

RACER Trust

RCRA Facilities Investigation

**Pontiac North Campus
Pontiac, Michigan**

July 9, 2012

DRAFT



Victoria A. Stacey, PE
Staff Environmental Engineer

Christi Kiker, PE
Principal Environmental Engineer

John P. McKenna, CPG, PG
Associate Vice President

RCRA Facilities Investigation

Pontiac North Campus
Pontiac, Michigan

Prepared for:
RACER Trust

Prepared by:
ARCADIS G&M of Michigan, LLC
28550 Cabot Drive, Suite 500
Novi,
Michigan 48377
Tel 248.994.2240
Fax 248.994.2241

Our Ref.:
B0064607.2012

Date:
July 9, 2012

This document is intended only for the use of the individual or entity for which it was prepared and may contain information that is privileged, confidential and exempt from disclosure under applicable law. Any dissemination, distribution or copying of this document is strictly prohibited.

1. Introduction	1-1
1.1 Site Setting	1-2
1.2 History	1-3
1.2.1 Corrective Action History	1-3
1.3 Purpose	1-4
1.4 RFI Objectives and Approach	1-5
2. RFI Overview	2-1
2.1 Site Location	2-1
2.2 Areas of Investigation	2-1
2.2.1 Fiero	2-2
2.2.2 Demolition Area	2-2
2.2.3 Metal Fabrication Division	2-2
2.2.4 Off-site Areas	2-2
2.2.4.1 Pontiac School Board Property	2-2
2.2.4.2 Harris Lake	2-3
2.2.4.3 Terry Lake	2-3
2.2.4.4 Osmun Lake	2-3
2.3 RFI	2-3
2.3.1 RFI Field Methods and Procedures	2-4
2.3.2 Laboratory Procedures	2-6
2.3.3 Data Validation	2-6
2.3.4 RFI Field Activities	2-6
2.3.4.1 Site-wide Hydrogeologic Investigation (2001-2002)	2-6
2.3.4.2 AOI and AOI Follow-up Investigation (2001-2011)	2-7
2.3.4.3 Pontiac School Board Property (2001)	2-9
2.3.4.4 Harris Lake (2001-2002)	2-9
2.3.4.5 Terry Lake (2002)	2-10

2.3.4.6	Osmun Lake (2002)	2-11
2.3.4.7	LNAPL Investigation (2001-2005)	2-11
2.4	Redevelopment Activities	2-14
2.4.1	Demolition Area (2004-2008)	2-14
2.4.1.1	TP-10 and BW9-27 Excavation Area Soils (2007)	2-14
2.4.2	Powertrain Excavated Soils (2007)	2-15
2.4.3	Fiero Powerhouse	2-15
2.5	Interim Measures	2-15
2.6	Other Reports	2-16
3.	Environmental Setting	3-1
3.1	Location/Physiography	3-1
3.2	Climate	3-1
3.3	Land Use and Demographic Data	3-1
3.3.1	Land Use Patterns	3-1
3.3.2	Economy, Population, and Housing Trends	3-2
3.3.3	Site Redevelopment Plans	3-2
3.4	Regional Geology	3-2
3.4.1	Overburden	3-3
3.4.2	Bedrock	3-3
3.5	Regional Hydrogeology	3-4
3.5.1	Unconfined Water Table Zone	3-4
3.5.2	Glacial Zone	3-4
3.5.3	Sand and Gravel Outwash Zone	3-4
3.5.4	Bedrock Zone	3-5
3.6	Surface Water/Drainage	3-5
3.7	Groundwater Use	3-6
3.8	Site Geology/Hydrogeology	3-6

