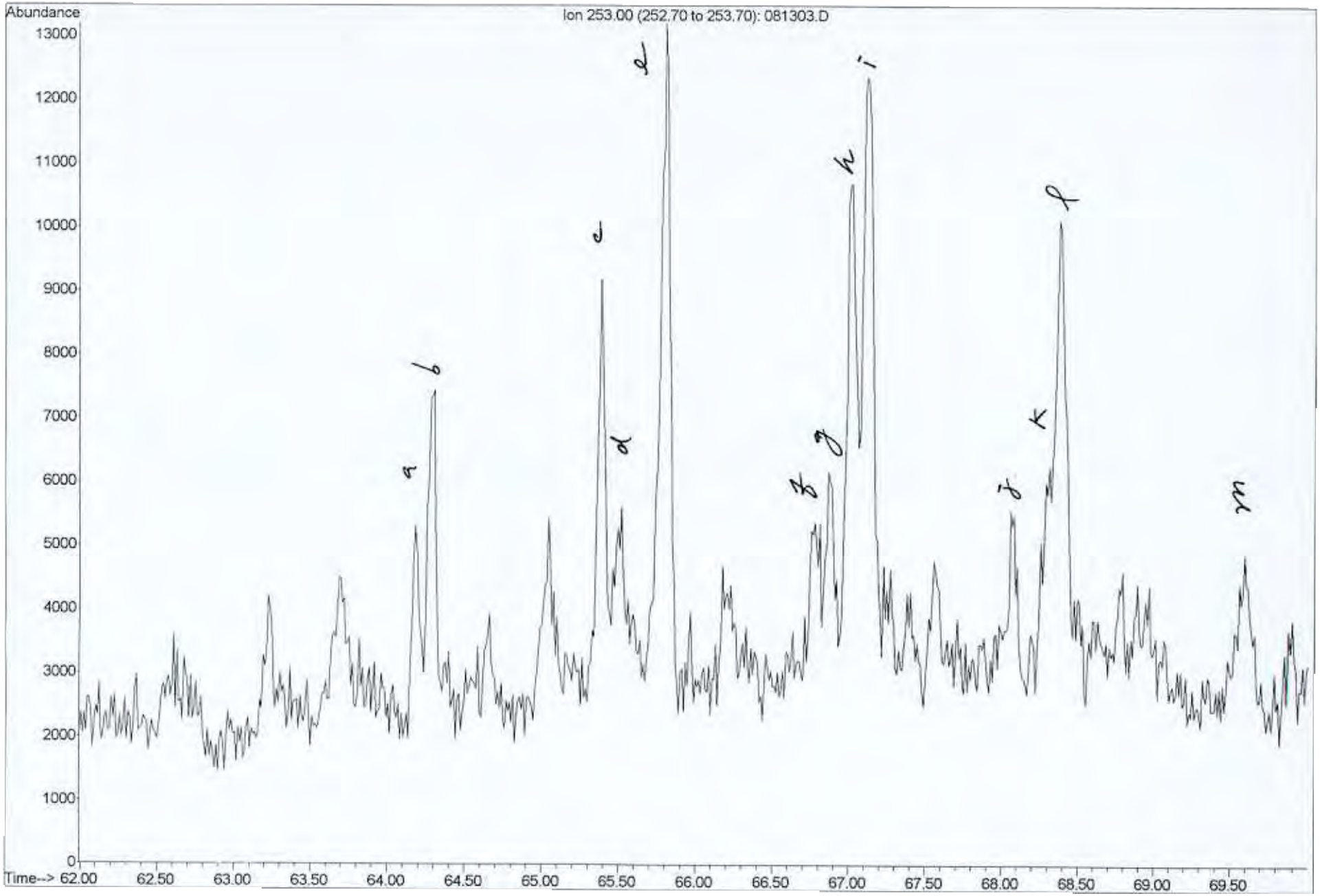
Key for Monoaromatic Steranes Identification (m/z 253 mass chromatogram)

Code	Identity	Elemental Composition
a	20S, 5ß C_{27}-Monoaromatic sterane	$C_{27}H_{42}$
b	20S, dia C_{27}-Monoaromatic sterane	$C_{27}H_{42}$
c	20R, 5ß C_{27}-Monoaromatic sterane + 20R C_{27} dia MAS	$C_{27}H_{42}$
d	20S, 5α C_{27}-Monoaromatic sterane	$C_{27}H_{42}$
e	20S, 5ß C_{28}-Monoaromatic sterane + 20S C_{28} dia MAS	$C_{28}H_{44}$
f	20R, 5α C_{27}-Monoaromatic sterane	$C_{27}H_{42}$
g	20S, 5α C_{28}-Monoaromatic sterane	$C_{28}H4_4$
h	20R, 5ß C_{28}-Monoaromatic sterane + 20R C_{28} dia MAS	$C_{28}H_{44}$
i	20S, 5ß C_{29}-Monoaromatic sterane + 20S C_{29} dia MAS	$C_{29}H_{46}$
j	20S, 5α C_{29}-Monoaromatic sterane	$C_{29}H_{46}$
k	20R, 5α C_{28}-Monoaromatic sterane	$C_{28}H_{44}$
	20R, 5ß C_{29}-Monoaromatic sterane + 20R C_{29} dia MAS	$C_{29}H_{46}$
m	20R, 5α C_{29}-Monoaromatic sterane	$C_{29}H_{46}$

TWP

PN

ZymaX FORENSICS

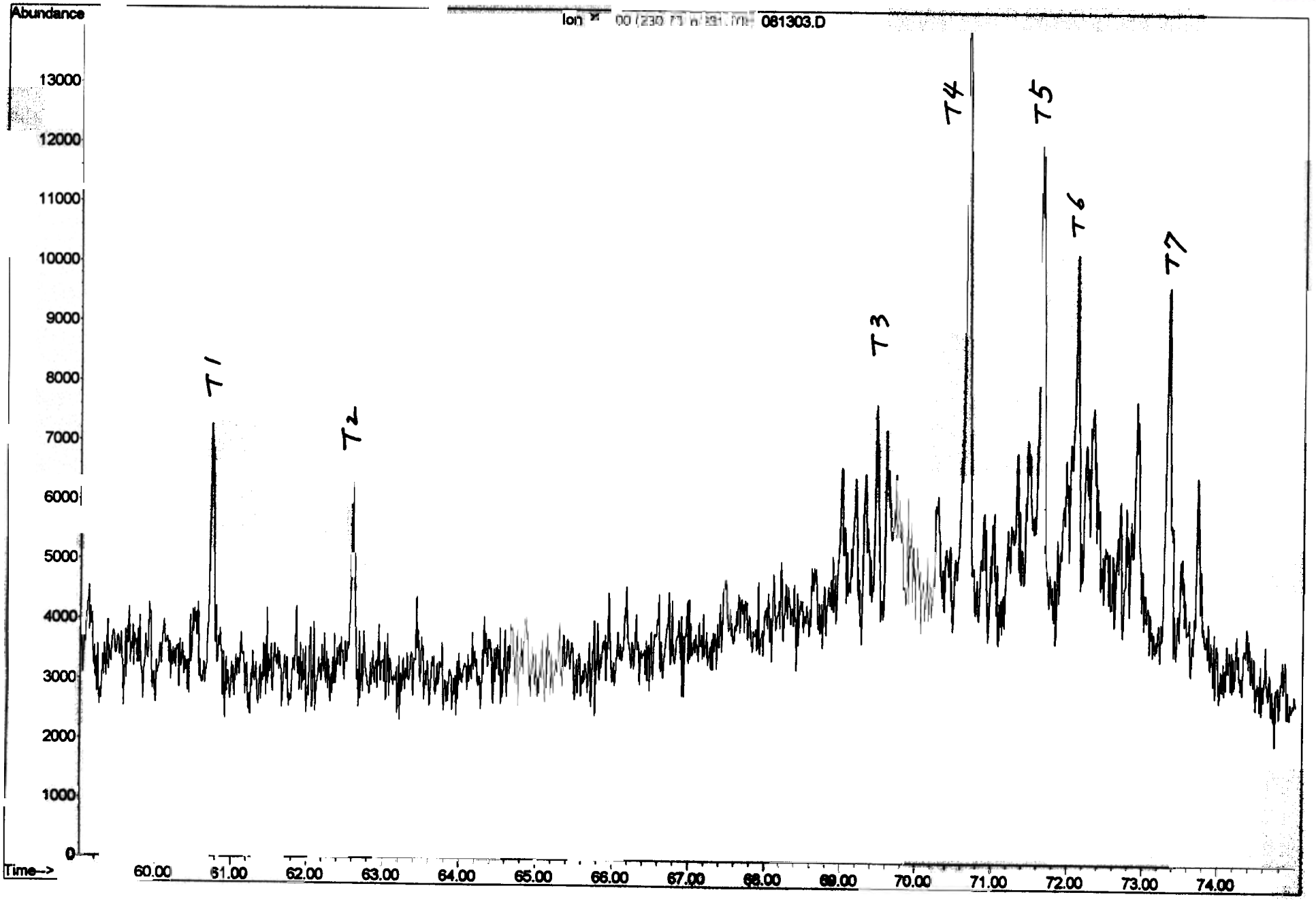


Table

Key for Triaromatic Steranes Identification (m/z 231 chromatogram)

Code	Identity	Elemental Composition
T1	C_{20} Triaromatic sterane	$C_{20}H_{20}$
T2	C_{21} Triaromatic sterane	$C_{21}H_{22}$
T3	20S C_{26} Triaromatic sterane	$C_{26}H_{32}$
T4	20R C_{26} + 20S C_{27}-Triaromatic steranes	$C_{26}H_{32}$ + $C_{27}H_{34}$
T5	20S C_{28}-Triaromatic sterane	$C_{28}H_{36}$
T6	20R C_{27}-Triaromatic sterane	$C_{27}H_{34}$
T7	20R C_{28}-Triaromatic sterane	$C_{28}H_{36}$

MWM4-06-N-072803 (32592-1) Ali+Arom
GM PNC RF1 (M1), BBL, 08-13-03



Table

Key for Aromatic Compounds Identification in Bar Diagram

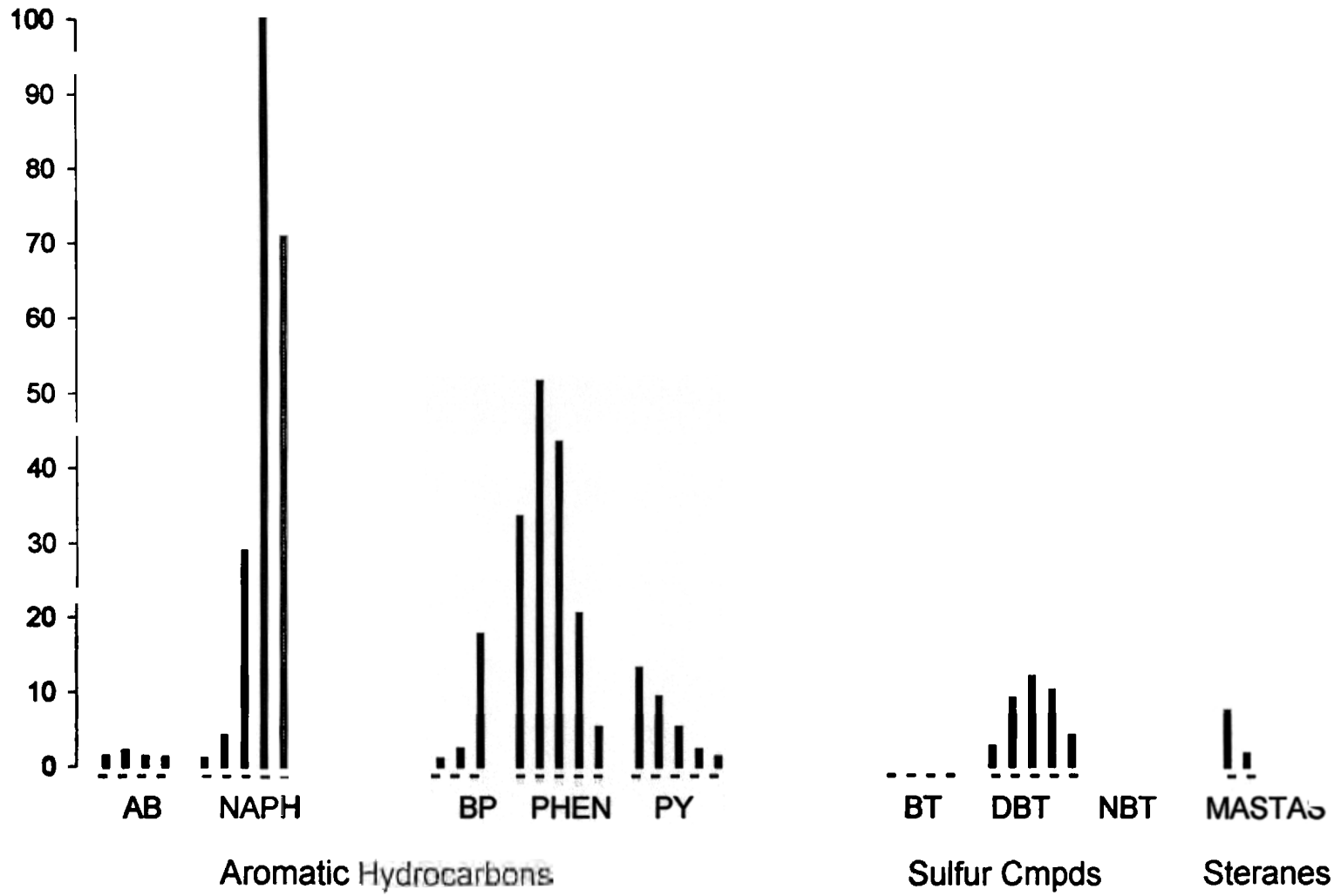
	C_3-C_6 Alkylbenzenes
NAPH:	C_0-C_4 Naphthalenes
	C_0-C_4 Fluorenes
	C_0-C_2 BP Biphenyl/Dibenzofuran
PHEN:	C_0-C_4 Phenanthrenes
	C_0-C_4 Pyrenes/Fluoranthenes
CHR:	C_0-C_4 Chrysenes
	C_1-C_5 Benzothiophenes
DBT:	C_0-C_4 Dibenzothiophenes
	C_0-C_4 Naphthobenzothiophenes
	Monoaromatic Steranes
	Triaromatic Steranes

ZymaX FORENSICS

Key for Identifying Aromatic Hydrocarbons at Various m/z Units

No	m/z	Compound
1		C_3-alkylbenzenes
2		C_4-alkylbenzenes
3		C_5-alkylbenzenes
4		C_6-alkylbenzenes
5		C_0-naphthalene
6		C_1-naphthalenes
7		C_2-naphthalenes
8		C_3-naphthalenes
9		C_4-naphthalenes
10		C_0-fluorene
11		C_1-fluorenes
12		C_2-fluorenes
13		C_3-fluorenes
14		C_4-fluorenes
15		C_0-biphenyl
16		C_1-biphenyls + dibenzofuran
17		C_2-biphenyls + C_1-dibenzofuran
18		C_0-phenanthrene
19		C_1-phenanthrenes
20		C_2-phenanthrenes
21		C_3-phenanthrenes
22		C_4-phenanthrenes
23		C_0-pyrene/fluoranthene
24		C_1-pyrenes/fluoranthenes
25		C_2-pyrenes/fluoranthenes
26		C_3-pyrenes/fluoranthenes
27		C_4-pyrenes/fluoranthenes
28		C_0-chrysene
29		C_1-chrysenes
30		C_2-chrysenes
31		C_3-chrysenes
32		C_4-chrysenes
33		C_1-benzothiophenes
34		C_2-benzothiophenes
35		C_3-benzothiophenes
36		C_4-benzothiophenes
37		C_5-benzothiophenes
28		C_0-dibenzothiophene
39		C_1-dibenzothiophenes
40		C_2-dibenzothiophenes
41		C_3-dibenzothiophenes
42		C_4-dibenzothiophenes
43		C_0-naphthobenzothiophene
44		C_1-naphthobenzothiophenes
45		C_2-naphthobenzothiophenes
46		C_3-naphthobenzothiophenes
47		C_4-naphthobenzothiophenes
48		Monoaromatic steranes
49		Monoaromatic steranes
50		Monoaromatic steranes
51		Triaromatic steranes
52		Triaromatic steranes

Aromatic Distribution



Appendix F

Supporting Risk Calculations

ENCORE
Environmental Corporate Remediation

Appendix F.1: Estimated Cumulative Cancer Risk and HI for AOIs W-1, W-8, W-9, and Area of Industrial Redevelopment

Estimated Cumulative Cancer Risk and HI for AOI W-01
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Conc in Soil[1] (mg/kg)	Back-ground (mg/kg)	Screening Criteria at 10^{-6} Risk (mg/kg)	Screening Criteria at HQ of 1 (mg/kg)	Cancer Risk	HQ
VOC	Acetone	67-64-1	ID	92	51	2.2E+00			6.0E+03		3.7E-04
VOC	Benzene	71-43-2	A	92	13	**1.1E-01**		1.3E+00	2.4E+01	8.1E-08	4.4E-03
VOC	2-Butanone	78-93-3	ID	92	35	2.3E+00			2.7E+04		8.5E-05
VOC	Carbon Disulfide	75-15-0		92	4	9.6E-03			1.2E+03		8.0E-06
VOC	Chlorobenzene	108-90-7	D	92	1	1.1E-01			5.3E+02		2.1E-04
VOC	Chloroethane	75-00-3		92	3	5.2E-03		6.5E+00	1.8E+04	8.0E-10	2.9E-07
VOC	Cumene	98-82-8	D	36	10	1.1E+00			2.0E+03		5.5E-04
VOC	Cyclohexane	110-82-7	ID	36	10	3.0E-01			3.2E+04		9.4E-06
VOC	1,2-Dichlorobenzene	95-50-1	D	85	2	4.5E-01			4.1E+03		1.1E-04
VOC	1,3-Dichlorobenzene	541-73-1	D	85	1	1.1E-01			6.3E+01		1.7E-03
VOC	1,4-Dichlorobenzene	106-46-7	C	85	1	2.6E-03		7.9E+00	1.9E+03	3.3E-10	1.4E-06
VOC	Dichlorodifluoromethane	75-71-8		46	1	1.4E-03			3.1E+02		4.5E-06
VOC	1,1-Dichloroethane	75-34-3	C	92	4	1.7E-01			1.7E+03		1.0E-04
VOC	cis-1,2-Dichloroethene	156-59-2	D	92	4	1.4E+00			1.5E+02		9.3E-03
VOC	trans-1,2-Dichloroethene	156-60-5		92	1	1.8E-01			2.3E+02		7.8E-04
VOC	Ethyl Benzene	100-41-4	D	92	23	2.5E+01		2.0E+01	7.4E+03	1.3E-06	3.4E-03
VOC	2-Hexanone	591-78-6		92	3	1.6E-02					
VOC	Methyl Acetate	79-20-9		36	8	3.4E+01			9.2E+04		3.7E-04
VOC	4-Methyl-2-pentanone	108-10-1	ID	92	8	6.8E-01			2.8E+03		2.4E-04
VOC	Methylcyclohexane	108-87-2		36	15	1.4E+00			8.7E+03		1.6E-04
VOC	Methylene Chloride	75-09-2	B2	92	11	2.5E+01		2.1E+01	9.3E+03	1.2E-06	2.7E-03
VOC	Pentachloroethane	76-01-7		10	1	9.9E-02					
VOC	Tetrachloroethene	127-18-4	C-B2	92	12	5.6E+00		3.4E+00	1.8E+03	1.6E-06	3.1E-03
VOC	Toluene	108-88-3	D	92	38	4.2E+01			2.2E+03		1.9E-02
VOC	1,1,1-Trichloroethane	71-55-6	D	92	2	3.9E-03			6.9E+03		5.7E-07
VOC	Trichloroethene	79-01-6	C-B2	92	5	2.3E+00		7.5E+00	9.8E+01	3.0E-07	2.3E-02
VOC	Trichlorofluoromethane	75-69-4		46	2	1.5E-03			1.3E+03		1.2E-06
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		36	3	8.9E-03			6.9E+04		1.3E-07
VOC	Vinyl Chloride	75-01-4	A	92	1	9.5E-03		7.5E-01	1.4E+02	1.3E-08	6.8E-05
VOC	Xylenes (total)	1330-20-7	ID	92	27	**2.6E-01**			9.0E+02		2.8E-04
SVOC	Acenaphthene	83-32-9		68	16	3.6E+01			2.9E+04		1.2E-03
SVOC	Acenaphthylene	208-96-8	D	68	2	2.0E+00			2.9E+04		6.9E-05
SVOC	Anthracene	120-12-7	D	68	20	2.1E+01			2.4E+05		8.8E-05
SVOC	Atrazine	1912-24-9		36	1	9.6E-02		7.8E+00	2.2E+04	1.2E-08	4.4E-06
SVOC	Benzo(a)anthracene	56-55-3	B2	68	23	1.5E+01		2.1E+00		7.1E-06	
SVOC	Benzo(a)pyrene	50-32-8	B2	68	16	**2.4E+00**		2.1E-01		1.2E-05	
SVOC	Benzo(b)fluoranthene	205-99-2	B2	68	24	1.1E+01		2.1E+00		5.2E-06	
SVOC	Benzo(g,h,i)perylene	191-24-2	D	68	19	4.5E+00			2.9E+04		1.6E-04
SVOC	Benzo(k)fluoranthene	207-08-9	B2	68	12	5.3E+00		2.1E+01		2.5E-07	
SVOC	Biphenyl	92-52-4	D	36	3	3.4E+00			2.3E+04		1.5E-04
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	68	19	7.6E+01		1.2E+02	1.2E+04	6.3E-07	6.3E-03
SVOC	Butylbenzylphthalate	85-68-7	C	68	24	1.1E+03			1.2E+05		9.2E-03
SVOC	Carbazole	86-74-8	B2	67	8	1.1E+01		8.6E+01		1.3E-07	
SVOC	Chrysene	218-01-9	B2	68	28	1.6E+01		2.1E+02		7.6E-08	
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	68	7	6.7E-01		2.1E-01		3.2E-06	
SVOC	Dibenzofuran	132-64-9	D	68	15	2.7E+01			3.1E+03		8.7E-03

Estimated Cumulative Cancer Risk and HI for AOI W-01
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Conc in Soil[1] (mg/kg)	Back-ground (mg/kg)	Screening Criteria at 10^{-6} Risk (mg/kg)	Screening Criteria at HQ of 1 (mg/kg)	Cancer Risk	HQ
SVOC	2,4-Dimethylphenol	105-67-9		68	8	7.2E+01			1.2E+04		6.0E-03
SVOC	Di-n-butylphthalate	84-74-2	D	68	4	4.8E+02			6.2E+04		7.7E-03
SVOC	Di-n-octylphthalate	117-84-0		68	1	3.7E+01			2.5E+04		1.5E-03
SVOC	Fluoranthene	206-44-0	D	68	32	8.2E+01			2.2E+04		3.7E-03
SVOC	Fluorene	86-73-7	D	68	22	3.6E+01			2.6E+04		1.4E-03
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	67	14	3.7E+00		2.1E+00		1.8E-06	
SVOC	2-Methylnaphthalene	91-57-6	ID	67	37	**6.6E+00**			1.9E+02		3.5E-02
SVOC	Methylphenol (total)	1319-77-3		67	12	1.3E+02			3.1E+03		4.0E-02
SVOC	Naphthalene	91-20-3	C	67	29	**2.3E+01**			1.9E+02		1.2E-01
SVOC	Phenanthrene	85-01-8	D	67	44	1.1E+02			2.9E+04		3.8E-03
SVOC	Phenol	108-95-2	ID	67	9	1.4E+02			3.7E+05		3.8E-04
SVOC	Pyrene	129-00-0	D	67	35	5.0E+01			2.9E+04		1.7E-03
P/PCB	PCBs (total)	1336-36-3	B2	74	34	**8.0E-01**		7.4E-01	1.1E+01	1.1E-06	7.3E-02
INORG	Aluminum	7429-90-5	D	31	31	1.1E+04			9.2E+05		1.2E-02
INORG	Antimony	7440-36-0		67	35	**6.7E+00**			4.1E+02		1.6E-02
INORG	Arsenic	7440-38-2	A	67	67	**1.6E+01**	1.3E+01	1.6E+00	2.6E+02	1.6E-06	9.6E-03
INORG	Barium	7440-39-3	D	67	67	5.7E+03	1.1E+02		6.7E+04		8.4E-02
INORG	Beryllium	7440-41-7	B1	67	29	1.1E+00	1.5E+00	2.2E+03	1.9E+03		
INORG	Cadmium	7440-43-9	B1	67	56	1.6E+01	1.2E+00	3.0E+03	4.5E+02	4.8E-09	3.2E-02
INORG	Chromium (total)	7440-47-3		67	67	**4.4E+02**	4.9E+01	4.5E+02	2.5E+03	8.6E-07	1.6E-01
INORG	Chromium III	16065-83-1	D	12	12	3.8E+02			1.5E+06		2.5E-04
INORG	Cobalt	7440-48-4	B1	66	50	6.4E+01	1.7E+01	1.9E+03	1.3E+04	2.5E-08	3.6E-03
INORG	Copper	7440-50-8	D	67	67	**4.2E+02**	3.2E+01		4.1E+04		9.4E-03
INORG	Cyanide (total)	57-12-5	D	56	29	4.1E+00			1.2E+04		3.4E-04
INORG	Iron	7439-89-6	D	31	31	**1.3E+05**	1.2E+04		3.1E+05		3.7E-01
INORG	Lead	7439-92-1	B2	66	65	4.0E+03	4.9E+01		7.5E+02		
INORG	Manganese	7439-96-5	D	79	79	**2.5E+03**	5.1E+02		1.9E+04		1.0E-01
INORG	Mercury	7439-97-6	D	67	31	**1.0E-01**	1.3E-01		1.4E+01		
INORG	Nickel	7440-02-0	A	67	67	6.0E+02	3.0E+01		2.0E+04		2.9E-02
INORG	Selenium	7782-49-2	D	67	13	7.7E+00	4.1E-01		5.1E+03		1.4E-03
INORG	Silver	7440-22-4	D	67	13	7.0E+01			5.1E+03		1.4E-02
INORG	Thallium	7440-28-0		67	20	**2.2E+00**			6.8E+01		3.2E-02
INORG	Tin	7440-31-5		8	3	8.4E+01			6.1E+05		1.4E-04
INORG	Vanadium	7440-62-2		67	66	6.1E+01	3.3E+01		7.2E+03		4.0E-03
INORG	Zinc	7440-66-6	D	67	67	7.4E+03	1.9E+02		3.1E+05		2.3E-02
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	B2	27	26	**3.9E-05**		1.6E-05		2.4E-06	
									Sum	**4E-05**	**1E+00**

Notes:

All concentrations are the maximum values detected, except the concentrations in bold are 95% UCLs.

The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.

The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.

The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).

The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.

The concentrations for all PCB isomers were summed before comparing to Polychlorinated biphenyls (PCBs) for cancer effects and Aroclor 1254 for noncancer effects.

The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.

Estimated Cumulative Cancer Risk and HI for AOI W-01 General Motors - Pontiac North Campus, Pontiac, Michigan											
Chem Group	**Chemical**	**CASRN**	**Carc Class**	**Analyzed**	**Detected**	**Conc in Soil[1] (mg/kg)**	**Back-ground (mg/kg)**	**Screening Criteria at 10^{-6} Risk (mg/kg)**	**Screening Criteria at HQ of 1 (mg/kg)**	**Cancer Risk**	**HQ**
	The Screening Criteria for Mercury was calculated by ENVIRON to account for the vapor inhalation pathway using:										
	EPA Region 9 equations, RfC from IRIS, and chemical properties from EPA's Soil Screening Guidance.										
	Only chemicals detected at AOI W-01 are shown.										
	Cancer risk and HQ are calculated using concentrations in excess of background.										
	The background concentration for iron is the MDEQ Statewide Default Background Level.										
	Lead is evaluated using EPA criterion based on blood-lead modeling, and therefore has no cancer or HQ calculation.										
	95% UCLs are the maximum of either vertically averaged soil concentrations (0-10 ft bgs) or surface soil concentrations (0-2 ft bgs).										

Estimated Cumulative Cancer Risk and HI for AOI W-08
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Conc in Soil[1] (mg/kg)	Back-ground (mg/kg)	Screening Criteria at 10^{-6} Risk (mg/kg)	Screening Criteria at HQ of 1 (mg/kg)	Cancer Risk	HQ
VOC	Acetone	67-64-1	ID	43	22	3.0E-01			6.0E+03		5.0E-05
VOC	Benzene	71-43-2	A	42	5	5.7E-02		1.3E+00	2.4E+01	4.4E-08	2.4E-03
VOC	Bromomethane	74-83-9	D	43	1	2.2E-02			1.3E+01		1.7E-03
VOC	2-Butanone	78-93-3	ID	43	14	1.3E-01			2.7E+04		4.8E-06
VOC	Carbon Disulfide	75-15-0		43	3	1.6E-03			1.2E+03		1.3E-06
VOC	Cumene	98-82-8	D	43	7	4.6E-02			2.0E+03		2.3E-05
VOC	Cyclohexane	110-82-7	ID	43	4	8.3E-02			3.2E+04		2.6E-06
VOC	1,2-Dichlorobenzene	95-50-1	D	43	2	3.2E-02			4.1E+03		7.8E-06
VOC	1,4-Dichlorobenzene	106-46-7	C	43	3	2.0E-02		7.9E+00	1.9E+03	2.5E-09	1.0E-05
VOC	1,1-Dichloroethane	75-34-3	C	43	1	1.1E-03			1.7E+03		6.5E-07
VOC	1,1-Dichloroethene	75-35-4	C	43	2	1.0E-03			4.1E+02		2.4E-06
VOC	Ethyl Benzene	100-41-4	D	43	12	1.3E-01		2.0E+01	7.4E+03	6.5E-09	1.8E-05
VOC	Methyl Acetate	79-20-9		43	6	2.3E-01			9.2E+04		2.5E-06
VOC	4-Methyl-2-pentanone	108-10-1	ID	43	4	3.4E-03			2.8E+03		1.2E-06
VOC	Methylcyclohexane	108-87-2		43	10	1.0E-01			8.7E+03		1.1E-05
VOC	Methylene Chloride	75-09-2	B2	43	4	7.5E-02		2.1E+01	9.3E+03	3.6E-09	8.1E-06
VOC	Tetrachloroethene	127-18-4	C-B2	43	1	1.1E-03		3.4E+00	1.8E+03	3.2E-10	6.1E-07
VOC	Toluene	108-88-3	D	43	25	5.6E-02			2.2E+03		2.5E-05
VOC	Xylenes (total)	1330-20-7	ID	43	13	7.7E-01			9.0E+02		8.6E-04
SVOC	Acenaphthene	83-32-9		43	7	6.9E-01			2.9E+04		2.4E-05
SVOC	Anthracene	120-12-7	D	43	16	3.5E+00			2.4E+05		1.5E-05
SVOC	Benzo(a)anthracene	56-55-3	B2	43	18	3.9E+00		2.1E+00		1.9E-06	
SVOC	Benzo(a)pyrene	50-32-8	B2	43	11	6.1E+00		2.1E-01		2.9E-05	
SVOC	Benzo(b)fluoranthene	205-99-2	B2	43	16	6.9E+00		2.1E+00		3.3E-06	
SVOC	Benzo(g,h,i)perylene	191-24-2	D	43	8	3.4E+00			2.9E+04		1.2E-04
SVOC	Benzo(k)fluoranthene	207-08-9	B2	43	10	3.3E+00		2.1E+01		1.6E-07	
SVOC	Biphenyl	92-52-4	D	43	3	2.4E-01			2.3E+04		1.0E-05
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	43	16	1.8E+00		1.2E+02	1.2E+04	1.5E-08	1.5E-04
SVOC	Butylbenzylphthalate	85-68-7	C	43	1	7.7E-01			1.2E+05		6.4E-06
SVOC	Carbazole	86-74-8	B2	43	3	1.0E+00		8.6E+01		1.2E-08	
SVOC	Chrysene	218-01-9	B2	43	19	5.9E+00		2.1E+02		2.8E-08	
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	43	1	1.0E+00		2.1E-01		4.8E-06	
SVOC	Dibenzofuran	132-64-9	D	43	6	6.1E-01			3.1E+03		2.0E-04
SVOC	Di-n-butylphthalate	84-74-2	D	43	1	3.6E+00			6.2E+04		5.8E-05
SVOC	Fluoranthene	206-44-0	D	43	24	6.9E+00			2.2E+04		3.1E-04
SVOC	Fluorene	86-73-7	D	43	15	2.1E+01			2.6E+04		8.1E-04
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	43	8	2.9E+00		2.1E+00		1.4E-06	
SVOC	2-Methylnaphthalene	91-57-6	ID	43	14	6.7E+00			1.9E+02		3.5E-02
SVOC	Naphthalene	91-20-3	C	43	10	6.6E-01			1.9E+02		3.5E-03
SVOC	Phenanthrene	85-01-8	D	43	29	4.2E+01			2.9E+04		1.4E-03
SVOC	Phenol	108-95-2	ID	43	1	1.1E-01			3.7E+05		3.0E-07
SVOC	Pyrene	129-00-0	D	43	24	1.1E+01			2.9E+04		3.8E-04
P/PCB	PCBs (total)	1336-36-3	B2	46	22	9.6E-01		7.4E-01	1.1E+01	1.3E-06	8.7E-02
INORG	Antimony	7440-36-0		43	19	**1.2E+01**			4.1E+02		2.8E-02
INORG	Arsenic	7440-38-2	A	43	43	5.4E+01	1.3E+01	1.6E+00	2.6E+02	2.6E-05	1.6E-01
INORG	Barium	7440-39-3	D	43	43	4.0E+03	1.1E+02		6.7E+04		5.9E-02

Estimated Cumulative Cancer Risk and HI for AOI W-08
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Conc in Soil[1] (mg/kg)	Back-ground (mg/kg)	Screening Criteria at 10^{-6} Risk (mg/kg)	Screening Criteria at HQ of 1 (mg/kg)	Cancer Risk	HQ
INORG	Beryllium	7440-41-7	B1	43	29	1.1E+00	1.5E+00	2.2E+03	1.9E+03		
INORG	Cadmium	7440-43-9	B1	43	34	3.9E+01	1.2E+00	3.0E+03	4.5E+02	1.2E-08	8.3E-02
INORG	Chromium (total)	7440-47-3		45	45	**3.3E+02**	4.9E+01	4.5E+02	2.5E+03	6.1E-07	1.1E-01
INORG	Chromium III	16065-83-1	D	2	2	3.2E+02			1.5E+06		2.1E-04
INORG	Chromium VI	18540-29-9	A	2	2	1.4E+00		4.5E+02	2.5E+03	3.1E-09	5.5E-04
INORG	Cobalt	7440-48-4	B1	43	43	6.4E+01	1.7E+01	1.9E+03	1.3E+04	2.5E-08	3.6E-03
INORG	Copper	7440-50-8	D	43	43	**2.6E+03**	3.2E+01		4.1E+04		6.3E-02
INORG	Lead	7439-92-1	B2	43	43	8.4E+03	4.9E+01		7.5E+02		
INORG	Manganese	7439-96-5	D	51	51	2.8E+03	5.1E+02		1.9E+04		1.2E-01
INORG	Mercury	7439-97-6	D	43	28	**5.9E-01**	1.3E-01		1.4E+01		3.4E-02
INORG	Nickel	7440-02-0	A	43	43	1.9E+03	3.0E+01		2.0E+04		9.3E-02
INORG	Selenium	7782-49-2	D	43	12	8.6E+00	4.1E-01		5.1E+03		1.6E-03
INORG	Silver	7440-22-4	D	43	5	2.6E+00			5.1E+03		5.1E-04
INORG	Thallium	7440-28-0		43	20	2.1E+00			6.8E+01		3.1E-02
INORG	Vanadium	7440-62-2		43	43	5.2E+01	3.3E+01		7.2E+03		2.7E-03
INORG	Zinc	7440-66-6	D	43	43	5.8E+03	1.9E+02		3.1E+05		1.8E-02
									Sum	**7E-05**	**9E-01**

Notes:

All concentrations are the maximum values detected, except the concentrations in bold are 95% UCLs.

The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.

The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.

The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).

The concentrations for all PCB isomers were summed before comparing to Polychlorinated biphenyls (PCBs) for cancer effects and Aroclor 1254 for noncancer effects.

The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.

The Screening Criteria for Mercury was calculated by ENVIRON to account for the vapor inhalation pathway using: EPA Region 9 equations, RfC from IRIS, and chemical properties from EPA's Soil Screening Guidance.

Only chemicals detected at AOI W-08 are shown.

Cancer risk and HQ are calculated using concentrations in excess of background.

Lead is evaluated using EPA criterion based on blood-lead modeling, and therefore has no cancer or HQ calculation.

95% UCLs are the maximum of either vertically averaged soil concentrations (0-10 ft bgs) or surface soil concentrations (0-2 ft bgs).

Estimated Cumulative Cancer Risk and HI for AOI W-09 General Motors - Pontiac North Campus, Pontiac, Michigan											
Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Conc in Soil[1] (mg/kg)	Back-ground (mg/kg)	Screening Criteria at 10^{-6} Risk (mg/kg)	Screening Criteria at HQ of 1 (mg/kg)	Cancer Risk	HQ
VOC	Acetone	67-64-1	ID	43	7	3.1E-01			6.0E+03		5.2E-05
VOC	Benzene	71-43-2	A	43	4	8.0E-04		1.3E+00	2.4E+01	6.2E-10	3.3E-05
VOC	2-Butanone	78-93-3	ID	43	4	7.8E-03			2.7E+04		2.9E-07
VOC	Carbon Disulfide	75-15-0		43	4	1.2E-03			1.2E+03		1.0E-06
VOC	Cumene	98-82-8	D	43	2	3.1E-03			2.0E+03		1.6E-06
VOC	Cyclohexane	110-82-7	ID	43	3	2.9E-02			3.2E+04		9.1E-07
VOC	1,1-Dichloroethane	75-34-3	C	43	2	1.2E-03			1.7E+03		7.1E-07
VOC	1,1-Dichloroethene	75-35-4	C	43	1	5.6E-04			4.1E+02		1.4E-06
VOC	Methyl Acetate	79-20-9		43	1	2.6E+00			9.2E+04		2.8E-05
VOC	4-Methyl-2-pentanone	108-10-1	ID	43	1	9.5E-04			2.8E+03		3.4E-07
VOC	Methylcyclohexane	108-87-2		43	4	5.6E-02			8.7E+03		6.4E-06
VOC	Methylene Chloride	75-09-2	B2	43	9	1.3E-01		2.1E+01	9.3E+03	6.2E-09	1.4E-05
VOC	Toluene	108-88-3	D	43	9	3.7E-02			2.2E+03		1.7E-05
VOC	1,1,1-Trichloroethane	71-55-6	D	43	2	1.5E-03			6.9E+03		2.2E-07
VOC	Trichloroethene	79-01-6	C-B2	43	1	4.1E-03		7.5E+00	9.8E+01	5.4E-10	4.1E-05
VOC	Trichlorofluoromethane	75-69-4		43	1	8.4E-04			1.3E+03		6.5E-07
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		43	2	8.2E-03			6.9E+04		1.2E-07
VOC	Xylenes (total)	1330-20-7	ID	43	1	6.3E-02			9.0E+02		7.0E-05
SVOC	Acenaphthene	83-32-9		43	7	2.2E+00			2.9E+04		7.6E-05
SVOC	Anthracene	120-12-7	D	43	13	3.4E+00			2.4E+05		1.4E-05
SVOC	Benzo(a)anthracene	56-55-3	B2	43	21	1.2E+01		2.1E+00		5.7E-06	
SVOC	Benzo(a)pyrene	50-32-8	B2	43	19	**1.5E+00**		2.1E-01		7.2E-06	
SVOC	Benzo(b)fluoranthene	205-99-2	B2	43	22	1.0E+01		2.1E+00		4.8E-06	
SVOC	Benzo(g,h,i)perylene	191-24-2	D	43	19	4.8E+00			2.9E+04		1.7E-04
SVOC	Benzo(k)fluoranthene	207-08-9	B2	43	16	4.5E+00		2.1E+01		2.1E-07	
SVOC	Biphenyl	92-52-4	D	43	5	3.0E-01			2.3E+04		1.3E-05
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	43	13	5.3E+01		1.2E+02	1.2E+04	4.4E-07	4.4E-03
SVOC	Butylbenzylphthalate	85-68-7	C	43	8	2.8E+01			1.2E+05		2.3E-04
SVOC	Carbazole	86-74-8	B2	43	7	1.4E+00		8.6E+01		1.6E-08	
SVOC	Chrysene	218-01-9	B2	43	21	1.4E+01		2.1E+02		6.7E-08	
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	43	9	1.4E+00		2.1E-01		6.7E-06	
SVOC	Dibenzofuran	132-64-9	D	43	13	1.0E+00			3.1E+03		3.2E-04
SVOC	2,4-Dimethylphenol	105-67-9		43	1	6.2E-02			1.2E+04		5.2E-06
SVOC	Di-n-octylphthalate	117-84-0		43	1	2.9E+00			2.5E+04		1.2E-04
SVOC	Fluoranthene	206-44-0	D	43	22	2.8E+01			2.2E+04		1.3E-03
SVOC	Fluorene	86-73-7	D	42	6	1.5E+00			2.6E+04		5.8E-05
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	43	15	4.5E+00		2.1E+00		2.1E-06	
SVOC	2-Methylnaphthalene	91-57-6	ID	42	17	8.7E-01			1.9E+02		4.6E-03
SVOC	Methylphenol (total)	1319-77-3		43	1	1.1E-01			3.1E+03		3.6E-05
SVOC	Naphthalene	91-20-3	C	42	15	7.9E-01			1.9E+02		4.2E-03
SVOC	Phenanthrene	85-01-8	D	43	22	1.6E+01			2.9E+04		5.5E-04
SVOC	Phenol	108-95-2	ID	43	4	1.1E+00			3.7E+05		3.0E-06
SVOC	Pyrene	129-00-0	D	43	24	2.8E+01			2.9E+04		9.7E-04
P/PCB	PCBs (total)	1336-36-3	B2	387	255	**3.6E+00**		7.4E-01	1.1E+01	4.8E-06	3.2E-01
INORG	Antimony	7440-36-0		43	32	6.3E+00			4.1E+02		1.5E-02
INORG	Arsenic	7440-38-2	A	44	44	1.9E+01	1.3E+01	1.6E+00	2.6E+02	3.8E-06	2.3E-02
INORG	Barium	7440-39-3	D	43	43	3.8E+02	1.1E+02		6.7E+04		4.0E-03

Estimated Cumulative Cancer Risk and HI for AOI W-09
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Conc in Soil[1] (mg/kg)	Back-ground (mg/kg)	Screening Criteria at 10^{-6} Risk (mg/kg)	Screening Criteria at HQ of 1 (mg/kg)	Cancer Risk	HQ
INORG	Beryllium	7440-41-7	B1	43	23	5.9E-01	1.5E+00	2.2E+03	1.9E+03		
INORG	Cadmium	7440-43-9	B1	43	32	5.9E+00	1.2E+00	3.0E+03	4.5E+02	1.6E-09	1.0E-02
INORG	Chromium (total)	7440-47-3		44	44	5.2E+02	4.9E+01	4.5E+02	2.5E+03	1.1E-06	1.9E-01
INORG	Chromium III	16065-83-1	D	1	1	1.9E+02			1.5E+06		1.3E-04
INORG	Chromium VI	18540-29-9	A	1	1	6.4E-01		4.5E+02	2.5E+03	1.4E-09	2.6E-04
INORG	Cobalt	7440-48-4	B1	43	43	1.4E+01	1.7E+01	1.9E+03	1.3E+04		
INORG	Copper	7440-50-8	D	43	43	4.6E+02	3.2E+01		4.1E+04		1.0E-02
INORG	Cyanide (total)	57-12-5	D	4	2	6.1E-01			1.2E+04		5.1E-05
INORG	Lead	7439-92-1	B2	43	43	4.3E+02	4.9E+01		7.5E+02		
INORG	Manganese	7439-96-5	D	46	46	4.8E+03	5.1E+02		1.9E+04		2.3E-01
INORG	Mercury	7439-97-6	D	43	30	3.3E-01	1.3E-01		1.4E+01		1.5E-02
INORG	Nickel	7440-02-0	A	43	43	1.5E+02	3.0E+01		2.0E+04		6.2E-03
INORG	Selenium	7782-49-2	D	43	4	1.7E+00	4.1E-01		5.1E+03		2.5E-04
INORG	Silver	7440-22-4	D	43	9	6.5E-01			5.1E+03		1.3E-04
INORG	Thallium	7440-28-0		43	15	3.3E+00			6.8E+01		4.9E-02
INORG	Vanadium	7440-62-2		43	43	2.3E+01	3.3E+01		7.2E+03		
INORG	Zinc	7440-66-6	D	43	43	2.3E+03	1.9E+02		3.1E+05		6.9E-03
									Sum	**4E-05**	**9E-01**

Notes:

All concentrations are the maximum values detected, except the concentrations in bold are 95% UCLs.

The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.

The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.

The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).

The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.

The concentrations for all PCB isomers were summed before comparing to Polychlorinated biphenyls (PCBs) for cancer effects and Aroclor 1254 for noncancer effects.

The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.

The Screening Criteria for Mercury was calculated by ENVIRON to account for the vapor inhalation pathway using: EPA Region 9 equations, RfC from IRIS, and chemical properties from EPA's Soil Screening Guidance.

Only chemicals detected at AOI W-09 are shown.

Cancer risk and HQ are calculated using concentrations in excess of background.

Lead is evaluated using EPA criterion based on blood-lead modeling, and therefore has no cancer or HQ calculation.

95% UCLs are the maximum of either vertically averaged soil concentrations (0-10 ft bgs) or surface soil concentrations (0-2 ft bgs).

Estimated Cumulative Cancer Risk and HI for the Area of Industrial Redevelopment
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Conc in Soil[1] (mg/kg)	Back-ground (mg/kg)	Screening Criteria at 10^{-6} Risk (mg/kg)	Screening Criteria at HQ of 1 (mg/kg)	Cancer Risk	HQ
VOC	Acetone	67-64-1	ID	138	61	2.2E+00			6.0E+03		3.7E-04
VOC	Benzene	71-43-2	A	137	19	7.2E-01		1.3E+00	2.4E+01	5.5E-07	3.0E-02
VOC	Bromomethane	74-83-9	D	138	1	2.2E-02			1.3E+01		1.7E-03
VOC	2-Butanone	78-93-3	ID	138	41	1.6E+00			2.7E+04		5.9E-05
VOC	Carbon Disulfide	75-15-0		138	9	3.9E-03			1.2E+03		3.3E-06
VOC	Chlorobenzene	108-90-7	D	138	1	1.1E-01			5.3E+02		2.1E-04
VOC	Chloroethane	75-00-3		138	3	5.2E-03		6.5E+00	1.8E+04	8.0E-10	2.9E-07
VOC	Cumene	98-82-8	D	104	19	1.1E+00			2.0E+03		5.5E-04
VOC	Cyclohexane	110-82-7	ID	104	16	3.0E-01			3.2E+04		9.4E-06
VOC	1,2-Dichlorobenzene	95-50-1	D	131	3	3.2E-02			4.1E+03		7.8E-06
VOC	1,3-Dichlorobenzene	541-73-1	D	131	1	1.1E-01			6.3E+01		1.7E-03
VOC	1,4-Dichlorobenzene	106-46-7	C	131	4	2.0E-02		7.9E+00	1.9E+03	2.5E-09	1.0E-05
VOC	Dichlorodifluoromethane	75-71-8		110	1	1.4E-03			3.1E+02		4.5E-06
VOC	1,1-Dichloroethane	75-34-3	C	138	9	2.8E-01			1.7E+03		1.6E-04
VOC	1,1-Dichloroethene	75-35-4	C	138	4	2.9E-02			4.1E+02		7.1E-05
VOC	cis-1,2-Dichloroethene	156-59-2	D	138	2	1.9E-01			1.5E+02		1.3E-03
VOC	Ethyl Benzene	100-41-4	D	138	31	2.5E+01		2.0E+01	7.4E+03	1.3E-06	3.4E-03
VOC	2-Hexanone	591-78-6		138	3	1.6E-02					
VOC	Methyl Acetate	79-20-9		104	16	3.4E+01			9.2E+04		3.7E-04
VOC	4-Methyl-2-pentanone	108-10-1	ID	138	15	6.8E-01			2.8E+03		2.4E-04
VOC	Methylcyclohexane	108-87-2		104	25	1.4E+00			8.7E+03		1.6E-04
VOC	Methylene Chloride	75-09-2	B2	138	22	2.5E+01		2.1E+01	9.3E+03	1.2E-06	2.7E-03
VOC	Pentachloroethane	76-01-7		6	1	9.9E-02					
VOC	Tetrachloroethene	127-18-4	C-B2	138	8	1.2E-01		3.4E+00	1.8E+03	3.5E-08	6.7E-05
VOC	Toluene	108-88-3	D	138	60	4.2E+01			2.2E+03		1.9E-02
VOC	1,1,1-Trichloroethane	71-55-6	D	137	4	3.9E-03			6.9E+03		5.7E-07
VOC	Trichloroethene	79-01-6	C-B2	138	5	2.5E-01		7.5E+00	9.8E+01	3.3E-08	2.5E-03
VOC	Trichlorofluoromethane	75-69-4		110	1	8.4E-04			1.3E+03		6.5E-07
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		104	5	8.9E-03			6.9E+04		1.3E-07
VOC	Xylenes (total)	1330-20-7	ID	138	35	**1.1E-01**			9.0E+02		1.2E-04
SVOC	Acenaphthene	83-32-9		119	27	3.6E+01			2.9E+04		1.2E-03
SVOC	Acenaphthylene	208-96-8	D	118	1	2.0E+00			2.9E+04		6.9E-05
SVOC	Anthracene	120-12-7	D	119	45	2.1E+01			2.4E+05		8.8E-05
SVOC	Benzo(a)anthracene	56-55-3	B2	119	52	1.5E+01		2.1E+00		7.1E-06	
SVOC	Benzo(a)pyrene	50-32-8	B2	119	41	**1.3E+00**		2.1E-01		6.4E-06	
SVOC	Benzo(b)fluoranthene	205-99-2	B2	119	51	1.1E+01		2.1E+00		5.2E-06	
SVOC	Benzo(g,h,i)perylene	191-24-2	D	119	40	4.8E+00			2.9E+04		1.7E-04
SVOC	Benzo(k)fluoranthene	207-08-9	B2	119	33	5.3E+00		2.1E+01		2.5E-07	
SVOC	Biphenyl	92-52-4	D	104	9	3.4E+00			2.3E+04		1.5E-04
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	119	33	7.6E+01		1.2E+02	1.2E+04	6.3E-07	6.3E-03
SVOC	Butylbenzylphthalate	85-68-7	C	119	24	1.1E+03			1.2E+05		9.2E-03
SVOC	Carbazole	86-74-8	B2	119	15	1.1E+01		8.6E+01		1.3E-07	
SVOC	Chrysene	218-01-9	B2	119	58	1.6E+01		2.1E+02		7.6E-08	
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	119	13	1.4E+00		2.1E-01		6.7E-06	
SVOC	Dibenzofuran	132-64-9	D	119	28	2.7E+01			3.1E+03		8.7E-03
SVOC	2,4-Dimethylphenol	105-67-9		119	7	7.2E+01			1.2E+04		6.0E-03
SVOC	Di-n-butylphthalate	84-74-2	D	119	4	4.8E+02			6.2E+04		7.7E-03

Estimated Cumulative Cancer Risk and HI for the Area of Industrial Redevelopment
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	Carc Class	Analyzed	Detected	Conc in Soil[1] (mg/kg)	Back-ground (mg/kg)	Screening Criteria at 10^{-6} Risk (mg/kg)	Screening Criteria at HQ of 1 (mg/kg)	Cancer Risk	HQ
SVOC	Di-n-octylphthalate	117-84-0		119	2	3.7E+01			2.5E+04		1.5E-03
SVOC	Fluoranthene	206-44-0	D	119	64	8.2E+01			2.2E+04		3.7E-03
SVOC	Fluorene	86-73-7	D	118	37	3.6E+01			2.6E+04		1.4E-03
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	119	32	4.5E+00		2.1E+00		2.1E-06	
SVOC	2-Methylnaphthalene	91-57-6	ID	118	54	**2.9E+00**			1.9E+02		1.5E-02
SVOC	Methylphenol (total)	1319-77-3		119	9	1.3E+02			3.1E+03		4.0E-02
SVOC	Naphthalene	91-20-3	C	118	44	**9.7E+00**			1.9E+02		5.1E-02
SVOC	Phenanthrene	85-01-8	D	119	77	1.1E+02			2.9E+04		3.8E-03
SVOC	Phenol	108-95-2	ID	119	12	1.4E+02			3.7E+05		3.8E-04
SVOC	Pyrene	129-00-0	D	119	68	5.0E+01			2.9E+04		1.7E-03
P/PCB	PCBs (total)	1336-36-3	B2	466	303	**1.6E+00**		7.4E-01	1.1E+01	2.2E-06	1.5E-01
INORG	Aluminum	7429-90-5	D	15	15	1.1E+04			9.2E+05		1.2E-02
INORG	Antimony	7440-36-0		119	70	**3.7E+00**			4.1E+02		9.0E-03
INORG	Arsenic	7440-38-2	A	120	120	**1.2E+01**	1.3E+01	1.6E+00	2.6E+02		
INORG	Barium	7440-39-3	D	119	119	4.0E+03	1.1E+02		6.7E+04		5.9E-02
INORG	Beryllium	7440-41-7	B1	119	64	1.1E+00	1.5E+00	2.2E+03	1.9E+03		
INORG	Cadmium	7440-43-9	B1	119	99	3.9E+01	1.2E+00	3.0E+03	4.5E+02	1.2E-08	8.3E-02
INORG	Calcium	7440-70-2		15	15	8.9E+04					
INORG	Chromium (total)	7440-47-3		122	122	**2.8E+02**	4.9E+01	4.5E+02	2.5E+03	5.1E-07	9.2E-02
INORG	Chromium III	16065-83-1	D	15	15	3.8E+02			1.5E+06		2.5E-04
INORG	Chromium VI	18540-29-9	A	15	3	1.4E+00		4.5E+02	2.5E+03	3.1E-09	5.5E-04
INORG	Cobalt	7440-48-4	B1	119	115	6.4E+01	1.7E+01	1.9E+03	1.3E+04	2.5E-08	3.6E-03
INORG	Copper	7440-50-8	D	119	119	**3.3E+02**	3.2E+01		4.1E+04		7.3E-03
INORG	Cyanide (total)	57-12-5	D	39	21	4.1E+00			1.2E+04		3.4E-04
INORG	Iron	7439-89-6	D	15	15	**1.6E+05**	1.2E+04		3.1E+05		4.7E-01
INORG	Lead	7439-92-1	B2	119	119	8.4E+03	4.9E+01		7.5E+02		
INORG	Magnesium	7439-95-4		15	15	1.7E+04					
INORG	Manganese	7439-96-5	D	142	142	**1.6E+03**	5.1E+02		1.9E+04		5.8E-02
INORG	Mercury	7439-97-6	D	119	75	**1.4E-01**	1.3E-01		1.4E+01		8.1E-04
INORG	Nickel	7440-02-0	A	119	119	1.9E+03	3.0E+01		2.0E+04		9.3E-02
INORG	Potassium	7440-09-7		15	5	2.7E+03					
INORG	Selenium	7782-49-2	D	119	28	8.6E+00	4.1E-01		5.1E+03		1.6E-03
INORG	Silver	7440-22-4	D	119	24	7.0E+01			5.1E+03		1.4E-02
INORG	Sodium	7440-23-5		15	15	6.8E+02					
INORG	Thallium	7440-28-0		119	45	**1.3E+00**			6.8E+01		1.9E-02
INORG	Tin	7440-31-5		4	3	8.4E+01			6.1E+05		1.4E-04
INORG	Vanadium	7440-62-2		119	119	6.1E+01	3.3E+01		7.2E+03		4.0E-03
INORG	Zinc	7440-66-6	D	119	119	7.4E+03	1.9E+02		3.1E+05		2.3E-02
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6-TEF	B2	21	21	**4.4E-05**		1.6E-05		2.8E-06	
									Sum	**4E-05**	**1E+00**

Notes:

All concentrations are the maximum values detected, except the concentrations in bold are 95% UCLs.