3.8.1	Site Geology	3-6
3.8.2	Site Hydrogeologic Setting	3-10
3.8.3	In-situ Hydraulic Conductivity Test Results	3-13
3.9	Semi-Annual Groundwater Monitoring	3-14
3.10	Background Soil Characterization	3-14
4.	RFI Results and Discussion	4-1
4.1	Data Evaluation Methods	4-1
4.2	Analytical Results	4-2
5.	Human Health Risk Evaluation	5-1
5.1	Initial Screening	5-1
5.2	Exposure Assessment	5-2
5.2.1	Exposure Setting	5-3
5.2.2	Exposure Pathway Analysis	5-3
5.2.2.1	Onsite	5-4
5.2.2.2	Off-site	5-5
5.2.2.3	Exposure Characteristics of Areas Included in Risk Evaluation	5-5
5.2.3	Exposure Point Concentrations	5-6
5.3	Risk Characterization	5-8
5.3.1	Onsite	5-8
5.4	Uncertainties	5-11
5.5	Conclusions and Recommendations	5-12
6.	Summary/Conclusions	6-1
6.1	Objectives	6-1
6.2	Deed Restrictions Planned for the Site	6-1
6.3	Results of Data Screening	6-2
6.4	Results of the Risk Assessment and Recommendations for Further Evaluation	6-2

7. References**7-1****Tables**

2-1	Timeline
2-2	Groundwater Sampling Field Parameters
2-3	Summary of Analytical Methods
2-4	Interim Measures
3-1	Subsurface Stratigraphic Data Summary
3-2	Groundwater Levels Summary
3-3	Hydraulic Conductivity Values
3-4	Background Screening Levels
4-1	Summary of RFI Activities
4-2	Relevant Screening Criteria
4-3	Screening Summary of Frequency and Maximum Detections in Soil for Sitewide Hydrogeologic Investigation
4-4	Screening Summary of Frequency and Maximum Detections in Shallow Groundwater for Sitewide Hydrogeologic Investigation
4-5	Screening Summary of Frequency and Maximum Detections in Deep and Intermediate Groundwater for Sitewide Hydrogeologic Investigation
4-6	Screening Summary of Frequency and Maximum Detections in Soil for AOI F-7
4-7	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI F-7
4-8	Screening Summary of Frequency and Maximum Detections in Soil for AOI F-8
4-9	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI F-08
4-10	Screening Summary of Frequency and Maximum Detections in Soil for AOI F-12
4-11	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI F-12

4-12	Screening Summary of Frequency and Maximum Detections in Soil for AOI F-13
4-13	Screening Summary of Frequency and Maximum Detections in Soil for AOI F-14
4-14	Screening Summary of Frequency and Maximum Detections in Soil for AOI F-15
4-15	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI F-15
4-16	Screening Summary of Frequency and Maximum Detections in Soil for AOI F-16 (Soil)
4-17	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI F-16 (Groundwater)
4-18	Screening Summary of Frequency and Maximum Detections in Soil for AOI F-17 (Soil)
4-19	Screening Summary of Frequency and Maximum Detections in Soil for AOI W-01 (Soil)
4-20	Screening Summary of Frequency and Maximum Detections in LNAPL for AOI W-1 (LNAPL)
4-21	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI W-1 (Groundwater)
4-22	Screening Summary of Frequency and Maximum Detections in Soil for AOI W-3 (Soil)
4-23	Screening Summary of Frequency and Maximum Detections in Soil for AOI W-5 (Soil)
4-24	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI W-5 (Groundwater)
4-25	Screening Summary of Frequency and Maximum Detections in Soil for AOI W-6 (Soil)
4-26	Screening Summary of Frequency and Maximum Detections in Soil for AOI W-8 (Soil)
4-27	Screening Summary of Frequency and Maximum Detections in LNAPL for AOI W-8 (LNAPL)
4-28	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI W-8 (Groundwater)
4-29	Screening Summary of Frequency and Maximum Detections in Soil for AOI W-9 (Soil)