The Screening Criteria for Pyrene were used as surrogates for Phenanthrene and Benzo(g,h,i)perylene.

The Screening Criteria for Naphthalene were used as surrogates for 2-Methylnaphthalene.

The Screening Criteria for Chromium VI was used as a surrogate for Chromium (total).

The concentrations for the Methylphenol (2, 3, & 4) were summed before comparing to the Screening Criteria for 4-Methylphenol.

The concentrations for all PCB isomers were summed before comparing to Polychlorinated biphenyls (PCBs) for cancer effects

Estimated Cumulative Cancer Risk and HI for the Area of Industrial Redevelopment General Motors - Pontiac North Campus, Pontiac, Michigan											
Chem Group	**Chemical**	**CASRN**	**Carc Class**	**Analyzed**	**Detected**	**Conc in Soil[1] (mg/kg)**	**Back-ground (mg/kg)**	**Screening Criteria at 10^{-6} Risk (mg/kg)**	**Screening Criteria at HQ of 1 (mg/kg)**	**Cancer Risk**	**HQ**
	and Aroclor 1254 for noncancer effects.										
	The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the Screening Criteria.										
	The Screening Criteria for Mercury was calculated by ENVIRON to account for the vapor inhalation pathway using:										
	EPA Region 9 equations, RfC from IRIS, and chemical properties from EPA's Soil Screening Guidance.										
	Only chemicals detected at the Area of Industrial Redevelopment are shown.										
	Cancer risk and HQ are calculated using concentrations in excess of background.										
	The background concentration for iron is the MDEQ Statewide Default Background Level.										
	Lead is evaluated using EPA criterion based on blood-lead modeling, and therefore has no cancer or HQ calculation.										
	95% UCLs are the maximum of either vertically averaged soil concentrations (0-10 ft bgs) or surface soil concentrations (0-2 ft bgs).										

Appendix F.2: Risk Calculations for Potential Exposure of Construction Workers at AOIs M-2, M-16, W-1, and Area of Industrial Redevelopment

APPENDIX F.2

Risk Calculations for Potential Exposure of Construction Workers at AOIs M-2, M-16, W-1, and Area of Industrial Redevelopment

1.0 INTRODUCTION

This appendix evaluates potential exposures of workers who perform construction activities at AOIs W-1, M-2, M-16, and the proposed Area of Industrial Redevelopment. Potential exposures at AOIs W-1, M-2, and M-16 are evaluated based on an occasional maintenance or construction scenario that is typical for GM sites (ENVIRON, 2003). For the proposed Area of Industrial Redevelopment, potential exposures are evaluated for a larger-scale, short-term construction scenario that might be associated with redevelopment of that part of the Site.

For AOI W-1, the calculations in this appendix address the potential exposure of construction workers to surface and subsurface soil. Potential exposure of construction workers to the LNAPL at AOI W-1 was previously addressed in the RFI Report (ENCORE, 2002b), and therefore, is not repeated in this appendix. For AOIs M-2 and M-16, the calculations in this appendix address the potential exposure of construction workers to the LNAPLs at these AOIs.

The potential exposure pathways evaluated are as follows:

- Soil at AOI W-1 and Area of Industrial Redevelopment: incidental ingestion, dermal contact, inhalation of vapors and particulates
- Smear Zone Soil at AOIs M-2 and M-16: incidental ingestion and dermal contact
- LNAPL at AOIs M-2 and M-16: dermal contact and inhalation of vapors

These potential exposures are believed to be the most potentially significant under current and reasonably expected future land use at these areas.

2.0 EXPOSURE CONCENTRATIONS

2.1 Soil

The highest concentrations of each constituent in soil at AOI W-1 and at the Area of Industrial Redevelopment are used as exposure concentrations, except the 95% UCL is used for

constituents with maximum concentrations that contribute most significantly to the cumulative cancer and/or noncancer risks. Using 95% UCLs for these constituents and maximum concentrations for other constituents overestimates cumulative risks, but is an efficient approach that is consistent with U.S. EPA guidance (1989; page 6-25).

The 95% UCL for each constituent is calculated using depth-averaged concentrations at each boring location and the nonparametric bootstrap method known as the bias-corrected and accelerated (BCa) method with 4,000 bootstrap replications (Efron and Tibshirani, 1998). A nonparametric bootstrap confidence interval does not rely on assumptions about the data's underlying probability distribution which are often difficult to confirm, but instead are based on statistical re-sampling of the empirical distribution of the observed concentrations. For an empirical distribution that is approximately normal, the bootstrap confidence interval will be essentially the same as the normal confidence interval. For an empirical distribution that is not normal, however, the bootstrap prediction interval will be more accurate than a confidence interval calculated assuming a normal (or even lognormal) distribution (U.S. EPA, 1997b). The soil concentrations used in the calculations for AOI W-1 and the Area of Industrial Redevelopment are shown in the tables accompanying this appendix (at the end of the text).

2.2 LNAPL

The highest concentrations of each constituent in the LNAPL at AOIs M-2 and M-16 are used as the exposure concentrations. The LNAPL concentrations used in the calculations are shown in the tables accompanying this appendix.

2.3 Smear Zone Soil

Soil in the depth interval within which the LNAPL layer at AOIs M-2 and M-16 fluctuates with the water table (the smear zone) is conservatively assumed to be completely saturated with LNAPL. The concentration of a LNAPL constituent in the smear zone soil is estimated as follows:

$$C_{soil} = C_{NAPL} \cdot r_{NAPL} \cdot \frac{n}{r_{soil}}$$

where C_{NAPL} is the concentration of a chemical in the LNAPL, $?_{NAPL}$ is the density of the LNAPL (approximately 0.9 kg/L), n is the total porosity of the soil (assumed to be 0.43), and $?_{soil}$ is the dry bulk density of the soil (assumed to be 1.5 kg/L). The assumed soil porosity and bulk density are the default values U.S. EPA recommended in the Soil Screening Guidance (U.S. EPA, 1996). This calculation assumes 100% NAPL saturation of the soil voids and is highly conservative since typical NAPL residual saturation does not exceed 20% to 50%, depending on the type of NAPL and soil. The LNAPL concentrations discussed in Section 2.2 are used for C_{NAPL}.

2.4 Air

2.4.1 Emissions from Soil

Vapor emissions from soil to outdoor air are estimated using the model developed by Jury et al. (1990) and recommended by U.S. EPA for screening-level assessments (U.S. EPA, 1996). The model estimates the average vapor flux over a defined period of exposure under unsteady-state conditions, assuming linear equilibrium partitioning and an infinite depth of contamination. The assumption of infinite contaminant depth is highly conservative, but does not seriously affect the conclusions in this risk evaluation.

Emission of respirable soil particles (10 μm in diameter or smaller, i.e., PM_{10}) from soil not in the smear zone during occasional excavations at AOI W-1 is conservatively based on data compiled by U.S. EPA on particulate emissions from heavy construction operations (U.S. EPA, 1995a). In the larger-scale, short-term scenario for the Area of Industrial Redevelopment, the emission of PM_{10} is assumed to be limited so that the resulting PM_{10} air concentration does not exceed the 24-hour ambient air quality criterion of 0.150 mg/m^3. Particulate emissions from smear zone soil at AOIs M-2 and M-16 are not expected since the soil is assumed to be saturated with NAPL.

2.4.2 Emissions from LNAPL

The vapor concentration of LNAPL constituents in the air as a result of emission from LNAPL that is exposed in an open excavation pit is estimated using the "oil film surface emission model." This model is described by the equations in Table 5-7 of the U.S. EPA guidance entitled *Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF) – Air Emission Models* (U.S. EPA, 1987). The use of this vapor emission model assumes that a layer of free-phase LNAPL will be present on the floor of the excavation pit.

As shown by the model's equations, the oil film model is capable of accounting for depletion of constituents in the LNAPL over time as they volatilize. However, the calculations shown in the accompanying tables conservatively assume that the constituent in the exposed LNAPL layer do not deplete. This assumption is used because it is possible for the exposed LNAPL in the pit to be refreshed by "fresh" LNAPL draining into the pit, such as when workers attempt to "dewater" the pit. Because the size of excavation pits for occasional maintenance or construction activities are expected to be small relative to the size of the LNAPL plumes, "fresh" LNAPL would be available to drain into an open pit.

2.4.3 Air Dispersion

The concentrations of soil and LNAPL constituents in air are estimated using air dispersion calculations provided by the U.S. EPA screening-level air dispersion model SCREEN3 (U.S. EPA, 1995b). The area-source algorithm in SCREEN3 is used with worst-case meteorological conditions (selected by the model) to estimate maximum 1-hour concentrations

at ground level. The excavation pit is approximated as a square source, since the maximum calculated air concentration is independent of wind direction. The size of the excavation pit for occasional excavations is assumed to be 15-ft by 15-ft. The size of excavations during construction of the proposed Area of Industrial Redevelopment (which is expected to be slab-on-grade) is assumed to be 0.5 acre, since firm plans for the building configuration and construction have not been established.

The maximum 1-hour on-source air concentrations at ground level calculated by SCREEN3 are converted to maximum 24-hour air concentrations using a conservative factor of 0.4. The air concentrations estimated by this approach are conservative (i.e., expected to predict higher than actual air concentrations to which workers would be exposed).

3.0 EXPOSURE FACTORS

The exposure factors used for evaluating high-end exposure of workers performing excavations during occasional maintenance or construction activities are as follows:

Soil Ingestion Rate

A soil ingestion rate of 200 mg/day is used for workers performing maintenance work that involves excavation into the soil. This rate is lower than the 480 mg/day that is often cited as U.S. EPA's recommended soil ingestion rate for excavation or construction scenarios (U.S. EPA, 1991a). However, the 480 mg/day rate is based on an assumption regarding soil adherence to hands that has been shown in recent U.S. EPA-funded field studies to overestimate (by 3 to 4-fold) soil adherence to hands during various excavation and construction activities. Replacing the earlier soil adherence assumption with soil adherence data from the U.S. EPA-funded studies (U.S. EPA, 1997a) would give a soil ingestion rate of approximately 120 mg/kg to 160 mg/kg. Therefore, using a rate of 200 mg/kg is conservative.

Soil Dermal Contact Rate and Absorption

The dermal contact rate is the product of the exposed skin surface area and the soil-to-skin adherence factor. The exposed skin area of 3,300 cm^2 and the soil-to-skin adherence factor of 0.2 mg/cm^2 are the U.S. EPA-recommended skin area and adherence factor for evaluating high-end contact with soil by workers in industrial settings (U.S. EPA, 2001). The absorbed dose from dermal contact with soil is estimated by multiplying the dermal contact rate by U.S. EPA-recommended absorption factors for absorption from soil (U.S. EPA, 2001).

LNAPL Dermal Contact Rate

The exposed skin surface area of 3,300 cm^2 is the same exposed skin surface area for exposure to soil, as discussed above. Workers are assumed to be covered with LNAPL over this exposed skin surface area for 2 hours per day. The absorbed dose for organic

chemicals is estimated using the nonsteady-state approach suggested by U.S. EPA (2001), which is more conservative than the steady-state approach recommended in early guidance (U.S. EPA, 1989), particularly for hydrophobic organic compounds. The permeability coefficient (K_p) for dermal absorption of organic chemicals from LNAPL is estimated following U.S. EPA guidance (1992).

Exposure Frequency and Duration

The total number of days of occasional maintenance or construction that involves actual excavation into the smear zone and water table is assumed to be 50 days, which is assumed to occur at an exposure frequency of 5 days/year for an exposure duration of 10 years. This combination of exposure frequency and exposure duration is expected to be conservative for the amount of time these workers are actually in contact with LNAPL and LNAPL-saturated soil (as opposed to the total time for maintenance or construction, which typically includes time not associated with excavation). For perspective, the frequency of 5 days/year is expected to be equivalent to the excavation time for a few small repairs per year or one larger repair. The duration of 10 years is more than twice the length of time that workers typically work at one location.

To evaluate potential exposures during the construction in the proposed Area of Industrial Redevelopment, the exposure duration (ED) is set to 1 year and the exposure frequency (EF) is treated as a variable. The allowable values of EF were determined by ensuring that the calculated exposures do not exceed acceptable levels. This approach was used since firm plans for construction of the proposed Area of Industrial Redevelopment have not been established. As shown in the tables accompanying this appendix, the allowable values of EF can be as high as approximately 125 days/year.

Body Weight

The body weight of 70 kg is the standard U.S. EPA-recommended body weight for assessing exposure to adults (U.S. EPA, 1989).

Averaging Time

The averaging time for evaluating cancer risk is equal to a lifetime of 70 years, and the averaging time for evaluating noncancer risk is equal to the exposure duration (U.S. EPA, 1989).

4.0 TOXICITY VALUES

The toxicity values used in the calculation of risk are shown in the accompanying tables. They are compiled following U.S. EPA's hierarchy of sources, as follows:

1. Integrated Risk Information System (IRIS)
2. Health Effects Assessment Summary Tables (HEAST)
3. National Center for Environmental Assessment (NCEA)

The specific source of each toxicity value is noted on the accompanying tables.

5.0 CUMULATIVE CANCER AND NONCANCER RISKS

The cancer risk associated with potential exposure to a carcinogenic chemical is calculated by multiplying an estimate of the lifetime average daily dose (LADD) for a particular exposure scenario by the cancer slope factor (SF) for the chemical, as follows:

$$Risk = LADD \cdot SF$$

For the inhalation route, the inhalation cancer risk is calculated using the chemical concentration in air (C_{air}) and the URF, as follows:

$$Risk = C_{air} \cdot URF \cdot \frac{EF \cdot ED}{AT}$$

where EF is exposure frequency, ED is exposure duration, and AT is averaging time.

The noncancer HQ associated with potential exposure to a noncarcinogenic chemical is calculated by dividing an estimate of the average daily dose (ADD) for a particular exposure scenario by the reference dose (RfD) for the chemical, as follows:

$$HQ = \frac{ADD}{RfD}$$

For the inhalation route, the inhalation HQ is calculated using C_{air} and the RfC, as follows:

$$HQ = \frac{C_{air}}{RfC} \cdot \frac{EF \cdot ED}{AT}$$

The calculated cancer risk and HQ for each constituent for each route of exposure are provided in the accompanying tables.

The potential cancer risk and noncancer effects that may result from exposure to the combination of constituents at an area are estimated following U.S. EPA guidance (U.S. EPA, 1989), as follows:

$$Cumulative\,Risk = \sum_i Risk_i$$

$$Hazard\ \ Index = \sum_i HQ_i$$

where:

$Risk_i$ = estimated cancer risk for the *i*th constituent

HQ_i = hazard quotient for the *i*th constituent

This approach may result in estimates of cumulative cancer and noncancer risks that are more conservative than necessary. For example, different chemicals may cause different and unrelated health effects, so that summing the HQs for their individual effects would overestimate the significance of their combined effects. Nonetheless, this approach is used here as a conservative assessment tool. The cumulative cancer risk and HI estimates for each exposure route are shown in the accompanying tables.

Attachment to Appendix F.2

Toxicity Values
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	Cancer Class	SF_{oral} $(mg/kg/d)^{-1}$			RfD_{oral} (mg/kg/d)				URF $(ug/m^3)^{-1}$			RfC (mg/m^3)			
				Value	Ref	Notes	Value	UF	Ref	Notes	Value	Ref	Notes	Value	UF	Ref	Notes
VOC	Benzene	71-43-2	A	5.50E-02	1	68	4.00E-03	300	1		7.80E-06	1	60	3.00E-02	300	1	
VOC	Chloroform	67-66-3	B2	8.10E-02	2	26,4	1.00E-02	1000	1		2.30E-05	1		5.00E-02	100	117	
VOC	Cumene	98-82-8	D				1.00E-01	1000	1					4.00E-01	1000	1	
VOC	Cyclohexane	110-82-7					5.70E+00		4	4				2.00E+01		4	44
VOC	1,1-Dichloroethane	75-34-3	C				1.00E-01	1000	2	26,6				5.00E-01	1000	2	3
VOC	1,1-Dichloroethene	75-35-4	C				5.00E-02	100	1					2.00E-01	30	1	
VOC	cis-1,2-Dichloroethene	156-59-2	D				1.00E-02	3000	2	6							
VOC	Ethyl Benzene	100-41-4	D				1.00E-01	1000	1					1.00E+00	300	1	
VOC	Methyl Acetate	79-20-9					1.00E+00	1000	2								
VOC	4-Methyl-2-pentanone	108-10-1	ID						1	90				3.00E+00	300	1	
VOC	Methylcyclohexane	108-87-2					8.57E-01	100	2	63,4				3.00E+00	100	2	
VOC	Methylene Chloride	75-09-2	B2	7.50E-03	1		6.00E-02	100	1		4.70E-07	1		3.00E+00	100	2	
VOC	Tetrachloroethene	127-18-4	C-B2	5.20E-02	77		1.00E-02	1000	1		3.06E-06	77		4.00E-01	300	109	94
VOC	Toluene	108-88-3	D				2.00E-01	1000	1					4.00E-01	300	1	
VOC	1,1,1-Trichloroethane	71-55-6	D				2.80E-01	90	72					2.20E+00	90	73	
VOC	Trichloroethene	79-01-6	C-B2	1.10E-02	49		6.00E-03	3000	46	6, 97	1.70E-06	49					
VOC	Xylenes (total)	1330-20-7	ID				2.00E-01	1000	1					1.00E-01	300	1	
SVOC	Anthracene	120-12-7	D				3.00E-01	3000	1							2	90
SVOC	Biphenyl	92-52-4	D				5.00E-02										
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	1.40E-02	1		2.00E-02	1000	1		4.00E-06	3	45				
SVOC	Butylbenzylphthalate	85-68-7	C				2.00E-01	1000	1								
SVOC	Fluoranthene	206-44-0	D				4.00E-02	3000	1								
SVOC	Fluorene	86-73-7	D				4.00E-02	3000	1								
SVOC	2-Methylnaphthalene	91-57-6	ID				2.00E-02	3000	118					3.00E-03	3000	1	61
SVOC	Phenanthrene	85-01-8	D				3.00E-02	3000	1	20							
SVOC	Pyrene	129-00-0	D				3.00E-02	3000	1								
P/PCB	PCBs (total)	1336-36-3	B2	2.00E+00	1	30,32	2.00E-05	300	1	72							
INORG	Antimony	7440-36-0					4.00E-04	1000	1								
INORG	Arsenic	7440-38-2	A	1.50E+00	1		3.00E-04	3	1		4.30E-03	1					
INORG	Cadmium	7440-43-9	B1	6.30E+00	1	52,4	5.00E-04	10	1	96	1.80E-03	1		2.00E-04		3	44
INORG	Chromium (total)	7440-47-3		4.10E+01	2	8,4	3.00E-03	900	1	8	1.20E-02	1	8	1.00E-04	300	1	59,8
INORG	Cobalt	7440-48-4	B1	9.80E+00	3	4	2.00E-02	10	105		2.80E-03	106		2.00E-05	100	86	
INORG	Copper	7440-50-8	D				4.00E-02	2	50	49							
INORG	Cyanide (total)	57-12-5	D				2.00E-02	500	1								
INORG	Lead	7439-92-1	B2														
INORG	Nickel	7440-02-0	A	8.40E-01	2	4	2.00E-02	300	1		2.40E-04	1					
INORG	Silver	7440-22-4	D				5.00E-03	3	1					1.00E-05	1000	83	
INORG	Vanadium	7440-62-2					7.00E-03	100	2	6							
INORG	Zinc	7440-66-6	D				3.00E-01	3	1								
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6	B2	1.50E+05	2	55					3.30E+01	2	26,55,56				

Toxicity Values
General Motors - Pontiac North Campus, Pontiac, Michigan

References:

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2	USEPA. 1997. Health Effects Assessment Summary Tables (HEAST). FY-1997 Update. EPA 540/R-97-036. July.
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4	USEPA. Region IX. 2002. Preliminary Remediation Goal Table. October.
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77	USEPA. 2001. Risk Assessment Issue Paper for Carcinogenicity Information for Tetrachloroethylene (perchloroethylene, PERC) [CASRN 127-18-4]. December 20.
83	USEPA. NCEA. 1994. Risk Assessment Issue Paper for: Derivation of a Provisional RfC for Silver [CASRN 7440-22-4]. June 30.
86	USEPA. NCEA. 2002. Risk Assessment Issue paper for: Derivation of a Provisional RfC for Cobalt and Compounds [CASRN 7440-48-4]. January 15.
105	USEPA. NCEA. 2002. Risk Assessment Issue paper for: Derivation of a Provisional RfD for Cobalt and Compounds [CASRN 7440-48-4]. January 15.
106	USEPA. NCEA. 2002. Risk Assessment Issue paper for: Derivation of a Provisional Carcinogenicity Assessment for Cobalt and Compounds [CASRN 7440-48-4]. January 15.
109	USEPA. NCEA. 1997. Risk Assessment Issue Paper for: Derivation of a Provisional RfC for Tetrachloroethylene (perchloroethylene, PERC) [CASRN 127-18-4]. June 20.
117	USEPA. NCEA. 2003. Risk Assessment Issue Paper for: Derivation of Provisional Subchronic and Chronic RfCs for Chloroform [CASRN 67-66-3]. January 23.
118	USEPA. NCEA. 2002. Provisional Toxicity Value Assessment for HWIR: RfD for 2-Methylnapthalene [CASRN 91-57-6]. August.

Notes:

4	ENVIRON obtained value by route-to-route extrapolation.
6	Under review, according to IRIS.
8	ENVIRON used Chromium VI [CASRN 18540-29-9] value from IRIS (reference 1) as a surrogate.
20	ENVIRON used Pyrene [CASRN 129-00-0] value from IRIS (reference 1) as a surrogate.
26	USEPA obtained value by route-to-route extrapolation.
30	Upper-bound slope factor.
32	High risk & persistence tier.Use for: food chain exposure;sediment/soil ingestion;dust/aerosol inhalation;dermal exposure, if an absorption factor has been applied;presence of dioxin-like,tumor-promoting/persistent congeners;all early life exposures.
44	ENVIRON derived CRFC from CRFDI value presented in the indicated reference, using standard USEPA methodology presented in HEAST.
45	ENVIRON derived URFI from CSFI value presented in the indicated reference, using standard USEPA methodology presented in HEAST.
49	ENVIRON derived CRFDO from adverse health effect level value presented in the indicated reference.
52	ENVIRON derived inhalation SF from URFI value presented in the indicated reference, using standard USEPA methodology presented in HEAST.
55	Under EPA review. Number subject to change.
59	Chromium VI Particulates.
60	IRIS provides a range of 2.2E-6 to 7.8E-6 (ug/m3)-1 as the Inhalation Unit Risk Factor (URF) for Benzene.
61	ENVIRON used Naphthalene [CASRN 91-20-3] value from indicated reference as a surrogate.
63	ENVIRON derived inhalation RfD from inhalation RfC published in the indicated reference, using standard USEPA methodology presented in HEAST.
68	IRIS provides a range of 1.5E-2 to 5.5E-2 (mg/kg/d)-1 as the Oral Slope Factor (CSFO) for Benzene.
72	ENVIRON used Aroclor 1254 [CASRN 11097-69-1] value from the indicated reference as a surrogate for Polychlorinated biphenyls [CASRN 1336-36-3].
90	Inadequate data exist to derive a toxicity value, according to the indicated reference.
94	Two provisonal RfC values are presented in the indicated reference (4E-1 and 6E-1 mg/m3). Personal communication with NCEA indicated that either RfC is acceptable and the RfC should be chosen on a case-by-case basis.
96	Water Criterion.
97	ENVIRON used withdrawn source.

Physical and Chemical Information
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	MW (g/mole)			K_{ow} (unitless)			log K_{ow} (unitless)			K_{oc} (L/kg)			K_d (L/kg)			H (unitless)			s (mg/L)			VP (mm Hg)			D_{air} (cm^2/s)			D_{water} (cm^2/s)			Kp (cm/hr)			ABS_d (unitless)			FA (unitless)		
			Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes
VOC	Benzene	71-43-2	7.81E+01	50		1.30E+02	40		2.13	44		5.89E+01	44					2.28E-01	44		1.75E+03	44		9.50E+01	50	92	8.80E-02	44		9.80E-06	44		0.015	62					1.0E+00	62	
VOC	Chloroform	67-66-3	1.19E+02	50		8.30E+01	40		1.92	44		3.98E+01	44					1.50E-01	44		7.92E+03	44		1.97E+02	50	92	1.04E-01	44		1.00E-05	44		0.007	62	104				1.0E+00	62	
VOC	Cumene	98-82-8	1.20E+02	50		3.80E+03	40		3.66	1		3.30E+03	40					4.74E+01	50	92	6.13E+01	50	92	4.50E+00	50	92	6.50E-02	65		7.83E-06	65		0.14	1	70						
VOC	Cyclohexane	110-82-7	8.42E+01	50														7.97E+00	50	92	5.50E+01	50	92	9.69E+01	50	92	1.11E-01	66		9.14E-06	66										
VOC	1,1-Dichloroethane	75-34-3	9.90E+01	50		6.20E+01	40		1.79	44		3.16E+01	44					2.30E-01	44		5.06E+03	44		2.27E+02	50	92	7.42E-02	44		1.05E-05	44		0.007	62	104				1.0E+00	62	
VOC	1,1-Dichloroethene	75-35-4	9.69E+01	50		1.30E+02	40		2.13	44		5.89E+01	44					1.07E+00	44		2.25E+03	44		6.00E+02	50	92	9.00E-02	44		1.04E-05	44		0.012	62	104				1.0E+00	62	
VOC	cis-1,2-Dichloroethene	156-59-2	9.69E+01	50		7.20E+01	40		1.86	44		3.55E+01	44					1.67E-01	44		3.50E+03	44		2.03E+02	50	92	7.36E-02	44		1.13E-05	44		0.01	44	70						
VOC	Ethyl Benzene	100-41-4	1.06E+02	50		1.33E+03	65		3.14	44		3.63E+02	44					3.23E-01	44		1.69E+02	44		9.60E+00	50	92	7.50E-02	44		7.80E-06	44		0.049	62					1.0E+00	62	
VOC	Methyl Acetate	79-20-9	7.41E+01	55		2.90E+00	65		0.462	65		3.25E+00	65					3.53E-03	65		2.44E+05	65		2.16E+02	65		1.23E-01	65		1.10E-05	65		0.001	65	70						
VOC	4-Methyl-2-pentanone	108-10-1	1.00E+02	50		1.55E+01	65		1.19	62		1.20E+01	65					5.64E-03	50	92	2.00E+04	65		1.99E+01	50	92	7.50E-02	40		7.80E-06	40		0.003	62					1.0E+00	62	
VOC	Methylcyclohexane	108-87-2	9.82E+01	55														1.76E+01	60					4.60E+01	60		8.99E-02	66		8.27E-06	66										
VOC	Methylene Chloride	75-09-2	8.49E+01	50		1.80E+01	40		1.25	44		1.17E+01	44					8.98E-02	44		1.30E+04	44		4.33E+02	50	92	1.01E-01	44		1.17E-05	44		0.004	62	104				1.0E+00	62	
VOC	Tetrachloroethene	127-18-4	1.66E+02	50		4.70E+02	40		2.67	44		1.55E+02	44					7.54E-01	44		2.00E+02	44		1.86E+01	50	92	7.20E-02	44		8.20E-06	44		0.033	62	104				1.0E+00	62	
VOC	Toluene	108-88-3	9.21E+01	50		4.65E+02	65		2.75	44		1.82E+02	44					2.72E-01	44		5.26E+02	44		2.84E+01	50	92	8.70E-02	44		8.60E-06	44		0.031	62					1.0E+00	62	
VOC	1,1,1-Trichloroethane	71-55-6	1.33E+02	50		3.00E+02	40		2.48	44		1.10E+02	44					7.05E-01	44		1.33E+03	44		1.24E+02	50	92	7.80E-02	44		8.80E-06	44		0.013	62	104				1.0E+00	62	
VOC	Trichloroethene	79-01-6	1.31E+02	50		5.10E+02	40		2.71	44		1.66E+02	44					4.22E-01	44		1.10E+03	44		7.35E+01	50	92	7.90E-02	44		9.10E-06	44		0.012	62	104				1.0E+00	62	
VOC	Xylenes (total)	1330-20-7	1.06E+02	1								2.60E+02	34					1.71E-01	1	59		1	61	1.00E+01	1	65	7.20E-02	34		8.00E-06	40										
SVOC	Anthracene	120-12-7	1.78E+02	50		2.95E+04	65		4.55	44		2.95E+04	44					2.67E-03	44		4.34E-02	44		2.67E-06	50	92	3.24E-02	44		7.74E-06	44		0.265	44	70	1.3E-01	62				
SVOC	Biphenyl	92-52-4	1.54E+02	50														1.23E-02	50	92	6.03E+00	50	93	9.64E-03	50	92	4.04E-02	66		8.15E-06	66					1.0E-01	62			
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	3.91E+02	50		2.00E+07	40		7.3	44		1.51E+07	44					4.18E-06	44		3.40E-01	44		6.45E-06	50	94	3.51E-02	44		3.66E-06	44		0.025	62		1.0E-01	62		8.0E-01	62	
SVOC	Butylbenzylphthalate	85-68-7	3.12E+02	50		6.90E+04	40		4.84	44		5.75E+04	44					5.17E-05	44		2.69E+00	44		8.25E-06	50	92	1.74E-02	44		4.83E-06	44		0.065	44	70	1.0E-01	62				
SVOC	Fluoranthene	206-44-0	2.02E+02	50		1.30E+05	40		5.12	44		1.07E+05	44					6.60E-04	44		2.06E-01	44		7.80E-06	50	94	3.02E-02	44		6.35E-06	44		0.22	62	103	1.3E-01	62		1.0E+00	62	
SVOC	Fluorene	86-73-7	1.66E+02	50		1.60E+04	40		4.21	44		1.38E+04	44					2.61E-03	44		1.98E+00	44		6.33E-04	50	92	3.63E-02	44		7.88E-06	44		0.18	44	70	1.3E-01	62				
SVOC	2-Methylnaphthalene	91-57-6	1.42E+02	50					3.86	1								2.12E-02	50	92	2.46E+01	50	92	5.50E-02	50	92							0.142	1	70	1.0E-01	62				
SVOC	Phenanthrene	85-01-8	1.78E+02	50		3.55E+04	65		4.46	1		1.40E+04	3					9.52E-04	50	92	1.15E+00	50	92	1.12E-04	50	92	3.33E-02	65		7.47E-06	65		0.14	62	103	1.3E-01	62		1.0E+00	62	
SVOC	Pyrene	129-00-0	2.02E+02	50		1.30E+05	40		5.11	44		1.05E+05	44					4.51E-04	44		1.35E-01	44		4.59E-06	50	92	2.72E-02	44		7.24E-06	44		0.472	44	70	1.3E-01	62				
P/PCB	PCBs (total)	1336-36-3	3.28E+02	40		2.00E+06	40		6.301	40		3.09E+05	44					1.06E-01	50	94	7.00E-01	44		7.70E-05	50	92	8.00E-02	40		1.00E-05	40		0.566	40	70	1.4E-01	62		6.0E-01	62	
INORG	Antimony	7440-36-0	1.22E+02	50			40	48		1	48		65	48	4.50E+01	44	43					1	61					40	48		40	48	0.001	62							
INORG	Arsenic	7440-38-2	7.49E+01	50			40	48		1	48		65	48	2.90E+01	44	43					1	61					40	48		40	48	0.001	62		3.0E-02	62				
INORG	Cadmium	7440-43-9	1.12E+02	50			40	48		1	48		65	48	7.50E+01	44	43					1	61		40	48		40	48		40	48	0.001	62		1.0E-03	62				
INORG	Chromium (total)	7440-47-3	5.20E+01	50			65	48		1	48		65	48	1.90E+01	44	43,45					1	61					40	48		40	48	0.001	62							
INORG	Cobalt	7440-48-4	5.89E+01	50						1	48				4.50E+01	35						1	61										4E-04	62							
INORG	Copper	7440-50-8	6.35E+01	50			40	48		1	48				3.50E+01	35						1	61					40	48		40	48	0.001	62							
INORG	Cyanide (total)	57-12-5	2.60E+01	1			65	100		1	48		65	100	9.90E+00	44	43		65	100		65	100	1.38E+01	65		5.48E-01	65		2.10E-05	65		0.001	62							
INORG	Lead	7439-92-1	2.07E+02	50			40	48		1	48		65	48	9.00E+02	35						1	61					40	48		40	48	0.001	62							
INORG	Nickel	7440-02-0	5.87E+01	50			40	48		1	48		65	48	6.50E+01	44	43					1	61					40	48		40	48	2E-04	62							
INORG	Silver	7440-22-4	1.08E+02	50			40	48		1	48		65	48	8.30E+00	44	43					1	61					40	48		40	48	6E-04	62							
INORG	Vanadium	7440-62-2	5.09E+01	50			40	48		1	48				1.00E+03	44	43					1	61		40	48		40	48		40	48	0.001	62							
INORG	Zinc	7440-66-6	6.54E+01	50			40	48		1	48		65	48	6.20E+01	44	43					1	61					40	48		40	48	6E-04	62							
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6	3.22E+02	50		6.31E+06	62											3.24E-03	50	92	7.91E-06	50	93	1.49E-09	50	92	4.70E-02	40		8.00E-06	40					3.0E-02	62		5.0E-01	62	

Physical and Chemical Information
General Motors - Pontiac North Campus, Pontiac, Michigan

References:

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62	USEPA. 2001. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim -- Review Draft-For Public Comment.
62	USEPA. 2001. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim -- Review Draft-For Public Comment.
65	USEPA. July 1998. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities.

Notes:

43	pH associated with value is 6.8.
45	ENVIRON used the value for Chromium VI [CASRN 18540-29-9] presented in indicated reference as a surrogate.
48	Not Available or Not Applicable
59	min: max is 6.662E-3.
61	Insoluble
65	min temperature: max is 32.1C
70	ENVIRON calculated Kp value using equation 5.8 (p.5-38) in reference 43 with log Kow from the indicated reference and the MW presented in table.
92	Indicated source cites CHEMFATE.
93	Indicated source cites FATE.
94	Indicated source cites LIVECHEM.
100	No data available
103	Identified as outside the effective prediction domain
104	Halogenated compound

Concentrations of Chemicals in NAPL
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN		NAPL M-02 (mg/kg)	NAPL M-16 (mg/kg)	NAPL W-08 (mg/kg)
VOC	Benzene	71-43-2			1.40E-01	
VOC	Chloroform	67-66-3		4.20E-01		
VOC	Cumene	98-82-8		7.90E-01	6.10E-01	8.00E-01
VOC	Cyclohexane	110-82-7			7.30E-01	
VOC	1,1-Dichloroethane	75-34-3		2.10E+01		
VOC	1,1-Dichloroethene	75-35-4		2.40E+00		
VOC	cis-1,2-Dichloroethene	156-59-2			3.00E-01	
VOC	Ethyl Benzene	100-41-4		2.70E+00	7.10E+00	1.20E+00
VOC	Methyl Acetate	79-20-9			4.80E-01	
VOC	4-Methyl-2-pentanone	108-10-1		3.40E-01		
VOC	Methylcyclohexane	108-87-2		2.70E-01	1.90E+00	6.20E-01
VOC	Methylene Chloride	75-09-2		1.30E+00		
VOC	Tetrachloroethene	127-18-4		1.10E+01	2.20E-01	
VOC	Toluene	108-88-3		3.30E+00	1.20E+01	
VOC	1,1,1-Trichloroethane	71-55-6		4.40E+00		
VOC	Trichloroethene	79-01-6		1.40E+00	5.30E-01	
VOC	Xylenes (total)	1330-20-7		1.00E+01	3.90E+01	1.30E+00
SVOC	Anthracene	120-12-7		1.20E+02		
SVOC	Biphenyl	92-52-4				1.60E+02
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7			5.30E+02	
SVOC	Butylbenzylphthalate	85-68-7			4.00E+02	
SVOC	Fluoranthene	206-44-0		1.30E+02		
SVOC	Fluorene	86-73-7		1.70E+02	1.40E+02	1.90E+02
SVOC	2-Methylnaphthalene	91-57-6		5.90E+01		1.20E+02
SVOC	Phenanthrene	85-01-8		6.60E+02	2.50E+02	7.80E+02
SVOC	Pyrene	129-00-0		1.70E+02		
P/PCB	PCBs (total)	1336-36-3		1.70E+02	8.32E+01	2.70E+00
INORG	Antimony	7440-36-0		4.80E-01	2.70E-01	
INORG	Arsenic	7440-38-2		6.50E+00	1.11E+01	
INORG	Cadmium	7440-43-9			8.90E-02	
INORG	Chromium (total)	7440-47-3		2.70E+00	2.90E+00	
INORG	Cobalt	7440-48-4		8.40E-02	1.90E-01	
INORG	Copper	7440-50-8		3.20E+00	4.10E+00	2.90E-01
INORG	Cyanide (total)	57-12-5		1.20E-01		
INORG	Lead	7439-92-1		8.30E-01	1.40E+01	
INORG	Nickel	7440-02-0		9.17E+01	1.30E+00	
INORG	Silver	7440-22-4		1.10E-01		
INORG	Vanadium	7440-62-2			3.10E+00	
INORG	Zinc	7440-66-6		1.90E+00	2.79E+01	
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6				7.38E-06
Notes:						
1. Concentrations in bold are nonparametric bootstrap 95% UCLs.						
	NAPL density	0.9		kg/L		
	Soil bulk density	1.5		kg/L		
	Soil total porosity	0.43				
	NAPL saturation	100%				

High-End Exposure Factors General Motors - Pontiac North Campus, Pontiac, Michigan			
			Construction Scenario
Soil Ingestion			
Ingestion Rate	mg-soil/day	**IR**	330
Conversion Factor	kg/mg	**CF**	1E-06
Fraction Contaminated	unitless	**FC**	1.0
Exposure Frequency	days/year	**EF**	5
Expoure Duration	years	**ED**	10
Body Weight	kg	**BW**	70
Averaging Time, cancer	days	**AT_c**	25,550
Averaging Time, noncancer	days	**AT_{nc}**	3,650
Soil Dermal Contact			
Adherence Factor	mg-soil/cm^2	**AF**	0.2
Skin Surface Area	cm^2/day	**SA**	3,300
Conversion Factor	kg/mg	**CF**	1E-06
Fraction Contaminated	unitless	**FC**	1.0
Exposure Frequency	days/year	**EF**	5
Expoure Duration	years	**ED**	10
Body Weight	kg	**BW**	70
Averaging Time, cancer	days	**AT_c**	25,550
Averaging Time, noncancer	days	**AT_{nc}**	3,650
Ambient Air Inhalation			
Exposure Frequency	days/year	**EF**	5
Expoure Duration	years	**ED**	10
Averaging Time, cancer	days	**AT_c**	25,550
Averaging Time, noncancer	days	**AT_{nc}**	3,650
Oil Dermal Contact			
Event Time	hr	**t**	2
Skin Surface Area	cm^2	**SA**	3,300
Events per Day	1/d	**EV**	1
Exposure Frequency	d/yr	**EF**	5
Exposure Duration	yr	**ED**	10
Body Weight	kg-bw	**BW**	70
Averaging Time, carc	d	**AT_c**	25,550
Averaging Time, noncarc	d	**AT_{nc}**	3,650

Nonsteady State Dermal Absorption of Chemical from NAPL
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	MW (g/mole)	K_{ow} (unitless)	K_p (cm/hr)	B (unitless)	t (hr)	c	b	ts (hr)	FA (unitless)	DA (L/cm^2-event)
VOC	Benzene	71-43-2	78.1	1.3E+02	1.1E-04	3.8E-04	2.9E-01	3.3E-01	3.0E-01	6.9E-01	1.0E+00	2.85E-07
VOC	Chloroform	67-66-3	119.4	8.3E+01	7.6E-05	3.2E-04	4.9E-01	3.3E-01	3.0E-01	1.2E+00	1.0E+00	2.26E-07
VOC	Cumene	98-82-8	120.2	3.8E+03	2.0E-05	8.6E-05	5.0E-01	3.3E-01	3.0E-01	1.2E+00		
VOC	Cyclohexane	110-82-7	84.2				3.1E-01	3.3E-01	3.0E-01	7.5E-01		
VOC	1,1-Dichloroethane	75-34-3	99.0	6.2E+01	1.1E-04	4.2E-04	3.8E-01	3.3E-01	3.0E-01	9.0E-01	1.0E+00	2.99E-07
VOC	1,1-Dichloroethene	75-35-4	96.9	1.3E+02	8.7E-05	3.3E-04	3.7E-01	3.3E-01	3.0E-01	8.8E-01	1.0E+00	2.37E-07
VOC	cis-1,2-Dichloroethene	156-59-2	96.9	7.2E+01	1.1E-04	4.0E-04	3.7E-01	3.3E-01	3.0E-01	8.8E-01		
VOC	Ethyl Benzene	100-41-4	106.2	1.3E+03	3.5E-05	1.4E-04	4.1E-01	3.3E-01	3.0E-01	9.9E-01	1.0E+00	9.88E-08
VOC	Methyl Acetate	79-20-9	74.1	2.9E+00	4.2E-04	1.4E-03	2.7E-01	3.3E-01	3.0E-01	6.6E-01		
VOC	4-Methyl-2-pentanone	108-10-1	100.2	1.6E+01	1.7E-04	6.6E-04	3.8E-01	3.3E-01	3.0E-01	9.2E-01	1.0E+00	4.74E-07
VOC	Methylcyclohexane	108-87-2	98.2				3.7E-01	3.3E-01	3.0E-01	9.0E-01		
VOC	Methylene Chloride	75-09-2	84.9	1.8E+01	2.0E-04	7.0E-04	3.1E-01	3.3E-01	3.0E-01	7.5E-01	1.0E+00	5.21E-07
VOC	Tetrachloroethene	127-18-4	165.8	4.7E+02	2.3E-05	1.1E-04	8.9E-01	3.3E-01	3.0E-01	2.1E+00	1.0E+00	8.51E-08
VOC	Toluene	108-88-3	92.1	4.7E+02	6.0E-05	2.2E-04	3.5E-01	3.3E-01	3.0E-01	8.3E-01	1.0E+00	1.61E-07
VOC	1,1,1-Trichloroethane	71-55-6	133.4	3.0E+02	4.1E-05	1.8E-04	5.9E-01	3.3E-01	3.0E-01	1.4E+00	1.0E+00	1.30E-07
VOC	Trichloroethene	79-01-6	131.4	5.1E+02	3.5E-05	1.5E-04	5.7E-01	3.3E-01	3.0E-01	1.4E+00	1.0E+00	1.10E-07
VOC	Xylenes (total)	1330-20-7	106.2				4.1E-01	3.3E-01	3.0E-01	9.9E-01		
SVOC	Anthracene	120-12-7	178.2	3.0E+04	4.8E-06	2.5E-05	1.0E+00	3.3E-01	3.0E-01	2.5E+00		
SVOC	Biphenyl	92-52-4	154.2				7.7E-01	3.3E-01	3.0E-01	1.8E+00		
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	390.6	2.0E+07	3.4E-08	2.6E-07	1.6E+01	3.3E-01	3.0E-01	3.9E+01	8.0E-01	4.27E-10
SVOC	Butylbenzylphthalate	85-68-7	312.4	6.9E+04	6.4E-07	4.3E-06	5.9E+00	3.3E-01	3.0E-01	1.4E+01		
SVOC	Fluoranthene	206-44-0	202.3	1.3E+05	2.1E-06	1.2E-05	1.4E+00	3.3E-01	3.0E-01	3.4E+00	1.0E+00	9.95E-09
SVOC	Fluorene	86-73-7	166.2	1.6E+04	6.9E-06	3.4E-05	9.0E-01	3.3E-01	3.0E-01	2.2E+00		
SVOC	2-Methylnaphthalene	91-57-6	142.2				6.6E-01	3.3E-01	3.0E-01	1.6E+00		
SVOC	Phenanthrene	85-01-8	178.2	3.6E+04	4.5E-06	2.3E-05	1.0E+00	3.3E-01	3.0E-01	2.5E+00	1.0E+00	1.81E-08
SVOC	Pyrene	129-00-0	202.3	1.3E+05	2.1E-06	1.2E-05	1.4E+00	3.3E-01	3.0E-01	3.4E+00		
P/PCB	PCBs (total)	1336-36-3	328.0	2.0E+06	1.7E-07	1.2E-06	7.2E+00	3.3E-01	3.0E-01	1.7E+01	6.0E-01	1.05E-09
INORG	Antimony	7440-36-0	121.8		1.0E-03							2.00E-06
INORG	Arsenic	7440-38-2	74.9		1.0E-03							2.00E-06
INORG	Cadmium	7440-43-9	112.4		1.0E-03							2.00E-06
INORG	Chromium (total)	7440-47-3	52.0		1.0E-03							2.00E-06
INORG	Cobalt	7440-48-4	58.9		1.0E-03							2.00E-06
INORG	Copper	7440-50-8	63.5		1.0E-03							2.00E-06
INORG	Cyanide (total)	57-12-5	26.0		1.0E-03							2.00E-06
INORG	Lead	7439-92-1	207.2		1.0E-03							2.00E-06
INORG	Nickel	7440-02-0	58.7		1.0E-03							2.00E-06
INORG	Silver	7440-22-4	107.9		1.0E-03							2.00E-06
INORG	Vanadium	7440-62-2	50.9		1.0E-03							2.00E-06
INORG	Zinc	7440-66-6	65.4		1.0E-03							2.00E-06
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6	322.0	6.3E+06	1.2E-07	8.4E-07	6.7E+00	3.3E-01	3.0E-01	1.6E+01	5.0E-01	6.14E-10
Note:	Event Time	hours	**t**	2								
	K_p divided by the K_{ow} of organics in NAPL (USEPA 1992)											
	K_p capped at 1 cm/hr (USEPA 1992)											

Estimated Ambient Air Concentration from Excavation Into Soil with Free-Phase NAPL at M-02
General Motors - Pontiac North Campus, Pontiac, Michigan