4-30	Screening Summary of Frequency and Maximum Detections in Shallow Groundwater for AOI W-9 (Shallow Groundwater)
4-31	Screening Summary of Frequency and Maximum Detections in Soil for AOI W-10 (Soil)
4-32	Screening Summary of Frequency and Maximum Detections in LNAPL for AOI W-10 (LNAPL)
4-33	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI W-10 (Groundwater)
4-34	Screening Summary of Frequency and Maximum Detections in Soil for AOI W-13 (Soil)
4-35	Screening Summary of Frequency and Maximum Detections in Soil for AOI M-2 (Soil)
4-36	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-2 (Groundwater)
4-37	Screening Summary of Frequency and Maximum Detections in Soil for AOI M-4 (Soil)
4-38	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-4 (Groundwater)
4-39	Screening Summary of Frequency and Maximum Detections in Soil for AOI M-5 (Soil)
4-40	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-5 (Groundwater)
4-41	Screening Summary of Frequency and Maximum Detections in Soil for AOI M-7 (Soil)
4-42	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-7 (Groundwater)
4-43	Screening Summary of Frequency and Maximum Detections in Soil for AOI M-11 (Soil)
4-44	Screening Summary of Frequency and Maximum Detections in Soil for AOI M-16 (Soil)
4-45	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-16 (Groundwater)
4-46	Screening Summary of Frequency and Maximum Detections in Soil for AOI M-19 (Soil)
4-47	Screening Summary of Frequency and Maximum Detections in Soil for AOI M-23 (Soil)

4-48	Screening Summary of Frequency and Maximum Detections in Soil for AOI M-25 (Soil)
4-49	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-25 (Groundwater)
4-50	Screening Summary of Frequency and Maximum Detections in Surface Soil for AOI M-27 (Surface Soil)
4-51	Screening Summary of Frequency and Maximum Detections in Subsurface Soil for AOI M-27 (Subsurface Soil)
4-52	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-27 (Groundwater)
4-53	Screening Summary of Frequency and Maximum Detections in Soil for AOI M-28 (Soil)
4-54	Screening Summary of Frequency and Maximum Detections in Soil for AOI M-30 (Soil)
4-55	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-30 (Groundwater)
4-56	Screening Summary of Frequency and Maximum Detections in Soil for AOI M-31 (Soil)
4-57	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-31 (Groundwater)
4-58	Screening Summary of Frequency and Maximum Detections in Soil for AOI M-32 (Soil)
4-59	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-32 (Groundwater)
4-60	Screening Summary of Frequency and Maximum Detections in Soil for AOI M-34 (Soil)
4-61	Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-34 (Groundwater)
4-62	Screening Summary of Frequency and Maximum Detections in Surface Soil for Pontiac School Board (Surface Soil)
4-63	Screening Summary of Frequency and Maximum Detections in Subsurface Soil for Pontiac School Board (Subsurface Soil)
4-64	Screening Summary of Frequency and Maximum Detections in Sediment for Pontiac School Board (Sediment)
4-65	Screening Summary of Frequency and Maximum Detections in Groundwater for Pontiac School Board (Groundwater)

4-66	Screening Summary of Frequency and Maximum Detections in Sediment for Terry Lake (Sediment)
4-67	Screening Summary of Frequency and Maximum Detections in Sediment for Osmun Lake (Sediment)
4-68	Screening Summary of Frequency and Maximum Detections in Groundwater for Off-site Groundwater
4-69	Screening Summary of Frequency and Maximum Detections in Groundwater for Down Gradient Shallow Groundwater
4-70	Screening Summary of Frequency and Maximum Detections in Groundwater for Down Gradient Deep Groundwater
4-71	Screening Summary of Frequency and Maximum Detections in Soil for Stormwater Detention Facility
4-72	Screening Summary of Frequency and Maximum Detections in Groundwater for Stormwater Detention Facility
4-73	Screening Summary of Frequency and Maximum Detections in Groundwater for Groundwater Surfacewater Interface (GSI) Wells
5-1	Areas of Evaluation with Exceedances of Applicable Screening Criteria and their Constituents of Potential Concern
5-2	On-Site Exposure Pathways

Figures

1-1	Site Location
1-2	Site Operational Areas and Offsite Areas
2-1	Areas of Interest
2-2	Background Sample Locations
3-1	City of Pontiac Land Use Map
3-2	Regional Surficial Geology
3-3	Regional Bedrock Geology
3-4	Aquifer Characterization of the Glacial Drift
3-5	Storm and Sanitary Sewer Outfalls
3-6	Geologic Cross Section Location Map
3-7	Hydrogeologic Cross Section A-A'