TCL/TAL Group	Chemical	CASRN	C_{NAPL} (mg/kg)	MW (g/mole)	K_{eq} (unitless)	D_{air} (cm^2/s)	Sc	k_G (m/s)	K (m/s)	J_L (mg/m^2-s)	$C_{air, worker}$ (mg/m^3)
VOC	Benzene	71-43-2		7.81E+01	9.33E-04	8.80E-02	1.59E+00	1.72E-03	1.61E-06		
VOC	Chloroform	67-66-3	4.20E-01	1.19E+02	1.94E-03	1.04E-01	1.34E+00	1.92E-03	3.73E-06	1.41E-03	1.55E-02
VOC	Cumene	98-82-8	7.90E-01	1.20E+02	4.42E-05	6.50E-02	2.15E+00	1.40E-03	6.21E-08	4.41E-05	4.84E-04
VOC	Cyclohexane	110-82-7		8.42E+01	9.51E-04	1.11E-01	1.26E+00	2.01E-03	1.91E-06		
VOC	1,1-Dichloroethane	75-34-3	2.10E+01	9.90E+01	2.23E-03	7.42E-02	1.88E+00	1.53E-03	3.43E-06	6.48E-02	7.10E-01
VOC	1,1-Dichloroethene	75-35-4	2.40E+00	9.69E+01	5.89E-03	9.00E-02	1.55E+00	1.75E-03	1.03E-05	2.22E-02	2.44E-01
VOC	cis-1,2-Dichloroethene	156-59-2		9.69E+01	1.99E-03	7.36E-02	1.90E+00	1.53E-03	3.04E-06		
VOC	Ethyl Benzene	100-41-4	2.70E+00	1.06E+02	9.43E-05	7.50E-02	1.86E+00	1.55E-03	1.46E-07	3.54E-04	3.88E-03
VOC	Methyl Acetate	79-20-9		7.41E+01	2.12E-03	1.23E-01	1.13E+00	2.15E-03	4.57E-06		
VOC	4-Methyl-2-pentanone	108-10-1	3.40E-01	1.00E+02	1.95E-04	7.50E-02	1.86E+00	1.55E-03	3.02E-07	9.23E-05	1.01E-03
VOC	Methylcyclohexane	108-87-2	2.70E-01	9.82E+01	4.52E-04	8.99E-02	1.55E+00	1.75E-03	7.89E-07	1.92E-04	2.10E-03
VOC	Methylene Chloride	75-09-2	1.30E+00	8.49E+01	4.25E-03	1.01E-01	1.38E+00	1.89E-03	8.03E-06	9.39E-03	1.03E-01
VOC	Tetrachloroethene	127-18-4	1.10E+01	1.66E+02	1.82E-04	7.20E-02	1.94E+00	1.50E-03	2.74E-07	2.71E-03	2.97E-02
VOC	Toluene	108-88-3	3.30E+00	9.21E+01	2.79E-04	8.70E-02	1.60E+00	1.71E-03	4.76E-07	1.41E-03	1.55E-02
VOC	1,1,1-Trichloroethane	71-55-6	4.40E+00	1.33E+02	1.22E-03	7.80E-02	1.79E+00	1.59E-03	1.93E-06	7.64E-03	8.37E-02
VOC	Trichloroethene	79-01-6	1.40E+00	1.31E+02	7.22E-04	7.90E-02	1.77E+00	1.60E-03	1.16E-06	1.46E-03	1.60E-02
VOC	Xylenes (total)	1330-20-7	1.00E+01	1.06E+02	9.82E-05	7.20E-02	1.94E+00	1.50E-03	1.48E-07	1.33E-03	1.46E-02
SVOC	Anthracene	120-12-7	1.20E+02	1.78E+02	2.62E-11	3.24E-02	4.31E+00	8.81E-04	2.31E-14	2.50E-09	2.74E-08
SVOC	Biphenyl	92-52-4		1.54E+02	9.47E-08	4.04E-02	3.45E+00	1.02E-03	9.67E-11		
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7		3.91E+02	6.34E-11	3.51E-02	3.98E+00	9.30E-04	5.89E-14		
SVOC	Butylbenzylphthalate	85-68-7		3.12E+02	8.10E-11	1.74E-02	8.02E+00	5.81E-04	4.71E-14		
SVOC	Fluoranthene	206-44-0	1.30E+02	2.02E+02	7.66E-11	3.02E-02	4.62E+00	8.40E-04	6.44E-14	7.53E-09	8.26E-08
SVOC	Fluorene	86-73-7	1.70E+02	1.66E+02	6.22E-09	3.63E-02	3.84E+00	9.51E-04	5.91E-12	9.04E-07	9.91E-06
SVOC	2-Methylnaphthalene	91-57-6	5.90E+01	1.42E+02	5.40E-07						
SVOC	Phenanthrene	85-01-8	6.60E+02	1.78E+02	1.10E-09	3.33E-02	4.19E+00	8.97E-04	9.87E-13	5.86E-07	6.43E-06
SVOC	Pyrene	129-00-0	1.70E+02	2.02E+02	4.51E-11	2.72E-02	5.13E+00	7.84E-04	3.53E-14	5.41E-09	5.92E-08
P/PCB	PCBs (total)	1336-36-3	1.70E+02	3.28E+02	7.56E-10	8.00E-02	1.74E+00	1.61E-03	1.22E-12	1.87E-07	2.05E-06
INORG	Antimony	7440-36-0	4.80E-01	1.22E+02							
INORG	Arsenic	7440-38-2	6.50E+00	7.49E+01							
INORG	Cadmium	7440-43-9		1.12E+02							
INORG	Chromium (total)	7440-47-3	2.70E+00	5.20E+01							
INORG	Cobalt	7440-48-4	8.40E-02	5.89E+01							
INORG	Copper	7440-50-8	3.20E+00	6.35E+01							
INORG	Cyanide (total)	57-12-5	1.20E-01	2.60E+01	1.36E-04	5.48E-01	2.55E-01	5.86E-03	7.96E-07	8.60E-05	9.42E-04
INORG	Lead	7439-92-1	8.30E-01	2.07E+02							
INORG	Nickel	7440-02-0	9.17E+01	5.87E+01							
INORG	Silver	7440-22-4	1.10E-01	1.08E+02							

Estimated Ambient Air Concentration from Excavation Into Soil with Free-Phase NAPL at M-02
General Motors - Pontiac North Campus, Pontiac, Michigan

TCL/TAL Group	Chemical	CASRN	C_{NAPL} (mg/kg)	MW (g/mole)	K_{eq} (unitless)	D_{air} (cm^2/s)	Sc	k_G (m/s)	K (m/s)	J_L (mg/m^2-s)	$C_{air, worker}$ (mg/m^3)
INORG	Vanadium	7440-62-2		5.09E+01							
INORG	Zinc	7440-66-6	1.90E+00	6.54E+01							
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6		3.22E+02	1.46E-14	4.70E-02	2.97E+00	1.13E-03	1.65E-17		
Notes:											
Physical Properties of Air											
	Pressure	1	atm	assumed							
	Molecular Weight	28.8	g/g mol	Perry and Chilton (1973)							
	Viscosity	1.80E-04	g/(cm.s)	Perry and Chilton (1973)							
	Density	0.00129	g/cm^3	Perry and Chilton (1973)							
Physical Properties of NAPL											
	Molecular Weight	150	g/g mol	Malcolm Pirnie (1999)							
	Density	0.9	g/cm^3	Malcolm Pirnie (1999)							
Physical Characteristics of Excavation Pit											
	Windspeed	0.5	m/s	assumed							
	Surface Area	2.1.E+01	m^2								
	Effective Diameter of Area	5.2.E+00	m	calculated							

Construction Scenario Cancer Risk Calculations - M-02
General Motors - Pontiac North Campus, Pontiac, Michigan

				Smear Zone Soil Ingestion				Smear Zone Soil Dermal Contact				NAPL Dermal Contact					NAPL Vapor Inhalation			
Chem Group	Chemical	CASRN	Cancer Class	C_{soil} (mg/kg)	LADD (mg/kg/d)	SF_{oral} $(mg/kg/d)^{-1}$	Risk	AF_{derm}	LADD (mg/kg/d)	SF_{derm} $(mg/kg/d)^{-1}$	Risk	C_{NAPL} (mg/L)	DA (L/cm^2)	LADD (mg/kg/d)	SF_{derm} $(mg/kg/d)^{-1}$	Risk	C_{air} (mg/m^3)	C_{air} (mg/m^3)	URF (m^3/mg)	Risk
VOC	Benzene	71-43-2	A			5.5E-02				5.5E-02			2.85E-07		5.5E-02				7.8E-03	
VOC	Chloroform	67-66-3	B2	1.08E-01	1.00E-09	8.1E-02	8.1E-11			8.1E-02		3.78E-01	2.26E-07	7.87E-09	8.1E-02	6.4E-10	1.55E-02	3.02E-05	2.3E-02	7.0E-07
VOC	Cumene	98-82-8	D	2.04E-01	1.88E-09							7.11E-01					4.84E-04	9.47E-07		
VOC	Cyclohexane	110-82-7																		
VOC	1,1-Dichloroethane	75-34-3	C	5.42E+00	5.00E-08							1.89E+01	2.99E-07	5.22E-07			7.10E-01	1.39E-03		
VOC	1,1-Dichloroethene	75-35-4	C	6.19E-01	5.71E-09							2.16E+00	2.37E-07	4.73E-08			2.44E-01	4.77E-04		
VOC	cis-1,2-Dichloroethene	156-59-2	D																	
VOC	Ethyl Benzene	100-41-4	D	6.97E-01	6.43E-09							2.43E+00	9.88E-08	2.21E-08			3.88E-03	7.60E-06		
VOC	Methyl Acetate	79-20-9																		
VOC	4-Methyl-2-pentanone	108-10-1	ID	8.77E-02	8.09E-10							3.06E-01	4.74E-07	1.34E-08			1.01E-03	1.98E-06		
VOC	Methylcyclohexane	108-87-2		6.97E-02	6.43E-10							2.43E-01					2.10E-03	4.11E-06		
VOC	Methylene Chloride	75-09-2	B2	3.35E-01	3.09E-09	7.5E-03	2.3E-11			7.5E-03		1.17E+00	5.21E-07	5.63E-08	7.5E-03	4.2E-10	1.03E-01	2.01E-04	4.7E-04	9.5E-08
VOC	Tetrachloroethene	127-18-4	C-B2	2.84E+00	2.62E-08	5.2E-02	1.4E-09			5.2E-02		9.90E+00	8.51E-08	7.78E-08	5.2E-02	4.0E-09	2.97E-02	5.82E-05	3.1E-03	1.8E-07
VOC	Toluene	108-88-3	D	8.51E-01	7.85E-09							2.97E+00	1.61E-07	4.41E-08			1.55E-02	3.03E-05		
VOC	1,1,1-Trichloroethane	71-55-6	D	1.14E+00	1.05E-08							3.96E+00	1.30E-07	4.73E-08			8.37E-02	1.64E-04		
VOC	Trichloroethene	79-01-6	C-B2	3.61E-01	3.33E-09	1.1E-02	3.7E-11			1.1E-02		1.26E+00	1.10E-07	1.28E-08	1.1E-02	1.4E-10	1.60E-02	3.12E-05	1.7E-03	5.3E-08
VOC	Xylenes (total)	1330-20-7	ID	2.58E+00	2.38E-08							9.00E+00					1.46E-02	2.85E-05		
SVOC	Anthracene	120-12-7	D	3.10E+01	2.86E-07			0.13	7.43E-08			1.08E+02					2.74E-08	5.35E-11		
SVOC	Biphenyl	92-52-4	D					0.10												
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2			1.4E-02		0.10		1.4E-02			4.27E-10		1.4E-02				4.0E-03	
SVOC	Butylbenzylphthalate	85-68-7	C					0.10												
SVOC	Fluoranthene	206-44-0	D	3.35E+01	3.09E-07			0.13	8.05E-08			1.17E+02	9.95E-09	1.07E-07			8.26E-08	1.62E-10		
SVOC	Fluorene	86-73-7	D	4.39E+01	4.05E-07			0.13	1.05E-07			1.53E+02					9.91E-06	1.94E-08		
SVOC	2-Methylnaphthalene	91-57-6	ID	1.52E+01	1.40E-07			0.10	2.81E-08			5.31E+01								
SVOC	Phenanthrene	85-01-8	D	1.70E+02	1.57E-06			0.13	4.08E-07			5.94E+02	1.81E-08	9.90E-07			6.43E-06	1.26E-08		
SVOC	Pyrene	129-00-0	D	4.39E+01	4.05E-07			0.13	1.05E-07			1.53E+02					5.92E-08	1.16E-10		
P/PCB	PCBs (total)	1336-36-3	B2	4.39E+01	4.05E-07	2.0E+00	8.1E-07	0.14	1.13E-07	2.0E+00	2.3E-07	1.53E+02	1.05E-09	1.48E-08	2.0E+00	3.0E-08	2.05E-06	4.01E-09		
INORG	Antimony	7440-36-0		1.24E-01	1.14E-09							4.32E-01	2.00E-06	7.97E-08						
INORG	Arsenic	7440-38-2	A	1.68E+00	1.55E-08	1.5E+00	2.3E-08	0.03	9.28E-10	1.5E+00	1.4E-09	5.85E+00	2.00E-06	1.08E-06	1.5E+00	1.6E-06			4.3E+00	
INORG	Cadmium	7440-43-9	B1			6.3E+00		0.00		6.3E+00			2.00E-06		6.3E+00				1.8E+00	
INORG	Chromium (total)	7440-47-3		6.97E-01	6.43E-09	4.1E+01	2.6E-07			4.1E+01		2.43E+00	2.00E-06	4.48E-07	4.1E+01	1.8E-05			1.2E+01	
INORG	Cobalt	7440-48-4	B1	2.17E-02	2.00E-10	9.8E+00	2.0E-09			9.8E+00		7.56E-02	2.00E-06	1.39E-08	9.8E+00	1.4E-07			2.8E+00	
INORG	Copper	7440-50-8	D	8.26E-01	7.62E-09							2.88E+00	2.00E-06	5.31E-07						
INORG	Cyanide (total)	57-12-5	D	3.10E-02	2.86E-10							1.08E-01	2.00E-06	1.99E-08			9.42E-04	1.84E-06		
INORG	Lead	7439-92-1	B2	2.14E-01	1.98E-09							7.47E-01	2.00E-06	1.38E-07						
INORG	Nickel	7440-02-0	A	2.37E+01	2.18E-07	8.4E-01	1.8E-07			8.4E-01		8.25E+01	2.00E-06	1.52E-05	8.4E-01	1.3E-05			2.4E-01	
INORG	Silver	7440-22-4	D	2.84E-02	2.62E-10							9.90E-02	2.00E-06	1.83E-08						
INORG	Vanadium	7440-62-2											2.00E-06							
INORG	Zinc	7440-66-6	D	4.90E-01	4.52E-09							1.71E+00	2.00E-06	3.16E-07						
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6	B2			1.5E+05		0.03		1.5E+05			6.14E-10		1.5E+05				3.3E+04	
					Cumulative Risk:	**1E-06**				**2E-07**					**3E-05**					**1E-06**

Construction Scenario Hazard Index Calculations - M-02
General Motors - Pontiac North Campus, Pontiac, Michigan

				Smear Zone Soil Ingestion				Smear Zone Soil Dermal Contact				NAPL Dermal Contact					NAPL Vapor Inhalation			
Chem Group	Chemical	CASRN	Cancer Class	C_{soil} (mg/kg)	ADD (mg/kg/d)	RfD_{oral} (mg/kg/d)	HQ	AF_{derm}	ADD (mg/kg/d)	RfD_{derm} (mg/kg/d)	HQ	C_{NAPL} (mg/L)	DA (L/cm^2)	ADD (mg/kg/d)	RfD_{derm} (mg/kg/d)	HQ	C_{air} (mg/m^3)	C_{air} (mg/m^3)	RfC (mg/m^3)	HQ
VOC	Benzene	71-43-2	A			4.0E-03				4.0E-03			2.85E-07		4.0E-03				3.0E-02	
VOC	Chloroform	67-66-3	B2	1.08E-01	7.00E-09	1.0E-02	7.0E-07			1.0E-02		3.78E-01	2.26E-07	5.51E-08	1.0E-02	5.5E-06	1.55E-02	2.12E-04	5.0E-02	4.2E-03
VOC	Cumene	98-82-8	D	2.04E-01	1.32E-08	1.0E-01	1.3E-07			1.0E-01		7.11E-01			1.0E-01		4.84E-04	6.63E-06	4.0E-01	1.7E-05
VOC	Cyclohexane	110-82-7				5.7E+00				5.7E+00					5.7E+00				2.0E+01	
VOC	1,1-Dichloroethane	75-34-3	C	5.42E+00	3.50E-07	1.0E-01	3.5E-06			1.0E-01		1.89E+01	2.99E-07	3.65E-06	1.0E-01	3.7E-05	7.10E-01	9.72E-03	5.0E-01	1.9E-02
VOC	1,1-Dichloroethene	75-35-4	C	6.19E-01	4.00E-08	5.0E-02	8.0E-07			5.0E-02		2.16E+00	2.37E-07	3.31E-07	5.0E-02	6.6E-06	2.44E-01	3.34E-03	2.0E-01	1.7E-02
VOC	cis-1,2-Dichloroethene	156-59-2	D			1.0E-02				1.0E-02					1.0E-02					
VOC	Ethyl Benzene	100-41-4	D	6.97E-01	4.50E-08	1.0E-01	4.5E-07			1.0E-01		2.43E+00	9.88E-08	1.55E-07	1.0E-01	1.5E-06	3.88E-03	5.32E-05	1.0E+00	5.3E-05
VOC	Methyl Acetate	79-20-9				1.0E+00				1.0E+00					1.0E+00					
VOC	4-Methyl-2-pentanone	108-10-1	ID	8.77E-02	5.66E-09							3.06E-01	4.74E-07	9.37E-08			1.01E-03	1.39E-05	3.0E+00	4.6E-06
VOC	Methylcyclohexane	108-87-2		6.97E-02	4.50E-09	8.6E-01	5.2E-09			8.6E-01		2.43E-01			8.6E-01		2.10E-03	2.88E-05	3.0E+00	9.6E-06
VOC	Methylene Chloride	75-09-2	B2	3.35E-01	2.17E-08	6.0E-02	3.6E-07			6.0E-02		1.17E+00	5.21E-07	3.94E-07	6.0E-02	6.6E-06	1.03E-01	1.41E-03	3.0E+00	4.7E-04
VOC	Tetrachloroethene	127-18-4	C-B2	2.84E+00	1.83E-07	1.0E-02	1.8E-05			1.0E-02		9.90E+00	8.51E-08	5.44E-07	1.0E-02	5.4E-05	2.97E-02	4.07E-04	4.0E-01	1.0E-03
VOC	Toluene	108-88-3	D	8.51E-01	5.50E-08	2.0E-01	2.7E-07			2.0E-01		2.97E+00	1.61E-07	3.09E-07	2.0E-01	1.5E-06	1.55E-02	2.12E-04	4.0E-01	5.3E-04
VOC	1,1,1-Trichloroethane	71-55-6	D	1.14E+00	7.33E-08	2.8E-01	2.6E-07			2.8E-01		3.96E+00	1.30E-07	3.31E-07	2.8E-01	1.2E-06	8.37E-02	1.15E-03	2.2E+00	5.2E-04
VOC	Trichloroethene	79-01-6	C-B2	3.61E-01	2.33E-08	6.0E-03	3.9E-06			6.0E-03		1.26E+00	1.10E-07	8.95E-08	6.0E-03	1.5E-05	1.60E-02	2.19E-04		
VOC	Xylenes (total)	1330-20-7	ID	2.58E+00	1.67E-07	2.0E-01	8.3E-07			2.0E-01		9.00E+00			2.0E-01		1.46E-02	2.00E-04	1.0E-01	2.0E-03
SVOC	Anthracene	120-12-7	D	3.10E+01	2.00E-06	3.0E-01	6.7E-06	0.13	5.20E-07	3.0E-01	1.7E-06	1.08E+02			3.0E-01		2.74E-08	3.75E-10		
SVOC	Biphenyl	92-52-4	D			5.0E-02		0.10		5.0E-02					5.0E-02					
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2			2.0E-02		0.10		2.0E-02			4.27E-10		2.0E-02					
SVOC	Butylbenzylphthalate	85-68-7	C			2.0E-01		0.10		2.0E-01					2.0E-01					
SVOC	Fluoranthene	206-44-0	D	3.35E+01	2.17E-06	4.0E-02	5.4E-05	0.13	5.63E-07	4.0E-02	1.4E-05	1.17E+02	9.95E-09	7.52E-07	4.0E-02	1.9E-05	8.26E-08	1.13E-09		
SVOC	Fluorene	86-73-7	D	4.39E+01	2.83E-06	4.0E-02	7.1E-05	0.13	7.36E-07	4.0E-02	1.8E-05	1.53E+02			4.0E-02		9.91E-06	1.36E-07		
SVOC	2-Methylnaphthalene	91-57-6	ID	1.52E+01	9.83E-07	2.0E-02	4.9E-05	0.10	1.97E-07	2.0E-02	9.8E-06	5.31E+01			2.0E-02				3.0E-03	
SVOC	Phenanthrene	85-01-8	D	1.70E+02	1.10E-05	3.0E-02	3.7E-04	0.13	2.86E-06	3.0E-02	9.5E-05	5.94E+02	1.81E-08	6.93E-06	3.0E-02	2.3E-04	6.43E-06	8.80E-08		
SVOC	Pyrene	129-00-0	D	4.39E+01	2.83E-06	3.0E-02	9.4E-05	0.13	7.36E-07	3.0E-02	2.5E-05	1.53E+02			3.0E-02		5.92E-08	8.12E-10		
P/PCB	PCBs (total)	1336-36-3	B2	4.39E+01	2.84E-06	2.0E-05	1.4E-01	0.14	7.94E-07	2.0E-05	4.0E-02	1.53E+02	1.05E-09	1.04E-07	2.0E-05	5.2E-03	2.05E-06	2.81E-08		
INORG	Antimony	7440-36-0		1.24E-01	8.00E-09	4.0E-04	2.0E-05			4.0E-04		4.32E-01	2.00E-06	5.58E-07	4.0E-04	1.4E-03				
INORG	Arsenic	7440-38-2	A	1.68E+00	1.08E-07	3.0E-04	3.6E-04	0.03	6.50E-09	3.0E-04	2.2E-05	5.85E+00	2.00E-06	7.56E-06	3.0E-04	2.5E-02				
INORG	Cadmium	7440-43-9	B1			5.0E-04		0.00		5.0E-04			2.00E-06		5.0E-04				2.0E-04	
INORG	Chromium (total)	7440-47-3		6.97E-01	4.50E-08	3.0E-03	1.5E-05			3.0E-03		2.43E+00	2.00E-06	3.14E-06	3.0E-03	1.0E-03			1.0E-04	
INORG	Cobalt	7440-48-4	B1	2.17E-02	1.40E-09	2.0E-02	7.0E-08			2.0E-02		7.56E-02	2.00E-06	9.76E-08	2.0E-02	4.9E-06			2.0E-05	
INORG	Copper	7440-50-8	D	8.26E-01	5.33E-08	4.0E-02	1.3E-06			4.0E-02		2.88E+00	2.00E-06	3.72E-06	4.0E-02	9.3E-05				
INORG	Cyanide (total)	57-12-5	D	3.10E-02	2.00E-09	2.0E-02	1.0E-07			2.0E-02		1.08E-01	2.00E-06	1.39E-07	2.0E-02	7.0E-06	9.42E-04	1.29E-05		
INORG	Lead	7439-92-1	B2	2.14E-01	1.38E-08							7.47E-01	2.00E-06	9.65E-07						
INORG	Nickel	7440-02-0	A	2.37E+01	1.53E-06	2.0E-02	7.6E-05			2.0E-02		8.25E+01	2.00E-06	1.07E-04	2.0E-02	5.3E-03				
INORG	Silver	7440-22-4	D	2.84E-02	1.83E-09	5.0E-03	3.7E-07			5.0E-03		9.90E-02	2.00E-06	1.28E-07	5.0E-03	2.6E-05			1.0E-05	
INORG	Vanadium	7440-62-2				7.0E-03				7.0E-03			2.00E-06		7.0E-03					
INORG	Zinc	7440-66-6	D	4.90E-01	3.17E-08	3.0E-01	1.1E-07			3.0E-01		1.71E+00	2.00E-06	2.21E-06	3.0E-01	7.4E-06				
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6	B2					0.03					6.14E-10							
EOR	End of Records	EOR																		
				Hazard Index:			**1E-01**				**4E-02**					**4E-02**				**4E-02**

Estimated Ambient Air Concentration from Excavation Into Soil with Free-Phase NAPL at M-16
General Motors - Pontiac North Campus, Pontiac, Michigan

TCL/TAL Group	Chemical	CASRN	C_{NAPL} (mg/kg)	MW (g/mole)	K_{eq} (unitless)	D_{air} (cm^2/s)	Sc	k_G (m/s)	K (m/s)	J_L (mg/m^2-s)	$C_{air, worker}$ (mg/m^3)
VOC	Benzene	71-43-2	1.40E-01	7.81E+01	9.33E-04	8.80E-02	1.59E+00	1.72E-03	1.61E-06	2.02E-04	2.22E-03
VOC	Chloroform	67-66-3		1.19E+02	1.94E-03	1.04E-01	1.34E+00	1.92E-03	3.73E-06		
VOC	Cumene	98-82-8	6.10E-01	1.20E+02	4.42E-05	6.50E-02	2.15E+00	1.40E-03	6.21E-08	3.41E-05	3.74E-04
VOC	Cyclohexane	110-82-7	7.30E-01	8.42E+01	9.51E-04	1.11E-01	1.26E+00	2.01E-03	1.91E-06	1.25E-03	1.37E-02
VOC	1,1-Dichloroethane	75-34-3		9.90E+01	2.23E-03	7.42E-02	1.88E+00	1.53E-03	3.43E-06		
VOC	1,1-Dichloroethene	75-35-4		9.69E+01	5.89E-03	9.00E-02	1.55E+00	1.75E-03	1.03E-05		
VOC	cis-1,2-Dichloroethene	156-59-2	3.00E-01	9.69E+01	1.99E-03	7.36E-02	1.90E+00	1.53E-03	3.04E-06	8.21E-04	9.00E-03
VOC	Ethyl Benzene	100-41-4	7.10E+00	1.06E+02	9.43E-05	7.50E-02	1.86E+00	1.55E-03	1.46E-07	9.32E-04	1.02E-02
VOC	Methyl Acetate	79-20-9	4.80E-01	7.41E+01	2.12E-03	1.23E-01	1.13E+00	2.15E-03	4.57E-06	1.97E-03	2.16E-02
VOC	4-Methyl-2-pentanone	108-10-1		1.00E+02	1.95E-04	7.50E-02	1.86E+00	1.55E-03	3.02E-07		
VOC	Methylcyclohexane	108-87-2	1.90E+00	9.82E+01	4.52E-04	8.99E-02	1.55E+00	1.75E-03	7.89E-07	1.35E-03	1.48E-02
VOC	Methylene Chloride	75-09-2		8.49E+01	4.25E-03	1.01E-01	1.38E+00	1.89E-03	8.03E-06		
VOC	Tetrachloroethene	127-18-4	2.20E-01	1.66E+02	1.82E-04	7.20E-02	1.94E+00	1.50E-03	2.74E-07	5.43E-05	5.95E-04
VOC	Toluene	108-88-3	1.20E+01	9.21E+01	2.79E-04	8.70E-02	1.60E+00	1.71E-03	4.76E-07	5.14E-03	5.64E-02
VOC	1,1,1-Trichloroethane	71-55-6		1.33E+02	1.22E-03	7.80E-02	1.79E+00	1.59E-03	1.93E-06		
VOC	Trichloroethene	79-01-6	5.30E-01	1.31E+02	7.22E-04	7.90E-02	1.77E+00	1.60E-03	1.16E-06	5.51E-04	6.04E-03
VOC	Xylenes (total)	1330-20-7	3.90E+01	1.06E+02	9.82E-05	7.20E-02	1.94E+00	1.50E-03	1.48E-07	5.19E-03	5.68E-02
SVOC	Anthracene	120-12-7		1.78E+02	2.62E-11	3.24E-02	4.31E+00	8.81E-04	2.31E-14		
SVOC	Biphenyl	92-52-4		1.54E+02	9.47E-08	4.04E-02	3.45E+00	1.02E-03	9.67E-11		
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	5.30E+02	3.91E+02	6.34E-11	3.51E-02	3.98E+00	9.30E-04	5.89E-14	2.81E-08	3.08E-07
SVOC	Butylbenzylphthalate	85-68-7	4.00E+02	3.12E+02	8.10E-11	1.74E-02	8.02E+00	5.81E-04	4.71E-14	1.69E-08	1.86E-07
SVOC	Fluoranthene	206-44-0		2.02E+02	7.66E-11	3.02E-02	4.62E+00	8.40E-04	6.44E-14		
SVOC	Fluorene	86-73-7	1.40E+02	1.66E+02	6.22E-09	3.63E-02	3.84E+00	9.51E-04	5.91E-12	7.45E-07	8.16E-06
SVOC	2-Methylnaphthalene	91-57-6		1.42E+02	5.40E-07						
SVOC	Phenanthrene	85-01-8	2.50E+02	1.78E+02	1.10E-09	3.33E-02	4.19E+00	8.97E-04	9.87E-13	2.22E-07	2.43E-06
SVOC	Pyrene	129-00-0		2.02E+02	4.51E-11	2.72E-02	5.13E+00	7.84E-04	3.53E-14		
P/PCB	PCBs (total)	1336-36-3	8.32E+01	3.28E+02	7.56E-10	8.00E-02	1.74E+00	1.61E-03	1.22E-12	9.14E-08	1.00E-06
INORG	Antimony	7440-36-0	2.70E-01	1.22E+02							
INORG	Arsenic	7440-38-2	1.11E+01	7.49E+01							
INORG	Cadmium	7440-43-9	8.90E-02	1.12E+02							
INORG	Chromium (total)	7440-47-3	2.90E+00	5.20E+01							
INORG	Cobalt	7440-48-4	1.90E-01	5.89E+01							
INORG	Copper	7440-50-8	4.10E+00	6.35E+01							
INORG	Cyanide (total)	57-12-5		2.60E+01	1.36E-04	5.48E-01	2.55E-01	5.86E-03	7.96E-07		
INORG	Lead	7439-92-1	1.40E+01	2.07E+02							
INORG	Nickel	7440-02-0	1.30E+00	5.87E+01							
INORG	Silver	7440-22-4		1.08E+02							

Estimated Ambient Air Concentration from Excavation Into Soil with Free-Phase NAPL at M-16
General Motors - Pontiac North Campus, Pontiac, Michigan

TCL/TAL Group	Chemical	CASRN	C_{NAPL} (mg/kg)	MW (g/mole)	K_{eq} (unitless)	D_{air} (cm^2/s)	Sc	k_G (m/s)	K (m/s)	J_L (mg/m^2-s)	$C_{air, worker}$ (mg/m^3)
INORG	Vanadium	7440-62-2	3.10E+00	5.09E+01							
INORG	Zinc	7440-66-6	2.79E+01	6.54E+01							
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6		3.22E+02	1.46E-14	4.70E-02	2.97E+00	1.13E-03	1.65E-17		
Notes:											
Physical Properties of Air											
	Pressure	1	atm	assumed							
	Molecular Weight	28.8	g/g mol	Perry and Chilton (1973)							
	Viscosity	1.80E-04	g/(cm.s)	Perry and Chilton (1973)							
	Density	0.00129	g/cm^3	Perry and Chilton (1973)							
Physical Properties of NAPL											
	Molecular Weight	150	g/g mol	Malcolm Pirnie (1999)							
	Density	0.9	g/cm^3	Malcolm Pirnie (1999)							
Physical Characteristics of Excavation Pit											
	Windspeed	0.5	m/s	assumed							
	Surface Area	2.1.E+01	m^2								
	Effective Diameter of Area	5.2.E+00	m	calculated							

Construction Scenario Cancer Risk Calculations - M-16
General Motors - Pontiac North Campus, Pontiac, Michigan

				Smear Zone Soil Ingestion				Smear Zone Soil Dermal Contact				NAPL Dermal Contact					NAPL Vapor Inhalation			
Chem Group	**Chemical**	**CASRN**	**Cancer Class**	**C_{soil}** (mg/kg)	**LADD** (mg/kg/d)	**SF_{oral}** $(mg/kg/d)^{-1}$	**Risk**	**AF_{derm}**	**LADD** (mg/kg/d)	**SF_{derm}** $(mg/kg/d)^{-1}$	**Risk**	**C_{NAPL}** (mg/L)	**DA** (L/cm^2)	**LADD** (mg/kg/d)	**SF_{derm}** $(mg/kg/d)^{-1}$	**Risk**	**C_{air}** (mg/m^3)	**C_{air}** (mg/m^3)	**URF** (m^3/mg)	**Risk**
VOC	Benzene	71-43-2	A	3.61E-02	3.33E-10	5.5E-02	1.8E-11			5.5E-02		1.26E-01	2.85E-07	3.31E-09	5.5E-02	1.8E-10	2.22E-03	4.34E-06	7.8E-03	3.4E-08
VOC	Chloroform	67-66-3	B2			8.1E-02				8.1E-02			2.26E-07		8.1E-02				2.3E-02	
VOC	Cumene	98-82-8	D	1.57E-01	1.45E-09							5.49E-01					3.74E-04	7.31E-07		
VOC	Cyclohexane	110-82-7		1.88E-01	1.74E-09							6.57E-01					1.37E-02	2.69E-05		
VOC	1,1-Dichloroethane	75-34-3	C										2.99E-07							
VOC	1,1-Dichloroethene	75-35-4	C										2.37E-07							
VOC	cis-1,2-Dichloroethene	156-59-2	D	7.74E-02	7.14E-10							2.70E-01					9.00E-03	1.76E-05		
VOC	Ethyl Benzene	100-41-4	D	1.83E+00	1.69E-08							6.39E+00	9.88E-08	5.82E-08			1.02E-02	2.00E-05		
VOC	Methyl Acetate	79-20-9		1.24E-01	1.14E-09							4.32E-01					2.16E-02	4.23E-05		
VOC	4-Methyl-2-pentanone	108-10-1	ID										4.74E-07							
VOC	Methylcyclohexane	108-87-2		4.90E-01	4.52E-09							1.71E+00					1.48E-02	2.89E-05		
VOC	Methylene Chloride	75-09-2	B2			7.5E-03				7.5E-03			5.21E-07		7.5E-03				4.7E-04	
VOC	Tetrachloroethene	127-18-4	C-B2	5.68E-02	5.24E-10	5.2E-02	2.7E-11			5.2E-02		1.98E-01	8.51E-08	1.56E-09	5.2E-02	8.1E-11	5.95E-04	1.16E-06	3.1E-03	3.6E-09
VOC	Toluene	108-88-3	D	3.10E+00	2.86E-08							1.08E+01	1.61E-07	1.60E-07			5.64E-02	1.10E-04		
VOC	1,1,1-Trichloroethane	71-55-6	D										1.30E-07							
VOC	Trichloroethene	79-01-6	C-B2	1.37E-01	1.26E-09	1.1E-02	1.4E-11			1.1E-02		4.77E-01	1.10E-07	4.84E-09	1.1E-02	5.3E-11	6.04E-03	1.18E-05	1.7E-03	2.0E-08
VOC	Xylenes (total)	1330-20-7	ID	1.01E+01	9.28E-08							3.51E+01					5.68E-02	1.11E-04		
SVOC	Anthracene	120-12-7	D					0.13												
SVOC	Biphenyl	92-52-4	D					0.10												
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	1.37E+02	1.26E-06	1.4E-02	1.8E-08	0.10	2.52E-07	1.4E-02	3.5E-09	4.77E+02	4.27E-10	1.88E-08	1.4E-02	2.6E-10	3.08E-07	6.03E-10	4.0E-03	2.4E-12
SVOC	Butylbenzylphthalate	85-68-7	C	1.03E+02	9.52E-07			0.10	1.90E-07			3.60E+02					1.86E-07	3.63E-10		
SVOC	Fluoranthene	206-44-0	D					0.13					9.95E-09							
SVOC	Fluorene	86-73-7	D	3.61E+01	3.33E-07			0.13	8.66E-08			1.26E+02					8.16E-06	1.60E-08		
SVOC	2-Methylnaphthalene	91-57-6	ID					0.10												
SVOC	Phenanthrene	85-01-8	D	6.45E+01	5.95E-07			0.13	1.55E-07			2.25E+02	1.81E-08	3.75E-07			2.43E-06	4.76E-09		
SVOC	Pyrene	129-00-0	D					0.13												
P/PCB	PCBs (total)	1336-36-3	B2	2.15E+01	1.98E-07	2.0E+00	4.0E-07	0.14	5.54E-08	2.0E+00	1.1E-07	7.49E+01	1.05E-09	7.24E-09	2.0E+00	1.4E-08	1.00E-06	1.96E-09		
INORG	Antimony	7440-36-0		6.97E-02	6.43E-10							2.43E-01	2.00E-06	4.48E-08						
INORG	Arsenic	7440-38-2	A	2.86E+00	2.64E-08	1.5E+00	4.0E-08	0.03	1.59E-09	1.5E+00	2.4E-09	9.99E+00	2.00E-06	1.84E-06	1.5E+00	2.8E-06			4.3E+00	
INORG	Cadmium	7440-43-9	B1	2.30E-02	2.12E-10	6.3E+00	1.3E-09	0.00	4.24E-13	6.3E+00	2.7E-12	8.01E-02	2.00E-06	1.48E-08	6.3E+00	9.3E-08			1.8E+00	
INORG	Chromium (total)	7440-47-3		7.48E-01	6.90E-09	4.1E+01	2.8E-07			4.1E+01		2.61E+00	2.00E-06	4.82E-07	4.1E+01	2.0E-05			1.2E+01	
INORG	Cobalt	7440-48-4	B1	4.90E-02	4.52E-10	9.8E+00	4.4E-09			9.8E+00		1.71E-01	2.00E-06	3.16E-08	9.8E+00	3.1E-07			2.8E+00	
INORG	Copper	7440-50-8	D	1.06E+00	9.76E-09							3.69E+00	2.00E-06	6.81E-07						
INORG	Cyanide (total)	57-12-5	D										2.00E-06							
INORG	Lead	7439-92-1	B2	3.61E+00	3.33E-08							1.26E+01	2.00E-06	2.32E-06						
INORG	Nickel	7440-02-0	A	3.35E-01	3.09E-09	8.4E-01	2.6E-09			8.4E-01		1.17E+00	2.00E-06	2.16E-07	8.4E-01	1.8E-07			2.4E-01	
INORG	Silver	7440-22-4	D										2.00E-06							
INORG	Vanadium	7440-62-2		8.00E-01	7.38E-09							2.79E+00	2.00E-06	5.15E-07						
INORG	Zinc	7440-66-6	D	7.20E+00	6.64E-08							2.51E+01	2.00E-06	4.63E-06						
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6	B2			1.5E+05		0.03		1.5E+05			6.14E-10		1.5E+05				3.3E+04	
					Cumulative Risk:	**7E-07**				**1E-07**					**2E-05**					**6E-08**

Construction Scenario Hazard Index Calculations - M-16
General Motors - Pontiac North Campus, Pontiac, Michigan

				Smear Zone Soil Ingestion				Smear Zone Soil Dermal Contact				NAPL Dermal Contact					NAPL Vapor Inhalation			
Chem Group	Chemical	CASRN	Cancer Class	C_{soil} (mg/kg)	ADD (mg/kg/d)	RfD_{oral} (mg/kg/d)	HQ	AF_{derm}	ADD (mg/kg/d)	RfD_{derm} (mg/kg/d)	HQ	C_{NAPL} (mg/L)	DA (L/cm^2)	ADD (mg/kg/d)	RfD_{derm} (mg/kg/d)	HQ	C_{air} (mg/m^3)	C_{air} (mg/m^3)	RfC (mg/m^3)	HQ
VOC	Benzene	71-43-2	A	3.61E-02	2.33E-09	4.0E-03	5.8E-07			4.0E-03		1.26E-01	2.85E-07	2.32E-08	4.0E-03	5.8E-06	2.22E-03	3.04E-05	3.0E-02	1.0E-03
VOC	Chloroform	67-66-3	B2			1.0E-02				1.0E-02			2.26E-07		1.0E-02				5.0E-02	
VOC	Cumene	98-82-8	D	1.57E-01	1.02E-08	1.0E-01	1.0E-07			1.0E-01		5.49E-01			1.0E-01		3.74E-04	5.12E-06	4.0E-01	1.3E-05
VOC	Cyclohexane	110-82-7		1.88E-01	1.22E-08	5.7E+00	2.1E-09			5.7E+00		6.57E-01			5.7E+00		1.37E-02	1.88E-04	2.0E+01	9.4E-06
VOC	1,1-Dichloroethane	75-34-3	C			1.0E-01				1.0E-01			2.99E-07		1.0E-01				5.0E-01	
VOC	1,1-Dichloroethene	75-35-4	C			5.0E-02				5.0E-02			2.37E-07		5.0E-02				2.0E-01	
VOC	cis-1,2-Dichloroethene	156-59-2	D	7.74E-02	5.00E-09	1.0E-02	5.0E-07			1.0E-02		2.70E-01			1.0E-02		9.00E-03	1.23E-04		
VOC	Ethyl Benzene	100-41-4	D	1.83E+00	1.18E-07	1.0E-01	1.2E-06			1.0E-01		6.39E+00	9.88E-08	4.08E-07	1.0E-01	4.1E-06	1.02E-02	1.40E-04	1.0E+00	1.4E-04
VOC	Methyl Acetate	79-20-9		1.24E-01	8.00E-09	1.0E+00	8.0E-09			1.0E+00		4.32E-01			1.0E+00		2.16E-02	2.96E-04		
VOC	4-Methyl-2-pentanone	108-10-1	ID										4.74E-07						3.0E+00	
VOC	Methylcyclohexane	108-87-2		4.90E-01	3.17E-08	8.6E-01	3.7E-08			8.6E-01		1.71E+00			8.6E-01		1.48E-02	2.02E-04	3.0E+00	6.7E-05
VOC	Methylene Chloride	75-09-2	B2			6.0E-02				6.0E-02			5.21E-07		6.0E-02				3.0E+00	
VOC	Tetrachloroethene	127-18-4	C-B2	5.68E-02	3.67E-09	1.0E-02	3.7E-07			1.0E-02		1.98E-01	8.51E-08	1.09E-08	1.0E-02	1.1E-06	5.95E-04	8.15E-06	4.0E-01	2.0E-05
VOC	Toluene	108-88-3	D	3.10E+00	2.00E-07	2.0E-01	1.0E-06			2.0E-01		1.08E+01	1.61E-07	1.12E-06	2.0E-01	5.6E-06	5.64E-02	7.72E-04	4.0E-01	1.9E-03
VOC	1,1,1-Trichloroethane	71-55-6	D			2.8E-01				2.8E-01			1.30E-07		2.8E-01				2.2E+00	
VOC	Trichloroethene	79-01-6	C-B2	1.37E-01	8.83E-09	6.0E-03	1.5E-06			6.0E-03		4.77E-01	1.10E-07	3.39E-08	6.0E-03	5.6E-06	6.04E-03	8.27E-05		
VOC	Xylenes (total)	1330-20-7	ID	1.01E+01	6.50E-07	2.0E-01	3.2E-06			2.0E-01		3.51E+01			2.0E-01		5.68E-02	7.79E-04	1.0E-01	7.8E-03
SVOC	Anthracene	120-12-7	D			3.0E-01		0.13		3.0E-01					3.0E-01					
SVOC	Biphenyl	92-52-4	D			5.0E-02		0.10		5.0E-02					5.0E-02					
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	1.37E+02	8.83E-06	2.0E-02	4.4E-04	0.10	1.77E-06	2.0E-02	8.8E-05	4.77E+02	4.27E-10	1.31E-07	2.0E-02	6.6E-06	3.08E-07	4.22E-09		
SVOC	Butylbenzylphthalate	85-68-7	C	1.03E+02	6.66E-06	2.0E-01	3.3E-05	0.10	1.33E-06	2.0E-01	6.7E-06	3.60E+02			2.0E-01		1.86E-07	2.54E-09		
SVOC	Fluoranthene	206-44-0	D			4.0E-02		0.13		4.0E-02			9.95E-09		4.0E-02					
SVOC	Fluorene	86-73-7	D	3.61E+01	2.33E-06	4.0E-02	5.8E-05	0.13	6.06E-07	4.0E-02	1.5E-05	1.26E+02			4.0E-02		8.16E-06	1.12E-07		
SVOC	2-Methylnaphthalene	91-57-6	ID			2.0E-02		0.10		2.0E-02					2.0E-02				3.0E-03	
SVOC	Phenanthrene	85-01-8	D	6.45E+01	4.17E-06	3.0E-02	1.4E-04	0.13	1.08E-06	3.0E-02	3.6E-05	2.25E+02	1.81E-08	2.62E-06	3.0E-02	8.7E-05	2.43E-06	3.33E-08		
SVOC	Pyrene	129-00-0	D			3.0E-02		0.13		3.0E-02					3.0E-02					
P/PCB	PCBs (total)	1336-36-3	B2	2.15E+01	1.39E-06	2.0E-05	6.9E-02	0.14	3.88E-07	2.0E-05	1.9E-02	7.49E+01	1.05E-09	5.07E-08	2.0E-05	2.5E-03	1.00E-06	1.37E-08		
INORG	Antimony	7440-36-0		6.97E-02	4.50E-09	4.0E-04	1.1E-05			4.0E-04		2.43E-01	2.00E-06	3.14E-07	4.0E-04	7.8E-04				
INORG	Arsenic	7440-38-2	A	2.86E+00	1.85E-07	3.0E-04	6.2E-04	0.03	1.11E-08	3.0E-04	3.7E-05	9.99E+00	2.00E-06	1.29E-05	3.0E-04	4.3E-02				
INORG	Cadmium	7440-43-9	B1	2.30E-02	1.48E-09	5.0E-04	3.0E-06	0.00	2.97E-12	5.0E-04	5.9E-09	8.01E-02	2.00E-06	1.03E-07	5.0E-04	2.1E-04			2.0E-04	
INORG	Chromium (total)	7440-47-3		7.48E-01	4.83E-08	3.0E-03	1.6E-05			3.0E-03		2.61E+00	2.00E-06	3.37E-06	3.0E-03	1.1E-03			1.0E-04	
INORG	Cobalt	7440-48-4	B1	4.90E-02	3.17E-09	2.0E-02	1.6E-07			2.0E-02		1.71E-01	2.00E-06	2.21E-07	2.0E-02	1.1E-05			2.0E-05	
INORG	Copper	7440-50-8	D	1.06E+00	6.83E-08	4.0E-02	1.7E-06			4.0E-02		3.69E+00	2.00E-06	4.77E-06	4.0E-02	1.2E-04				
INORG	Cyanide (total)	57-12-5	D			2.0E-02				2.0E-02			2.00E-06		2.0E-02					
INORG	Lead	7439-92-1	B2	3.61E+00	2.33E-07							1.26E+01	2.00E-06	1.63E-05						
INORG	Nickel	7440-02-0	A	3.35E-01	2.17E-08	2.0E-02	1.1E-06			2.0E-02		1.17E+00	2.00E-06	1.51E-06	2.0E-02	7.6E-05				
INORG	Silver	7440-22-4	D			5.0E-03				5.0E-03			2.00E-06		5.0E-03				1.0E-05	
INORG	Vanadium	7440-62-2		8.00E-01	5.17E-08	7.0E-03	7.4E-06			7.0E-03		2.79E+00	2.00E-06	3.60E-06	7.0E-03	5.1E-04				
INORG	Zinc	7440-66-6	D	7.20E+00	4.65E-07	3.0E-01	1.5E-06			3.0E-01		2.51E+01	2.00E-06	3.24E-05	3.0E-01	1.1E-04				
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6	B2					0.03					6.14E-10							
EOR	End of Records	EOR																		
					Hazard Index:		**7E-02**				**2E-02**					**5E-02**				**1E-02**

Toxicity Values
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	Cancer Class	SF_{oral} $(mg/kg/d)^{-1}$			RfD_{oral} (mg/kg/d)				URF $(ug/m^3)^{-1}$			RfC (mg/m^3)			
				Value	Ref	Notes	Value	UF	Ref	Notes	Value	Ref	Notes	Value	UF	Ref	Notes
VOC	Acetone	67-64-1	ID				9.00E-01	1000	1					3.15E+00	1000	1	4,44
VOC	Benzene	71-43-2	A	5.50E-02	1	68	4.00E-03	300	1		7.80E-06	1	60	3.00E-02	300	1	
VOC	2-Butanone	78-93-3	D				6.00E-01	3000	1					1.00E+00	3000	1	
VOC	Carbon Disulfide	75-15-0					1.00E-01	100	1					7.00E-01	30	1	
VOC	Chlorobenzene	108-90-7	D				2.00E-02	1000	1					6.00E-02	1000	103	
VOC	Chloroethane	75-00-3		2.90E-03	3		4.00E-01		3					1.00E+01	300	1	
VOC	Cumene	98-82-8	D				1.00E-01	1000	1					4.00E-01	1000	1	
VOC	Cyclohexane	110-82-7												2.00E+01		4	44
VOC	1,2-Dichlorobenzene	95-50-1	D				9.00E-02	1000	1					2.00E-01	1000	2	3
VOC	1,3-Dichlorobenzene	541-73-1	D				9.00E-02	1000	1	10				1.40E-01	1000	2	3,10,44
VOC	1,4-Dichlorobenzene	106-46-7	C	2.40E-02	2	6	3.00E-02		3		6.29E-06	3	45	8.00E-01	100	1	
VOC	Dichlorodifluoromethane	75-71-8					2.00E-01	100	1					2.00E-01	10000	2	
VOC	1,1-Dichloroethane	75-34-3	C				1.00E-01	1000	2	26,6				5.00E-01	1000	2	3
VOC	cis-1,2-Dichloroethene	156-59-2	D				1.00E-02	3000	2	6				3.50E-02	3000	2	6,4,44
VOC	trans-1,2-Dichloroethene	156-60-5					2.00E-02	1000	1					7.00E-02	1000	1	4,44
VOC	Ethyl Benzene	100-41-4	D				1.00E-01	1000	1					1.00E+00	300	1	
VOC	2-Hexanone	591-78-6					4.00E-02	10000	40					5.00E-03	10000	108	
VOC	Methyl Acetate	79-20-9					1.00E+00	1000	2					3.50E+00	1000	2	4,44
VOC	4-Methyl-2-pentanone	108-10-1	ID						1	90				3.00E+00	300	1	
VOC	Methylcyclohexane	108-87-2												3.00E+00	100	2	
VOC	Methylene Chloride	75-09-2	B2	7.50E-03	1		6.00E-02	100	1		4.70E-07	1		3.00E+00	100	2	
VOC	Pentachloroethane	76-01-7															
VOC	Tetrachloroethene	127-18-4	C-B2	5.20E-02	77		1.00E-02	1000	1		3.06E-06	77		4.00E-01	300	109	94
VOC	Toluene	108-88-3	D				2.00E-01	1000	1					4.00E-01	300	1	
VOC	1,1,1-Trichloroethane	71-55-6	D				2.80E-01	90	72					2.20E+00	90	73	
VOC	Trichloroethene	79-01-6	C-B2	1.10E-02	49		6.00E-03	3000	46	6, 97	1.70E-06	49					
VOC	Trichlorofluoromethane	75-69-4					3.00E-01	1000	1					7.00E-01	10000	2	3
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1					3.00E+01	10	1					3.00E+01	100	2	
VOC	Vinyl Chloride	75-01-4	A	1.40E+00	1	78	3.00E-03	30	1		8.80E-06	1	79	1.00E-01	30	1	
VOC	Xylenes (total)	1330-20-7	ID				2.00E-01	1000	1					1.00E-01	300	1	
SVOC	Acenaphthene	83-32-9					6.00E-02	3000	1					2.10E-01	3000	1	4,44
SVOC	Acenaphthylene	208-96-8	D				3.00E-02	3000	1	20				1.05E-01	3000	1	20,4,44
SVOC	Anthracene	120-12-7	D				3.00E-01	3000	1							2	90
SVOC	Atrazine	1912-24-9					3.50E-02	100	1					1.23E-01	100	1	4,44
SVOC	Benzo(a)anthracene	56-55-3	B2	7.30E-01	10	5					2.09E-04	10	5,4,45				
SVOC	Benzo(a)pyrene	50-32-8	B2	7.30E+00	1						8.86E-04	3	45				
SVOC	Benzo(b)fluoranthene	205-99-2	B2	7.30E-01	10	5					2.09E-04	10	5,4,45				
SVOC	Benzo(g,h,i)perylene	191-24-2	D				3.00E-02	3000	1	20				1.05E-01	3000	1	20,4,44
SVOC	Benzo(k)fluoranthene	207-08-9	B2	7.30E-02	10	5					2.09E-05	10	5,4,45				
SVOC	Biphenyl	92-52-4	D				5.00E-02	1000	1					1.75E-01	1000	1	4,44
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	1.40E-02	1		2.00E-02	1000	1		4.00E-06	3	45				
SVOC	Butylbenzylphthalate	85-68-7	C				2.00E-01	1000	1					7.00E-01	1000	1	4,44
SVOC	Carbazole	86-74-8	B2	2.00E-02	2						5.71E-06	2	4,45				
SVOC	Chrysene	218-01-9	B2	7.30E-03	10	5					2.09E-06	10	5,4,45				
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	7.30E+00	10	5					2.09E-03	10	5,4,45				
SVOC	Dibenzofuran	132-64-9	D				2.00E-03		3					7.00E-03		3	4,44
SVOC	2,4-Dimethylphenol	105-67-9					2.00E-02	3000	1					7.00E-02	3000	1	4,44
SVOC	Di-n-butylphthalate	84-74-2	D				1.00E-01	1000	1	6						1	90