3-8	Hydrogeologic Cross Section B-B'
3-9	Hydrogeologic Cross Section C-C'
3-10	Hydrogeologic Cross Section D-D'
3-11	Hydrogeologic Cross Section E-E'
3-12	Shallow Groundwater Flow Map (September 20-21, 2011)
3-13	Potentiometric Surface – Upper Outwash Deposits
4-1	Exposure Pathway Conceptual Site Model (CSM)
4-2	Fiero –Ground Cover
4-3	DA – Ground Cover
4-4	MFD (North Section) – Ground Cover
4-5	MFD (South Section) – Ground Cover
4-6	Harris Lake and PSB – Sample Locations and Ground Cover
4-7	Pontiac School Board –Soil
4-8	AOIs Downgradient Wells – Groundwater
5-1	Summary of Human Health Risk Evaluation Conclusions and Recommendations
6-1	Proposed Deed Restrictions

Appendices

A	Analytical Compound Lists
B	Bathymetry Survey for Harris Lake and Osmun Lake
C	Hydraulic Conductivity Calculations
D	Soil Boring Logs and Monitoring Well Construction Logs
E	Background Soil Analytical Data
F	Analytical Data Summaries
G	Well Survey
H	ProUCL Output

ADEC	Alaska Department of Environmental Conservation
ADEQ	Arizona Department of Environmental Quality
AIR	Area of Industrial Redevelopment
AOIs	Areas of Interest
bgs	below ground surface
BSLs	background screening levels
CCR	Current Conditions Report
cm/sec	centimeters per second
CMP	Corrective Measures Proposal
COPCs	Constituents of Potential Concern
CPC	Chevrolet-Pontiac-Canada Group
CSM	conceptual site model
DA	Demolition Area
EI	Environmental Indicators
EPC	exposure point concentration
FSP	Field Sampling Plan
GM	General Motors
GSI	groundwater-surface water interface
HSA	hollow-stem auger
ID	inner diameter
IDEM	Indiana Department of Environmental Management
IM	Interim Measure
LNAPL	light non-aqueous phase liquid
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MFD	Metal Fabrication Division
mg/kg	milligrams per kilogram

mg/L	milligrams per liter
MIOSHA	Michigan Occupational Safety and Health Administration
MLC	Motors Liquidation Company
NDEQ	Nebraska Department of Environmental Quality
NFA	No Further Action
NREPA	Natural Resources and Environmental Protection Act
NTUs	nephelometric turbidity units
PCBs	polychlorinated biphenyls
PID	photoionization detector
PNC	Pontiac North Campus
PSB	Pontiac School Board
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
RACER	Revitalizing Auto Communities Environmental Response Trust
RCRA	Resource Conservation and Recovery Act
SPO	Service Parts Operation
SVOCs	semi-volatile organic compounds
TCL	Target Compound list
UCL	upper confidence limit
USEPA	U.S. Environmental Protection Agency
USPS	United States Postal Service
VDEQ	Virginia Department of Environmental Quality
VOCs	volatile organic compounds
Voluntary Agreement	Voluntary Corrective Action Agreement

1. Introduction

On October 10, 2000, the U.S. Environmental Protection Agency (USEPA) and General Motors (Old GM) Corporation entered into a Voluntary Corrective Action Agreement (Voluntary Agreement) for the Pontiac North Campus (PNC) located in Pontiac, Michigan. The Voluntary Agreement required 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 USEPA corrective action guidance documentation. The majority of the investigation activities were completed by GM prior to the bankruptcy filing on June 1, 2009.