Toxicity Values
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	Cancer Class	SF_{oral} $(mg/kg/d)^{-1}$			RfD_{oral} (mg/kg/d)				URF $(ug/m^3)^{-1}$			RfC (mg/m^3)			
				Value	Ref	Notes	Value	UF	Ref	Notes	Value	Ref	Notes	Value	UF	Ref	Notes
SVOC	Di-n-octylphthalate	117-84-0					2.00E-02	1000	2					7.00E-02	1000	2	4,44
SVOC	Fluoranthene	206-44-0	D				4.00E-02	3000	1					1.40E-01	3000	1	4,44
SVOC	Fluorene	86-73-7	D				4.00E-02	3000	1					1.40E-01	3000	1	4,44
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	7.30E-01	10	5					2.09E-04	10	5,4,45				
SVOC	2-Methylnaphthalene	91-57-6	ID				2.00E-02	3000	118					3.00E-03	3000	1	61
SVOC	Methylphenol (total)	1319-77-3					5.00E-02		1	99				1.75E-01		1	99,4,44
SVOC	Naphthalene	91-20-3	C				2.00E-02	3000	1					3.00E-03	3000	1	
SVOC	Phenanthrene	85-01-8	D				3.00E-02	3000	1	20				1.05E-01	3000	1	20,4,44
SVOC	Phenol	108-95-2	ID				3.00E-01	300	1							1	90,98
SVOC	Pyrene	129-00-0	D				3.00E-02	3000	1					1.05E-01	3000	1	4,44
P/PCB	PCBs (total)	1336-36-3	B2	2.00E+00	1	30,32	2.00E-05	300	1	72	5.71E-04	1	30,32,4,45	7.00E-05	300	1	72,4,44
INORG	Aluminum	7429-90-5	D		90	90	1.00E+00	100	85			90	90	5.00E-03	300	84	
INORG	Antimony	7440-36-0					4.00E-04	1000	1					1.40E-03	1000	1	4,44
INORG	Arsenic	7440-38-2	A	1.50E+00	1		3.00E-04	3	1		4.30E-03	1					
INORG	Barium	7440-39-3	D				7.00E-02	3	1							1	90
INORG	Beryllium	7440-41-7	B1				2.00E-03	300	1		2.40E-03	1		2.00E-05	10	1	
INORG	Cadmium	7440-43-9	B1				1.00E-03	10	1	95	1.80E-03	1		2.00E-04		3	44
INORG	Chromium (total)	7440-47-3					3.00E-03	900	1	8	1.20E-02	1	8	1.00E-04	300	1	59,8
INORG	Chromium III	16065-83-1	D				1.50E+00	1000	1					5.25E+00	1000	1	4,44
INORG	Cobalt	7440-48-4	B1				2.00E-02	10	105		2.80E-03	106		2.00E-05	100	86	
INORG	Copper	7440-50-8	D				4.00E-02	2	50	49				1.40E-01	2	50	49,4,44
INORG	Cyanide (total)	57-12-5	D				2.00E-02	500	1					7.00E-02	500	1	4,44
INORG	Iron	7439-89-6	D		91	90	3.00E-01	1	87			91	90			92	90
INORG	Lead	7439-92-1	B2														
INORG	Manganese	7439-96-5	D				1.40E-01	1	1	36				5.00E-05	1000	1	
INORG	Mercury	7439-97-6	D				3.00E-04	1000	1	51				3.00E-04	30	1	
INORG	Nickel	7440-02-0	A				2.00E-02	300	1		2.40E-04	1					
INORG	Selenium	7782-49-2	D				5.00E-03	3	1					1.75E-02	3	1	4,44
INORG	Silver	7440-22-4	D				5.00E-03	3	1					1.00E-05	1000	83	
INORG	Thallium	7440-28-0					7.00E-05	3000	52	49				2.45E-04	3000	52	49,4,44
INORG	Tin	7440-31-5					6.00E-01		2					2.10E+00		2	4,44
INORG	Vanadium	7440-62-2					7.00E-03	100	2	6				2.45E-02	100	2	6,4,44
INORG	Zinc	7440-66-6	D				3.00E-01	3	1					1.05E+00	3	1	4,44
CDD/F	2,3,7,8-TCDD	1746-01-6	B2	1.50E+05	2	55					3.30E+01	2	26,55,56,				

Toxicity Values
General Motors - Pontiac North Campus, Pontiac, Michigan

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Notes:

3	HEAST Alternate Method.
4	ENVIRON obtained value by route-to-route extrapolation.
5	Based on analogy to Benzo(a)pyrene [CASRN 50-32-8] using USEPA relative potency described in the indicated reference.
6	Under review, according to IRIS.
8	ENVIRON used Chromium VI [CASRN 18540-29-9] value from IRIS (reference 1) as a surrogate.
10	ENVIRON used 1,2-Dichlorobenzene [CASRN 95-50-1] values from IRIS (chronic RfDo) (reference 1) and HEAST (chronic RfDi) (reference 2) as surrogates.
20	ENVIRON used Pyrene [CASRN 129-00-0] value from IRIS (reference 1) as a surrogate.
26	USEPA obtained value by route-to-route extrapolation.
30	Upper-bound slope factor.
32	High risk & persistence tier.Use for: food chain exposure;sediment/soil ingestion;dust/aerosol inhalation;dermal exposure, if an absorption factor has been applied;presence of dioxin-like,tumor-promoting/persistent congeners;all early life exposures.
36	IRIS recommends applying a modifying factor of 3 when using this RfD in assessing exposures to drinking water or soil.
44	ENVIRON derived CRFC from CRFDI value presented in the indicated reference, using standard USEPA methodology presented in HEAST.
45	ENVIRON derived URFI from CSFI value presented in the indicated reference, using standard USEPA methodology presented in HEAST.
49	ENVIRON derived CRFDO from adverse health effect level value presented in the indicated reference.
51	ENVIRON used Mercuric Chloride [CASRN 7487-94-7] value from the indicated reference as a surrogate.
55	Under EPA review. Number subject to change.
56	This toxicity value already incorporates the absorption factor of 75% that is recommended in the cited reference.
59	Chromium VI Particulates.
60	IRIS provides a range of 2.2E-6 to 7.8E-6 (ug/m3)-1 as the Inhalation Unit Risk Factor (URF) for Benzene.
61	ENVIRON used Naphthalene [CASRN 91-20-3] value from indicated reference as a surrogate.
68	IRIS provides a range of 1.5E-2 to 5.5E-2 (mg/kg/d)-1 as the Oral Slope Factor (CSFO) for Benzene.
72	ENVIRON used Aroclor 1254 [CASRN 11097-69-1] value from the indicated reference as a surrogate for Polychlorinated biphenyls [CASRN 1336-36-3].
78	IRIS recommends an Oral Cancer Slope Factor(CSFO) for Vinyl Chloride of 7.2E-1 (mg/kg/d)-1 to account for continuous lifetime exposure during adulthood; a twofold increase to 1.4 (mg/kg/d)-1 is recommended to account for continuous exposure from birth.
79	IRIS recommends an Inhalation Unit Risk(URFI) for Vinyl Chloride of 4.4E-6 (ug/m3)-1 to account for continuous lifetime exposure during adulthood; a twofold increase to 8.8E-6 (ug/m3)-1 is recommended to account for continuous exposure from birth.
90	Inadequate data exist to derive a toxicity value, according to the indicated reference.
94	Two provisonal RfC values are presented in the indicated reference (4E-1 and 6E-1 mg/m3). Personal communication with NCEA indicated that either RfC is acceptable and the RfC should be chosen on a case-by-case basis.
95	Diet Criterion.
97	ENVIRON used withdrawn source.
98	Route-to-route extrapolation is not appropriate, according to the indicated reference.
99	ENVIRON used 3-Methylphenol [CASRN 108-39-4] values from the indicated reference as a surrogate.

Physical and Chemical Information
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	MW (g/mole)			K_{ow} (unitless)			K_{oc} (L/kg)			K_d (L/kg)			H (unitless)			s (mg/L)			VP (mm Hg)			D_{air} (cm^2/s)			D_{water} (cm^2/s)			ABS_d (unitless)			FA (unitless)		
			Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes
VOC	Acetone	67-64-1	5.81E+01	50		5.80E-01	40		5.75E-01	44					1.59E-03	44		1.00E+06	44		2.30E+02	50	92	1.24E-01	44		1.14E-05	44							
VOC	Benzene	71-43-2	7.81E+01	50		1.30E+02	40		5.89E+01	44					2.28E-01	44		1.75E+03	44		9.50E+01	50	92	8.80E-02	44		9.80E-06	44					1.00E+00	62	
VOC	2-Butanone	78-93-3	7.21E+01	50		1.91E+00	65		2.34E+00	65					2.28E-03	50	92	2.40E+05	40		9.53E+01	50	92	9.49E-02	36	27	9.80E-06	40					1.00E+00	62	
VOC	Carbon Disulfide	75-15-0	7.61E+01	50		1.00E+02	40		4.57E+01	44					1.24E+00	44		1.19E+03	44		3.59E+02	50	92	1.04E-01	44		1.00E-05	44					1.00E+00	62	
VOC	Chlorobenzene	108-90-7	1.13E+02	50		7.20E+02	40		2.19E+02	44					1.52E-01	44		4.72E+02	44		1.20E+01	50	92	7.30E-02	44		8.70E-06	44					1.00E+00	62	
VOC	Chloroethane	75-00-3	6.45E+01	50		1.26E+03	65		1.49E+01	3					3.60E-01	50	92	5.68E+03	50	92	1.01E+03	50	92	1.10E-01	36	27	1.53E-06	65					1.00E+00	62	
VOC	Cumene	98-82-8	1.20E+02	50		3.80E+03	40		3.30E+03	40					4.74E+01	50	92	6.13E+01	50	92	4.50E+00	50	92	6.50E-02	65		7.83E-06	65							
VOC	Cyclohexane	110-82-7	8.42E+01	50											7.97E+00	50	92	5.50E+01	50	92	9.69E+01	50	92												
VOC	1,2-Dichlorobenzene	95-50-1	1.47E+02	50		2.70E+03	40		6.17E+02	44					7.79E-02	44		1.56E+02	44		1.36E+00	50	92	6.90E-02	44		7.90E-06	44					1.00E+00	62	
VOC	1,3-Dichlorobenzene	541-73-1	1.47E+02	50		3.39E+03	65		1.70E+03	2					1.27E-01	50	92	1.33E+02	50	93	2.15E+00	50	92	4.14E-02	65		8.85E-06	65					1.00E+00	62	
VOC	1,4-Dichlorobenzene	106-46-7	1.47E+02	50		2.60E+03	40		6.17E+02	44					9.96E-02	44		7.38E+01	44		1.00E+00	50	92	6.90E-02	44		7.90E-06	44					1.00E+00	62	
VOC	Dichlorodifluoromethane	75-71-8	1.21E+02	50		1.40E+02	40		1.30E+02	40					1.40E+01	50	92	2.80E+02	50	92	4.85E+03	50	92	8.00E-02	40		8.00E-06	40					1.00E+00	62	
VOC	1,1-Dichloroethane	75-34-3	9.90E+01	50		6.20E+01	40		3.16E+01	44					2.30E-01	44		5.06E+03	44		2.27E+02	50	92	7.42E-02	44		1.05E-05	44					1.00E+00	62	
VOC	cis-1,2-Dichloroethene	156-59-2	9.69E+01	50		7.20E+01	40		3.55E+01	44					1.67E-01	44		3.50E+03	44		2.03E+02	50	92	7.36E-02	44		1.13E-05	44							
VOC	trans-1,2-Dichloroethene	156-60-5	9.69E+01	50		1.20E+02	40		5.25E+01	44					3.85E-01	44		6.30E+03	44		3.33E+02	50	92	7.07E-02	44		1.19E-05	44							
VOC	Ethyl Benzene	100-41-4	1.06E+02	50		1.33E+03	65		3.63E+02	44					3.23E-01	44		1.69E+02	44		9.60E+00	50	92	7.50E-02	44		7.80E-06	44					1.00E+00	62	
VOC	2-Hexanone	591-78-6	1.00E+02	50											7.15E-02	1					1.16E+01	50	92												
VOC	Methyl Acetate	79-20-9	7.41E+01	55		2.90E+00	65		3.25E+00	65					3.53E-03	65		2.44E+05	65		2.16E+02	65		1.23E-01	65		1.10E-05	65							
VOC	4-Methyl-2-pentanone	108-10-1	1.00E+02	50		1.55E+01	65		1.20E+01	65					5.64E-03	50	92	2.00E+04	65		1.99E+01	50	92	7.50E-02	40		7.80E-06	40					1.00E+00	62	
VOC	Methylcyclohexane	108-87-2	9.82E+01	55																															
VOC	Methylene Chloride	75-09-2	8.49E+01	50		1.80E+01	40		1.17E+01	44					8.98E-02	44		1.30E+04	44		4.33E+02	50	92	1.01E-01	44		1.17E-05	44					1.00E+00	62	
VOC	Pentachloroethane	76-01-7	2.02E+02	50											7.93E-02	50	92	4.80E+02	50	92	3.50E+00	50	92												
VOC	Tetrachloroethene	127-18-4	1.66E+02	50		4.70E+02	40		1.55E+02	44					7.54E-01	44		2.00E+02	44		1.86E+01	50	92	7.20E-02	44		8.20E-06	44					1.00E+00	62	
VOC	Toluene	108-88-3	9.21E+01	50		4.65E+02	65		1.82E+02	44					2.72E-01	44		5.26E+02	44		2.84E+01	50	92	8.70E-02	44		8.60E-06	44					1.00E+00	62	
VOC	1,1,1-Trichloroethane	71-55-6	1.33E+02	50		3.00E+02	40		1.10E+02	44					7.05E-01	44		1.33E+03	44		1.24E+02	50	92	7.80E-02	44		8.80E-06	44					1.00E+00	62	
VOC	Trichloroethene	79-01-6	1.31E+02	50		5.10E+02	40		1.66E+02	44					4.22E-01	44		1.10E+03	44		7.35E+01	50	92	7.90E-02	44		9.10E-06	44					1.00E+00	62	
VOC	Trichlorofluoromethane	75-69-4	1.37E+02	50		3.40E+02	40		1.59E+02	3					3.96E+00	50	92	1.10E+03	50	92	8.03E+02	50	92	8.33E-02	36	27	9.70E-06	40					1.00E+00	62	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.87E+02	50		1.40E+03	40		1.30E+03	40					1.97E+01	50	92	1.70E+02	50	92	3.32E+02	50	92	7.80E-02	40		8.20E-06	40							
VOC	Vinyl Chloride	75-01-4	6.25E+01	50		3.20E+01	40		1.86E+01	44					1.11E+00	44		2.76E+03	44		2.98E+03	50	92	1.06E-01	44		1.23E-05	44					1.00E+00	62	
VOC	Xylenes (total)	1330-20-7	1.06E+02	1					2.60E+02	34					1.71E-01	1	59		1	61	1.00E+01	1	65	7.20E-02	34		8.00E-06	40							
SVOC	Acenaphthene	83-32-9	1.54E+02	1		8.30E+03	40		7.08E+03	44					6.36E-03	44		4.24E+00	44		2.50E-03	50	92	4.21E-02	44		7.69E-06	44		1.30E-01	62				
SVOC	Acenaphthylene	208-96-8	1.52E+02	50					4.90E+03	34					4.62E-03	50	92	1.61E+01	50	92	9.12E-04	50	92							1.30E-01	62				
SVOC	Anthracene	120-12-7	1.78E+02	50		2.95E+04	65		2.95E+04	44					2.67E-03	44		4.34E-02	44		2.67E-06	50	92	3.24E-02	44		7.74E-06	44		1.30E-01	62				
SVOC	Atrazine	1912-24-9	2.16E+02	50		4.07E+02	65		1.54E+02	65					1.07E-07	65		7.00E+01	50	92	3.00E-07	50	92	2.80E-02	65		6.03E-06	65		1.00E-01	62				
SVOC	Benzo(a)anthracene	56-55-3	2.28E+02	50		5.00E+05	40		3.98E+05	44					1.37E-04	44		9.40E-03	44		1.05E-07	50	92	5.10E-02	44		9.00E-06	44		1.30E-01	62		1.00E+00	62	
SVOC	Benzo(a)pyrene	50-32-8	2.52E+02	50		1.30E+06	40		1.02E+06	44					4.63E-05	44		1.62E-03	44		5.49E-09	50	92	4.30E-02	44		9.00E-06	44		1.30E-01	62		1.00E+00	62	
SVOC	Benzo(b)fluoranthene	205-99-2	2.52E+02	50		1.60E+06	40		1.23E+06	44					4.55E-03	44		1.50E-03	44		5.00E-07	50	92	2.26E-02	44		5.56E-06	44		1.30E-01	62		1.00E+00	62	
SVOC	Benzo(g,h,i)perylene	191-24-2	2.76E+02	50					1.60E+06	3					5.76E-06	50	92	2.60E-04	50	92	1.01E-10	50	92							1.30E-01	62				
SVOC	Benzo(k)fluoranthene	207-08-9	2.52E+02	50		1.56E+06	65		1.23E+06	44					3.40E-05	44		8.00E-04	44		2.00E-09	50	92	2.26E-02	44		5.56E-06	44		1.30E-01	62				
SVOC	Biphenyl	92-52-4	1.54E+02	50											1.23E-02	50	92	6.03E+00	50	93	9.64E-03	50	92							1.00E-01	62				
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	3.91E+02	50		2.00E+07	40		1.51E+07	44					4.18E-06	44		3.40E-01	44		6.45E-06	50	94	3.51E-02	44		3.66E-06	44		1.00E-01	62		8.00E-01	62	
SVOC	Butylbenzylphthalate	85-68-7	3.12E+02	50		6.90E+04	40		5.75E+04	44					5.17E-05	44		2.69E+00	44		8.25E-06	50	92	1.74E-02	44		4.83E-06	44		1.00E-01	62				
SVOC	Carbazole	86-74-8	1.67E+02	50					3.39E+03	44					6.26E-07	44		7.48E+00	44		5.19E-07	50	90	3.90E-02	44		7.03E-06	44		1.00E-01	62				
SVOC	Chrysene	218-01-9	2.28E+02	50		5.00E+05	40		3.98E+05	44					3.88E-03	44		1.60E-03	44		6.23E-09	50	92	2.48E-02	44		6.21E-06	44		1.30E-01	62		1.00E+00	62	
SVOC	Dibenz(a,h)anthracene	53-70-3	2.78E+02	50		4.90E+06	40		3.80E+06	44					6.03E-07	44		2.49E-03	44		1.00E-10	50	92	2.02E-02	44		5.18E-06	44		1.30E-01	62		6.00E-01	62	
SVOC	Dibenzofuran	132-64-9	1.68E+02	50											5.15E-04	50	92	1.00E+01	50	93	1.80E-04	50	92							1.00E-01	62				
SVOC	2,4-Dimethylphenol	105-67-9	1.22E+02	50		2.30E+02	40		2.09E+02	44					8.20E-05	44		7.87E+03	44		9.80E-02	50	92	5.84E-02	44		8.69E-06	44		1.00E-01	62		1.00E+00	62	
SVOC	Di-n-butylphthalate	84-74-2	2.78E+02	50		4.10E+04	40		3.39E+04	44					3.85E-08	44		1.12E+01	44		7.30E-05	50	92	4.38E-02	44		7.86E-06	44		1.00E-01	62		9.00E-01	62	
SVOC	Di-n-octylphthalate	117-84-0	3.91E+02	50		1.10E+08	40		8.32E+07	44					2.74E-03	44		2.00E-02	44		2.60E-06	50	92	1.51E-02	44		3.58E-06	44		1.00E-01	62				
SVOC	Fluoranthene	206-44-0	2.02E+02	50		1.30E+05	40		1.07E+05	44					6.60E-04	44		2.06E-01	44		7.80E-06	50	94	3.02E-02	44		6.35E-06	44		1.30E-01	62		1.00E+00	62	
SVOC	Fluorene	86-73-7	1.66E+02	50		1.60E+04	40		1.38E+04	44					2.61E-03	44		1.98E+00	44		6.33E-04	50	92	3.63E-02	44		7.88E-06	44		1.30E-01	62				
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	2.76E+02	50		4.50E+06	40		3.47E+06	44					6.56E-05	44		2.20E-05	44		1.00E-10	50	92	1.90E-02	44		5.66E-06	44		1.30E-01	62		6.00E-01	62	
SVOC	2-Methylnaphthalene	91-57-6	1.42E+02	50											2.12E-02	50	92	2.46E+01	50	92	5.50E-02	50	92							1.00E-01	62				
SVOC	Methylphenol (total)	1319-77-3	1.08E+02	50	99				8.60E+01	40	99				3.54E-05	50	92,99	2.27E+04	50	92,99	1.38E-01	50	92,99	7.40E-02	40	99	1.00E-05	40	99	1.00E-01	62				
SVOC	Naphthalene	91-20-3	1.28E+02	50		2.30E+03	40		2.00E+03	44					1.98E-02	44		3.10E+01	44		8.50E-02	50	92	5.90E-02	44		7.50E-06	44		1.30E-01	62		1.00E+00	62	
SVOC	Phenanthrene	85-01-8	1.78E+02	50		3.55E+04	65		1.40E+04	3					9.52E-04	50	92	1.15E+00	50	92	1.12E-04	50	92	3.33E-02	65		7.47E-06	65		1.30E-01	62		1.00E+00	62	
SVOC	Phenol	108-95-2	9.41E+01	50		3.00E+01	40		2.88E+01	44					1.63E-05	44		8.28E+04	44		2.76E-01	50	92	8.20E-02	44		9.10E-06	44		1.00E-01	62		1.00E+00	62	
SVOC	Pyrene	129-00-0	2.02E+02	50		1.30E+05	40		1.05E+05	44					4.51E-04	44		1.35E-01	44		4.59E-06	50	92	2.72E-02	44		7.24E-06	44		1.30E-01	62				
P/PCB	PCBs (total)	1336-36-3	3.28E+02	40		2.00E+06	40		3.09E+05	44					1.06E-01	50	94	7.00E-01	44		7.70E-05	50	92	8.00E-02	40		1.00E-05	40		1.40E-01	62				
INORG	Aluminum	7429-90-5	2.70E+01	50								1.50E+03	35																						
INORG	Antimony	7440-36-0	1.22E+02	50			40	48		65	48	4.50E+01	44	43					1	61					40	48		40	48						
INORG	Arsenic	7440-38-2	7.49E+01	50			40	48		65	48	2.90E+01	44	43					1	61					40	48		40	48	3.00E-02	62				
INORG	Barium	7440-39-3	1.37E+02	50			40	48		65	48	4.10E+01	44	43					1	60					40	48		40	48						
INORG	Beryllium	7440-41-7	9.01E+00	50			40	48		65	48	7.90E+02	44	43					1	61					40	48		40	48						

Physical and Chemical Information
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	MW (g/mole)			K_{ow} (unitless)			K_{oc} (L/kg)			K_d (L/kg)			H (unitless)			s (mg/L)			VP (mm Hg)			D_{air} (cm^2/s)			D_{water} (cm^2/s)			ABS_d (unitless)			FA (unitless)		
			Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes
INORG	Cadmium	7440-43-9	1.12E+02	50			40	48		65	48	7.50E+01	44	43					1	61		40	48		40	48		40	48	1.00E-03	62				
INORG	Chromium (total)	7440-47-3	5.20E+01	50			65	48		65	48	1.90E+01	44	43,45					1	61					40	48		40	48						
INORG	Chromium III	16065-83-1	5.20E+01	50								1.80E+06	44	43																				
INORG	Cobalt	7440-48-4	5.89E+01	50								4.50E+01	35						1	61														
INORG	Copper	7440-50-8	6.35E+01	50			40	48				3.50E+01	35						1	61					40	48		40	48						
INORG	Cyanide (total)	57-12-5	2.60E+01	1			65	100		65	100	9.90E+00	44	43		65	100		65	100	1.38E+01	65		5.48E-01	65		2.10E-05	65							
INORG	Iron	7439-89-6	5.58E+01	50								2.50E+01	35																					
INORG	Lead	7439-92-1	2.07E+02	50			40	48		65	48	9.00E+02	35						1	61					40	48		40	48						
INORG	Manganese	7439-96-5	5.49E+01	50								6.50E+01	35																					
INORG	Mercury	7439-97-6	2.01E+02	50			40	48		65	48	1.00E+03	65		2.90E-01	65		5.60E-02	1		1.96E-03	50	92	3.07E-02	44		6.30E-06	44							
INORG	Nickel	7440-02-0	5.87E+01	50			40	48		65	48	6.50E+01	44	43					1	61					40	48		40	48						
INORG	Selenium	7782-49-2	7.90E+01	50			40	48		65	48	5.00E+00	44	43					40	48		40	48		40	48		40	48						
INORG	Silver	7440-22-4	1.08E+02	50			40	48		65	48	8.30E+00	44	43					1	61					40	48		40	48						
INORG	Thallium	7440-28-0	2.04E+02	50			40	48		65	48	7.10E+01	44	43					1	61					40	48		40	48						
INORG	Tin	7440-31-5	1.19E+02	1								2.50E+02	35						1	61														
INORG	Vanadium	7440-62-2	5.09E+01	50			40	48				1.00E+03	44	43					1	61		40	48		40	48		40	48						
INORG	Zinc	7440-66-6	6.54E+01	50			40	48		65	48	6.20E+01	44	43					1	61					40	48		40	48						
CDD/F	2,3,7,8-TCDD	1746-01-6	3.22E+02	50					1.40E+07	40					3.24E-03	50	92,	7.91E-06	50	93,	1.49E-09	50	92,	4.70E-02	40		8.00E-06	40							

Physical and Chemical Information
General Motors - Pontiac North Campus, Pontiac, Michigan

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34	USEPA. 1994. Technical Background for Soil Screening Guidance. Office of Emergency and Remedial Response. EPA/540/R-94/106. Review Draft. November.
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36	USEPA. 1988. Superfund Exposure Assessment Manual (SEAM). Office of Remedial Response. OSWER Directive 9285.5-1. EPA/540/1-88-/001 Pre-publication Edition. April.
40	Research Triangle Institute, Center for Environmental Analysis. 1995. Supplemental Technical Support Document for Hazardous Waste Identification Rule: Risk Assessment for Human and Ecological Receptors--Volume 1, TABLE A-1. November 1995.
44	USEPA. 1996. Soil Screening Guidance: Technical Background Document and User Guide. Office of Emergency and Remedial Response. EPA/540/R-95/128. May.
50	USEPA. 1997. Superfund Chemical Data Matrix (SCDM). Office of Emergency and Remedial Response. September 12.
62	USEPA. 2001. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim -- Review Draft-For Public Comment.
65	USEPA. July 1998. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities.
Notes:	
27	Diffusivity value at 30 degrees Celcius.
43	pH associated with value is 6.8.
45	ENVIRON used the value for Chromium VI [CASRN 18540-29-9] presented in indicated reference as a surrogate.
48	Not Available or Not Applicable
59	min: max is 6.662E-3.
60	Hydrolyzes
61	Insoluble
92	Indicated source cites CHEMFATE.
93	Indicated source cites FATE.
94	Indicated source cites LIVECHEM.
99	ENVIRON used the value for 3-Methylphenol [CASRN 108-39-4] value as a surrogate.
100	No data available

Concentrations of Chemicals in LNAPL and Soil General Motors - Pontiac North Campus, Pontiac, Michigan			
Chem Group	**Chemical**	**CASRN**	**AOI W-01 Soil (all depths)** (mg/kg)
VOC	Acetone	67-64-1	2.20E+00
VOC	Benzene	71-43-2	7.20E-01
VOC	2-Butanone	78-93-3	2.30E+00
VOC	Carbon Disulfide	75-15-0	9.60E-03
VOC	Chlorobenzene	108-90-7	1.10E-01
VOC	Chloroethane	75-00-3	5.20E-03
VOC	Cumene	98-82-8	1.10E+00
VOC	Cyclohexane	110-82-7	3.00E-01
VOC	1,2-Dichlorobenzene	95-50-1	4.50E-01
VOC	1,3-Dichlorobenzene	541-73-1	1.10E-01
VOC	1,4-Dichlorobenzene	106-46-7	2.60E-03
VOC	Dichlorodifluoromethane	75-71-8	1.40E-03
VOC	1,1-Dichloroethane	75-34-3	1.70E-01
VOC	cis-1,2-Dichloroethene	156-59-2	1.40E+00
VOC	trans-1,2-Dichloroethene	156-60-5	1.80E-01
VOC	Ethyl Benzene	100-41-4	2.50E+01
VOC	2-Hexanone	591-78-6	1.58E-02
VOC	Methyl Acetate	79-20-9	3.40E+01
VOC	4-Methyl-2-pentanone	108-10-1	6.80E-01
VOC	Methylcyclohexane	108-87-2	1.40E+00
VOC	Methylene Chloride	75-09-2	2.50E+01
VOC	Pentachloroethane	76-01-7	9.90E-02
VOC	Tetrachloroethene	127-18-4	5.60E+00
VOC	Toluene	108-88-3	4.20E+01
VOC	1,1,1-Trichloroethane	71-55-6	3.90E-03
VOC	Trichloroethene	79-01-6	2.30E+00
VOC	Trichlorofluoromethane	75-69-4	1.50E-03
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	8.90E-03
VOC	Vinyl Chloride	75-01-4	9.50E-03
VOC	Xylenes (total)	1330-20-7	1.50E+02
SVOC	Acenaphthene	83-32-9	3.60E+01
SVOC	Acenaphthylene	208-96-8	2.00E+00
SVOC	Anthracene	120-12-7	2.10E+01
SVOC	Atrazine	1912-24-9	9.60E-02
SVOC	Benzo(a)anthracene	56-55-3	1.50E+01
SVOC	Benzo(a)pyrene	50-32-8	8.60E+00
SVOC	Benzo(b)fluoranthene	205-99-2	1.10E+01
SVOC	Benzo(g,h,i)perylene	191-24-2	4.50E+00
SVOC	Benzo(k)fluoranthene	207-08-9	5.30E+00
SVOC	Biphenyl	92-52-4	3.40E+00
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	7.60E+01
SVOC	Butylbenzylphthalate	85-68-7	1.10E+03
SVOC	Carbazole	86-74-8	1.10E+01
SVOC	Chrysene	218-01-9	1.60E+01
SVOC	Dibenz(a,h)anthracene	53-70-3	6.70E-01
SVOC	Dibenzofuran	132-64-9	2.70E+01
SVOC	2,4-Dimethylphenol	105-67-9	7.20E+01
SVOC	Di-n-butylphthalate	84-74-2	4.80E+02
SVOC	Di-n-octylphthalate	117-84-0	3.70E+01
SVOC	Fluoranthene	206-44-0	8.20E+01

Concentrations of Chemicals in LNAPL and Soil General Motors - Pontiac North Campus, Pontiac, Michigan			
Chem Group	**Chemical**	**CASRN**	**AOI W-01 Soil (all depths)** (mg/kg)
SVOC	Fluorene	86-73-7	3.60E+01
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	3.70E+00
SVOC	2-Methylnaphthalene	91-57-6	**1.24E+01**
SVOC	Methylphenol (total)	1319-77-3	1.25E+02
SVOC	Naphthalene	91-20-3	**1.80E+01**
SVOC	Phenanthrene	85-01-8	1.10E+02
SVOC	Phenol	108-95-2	1.40E+02
SVOC	Pyrene	129-00-0	5.00E+01
P/PCB	PCBs (total)	1336-36-3	**1.42E+01**
INORG	Aluminum	7429-90-5	1.08E+04
INORG	Antimony	7440-36-0	1.74E+03
INORG	Arsenic	7440-38-2	4.43E+01
INORG	Barium	7440-39-3	5.72E+03
INORG	Beryllium	7440-41-7	1.05E+00
INORG	Cadmium	7440-43-9	1.56E+01
INORG	Chromium (total)	7440-47-3	1.66E+03
INORG	Chromium III	16065-83-1	3.77E+02
INORG	Cobalt	7440-48-4	6.44E+01
INORG	Copper	7440-50-8	4.70E+03
INORG	Cyanide (total)	57-12-5	4.10E+00
INORG	Iron	7439-89-6	3.76E+05
INORG	Lead	7439-92-1	3.95E+03
INORG	Manganese	7439-96-5	**1.86E+03**
INORG	Mercury	7439-97-6	4.65E+00
INORG	Nickel	7440-02-0	6.01E+02
INORG	Selenium	7782-49-2	7.67E+00
INORG	Silver	7440-22-4	6.96E+01
INORG	Thallium	7440-28-0	7.72E+00
INORG	Tin	7440-31-5	8.40E+01
INORG	Vanadium	7440-62-2	6.14E+01
INORG	Zinc	7440-66-6	7.40E+03
CDD/F	2,3,7,8-TCDD	1746-01-6	1.89E-03
Notes:			
All concentrations are the maximum values detected, except the concentrations in bold and shading are depth averaged 95% UCLs.			

High-End Exposure Factors General Motors - Pontiac North Campus, Pontiac, Michigan			
			Construction Scenario
Soil Ingestion			
Ingestion Rate	mg-soil/day	**IR**	200
Conversion Factor	kg/mg	**CF**	1E-06
Fraction Contacted	unitless	**FC**	1.0
Exposure Frequency	days/year	**EF**	5
Exposure Duration	years	**ED**	10
Body Weight	kg	**BW**	70
Averaging Time, cancer	days	**AT_c**	25,550
Averaging Time, noncancer	days	**AT_{nc}**	3,650
Soil Dermal Contact			
Adherence Factor	mg-soil/cm^2	**AF**	0.2
Skin Surface Area	cm^2/day	**SA**	3,300
Conversion Factor	kg/mg	**CF**	1E-06
Fraction Contacted	unitless	**FC**	1.0
Exposure Frequency	days/year	**EF**	5
Exposure Duration	years	**ED**	10
Body Weight	kg	**BW**	70
Averaging Time, cancer	days	**AT_c**	25,550
Averaging Time, noncancer	days	**AT_{nc}**	3,650
Ambient Air Inhalation			
Exposure Frequency	days/year	**EF**	5
Exposure Duration	years	**ED**	10
Averaging Time, cancer	days	**AT_c**	25,550
Averaging Time, noncancer	days	**AT_{nc}**	3,650

Vapor Flux (mg/m2-s per mg/kg) from Soil to Ambient Air at AOI W-01
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	K_{oc} (L/kg)	K_d (L/kg)	H (unitless)	R_L (unitless)	D_{air} (cm^2/s)	D_G (cm^2/s)	D_{water} (cm^2/s)	D_L (cm^2/s)	D_E (cm^2/s)	J_G (kg/m^2-s)	MW (g/mole)	VP (mm Hg)	v* (mg/L)	s (mg/L)	C_{sat} (mg/kg)
VOC	Acetone	67-64-1	5.75E-01	3.45E-03	1.59E-03	1.56E-01	1.24E-01	9.63E-03	1.14E-05	1.11E-07	9.91E-05	9.49E-06	5.81E+01	2.30E+02	7.18E+02	1.00E+06	1.04E+05
VOC	Benzene	71-43-2	5.89E+01	3.53E-01	2.28E-01	7.44E-01	8.80E-02	6.84E-03	9.80E-06	9.50E-08	2.09E-03	4.36E-05	7.81E+01	9.50E+01	3.99E+02	1.75E+03	8.68E+02
VOC	2-Butanone	78-93-3	2.34E+00	1.40E-02	2.28E-03	1.72E-01	9.49E-02	7.37E-03	9.80E-06	9.50E-08	9.86E-05	9.46E-06	7.21E+01	9.53E+01	3.69E+02	2.40E+05	2.74E+04
VOC	Carbon Disulfide	75-15-0	4.57E+01	2.74E-01	1.24E+00	9.09E-01	1.04E-01	8.08E-03	1.00E-05	9.70E-08	1.10E-02	1.00E-04	7.61E+01	3.59E+02	1.47E+03	1.19E+03	7.20E+02
VOC	Chlorobenzene	108-90-7	2.19E+02	1.31E+00	1.52E-01	2.16E+00	7.30E-02	5.67E-03	8.70E-06	8.44E-08	3.98E-04	1.90E-05	1.13E+02	1.20E+01	7.24E+01	4.72E+02	6.81E+02
VOC	Chloroethane	75-00-3	1.49E+01	8.94E-02	3.60E-01	3.85E-01	1.10E-01	8.54E-03	1.53E-06	1.48E-08	8.00E-03	8.52E-05	6.45E+01	1.01E+03	3.50E+03	5.68E+03	1.46E+03
VOC	Cumene	98-82-8	3.30E+03	1.98E+01	4.74E+01	4.31E+01	6.50E-02	5.05E-03	7.83E-06	7.59E-08	5.55E-03	7.10E-05	1.20E+02	4.50E+00	2.91E+01	6.13E+01	1.23E+03
VOC	Cyclohexane	110-82-7			7.97E+00	2.38E+00							8.42E+01	9.69E+01	4.38E+02	5.50E+01	8.73E+01
VOC	1,2-Dichlorobenzene	95-50-1	6.17E+02	3.70E+00	7.79E-02	5.72E+00	6.90E-02	5.36E-03	7.90E-06	7.66E-08	7.29E-05	8.14E-06	1.47E+02	1.36E+00	1.07E+01	1.56E+02	5.95E+02
VOC	1,3-Dichlorobenzene	541-73-1	1.70E+03	1.02E+01	1.27E-01	1.55E+01	4.14E-02	3.22E-03	8.85E-06	8.58E-08	2.63E-05	4.89E-06	1.47E+02	2.15E+00	1.70E+01	1.33E+02	1.37E+03
VOC	1,4-Dichlorobenzene	106-46-7	6.17E+02	3.70E+00	9.96E-02	5.73E+00	6.90E-02	5.36E-03	7.90E-06	7.66E-08	9.32E-05	9.20E-06	1.47E+02	1.00E+00	7.90E+00	7.38E+01	2.82E+02
VOC	Dichlorodifluoromethane	75-71-8	1.30E+02	7.80E-01	1.40E+01	5.25E+00	8.00E-02	6.21E-03	8.00E-06	7.76E-08	1.66E-02	1.23E-04	1.21E+02	4.85E+03	3.15E+04	2.80E+02	9.79E+02
VOC	1,1-Dichloroethane	75-34-3	3.16E+01	1.90E-01	2.30E-01	4.99E-01	7.42E-02	5.76E-03	1.05E-05	1.02E-07	2.66E-03	4.91E-05	9.90E+01	2.27E+02	1.21E+03	5.06E+03	1.68E+03
VOC	cis-1,2-Dichloroethene	156-59-2	3.55E+01	2.13E-01	1.67E-01	5.16E-01	7.36E-02	5.72E-03	1.13E-05	1.10E-07	1.85E-03	4.10E-05	9.69E+01	2.03E+02	1.06E+03	3.50E+03	1.20E+03
VOC	trans-1,2-Dichloroethene	156-60-5	5.25E+01	3.15E-01	3.85E-01	7.30E-01	7.07E-02	5.49E-03	1.19E-05	1.15E-07	2.90E-03	5.13E-05	9.69E+01	3.33E+02	1.74E+03	6.30E+03	2.94E+03
VOC	Ethyl Benzene	100-41-4	3.63E+02	2.18E+00	3.23E-01	3.51E+00	7.50E-02	5.83E-03	7.80E-06	7.56E-08	5.36E-04	2.21E-05	1.06E+02	9.60E+00	5.48E+01	1.69E+02	3.95E+02
VOC	2-Hexanone	591-78-6			7.15E-02	1.70E-01							1.00E+02	1.16E+01	6.26E+01		
VOC	Methyl Acetate	79-20-9	3.25E+00	1.95E-02	3.53E-03	1.80E-01	1.23E-01	9.55E-03	1.10E-05	1.07E-07	1.88E-04	1.31E-05	7.41E+01	2.16E+02	8.60E+02	2.44E+05	2.93E+04
VOC	4-Methyl-2-pentanone	108-10-1	1.20E+01	7.20E-02	5.64E-03	2.60E-01	7.50E-02	5.83E-03	7.80E-06	7.56E-08	1.27E-04	1.07E-05	1.00E+02	1.99E+01	1.07E+02	2.00E+04	3.46E+03
VOC	Methylcyclohexane	108-87-2				1.50E-01							9.82E+01				
VOC	Methylene Chloride	75-09-2	1.17E+01	7.02E-02	8.98E-02	2.80E-01	1.01E-01	7.84E-03	1.17E-05	1.13E-07	2.51E-03	4.78E-05	8.49E+01	4.33E+02	1.98E+03	1.30E+04	2.43E+03
VOC	Pentachloroethane	76-01-7			7.93E-02	1.72E-01							2.02E+02	3.50E+00	3.81E+01	4.80E+02	5.51E+01
VOC	Tetrachloroethene	127-18-4	1.55E+02	9.30E-01	7.54E-01	1.76E+00	7.20E-02	5.59E-03	8.20E-06	7.95E-08	2.40E-03	4.67E-05	1.66E+02	1.86E+01	1.65E+02	2.00E+02	2.34E+02
VOC	Toluene	108-88-3	1.82E+02	1.09E+00	2.72E-01	1.86E+00	8.70E-02	6.76E-03	8.60E-06	8.34E-08	9.86E-04	2.99E-05	9.21E+01	2.84E+01	1.41E+02	5.26E+02	6.53E+02
VOC	1,1,1-Trichloroethane	71-55-6	1.10E+02	6.60E-01	7.05E-01	1.34E+00	7.80E-02	6.06E-03	8.80E-06	8.53E-08	3.19E-03	5.39E-05	1.33E+02	1.24E+02	8.87E+02	1.33E+03	1.18E+03
VOC	Trichloroethene	79-01-6	1.66E+02	9.96E-01	4.22E-01	1.76E+00	7.90E-02	6.14E-03	9.10E-06	8.83E-08	1.47E-03	3.65E-05	1.31E+02	7.35E+01	5.19E+02	1.10E+03	1.29E+03
VOC	Trichlorofluoromethane	75-69-4	1.59E+02	9.54E-01	3.96E+00	2.69E+00	8.33E-02	6.47E-03	9.70E-06	9.41E-08	9.53E-03	9.31E-05	1.37E+02	8.03E+02	5.93E+03	1.10E+03	1.97E+03
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.30E+03	7.80E+00	1.97E+01	1.74E+01	7.80E-02	6.06E-03	8.20E-06	7.95E-08	6.86E-03	7.90E-05	1.87E+02	3.32E+02	3.34E+03	1.70E+02	1.97E+03
VOC	Vinyl Chloride	75-01-4	1.86E+01	1.12E-01	1.11E+00	6.28E-01	1.06E-01	8.23E-03	1.23E-05	1.19E-07	1.45E-02	1.15E-04	6.25E+01	2.98E+03	1.00E+04	2.76E+03	1.16E+03
VOC	Xylenes (total)	1330-20-7	2.60E+02	1.56E+00	1.71E-01	2.54E+00	7.20E-02	5.59E-03	8.00E-06	7.76E-08	3.77E-04	1.85E-05	1.06E+02	1.00E+01	5.71E+01		
SVOC	Acenaphthene	83-32-9	7.08E+03	4.25E+01	6.36E-03	6.39E+01	4.21E-02	3.27E-03	7.69E-06	7.46E-08	3.27E-07	5.45E-07	1.54E+02	2.50E-03	2.07E-02	4.24E+00	1.81E+02
SVOC	Acenaphthylene	208-96-8	4.90E+03	2.94E+01	4.62E-03	4.43E+01							1.52E+02	9.12E-04	7.46E-03	1.61E+01	4.75E+02
SVOC	Anthracene	120-12-7	2.95E+04	1.77E+02	2.67E-03	2.66E+02	3.24E-02	2.52E-03	7.74E-06	7.51E-08	2.56E-08	1.52E-07	1.78E+02	2.67E-06	2.56E-05	4.34E-02	7.69E+00
SVOC	Atrazine	1912-24-9	1.54E+02	9.24E-01	1.07E-07	1.54E+00	2.80E-02	2.17E-03	6.03E-06	5.85E-08	3.82E-08	1.86E-07	2.16E+02	3.00E-07	3.48E-06	7.00E+01	7.17E+01
SVOC	Benzo(a)anthracene	56-55-3	3.98E+05	2.39E+03	1.37E-04	3.58E+03	5.10E-02	3.96E-03	9.00E-06	8.73E-08	1.76E-10	1.26E-08	2.28E+02	1.05E-07	1.29E-06	9.40E-03	2.24E+01
SVOC	Benzo(a)pyrene	50-32-8	1.02E+06	6.12E+03	4.63E-05	9.18E+03	4.30E-02	3.34E-03	9.00E-06	8.73E-08	2.64E-11	4.89E-09	2.52E+02	5.49E-09	7.45E-08	1.62E-03	9.91E+00
SVOC	Benzo(b)fluoranthene	205-99-2	1.23E+06	7.38E+03	4.55E-03	1.11E+04	2.26E-02	1.76E-03	5.56E-06	5.39E-08	7.26E-10	2.57E-08	2.52E+02	5.00E-07	6.78E-06	1.50E-03	1.11E+01
SVOC	Benzo(g,h,i)perylene	191-24-2	1.60E+06	9.60E+03	5.76E-06	1.44E+04							2.76E+02	1.01E-10	1.50E-09	2.60E-04	2.50E+00
SVOC	Benzo(k)fluoranthene	207-08-9	1.23E+06	7.38E+03	3.40E-05	1.11E+04	2.26E-02	1.76E-03	5.56E-06	5.39E-08	1.03E-11	3.05E-09	2.52E+02	2.00E-09	2.71E-08	8.00E-04	5.90E+00
SVOC	Biphenyl	92-52-4			1.23E-02	1.53E-01							1.54E+02	9.64E-03	7.99E-02	6.03E+00	6.17E-01
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	1.51E+07	9.06E+04	4.18E-06	1.36E+05	3.51E-02	2.73E-03	3.66E-06	3.55E-08	3.45E-13	5.60E-10	3.91E+02	6.45E-06	1.35E-04	3.40E-01	3.08E+04
SVOC	Butylbenzylphthalate	85-68-7	5.75E+04	3.45E+02	5.17E-05	5.18E+02	1.74E-02	1.35E-03	4.83E-06	4.68E-08	2.25E-10	1.43E-08	3.12E+02	8.25E-06	1.39E-04	2.69E+00	9.28E+02
SVOC	Carbazole	86-74-8	3.39E+03	2.03E+01	6.26E-07	3.07E+01	3.90E-02	3.03E-03	7.03E-06	6.82E-08	2.29E-09	4.56E-08	1.67E+02	5.19E-07	4.67E-06	7.48E+00	1.53E+02
SVOC	Chrysene	218-01-9	3.98E+05	2.39E+03	3.88E-03	3.58E+03	2.48E-02	1.93E-03	6.21E-06	6.02E-08	2.10E-09	4.37E-08	2.28E+02	6.23E-09	7.65E-08	1.60E-03	3.82E+00
SVOC	Dibenz(a,h)anthracene	53-70-3	3.80E+06	2.28E+04	6.03E-07	3.42E+04	2.02E-02	1.57E-03	5.18E-06	5.02E-08	1.50E-12	1.17E-09	2.78E+02	1.00E-10	1.50E-09	2.49E-03	5.68E+01
SVOC	Dibenzofuran	132-64-9			5.15E-04	1.50E-01							1.68E+02	1.80E-04	1.63E-03	1.00E+01	1.00E+00
SVOC	2,4-Dimethylphenol	105-67-9	2.09E+02	1.25E+00	8.20E-05	2.03E+00	5.84E-02	4.54E-03	8.69E-06	8.43E-08	2.25E-07	4.52E-07	1.22E+02	9.80E-02	6.44E-01	7.87E+03	1.07E+04
SVOC	Di-n-butylphthalate	84-74-2	3.39E+04	2.03E+02	3.85E-08	3.05E+02	4.38E-02	3.40E-03	7.86E-06	7.62E-08	2.50E-10	1.51E-08	2.78E+02	7.30E-05	1.09E-03	1.12E+01	2.28E+03
SVOC	Di-n-octylphthalate	117-84-0	8.32E+07	4.99E+05	2.74E-03	7.49E+05	1.51E-02	1.17E-03	3.58E-06	3.47E-08	4.34E-12	1.99E-09	3.91E+02	2.60E-06	5.46E-05	2.00E-02	9.98E+03
SVOC	Fluoranthene	206-44-0	1.07E+05	6.42E+02	6.60E-04	9.63E+02	3.02E-02	2.35E-03	6.35E-06	6.16E-08	1.67E-09	3.90E-08	2.02E+02	7.80E-06	8.48E-05	2.06E-01	1.32E+02
SVOC	Fluorene	86-73-7	1.38E+04	8.28E+01	2.61E-03	1.24E+02	3.63E-02	2.82E-03	7.88E-06	7.64E-08	5.98E-08	2.33E-07	1.66E+02	6.33E-04	5.66E-03	1.98E+00	1.64E+02
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	3.47E+06	2.08E+04	6.56E-05	3.12E+04	1.90E-02	1.48E-03	5.66E-06	5.49E-08	4.86E-12	2.10E-09	2.76E+02	1.00E-10	1.49E-09	2.20E-05	4.58E-01
SVOC	2-Methylnaphthalene	91-57-6			2.12E-02	1.56E-01							1.42E+02	5.50E-02	4.21E-01	2.46E+01	2.54E+00
SVOC	Methylphenol (total)	1319-77-3	8.60E+01	5.16E-01	3.54E-05	9.24E-01	7.40E-02	5.75E-03	1.00E-05	9.70E-08	3.25E-07	5.43E-07	1.08E+02	1.38E-01	8.02E-01	2.27E+04	1.40E+04
SVOC	Naphthalene	91-20-3	2.00E+03	1.20E+01	1.98E-02	1.82E+01	5.90E-02	4.58E-03	7.50E-06	7.27E-08	5.00E-06	2.13E-06	1.28E+02	8.50E-02	5.86E-01	3.10E+01	3.75E+02
SVOC	Phenanthrene	85-01-8	1.40E+04	8.40E+01	9.52E-04	1.26E+02	3.33E-02	2.59E-03	7.47E-06	7.24E-08	2.01E-08	1.35E-07	1.78E+02	1.12E-04	1.07E-03	1.15E+00	9.67E+01
SVOC	Phenol	108-95-2	2.88E+01	1.73E-01	1.63E-05	4.09E-01	8.20E-02	6.37E-03	9.10E-06	8.83E-08	4.69E-07	6.53E-07	9.41E+01	2.76E-01	1.40E+00	8.28E+04	2.26E+04
SVOC	Pyrene	129-00-0	1.05E+05	6.30E+02	4.51E-04	9.45E+02	2.72E-02	2.11E-03	7.24E-06	7.02E-08	1.08E-09	3.14E-08	2.02E+02	4.59E-06	4.99E-05	1.35E-01	8.51E+01

Vapor Flux (mg/m2-s per mg/kg) from Soil to Ambient Air at AOI W-01
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	K_{oc} (L/kg)	K_d (L/kg)	H (unitless)	R_L (unitless)	D_{air} (cm^2/s)	D_G (cm^2/s)	D_{water} (cm^2/s)	D_L (cm^2/s)	D_E (cm^2/s)	J_G (kg/m^2-s)		MW (g/mole)	VP (mm Hg)	v* (mg/L)	s (mg/L)	C_{sat} (mg/kg)
P/PCB	PCBs (total)	1336-36-3	3.09E+05	1.85E+03	1.06E-01	2.78E+03	8.00E-02	6.21E-03	1.00E-05	9.70E-08	2.37E-07	4.64E-07		3.28E+02	7.70E-05	1.36E-03	7.00E-01	1.30E+03
INORG	Aluminum	7429-90-5		1.50E+03		2.25E+03								2.70E+01				
INORG	Antimony	7440-36-0		4.50E+01		6.77E+01								1.22E+02				
INORG	Arsenic	7440-38-2		2.90E+01		4.37E+01								7.49E+01				
INORG	Barium	7440-39-3		4.10E+01		6.17E+01								1.37E+02				
INORG	Beryllium	7440-41-7		7.90E+02		1.19E+03								9.01E+00				
INORG	Cadmium	7440-43-9		7.50E+01		1.13E+02								1.12E+02				
INORG	Chromium (total)	7440-47-3		1.90E+01		2.87E+01								5.20E+01				
INORG	Chromium III	16065-83-1		1.80E+06		2.70E+06								5.20E+01				
INORG	Cobalt	7440-48-4		4.50E+01		6.77E+01								5.89E+01				
INORG	Copper	7440-50-8		3.50E+01		5.27E+01								6.35E+01				
INORG	Cyanide (total)	57-12-5		9.90E+00		1.50E+01	5.48E-01	4.26E-02	2.10E-05	2.04E-07	1.36E-08	1.11E-07		2.60E+01	1.38E+01	1.93E+01		
INORG	Iron	7439-89-6		2.50E+01		3.77E+01								5.58E+01				
INORG	Lead	7439-92-1		9.00E+02		1.35E+03								2.07E+02				
INORG	Manganese	7439-96-5		6.50E+01		9.77E+01								5.49E+01				
INORG	Mercury	7439-97-6		1.00E+03	2.90E-01	1.50E+03	3.07E-02	2.38E-03	6.30E-06	6.11E-08	4.61E-07	6.47E-07		2.01E+02	1.96E-03	2.11E-02	5.60E-02	5.60E+01
INORG	Nickel	7440-02-0		6.50E+01		9.77E+01								5.87E+01				
INORG	Selenium	7782-49-2		5.00E+00		7.65E+00								7.90E+01				
INORG	Silver	7440-22-4		8.30E+00		1.26E+01								1.08E+02				
INORG	Thallium	7440-28-0		7.10E+01		1.07E+02								2.04E+02				
INORG	Tin	7440-31-5		2.50E+02		3.75E+02								1.19E+02				
INORG	Vanadium	7440-62-2		1.00E+03		1.50E+03								5.09E+01				
INORG	Zinc	7440-66-6		6.20E+01		9.32E+01								6.54E+01				
CDD/F	2,3,7,8-TCDD	1746-01-6	1.40E+07	8.40E+04	3.24E-03	1.26E+05	4.70E-02	3.65E-03	8.00E-06	7.76E-08	9.44E-11	9.26E-09		3.22E+02	1.49E-09	2.58E-08	7.91E-06	6.64E-01
Notes:	Soil bulk density	kg/L	**?$_b$**	1.50														
	Soil particle density	kg/L	**?$_s$**	2.65														
	Soil porosity	L/L-soil	n	0.43														
	Soil water content	L/L-soil	?$_w$	0.15														
	Soil air-filled porosity	L/L-soil	?$_a$	0.28														
	Soil organic carbon fraction	unitless	**f_{oc}**	0.006														
	Averaging period	year	**ED**	10														
		s	**ED**	3.15E+08														
	Molar Gas Constant	L-mmHg/mole-^oK	**R**	62.411														
	Temperature	^oC	**T**	25														
		^oK	**T**	298														

Estimated Concentrations in Ambient Air from Excavations Soil at AOI W-01
General Motors - Pontiac North Campus, Pontiac, Michigan

			Vapor			PM_{10}	
	C/Q (kg/m^3 per kg/m^2-s)**:**			10.96		10.96	
Chem Chem	**Chemical**	**CASRN**	C_{soil} (mg/kg)	C_{source} (mg/kg)	C_{air} (mg/m^3)	C_{soil} (mg/kg)	C_{air} (mg/m^3)
VOC	Acetone	67-64-1	2.20E+00	2.20E+00	2.29E-04	2.20E+00	3.30E-07
VOC	Benzene	71-43-2	7.20E-01	7.20E-01	3.44E-04	7.20E-01	1.08E-07
VOC	2-Butanone	78-93-3	2.30E+00	2.30E+00	2.39E-04	2.30E+00	3.45E-07
VOC	Carbon Disulfide	75-15-0	9.60E-03	9.60E-03	1.05E-05	9.60E-03	1.44E-09
VOC	Chlorobenzene	108-90-7	1.10E-01	1.10E-01	2.29E-05	1.10E-01	1.65E-08
VOC	Chloroethane	75-00-3	5.20E-03	5.20E-03	4.86E-06	5.20E-03	7.80E-10
VOC	Cumene	98-82-8	1.10E+00	1.10E+00	8.56E-04	1.10E+00	1.65E-07
VOC	Cyclohexane	110-82-7	3.00E-01	3.00E-01		3.00E-01	4.50E-08
VOC	1,2-Dichlorobenzene	95-50-1	4.50E-01	4.50E-01	4.01E-05	4.50E-01	6.75E-08
VOC	1,3-Dichlorobenzene	541-73-1	1.10E-01	1.10E-01	5.89E-06	1.10E-01	1.65E-08
VOC	1,4-Dichlorobenzene	106-46-7	2.60E-03	2.60E-03	2.62E-07	2.60E-03	3.90E-10
VOC	Dichlorodifluoromethane	75-71-8	1.40E-03	1.40E-03	1.88E-06	1.40E-03	2.10E-10
VOC	1,1-Dichloroethane	75-34-3	1.70E-01	1.70E-01	9.15E-05	1.70E-01	2.55E-08
VOC	cis-1,2-Dichloroethene	156-59-2	1.40E+00	1.40E+00	6.29E-04	1.40E+00	2.10E-07
VOC	trans-1,2-Dichloroethene	156-60-5	1.80E-01	1.80E-01	1.01E-04	1.80E-01	2.70E-08
VOC	Ethyl Benzene	100-41-4	2.50E+01	2.50E+01	6.05E-03	2.50E+01	3.75E-06
VOC	2-Hexanone	591-78-6	1.58E-02			1.58E-02	2.36E-09
VOC	Methyl Acetate	79-20-9	3.40E+01	3.40E+01	4.87E-03	3.40E+01	5.10E-06
VOC	4-Methyl-2-pentanone	108-10-1	6.80E-01	6.80E-01	8.00E-05	6.80E-01	1.02E-07
VOC	Methylcyclohexane	108-87-2	1.40E+00			1.40E+00	2.10E-07
VOC	Methylene Chloride	75-09-2	2.50E+01	2.50E+01	1.31E-02	2.50E+01	3.75E-06
VOC	Pentachloroethane	76-01-7	9.90E-02	9.90E-02		9.90E-02	1.49E-08
VOC	Tetrachloroethene	127-18-4	5.60E+00	5.60E+00	2.87E-03	5.60E+00	8.40E-07
VOC	Toluene	108-88-3	4.20E+01	4.20E+01	1.38E-02	4.20E+01	6.30E-06
VOC	1,1,1-Trichloroethane	71-55-6	3.90E-03	3.90E-03	2.30E-06	3.90E-03	5.85E-10
VOC	Trichloroethene	79-01-6	2.30E+00	2.30E+00	9.21E-04	2.30E+00	3.45E-07
VOC	Trichlorofluoromethane	75-69-4	1.50E-03	1.50E-03	1.53E-06	1.50E-03	2.25E-10
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	8.90E-03	8.90E-03	7.70E-06	8.90E-03	1.34E-09
VOC	Vinyl Chloride	75-01-4	9.50E-03	9.50E-03	1.20E-05	9.50E-03	1.43E-09
VOC	Xylenes (total)	1330-20-7	1.50E+02			1.50E+02	2.25E-05
SVOC	Acenaphthene	83-32-9	3.60E+01	3.60E+01	2.15E-04	3.60E+01	5.40E-06
SVOC	Acenaphthylene	208-96-8	2.00E+00	2.00E+00		2.00E+00	3.00E-07
SVOC	Anthracene	120-12-7	2.10E+01	*7.69E+00*	1.28E-05	2.10E+01	3.15E-06
SVOC	Atrazine	1912-24-9	9.60E-02	9.60E-02	1.96E-07	9.60E-02	1.44E-08
SVOC	Benzo(a)anthracene	56-55-3	1.50E+01	1.50E+01	2.08E-06	1.50E+01	2.25E-06
SVOC	Benzo(a)pyrene	50-32-8	8.60E+00	8.60E+00	4.61E-07	8.60E+00	1.29E-06
SVOC	Benzo(b)fluoranthene	205-99-2	1.10E+01	1.10E+01	3.10E-06	1.10E+01	1.65E-06
SVOC	Benzo(g,h,i)perylene	191-24-2	4.50E+00	*2.50E+00*		4.50E+00	6.75E-07
SVOC	Benzo(k)fluoranthene	207-08-9	5.30E+00	5.30E+00	1.77E-07	5.30E+00	7.95E-07
SVOC	Biphenyl	92-52-4	3.40E+00	*6.17E-01*		3.40E+00	5.10E-07
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	7.60E+01	7.60E+01	4.66E-07	7.60E+01	1.14E-05
SVOC	Butylbenzylphthalate	85-68-7	1.10E+03	*9.28E+02*	1.46E-04	1.10E+03	1.65E-04
SVOC	Carbazole	86-74-8	1.10E+01	1.10E+01	5.49E-06	1.10E+01	1.65E-06
SVOC	Chrysene	218-01-9	1.60E+01	*3.82E+00*	1.83E-06	1.60E+01	2.40E-06
SVOC	Dibenz(a,h)anthracene	53-70-3	6.70E-01	6.70E-01	8.56E-09	6.70E-01	1.01E-07
SVOC	Dibenzofuran	132-64-9	2.70E+01	*1.00E+00*		2.70E+01	4.05E-06
SVOC	2,4-Dimethylphenol	105-67-9	7.20E+01	7.20E+01	3.56E-04	7.20E+01	1.08E-05
SVOC	Di-n-butylphthalate	84-74-2	4.80E+02	4.80E+02	7.93E-05	4.80E+02	7.20E-05

Estimated Concentrations in Ambient Air from Excavations Soil at AOI W-01
General Motors - Pontiac North Campus, Pontiac, Michigan

			Vapor			PM_{10}	
	C/Q (kg/m^3 per kg/m^2-s)**:**			10.96		10.96	
Chem Chem	**Chemical**	**CASRN**	C_{soil} (mg/kg)	C_{source} (mg/kg)	C_{air} (mg/m^3)	C_{soil} (mg/kg)	C_{air} (mg/m^3)
SVOC	Di-n-octylphthalate	117-84-0	3.70E+01	3.70E+01	8.05E-07	3.70E+01	5.55E-06
SVOC	Fluoranthene	206-44-0	8.20E+01	8.20E+01	3.50E-05	8.20E+01	1.23E-05
SVOC	Fluorene	86-73-7	3.60E+01	3.60E+01	9.20E-05	3.60E+01	5.40E-06
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	3.70E+00	*4.58E-01*	1.05E-08	3.70E+00	5.55E-07
SVOC	2-Methylnaphthalene	91-57-6	1.24E+01	*2.54E+00*		1.24E+01	1.86E-06
SVOC	Methylphenol (total)	1319-77-3	1.25E+02	1.25E+02	7.44E-04	1.25E+02	1.88E-05
SVOC	Naphthalene	91-20-3	1.80E+01	1.80E+01	4.21E-04	1.80E+01	2.70E-06
SVOC	Phenanthrene	85-01-8	1.10E+02	*9.67E+01*	1.43E-04	1.10E+02	1.65E-05
SVOC	Phenol	108-95-2	1.40E+02	1.40E+02	1.00E-03	1.40E+02	2.10E-05
SVOC	Pyrene	129-00-0	5.00E+01	5.00E+01	1.72E-05	5.00E+01	7.50E-06
P/PCB	PCBs (total)	1336-36-3	1.42E+01	1.42E+01	7.23E-05	1.42E+01	2.13E-06
INORG	Aluminum	7429-90-5	1.08E+04			1.08E+04	1.62E-03
INORG	Antimony	7440-36-0	1.74E+03			1.74E+03	2.61E-04
INORG	Arsenic	7440-38-2	4.43E+01			4.43E+01	6.65E-06
INORG	Barium	7440-39-3	5.72E+03			5.72E+03	8.58E-04
INORG	Beryllium	7440-41-7	1.05E+00			1.05E+00	1.58E-07
INORG	Cadmium	7440-43-9	1.56E+01			1.56E+01	2.34E-06
INORG	Chromium (total)	7440-47-3	1.66E+03			1.66E+03	2.49E-04
INORG	Chromium III	16065-83-1	3.77E+02			3.77E+02	5.65E-05
INORG	Cobalt	7440-48-4	6.44E+01			6.44E+01	9.66E-06
INORG	Copper	7440-50-8	4.70E+03			4.70E+03	7.05E-04
INORG	Cyanide (total)	57-12-5	4.10E+00			4.10E+00	6.15E-07
INORG	Iron	7439-89-6	3.76E+05			3.76E+05	5.64E-02
INORG	Lead	7439-92-1	3.95E+03			3.95E+03	5.93E-04
INORG	Manganese	7439-96-5	1.86E+03			1.86E+03	2.79E-04
INORG	Mercury	7439-97-6	4.65E+00	4.65E+00	3.30E-05	4.65E+00	6.98E-07
INORG	Nickel	7440-02-0	6.01E+02			6.01E+02	9.02E-05
INORG	Selenium	7782-49-2	7.67E+00			7.67E+00	1.15E-06
INORG	Silver	7440-22-4	6.96E+01			6.96E+01	1.04E-05
INORG	Thallium	7440-28-0	7.72E+00			7.72E+00	1.16E-06
INORG	Tin	7440-31-5	8.40E+01			8.40E+01	1.26E-05
INORG	Vanadium	7440-62-2	6.14E+01			6.14E+01	9.21E-06
INORG	Zinc	7440-66-6	7.40E+03			7.40E+03	1.11E-03
CDD/F	2,3,7,8-TCDD	1746-01-6	1.89E-03	1.89E-03	1.92E-10	1.89E-03	2.84E-10
Notes:							
C_{source} = Minimum of Soil Concentration and Csat							

Construction Scenario Cancer Risk Calculations - at AOI W-01
General Motors - Pontiac North Campus, Pontiac, Michigan

				Soil Ingestion				Soil Dermal Contact				Soil Vapor Inhalation			Soil Particulate Inhalation		
Chem Group	**Chemical**	**CASRN**	**Cancer Class**	**C_{soil}** (mg/kg)	**LADD** (mg/kg/d)	**SF_{oral}** $(mg/kg/d)^{-1}$	**Risk**	**AF_{derm}**	**LADD** (mg/kg/d)	**SF_{derm}** $(mg/kg/d)^{-1}$	**Risk**	**C_{air}** (mg/m^3)	**URF** (m^3/mg)	**Risk**	**C_{air}** (mg/m^3)	**URF** (m^3/mg)	**Risk**
VOC	Acetone	67-64-1	ID	2.20E+00	1.23E-08							2.29E-04			3.30E-07		
VOC	Benzene	71-43-2	A	7.20E-01	4.03E-09	5.5E-02	2.2E-10			5.5E-02		3.44E-04	7.8E-03	5.3E-09	1.08E-07	7.8E-03	1.6E-12
VOC	2-Butanone	78-93-3	D	2.30E+00	1.29E-08							2.39E-04			3.45E-07		
VOC	Carbon Disulfide	75-15-0		9.60E-03	5.37E-11							1.05E-05			1.44E-09		
VOC	Chlorobenzene	108-90-7	D	1.10E-01	6.15E-10							2.29E-05			1.65E-08		
VOC	Chloroethane	75-00-3		5.20E-03	2.91E-11	2.9E-03	8.4E-14			2.9E-03		4.86E-06			7.80E-10		
VOC	Cumene	98-82-8	D	1.10E+00	6.15E-09							8.56E-04			1.65E-07		
VOC	Cyclohexane	110-82-7		3.00E-01	1.68E-09										4.50E-08		
VOC	1,2-Dichlorobenzene	95-50-1	D	4.50E-01	2.52E-09							4.01E-05			6.75E-08		
VOC	1,3-Dichlorobenzene	541-73-1	D	1.10E-01	6.15E-10							5.89E-06			1.65E-08		
VOC	1,4-Dichlorobenzene	106-46-7	C	2.60E-03	1.45E-11	2.4E-02	3.5E-13			2.4E-02		2.62E-07	6.3E-03	3.2E-12	3.90E-10	6.3E-03	4.8E-15
VOC	Dichlorodifluoromethane	75-71-8		1.40E-03	7.83E-12							1.88E-06			2.10E-10		
VOC	1,1-Dichloroethane	75-34-3	C	1.70E-01	9.51E-10							9.15E-05			2.55E-08		
VOC	cis-1,2-Dichloroethene	156-59-2	D	1.40E+00	7.83E-09							6.29E-04			2.10E-07		
VOC	trans-1,2-Dichloroethene	156-60-5		1.80E-01	1.01E-09							1.01E-04			2.70E-08		
VOC	Ethyl Benzene	100-41-4	D	2.50E+01	1.40E-07							6.05E-03			3.75E-06		
VOC	2-Hexanone	591-78-6		1.58E-02	8.81E-11										2.36E-09		
VOC	Methyl Acetate	79-20-9		3.40E+01	1.90E-07							4.87E-03			5.10E-06		
VOC	4-Methyl-2-pentanone	108-10-1	ID	6.80E-01	3.80E-09							8.00E-05			1.02E-07		
VOC	Methylcyclohexane	108-87-2		1.40E+00	7.83E-09										2.10E-07		
VOC	Methylene Chloride	75-09-2	B2	2.50E+01	1.40E-07	7.5E-03	1.0E-09			7.5E-03		1.31E-02	4.7E-04	1.2E-08	3.75E-06	4.7E-04	3.4E-12
VOC	Pentachloroethane	76-01-7		9.90E-02	5.54E-10										1.49E-08		
VOC	Tetrachloroethene	127-18-4	C-B2	5.60E+00	3.13E-08	5.2E-02	1.6E-09			5.2E-02		2.87E-03	3.1E-03	1.7E-08	8.40E-07	3.1E-03	5.0E-12
VOC	Toluene	108-88-3	D	4.20E+01	2.35E-07							1.38E-02			6.30E-06		
VOC	1,1,1-Trichloroethane	71-55-6	D	3.90E-03	2.18E-11							2.30E-06			5.85E-10		
VOC	Trichloroethene	79-01-6	C-B2	2.30E+00	1.29E-08	1.1E-02	1.4E-10			1.1E-02		9.21E-04	1.7E-03	3.1E-09	3.45E-07	1.7E-03	1.1E-12
VOC	Trichlorofluoromethane	75-69-4		1.50E-03	8.39E-12							1.53E-06			2.25E-10		
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		8.90E-03	4.98E-11							7.70E-06			1.34E-09		
VOC	Vinyl Chloride	75-01-4	A	9.50E-03	5.31E-11	1.4E+00	7.4E-11			1.4E+00		1.20E-05	8.8E-03	2.1E-10	1.43E-09	8.8E-03	2.5E-14
VOC	Xylenes (total)	1330-20-7	ID	1.50E+02	8.39E-07										2.25E-05		
SVOC	Acenaphthene	83-32-9		3.60E+01	2.01E-07			1.30E-01	8.64E-08			2.15E-04			5.40E-06		
SVOC	Acenaphthylene	208-96-8	D	2.00E+00	1.12E-08			1.30E-01	4.80E-09						3.00E-07		
SVOC	Anthracene	120-12-7	D	2.10E+01	1.17E-07			1.30E-01	5.04E-08			1.28E-05			3.15E-06		
SVOC	Atrazine	1912-24-9		9.60E-02	5.37E-10			1.00E-01	1.77E-10			1.96E-07			1.44E-08		
SVOC	Benzo(a)anthracene	56-55-3	B2	1.50E+01	8.39E-08	7.3E-01	6.1E-08	1.30E-01	3.60E-08	7.3E-01	2.6E-08	2.08E-06	2.1E-01	8.5E-10	2.25E-06	2.1E-01	9.2E-10
SVOC	Benzo(a)pyrene	50-32-8	B2	8.60E+00	4.81E-08	7.3E+00	3.5E-07	1.30E-01	2.06E-08	7.3E+00	1.5E-07	4.61E-07	8.9E-01	8.0E-10	1.29E-06	8.9E-01	2.2E-09
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.10E+01	6.15E-08	7.3E-01	4.5E-08	1.30E-01	2.64E-08	7.3E-01	1.9E-08	3.10E-06	2.1E-01	1.3E-09	1.65E-06	2.1E-01	6.7E-10
SVOC	Benzo(g,h,i)perylene	191-24-2	D	4.50E+00	2.52E-08			1.30E-01	1.08E-08						6.75E-07		
SVOC	Benzo(k)fluoranthene	207-08-9	B2	5.30E+00	2.96E-08	7.3E-02	2.2E-09	1.30E-01	1.27E-08	7.3E-02	9.3E-10	1.77E-07	2.1E-02	7.2E-12	7.95E-07	2.1E-02	3.2E-11
SVOC	Biphenyl	92-52-4	D	3.40E+00	1.90E-08			1.00E-01	6.27E-09						5.10E-07		
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	7.60E+01	4.25E-07	1.4E-02	5.9E-09	1.00E-01	1.40E-07	1.4E-02	2.0E-09	4.66E-07	4.0E-03	3.7E-12	1.14E-05	4.0E-03	8.9E-11
SVOC	Butylbenzylphthalate	85-68-7	C	1.10E+03	6.15E-06			1.00E-01	2.03E-06			1.46E-04			1.65E-04		
SVOC	Carbazole	86-74-8	B2	1.10E+01	6.15E-08	2.0E-02	1.2E-09	1.00E-01	2.03E-08	2.0E-02	4.1E-10	5.49E-06	5.7E-03	6.1E-11	1.65E-06	5.7E-03	1.8E-11
SVOC	Chrysene	218-01-9	B2	1.60E+01	8.95E-08	7.3E-03	6.5E-10	1.30E-01	3.84E-08	7.3E-03	2.8E-10	1.83E-06	2.1E-03	7.5E-12	2.40E-06	2.1E-03	9.8E-12
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	6.70E-01	3.75E-09	7.3E+00	2.7E-08	1.30E-01	1.61E-09	7.3E+00	1.2E-08	8.56E-09	2.1E+00	3.5E-11	1.01E-07	2.1E+00	4.1E-10
SVOC	Dibenzofuran	132-64-9	D	2.70E+01	1.51E-07			1.00E-01	4.98E-08						4.05E-06		
SVOC	2,4-Dimethylphenol	105-67-9		7.20E+01	4.03E-07			1.00E-01	1.33E-07			3.56E-04			1.08E-05		
SVOC	Di-n-butylphthalate	84-74-2	D	4.80E+02	2.68E-06			1.00E-01	8.86E-07			7.93E-05			7.20E-05		

Construction Scenario Cancer Risk Calculations - at AOI W-01
General Motors - Pontiac North Campus, Pontiac, Michigan

				Soil Ingestion				Soil Dermal Contact				Soil Vapor Inhalation			Soil Particulate Inhalation		
Chem Group	**Chemical**	**CASRN**	**Cancer Class**	**C_{soil}** (mg/kg)	**LADD** (mg/kg/d)	**SF_{oral}** $(mg/kg/d)^{-1}$	**Risk**	**AF_{derm}**	**LADD** (mg/kg/d)	**SF_{derm}** $(mg/kg/d)^{-1}$	**Risk**	**C_{air}** (mg/m^3)	**URF** (m^3/mg)	**Risk**	**C_{air}** (mg/m^3)	**URF** (m^3/mg)	**Risk**
SVOC	Di-n-octylphthalate	117-84-0		3.70E+01	2.07E-07			1.00E-01	6.83E-08			8.05E-07			5.55E-06		
SVOC	Fluoranthene	206-44-0	D	8.20E+01	4.58E-07			1.30E-01	1.97E-07			3.50E-05			1.23E-05		
SVOC	Fluorene	86-73-7	D	3.60E+01	2.01E-07			1.30E-01	8.64E-08			9.20E-05			5.40E-06		
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	3.70E+00	2.07E-08	7.3E-01	1.5E-08	1.30E-01	8.88E-09	7.3E-01	6.5E-09	1.05E-08	2.1E-01	4.3E-12	5.55E-07	2.1E-01	2.3E-10
SVOC	2-Methylnaphthalene	91-57-6	ID	1.24E+01	6.93E-08			1.00E-01	2.29E-08						1.86E-06		
SVOC	Methylphenol (total)	1319-77-3		1.25E+02	6.99E-07			1.00E-01	2.31E-07			7.44E-04			1.88E-05		
SVOC	Naphthalene	91-20-3	C	1.80E+01	1.01E-07			1.30E-01	4.32E-08			4.21E-04			2.70E-06		
SVOC	Phenanthrene	85-01-8	D	1.10E+02	6.15E-07			1.30E-01	2.64E-07			1.43E-04			1.65E-05		
SVOC	Phenol	108-95-2	ID	1.40E+02	7.83E-07			1.00E-01	2.58E-07			1.00E-03			2.10E-05		
SVOC	Pyrene	129-00-0	D	5.00E+01	2.80E-07			1.30E-01	1.20E-07			1.72E-05			7.50E-06		
P/PCB	PCBs (total)	1336-36-3	B2	1.42E+01	7.94E-08	2.0E+00	1.6E-07	1.40E-01	3.67E-08	2.0E+00	7.3E-08	7.23E-05	5.7E-01	8.1E-08	2.13E-06	5.7E-01	2.4E-09
INORG	Aluminum	7429-90-5	D	1.08E+04	6.04E-05										1.62E-03		
INORG	Antimony	7440-36-0		1.74E+03	9.73E-06										2.61E-04		
INORG	Arsenic	7440-38-2	A	4.43E+01	2.48E-07	1.5E+00	3.7E-07	3.00E-02	2.45E-08	1.5E+00	3.7E-08		4.3E+00		6.65E-06	4.3E+00	5.6E-08
INORG	Barium	7440-39-3	D	5.72E+03	3.20E-05										8.58E-04		
INORG	Beryllium	7440-41-7	B1	1.05E+00	5.87E-09								2.4E+00		1.58E-07	2.4E+00	7.4E-10
INORG	Cadmium	7440-43-9	B1	1.56E+01	8.72E-08			1.00E-03	2.88E-10				1.8E+00		2.34E-06	1.8E+00	8.2E-09
INORG	Chromium (total)	7440-47-3		1.66E+03	9.28E-06								1.2E+01		2.49E-04	1.2E+01	5.8E-06
INORG	Chromium III	16065-83-1	D	3.77E+02	2.11E-06										5.65E-05		
INORG	Cobalt	7440-48-4	B1	6.44E+01	3.60E-07								2.8E+00		9.66E-06	2.8E+00	5.3E-08
INORG	Copper	7440-50-8	D	4.70E+03	2.63E-05										7.05E-04		
INORG	Cyanide (total)	57-12-5	D	4.10E+00	2.29E-08										6.15E-07		
INORG	Iron	7439-89-6	D	3.76E+05	2.10E-03										5.64E-02		
INORG	Lead	7439-92-1	B2	3.95E+03	2.21E-05										5.93E-04		
INORG	Manganese	7439-96-5	D	1.86E+03	1.04E-05										2.79E-04		
INORG	Mercury	7439-97-6	D	4.65E+00	2.60E-08							3.30E-05			6.98E-07		
INORG	Nickel	7440-02-0	A	6.01E+02	3.36E-06								2.4E-01		9.02E-05	2.4E-01	4.2E-08
INORG	Selenium	7782-49-2	D	7.67E+00	4.29E-08										1.15E-06		
INORG	Silver	7440-22-4	D	6.96E+01	3.89E-07										1.04E-05		
INORG	Thallium	7440-28-0		7.72E+00	4.32E-08										1.16E-06		
INORG	Tin	7440-31-5		8.40E+01	4.70E-07										1.26E-05		
INORG	Vanadium	7440-62-2		6.14E+01	3.43E-07										9.21E-06		
INORG	Zinc	7440-66-6	D	7.40E+03	4.14E-05										1.11E-03		
CDD/F	2,3,7,8-TCDD	1746-01-6	B2	1.89E-03	1.06E-11	1.5E+05	1.6E-06			1.5E+05		1.92E-10	3.3E+04	1.2E-08	2.84E-10	3.3E+04	1.8E-08
		Cumulative Risk:					**2.6E-06**				**3.3E-07**			**1.3E-07**			**6.0E-06**

Construction Scenario Hazard Index Calculations - at AOI W-01
General Motors - Pontiac North Campus, Pontiac, Michigan

				Soil Ingestion				Soil Dermal Contact				Soil Vapor Inhalation			Soil Particulate Inhalation		
Chem Group	Chemical	CASRN	Cancer Class	C_{soil} (mg/kg)	ADD (mg/kg/d)	RfD_{oral} (mg/kg/d)	HQ	AF_{derm}	ADD (mg/kg/d)	RfD_{derm} (mg/kg/d)	HQ	C_{air} (mg/m^3)	RfC (mg/m^3)	HQ	C_{air} (mg/m^3)	RfC (mg/m^3)	HQ
VOC	Acetone	67-64-1	ID	2.20E+00	8.61E-08	9.0E-01	9.6E-08			9.0E-01		2.29E-04	3.2E+00	9.9E-07	3.30E-07	3.2E+00	1.4E-09
VOC	Benzene	71-43-2	A	7.20E-01	2.82E-08	4.0E-03	7.0E-06			4.0E-03		3.44E-04	3.0E-02	1.6E-04	1.08E-07	3.0E-02	4.9E-08
VOC	2-Butanone	78-93-3	D	2.30E+00	9.00E-08	6.0E-01	1.5E-07			6.0E-01		2.39E-04	1.0E+00	3.3E-06	3.45E-07	1.0E+00	4.7E-09
VOC	Carbon Disulfide	75-15-0		9.60E-03	3.76E-10	1.0E-01	3.8E-09			1.0E-01		1.05E-05	7.0E-01	2.1E-07	1.44E-09	7.0E-01	2.8E-11
VOC	Chlorobenzene	108-90-7	D	1.10E-01	4.31E-09	2.0E-02	2.2E-07			2.0E-02		2.29E-05	6.0E-02	5.2E-06	1.65E-08	6.0E-02	3.8E-09
VOC	Chloroethane	75-00-3		5.20E-03	2.04E-10	4.0E-01	5.1E-10			4.0E-01		4.86E-06	1.0E+01	6.7E-09	7.80E-10	1.0E+01	1.1E-12
VOC	Cumene	98-82-8	D	1.10E+00	4.31E-08	1.0E-01	4.3E-07			1.0E-01		8.56E-04	4.0E-01	2.9E-05	1.65E-07	4.0E-01	5.7E-09
VOC	Cyclohexane	110-82-7		3.00E-01	1.17E-08								2.0E+01		4.50E-08	2.0E+01	3.1E-11
VOC	1,2-Dichlorobenzene	95-50-1	D	4.50E-01	1.76E-08	9.0E-02	2.0E-07			9.0E-02		4.01E-05	2.0E-01	2.7E-06	6.75E-08	2.0E-01	4.6E-09
VOC	1,3-Dichlorobenzene	541-73-1	D	1.10E-01	4.31E-09	9.0E-02	4.8E-08			9.0E-02		5.89E-06	1.4E-01	5.8E-07	1.65E-08	1.4E-01	1.6E-09
VOC	1,4-Dichlorobenzene	106-46-7	C	2.60E-03	1.02E-10	3.0E-02	3.4E-09			3.0E-02		2.62E-07	8.0E-01	4.5E-09	3.90E-10	8.0E-01	6.7E-12
VOC	Dichlorodifluoromethane	75-71-8		1.40E-03	5.48E-11	2.0E-01	2.7E-10			2.0E-01		1.88E-06	2.0E-01	1.3E-07	2.10E-10	2.0E-01	1.4E-11
VOC	1,1-Dichloroethane	75-34-3	C	1.70E-01	6.65E-09	1.0E-01	6.7E-08			1.0E-01		9.15E-05	5.0E-01	2.5E-06	2.55E-08	5.0E-01	7.0E-10
VOC	cis-1,2-Dichloroethene	156-59-2	D	1.40E+00	5.48E-08	1.0E-02	5.5E-06			1.0E-02		6.29E-04	3.5E-02	2.5E-04	2.10E-07	3.5E-02	8.2E-08
VOC	trans-1,2-Dichloroethene	156-60-5		1.80E-01	7.05E-09	2.0E-02	3.5E-07			2.0E-02		1.01E-04	7.0E-02	2.0E-05	2.70E-08	7.0E-02	5.3E-09
VOC	Ethyl Benzene	100-41-4	D	2.50E+01	9.78E-07	1.0E-01	9.8E-06			1.0E-01		6.05E-03	1.0E+00	8.3E-05	3.75E-06	1.0E+00	5.1E-08
VOC	2-Hexanone	591-78-6		1.58E-02	6.16E-10	4.0E-02	1.5E-08			4.0E-02			5.0E-03		2.36E-09	5.0E-03	6.5E-09
VOC	Methyl Acetate	79-20-9		3.40E+01	1.33E-06	1.0E+00	1.3E-06			1.0E+00		4.87E-03	3.5E+00	1.9E-05	5.10E-06	3.5E+00	2.0E-08
VOC	4-Methyl-2-pentanone	108-10-1	ID	6.80E-01	2.66E-08							8.00E-05	3.0E+00	3.7E-07	1.02E-07	3.0E+00	4.7E-10
VOC	Methylcyclohexane	108-87-2		1.40E+00	5.48E-08								3.0E+00		2.10E-07	3.0E+00	9.6E-10
VOC	Methylene Chloride	75-09-2	B2	2.50E+01	9.78E-07	6.0E-02	1.6E-05			6.0E-02		1.31E-02	3.0E+00	6.0E-05	3.75E-06	3.0E+00	1.7E-08
VOC	Pentachloroethane	76-01-7		9.90E-02	3.87E-09										1.49E-08		
VOC	Tetrachloroethene	127-18-4	C-B2	5.60E+00	2.19E-07	1.0E-02	2.2E-05			1.0E-02		2.87E-03	4.0E-01	9.8E-05	8.40E-07	4.0E-01	2.9E-08
VOC	Toluene	108-88-3	D	4.20E+01	1.64E-06	2.0E-01	8.2E-06			2.0E-01		1.38E-02	4.0E-01	4.7E-04	6.30E-06	4.0E-01	2.2E-07
VOC	1,1,1-Trichloroethane	71-55-6	D	3.90E-03	1.53E-10	2.8E-01	5.5E-10			2.8E-01		2.30E-06	2.2E+00	1.4E-08	5.85E-10	2.2E+00	3.6E-12
VOC	Trichloroethene	79-01-6	C-B2	2.30E+00	9.00E-08	6.0E-03	1.5E-05			6.0E-03		9.21E-04			3.45E-07		
VOC	Trichlorofluoromethane	75-69-4		1.50E-03	5.87E-11	3.0E-01	2.0E-10			3.0E-01		1.53E-06	7.0E-01	3.0E-08	2.25E-10	7.0E-01	4.4E-12
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		8.90E-03	3.48E-10	3.0E+01	1.2E-11			3.0E+01		7.70E-06	3.0E+01	3.5E-09	1.34E-09	3.0E+01	6.1E-13
VOC	Vinyl Chloride	75-01-4	A	9.50E-03	3.72E-10	3.0E-03	1.2E-07			3.0E-03		1.20E-05	1.0E-01	1.6E-06	1.43E-09	1.0E-01	2.0E-10
VOC	Xylenes (total)	1330-20-7	ID	1.50E+02	5.87E-06	2.0E-01	2.9E-05			2.0E-01			1.0E-01		2.25E-05	1.0E-01	3.1E-06
SVOC	Acenaphthene	83-32-9		3.60E+01	1.41E-06	6.0E-02	2.3E-05	1.30E-01	6.04E-07	6.0E-02	1.0E-05	2.15E-04	2.1E-01	1.4E-05	5.40E-06	2.1E-01	3.5E-07
SVOC	Acenaphthylene	208-96-8	D	2.00E+00	7.83E-08	3.0E-02	2.6E-06	1.30E-01	3.36E-08	3.0E-02	1.1E-06		1.1E-01		3.00E-07	1.1E-01	3.9E-08
SVOC	Anthracene	120-12-7	D	2.10E+01	8.22E-07	3.0E-01	2.7E-06	1.30E-01	3.53E-07	3.0E-01	1.2E-06	1.28E-05			3.15E-06		
SVOC	Atrazine	1912-24-9		9.60E-02	3.76E-09	3.5E-02	1.1E-07	1.00E-01	1.24E-09	3.5E-02	3.5E-08	1.96E-07	1.2E-01	2.2E-08	1.44E-08	1.2E-01	1.6E-09
SVOC	Benzo(a)anthracene	56-55-3	B2	1.50E+01	5.87E-07			1.30E-01	2.52E-07			2.08E-06			2.25E-06		
SVOC	Benzo(a)pyrene	50-32-8	B2	8.60E+00	3.37E-07			1.30E-01	1.44E-07			4.61E-07			1.29E-06		
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.10E+01	4.31E-07			1.30E-01	1.85E-07			3.10E-06			1.65E-06		
SVOC	Benzo(g,h,i)perylene	191-24-2	D	4.50E+00	1.76E-07	3.0E-02	5.9E-06	1.30E-01	7.56E-08	3.0E-02	2.5E-06		1.1E-01		6.75E-07	1.1E-01	8.8E-08
SVOC	Benzo(k)fluoranthene	207-08-9	B2	5.30E+00	2.07E-07			1.30E-01	8.90E-08			1.77E-07			7.95E-07		
SVOC	Biphenyl	92-52-4	D	3.40E+00	1.33E-07	5.0E-02	2.7E-06	1.00E-01	4.39E-08	5.0E-02	8.8E-07		1.8E-01		5.10E-07	1.8E-01	4.0E-08
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	7.60E+01	2.97E-06	2.0E-02	1.5E-04	1.00E-01	9.82E-07	2.0E-02	4.9E-05	4.66E-07			1.14E-05		
SVOC	Butylbenzylphthalate	85-68-7	C	1.10E+03	4.31E-05	2.0E-01	2.2E-04	1.00E-01	1.42E-05	2.0E-01	7.1E-05	1.46E-04	7.0E-01	2.8E-06	1.65E-04	7.0E-01	3.2E-06
SVOC	Carbazole	86-74-8	B2	1.10E+01	4.31E-07			1.00E-01	1.42E-07			5.49E-06			1.65E-06		
SVOC	Chrysene	218-01-9	B2	1.60E+01	6.26E-07			1.30E-01	2.69E-07			1.83E-06			2.40E-06		
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	6.70E-01	2.62E-08			1.30E-01	1.12E-08			8.56E-09			1.01E-07		
SVOC	Dibenzofuran	132-64-9	D	2.70E+01	1.06E-06	2.0E-03	5.3E-04	1.00E-01	3.49E-07	2.0E-03	1.7E-04		7.0E-03		4.05E-06	7.0E-03	7.9E-06
SVOC	2,4-Dimethylphenol	105-67-9		7.20E+01	2.82E-06	2.0E-02	1.4E-04	1.00E-01	9.30E-07	2.0E-02	4.6E-05	3.56E-04	7.0E-02	7.0E-05	1.08E-05	7.0E-02	2.1E-06
SVOC	Di-n-butylphthalate	84-74-2	D	4.80E+02	1.88E-05	1.0E-01	1.9E-04	1.00E-01	6.20E-06	1.0E-01	6.2E-05	7.93E-05			7.20E-05		

Construction Scenario Hazard Index Calculations - at AOI W-01
General Motors - Pontiac North Campus, Pontiac, Michigan

				Soil Ingestion				Soil Dermal Contact				Soil Vapor Inhalation			Soil Particulate Inhalation		
Chem Group	Chemical	CASRN	Cancer Class	C_{soil} (mg/kg)	ADD (mg/kg/d)	RfD_{oral} (mg/kg/d)	HQ	AF_{derm}	ADD (mg/kg/d)	RfD_{derm} (mg/kg/d)	HQ	C_{air} (mg/m^3)	RfC (mg/m^3)	HQ	C_{air} (mg/m^3)	RfC (mg/m^3)	HQ
SVOC	Di-n-octylphthalate	117-84-0		3.70E+01	1.45E-06	2.0E-02	7.2E-05	1.00E-01	4.78E-07	2.0E-02	2.4E-05	8.05E-07	7.0E-02	1.6E-07	5.55E-06	7.0E-02	1.1E-06
SVOC	Fluoranthene	206-44-0	D	8.20E+01	3.21E-06	4.0E-02	8.0E-05	1.30E-01	1.38E-06	4.0E-02	3.4E-05	3.50E-05	1.4E-01	3.4E-06	1.23E-05	1.4E-01	1.2E-06
SVOC	Fluorene	86-73-7	D	3.60E+01	1.41E-06	4.0E-02	3.5E-05	1.30E-01	6.04E-07	4.0E-02	1.5E-05	9.20E-05	1.4E-01	9.0E-06	5.40E-06	1.4E-01	5.3E-07
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	3.70E+00	1.45E-07			1.30E-01	6.21E-08			1.05E-08			5.55E-07		
SVOC	2-Methylnaphthalene	91-57-6	ID	1.24E+01	4.85E-07	2.0E-02	2.4E-05	1.00E-01	1.60E-07	2.0E-02	8.0E-06		3.0E-03		1.86E-06	3.0E-03	8.5E-06
SVOC	Methylphenol (total)	1319-77-3		1.25E+02	4.89E-06	5.0E-02	9.8E-05	1.00E-01	1.61E-06	5.0E-02	3.2E-05	7.44E-04	1.8E-01	5.8E-05	1.88E-05	1.8E-01	1.5E-06
SVOC	Naphthalene	91-20-3	C	1.80E+01	7.05E-07	2.0E-02	3.5E-05	1.30E-01	3.02E-07	2.0E-02	1.5E-05	4.21E-04	3.0E-03	1.9E-03	2.70E-06	3.0E-03	1.2E-05
SVOC	Phenanthrene	85-01-8	D	1.10E+02	4.31E-06	3.0E-02	1.4E-04	1.30E-01	1.85E-06	3.0E-02	6.2E-05	1.43E-04	1.1E-01	1.9E-05	1.65E-05	1.1E-01	2.2E-06
SVOC	Phenol	108-95-2	ID	1.40E+02	5.48E-06	3.0E-01	1.8E-05	1.00E-01	1.81E-06	3.0E-01	6.0E-06	1.00E-03			2.10E-05		
SVOC	Pyrene	129-00-0	D	5.00E+01	1.96E-06	3.0E-02	6.5E-05	1.30E-01	8.40E-07	3.0E-02	2.8E-05	1.72E-05	1.1E-01	2.2E-06	7.50E-06	1.1E-01	9.8E-07
P/PCB	PCBs (total)	1336-36-3	B2	1.42E+01	5.56E-07	2.0E-05	2.8E-02	1.40E-01	2.57E-07	2.0E-05	1.3E-02	7.23E-05	7.0E-05	1.4E-02	2.13E-06	7.0E-05	4.2E-04
INORG	Aluminum	7429-90-5	D	1.08E+04	4.23E-04	1.0E+00	4.2E-04			1.0E+00			5.0E-03		1.62E-03	5.0E-03	4.4E-03
INORG	Antimony	7440-36-0		1.74E+03	6.81E-05	4.0E-04	1.7E-01			4.0E-04			1.4E-03		2.61E-04	1.4E-03	2.6E-03
INORG	Arsenic	7440-38-2	A	4.43E+01	1.73E-06	3.0E-04	5.8E-03	3.00E-02	1.72E-07	3.0E-04	5.7E-04				6.65E-06		
INORG	Barium	7440-39-3	D	5.72E+03	2.24E-04	7.0E-02	3.2E-03			7.0E-02					8.58E-04		
INORG	Beryllium	7440-41-7	B1	1.05E+00	4.11E-08	2.0E-03	2.1E-05			2.0E-03			2.0E-05		1.58E-07	2.0E-05	1.1E-04
INORG	Cadmium	7440-43-9	B1	1.56E+01	6.11E-07	1.0E-03	6.1E-04	1.00E-03	2.01E-09	1.0E-03	2.0E-06		2.0E-04		2.34E-06	2.0E-04	1.6E-04
INORG	Chromium (total)	7440-47-3		1.66E+03	6.50E-05	3.0E-03	2.2E-02			3.0E-03			1.0E-04		2.49E-04	1.0E-04	3.4E-02
INORG	Chromium III	16065-83-1	D	3.77E+02	1.47E-05	1.5E+00	9.8E-06			1.5E+00			5.3E+00		5.65E-05	5.3E+00	1.5E-07
INORG	Cobalt	7440-48-4	B1	6.44E+01	2.52E-06	2.0E-02	1.3E-04			2.0E-02			2.0E-05		9.66E-06	2.0E-05	6.6E-03
INORG	Copper	7440-50-8	D	4.70E+03	1.84E-04	4.0E-02	4.6E-03			4.0E-02			1.4E-01		7.05E-04	1.4E-01	6.9E-05
INORG	Cyanide (total)	57-12-5	D	4.10E+00	1.60E-07	2.0E-02	8.0E-06			2.0E-02			7.0E-02		6.15E-07	7.0E-02	1.2E-07
INORG	Iron	7439-89-6	D	3.76E+05	1.47E-02	3.0E-01	4.9E-02			3.0E-01					5.64E-02		
INORG	Lead	7439-92-1	B2	3.95E+03	1.55E-04										5.93E-04		
INORG	Manganese	7439-96-5	D	1.86E+03	7.28E-05	1.4E-01	5.2E-04			1.4E-01			5.0E-05		2.79E-04	5.0E-05	7.6E-02
INORG	Mercury	7439-97-6	D	4.65E+00	1.82E-07	3.0E-04	6.1E-04			3.0E-04		3.30E-05	3.0E-04	1.5E-03	6.98E-07	3.0E-04	3.2E-05
INORG	Nickel	7440-02-0	A	6.01E+02	2.35E-05	2.0E-02	1.2E-03			2.0E-02					9.02E-05		
INORG	Selenium	7782-49-2	D	7.67E+00	3.00E-07	5.0E-03	6.0E-05			5.0E-03			1.8E-02		1.15E-06	1.8E-02	9.0E-07
INORG	Silver	7440-22-4	D	6.96E+01	2.72E-06	5.0E-03	5.4E-04			5.0E-03			1.0E-05		1.04E-05	1.0E-05	1.4E-02
INORG	Thallium	7440-28-0		7.72E+00	3.02E-07	7.0E-05	4.3E-03			7.0E-05			2.5E-04		1.16E-06	2.5E-04	6.5E-05
INORG	Tin	7440-31-5		8.40E+01	3.29E-06	6.0E-01	5.5E-06			6.0E-01			2.1E+00		1.26E-05	2.1E+00	8.2E-08
INORG	Vanadium	7440-62-2		6.14E+01	2.40E-06	7.0E-03	3.4E-04			7.0E-03			2.5E-02		9.21E-06	2.5E-02	5.1E-06
INORG	Zinc	7440-66-6	D	7.40E+03	2.90E-04	3.0E-01	9.7E-04			3.0E-01			1.1E+00		1.11E-03	1.1E+00	1.4E-05
CDD/F	2,3,7,8-TCDD	1746-01-6	B2	1.89E-03	7.41E-11							1.92E-10			2.84E-10		
		HI:					**2.9E-01**				**1.4E-02**			**1.9E-02**			**1.4E-01**