On June 1, 2009, GM filed for Chapter 11 protection in federal court under the Bankruptcy Code. On July 10, 2009, what would subsequently become GM LLC (New GM) was created and purchased certain Old GM assets pursuant to Section 363 of the Bankruptcy Code. Motors Liquidation Company (MLC) was formed to manage the assets (89 properties) that were not sold to New GM, including the entire PNC. The entire PNC was split into separate operational portions on July 10, 2009, with MLC controlling some portions and New GM controlling the remainder. Effective March 31, 2011, the Revitalizing Auto Communities Environmental Response Trust (RACER) was created through a Bankruptcy Settlement Agreement. Responsibilities for the liabilities for the PNC Site have been divided between RACER and New GM.

In July, 2011, RACER sold Plant 25 and the building was demolished in 2011. In September 2011, RACER sold Plant 15. RACER retains responsibility for certain below grade environmental conditions for both Plants 15 and 25.

An Administrative Order on Consent was executed on September 29, 2011 between USEPA and RACER calling for RACER to complete corrective activities at the Site. New GM entered into a separate Administrative Order on Consent with the USEPA for the portion of PNC they control and operate.

This RCRA Facilities Investigation Report (RFI Report) summarizes the results of the investigations and other activities that have taken place in areas of investigation wholly or partially owned and controlled by RACER at PNC (the Site) through December 2011, describes the nature and extent of impacts at the site, and draws conclusions about the risk related to these impacts.

1.1 Site Setting

Prior to bankruptcy, PNC encompassed approximately 595 acres in the northwest quadrant of the City of Pontiac, Michigan (see Figure 1-1). PNC previously covered four facilities, including:

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

Figure 1-2 shows each of these operational areas and off-site areas. Operations were referred to by operational areas:

Operational Areas

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

After the division of PNC following the bankruptcy, RACER retained approximately 315 acres of PNC as shown on Figure 1-1 (the Site). The Site now encompasses solely:

- Fiero
- Demolition Area (DA)
- Portions of the Metal Fabrication Division (MFD)

Additionally, during completion of the RFI, five off-site areas were investigated:

Off-site Areas

- Pontiac School Board (PSB) Property
- Harris Lake
- Terry Lake
- Osmun Lake
- Off-site Groundwater

1.2 History

1.2.1 Corrective Action History

A brief chronology follows that describes the corrective action history.

- Voluntary Agreement executed – October 11, 1999
- Current Conditions Report (CCR) was submitted to provide details regarding the Site operations, remedial activities, and historical operations – January 31, 2001
- RFI Work Plan was submitted to evaluate whether the Areas of Interest (AOIs) identified in the CCR as requiring Further Action have released hazardous waste or hazardous constituents that may pose an unacceptable risk to human health and/or the environment – May 15, 2001

- The Corrective Measures Plan (CMP) was submitted detailing corrective measures that would be undertaken at the Site. – November 26, 2003.
- Nearshore Sediment Removal Program was conducted at Harris Lake to alleviate aesthetic concerns in the sediment. – May 2004
- RFI Work Addenda 1 through 4, 8, 8A, 9 through 17, 19 through 23, 25, and 26 were submitted to evaluate various AOIs – February 2001 through October 2006
- GM Corporation declares bankruptcy and is renamed MLC. New GM purchases assets from MLC. – July 10, 2009
- RACER Trust is created to manage the environmental liabilities from old GM (n/k/a MLC) and subsequently the Site is split between New GM and RACER. - March 31, 2011
- RACER enters into new Administrative Order on Consent with the USEPA – September 29, 2011

Based on results of the RFI completed in 2002 (ENCORE, 2002d) and continuing investigations, several Interim Measures (IMs) on the RACER-owned property were also completed during and after completion of the RFI to address areas that posed unacceptable risk to human health and the environment. The IMs are presented in Section 2.5.

1.3 Purpose

This RFI Report describes the procedures, methods, and results of the field investigations conducted during the RFI. The information includes a comparison of the RFI data with Michigan's Part 201 of the Natural Resources and Environmental Protection Act (NREPA) (1994 PA 451, as amended) generic risk-based screening criteria to identify whether a potential release of hazardous waste or hazardous constituents has occurred from each AOI. Where a potential release is identified, the nature and extent of hazardous constituents in the environmental media characterized during the RFI are discussed. A human health risk evaluation is included in this RFI Report to provide a basis for evaluating whether the presence of these hazardous constituents pose an unacceptable risk to human health.