Toxicity Values
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	Cancer Class	SF_{oral} $(mg/kg/d)^{-1}$			RfD_{oral} (mg/kg/d)				URF $(ug/m^3)^{-1}$			RfC (mg/m^3)				$SRfD_{oral}$ (mg/kg/d)				SRfC (mg/m^3)			
				Value	Ref	Notes	Value	UF	Ref	Notes	Value	Ref	Notes	Value	UF	Ref	Notes	Value	UF	Ref	Notes	Value	UF	Ref	Notes
VOC	Acetone	67-64-1	ID				9.00E-01	1000	1					3.15E+00	1000	1	4,44	1.00E+00	100	2		3.50E+00	100	2	4,45
VOC	Benzene	71-43-2	A	5.50E-02	1	68	4.00E-03	300	1		7.80E-06	1	60	3.00E-02	300	1		3.00E-03	3000	93		6.00E-02	100	94	50,69
VOC	Bromomethane	74-83-9	D				1.40E-03	1000	1					5.00E-03	100	1		5.00E-03	300	25		2.00E-01	30	24	
VOC	2-Butanone	78-93-3	ID				6.00E-01	1000	1					5.00E+00	300	1		2.00E+00	1000	2		7.00E+00	1000	2	4,45
VOC	Carbon Disulfide	75-15-0					1.00E-01	100	1					7.00E-01	30	1		1.00E-01	100	2	2	7.00E-01	30	2	2
VOC	Chlorobenzene	108-90-7	D				2.00E-02	1000	1					6.00E-02	1000	103									
VOC	Chloroethane	75-00-3		2.90E-03	3		4.00E-01		3					1.00E+01	300	1						1.00E+01	300	2	2
VOC	Cumene	98-82-8	D				1.00E-01	1000	1					4.00E-01	1000	1		4.00E-01	300	2		1.40E+00	300	2	4,45
VOC	Cyclohexane	110-82-7	ID											6.00E+00	300	1									
VOC	1,2-Dichlorobenzene	95-50-1	D				9.00E-02	1000	1					2.00E-01	1000	2	3					2.00E+00	100	2	3
VOC	1,3-Dichlorobenzene	541-73-1	D				9.00E-02	1000	1	10				1.40E-01	1000	2	3,10,44								
VOC	1,4-Dichlorobenzene	106-46-7	C	2.40E-02	2	6	3.00E-02		3		6.29E-06	3	45	8.00E-01	100	1						2.50E+00	30	2	
VOC	Dichlorodifluoromethane	75-71-8					2.00E-01	100	1					2.00E-01	10000	2		9.00E-01	100	2		2.00E+00	1000	2	
VOC	1,1-Dichloroethane	75-34-3	C				1.00E-01	1000	2	26,6				5.00E-01	1000	2	3	1.00E+00	100	2	26	5.00E+00	100	2	3
VOC	1,1-Dichloroethene	75-35-4	C				5.00E-02	100	1					2.00E-01	30	1									
VOC	cis-1,2-Dichloroethene	156-59-2	D				1.00E-02	3000	2	6				3.50E-02	3000	2	6,4,44	1.00E-01	300	2		3.50E-01	300	2	4,45
VOC	Ethyl Benzene	100-41-4	D				1.00E-01	1000	1					1.00E+00	300	1		1.00E-01	1000	22		1.00E+00	300	28	2
VOC	2-Hexanone	591-78-6					4.00E-02	10000	40					5.00E-03	10000	108									
VOC	Methyl Acetate	79-20-9					1.00E+00	1000	2					3.50E+00	1000	2	4,44	1.00E+01	100	2		3.50E+01	100	2	4,45
VOC	4-Methyl-2-pentanone	108-10-1	ID						1	90				3.00E+00	300	1									
VOC	Methylcyclohexane	108-87-2												3.00E+00	100	2						3.00E+00	100	2	
VOC	Methylene Chloride	75-09-2	B2	7.50E-03	1		6.00E-02	100	1		4.70E-07	1		3.00E+00	100	2		6.00E-02	100	2	2	3.00E+00	100	2	
VOC	Pentachloroethane	76-01-7																							
VOC	Tetrachloroethene	127-18-4	C-B2	5.20E-02	77		1.00E-02	1000	1		3.06E-06	77		4.00E-01	300	109	94	1.00E-01	100	2					
VOC	Toluene	108-88-3	D				2.00E-01	1000	1					4.00E-01	300	1		2.00E+00	100	2		1.00E+00	300	27	
VOC	1,1,1-Trichloroethane	71-55-6	D				2.80E-01	90	72					2.20E+00	90	73		2.80E+00	90	72		2.20E+01	90	73	
VOC	Trichloroethene	79-01-6	C-B2	1.10E-02	49		6.00E-03	3000	46	6, 97	1.70E-06	49													
VOC	Trichlorofluoromethane	75-69-4					3.00E-01	1000	1					7.00E-01	10000	2	3	7.00E-01	1000	2	93	7.00E+00	1000	2	3
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1					3.00E+01	10	1					3.00E+01	100	2						3.00E+01	100	2	
VOC	Xylenes (total)	1330-20-7	ID				2.00E-01	1000	1					1.00E-01	300	1		4.00E-01	1000	64		1.40E+00	1000	64	4,45
SVOC	Acenaphthene	83-32-9					6.00E-02	3000	1					2.10E-01	3000	1	4,44	6.00E-01	300	2		2.10E+00	300	2	4,45
SVOC	Acenaphthylene	208-96-8	D				3.00E-02	3000	1	20				1.05E-01	3000	1	20,4,44	3.00E-01	300	2	20	1.05E+00	300	2	20,4,45
SVOC	Anthracene	120-12-7	D				3.00E-01	3000	1							2	90	3.00E+00	300	2		1.05E+01	300	2	4,45
SVOC	Benzo(a)anthracene	56-55-3	B2	7.30E-01	10	5					2.09E-04	10	5,4,45												
SVOC	Benzo(a)pyrene	50-32-8	B2	7.30E+00	1						8.86E-04	3	45												
SVOC	Benzo(b)fluoranthene	205-99-2	B2	7.30E-01	10	5					2.09E-04	10	5,4,45												
SVOC	Benzo(g,h,i)perylene	191-24-2	D				3.00E-02	3000	1	20				1.05E-01	3000	1	20,4,44	3.00E-01	300	2	20	1.05E+00	300	2	20,4,45
SVOC	Benzo(k)fluoranthene	207-08-9	B2	7.30E-02	10	5					2.09E-05	10	5,4,45												
SVOC	Biphenyl	92-52-4	D				5.00E-02	1000	1					1.75E-01	1000	1	4,44								
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	1.40E-02	1		2.00E-02	1000	1		4.00E-06	3	45									2.00E-01	100	16	
SVOC	Butylbenzylphthalate	85-68-7	C				2.00E-01	1000	1					7.00E-01	1000	1	4,44	2.00E+00	100	2		7.00E+00	100	2	4,45
SVOC	Carbazole	86-74-8	B2	2.00E-02	2						5.71E-06	2	4,45												
SVOC	Chrysene	218-01-9	B2	7.30E-03	10	5					2.09E-06	10	5,4,45												
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	7.30E+00	10	5					2.09E-03	10	5,4,45												
SVOC	Dibenzofuran	132-64-9	D				2.00E-03		3					7.00E-03		3	4,44								
SVOC	2,4-Dimethylphenol	105-67-9					2.00E-02	3000	1					7.00E-02	3000	1	4,44	2.00E-01	300	2		7.00E-01	300	2	4,45
SVOC	Di-n-butylphthalate	84-74-2	D				1.00E-01	1000	1	6						1	90	1.00E+00	100	2		3.50E+00	100	2	4,45
SVOC	Di-n-octylphthalate	117-84-0					2.00E-02	1000	2					7.00E-02	1000	2	4,44	2.00E-02	1000	2		7.00E-02	1000	2	4,45
SVOC	Fluoranthene	206-44-0	D				4.00E-02	3000	1					1.40E-01	3000	1	4,44	4.00E-01	300	2		1.40E+00	300	2	4,45
SVOC	Fluorene	86-73-7	D				4.00E-02	3000	1					1.40E-01	3000	1	4,44	4.00E-01	300	2		1.40E+00	300	2	4,45
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	7.30E-01	10	5					2.09E-04	10	5,4,45												
SVOC	2-Methylnaphthalene	91-57-6	ID				2.00E-02	3000	118					3.00E-03	3000	1	61								
SVOC	Methylphenol (total)	1319-77-3					5.00E-02		1	99				1.75E-01		1	99,4,44								
SVOC	Naphthalene	91-20-3	C				2.00E-02	3000	1					3.00E-03	3000	1									
SVOC	Phenanthrene	85-01-8	D				3.00E-02	3000	1	20				1.05E-01	3000	1	20,4,44	3.00E-01	300	2	20	1.05E+00	300	2	20,4,45
SVOC	Phenol	108-95-2	ID				3.00E-01	300	1							1	90,98								
SVOC	Pyrene	129-00-0	D				3.00E-02	3000	1					1.05E-01	3000	1	4,44	3.00E-01	300	2		1.05E+00	300	2	4,45
P/PCB	PCBs (total)	1336-36-3	B2	2.00E+00	1	30,32	2.00E-05	300	1	72	5.71E-04	1	30,32,45					5.00E-05	100	2	72				
INORG	Aluminum	7429-90-5	D		90	90	1.00E+00	100	85			90	90	5.00E-03	300	84									
INORG	Antimony	7440-36-0					4.00E-04	1000	1					1.40E-03	1000	1	4,44	4.00E-04	1000	2		4.00E-04	100	99	91
INORG	Arsenic	7440-38-2	A	1.50E+00	1		3.00E-04	3	1		4.30E-03	1						5.00E-03	10	100					
INORG	Barium	7440-39-3	D				7.00E-02	3	1							1	90	7.00E-02	3	2	2	2.45E-01	3	2	2,4,45
INORG	Beryllium	7440-41-7	B1				2.00E-03	300	1		2.40E-03	1		2.00E-05	10	1									
INORG	Cadmium	7440-43-9	B1				1.00E-03	10	1	95	1.80E-03	1		2.00E-04		3	44					9.00E-04		122	102
INORG	Calcium	7440-70-2																							
INORG	Chromium (total)	7440-47-3					3.00E-03	900	1	8	1.20E-02	1	8	1.00E-04	300	1	59,8	2.00E-02	100	2	8				
INORG	Chromium III	16065-83-1	D				1.50E+00	1000	1					5.25E+00	1000	1	4,44								
INORG	Chromium VI	18540-29-9	A				3.00E-03	900	1		1.20E-02	1		1.00E-04	300	1	59	2.00E-02	100	2					
INORG	Cobalt	7440-48-4	B1				2.00E-02	10	105		2.80E-03	106		2.00E-05	100	86									
INORG	Copper	7440-50-8	D				4.00E-02	2	50	49				1.40E-01	2	50	49,4,44								
INORG	Cyanide (total)	57-12-5	D				2.00E-02	500	1					7.00E-02	500	1	4,44	2.00E-02	500	2	2	7.00E-02	500	2	2,4,45

Toxicity Values
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	Cancer Class	SF_{oral} $(mg/kg/d)^{-1}$			RfD_{oral} (mg/kg/d)				URF $(ug/m^3)^{-1}$			RfC (mg/m^3)				$SRfD_{oral}$ (mg/kg/d)				SRfC (mg/m^3)			
				Value	Ref	Notes	Value	UF	Ref	Notes	Value	Ref	Notes	Value	UF	Ref	Notes	Value	UF	Ref	Notes	Value	UF	Ref	Notes
INORG	Iron	7439-89-6	D		91	90	3.00E-01	1	87			91	90			92	90								
INORG	Lead	7439-92-1	B2																						
INORG	Magnesium	7439-95-4					9.70E+00		63	92				3.40E+01		63	92,4,44								
INORG	Manganese	7439-96-5	D				1.40E-01	1	1	36				5.00E-05	1000	1									
INORG	Mercury	7439-97-6	D				3.00E-04	1000	1	51				3.00E-04	30	1		3.00E-04	1000	2		3.00E-04	30	2	
INORG	Nickel	7440-02-0	A				2.00E-02	300	1		2.40E-04	1						2.00E-02	300	2	2				
INORG	Potassium	7440-09-7																							
INORG	Selenium	7782-49-2	D				5.00E-03	3	1					1.75E-02	3	1	4,44	5.00E-03	3	2	2	1.75E-02	3	2	2,4,45
INORG	Silver	7440-22-4	D				5.00E-03	3	1					1.00E-05	1000	83		5.00E-03	3	2	2	1.75E-02	3	2	2,4,45
INORG	Sodium	7440-23-5																							
INORG	Thallium	7440-28-0					7.00E-05	3000	52	49				2.45E-04	3000	52	49,4,44								
INORG	Tin	7440-31-5					6.00E-01		2					2.10E+00		2	4,44								
INORG	Vanadium	7440-62-2					7.00E-03	100	2	6				2.45E-02	100	2	6,4,44	7.00E-03	100	2		2.45E-02	100	2	4,45
INORG	Zinc	7440-66-6	D				3.00E-01	3	1					1.05E+00	3	1	4,44	3.00E-01	3	2	2	1.05E+00	3	2	2,4,45
CDD/F	2,3,7,8-TCDD	1746-01-6	B2	1.50E+05	2	55					3.30E+01	2	26,55,56												

Toxicity Values
General Motors - Pontiac North Campus, Pontiac, Michigan

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118	USEPA. NCEA. 2002. Provisional Toxicity Value Assessment for HWIR: RfD for 2-Methylnapthalene [CASRN 91-57-6]. August.
122	USEPA. NCEA. 1998. Risk Assessment Issue Paper for: Derivation of Provisional Subchronic RfC for Cadmium [CASRN 7440-43-9]. June 14.
Notes:	
3	HEAST Alternate Method.
4	ENVIRON obtained value by route-to-route extrapolation.
5	Based on analogy to Benzo(a)pyrene [CASRN 50-32-8] using USEPA relative potency described in the indicated reference.
6	Under review, according to IRIS.
8	ENVIRON used Chromium VI [CASRN 18540-29-9] value from IRIS (reference 1) as a surrogate.
10	ENVIRON used 1,2-Dichlorobenzene [CASRN 95-50-1] values from IRIS (chronic RfDo) (reference 1) and HEAST (chronic RfDi) (reference 2) as surrogates.
20	ENVIRON used Pyrene [CASRN 129-00-0] value from IRIS (reference 1) as a surrogate.
26	USEPA obtained value by route-to-route extrapolation.
30	Upper-bound slope factor.
32	High risk & persistence tier.Use for: food chain exposure;sediment/soil ingestion;dust/aerosol inhalation;dermal exposure, if an absorption factor has been applied;presence of dioxin-like,tumor-promoting/persistent congeners;all early life exposures.
36	IRIS recommends applying a modifying factor of 3 when using this RfD in assessing exposures to drinking water or soil.
44	ENVIRON derived CRFC from CRFDI value presented in the indicated reference, using standard USEPA methodology presented in HEAST.
45	ENVIRON derived URFI from CSFI value presented in the indicated reference, using standard USEPA methodology presented in HEAST.
49	ENVIRON derived CRFDO from adverse health effect level value presented in the indicated reference.
50	Personal communication with NCEA indicated the supporting paper had been retired.
51	ENVIRON used Mercuric Chloride [CASRN 7487-94-7] value from the indicated reference as a surrogate.
55	Under EPA review. Number subject to change.
56	This toxicity value already incorporates the absorption factor of 75% that is recommended in the cited reference.
59	Chromium VI Particulates.
60	IRIS provides a range of 2.2E-6 to 7.8E-6 (ug/m3)-1 as the Inhalation Unit Risk Factor (URF) for Benzene.
61	ENVIRON used Naphthalene [CASRN 91-20-3] value from indicated reference as a surrogate.
68	IRIS provides a range of 1.5E-2 to 5.5E-2 (mg/kg/d)-1 as the Oral Slope Factor (CSFO) for Benzene.

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69	Personal communication with NCEA indicated the retired paper should be used until a new value is published in IRIS.
72	ENVIRON used Aroclor 1254 [CASRN 11097-69-1] value from the indicated reference as a surrogate for Polychlorinated biphenyls [CASRN 1336-36-3].
90	Inadequate data exist to derive a toxicity value, according to the indicated reference.
91	This criterion is applicable to insoluable forms of the compound occurring as dust or fumes.
92	NCEA directed ENVIRON to use outdated value.
93	Personal communication with NCEA indicated the HEAST LOAEL of 1000 mg and the sRfD of 7E-1mg/kg-day both appear to be incorrect and recommended using the IRIS RfD of 3E-1 as the sRfD.
94	Two provisonal RfC values are presented in the indicated reference (4E-1 and 6E-1 mg/m3). Personal communication with NCEA indicated that either RfC is acceptable and the RfC should be chosen on a case-by-case basis.
95	Diet Criterion.
98	Route-to-route extrapolation is not appropriate, according to the indicated reference.
99	ENVIRON used 3-Methylphenol [CASRN 108-39-4] values from the indicated reference as a surrogate.
102	A dose equivalency factor of 4.5 was applied to the Chronic RfC to derive the Subchronic RfC.

Physical and Chemical Information
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	MW (g/mole)			K_{ow} (unitless)			K_{oc} (L/kg)			K_d (L/kg)			H (unitless)			s (mg/L)			VP (mm Hg)			D_{air} (cm^2/s)			D_{water} (cm^2/s)			ABS_d (unitless)			FA (unitless)		
			Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes
VOC	Acetone	67-64-1	5.81E+01	50		5.80E-01	40		5.75E-01	44					1.59E-03	44		1.00E+06	44		2.30E+02	50	92	1.24E-01	44		1.14E-05	44							
VOC	Benzene	71-43-2	7.81E+01	50		1.30E+02	40		5.89E+01	44					2.28E-01	44		1.75E+03	44		9.50E+01	50	92	8.80E-02	44		9.80E-06	44					1.00E+00	62	
VOC	Bromomethane	74-83-9	9.49E+01	50		1.50E+01	40		1.05E+01	44					2.56E-01	44		1.52E+04	44		1.62E+03	50	92	7.28E-02	44		1.21E-05	44					1.00E+00	62	
VOC	2-Butanone	78-93-3	7.21E+01	50		1.91E+00	65		2.34E+00	65					2.28E-03	50	92	2.40E+05	40		9.53E+01	50	92	9.49E-02	36	27	9.80E-06	40					1.00E+00	62	
VOC	Carbon Disulfide	75-15-0	7.61E+01	50		1.00E+02	40		4.57E+01	44					1.24E+00	44		1.19E+03	44		3.59E+02	50	92	1.04E-01	44		1.00E-05	44					1.00E+00	62	
VOC	Chlorobenzene	108-90-7	1.13E+02	50		7.20E+02	40		2.19E+02	44					1.52E-01	44		4.72E+02	44		1.20E+01	50	92	7.30E-02	44		8.70E-06	44					1.00E+00	62	
VOC	Chloroethane	75-00-3	6.45E+01	50		1.26E+03	65		1.49E+01	3					3.60E-01	50	92	5.68E+03	50	92	1.01E+03	50	92	1.10E-01	36	27	1.53E-06	65					1.00E+00	62	
VOC	Cumene	98-82-8	1.20E+02	50		3.80E+03	40		3.30E+03	40					4.74E+01	50	92	6.13E+01	50	92	4.50E+00	50	92	6.50E-02	65		7.83E-06	65							
VOC	Cyclohexane	110-82-7	8.42E+01	50											7.97E+00	50	92	5.50E+01	50	92	9.69E+01	50	92												
VOC	1,2-Dichlorobenzene	95-50-1	1.47E+02	50		2.70E+03	40		6.17E+02	44					7.79E-02	44		1.56E+02	44		1.36E+00	50	92	6.90E-02	44		7.90E-06	44					1.00E+00	62	
VOC	1,3-Dichlorobenzene	541-73-1	1.47E+02	50		3.39E+03	65		1.70E+03	2					1.27E-01	50	92	1.33E+02	50	93	2.15E+00	50	92	4.14E-02	65		8.85E-06	65					1.00E+00	62	
VOC	1,4-Dichlorobenzene	106-46-7	1.47E+02	50		2.60E+03	40		6.17E+02	44					9.96E-02	44		7.38E+01	44		1.00E+00	50	92	6.90E-02	44		7.90E-06	44					1.00E+00	62	
VOC	Dichlorodifluoromethane	75-71-8	1.21E+02	50		1.40E+02	40		1.30E+02	40					1.40E+01	50	92	2.80E+02	50	92	4.85E+03	50	92	8.00E-02	40		8.00E-06	40					1.00E+00	62	
VOC	1,1-Dichloroethane	75-34-3	9.90E+01	50		6.20E+01	40		3.16E+01	44					2.30E-01	44		5.06E+03	44		2.27E+02	50	92	7.42E-02	44		1.05E-05	44					1.00E+00	62	
VOC	1,1-Dichloroethene	75-35-4	9.69E+01	50		1.30E+02	40		5.89E+01	44					1.07E+00	44		2.25E+03	44		6.00E+02	50	92	9.00E-02	44		1.04E-05	44					1.00E+00	62	
VOC	cis-1,2-Dichloroethene	156-59-2	9.69E+01	50		7.20E+01	40		3.55E+01	44					1.67E-01	44		3.50E+03	44		2.03E+02	50	92	7.36E-02	44		1.13E-05	44							
VOC	Ethyl Benzene	100-41-4	1.06E+02	50		1.33E+03	65		3.63E+02	44					3.23E-01	44		1.69E+02	44		9.60E+00	50	92	7.50E-02	44		7.80E-06	44					1.00E+00	62	
VOC	2-Hexanone	591-78-6	1.00E+02	50											7.15E-02	1					1.16E+01	50	92											
VOC	Methyl Acetate	79-20-9	7.41E+01	55		2.90E+00	65		3.25E+00	65					3.53E-03	65		2.44E+05	65		2.16E+02	65		1.23E-01	65		1.10E-05	65							
VOC	4-Methyl-2-pentanone	108-10-1	1.00E+02	50		1.55E+01	65		1.20E+01	65					5.64E-03	50	92	2.00E+04	65		1.99E+01	50	92	7.50E-02	40		7.80E-06	40					1.00E+00	62	
VOC	Methylcyclohexane	108-87-2	9.82E+01	55																															
VOC	Methylene Chloride	75-09-2	8.49E+01	50		1.80E+01	40		1.17E+01	44					8.98E-02	44		1.30E+04	44		4.33E+02	50	92	1.01E-01	44		1.17E-05	44					1.00E+00	62	
VOC	Pentachloroethane	76-01-7	2.02E+02	50											7.93E-02	50	92	4.80E+02	50	92	3.50E+00	50	92												
VOC	Tetrachloroethene	127-18-4	1.66E+02	50		4.70E+02	40		1.55E+02	44					7.54E-01	44		2.00E+02	44		1.86E+01	50	92	7.20E-02	44		8.20E-06	44					1.00E+00	62	
VOC	Toluene	108-88-3	9.21E+01	50		4.65E+02	65		1.82E+02	44					2.72E-01	44		5.26E+02	44		2.84E+01	50	92	8.70E-02	44		8.60E-06	44					1.00E+00	62	
VOC	1,1,1-Trichloroethane	71-55-6	1.33E+02	50		3.00E+02	40		1.10E+02	44					7.05E-01	44		1.33E+03	44		1.24E+02	50	92	7.80E-02	44		8.80E-06	44					1.00E+00	62	
VOC	Trichloroethene	79-01-6	1.31E+02	50		5.10E+02	40		1.66E+02	44					4.22E-01	44		1.10E+03	44		7.35E+01	50	92	7.90E-02	44		9.10E-06	44					1.00E+00	62	
VOC	Trichlorofluoromethane	75-69-4	1.37E+02	50		3.40E+02	40		1.59E+02	3					3.96E+00	50	92	1.10E+03	50	92	8.03E+02	50	92	8.33E-02	36	27	9.70E-06	40					1.00E+00	62	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.87E+02	50		1.40E+03	40		1.30E+03	40					1.97E+01	50	92	1.70E+02	50	92	3.32E+02	50	92	7.80E-02	40		8.20E-06	40							
VOC	Xylenes (total)	1330-20-7	1.06E+02	1					2.60E+02	34					1.71E-01	1	59		1	61	1.00E+01	1	65	7.20E-02	34		8.00E-06	40							
SVOC	Acenaphthene	83-32-9	1.54E+02	1		8.30E+03	40		7.08E+03	44					6.36E-03	44		4.24E+00	44		2.50E-03	50	92	4.21E-02	44		7.69E-06	44		1.30E-01	62				
SVOC	Acenaphthylene	208-96-8	1.52E+02	50					4.90E+03	34					4.62E-03	50	92	1.61E+01	50	92	9.12E-04	50	92							1.30E-01	62				
SVOC	Anthracene	120-12-7	1.78E+02	50		2.95E+04	65		2.95E+04	44					2.67E-03	44		4.34E-02	44		2.67E-06	50	92	3.24E-02	44		7.74E-06	44		1.30E-01	62				
SVOC	Benzo(a)anthracene	56-55-3	2.28E+02	50		5.00E+05	40		3.98E+05	44					1.37E-04	44		9.40E-03	44		1.05E-07	50	92	5.10E-02	44		9.00E-06	44		1.30E-01	62		1.00E+00	62	
SVOC	Benzo(a)pyrene	50-32-8	2.52E+02	50		1.30E+06	40		1.02E+06	44					4.63E-05	44		1.62E-03	44		5.49E-09	50	92	4.30E-02	44		9.00E-06	44		1.30E-01	62		1.00E+00	62	
SVOC	Benzo(b)fluoranthene	205-99-2	2.52E+02	50		1.60E+06	40		1.23E+06	44					4.55E-03	44		1.50E-03	44		5.00E-07	50	92	2.26E-02	44		5.56E-06	44		1.30E-01	62		1.00E+00	62	
SVOC	Benzo(g,h,i)perylene	191-24-2	2.76E+02	50					1.60E+06	3					5.76E-06	50	92	2.60E-04	50	92	1.01E-10	50	92							1.30E-01	62				
SVOC	Benzo(k)fluoranthene	207-08-9	2.52E+02	50		1.56E+06	65		1.23E+06	44					3.40E-05	44		8.00E-04	44		2.00E-09	50	92	2.26E-02	44		5.56E-06	44		1.30E-01	62				
SVOC	Biphenyl	92-52-4	1.54E+02	50											1.23E-02	50	92	6.03E+00	50	93	9.64E-03	50	92							1.00E-01	62				
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	3.91E+02	50		2.00E+07	40		1.51E+07	44					4.18E-06	44		3.40E-01	44		6.45E-06	50	94	3.51E-02	44		3.66E-06	44		1.00E-01	62		8.00E-01	62	
SVOC	Butylbenzylphthalate	85-68-7	3.12E+02	50		6.90E+04	40		5.75E+04	44					5.17E-05	44		2.69E+00	44		8.25E-06	50	92	1.74E-02	44		4.83E-06	44		1.00E-01	62				
SVOC	Carbazole	86-74-8	1.67E+02	50					3.39E+03	44					6.26E-07	44		7.48E+00	44		5.19E-07	50	90	3.90E-02	44		7.03E-06	44		1.00E-01	62				
SVOC	Chrysene	218-01-9	2.28E+02	50		5.00E+05	40		3.98E+05	44					3.88E-03	44		1.60E-03	44		6.23E-09	50	92	2.48E-02	44		6.21E-06	44		1.30E-01	62		1.00E+00	62	
SVOC	Dibenz(a,h)anthracene	53-70-3	2.78E+02	50		4.90E+06	40		3.80E+06	44					6.03E-07	44		2.49E-03	44		1.00E-10	50	92	2.02E-02	44		5.18E-06	44		1.30E-01	62		6.00E-01	62	
SVOC	Dibenzofuran	132-64-9	1.68E+02	50											5.15E-04	50	92	1.00E+01	50	93	1.80E-04	50	92							1.00E-01	62				
SVOC	2,4-Dimethylphenol	105-67-9	1.22E+02	50		2.30E+02	40		2.09E+02	44					8.20E-05	44		7.87E+03	44		9.80E-02	50	92	5.84E-02	44		8.69E-06	44		1.00E-01	62		1.00E+00	62	
SVOC	Di-n-butylphthalate	84-74-2	2.78E+02	50		4.10E+04	40		3.39E+04	44					3.85E-08	44		1.12E+01	44		7.30E-05	50	92	4.38E-02	44		7.86E-06	44		1.00E-01	62		9.00E-01	62	
SVOC	Di-n-octylphthalate	117-84-0	3.91E+02	50		1.10E+08	40		8.32E+07	44					2.74E-03	44		2.00E-02	44		2.60E-06	50	92	1.51E-02	44		3.58E-06	44		1.00E-01	62				
SVOC	Fluoranthene	206-44-0	2.02E+02	50		1.30E+05	40		1.07E+05	44					6.60E-04	44		2.06E-01	44		7.80E-06	50	94	3.02E-02	44		6.35E-06	44		1.30E-01	62		1.00E+00	62	
SVOC	Fluorene	86-73-7	1.66E+02	50		1.60E+04	40		1.38E+04	44					2.61E-03	44		1.98E+00	44		6.33E-04	50	92	3.63E-02	44		7.88E-06	44		1.30E-01	62				
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	2.76E+02	50		4.50E+06	40		3.47E+06	44					6.56E-05	44		2.20E-05	44		1.00E-10	50	92	1.90E-02	44		5.66E-06	44		1.30E-01	62		6.00E-01	62	
SVOC	2-Methylnaphthalene	91-57-6	1.42E+02	50											2.12E-02	50	92	2.46E+01	50	92	5.50E-02	50	92							1.00E-01	62				
SVOC	Methylphenol (total)	1319-77-3	1.08E+02	50	99				8.60E+01	40	99				3.54E-05	50	92,99	2.27E+04	50	92,99	1.38E-01	50	92,99	7.40E-02	40	99	1.00E-05	40	99	1.00E-01	62				
SVOC	Naphthalene	91-20-3	1.28E+02	50		2.30E+03	40		2.00E+03	44					1.98E-02	44		3.10E+01	44		8.50E-02	50	92	5.90E-02	44		7.50E-06	44		1.30E-01	62		1.00E+00	62	
SVOC	Phenanthrene	85-01-8	1.78E+02	50		3.55E+04	65		1.40E+04	3					9.52E-04	50	92	1.15E+00	50	92	1.12E-04	50	92	3.33E-02	65		7.47E-06	65		1.30E-01	62		1.00E+00	62	
SVOC	Phenol	108-95-2	9.41E+01	50		3.00E+01	40		2.88E+01	44					1.63E-05	44		8.28E+04	44		2.76E-01	50	92	8.20E-02	44		9.10E-06	44		1.00E-01	62		1.00E+00	62	
SVOC	Pyrene	129-00-0	2.02E+02	50		1.30E+05	40		1.05E+05	44					4.51E-04	44		1.35E-01	44		4.59E-06	50	92	2.72E-02	44		7.24E-06	44		1.30E-01	62				
P/PCB	PCBs (total)	1336-36-3	3.28E+02	40		2.00E+06	40		3.09E+05	44					1.06E-01	50	94	7.00E-01	44		7.70E-05	50	92	8.00E-02	40		1.00E-05	40		1.40E-01	62				
INORG	Aluminum	7429-90-5	2.70E+01	50								1.50E+03	35																						
INORG	Antimony	7440-36-0	1.22E+02	50			40	48		65	48	4.50E+01	44	43					1	61					40	48		40	48						
INORG	Arsenic	7440-38-2	7.49E+01	50			40	48		65	48	2.90E+01	44	43					1	61					40	48		40	48	3.00E-02	62				
INORG	Barium	7440-39-3	1.37E+02	50			40	48		65	48	4.10E+01	44	43					1	60					40	48		40	48						
INORG	Beryllium	7440-41-7	9.01E+00	50			40	48		65	48	7.90E+02	44	43					1	61					40	48		40	48						
INORG	Cadmium	7440-43-9	1.12E+02	50			40	48		65	48	7.50E+01	44	43					1	61		40	48		40	48		40	48	1.00E-03	62				

Physical and Chemical Information
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	MW (g/mole)			K_{ow} (unitless)			K_{oc} (L/kg)			K_d (L/kg)			H (unitless)			s (mg/L)			VP (mm Hg)			D_{air} (cm^2/s)			D_{water} (cm^2/s)			ABS_d (unitless)			FA (unitless)		
			Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes
INORG	Calcium	7440-70-2	4.01E+01	50								4.00E+00	35																						
INORG	Chromium (total)	7440-47-3	5.20E+01	50			65	48		65	48	1.90E+01	44	43,45					1	61					40	48		40	48						
INORG	Chromium III	16065-83-1	5.20E+01	50								1.80E+06	44	43																				
INORG	Chromium VI	18540-29-9	5.20E+01	50			40	48		65	48	1.90E+01	44	43								40	48		40	48		40	48						
INORG	Cobalt	7440-48-4	5.89E+01	50								4.50E+01	35						1	61														
INORG	Copper	7440-50-8	6.35E+01	50			40	48				3.50E+01	35						1	61					40	48		40	48						
INORG	Cyanide (total)	57-12-5	2.60E+01	1			65	100		65	100	9.90E+00	44	43		65	100		65	100	1.38E+01	65		5.48E-01	65		2.10E-05	65						
INORG	Iron	7439-89-6	5.58E+01	50								2.50E+01	35																					
INORG	Lead	7439-92-1	2.07E+02	50			40	48		65	48	9.00E+02	35						1	61					40	48		40	48						
INORG	Magnesium	7439-95-4	2.43E+01	50								4.50E+00	35																					
INORG	Manganese	7439-96-5	5.49E+01	50								6.50E+01	35																					
INORG	Mercury	7439-97-6	2.01E+02	50			40	48		65	48				2.90E-01	65		5.60E-02	1		1.96E-03	50	92	3.07E-02	44		6.30E-06	44						
INORG	Nickel	7440-02-0	5.87E+01	50			40	48		65	48	6.50E+01	44	43					1	61					40	48		40	48						
INORG	Potassium	7440-09-7	3.91E+01	50								5.50E+00	35																					
INORG	Selenium	7782-49-2	7.90E+01	50			40	48		65	48	5.00E+00	44	43					40	48		40	48		40	48		40	48						
INORG	Silver	7440-22-4	1.08E+02	50			40	48		65	48	8.30E+00	44	43					1	61					40	48		40	48						
INORG	Sodium	7440-23-5	2.30E+01	50								1.00E+02	35																					
INORG	Thallium	7440-28-0	2.04E+02	50			40	48		65	48	7.10E+01	44	43					1	61					40	48		40	48						
INORG	Tin	7440-31-5	1.19E+02	1								2.50E+02	35						1	61														
INORG	Vanadium	7440-62-2	5.09E+01	50			40	48				1.00E+03	44	43					1	61		40	48		40	48		40	48						
INORG	Zinc	7440-66-6	6.54E+01	50			40	48		65	48	6.20E+01	44	43					1	61					40	48		40	48						
CDD/F	2,3,7,8-TCDD	1746-01-6	3.22E+02	50					1.40E+07	40					3.24E-03	50	92	7.91E-06	50	93	1.49E-09	50	92	4.70E-02	40		8.00E-06	40		3.00E-02	62	109	5.00E-01	62	

Physical and Chemical Information
General Motors - Pontiac North Campus, Pontiac, Michigan

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34	USEPA. 1994. Technical Background for Soil Screening Guidance. Office of Emergency and Remedial Response. EPA/540/R-94/106. Review Draft. November.
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36	USEPA. 1988. Superfund Exposure Assessment Manual (SEAM). Office of Remedial Response. OSWER Directive 9285.5-1. EPA/540/1-88-/001 Pre-publication Edition. April.
40	Research Triangle Institute, Center for Environmental Analysis. 1995. Supplemental Technical Support Document for Hazardous Waste Identification Rule: Risk Assessment for Human and Ecological Receptors--Volume 1, TABLE A-1. November 1995.
44	USEPA. 1996. Soil Screening Guidance: Technical Background Document and User Guide. Office of Emergency and Remedial Response. EPA/540/R-95/128. May.
50	USEPA. 1997. Superfund Chemical Data Matrix (SCDM). Office of Emergency and Remedial Response. September 12.
62	USEPA. 2001. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim -- Review Draft-For Public Comment.
65	USEPA. July 1998. Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities.
Notes:	
27	Diffusivity value at 30 degrees Celcius.
43	pH associated with value is 6.8.
45	ENVIRON used the value for Chromium VI [CASRN 18540-29-9] presented in indicated reference as a surrogate.
48	Not Available or Not Applicable
59	min: max is 6.662E-3.
60	Hydrolyzes
61	Insoluble
92	Indicated source cites CHEMFATE.
93	Indicated source cites FATE.
94	Indicated source cites LIVECHEM.
99	ENVIRON used the value for 3-Methylphenol [CASRN 108-39-4] value as a surrogate.
100	No data available
109	RAGS E indicates that a value of 0.001 is appropriate if the soil organic content is >10% (pp. 3-20, EPA 2001).

Concentrations of Chemicals in Soil General Motors - Pontiac North Campus, Pontiac, Michigan				
Chem Group	**Chemical**	**CASRN**	**Area of Ind Redevelopment Soil (all depths)** (mg/kg)	**Background** (mg/kg)
VOC	Acetone	67-64-1	3.80E-01	
VOC	Benzene	71-43-2	3.90E-01	
VOC	Bromomethane	74-83-9	2.23E-02	
VOC	2-Butanone	78-93-3	3.80E-01	
VOC	Carbon Disulfide	75-15-0	3.90E-03	
VOC	Chlorobenzene	108-90-7	1.10E-01	
VOC	Chloroethane	75-00-3	5.20E-03	
VOC	Cumene	98-82-8	1.10E+00	
VOC	Cyclohexane	110-82-7	3.00E-01	
VOC	1,2-Dichlorobenzene	95-50-1	6.30E-03	
VOC	1,3-Dichlorobenzene	541-73-1	1.10E-01	
VOC	1,4-Dichlorobenzene	106-46-7	1.95E-02	
VOC	Dichlorodifluoromethane	75-71-8	1.40E-03	
VOC	1,1-Dichloroethane	75-34-3	2.80E-01	
VOC	1,1-Dichloroethene	75-35-4	2.90E-02	
VOC	cis-1,2-Dichloroethene	156-59-2	1.90E-01	
VOC	Ethyl Benzene	100-41-4	8.90E+00	
VOC	2-Hexanone	591-78-6	4.10E-03	
VOC	Methyl Acetate	79-20-9	3.40E+01	
VOC	4-Methyl-2-pentanone	108-10-1	6.80E-01	
VOC	Methylcyclohexane	108-87-2	1.40E+00	
VOC	Methylene Chloride	75-09-2	1.10E+00	
VOC	Pentachloroethane	76-01-7	9.90E-02	
VOC	Tetrachloroethene	127-18-4	1.20E-01	
VOC	Toluene	108-88-3	2.40E+00	
VOC	1,1,1-Trichloroethane	71-55-6	3.90E-03	
VOC	Trichloroethene	79-01-6	2.50E-01	
VOC	Trichlorofluoromethane	75-69-4	8.40E-04	
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	8.60E-03	
VOC	Xylenes (total)	1330-20-7	**5.48E-01**	
SVOC	Acenaphthene	83-32-9	5.30E+00	
SVOC	Acenaphthylene	208-96-8		
SVOC	Anthracene	120-12-7	3.50E+00	
SVOC	Benzo(a)anthracene	56-55-3	1.20E+01	
SVOC	Benzo(a)pyrene	50-32-8	**5.04E+00**	
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+01	
SVOC	Benzo(g,h,i)perylene	191-24-2	4.80E+00	
SVOC	Benzo(k)fluoranthene	207-08-9	4.50E+00	
SVOC	Biphenyl	92-52-4	3.40E+00	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	7.60E+01	
SVOC	Butylbenzylphthalate	85-68-7	1.70E+02	
SVOC	Carbazole	86-74-8	1.40E+00	
SVOC	Chrysene	218-01-9	1.40E+01	
SVOC	Dibenz(a,h)anthracene	53-70-3	1.40E+00	
SVOC	Dibenzofuran	132-64-9	2.90E+00	
SVOC	2,4-Dimethylphenol	105-67-9	3.80E-01	
SVOC	Di-n-butylphthalate	84-74-2	5.70E+00	
SVOC	Di-n-octylphthalate	117-84-0	2.90E+00	
SVOC	Fluoranthene	206-44-0	2.80E+01	

Concentrations of Chemicals in Soil
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	Area of Ind Redevelopment Soil (all depths) (mg/kg)	Background (mg/kg)
SVOC	Fluorene	86-73-7	2.10E+01	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	4.50E+00	
SVOC	2-Methylnaphthalene	91-57-6	**2.60E+00**	
SVOC	Methylphenol (total)	1319-77-3	8.75E+00	
SVOC	Naphthalene	91-20-3	**1.35E+00**	
SVOC	Phenanthrene	85-01-8	4.20E+01	
SVOC	Phenol	108-95-2	2.20E+00	
SVOC	Pyrene	129-00-0	2.80E+01	
P/PCB	PCBs (total)	1336-36-3	**2.90E+00**	
INORG	Aluminum	7429-90-5	1.08E+04	*6.90E+03*
INORG	Antimony	7440-36-0	**4.49E+00**	
INORG	Arsenic	7440-38-2	**8.68E+00**	1.3E+01
INORG	Barium	7440-39-3	4.04E+03	1.1E+02
INORG	Beryllium	7440-41-7	1.07E+00	1.5E+00
INORG	Cadmium	7440-43-9	3.85E+01	1.2E+00
INORG	Calcium	7440-70-2	8.86E+04	
INORG	Chromium (total)	7440-47-3	**1.19E+02**	4.9E+01
INORG	Chromium III	16065-83-1	2.72E+02	
INORG	Chromium VI	18540-29-9	6.38E-01	
INORG	Cobalt	7440-48-4	**9.00E+00**	1.7E+01
INORG	Copper	7440-50-8	**9.83E+02**	3.2E+01
INORG	Cyanide (total)	57-12-5	1.97E+00	*3.90E-01*
INORG	Iron	7439-89-6	**3.76E+04**	*1.2E+04*
INORG	Lead	7439-92-1	8.44E+03	4.9E+01
INORG	Magnesium	7439-95-4	1.65E+04	
INORG	Manganese	7439-96-5	**7.99E+02**	5.1E+02
INORG	Mercury	7439-97-6	**2.45E-01**	1.3E-01
INORG	Nickel	7440-02-0	5.28E+02	3.0E+01
INORG	Potassium	7440-09-7	2.69E+03	
INORG	Selenium	7782-49-2	4.89E+00	4.1E-01
INORG	Silver	7440-22-4	6.96E+01	*1.00E+00*
INORG	Sodium	7440-23-5	6.24E+02	
INORG	Thallium	7440-28-0	**1.15E+00**	
INORG	Tin	7440-31-5	2.70E+01	
INORG	Vanadium	7440-62-2	5.20E+01	3.3E+01
INORG	Zinc	7440-66-6	7.40E+03	1.9E+02
CDD/F	2,3,7,8-TCDD	1746-01-6	1.89E-03	
Notes:				
Background concentrations in italics are MI State background values, all other background values are site-specific.				
Concentrations highlighted and in bold are depth-averaged 95% UCL concentrations.				

High-End Exposure Factors General Motors - Pontiac North Campus, Pontiac, Michigan			
			Construction Scenario
Soil Ingestion			
Ingestion Rate	mg-soil/day	**IR**	200
Conversion Factor	kg/mg	**CF**	1E-06
Fraction Contacted	unitless	**FC**	1.0
Exposure Frequency	days/year	**EF**	125
Exposure Duration	years	**ED**	1
Body Weight	kg	**BW**	70
Averaging Time, cancer	days	**AT_c**	25,550
Averaging Time, noncancer	days	**AT_{nc}**	365
Soil Dermal Contact			
Adherence Factor	mg-soil/cm^2	**AF**	0.2
Skin Surface Area	cm^2/day	**SA**	3,300
Conversion Factor	kg/mg	**CF**	1E-06
Fraction Contacted	unitless	**FC**	1.0
Exposure Frequency	days/year	**EF**	125
Exposure Duration	years	**ED**	1
Body Weight	kg	**BW**	70
Averaging Time, cancer	days	**AT_c**	25,550
Averaging Time, noncancer	days	**AT_{nc}**	365
Ambient Air Inhalation			
Exposure Frequency	days/year	**EF**	125
Exposure Duration	years	**ED**	1
Averaging Time, cancer	days	**AT_c**	25,550
Averaging Time, noncancer	days	**AT_{nc}**	365

Vapor Flux (mg/m2-s per mg/kg) from Soil to Ambient Air at Area of Ind Redevelopment
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	K_{oc} (L/kg)	K_d (L/kg)	H (unitless)	R_L (unitless)	D_{air} (cm^2/s)	D_G (cm^2/s)	D_{water} (cm^2/s)	D_L (cm^2/s)	D_E (cm^2/s)	J_G (kg/m^2-s)	MW (g/mole)	VP (mm Hg)	v* (mg/L)	s (mg/L)	C_{sat} (mg/kg)
VOC	Acetone	67-64-1	5.75E-01	3.45E-03	1.59E-03	1.56E-01	1.24E-01	9.63E-03	1.14E-05	1.11E-07	9.91E-05	3.00E-05	5.81E+01	2.30E+02	7.18E+02	1.00E+06	1.04E+05
VOC	Benzene	71-43-2	5.89E+01	3.53E-01	2.28E-01	7.44E-01	8.80E-02	6.84E-03	9.80E-06	9.50E-08	2.09E-03	1.38E-04	7.81E+01	9.50E+01	3.99E+02	1.75E+03	8.68E+02
VOC	Bromomethane	74-83-9	1.05E+01	6.30E-02	2.56E-01	3.16E-01	7.28E-02	5.65E-03	1.21E-05	1.17E-07	4.58E-03	2.04E-04	9.49E+01	1.62E+03	8.25E+03	1.52E+04	3.20E+03
VOC	2-Butanone	78-93-3	2.34E+00	1.40E-02	2.28E-03	1.72E-01	9.49E-02	7.37E-03	9.80E-06	9.50E-08	9.86E-05	2.99E-05	7.21E+01	9.53E+01	3.69E+02	2.40E+05	2.74E+04
VOC	Carbon Disulfide	75-15-0	4.57E+01	2.74E-01	1.24E+00	9.09E-01	1.04E-01	8.08E-03	1.00E-05	9.70E-08	1.10E-02	3.16E-04	7.61E+01	3.59E+02	1.47E+03	1.19E+03	7.20E+02
VOC	Chlorobenzene	108-90-7	2.19E+02	1.31E+00	1.52E-01	2.16E+00	7.30E-02	5.67E-03	8.70E-06	8.44E-08	3.98E-04	6.02E-05	1.13E+02	1.20E+01	7.24E+01	4.72E+02	6.81E+02
VOC	Chloroethane	75-00-3	1.49E+01	8.94E-02	3.60E-01	3.85E-01	1.10E-01	8.54E-03	1.53E-06	1.48E-08	8.00E-03	2.70E-04	6.45E+01	1.01E+03	3.50E+03	5.68E+03	1.46E+03
VOC	Cumene	98-82-8	3.30E+03	1.98E+01	4.74E+01	4.31E+01	6.50E-02	5.05E-03	7.83E-06	7.59E-08	5.55E-03	2.25E-04	1.20E+02	4.50E+00	2.91E+01	6.13E+01	1.23E+03
VOC	Cyclohexane	110-82-7	0.00E+00	0.00E+00	7.97E+00	2.38E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.42E+01	9.69E+01	4.38E+02	5.50E+01	8.73E+01
VOC	1,2-Dichlorobenzene	95-50-1	6.17E+02	3.70E+00	7.79E-02	5.72E+00	6.90E-02	5.36E-03	7.90E-06	7.66E-08	7.29E-05	2.57E-05	1.47E+02	1.36E+00	1.07E+01	1.56E+02	5.95E+02
VOC	1,3-Dichlorobenzene	541-73-1	1.70E+03	1.02E+01	1.27E-01	1.55E+01	4.14E-02	3.22E-03	8.85E-06	8.58E-08	2.63E-05	1.55E-05	1.47E+02	2.15E+00	1.70E+01	1.33E+02	1.37E+03
VOC	1,4-Dichlorobenzene	106-46-7	6.17E+02	3.70E+00	9.96E-02	5.73E+00	6.90E-02	5.36E-03	7.90E-06	7.66E-08	9.32E-05	2.91E-05	1.47E+02	1.00E+00	7.90E+00	7.38E+01	2.82E+02
VOC	Dichlorodifluoromethane	75-71-8	1.30E+02	7.80E-01	1.40E+01	5.25E+00	8.00E-02	6.21E-03	8.00E-06	7.76E-08	1.66E-02	3.88E-04	1.21E+02	4.85E+03	3.15E+04	2.80E+02	9.79E+02
VOC	1,1-Dichloroethane	75-34-3	3.16E+01	1.90E-01	2.30E-01	4.99E-01	7.42E-02	5.76E-03	1.05E-05	1.02E-07	2.66E-03	1.55E-04	9.90E+01	2.27E+02	1.21E+03	5.06E+03	1.68E+03
VOC	1,1-Dichloroethene	75-35-4	5.89E+01	3.53E-01	1.07E+00	9.80E-01	9.00E-02	6.99E-03	1.04E-05	1.01E-07	7.63E-03	2.63E-04	9.69E+01	6.00E+02	3.13E+03	2.25E+03	1.47E+03
VOC	cis-1,2-Dichloroethene	156-59-2	3.55E+01	2.13E-01	1.67E-01	5.16E-01	7.36E-02	5.72E-03	1.13E-05	1.10E-07	1.85E-03	1.30E-04	9.69E+01	2.03E+02	1.06E+03	3.50E+03	1.20E+03
VOC	Ethyl Benzene	100-41-4	3.63E+02	2.18E+00	3.23E-01	3.51E+00	7.50E-02	5.83E-03	7.80E-06	7.56E-08	5.36E-04	6.98E-05	1.06E+02	9.60E+00	5.48E+01	1.69E+02	3.95E+02
VOC	2-Hexanone	591-78-6	0.00E+00	0.00E+00	7.15E-02	1.70E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+02	1.16E+01	6.26E+01	0.00E+00	0.00E+00
VOC	Methyl Acetate	79-20-9	3.25E+00	1.95E-02	3.53E-03	1.80E-01	1.23E-01	9.55E-03	1.10E-05	1.07E-07	1.88E-04	4.13E-05	7.41E+01	2.16E+02	8.60E+02	2.44E+05	2.93E+04
VOC	4-Methyl-2-pentanone	108-10-1	1.20E+01	7.20E-02	5.64E-03	2.60E-01	7.50E-02	5.83E-03	7.80E-06	7.56E-08	1.27E-04	3.39E-05	1.00E+02	1.99E+01	1.07E+02	2.00E+04	3.46E+03
VOC	Methylcyclohexane	108-87-2	0.00E+00	0.00E+00	0.00E+00	1.50E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.82E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
VOC	Methylene Chloride	75-09-2	1.17E+01	7.02E-02	8.98E-02	2.80E-01	1.01E-01	7.84E-03	1.17E-05	1.13E-07	2.51E-03	1.51E-04	8.49E+01	4.33E+02	1.98E+03	1.30E+04	2.43E+03
VOC	Pentachloroethane	76-01-7	0.00E+00	0.00E+00	7.93E-02	1.72E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.02E+02	3.50E+00	3.81E+01	4.80E+02	5.51E+01
VOC	Tetrachloroethene	127-18-4	1.55E+02	9.30E-01	7.54E-01	1.76E+00	7.20E-02	5.59E-03	8.20E-06	7.95E-08	2.40E-03	1.48E-04	1.66E+02	1.86E+01	1.65E+02	2.00E+02	2.34E+02
VOC	Toluene	108-88-3	1.82E+02	1.09E+00	2.72E-01	1.86E+00	8.70E-02	6.76E-03	8.60E-06	8.34E-08	9.86E-04	9.46E-05	9.21E+01	2.84E+01	1.41E+02	5.26E+02	6.53E+02
VOC	1,1,1-Trichloroethane	71-55-6	1.10E+02	6.60E-01	7.05E-01	1.34E+00	7.80E-02	6.06E-03	8.80E-06	8.53E-08	3.19E-03	1.70E-04	1.33E+02	1.24E+02	8.87E+02	1.33E+03	1.18E+03
VOC	Trichloroethene	79-01-6	1.66E+02	9.96E-01	4.22E-01	1.76E+00	7.90E-02	6.14E-03	9.10E-06	8.83E-08	1.47E-03	1.16E-04	1.31E+02	7.35E+01	5.19E+02	1.10E+03	1.29E+03
VOC	Trichlorofluoromethane	75-69-4	1.59E+02	9.54E-01	3.96E+00	2.69E+00	8.33E-02	6.47E-03	9.70E-06	9.41E-08	9.53E-03	2.94E-04	1.37E+02	8.03E+02	5.93E+03	1.10E+03	1.97E+03
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	1.30E+03	7.80E+00	1.97E+01	1.74E+01	7.80E-02	6.06E-03	8.20E-06	7.95E-08	6.86E-03	2.50E-04	1.87E+02	3.32E+02	3.34E+03	1.70E+02	1.97E+03
VOC	Xylenes (total)	1330-20-7	2.60E+02	1.56E+00	1.71E-01	2.54E+00	7.20E-02	5.59E-03	8.00E-06	7.76E-08	3.77E-04	5.85E-05	1.06E+02	1.00E+01	5.71E+01	0.00E+00	0.00E+00
SVOC	Acenaphthene	83-32-9	7.08E+03	4.25E+01	6.36E-03	6.39E+01	4.21E-02	3.27E-03	7.69E-06	7.46E-08	3.27E-07	1.72E-06	1.54E+02	2.50E-03	2.07E-02	4.24E+00	1.81E+02
SVOC	Acenaphthylene	208-96-8	4.90E+03	2.94E+01	4.62E-03	4.43E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.52E+02	9.12E-04	7.46E-03	1.61E+01	4.75E+02
SVOC	Anthracene	120-12-7	2.95E+04	1.77E+02	2.67E-03	2.66E+02	3.24E-02	2.52E-03	7.74E-06	7.51E-08	2.56E-08	4.82E-07	1.78E+02	2.67E-06	2.56E-05	4.34E-02	7.69E+00
SVOC	Benzo(a)anthracene	56-55-3	3.98E+05	2.39E+03	1.37E-04	3.58E+03	5.10E-02	3.96E-03	9.00E-06	8.73E-08	1.76E-10	4.00E-08	2.28E+02	1.05E-07	1.29E-06	9.40E-03	2.24E+01
SVOC	Benzo(a)pyrene	50-32-8	1.02E+06	6.12E+03	4.63E-05	9.18E+03	4.30E-02	3.34E-03	9.00E-06	8.73E-08	2.64E-11	1.55E-08	2.52E+02	5.49E-09	7.45E-08	1.62E-03	9.91E+00
SVOC	Benzo(b)fluoranthene	205-99-2	1.23E+06	7.38E+03	4.55E-03	1.11E+04	2.26E-02	1.76E-03	5.56E-06	5.39E-08	7.26E-10	8.12E-08	2.52E+02	5.00E-07	6.78E-06	1.50E-03	1.11E+01
SVOC	Benzo(g,h,i)perylene	191-24-2	1.60E+06	9.60E+03	5.76E-06	1.44E+04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.76E+02	1.01E-10	1.50E-09	2.60E-04	2.50E+00
SVOC	Benzo(k)fluoranthene	207-08-9	1.23E+06	7.38E+03	3.40E-05	1.11E+04	2.26E-02	1.76E-03	5.56E-06	5.39E-08	1.03E-11	9.66E-09	2.52E+02	2.00E-09	2.71E-08	8.00E-04	5.90E+00
SVOC	Biphenyl	92-52-4	0.00E+00	0.00E+00	1.23E-02	1.53E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.54E+02	9.64E-03	7.99E-02	6.03E+00	6.17E-01
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	1.51E+07	9.06E+04	4.18E-06	1.36E+05	3.51E-02	2.73E-03	3.66E-06	3.55E-08	3.45E-13	1.77E-09	3.91E+02	6.45E-06	1.35E-04	3.40E-01	3.08E+04
SVOC	Butylbenzylphthalate	85-68-7	5.75E+04	3.45E+02	5.17E-05	5.18E+02	1.74E-02	1.35E-03	4.83E-06	4.68E-08	2.25E-10	4.53E-08	3.12E+02	8.25E-06	1.39E-04	2.69E+00	9.28E+02
SVOC	Carbazole	86-74-8	3.39E+03	2.03E+01	6.26E-07	3.07E+01	3.90E-02	3.03E-03	7.03E-06	6.82E-08	2.29E-09	1.44E-07	1.67E+02	5.19E-07	4.67E-06	7.48E+00	1.53E+02
SVOC	Chrysene	218-01-9	3.98E+05	2.39E+03	3.88E-03	3.58E+03	2.48E-02	1.93E-03	6.21E-06	6.02E-08	2.10E-09	1.38E-07	2.28E+02	6.23E-09	7.65E-08	1.60E-03	3.82E+00
SVOC	Dibenz(a,h)anthracene	53-70-3	3.80E+06	2.28E+04	6.03E-07	3.42E+04	2.02E-02	1.57E-03	5.18E-06	5.02E-08	1.50E-12	3.69E-09	2.78E+02	1.00E-10	1.50E-09	2.49E-03	5.68E+01
SVOC	Dibenzofuran	132-64-9	0.00E+00	0.00E+00	5.15E-04	1.50E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.68E+02	1.80E-04	1.63E-03	1.00E+01	1.00E+00
SVOC	2,4-Dimethylphenol	105-67-9	2.09E+02	1.25E+00	8.20E-05	2.03E+00	5.84E-02	4.54E-03	8.69E-06	8.43E-08	2.25E-07	1.43E-06	1.22E+02	9.80E-02	6.44E-01	7.87E+03	1.07E+04
SVOC	Di-n-butylphthalate	84-74-2	3.39E+04	2.03E+02	3.85E-08	3.05E+02	4.38E-02	3.40E-03	7.86E-06	7.62E-08	2.50E-10	4.77E-08	2.78E+02	7.30E-05	1.09E-03	1.12E+01	2.28E+03
SVOC	Di-n-octylphthalate	117-84-0	8.32E+07	4.99E+05	2.74E-03	7.49E+05	1.51E-02	1.17E-03	3.58E-06	3.47E-08	4.34E-12	6.28E-09	3.91E+02	2.60E-06	5.46E-05	2.00E-02	9.98E+03
SVOC	Fluoranthene	206-44-0	1.07E+05	6.42E+02	6.60E-04	9.63E+02	3.02E-02	2.35E-03	6.35E-06	6.16E-08	1.67E-09	1.23E-07	2.02E+02	7.80E-06	8.48E-05	2.06E-01	1.32E+02
SVOC	Fluorene	86-73-7	1.38E+04	8.28E+01	2.61E-03	1.24E+02	3.63E-02	2.82E-03	7.88E-06	7.64E-08	5.98E-08	7.37E-07	1.66E+02	6.33E-04	5.66E-03	1.98E+00	1.64E+02
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	3.47E+06	2.08E+04	6.56E-05	3.12E+04	1.90E-02	1.48E-03	5.66E-06	5.49E-08	4.86E-12	6.64E-09	2.76E+02	1.00E-10	1.49E-09	2.20E-05	4.58E-01
SVOC	2-Methylnaphthalene	91-57-6	0.00E+00	0.00E+00	2.12E-02	1.56E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.42E+02	5.50E-02	4.21E-01	2.46E+01	2.54E+00
SVOC	Methylphenol (total)	1319-77-3	8.60E+01	5.16E-01	3.54E-05	9.24E-01	7.40E-02	5.75E-03	1.00E-05	9.70E-08	3.25E-07	1.72E-06	1.08E+02	1.38E-01	8.02E-01	2.27E+04	1.40E+04
SVOC	Naphthalene	91-20-3	2.00E+03	1.20E+01	1.98E-02	1.82E+01	5.90E-02	4.58E-03	7.50E-06	7.27E-08	5.00E-06	6.74E-06	1.28E+02	8.50E-02	5.86E-01	3.10E+01	3.75E+02

Vapor Flux (mg/m2-s per mg/kg) from Soil to Ambient Air at Area of Ind Redevelopment
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	K_{oc} (L/kg)	K_d (L/kg)	H (unitless)	R_L (unitless)	D_{air} (cm^2/s)	D_G (cm^2/s)	D_{water} (cm^2/s)	D_L (cm^2/s)	D_E (cm^2/s)	J_G (kg/m^2-s)		MW (g/mole)	VP (mm Hg)	v* (mg/L)	s (mg/L)	C_{sat} (mg/kg)
SVOC	Phenanthrene	85-01-8	1.40E+04	8.40E+01	9.52E-04	1.26E+02	3.33E-02	2.59E-03	7.47E-06	7.24E-08	2.01E-08	4.27E-07		1.78E+02	1.12E-04	1.07E-03	1.15E+00	9.67E+01
SVOC	Phenol	108-95-2	2.88E+01	1.73E-01	1.63E-05	4.09E-01	8.20E-02	6.37E-03	9.10E-06	8.83E-08	4.69E-07	2.06E-06		9.41E+01	2.76E-01	1.40E+00	8.28E+04	2.26E+04
SVOC	Pyrene	129-00-0	1.05E+05	6.30E+02	4.51E-04	9.45E+02	2.72E-02	2.11E-03	7.24E-06	7.02E-08	1.08E-09	9.92E-08		2.02E+02	4.59E-06	4.99E-05	1.35E-01	8.51E+01
P/PCB	PCBs (total)	1336-36-3	3.09E+05	1.85E+03	1.06E-01	2.78E+03	8.00E-02	6.21E-03	1.00E-05	9.70E-08	2.37E-07	1.47E-06		3.28E+02	7.70E-05	1.36E-03	7.00E-01	1.30E+03
INORG	Aluminum	7429-90-5	0.00E+00	1.50E+03	0.00E+00	2.25E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		2.70E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Antimony	7440-36-0	0.00E+00	4.50E+01	0.00E+00	6.77E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		1.22E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Arsenic	7440-38-2	0.00E+00	2.90E+01	0.00E+00	4.37E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		7.49E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Barium	7440-39-3	0.00E+00	4.10E+01	0.00E+00	6.17E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		1.37E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Beryllium	7440-41-7	0.00E+00	7.90E+02	0.00E+00	1.19E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		9.01E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Cadmium	7440-43-9	0.00E+00	7.50E+01	0.00E+00	1.13E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		1.12E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Calcium	7440-70-2	0.00E+00	4.00E+00	0.00E+00	6.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		4.01E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Chromium (total)	7440-47-3	0.00E+00	1.90E+01	0.00E+00	2.87E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		5.20E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Chromium III	16065-83-1	0.00E+00	1.80E+06	0.00E+00	2.70E+06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		5.20E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Chromium VI	18540-29-9	0.00E+00	1.90E+01	0.00E+00	2.87E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		5.20E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Cobalt	7440-48-4	0.00E+00	4.50E+01	0.00E+00	6.77E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		5.89E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Copper	7440-50-8	0.00E+00	3.50E+01	0.00E+00	5.27E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		6.35E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Cyanide (total)	57-12-5	0.00E+00	9.90E+00	0.00E+00	1.50E+01	5.48E-01	4.26E-02	2.10E-05	2.04E-07	1.36E-08	3.51E-07		2.60E+01	1.38E+01	1.93E+01	0.00E+00	0.00E+00
INORG	Iron	7439-89-6	0.00E+00	2.50E+01	0.00E+00	3.77E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		5.58E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Lead	7439-92-1	0.00E+00	9.00E+02	0.00E+00	1.35E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		2.07E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Magnesium	7439-95-4	0.00E+00	4.50E+00	0.00E+00	6.90E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		2.43E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Manganese	7439-96-5	0.00E+00	6.50E+01	0.00E+00	9.77E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		5.49E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Mercury	7439-97-6	0.00E+00	0.00E+00	2.90E-01	2.31E-01	3.07E-02	2.38E-03	6.30E-06	6.11E-08	2.99E-03	1.65E-04		2.01E+02	1.96E-03	2.11E-02	5.60E-02	8.63E-03
INORG	Nickel	7440-02-0	0.00E+00	6.50E+01	0.00E+00	9.77E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		5.87E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Potassium	7440-09-7	0.00E+00	5.50E+00	0.00E+00	8.40E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		3.91E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Selenium	7782-49-2	0.00E+00	5.00E+00	0.00E+00	7.65E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		7.90E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Silver	7440-22-4	0.00E+00	8.30E+00	0.00E+00	1.26E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		1.08E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Sodium	7440-23-5	0.00E+00	1.00E+02	0.00E+00	1.50E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		2.30E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Thallium	7440-28-0	0.00E+00	7.10E+01	0.00E+00	1.07E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		2.04E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Tin	7440-31-5	0.00E+00	2.50E+02	0.00E+00	3.75E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		1.19E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Vanadium	7440-62-2	0.00E+00	1.00E+03	0.00E+00	1.50E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		5.09E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
INORG	Zinc	7440-66-6	0.00E+00	6.20E+01	0.00E+00	9.32E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00		6.54E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CDD/F	2,3,7,8-TCDD	1746-01-6	1.40E+07	8.40E+04	3.24E-03	1.26E+05	4.70E-02	3.65E-03	8.00E-06	7.76E-08	9.44E-11	2.93E-08		3.22E+02	1.49E-09	2.58E-08	7.91E-06	6.64E-01

Notes:	Soil bulk density	kg/L	**$?_b$**	1.50														
	Soil particle density	kg/L	**$?_s$**	2.65														
	Soil porosity	L/L-soil	n	0.43														
	Soil water content	L/L-soil	$?_w$	0.15														
	Soil air-filled porosity	L/L-soil	$?_a$	0.28														
	Soil organic carbon fraction	unitless	**f_{oc}**	0.006														
	Averaging period	year	**ED**	1														
		s	**ED**	3.15E+07														
	Molar Gas Constant	L-mmHg/mole-^oK	**R**	62.411														
	Temperature	^oC	**T**	25														
		^oK	**T**	298														

Estimated Concentrations in Ambient Air from Excavations Soil at Area of Ind Redevelopment General Motors - Pontiac North Campus, Pontiac, Michigan							
			Vapor			PM_{10}	
	C/Q (kg/m^3 per kg/m^2-s)**:**			72.663857		72.663857	
Chem Chem	**Chemical**	**CASRN**	**C_{soil}** (mg/kg)	**C_{source}** (mg/kg)	**C_{air}** (mg/m^3)	**C_{soil}** (mg/kg)	**C_{air}** (mg/m^3)
VOC	Acetone	67-64-1	3.80E-01	3.80E-01	8.29E-04	3.80E-01	5.70E-08
VOC	Benzene	71-43-2	3.90E-01	3.90E-01	3.91E-03	3.90E-01	5.85E-08
VOC	Bromomethane	74-83-9	2.23E-02	2.23E-02	3.31E-04	2.23E-02	3.35E-09
VOC	2-Butanone	78-93-3	3.80E-01	3.80E-01	8.26E-04	3.80E-01	5.70E-08
VOC	Carbon Disulfide	75-15-0	3.90E-03	3.90E-03	8.97E-05	3.90E-03	5.85E-10
VOC	Chlorobenzene	108-90-7	1.10E-01	1.10E-01	4.81E-04	1.10E-01	1.65E-08
VOC	Chloroethane	75-00-3	5.20E-03	5.20E-03	1.02E-04	5.20E-03	7.80E-10
VOC	Cumene	98-82-8	1.10E+00	1.10E+00	1.79E-02	1.10E+00	1.65E-07
VOC	Cyclohexane	110-82-7	3.00E-01	3.00E-01		3.00E-01	4.50E-08
VOC	1,2-Dichlorobenzene	95-50-1	6.30E-03	6.30E-03	1.18E-05	6.30E-03	9.45E-10
VOC	1,3-Dichlorobenzene	541-73-1	1.10E-01	1.10E-01	1.24E-04	1.10E-01	1.65E-08
VOC	1,4-Dichlorobenzene	106-46-7	1.95E-02	1.95E-02	4.12E-05	1.95E-02	2.93E-09
VOC	Dichlorodifluoromethane	75-71-8	1.40E-03	1.40E-03	3.95E-05	1.40E-03	2.10E-10
VOC	1,1-Dichloroethane	75-34-3	2.80E-01	2.80E-01	3.16E-03	2.80E-01	4.20E-08
VOC	1,1-Dichloroethene	75-35-4	2.90E-02	2.90E-02	5.55E-04	2.90E-02	4.35E-09
VOC	cis-1,2-Dichloroethene	156-59-2	1.90E-01	1.90E-01	1.79E-03	1.90E-01	2.85E-08
VOC	Ethyl Benzene	100-41-4	8.90E+00	8.90E+00	4.51E-02	8.90E+00	1.34E-06
VOC	2-Hexanone	591-78-6	4.10E-03			4.10E-03	6.15E-10
VOC	Methyl Acetate	79-20-9	3.40E+01	3.40E+01	1.02E-01	3.40E+01	5.10E-06
VOC	4-Methyl-2-pentanone	108-10-1	6.80E-01	6.80E-01	1.68E-03	6.80E-01	1.02E-07
VOC	Methylcyclohexane	108-87-2	1.40E+00			1.40E+00	2.10E-07
VOC	Methylene Chloride	75-09-2	1.10E+00	1.10E+00	1.21E-02	1.10E+00	1.65E-07
VOC	Pentachloroethane	76-01-7	9.90E-02	9.90E-02		9.90E-02	1.49E-08
VOC	Tetrachloroethene	127-18-4	1.20E-01	1.20E-01	1.29E-03	1.20E-01	1.80E-08
VOC	Toluene	108-88-3	2.40E+00	2.40E+00	1.65E-02	2.40E+00	3.60E-07
VOC	1,1,1-Trichloroethane	71-55-6	3.90E-03	3.90E-03	4.83E-05	3.90E-03	5.85E-10
VOC	Trichloroethene	79-01-6	2.50E-01	2.50E-01	2.10E-03	2.50E-01	3.75E-08
VOC	Trichlorofluoromethane	75-69-4	8.40E-04	8.40E-04	1.80E-05	8.40E-04	1.26E-10
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	8.60E-03	8.60E-03	1.56E-04	8.60E-03	1.29E-09
VOC	Xylenes (total)	1330-20-7	5.48E-01			5.48E-01	8.22E-08
SVOC	Acenaphthene	83-32-9	5.30E+00	5.30E+00	6.64E-04	5.30E+00	7.95E-07
SVOC	Acenaphthylene	208-96-8					
SVOC	Anthracene	120-12-7	3.50E+00	3.50E+00	1.23E-04	3.50E+00	5.25E-07
SVOC	Benzo(a)anthracene	56-55-3	1.20E+01	1.20E+01	3.49E-05	1.20E+01	1.80E-06
SVOC	Benzo(a)pyrene	50-32-8	5.04E+00	5.04E+00	5.67E-06	5.04E+00	7.56E-07
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+01	1.00E+01	5.90E-05	1.00E+01	1.50E-06
SVOC	Benzo(g,h,i)perylene	191-24-2	4.80E+00	*2.50E+00*		4.80E+00	7.20E-07
SVOC	Benzo(k)fluoranthene	207-08-9	4.50E+00	4.50E+00	3.16E-06	4.50E+00	6.75E-07
SVOC	Biphenyl	92-52-4	3.40E+00	*6.17E-01*		3.40E+00	5.10E-07
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	7.60E+01	7.60E+01	9.78E-06	7.60E+01	1.14E-05
SVOC	Butylbenzylphthalate	85-68-7	1.70E+02	1.70E+02	5.59E-04	1.70E+02	2.55E-05
SVOC	Carbazole	86-74-8	1.40E+00	1.40E+00	1.47E-05	1.40E+00	2.10E-07
SVOC	Chrysene	218-01-9	1.40E+01	*3.82E+00*	3.84E-05	1.40E+01	2.10E-06
SVOC	Dibenz(a,h)anthracene	53-70-3	1.40E+00	1.40E+00	3.75E-07	1.40E+00	2.10E-07
SVOC	Dibenzofuran	132-64-9	2.90E+00	*1.00E+00*		2.90E+00	4.35E-07
SVOC	2,4-Dimethylphenol	105-67-9	3.80E-01	3.80E-01	3.94E-05	3.80E-01	5.70E-08
SVOC	Di-n-butylphthalate	84-74-2	5.70E+00	5.70E+00	1.97E-05	5.70E+00	8.55E-07
SVOC	Di-n-octylphthalate	117-84-0	2.90E+00	2.90E+00	1.32E-06	2.90E+00	4.35E-07
SVOC	Fluoranthene	206-44-0	2.80E+01	2.80E+01	2.51E-04	2.80E+01	4.20E-06
SVOC	Fluorene	86-73-7	2.10E+01	2.10E+01	1.12E-03	2.10E+01	3.15E-06
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	4.50E+00	*4.58E-01*	2.21E-07	4.50E+00	6.75E-07
SVOC	2-Methylnaphthalene	91-57-6	2.60E+00	*2.54E+00*		2.60E+00	3.90E-07
SVOC	Methylphenol (total)	1319-77-3	8.75E+00	8.75E+00	1.09E-03	8.75E+00	1.31E-06
SVOC	Naphthalene	91-20-3	1.35E+00	1.35E+00	6.61E-04	1.35E+00	2.03E-07
SVOC	Phenanthrene	85-01-8	4.20E+01	4.20E+01	1.30E-03	4.20E+01	6.30E-06
SVOC	Phenol	108-95-2	2.20E+00	2.20E+00	3.30E-04	2.20E+00	3.30E-07

Estimated Concentrations in Ambient Air from Excavations Soil at Area of Ind Redevelopment General Motors - Pontiac North Campus, Pontiac, Michigan							
			Vapor			PM_{10}	
	C/Q (kg/m^3 per kg/m^2-s)**:**			72.663857		72.663857	
Chem Chem	**Chemical**	**CASRN**	C_{soil} (mg/kg)	C_{source} (mg/kg)	C_{air} (mg/m^3)	C_{soil} (mg/kg)	C_{air} (mg/m^3)
SVOC	Pyrene	129-00-0	2.80E+01	2.80E+01	2.02E-04	2.80E+01	4.20E-06
P/PCB	PCBs (total)	1336-36-3	2.90E+00	2.90E+00	3.09E-04	2.90E+00	4.35E-07
INORG	Aluminum	7429-90-5	3.90E+03			3.90E+03	5.85E-04
INORG	Antimony	7440-36-0	4.49E+00			4.49E+00	6.74E-07
INORG	Arsenic	7440-38-2					
INORG	Barium	7440-39-3	3.93E+03			3.93E+03	5.89E-04
INORG	Beryllium	7440-41-7					
INORG	Cadmium	7440-43-9	3.73E+01			3.73E+01	5.60E-06
INORG	Calcium	7440-70-2	8.86E+04			8.86E+04	1.33E-02
INORG	Chromium (total)	7440-47-3	6.98E+01			6.98E+01	1.05E-05
INORG	Chromium III	16065-83-1	2.72E+02			2.72E+02	4.08E-05
INORG	Chromium VI	18540-29-9	6.38E-01			6.38E-01	9.56E-08
INORG	Cobalt	7440-48-4					
INORG	Copper	7440-50-8	9.51E+02			9.51E+02	1.43E-04
INORG	Cyanide (total)	57-12-5	1.58E+00			1.58E+00	2.37E-07
INORG	Iron	7439-89-6	2.56E+04			2.56E+04	3.84E-03
INORG	Lead	7439-92-1	8.39E+03			8.39E+03	1.26E-03
INORG	Magnesium	7439-95-4	1.65E+04			1.65E+04	2.48E-03
INORG	Manganese	7439-96-5	2.89E+02			2.89E+02	4.33E-05
INORG	Mercury	7439-97-6	1.15E-01	*8.63E-03*	1.03E-04	1.15E-01	1.73E-08
INORG	Nickel	7440-02-0	4.98E+02			4.98E+02	7.47E-05
INORG	Potassium	7440-09-7	2.69E+03			2.69E+03	4.04E-04
INORG	Selenium	7782-49-2	4.48E+00			4.48E+00	6.72E-07
INORG	Silver	7440-22-4	6.86E+01			6.86E+01	1.03E-05
INORG	Sodium	7440-23-5	6.24E+02			6.24E+02	9.36E-05
INORG	Thallium	7440-28-0	1.15E+00			1.15E+00	1.73E-07
INORG	Tin	7440-31-5	2.70E+01			2.70E+01	4.05E-06
INORG	Vanadium	7440-62-2	1.92E+01			1.92E+01	2.88E-06
INORG	Zinc	7440-66-6	7.21E+03			7.21E+03	1.08E-03
CDD/F	2,3,7,8-TCDD	1746-01-6	1.89E-03	1.89E-03	4.03E-09	1.89E-03	2.84E-10
Notes:							
C_{source} = Minimum of Soil Concentration and Csat							

1/2 Acre Construction Scenario Cancer Risk Calculations - at Area of Ind Redevelopment
General Motors - Pontiac North Campus, Pontiac, Michigan

				Soil Ingestion				Soil Dermal Contact					Soil Vapor Inhalation				Soil Particulate Inhalation			
Chem Group	**Chemical**	**CASRN**	**Cancer Class**	**C_{soil}** (mg/kg)	**LADD** (mg/kg/d)	**SF_{oral}** $(mg/kg/d)^{-1}$	**Risk**	**AF_{derm}**	**LADD** (mg/kg/d)	**SF_{derm}** $(mg/kg/d)^{-1}$	**Risk**	**PRG** (mg/kg)	**C_{air}** (mg/m^3)	**LADD** (mg/m^3)	**URF** (m^3/mg)	**Risk**	**C_{air}** (mg/m^3)	**LADD** (mg/m^3)	**URF** (m^3/mg)	**Risk**
VOC	Acetone	67-64-1	ID	3.80E-01	5.31E-09								8.29E-04	4.05E-06			5.70E-08	2.79E-10		
VOC	Benzene	71-43-2	A	3.90E-01	5.45E-09	5.5E-02	3.0E-10			5.5E-02			3.91E-03	1.91E-05	7.8E-03	1.5E-07	5.85E-08	2.86E-10	7.8E-03	2.2E-12
VOC	Bromomethane	74-83-9	D	2.23E-02	3.12E-10								3.31E-04	1.62E-06			3.35E-09	1.64E-11		
VOC	2-Butanone	78-93-3	ID	3.80E-01	5.31E-09								8.26E-04	4.04E-06			5.70E-08	2.79E-10		
VOC	Carbon Disulfide	75-15-0		3.90E-03	5.45E-11								8.97E-05	4.39E-07			5.85E-10	2.86E-12		
VOC	Chlorobenzene	108-90-7	D	1.10E-01	1.54E-09								4.81E-04	2.35E-06			1.65E-08	8.07E-11		
VOC	Chloroethane	75-00-3		5.20E-03	7.27E-11	2.9E-03	2.1E-13			2.9E-03			1.02E-04	4.98E-07			7.80E-10	3.82E-12		
VOC	Cumene	98-82-8	D	1.10E+00	1.54E-08								1.79E-02	8.78E-05			1.65E-07	8.07E-10		
VOC	Cyclohexane	110-82-7	ID	3.00E-01	4.19E-09												4.50E-08	2.20E-10		
VOC	1,2-Dichlorobenzene	95-50-1	D	6.30E-03	8.81E-11								1.18E-05	5.77E-08			9.45E-10	4.62E-12		
VOC	1,3-Dichlorobenzene	541-73-1	D	1.10E-01	1.54E-09								1.24E-04	6.05E-07			1.65E-08	8.07E-11		
VOC	1,4-Dichlorobenzene	106-46-7	C	1.95E-02	2.73E-10	2.4E-02	6.5E-12			2.4E-02			4.12E-05	2.02E-07	6.3E-03	1.3E-09	2.93E-09	1.43E-11	6.3E-03	9.0E-14
VOC	Dichlorodifluoromethane	75-71-8		1.40E-03	1.96E-11								3.95E-05	1.93E-07			2.10E-10	1.03E-12		
VOC	1,1-Dichloroethane	75-34-3	C	2.80E-01	3.91E-09								3.16E-03	1.55E-05			4.20E-08	2.05E-10		
VOC	1,1-Dichloroethene	75-35-4	C	2.90E-02	4.05E-10								5.55E-04	2.72E-06			4.35E-09	2.13E-11		
VOC	cis-1,2-Dichloroethene	156-59-2	D	1.90E-01	2.66E-09								1.79E-03	8.75E-06			2.85E-08	1.39E-10		
VOC	Ethyl Benzene	100-41-4	D	8.90E+00	1.24E-07								4.51E-02	2.21E-04			1.34E-06	6.53E-09		
VOC	2-Hexanone	591-78-6		4.10E-03	5.73E-11												6.15E-10	3.01E-12		
VOC	Methyl Acetate	79-20-9		3.40E+01	4.75E-07								1.02E-01	4.99E-04			5.10E-06	2.50E-08		
VOC	4-Methyl-2-pentanone	108-10-1	ID	6.80E-01	9.51E-09								1.68E-03	8.21E-06			1.02E-07	4.99E-10		
VOC	Methylcyclohexane	108-87-2		1.40E+00	1.96E-08												2.10E-07	1.03E-09		
VOC	Methylene Chloride	75-09-2	B2	1.10E+00	1.54E-08	7.5E-03	1.2E-10			7.5E-03			1.21E-02	5.91E-05	4.7E-04	2.8E-08	1.65E-07	8.07E-10	4.7E-04	3.8E-13
VOC	Pentachloroethane	76-01-7		9.90E-02	1.38E-09												1.49E-08	7.27E-11		
VOC	Tetrachloroethene	127-18-4	C-B2	1.20E-01	1.68E-09	5.2E-02	8.7E-11			5.2E-02			1.29E-03	6.30E-06	3.1E-03	1.9E-08	1.80E-08	8.81E-11	3.1E-03	2.7E-13
VOC	Toluene	108-88-3	D	2.40E+00	3.35E-08								1.65E-02	8.07E-05			3.60E-07	1.76E-09		
VOC	1,1,1-Trichloroethane	71-55-6	D	3.90E-03	5.45E-11								4.83E-05	2.36E-07			5.85E-10	2.86E-12		
VOC	Trichloroethene	79-01-6	C-B2	2.50E-01	3.49E-09	1.1E-02	3.8E-11			1.1E-02			2.10E-03	1.03E-05	1.7E-03	1.7E-08	3.75E-08	1.83E-10	1.7E-03	3.1E-13
VOC	Trichlorofluoromethane	75-69-4		8.40E-04	1.17E-11								1.80E-05	8.79E-08			1.26E-10	6.16E-13		
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		8.60E-03	1.20E-10								1.56E-04	7.63E-07			1.29E-09	6.31E-12		
VOC	Xylenes (total)	1330-20-7	ID	5.48E-01	7.66E-09												8.22E-08	4.02E-10		
SVOC	Acenaphthene	83-32-9		5.30E+00	7.41E-08			1.30E-01	3.18E-08				6.64E-04	3.25E-06			7.95E-07	3.89E-09		
SVOC	Acenaphthylene	208-96-8	D					1.30E-01												
SVOC	Anthracene	120-12-7	D	3.50E+00	4.89E-08			1.30E-01	2.10E-08				1.23E-04	6.00E-07			5.25E-07	2.57E-09		
SVOC	Benzo(a)anthracene	56-55-3	B2	1.20E+01	1.68E-07	7.3E-01	1.2E-07	1.30E-01	7.20E-08	7.3E-01	5.3E-08	2.3E+03	3.49E-05	1.71E-07	2.1E-01	3.6E-08	1.80E-06	8.81E-09	2.1E-01	1.8E-09
SVOC	Benzo(a)pyrene	50-32-8	B2	5.04E+00	7.05E-08	7.3E+00	5.1E-07	1.30E-01	3.02E-08	7.3E+00	2.2E-07	2.3E+02	5.67E-06	2.77E-08	8.9E-01	2.5E-08	7.56E-07	3.70E-09	8.9E-01	3.3E-09
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+01	1.40E-07	7.3E-01	1.0E-07	1.30E-01	6.00E-08	7.3E-01	4.4E-08	2.3E+03	5.90E-05	2.89E-07	2.1E-01	6.0E-08	1.50E-06	7.34E-09	2.1E-01	1.5E-09
SVOC	Benzo(g,h,i)perylene	191-24-2	D	4.80E+00	6.71E-08			1.30E-01	2.88E-08								7.20E-07	3.52E-09		
SVOC	Benzo(k)fluoranthene	207-08-9	B2	4.50E+00	6.29E-08	7.3E-02	4.6E-09	1.30E-01	2.70E-08	7.3E-02	2.0E-09	2.3E+04	3.16E-06	1.54E-08	2.1E-02	3.2E-10	6.75E-07	3.30E-09	2.1E-02	6.9E-11
SVOC	Biphenyl	92-52-4	D	3.40E+00	4.75E-08			1.00E-01	1.57E-08								5.10E-07	2.50E-09		
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	7.60E+01	1.06E-06	1.4E-02	1.5E-08	1.00E-01	3.51E-07	1.4E-02	4.9E-09	1.5E+05	9.78E-06	4.78E-08	4.0E-03	1.9E-10	1.14E-05	5.58E-08	4.0E-03	2.2E-10
SVOC	Butylbenzylphthalate	85-68-7	C	1.70E+02	2.38E-06			1.00E-01	7.84E-07				5.59E-04	2.74E-06			2.55E-05	1.25E-07		
SVOC	Carbazole	86-74-8	B2	1.40E+00	1.96E-08	2.0E-02	3.9E-10	1.00E-01	6.46E-09	2.0E-02	1.3E-10	1.1E+05	1.47E-05	7.17E-08	5.7E-03	4.1E-10	2.10E-07	1.03E-09	5.7E-03	5.9E-12
SVOC	Chrysene	218-01-9	B2	1.40E+01	1.96E-07	7.3E-03	1.4E-09	1.30E-01	8.40E-08	7.3E-03	6.1E-10	2.3E+05	3.84E-05	1.88E-07	2.1E-03	3.9E-10	2.10E-06	1.03E-08	2.1E-03	2.1E-11
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	1.40E+00	1.96E-08	7.3E+00	1.4E-07	1.30E-01	8.40E-09	7.3E+00	6.1E-08	2.3E+02	3.75E-07	1.84E-09	2.1E+00	3.8E-09	2.10E-07	1.03E-09	2.1E+00	2.1E-09
SVOC	Dibenzofuran	132-64-9	D	2.90E+00	4.05E-08			1.00E-01	1.34E-08								4.35E-07	2.13E-09		
SVOC	2,4-Dimethylphenol	105-67-9		3.80E-01	5.31E-09			1.00E-01	1.75E-09				3.94E-05	1.93E-07			5.70E-08	2.79E-10		
SVOC	Di-n-butylphthalate	84-74-2	D	5.70E+00	7.97E-08			1.00E-01	2.63E-08				1.97E-05	9.66E-08			8.55E-07	4.18E-09		
SVOC	Di-n-octylphthalate	117-84-0		2.90E+00	4.05E-08			1.00E-01	1.34E-08				1.32E-06	6.47E-09			4.35E-07	2.13E-09		
SVOC	Fluoranthene	206-44-0	D	2.80E+01	3.91E-07			1.30E-01	1.68E-07				2.51E-04	1.23E-06			4.20E-06	2.05E-08		
SVOC	Fluorene	86-73-7	D	2.10E+01	2.94E-07			1.30E-01	1.26E-07				1.12E-03	5.50E-06			3.15E-06	1.54E-08		

1/2 Acre Construction Scenario Cancer Risk Calculations - at Area of Ind Redevelopment
General Motors - Pontiac North Campus, Pontiac, Michigan

				Soil Ingestion				Soil Dermal Contact					Soil Vapor Inhalation				Soil Particulate Inhalation			
Chem Group	**Chemical**	**CASRN**	**Cancer Class**	**C_{soil}** (mg/kg)	**LADD** (mg/kg/d)	**SF_{oral}** $(mg/kg/d)^{-1}$	**Risk**	**AF_{derm}**	**LADD** (mg/kg/d)	**SF_{derm}** $(mg/kg/d)^{-1}$	**Risk**	**PRG** (mg/kg)	**C_{air}** (mg/m^3)	**LADD** (mg/m^3)	**URF** (m^3/mg)	**Risk**	**C_{air}** (mg/m^3)	**LADD** (mg/m^3)	**URF** (m^3/mg)	**Risk**
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	4.50E+00	6.29E-08	7.3E-01	4.6E-08	1.30E-01	2.70E-08	7.3E-01	2.0E-08	2.3E+03	2.21E-07	1.08E-09	2.1E-01	2.3E-10	6.75E-07	3.30E-09	2.1E-01	6.9E-10
SVOC	2-Methylnaphthalene	91-57-6	ID	2.60E+00	3.63E-08			1.00E-01	1.20E-08								3.90E-07	1.91E-09		
SVOC	Methylphenol (total)	1319-77-3		8.75E+00	1.22E-07			1.00E-01	4.04E-08				1.09E-03	5.34E-06			1.31E-06	6.42E-09		
SVOC	Naphthalene	91-20-3	C	1.35E+00	1.89E-08			1.30E-01	8.10E-09				6.61E-04	3.23E-06			2.03E-07	9.91E-10		
SVOC	Phenanthrene	85-01-8	D	4.20E+01	5.87E-07			1.30E-01	2.52E-07				1.30E-03	6.38E-06			6.30E-06	3.08E-08		
SVOC	Phenol	108-95-2	ID	2.20E+00	3.08E-08			1.00E-01	1.01E-08				3.30E-04	1.61E-06			3.30E-07	1.61E-09		
SVOC	Pyrene	129-00-0	D	2.80E+01	3.91E-07			1.30E-01	1.68E-07				2.02E-04	9.87E-07			4.20E-06	2.05E-08		
P/PCB	PCBs (total)	1336-36-3	B2	2.90E+00	4.05E-08	2.0E+00	8.1E-08	1.40E-01	1.87E-08	2.0E+00	3.7E-08	7.7E+02	3.09E-04	1.51E-06	5.7E-01	8.7E-07	4.35E-07	2.13E-09	5.7E-01	1.2E-09
INORG	Aluminum	7429-90-5	D	3.90E+03	5.45E-05												5.85E-04	2.86E-06		
INORG	Antimony	7440-36-0		4.49E+00	6.28E-08												6.74E-07	3.30E-09		
INORG	Arsenic	7440-38-2	A			1.5E+00		3.00E-02		1.5E+00					4.3E+00				4.3E+00	
INORG	Barium	7440-39-3	D	3.93E+03	5.49E-05												5.89E-04	2.88E-06		
INORG	Beryllium	7440-41-7	B1												2.4E+00				2.4E+00	
INORG	Cadmium	7440-43-9	B1	3.73E+01	5.21E-07			1.00E-03	1.72E-09						1.8E+00		5.60E-06	2.74E-08	1.8E+00	4.9E-08
INORG	Calcium	7440-70-2		8.86E+04	1.24E-03												1.33E-02	6.50E-05		
INORG	Chromium (total)	7440-47-3		6.98E+01	9.75E-07										1.2E+01		1.05E-05	5.12E-08	1.2E+01	6.1E-07
INORG	Chromium III	16065-83-1	D	2.72E+02	3.80E-06												4.08E-05	1.99E-07		
INORG	Chromium VI	18540-29-9	A	6.38E-01	8.91E-09										1.2E+01		9.56E-08	4.68E-10	1.2E+01	5.6E-09
INORG	Cobalt	7440-48-4	B1												2.8E+00				2.8E+00	
INORG	Copper	7440-50-8	D	9.51E+02	1.33E-05												1.43E-04	6.98E-07		
INORG	Cyanide (total)	57-12-5	D	1.58E+00	2.21E-08												2.37E-07	1.16E-09		
INORG	Iron	7439-89-6	D	2.56E+04	3.58E-04												3.84E-03	1.88E-05		
INORG	Lead	7439-92-1	B2	8.39E+03	1.17E-04												1.26E-03	6.16E-06		
INORG	Magnesium	7439-95-4		1.65E+04	2.31E-04												2.48E-03	1.21E-05		
INORG	Manganese	7439-96-5	D	2.89E+02	4.04E-06												4.33E-05	2.12E-07		
INORG	Mercury	7439-97-6	D	1.15E-01	1.61E-09								1.03E-04	5.06E-07			1.73E-08	8.44E-11		
INORG	Nickel	7440-02-0	A	4.98E+02	6.96E-06										2.4E-01		7.47E-05	3.65E-07	2.4E-01	8.8E-08
INORG	Potassium	7440-09-7		2.69E+03	3.76E-05												4.04E-04	1.97E-06		
INORG	Selenium	7782-49-2	D	4.48E+00	6.26E-08												6.72E-07	3.29E-09		
INORG	Silver	7440-22-4	D	6.86E+01	9.59E-07												1.03E-05	5.03E-08		
INORG	Sodium	7440-23-5		6.24E+02	8.72E-06												9.36E-05	4.58E-07		
INORG	Thallium	7440-28-0		1.15E+00	1.61E-08												1.73E-07	8.44E-10		
INORG	Tin	7440-31-5		2.70E+01	3.77E-07												4.05E-06	1.98E-08		
INORG	Vanadium	7440-62-2		1.92E+01	2.68E-07												2.88E-06	1.41E-08		
INORG	Zinc	7440-66-6	D	7.21E+03	1.01E-04												1.08E-03	5.29E-06		
CDD/F	2,3,7,8-TCDD	1746-01-6	B2	1.89E-03	2.64E-11	1.5E+05	4.0E-06	3.00E-02	2.62E-12	1.5E+05	3.9E-07	4.8E-02	4.03E-09	1.97E-11	3.3E+04	6.5E-07	2.84E-10	1.39E-12	3.3E+04	4.6E-08
		Cumulative Risk:					**5.0E-06**				**8.4E-07**					**1.9E-06**				**8.1E-07**

1/2 Acre Construction Scenario Hazard Index Calculations - at Area of Ind Redevelopment
General Motors - Pontiac North Campus, Pontiac, Michigan

				Soil Ingestion				Soil Dermal Contact				Soil Vapor Inhalation				Soil Particulate Inhalation			
Chem Group	**Chemical**	**CASRN**	**Cancer Class**	**C_{soil} (mg/kg)**	**ADD (mg/kg/d)**	**$SRfD_{oral}$ (mg/kg/d)**	**HQ**	**AF_{derm}**	**ADD (mg/kg/d)**	**$SRfD_{derm}$ (mg/kg/d)**	**HQ**	**C_{air} (mg/m^3)**	**ADD (mg/m^3)**	**SRfC (mg/m^3)**	**HQ**	**C_{air} (mg/m^3)**	**ADD (mg/m^3)**	**SRfC (mg/m^3)**	**HQ**
VOC	Acetone	67-64-1	ID	3.80E-01	3.72E-07	1.0E+00	3.7E-07			1.0E+00		8.29E-04	2.84E-04	3.5E+00	8.1E-05	5.70E-08	1.95E-08	3.5E+00	5.6E-09
VOC	Benzene	71-43-2	A	3.90E-01	3.82E-07	3.0E-03	1.3E-04			3.0E-03		3.91E-03	1.34E-03	6.0E-02	2.2E-02	5.85E-08	2.00E-08	6.0E-02	3.3E-07
VOC	Bromomethane	74-83-9	D	2.23E-02	2.18E-08	5.0E-03	4.4E-06			5.0E-03		3.31E-04	1.13E-04	2.0E-01	5.7E-04	3.35E-09	1.15E-09	2.0E-01	5.7E-09
VOC	2-Butanone	78-93-3	ID	3.80E-01	3.72E-07	2.0E+00	1.9E-07			2.0E+00		8.26E-04	2.83E-04	7.0E+00	4.0E-05	5.70E-08	1.95E-08	7.0E+00	2.8E-09
VOC	Carbon Disulfide	75-15-0		3.90E-03	3.82E-09	1.0E-01	3.8E-08			1.0E-01		8.97E-05	3.07E-05	7.0E-01	4.4E-05	5.85E-10	2.00E-10	7.0E-01	2.9E-10
VOC	Chlorobenzene	108-90-7	D	1.10E-01	1.08E-07	2.0E-02	5.4E-06			2.0E-02		4.81E-04	1.65E-04	6.0E-02	2.7E-03	1.65E-08	5.65E-09	6.0E-02	9.4E-08
VOC	Chloroethane	75-00-3		5.20E-03	5.09E-09	4.0E-01	1.3E-08			4.0E-01		1.02E-04	3.49E-05	1.0E+01	3.5E-06	7.80E-10	2.67E-10	1.0E+01	2.7E-11
VOC	Cumene	98-82-8	D	1.10E+00	1.08E-06	4.0E-01	2.7E-06			4.0E-01		1.79E-02	6.15E-03	1.4E+00	4.4E-03	1.65E-07	5.65E-08	1.4E+00	4.0E-08
VOC	Cyclohexane	110-82-7	ID	3.00E-01	2.94E-07									6.0E+00		4.50E-08	1.54E-08	6.0E+00	2.6E-09
VOC	1,2-Dichlorobenzene	95-50-1	D	6.30E-03	6.16E-09	9.0E-02	6.8E-08			9.0E-02		1.18E-05	4.04E-06	2.0E+00	2.0E-06	9.45E-10	3.24E-10	2.0E+00	1.6E-10
VOC	1,3-Dichlorobenzene	541-73-1	D	1.10E-01	1.08E-07	9.0E-02	1.2E-06			9.0E-02		1.24E-04	4.23E-05	1.4E-01	3.0E-04	1.65E-08	5.65E-09	1.4E-01	4.0E-08
VOC	1,4-Dichlorobenzene	106-46-7	C	1.95E-02	1.91E-08	3.0E-02	6.4E-07			3.0E-02		4.12E-05	1.41E-05	2.5E+00	5.6E-06	2.93E-09	1.00E-09	2.5E+00	4.0E-10
VOC	Dichlorodifluoromethane	75-71-8		1.40E-03	1.37E-09	9.0E-01	1.5E-09			9.0E-01		3.95E-05	1.35E-05	2.0E+00	6.8E-06	2.10E-10	7.19E-11	2.0E+00	3.6E-11
VOC	1,1-Dichloroethane	75-34-3	C	2.80E-01	2.74E-07	1.0E+00	2.7E-07			1.0E+00		3.16E-03	1.08E-03	5.0E+00	2.2E-04	4.20E-08	1.44E-08	5.0E+00	2.9E-09
VOC	1,1-Dichloroethene	75-35-4	C	2.90E-02	2.84E-08	5.0E-02	5.7E-07			5.0E-02		5.55E-04	1.90E-04	2.0E-01	9.5E-04	4.35E-09	1.49E-09	2.0E-01	7.4E-09
VOC	cis-1,2-Dichloroethene	156-59-2	D	1.90E-01	1.86E-07	1.0E-01	1.9E-06			1.0E-01		1.79E-03	6.13E-04	3.5E-01	1.8E-03	2.85E-08	9.76E-09	3.5E-01	2.8E-08
VOC	Ethyl Benzene	100-41-4	D	8.90E+00	8.71E-06	1.0E-01	8.7E-05			1.0E-01		4.51E-02	1.55E-02	1.0E+00	1.5E-02	1.34E-06	4.57E-07	1.0E+00	4.6E-07
VOC	2-Hexanone	591-78-6		4.10E-03	4.01E-09	4.0E-02	1.0E-07			4.0E-02				5.0E-03		6.15E-10	2.11E-10	5.0E-03	4.2E-08
VOC	Methyl Acetate	79-20-9		3.40E+01	3.33E-05	1.0E+01	3.3E-06			1.0E+01		1.02E-01	3.49E-02	3.5E+01	1.0E-03	5.10E-06	1.75E-06	3.5E+01	5.0E-08
VOC	4-Methyl-2-pentanone	108-10-1	ID	6.80E-01	6.65E-07							1.68E-03	5.74E-04	3.0E+00	1.9E-04	1.02E-07	3.49E-08	3.0E+00	1.2E-08
VOC	Methylcyclohexane	108-87-2		1.40E+00	1.37E-06									3.0E+00		2.10E-07	7.19E-08	3.0E+00	2.4E-08
VOC	Methylene Chloride	75-09-2	B2	1.10E+00	1.08E-06	6.0E-02	1.8E-05			6.0E-02		1.21E-02	4.14E-03	3.0E+00	1.4E-03	1.65E-07	5.65E-08	3.0E+00	1.9E-08
VOC	Pentachloroethane	76-01-7		9.90E-02	9.69E-08											1.49E-08	5.09E-09		
VOC	Tetrachloroethene	127-18-4	C-B2	1.20E-01	1.17E-07	1.0E-01	1.2E-06			1.0E-01		1.29E-03	4.41E-04	4.0E-01	1.1E-03	1.80E-08	6.16E-09	4.0E-01	1.5E-08
VOC	Toluene	108-88-3	D	2.40E+00	2.35E-06	2.0E+00	1.2E-06			2.0E+00		1.65E-02	5.65E-03	1.0E+00	5.7E-03	3.60E-07	1.23E-07	1.0E+00	1.2E-07
VOC	1,1,1-Trichloroethane	71-55-6	D	3.90E-03	3.82E-09	2.8E+00	1.4E-09			2.8E+00		4.83E-05	1.65E-05	2.2E+01	7.5E-07	5.85E-10	2.00E-10	2.2E+01	9.1E-12
VOC	Trichloroethene	79-01-6	C-B2	2.50E-01	2.45E-07	6.0E-03	4.1E-05			6.0E-03		2.10E-03	7.19E-04			3.75E-08	1.28E-08		
VOC	Trichlorofluoromethane	75-69-4		8.40E-04	8.22E-10	7.0E-01	1.2E-09			7.0E-01		1.80E-05	6.15E-06	7.0E+00	8.8E-07	1.26E-10	4.32E-11	7.0E+00	6.2E-12
VOC	1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		8.60E-03	8.41E-09	3.0E+01	2.8E-10			3.0E+01		1.56E-04	5.34E-05	3.0E+01	1.8E-06	1.29E-09	4.42E-10	3.0E+01	1.5E-11
VOC	Xylenes (total)	1330-20-7	ID	5.48E-01	5.36E-07	4.0E-01	1.3E-06			4.0E-01				1.4E+00		8.22E-08	2.82E-08	1.4E+00	2.0E-08
SVOC	Acenaphthene	83-32-9		5.30E+00	5.19E-06	6.0E-01	8.6E-06	1.30E-01	2.22E-06	6.0E-01	3.7E-06	6.64E-04	2.27E-04	2.1E+00	1.1E-04	7.95E-07	2.72E-07	2.1E+00	1.3E-07
SVOC	Acenaphthylene	208-96-8	D			3.0E-01		1.30E-01		3.0E-01				1.1E+00				1.1E+00	
SVOC	Anthracene	120-12-7	D	3.50E+00	3.42E-06	3.0E+00	1.1E-06	1.30E-01	1.47E-06	3.0E+00	4.9E-07	1.23E-04	4.20E-05	1.1E+01	4.0E-06	5.25E-07	1.80E-07	1.1E+01	1.7E-08
SVOC	Benzo(a)anthracene	56-55-3	B2	1.20E+01	1.17E-05			1.30E-01	5.04E-06			3.49E-05	1.19E-05			1.80E-06	6.16E-07		
SVOC	Benzo(a)pyrene	50-32-8	B2	5.04E+00	4.93E-06			1.30E-01	2.12E-06			5.67E-06	1.94E-06			7.56E-07	2.59E-07		
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+01	9.78E-06			1.30E-01	4.20E-06			5.90E-05	2.02E-05			1.50E-06	5.14E-07		
SVOC	Benzo(g,h,i)perylene	191-24-2	D	4.80E+00	4.70E-06	3.0E-01	1.6E-05	1.30E-01	2.01E-06	3.0E-01	6.7E-06			1.1E+00		7.20E-07	2.47E-07	1.1E+00	2.3E-07
SVOC	Benzo(k)fluoranthene	207-08-9	B2	4.50E+00	4.40E-06			1.30E-01	1.89E-06			3.16E-06	1.08E-06			6.75E-07	2.31E-07		
SVOC	Biphenyl	92-52-4	D	3.40E+00	3.33E-06	5.0E-02	6.7E-05	1.00E-01	1.10E-06	5.0E-02	2.2E-05			1.8E-01		5.10E-07	1.75E-07	1.8E-01	1.0E-06
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	B2	7.60E+01	7.44E-05	2.0E-02	3.7E-03	1.00E-01	2.45E-05	2.0E-02	1.2E-03	9.78E-06	3.35E-06	2.0E-01	1.7E-05	1.14E-05	3.90E-06	2.0E-01	2.0E-05
SVOC	Butylbenzylphthalate	85-68-7	C	1.70E+02	1.66E-04	2.0E+00	8.3E-05	1.00E-01	5.49E-05	2.0E+00	2.7E-05	5.59E-04	1.91E-04	7.0E+00	2.7E-05	2.55E-05	8.73E-06	7.0E+00	1.2E-06
SVOC	Carbazole	86-74-8	B2	1.40E+00	1.37E-06			1.00E-01	4.52E-07			1.47E-05	5.02E-06			2.10E-07	7.19E-08		
SVOC	Chrysene	218-01-9	B2	1.40E+01	1.37E-05			1.30E-01	5.88E-06			3.84E-05	1.31E-05			2.10E-06	7.19E-07		
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	1.40E+00	1.37E-06			1.30E-01	5.88E-07			3.75E-07	1.28E-07			2.10E-07	7.19E-08		
SVOC	Dibenzofuran	132-64-9	D	2.90E+00	2.84E-06	2.0E-03	1.4E-03	1.00E-01	9.36E-07	2.0E-03	4.7E-04			7.0E-03		4.35E-07	1.49E-07	7.0E-03	2.1E-05
SVOC	2,4-Dimethylphenol	105-67-9		3.80E-01	3.72E-07	2.0E-01	1.9E-06	1.00E-01	1.23E-07	2.0E-01	6.1E-07	3.94E-05	1.35E-05	7.0E-01	1.9E-05	5.70E-08	1.95E-08	7.0E-01	2.8E-08
SVOC	Di-n-butylphthalate	84-74-2	D	5.70E+00	5.58E-06	1.0E+00	5.6E-06	1.00E-01	1.84E-06	1.0E+00	1.8E-06	1.97E-05	6.76E-06	3.5E+00	1.9E-06	8.55E-07	2.93E-07	3.5E+00	8.4E-08
SVOC	Di-n-octylphthalate	117-84-0		2.90E+00	2.84E-06	2.0E-02	1.4E-04	1.00E-01	9.36E-07	2.0E-02	4.7E-05	1.32E-06	4.53E-07	7.0E-02	6.5E-06	4.35E-07	1.49E-07	7.0E-02	2.1E-06

1/2 Acre Construction Scenario Hazard Index Calculations - at Area of Ind Redevelopment
General Motors - Pontiac North Campus, Pontiac, Michigan

				Soil Ingestion				Soil Dermal Contact				Soil Vapor Inhalation				Soil Particulate Inhalation			
Chem Group	Chemical	CASRN	Cancer Class	C_{soil} (mg/kg)	ADD (mg/kg/d)	$SRfD_{oral}$ (mg/kg/d)	HQ	AF_{derm}	ADD (mg/kg/d)	$SRfD_{derm}$ (mg/kg/d)	HQ	C_{air} (mg/m^3)	ADD (mg/m^3)	SRfC (mg/m^3)	HQ	C_{air} (mg/m^3)	ADD (mg/m^3)	SRfC (mg/m^3)	HQ
SVOC	Fluoranthene	206-44-0	D	2.80E+01	2.74E-05	4.0E-01	6.8E-05	1.30E-01	1.18E-05	4.0E-01	2.9E-05	2.51E-04	8.59E-05	1.4E+00	6.1E-05	4.20E-06	1.44E-06	1.4E+00	1.0E-06
SVOC	Fluorene	86-73-7	D	2.10E+01	2.05E-05	4.0E-01	5.1E-05	1.30E-01	8.82E-06	4.0E-01	2.2E-05	1.12E-03	3.85E-04	1.4E+00	2.8E-04	3.15E-06	1.08E-06	1.4E+00	7.7E-07
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	4.50E+00	4.40E-06			1.30E-01	1.89E-06			2.21E-07	7.57E-08			6.75E-07	2.31E-07		
SVOC	2-Methylnaphthalene	91-57-6	ID	2.60E+00	2.54E-06	2.0E-02	1.3E-04	1.00E-01	8.40E-07	2.0E-02	4.2E-05			3.0E-03		3.90E-07	1.34E-07	3.0E-03	4.5E-05
SVOC	Methylphenol (total)	1319-77-3		8.75E+00	8.56E-06	5.0E-02	1.7E-04	1.00E-01	2.83E-06	5.0E-02	5.7E-05	1.09E-03	3.74E-04	1.8E-01	2.1E-03	1.31E-06	4.49E-07	1.8E-01	2.6E-06
SVOC	Naphthalene	91-20-3	C	1.35E+00	1.32E-06	2.0E-02	6.6E-05	1.30E-01	5.67E-07	2.0E-02	2.8E-05	6.61E-04	2.26E-04	3.0E-03	7.5E-02	2.03E-07	6.93E-08	3.0E-03	2.3E-05
SVOC	Phenanthrene	85-01-8	D	4.20E+01	4.11E-05	3.0E-01	1.4E-04	1.30E-01	1.76E-05	3.0E-01	5.9E-05	1.30E-03	4.47E-04	1.1E+00	4.3E-04	6.30E-06	2.16E-06	1.1E+00	2.1E-06
SVOC	Phenol	108-95-2	ID	2.20E+00	2.15E-06	3.0E-01	7.2E-06	1.00E-01	7.10E-07	3.0E-01	2.4E-06	3.30E-04	1.13E-04			3.30E-07	1.13E-07		
SVOC	Pyrene	129-00-0	D	2.80E+01	2.74E-05	3.0E-01	9.1E-05	1.30E-01	1.18E-05	3.0E-01	3.9E-05	2.02E-04	6.91E-05	1.1E+00	6.6E-05	4.20E-06	1.44E-06	1.1E+00	1.4E-06
P/PCB	PCBs (total)	1336-36-3	B2	2.90E+00	2.84E-06	5.0E-05	5.7E-02	1.40E-01	1.31E-06	5.0E-05	2.6E-02	3.09E-04	1.06E-04			4.35E-07	1.49E-07		
INORG	Aluminum	7429-90-5	D	3.90E+03	3.82E-03	1.0E+00	3.8E-03			1.0E+00				5.0E-03		5.85E-04	2.00E-04	5.0E-03	4.0E-02
INORG	Antimony	7440-36-0		4.49E+00	4.39E-06	4.0E-04	1.1E-02			4.0E-04				4.0E-04		6.74E-07	2.31E-07	4.0E-04	5.8E-04
INORG	Arsenic	7440-38-2	A			5.0E-03		3.00E-02		5.0E-03									
INORG	Barium	7440-39-3	D	3.93E+03	3.85E-03	7.0E-02	5.5E-02			7.0E-02				2.5E-01		5.89E-04	2.02E-04	2.5E-01	8.2E-04
INORG	Beryllium	7440-41-7	B1			2.0E-03				2.0E-03				2.0E-05				2.0E-05	
INORG	Cadmium	7440-43-9	B1	3.73E+01	3.65E-05	1.0E-03	3.6E-02	1.00E-03	1.20E-07	1.0E-03	1.2E-04			9.0E-04		5.60E-06	1.92E-06	9.0E-04	2.1E-03
INORG	Calcium	7440-70-2		8.86E+04	8.67E-02											1.33E-02	4.55E-03		
INORG	Chromium (total)	7440-47-3		6.98E+01	6.82E-05	2.0E-02	3.4E-03			2.0E-02				1.0E-04		1.05E-05	3.58E-06	1.0E-04	3.6E-02
INORG	Chromium III	16065-83-1	D	2.72E+02	2.66E-04	1.5E+00	1.8E-04			1.5E+00				5.3E+00		4.08E-05	1.40E-05	5.3E+00	2.7E-06
INORG	Chromium VI	18540-29-9	A	6.38E-01	6.24E-07	2.0E-02	3.1E-05			2.0E-02				1.0E-04		9.56E-08	3.27E-08	1.0E-04	3.3E-04
INORG	Cobalt	7440-48-4	B1			2.0E-02				2.0E-02				2.0E-05				2.0E-05	
INORG	Copper	7440-50-8	D	9.51E+02	9.31E-04	4.0E-02	2.3E-02			4.0E-02				1.4E-01		1.43E-04	4.89E-05	1.4E-01	3.5E-04
INORG	Cyanide (total)	57-12-5	D	1.58E+00	1.55E-06	2.0E-02	7.7E-05			2.0E-02				7.0E-02		2.37E-07	8.12E-08	7.0E-02	1.2E-06
INORG	Iron	7439-89-6	D	2.56E+04	2.50E-02	3.0E-01	8.3E-02			3.0E-01						3.84E-03	1.32E-03		
INORG	Lead	7439-92-1	B2	8.39E+03	8.21E-03											1.26E-03	4.31E-04		
INORG	Magnesium	7439-95-4		1.65E+04	1.61E-02	9.7E+00	1.7E-03			9.7E+00				3.4E+01		2.48E-03	8.48E-04	3.4E+01	2.5E-05
INORG	Manganese	7439-96-5	D	2.89E+02	2.82E-04	1.4E-01	2.0E-03			1.4E-01				5.0E-05		4.33E-05	1.48E-05	5.0E-05	3.0E-01
INORG	Mercury	7439-97-6	D	1.15E-01	1.13E-07	3.0E-04	3.8E-04			3.0E-04		1.03E-04	3.54E-05	3.0E-04	1.2E-01	1.73E-08	5.91E-09	3.0E-04	2.0E-05
INORG	Nickel	7440-02-0	A	4.98E+02	4.87E-04	2.0E-02	2.4E-02			2.0E-02						7.47E-05	2.56E-05		
INORG	Potassium	7440-09-7		2.69E+03	2.63E-03											4.04E-04	1.38E-04		
INORG	Selenium	7782-49-2	D	4.48E+00	4.38E-06	5.0E-03	8.8E-04			5.0E-03				1.8E-02		6.72E-07	2.30E-07	1.8E-02	1.3E-05
INORG	Silver	7440-22-4	D	6.86E+01	6.71E-05	5.0E-03	1.3E-02			5.0E-03				1.8E-02		1.03E-05	3.52E-06	1.8E-02	2.0E-04
INORG	Sodium	7440-23-5		6.24E+02	6.11E-04											9.36E-05	3.21E-05		
INORG	Thallium	7440-28-0		1.15E+00	1.13E-06	7.0E-05	1.6E-02			7.0E-05				2.5E-04		1.73E-07	5.91E-08	2.5E-04	2.4E-04
INORG	Tin	7440-31-5		2.70E+01	2.64E-05	6.0E-01	4.4E-05			6.0E-01				2.1E+00		4.05E-06	1.39E-06	2.1E+00	6.6E-07
INORG	Vanadium	7440-62-2		1.92E+01	1.88E-05	7.0E-03	2.7E-03			7.0E-03				2.5E-02		2.88E-06	9.85E-07	2.5E-02	4.0E-05
INORG	Zinc	7440-66-6	D	7.21E+03	7.06E-03	3.0E-01	2.4E-02			3.0E-01				1.1E+00		1.08E-03	3.70E-04	1.1E+00	3.5E-04
CDD/F	2,3,7,8-TCDD	1746-01-6	B2	1.89E-03	1.85E-09			3.00E-02	1.83E-10			4.03E-09	1.38E-09			2.84E-10	9.72E-11		
		HI:					**3.6E-01**				**2.8E-02**				**2.5E-01**				**3.8E-01**

Appendix F.3: Vapor Concentration Calculations for LNAPLs at AOIs M-2, M-16, and W-8

APPENDIX F.3

Vapor Concentration Calculations for LNAPLs at AOIs M-2, M-16, and W-8

1.0 Introduction

A simplified and conservative approach is used to evaluate the potential for significant exposure to constituents of the LNAPLs at AOIs M-2, M-16, and W-8 if these constituents are assumed to migrate into indoor air. In this simplified approach, vapor concentrations in equilibrium with the LNAPL are calculated and directly compared to occupational inhalation limits.

This approach is highly conservative because the source vapor concentrations would attenuated significantly if they were to migrate through the soil and building foundations cracks into indoor air. Typically, attenuation coefficients for VOCs are at least 10,000-fold. Actual attenuation coefficients are not been calculated here because the source vapor concentrations for the LNAPLs at these AOIs are relatively low, and the building characteristics that affect such calculations are uncertain for the proposed building in the Area of Industrial Redevelopment that might be constructed at AOI W-8 and future buildings that might be constructed at AOIs M-2 and M-16. However, illustrative calculations are provided in Section 4.0 to demonstrate that source vapor concentrations would be attenuated by at least 10,000-fold even under conservative assumptions for soil and building characteristics.

2.0 Source Vapor Concentrations

The vapor concentrations in equilibrium with the LNAPL are calculated using Raoult's Law as follows:

$$C_{i,source} = \frac{VP_i \cdot MW_{NAPL}}{R \cdot T} C_{i,NAPL} \left(\frac{kg}{10^3 g} \right)$$

where:

$C_{i,\ source}$	=	vapor concentration of chemical *i* (mg/m^3)
VP_i	=	vapor pressure for chemical *i* at 25^oC (mm Hg)
MW_{NAPL}	=	molecular weight of NAPL (g/mole)
R	=	gas constant, 0.062361 mm Hg m^3/mole/^oK

T = absolute temperature (^oK)

$C_{i,\ NAPL}$ = LNAPL concentration of chemical *i* (mg/kg)

Calculations of the source vapor concentrations are shown in the Attachment to this appendix.

3.0 Inhalation Limits

The occupational inhalation exposure limits are exposure limits for air contaminants as established in the Michigan Occupational Health Standards (MICIS, 2001), permissible exposure limits (PELs) established by the Occupational Safety and Health Administration (OSHA) (NIOSH, 1997), and threshold limit values (TLVs) recommended by the American Conference of Government Industrial Hygienists (ACGIH, 2002) for chemicals without Michigan exposure limits or federal PELs. These inhalation benchmarks are shown in the attachment to this appendix. As shown in the tables that accompany this appendix, no source vapor concentrations exceed the occupational inhalation limits.

4.0 Attenuation Coefficients

As discussed in Section 1.0, source vapor concentrations would attenuate if they migrate through the soil and foundation cracks into indoor air. Examples calculations are included in the tables that accompany this appendix to demonstrate that such attenuation would provide at least a 10,000-fold reduction of VOC source vapor concentrations. These calculations are based on the screening-level model described by Johnson and Ettinger (1991) and recommended by U.S. EPA (2003) and MDEQ (2002). The details of the model are available in the cited references and are not repeated here.

The example calculations are based on the generic commercial/industrial building characteristics recommended by MDEQ (2002), a conservative separation of 1.5 m between the subsurface vapor source and the building (based on conservative Site-specific depth to the water table), and assuming that soil between the LNAPL and the building consists of only sand.

These assumptions for building and soil characteristics are highly conservative for the LNAPL areas at AOIs M-2, M-16, and W-8. For example, the MDEQ assumption for the size of a generic commercial/industrial building is approximately 19 m by 19 m while the actual manufacturing buildings at AOIs M-2 and M-16 and the proposed building in the Area of Industrial Redevelopment are much larger. Assuming such a small building for these calculations is highly conservative, since the attenuation coefficient decreases with increasing building size. Another conservative assumption is that the soil overlying the LNAPLs consists of only sand. In fact, boring logs for borings at these areas show that the soil includes silt and clay which would provide greater attenuation than sand. The depth to the LNAPL at AOI W-8 is also approximately 3 times greater than the 1.5 m assumed for the calculations.

As shown in the tables that accompany this appendix, the attenuation coefficients for the VOCs detected in the LNAPLs at AOIs M-2, M-16, and W-8 are no larger than 0.0001, which means that source vapor concentrations would be expected to be attenuated or reduced by at least 10,000-fold if they were to migrate through the soil and foundation cracks into indoor air.

5.0 Significance of Potential Contribution to Indoor Air Concentrations

No LNAPL source vapor concentration exceeds the indoor air inhalation limits. As shown in the tables that accompany this appendix, the ratio of the source vapor concentrations to the inhalation limits are all less than 1. The discussion and illustrative calculations discussed in Section 4 show that these ratios can be divided by at least 10,000 to approximate the ratio of indoor air concentrations from vapor intrusion to the inhalation limits. If this is done, it can be seen that constituents of the LNAPL, if assumed to migrate into indoor air, would results in indoor air concentrations that are well below the inhalation limits and would not contribute materially to total indoor air concentrations, which would include contributions from indoor occupational sources. This can be seen on the accompanying tables where the ratios are divided by 10,000 and then summed. The sum of these ratios for each LNAPL area is less than 0.001.

Attachment to Appendix F.3

Occupational Criteria
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	MI OSHA (mg/m^3)			PEL (mg/m^3)			TLV-TWA (mg/m^3)		
			Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes
VOC	Benzene	71-43-2	3.19E+00	73		3.19E+00	46		1.60E+00	47	
VOC	Chloroform	67-66-3	9.78E+00	73					4.88E+01	47	
VOC	Cumene	98-82-8				2.45E+02	46		2.46E+02	47	
VOC	Cyclohexane	110-82-7				1.05E+03	46		3.44E+02	47	
VOC	1,1-Dichloroethane	75-34-3	4.00E+02	73		4.00E+02	46		4.05E+02	47	
VOC	1,1-Dichloroethene	75-35-4							1.98E+01	47	
VOC	cis-1,2-Dichloroethene	156-59-2							7.93E+02	47	
VOC	Ethyl Benzene	100-41-4	4.35E+02	73		4.35E+02	46		4.34E+02	47	
VOC	Methyl Acetate	79-20-9				6.10E+02	46		6.06E+02	47	
VOC	4-Methyl-2-pentanone	108-10-1				4.10E+02	46		2.05E+02	47	
VOC	Methylcyclohexane	108-87-2				2.00E+03	46		1.61E+03	47	
VOC	Methylene Chloride	75-09-2	8.70E+01	73		8.68E+01	46		1.74E+02	47	
VOC	Tetrachloroethene	127-18-4	1.70E+02	73		6.78E+02	46		1.70E+02	47	
VOC	Toluene	108-88-3	3.75E+02	73		7.54E+02	46		1.88E+02	47	
VOC	1,1,1-Trichloroethane	71-55-6	1.90E+03	73		1.90E+03	46		1.91E+03	47	
VOC	Trichloroethene	79-01-6	2.70E+02	73		5.37E+02	46		2.69E+02	47	
VOC	Xylenes (total)	1330-20-7	4.35E+02	73		4.35E+02	46		4.34E+02	47	
SVOC	Anthracene	120-12-7									
SVOC	Biphenyl	92-52-4				1.00E+00	46				
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7				5.00E+00	46		5.00E+00	47	
SVOC	Butylbenzylphthalate	85-68-7									
SVOC	Fluoranthene	206-44-0									
SVOC	Fluorene	86-73-7									
SVOC	2-Methylnaphthalene	91-57-6									
SVOC	Phenanthrene	85-01-8									
SVOC	Pyrene	129-00-0									
P/PCB	PCBs (total)	1336-36-3				5.00E-01	46	351	5.00E-01	47	351
INORG	Antimony	7440-36-0	5.00E-01	73		5.00E-01	46		5.00E-01	47	
INORG	Arsenic	7440-38-2	1.00E-02	73		5.00E-01	46		1.00E-02	47	
INORG	Cadmium	7440-43-9	5.00E-03	73		5.00E-03	46		1.00E-02	47	
INORG	Chromium (total)	7440-47-3	1.00E+00	73		1.00E+00	46				
INORG	Cobalt	7440-48-4	5.00E-02	73		1.00E-01	46		2.00E-02	47	
INORG	Copper	7440-50-8	1.00E+00	73	325	1.00E+00	46	325,326	1.00E+00	47	325
INORG	Cyanide (total)	57-12-5				5.00E+00	46				
INORG	Lead	7439-92-1	5.00E-02	73		5.00E-02	46		5.00E-02	47	
INORG	Nickel	7440-02-0	1.00E+00	73		1.00E+00	46		1.50E+00	47	
INORG	Silver	7440-22-4	1.00E-02	73		1.00E-02	46		1.00E-01	47	
INORG	Vanadium	7440-62-2									
INORG	Zinc	7440-66-6									
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6									

Occupational Criteria
General Motors - Pontiac North Campus, Pontiac, Michigan

References:

46	National Institute for Occupational Safety and Health (NIOSH). 1997. NIOSH Pocket Guide to Chemical Hazards. DHHS. 97-140. June.
47	American Conference of Government Industrial Hygenists. 2003. 2003 TLVs and BEIs. ISBN: 1-882417-40-2.
71	Michigan Department of Consumer and Industry Services. 2001. Occupational Health Standards; Part 301 Air Contaminants.

Notes:

325	Dust criterion.
326	Metal criterion.
351	ENVIRON used Aroclor 1254 [CASRN 11097-69-1] value from the indicated reference as a surrogate for Polychlorinated biphenyls [CASRN 1336-36-3].

Soil Moisture Profile below Slab on Grade Building General Motors - Pontiac North Campus, Pontiac, Michigan		
z (m)	q_T	q_w
0.000	0.481	0.481
0.015	0.481	0.480
0.031	0.481	0.479
0.046	0.481	0.478
0.061	0.481	0.477
0.077	0.481	0.475
0.092	0.481	0.474
0.107	0.481	0.473
0.123	0.481	0.471
0.138	0.481	0.470
0.154	0.481	0.468
0.169	0.481	0.466
0.184	0.481	0.465
0.200	0.481	0.463
0.215	0.481	0.462
0.230	0.481	0.460
0.246	0.481	0.458
0.261	0.481	0.457
0.276	0.481	0.455
0.292	0.481	0.454
0.307	0.481	0.452
0.322	0.481	0.450
0.338	0.481	0.449
0.353	0.481	0.447
0.368	0.481	0.446
0.384	0.481	0.444
0.399	0.481	0.443
0.415	0.481	0.441
0.430	0.481	0.440
0.445	0.481	0.439
0.461	0.481	0.437
0.476	0.481	0.436
0.491	0.481	0.434
0.507	0.481	0.433
0.522	0.481	0.432
0.537	0.481	0.430
0.553	0.481	0.429
0.568	0.481	0.428
0.583	0.481	0.426
0.599	0.481	0.425
0.614	0.481	0.424
0.629	0.481	0.423
0.645	0.481	0.421
0.660	0.481	0.420
0.676	0.481	0.419
0.691	0.481	0.418
0.706	0.481	0.417
0.722	0.481	0.415
0.737	0.481	0.414
0.752	0.481	0.413
0.768	0.481	0.412
0.783	0.481	0.411
0.798	0.481	0.410
0.814	0.481	0.409

Soil Moisture Profile below Slab on Grade Building General Motors - Pontiac North Campus, Pontiac, Michigan		
0.829	0.481	0.408
0.844	0.481	0.407
0.860	0.481	0.406
0.875	0.481	0.405
0.891	0.481	0.404
0.906	0.481	0.403
0.921	0.481	0.402
0.937	0.481	0.401
0.952	0.481	0.400
0.967	0.481	0.399
0.983	0.481	0.398
0.998	0.481	0.397
1.013	0.481	0.396
1.029	0.481	0.395
1.044	0.481	0.394
1.059	0.481	0.393
1.075	0.481	0.392
1.090	0.481	0.391
1.105	0.481	0.391
1.121	0.481	0.390
1.136	0.481	0.389
1.152	0.481	0.388
1.167	0.481	0.387
1.182	0.481	0.386
1.198	0.481	0.386
1.213	0.481	0.385
1.228	0.481	0.384
1.244	0.481	0.383
1.259	0.481	0.383
1.274	0.481	0.382
1.290	0.481	0.381
1.305	0.481	0.380
1.320	0.481	0.380
1.336	0.481	0.379
1.351	0.481	0.378
1.366	0.481	0.377
1.382	0.481	0.377
1.397	0.481	0.376
1.413	0.481	0.375
1.428	0.481	0.375
1.443	0.481	0.374
1.459	0.481	0.373
1.474	0.481	0.373
1.489	0.481	0.372
1.505	0.481	0.371
1.520	0.481	0.371
Note:		
Based on geotechnical data for sand from USEPA 2003.		
q_T	0.481	
q_r	0.111	
a	0.016	
N	1.321	

Calculation of Effective Diffusion Coefficients for a Slab on Grade Building General Motors - Pontiac North Campus, Pontiac, Michigan						
Chem Group	**Chemical**	**CASRN**	**D_{air}** (cm^2/s)	**D_{water}** (cm^2/s)	**H** (unitless)	**D_{eff}^T** (cm^2/s)
VOC	Benzene	71-43-2	8.80E-02	9.80E-06	1.14E-01	1.65E-04
VOC	Chloroform	67-66-3	1.04E-01	1.00E-05	7.50E-02	2.45E-04
VOC	Cumene	98-82-8	6.50E-02	7.83E-06	2.37E+01	1.23E-06
VOC	Cyclohexane	110-82-7	1.11E-01	9.14E-06	3.98E+00	7.31E-06
VOC	1,1-Dichloroethane	75-34-3	7.42E-02	1.05E-05	1.15E-01	1.69E-04
VOC	1,1-Dichloroethene	75-35-4	9.00E-02	1.04E-05	5.35E-01	4.66E-05
VOC	cis-1,2-Dichloroethene	156-59-2	7.36E-02	1.13E-05	8.35E-02	2.33E-04
VOC	Ethyl Benzene	100-41-4	7.50E-02	7.80E-06	1.62E-01	9.91E-05
VOC	Methyl Acetate	79-20-9	1.23E-01	1.10E-05	1.77E-03	4.15E-03
VOC	4-Methyl-2-pentanone	108-10-1	7.50E-02	7.80E-06	2.82E-03	2.10E-03
VOC	Methylcyclohexane	108-87-2	8.99E-02	8.27E-06	8.79E+00	3.24E-06
VOC	Methylene Chloride	75-09-2	1.01E-01	1.17E-05	4.49E-02	4.21E-04
VOC	Tetrachloroethene	127-18-4	7.20E-02	8.20E-06	3.77E-01	4.98E-05
VOC	Toluene	108-88-3	8.70E-02	8.60E-06	1.36E-01	1.27E-04
VOC	1,1,1-Trichloroethane	71-55-6	7.80E-02	8.80E-06	3.53E-01	5.67E-05
VOC	Trichloroethene	79-01-6	7.90E-02	9.10E-06	2.11E-01	9.07E-05
VOC	Xylenes (total)	1330-20-7	7.20E-02	8.00E-06	8.55E-02	1.71E-04
SVOC	Anthracene	120-12-7	3.24E-02	7.74E-06	1.34E-03	2.02E-03
SVOC	Biphenyl	92-52-4	4.04E-02	8.15E-06	6.13E-03	1.06E-03
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	3.51E-02	3.66E-06	2.09E-06	1.05E-02
SVOC	Butylbenzylphthalate	85-68-7	1.74E-02	4.83E-06	2.59E-05	3.31E-03
SVOC	Fluoranthene	206-44-0	3.02E-02	6.35E-06	3.30E-04	2.94E-03
SVOC	Fluorene	86-73-7	3.63E-02	7.88E-06	1.31E-03	2.20E-03
SVOC	2-Methylnaphthalene	91-57-6			1.06E-02	
SVOC	Phenanthrene	85-01-8	3.33E-02	7.47E-06	4.76E-04	2.95E-03
SVOC	Pyrene	129-00-0	2.72E-02	7.24E-06	2.26E-04	3.13E-03
P/PCB	PCBs (total)	1336-36-3	8.00E-02	1.00E-05	5.31E-02	3.09E-04
INORG	Antimony	7440-36-0				
INORG	Arsenic	7440-38-2				
INORG	Cadmium	7440-43-9				
INORG	Chromium (total)	7440-47-3				
INORG	Cobalt	7440-48-4				
INORG	Copper	7440-50-8				
INORG	Cyanide (total)	57-12-5	5.48E-01	2.10E-05		
INORG	Lead	7439-92-1				
INORG	Nickel	7440-02-0				
INORG	Silver	7440-22-4				
INORG	Vanadium	7440-62-2				
INORG	Zinc	7440-66-6				
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6	4.70E-02	8.00E-06	1.62E-03	2.32E-03

Vapor Intrusion into Building from Groundwater
General Motors - Pontiac North Campus, Pontiac, Michigan

Chem Group	Chemical	CASRN	D_{air} (cm^2/s)	D_{water} (cm^2/s)	H (unitless)	D_{crack} (cm^2/s)	D_{eff}^T (cm^2/s)	α_∞
VOC	Benzene	71-43-2	8.80E-02	9.80E-06	1.14E-01	1.43E-02	1.65E-04	7.60E-06
VOC	Chloroform	67-66-3	1.04E-01	1.00E-05	7.50E-02	1.69E-02	2.45E-04	1.08E-05
VOC	Cumene	98-82-8	6.50E-02	7.83E-06	2.37E+01	1.06E-02	1.23E-06	6.24E-08
VOC	Cyclohexane	110-82-7	1.11E-01	9.14E-06	3.98E+00	1.80E-02	7.31E-06	3.69E-07
VOC	1,1-Dichloroethane	75-34-3	7.42E-02	1.05E-05	1.15E-01	1.21E-02	1.69E-04	7.75E-06
VOC	1,1-Dichloroethene	75-35-4	9.00E-02	1.04E-05	5.35E-01	1.46E-02	4.66E-05	2.30E-06
VOC	cis-1,2-Dichloroethene	156-59-2	7.36E-02	1.13E-05	8.35E-02	1.20E-02	2.33E-04	1.03E-05
VOC	Ethyl Benzene	100-41-4	7.50E-02	7.80E-06	1.62E-01	1.22E-02	9.91E-05	4.74E-06
VOC	Methyl Acetate	79-20-9	1.23E-01	1.10E-05	1.77E-03	2.00E-02	4.15E-03	5.94E-05
VOC	4-Methyl-2-pentanone	108-10-1	7.50E-02	7.80E-06	2.82E-03	1.22E-02	2.10E-03	4.66E-05
VOC	Methylcyclohexane	108-87-2	8.99E-02	8.27E-06	8.79E+00	1.46E-02	3.24E-06	1.64E-07
VOC	Methylene Chloride	75-09-2	1.01E-01	1.17E-05	4.49E-02	1.64E-02	4.21E-04	1.70E-05
VOC	Tetrachloroethene	127-18-4	7.20E-02	8.20E-06	3.77E-01	1.17E-02	4.98E-05	2.45E-06
VOC	Toluene	108-88-3	8.70E-02	8.60E-06	1.36E-01	1.42E-02	1.27E-04	5.99E-06
VOC	1,1,1-Trichloroethane	71-55-6	7.80E-02	8.80E-06	3.53E-01	1.27E-02	5.67E-05	2.78E-06
VOC	Trichloroethene	79-01-6	7.90E-02	9.10E-06	2.11E-01	1.29E-02	9.07E-05	4.36E-06
VOC	Xylenes (total)	1330-20-7	7.20E-02	8.00E-06	8.55E-02	1.17E-02	1.71E-04	7.86E-06
SVOC	Anthracene	120-12-7	3.24E-02	7.74E-06	1.34E-03	5.27E-03	2.02E-03	4.58E-05
SVOC	Biphenyl	92-52-4	4.04E-02	8.15E-06	6.13E-03	6.57E-03	1.06E-03	3.25E-05
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	3.51E-02	3.66E-06	2.09E-06	6.41E-03	1.05E-02	7.17E-05
SVOC	Butylbenzylphthalate	85-68-7	1.74E-02	4.83E-06	2.59E-05	2.91E-03	3.31E-03	5.55E-05
SVOC	Fluoranthene	206-44-0	3.02E-02	6.35E-06	3.30E-04	4.92E-03	2.94E-03	5.32E-05
SVOC	Fluorene	86-73-7	3.63E-02	7.88E-06	1.31E-03	5.91E-03	2.20E-03	4.75E-05
SVOC	2-Methylnaphthalene	91-57-6			1.06E-02			
SVOC	Phenanthrene	85-01-8	3.33E-02	7.47E-06	4.76E-04	5.43E-03	2.95E-03	5.33E-05
SVOC	Pyrene	129-00-0	2.72E-02	7.24E-06	2.26E-04	4.44E-03	3.13E-03	5.44E-05
P/PCB	PCBs (total)	1336-36-3	8.00E-02	1.00E-05	5.31E-02	1.30E-02	3.09E-04	1.32E-05
INORG	Antimony	7440-36-0						
INORG	Arsenic	7440-38-2						
INORG	Cadmium	7440-43-9						
INORG	Chromium (total)	7440-47-3						
INORG	Cobalt	7440-48-4						
INORG	Copper	7440-50-8						
INORG	Cyanide (total)	57-12-5	5.48E-01	2.10E-05				
INORG	Lead	7439-92-1						
INORG	Nickel	7440-02-0						
INORG	Silver	7440-22-4						
INORG	Vanadium	7440-62-2						
INORG	Zinc	7440-66-6						
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6	4.70E-02	8.00E-06	1.62E-03	7.65E-03	2.32E-03	4.85E-05
Notes:	**Crack Soil and Building Characteristics**							
	Bulk density	kg/L	ρ_b	**1.66**				
	Total porosity	L/L-soil	θ_T	**0.375**				
	Water-filled porosity	L/L-soil	θ_w	**0.053**				
	Air-filled porosity	L/L-soil	θ_a	0.322				
	Residual saturation	L/L-soil	θ_r	**0.053**				
	Hydraulic conductivity	cm/s	**K**	**7.4E-03**				
	Dynamic viscosity of water	g/cm-s	μ_w	0.01307				
	Density of water	g/cm^3	ρ_w	1.0				
	Gravitational acceleration	cm/s^2	**g**	980.7				

Vapor Intrusion into Building from Groundwater General Motors - Pontiac North Campus, Pontiac, Michigan								
Chem Group	**Chemical**	**CASRN**	**D_{air}** (cm^2/s)	**D_{water}** (cm^2/s)	**H** (unitless)	**D_{crack}** (cm^2/s)	**D_{eff}^T** (cm^2/s)	α_∞
	Intrinsic permeability	cm^2	**k**	9.9E-08				
	Relative saturation	unitless	**S_e**	0.000				
	van Genuchten N	unitless	**N**	**3.177**				
	van Genuchten M	unitless	**M**	0.685				
	Relative air permeability	unitless	**k_{rg}**	1.000				
	Permeability to vapor	cm^2	**k_v**	9.92E-08				
	Distance from building foundation to source	m	**L_T**	**1.50**				
	Bldg foundation thickness	m	**L_{crack}**	0.15				
	Bldg foundation length	m		**19.29**				
	Bldg foundation width	m		**19.29**				
	Bldg occupied height	m		**2.44**				
	Bldg occupied volume	m^3		907.93				
	Bldg depth below ground	m		**0.15**				
	Bldg area for vapor intrusion	m^2	**A_B**	383.7				
	Ratio of A_{crack} to A_B		h	1E-04				
	Area of cracks	m^2	**A_{crack}**	3.86E-02				
	Air exchange rate	$hour^{-1}$	**ach**	**2.0**				
	Building ventilation rate	m^3/s	**Q_{bldg}**	5.04E-01				
	Pressure difference between outdoors-indoors	$kg/m\text{-}s^2$	D**P**	1.0				
	Viscosity of air	kg/m-s	m_a	1.8E-05				
	Crack length (bldg perimeter)	m	**X_{crack}**	77.16				
	Crack depth below ground	m	**Z_{crack}**	0.15				
	Crack radius	m	**r_{crack}**	**5E-04**				
	Soil gas flow rate into bldg	m^3/s	**Q_{soil}**	4.17E-05				

Estimated Equilibrium Vapor Concentrations from LNAPL
General Motors - Pontiac North Campus, Pontiac, Michigan

				M-02 NAPL				M-16 NAPL				W-08 NAPL			
Chem Group	**Chemical**	**CASRN**	**Criteria** (mg/m^3)	**C_{LNAPL}** (mg/kg)	**VP** (mm Hg)	**C_{vapor}** (mg/m^3)	**Ratio of Conc to Criteria**	**C_{LNAPL}** (mg/kg)	**VP** (mm Hg)	**C_{vapor}** (mg/m^3)	**Ratio of Conc to Criteria**	**C_{LNAPL}** (mg/kg)	**VP** (mm Hg)	**C_{vapor}** (mg/m^3)	**Ratio of Conc to Criteria**
VOC	Benzene	71-43-2	3.19E+00		9.50E+01			1.40E-01	9.50E+01	1.11E-01	3.5E-02		9.50E+01		
VOC	Chloroform	67-66-3	9.78E+00	4.20E-01	1.97E+02	6.93E-01	7.1E-02		1.97E+02				1.97E+02		
VOC	Cumene	98-82-8	2.45E+02	7.90E-01	4.50E+00	2.97E-02	1.2E-04	6.10E-01	4.50E+00	2.29E-02	9.4E-05	8.00E-01	4.50E+00	3.01E-02	1.2E-04
VOC	Cyclohexane	110-82-7	1.05E+03		9.69E+01			7.30E-01	9.69E+01	5.91E-01	5.6E-04		9.69E+01		
VOC	1,1-Dichloroethane	75-34-3	4.00E+02	2.10E+01	2.27E+02	3.99E+01	1.0E-01		2.27E+02				2.27E+02		
VOC	1,1-Dichloroethene	75-35-4	1.98E+01	2.40E+00	6.00E+02	1.20E+01	6.1E-01		6.00E+02				6.00E+02		
VOC	cis-1,2-Dichloroethene	156-59-2	7.93E+02		2.03E+02			3.00E-01	2.03E+02	5.09E-01	6.4E-04		2.03E+02		
VOC	Ethyl Benzene	100-41-4	4.35E+02	2.70E+00	9.60E+00	2.17E-01	5.0E-04	7.10E+00	9.60E+00	5.70E-01	1.3E-03	1.20E+00	9.60E+00	9.63E-02	2.2E-04
VOC	Methyl Acetate	79-20-9	6.10E+02		2.16E+02			4.80E-01	2.16E+02	8.66E-01	1.4E-03		2.16E+02		
VOC	4-Methyl-2-pentanone	108-10-1	4.10E+02	3.40E-01	1.99E+01	5.65E-02	1.4E-04		1.99E+01				1.99E+01		
VOC	Methylcyclohexane	108-87-2	2.00E+03	2.70E-01	4.60E+01	1.04E-01	5.2E-05	1.90E+00	4.60E+01	7.31E-01	3.7E-04	6.20E-01	4.60E+01	2.38E-01	1.2E-04
VOC	Methylene Chloride	75-09-2	8.70E+01	1.30E+00	4.33E+02	4.71E+00	5.4E-02		4.33E+02				4.33E+02		
VOC	Tetrachloroethene	127-18-4	1.70E+02	1.10E+01	1.86E+01	1.71E+00	1.0E-02	2.20E-01	1.86E+01	3.41E-02	2.0E-04		1.86E+01		
VOC	Toluene	108-88-3	3.75E+02	3.30E+00	2.84E+01	7.84E-01	2.1E-03	1.20E+01	2.84E+01	2.85E+00	7.6E-03		2.84E+01		
VOC	1,1,1-Trichloroethane	71-55-6	1.90E+03	4.40E+00	1.24E+02	4.55E+00	2.4E-03		1.24E+02				1.24E+02		
VOC	Trichloroethene	79-01-6	2.70E+02	1.40E+00	7.35E+01	8.60E-01	3.2E-03	5.30E-01	7.35E+01	3.26E-01	1.2E-03		7.35E+01		
VOC	Xylenes (total)	1330-20-7	4.35E+02	1.00E+01	1.00E+01	8.36E-01	1.9E-03	3.90E+01	1.00E+01	3.26E+00	7.5E-03	1.30E+00	1.00E+01	1.09E-01	2.5E-04
SVOC	Anthracene	120-12-7		1.20E+02	2.67E-06	2.68E-06			2.67E-06				2.67E-06		
SVOC	Biphenyl	92-52-4	1.00E+00		9.64E-03				9.64E-03			1.60E+02	9.64E-03	1.29E-02	1.3E-02
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	5.00E+00		6.45E-06			5.30E+02	6.45E-06	2.86E-05	5.7E-06		6.45E-06		
SVOC	Butylbenzylphthalate	85-68-7			8.25E-06			4.00E+02	8.25E-06	2.76E-05			8.25E-06		
SVOC	Fluoranthene	206-44-0		1.30E+02	7.80E-06	8.48E-06			7.80E-06				7.80E-06		
SVOC	Fluorene	86-73-7		1.70E+02	6.33E-04	9.00E-04		1.40E+02	6.33E-04	7.41E-04		1.90E+02	6.33E-04	1.01E-03	
SVOC	2-Methylnaphthalene	91-57-6		5.90E+01	5.50E-02	2.71E-02			5.50E-02			1.20E+02	5.50E-02	5.52E-02	
SVOC	Phenanthrene	85-01-8		6.60E+02	1.12E-04	6.18E-04		2.50E+02	1.12E-04	2.34E-04		7.80E+02	1.12E-04	7.30E-04	
SVOC	Pyrene	129-00-0		1.70E+02	4.59E-06	6.52E-06			4.59E-06				4.59E-06		
P/PCB	PCBs (total)	1336-36-3	5.00E-01	1.70E+02	7.70E-05	1.10E-04	2.2E-04	8.32E+01	7.70E-05	5.36E-05	1.1E-04	2.70E+00	7.70E-05	1.74E-06	3.5E-06
INORG	Antimony	7440-36-0	5.00E-01	4.80E-01				2.70E-01							
INORG	Arsenic	7440-38-2	1.00E-02	6.50E+00				1.11E+01							
INORG	Cadmium	7440-43-9	5.00E-03					8.90E-02							
INORG	Chromium (total)	7440-47-3	1.00E+00	2.70E+00				2.90E+00							
INORG	Cobalt	7440-48-4	5.00E-02	8.40E-02				1.90E-01							
INORG	Copper	7440-50-8	1.00E+00	3.20E+00				4.10E+00				2.90E-01			
INORG	Cyanide (total)	57-12-5	5.00E+00	1.20E-01	1.38E+01	1.39E-02	2.8E-03		1.38E+01				1.38E+01		
INORG	Lead	7439-92-1	5.00E-02	8.30E-01				1.40E+01							
INORG	Nickel	7440-02-0	1.00E+00	9.17E+01				1.30E+00							
INORG	Silver	7440-22-4	1.00E-02	1.10E-01											
INORG	Vanadium	7440-62-2						3.10E+00							
INORG	Zinc	7440-66-6		1.90E+00				2.79E+01							
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6			1.49E-09				1.49E-09			7.38E-06	1.49E-09	9.19E-17	

Estimated Indoor Air Concentrations from LNAPL
General Motors - Pontiac North Campus, Pontiac, Michigan

				M-02 NAPL						M-16 NAPL						W-08 NAPL					
Chem Group	**Chemical**	**CASRN**	**Criteria (mg/m^3)**	**C_{LNAPL} (mg/kg)**	**VP (mm Hg)**	**C_{vapor} (mg/m^3)**	**α_∞**	**$C_{indoor\ air}$ (mg/m^3)**	**Ratio of Conc to Criteria**	**C_{LNAPL} (mg/kg)**	**VP (mm Hg)**	**C_{vapor} (mg/m^3)**	**α_∞**	**$C_{indoor\ air}$ (mg/m^3)**	**Ratio of Conc to Criteria**	**C_{LNAPL} (mg/kg)**	**VP (mm Hg)**	**C_{vapor} (mg/m^3)**	**α_∞**	**$C_{indoor\ air}$ (mg/m^3)**	**Ratio of Conc to Criteria**
VOC	Benzene	71-43-2	3.19E+00		9.50E+01		7.60E-06			1.40E-01	9.50E+01	1.11E-01	7.60E-06	8.45E-07	2.7E-07		9.50E+01		7.60E-06		
VOC	Chloroform	67-66-3	9.78E+00	4.20E-01	1.97E+02	6.93E-01	1.08E-05	7.48E-06	7.6E-07		1.97E+02		1.08E-05				1.97E+02		1.08E-05		
VOC	Cumene	98-82-8	2.45E+02	7.90E-01	4.50E+00	2.97E-02	6.24E-08	1.85E-09	7.6E-12	6.10E-01	4.50E+00	2.29E-02	6.24E-08	1.43E-09	5.8E-12	8.00E-01	4.50E+00	3.01E-02	6.24E-08	1.88E-09	7.7E-12
VOC	Cyclohexane	110-82-7	1.05E+03		9.69E+01		3.69E-07			7.30E-01	9.69E+01	5.91E-01	3.69E-07	2.18E-07	2.1E-10		9.69E+01		3.69E-07		
VOC	1,1-Dichloroethane	75-34-3	4.00E+02	2.10E+01	2.27E+02	3.99E+01	7.75E-06	3.09E-04	7.7E-07		2.27E+02		7.75E-06				2.27E+02		7.75E-06		
VOC	1,1-Dichloroethene	75-35-4	1.98E+01	2.40E+00	6.00E+02	1.20E+01	2.30E-06	2.76E-05	1.4E-06		6.00E+02		2.30E-06				6.00E+02		2.30E-06		
VOC	cis-1,2-Dichloroethene	156-59-2	7.93E+02		2.03E+02		1.03E-05			3.00E-01	2.03E+02	5.09E-01	1.03E-05	5.26E-06	6.6E-09		2.03E+02		1.03E-05		
VOC	Ethyl Benzene	100-41-4	4.35E+02	2.70E+00	9.60E+00	2.17E-01	4.74E-06	1.03E-06	2.4E-09	7.10E+00	9.60E+00	5.70E-01	4.74E-06	2.70E-06	6.2E-09	1.20E+00	9.60E+00	9.63E-02	4.74E-06	4.56E-07	1.0E-09
VOC	Methyl Acetate	79-20-9	6.10E+02		2.16E+02		5.94E-05			4.80E-01	2.16E+02	8.66E-01	5.94E-05	5.14E-05	8.4E-08		2.16E+02		5.94E-05		
VOC	4-Methyl-2-pentanone	108-10-1	4.10E+02	3.40E-01	1.99E+01	5.65E-02	4.66E-05	2.63E-06	6.4E-09		1.99E+01		4.66E-05				1.99E+01		4.66E-05		
VOC	Methylcyclohexane	108-87-2	2.00E+03	2.70E-01	4.60E+01	1.04E-01	1.64E-07	1.70E-08	8.5E-12	1.90E+00	4.60E+01	7.31E-01	1.64E-07	1.20E-07	6.0E-11	6.20E-01	4.60E+01	2.38E-01	1.64E-07	3.91E-08	2.0E-11
VOC	Methylene Chloride	75-09-2	8.70E+01	1.30E+00	4.33E+02	4.71E+00	1.70E-05	7.98E-05	9.2E-07		4.33E+02		1.70E-05				4.33E+02		1.70E-05		
VOC	Tetrachloroethene	127-18-4	1.70E+02	1.10E+01	1.86E+01	1.71E+00	2.45E-06	4.18E-06	2.5E-08	2.20E-01	1.86E+01	3.41E-02	2.45E-06	8.36E-08	4.9E-10		1.86E+01		2.45E-06		
VOC	Toluene	108-88-3	3.75E+02	3.30E+00	2.84E+01	7.84E-01	5.99E-06	4.69E-06	1.3E-08	1.20E+01	2.84E+01	2.85E+00	5.99E-06	1.71E-05	4.5E-08		2.84E+01		5.99E-06		
VOC	1,1,1-Trichloroethane	71-55-6	1.90E+03	4.40E+00	1.24E+02	4.55E+00	2.78E-06	1.26E-05	6.7E-09		1.24E+02		2.78E-06				1.24E+02		2.78E-06		
VOC	Trichloroethene	79-01-6	2.70E+02	1.40E+00	7.35E+01	8.60E-01	4.36E-06	3.75E-06	1.4E-08	5.30E-01	7.35E+01	3.26E-01	4.36E-06	1.42E-06	5.3E-09		7.35E+01		4.36E-06		
VOC	Xylenes (total)	1330-20-7	4.35E+02	1.00E+01	1.00E+01	8.36E-01	7.86E-06	6.57E-06	1.5E-08	3.90E+01	1.00E+01	3.26E+00	7.86E-06	2.56E-05	5.9E-08	1.30E+00	1.00E+01	1.09E-01	7.86E-06	8.55E-07	2.0E-09
SVOC	Anthracene	120-12-7		1.20E+02	2.67E-06	2.68E-06	4.58E-05	1.23E-10			2.67E-06		4.58E-05				2.67E-06		4.58E-05		
SVOC	Biphenyl	92-52-4	1.00E+00		9.64E-03		3.25E-05				9.64E-03		3.25E-05			1.60E+02	9.64E-03	1.29E-02	3.25E-05	4.19E-07	4.2E-07
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	5.00E+00		6.45E-06		7.17E-05			5.30E+02	6.45E-06	2.86E-05	7.17E-05	2.05E-09	4.1E-10		6.45E-06		7.17E-05		
SVOC	Butylbenzylphthalate	85-68-7			8.25E-06		5.55E-05			4.00E+02	8.25E-06	2.76E-05	5.55E-05	1.53E-09			8.25E-06		5.55E-05		
SVOC	Fluoranthene	206-44-0		1.30E+02	7.80E-06	8.48E-06	5.32E-05	4.51E-10			7.80E-06		5.32E-05				7.80E-06		5.32E-05		
SVOC	Fluorene	86-73-7		1.70E+02	6.33E-04	9.00E-04	4.75E-05	4.27E-08		1.40E+02	6.33E-04	7.41E-04	4.75E-05	3.52E-08		1.90E+02	6.33E-04	1.01E-03	4.75E-05	4.78E-08	
SVOC	2-Methylnaphthalene	91-57-6		5.90E+01	5.50E-02	2.71E-02					5.50E-02					1.20E+02	5.50E-02	5.52E-02			
SVOC	Phenanthrene	85-01-8		6.60E+02	1.12E-04	6.18E-04	5.33E-05	3.29E-08		2.50E+02	1.12E-04	2.34E-04	5.33E-05	1.25E-08		7.80E+02	1.12E-04	7.30E-04	5.33E-05	3.89E-08	
SVOC	Pyrene	129-00-0		1.70E+02	4.59E-06	6.52E-06	5.44E-05	3.55E-10			4.59E-06		5.44E-05				4.59E-06		5.44E-05		
P/PCB	PCBs (total)	1336-36-3	5.00E-01	1.70E+02	7.70E-05	1.10E-04	1.32E-05	1.44E-09	2.9E-09	8.32E+01	7.70E-05	5.36E-05	1.32E-05	7.06E-10	1.4E-09	2.70E+00	7.70E-05	1.74E-06	1.32E-05	2.29E-11	4.6E-11
INORG	Antimony	7440-36-0	5.00E-01	4.80E-01						2.70E-01											
INORG	Arsenic	7440-38-2	1.00E-02	6.50E+00						1.11E+01											
INORG	Cadmium	7440-43-9	5.00E-03							8.90E-02											
INORG	Chromium (total)	7440-47-3	1.00E+00	2.70E+00						2.90E+00											
INORG	Cobalt	7440-48-4	5.00E-02	8.40E-02						1.90E-01											
INORG	Copper	7440-50-8	1.00E+00	3.20E+00						4.10E+00						2.90E-01					
INORG	Cyanide (total)	57-12-5	5.00E+00	1.20E-01	1.38E+01	1.39E-02					1.38E+01						1.38E+01				
INORG	Lead	7439-92-1	5.00E-02	8.30E-01						1.40E+01											
INORG	Nickel	7440-02-0	1.00E+00	9.17E+01						1.30E+00											
INORG	Silver	7440-22-4	1.00E-02	1.10E-01																	
INORG	Vanadium	7440-62-2								3.10E+00											
INORG	Zinc	7440-66-6		1.90E+00						2.79E+01											
CDD/F	2,3,7,8-TCDD Equivalent	1746-01-6			1.49E-09		4.85E-05				1.49E-09		4.85E-05			7.38E-06	1.49E-09	9.19E-17	4.85E-05	4.46E-21	
			Sum						**3.93E-06**						**4.74E-07**						**4.23E-07**