A separate baseline human health risk assessment was previously prepared for Harris Lake by ENVIRON in 2002 as part of the 2002 RFI (ENVIRON, 2002a). An ecological risk assessment was also performed on Harris Lake by Exponent in 2002 (Exponent, 2002) as part of the original RFI to evaluate whether Site-related constituents present an unacceptable ecological risk. The baseline human health risk assessment concluded that the levels of constituents present did not pose an unacceptable risk under then current and future expected land use scenarios.

1.4 RFI Objectives and Approach

The objectives of the RFI Work Plan (ENCORE, 2001d) and Work Plan Addenda Nos. 1 through 4, 8, 8A, 9 through 17, 19 through 23, 25, and 26 completed for the RACER-owned AOIs (ENCORE, 2001e-f, 2002b, 2003a-g, 2004a, 2004f-g, 2006a-b) were to detail the investigations necessary to:

- Evaluate Site-wide hydrogeologic conditions, as necessary, to properly investigate releases from AOIs.
- Characterize the nature and extent of releases of hazardous waste and/or hazardous constituents in environmental media at the Site.
- Assess potential risk to human health and the environment associated with releases of hazardous waste and/or hazardous constituents.
- Evaluate whether interim corrective measures are necessary to control current unacceptable risks, if any, to human health. Evaluate whether a corrective measures study is necessary to mitigate current and future unacceptable risks, if any, to human health and the environment.
- Evaluate the impact, if any, from discharges from the Site to off-site areas.

The objective of this RFI Report is to summarize the 2002 RFI (ENCORE, 2002d), the Supplemental RFI No. 1 (ENCORE, 2003h), and the investigation work completed since 2003 for the portion of the site owned by RACER. Additionally, this RFI Report details the risks to human health and the environmental for impacts on RACER-owned property, using the currently applicable Michigan Department of Environmental Quality (MDEQ) criteria.

2. RFI Overview

The CCR (ENCORE, 2001a) and the CCR Addendum (ENCORE, 2002a) identified 64 AOIs on the Site as a whole, 46 of which are on RACER-owned portions of the Site, based on a review of site historical and current usage information that indicated a potential for known or suspected areas of prior release of hazardous waste or hazardous constituents. The CCR and the CCR Addendum discussed each AOI with respect to description, historical and current operations, previous remedial investigations and actions, and current status, and identified 30 AOIs requiring further action. The remaining 34 AOIs have sufficient information to support No Further Action. A new AOI (F-15) was identified during the RFI as requiring Further Action along with off-site areas (PSB property, Harris Lake, Terry and Osmun Lakes). This RFI Report presents information obtained during the RFI for the 31 RACER-owned Further Action AOIs, 15 RACER-owned No Further Action AOIs plus the 5 off-site areas, at the locations shown on Figures 1-3 and 2-1.

This section provides a general description of the Site location, field investigation performed during the RFI, investigation methods, laboratory procedures, redevelopment activities, and Interim Measures. A detailed description of the historical and current operations at the Site, a review of historical topographic and Sanborn maps and aerial photographs, RCRA regulatory history, and historical and current waste management practices is presented in the CCR (ENCORE, 2001a) and CCR Addendum #1 (ENCORE, 2002a).

2.1 Site Location

Comprising approximately 315 acres, the Site is located in the City of Pontiac, Oakland County, Michigan (see Figure 1-1). The RACER-owned and -controlled facility is bounded to the south by Montcalm Avenue, to the west by Baldwin Avenue and the Grand Trunk Western Railroad Line, to the east by Joslyn Avenue and a plant service road, and to the north by Walton Boulevard and the Grand Trunk Western Railroad Line. Surrounding areas consist of residential subdivisions and mixed commercial and light and heavy industrial use properties. A detailed description of area demographics and environmental setting is provided in Section 3.

2.2 Areas of Investigation

The Site is divided into three onsite operational areas along with off-site areas to the south. Each of these areas is described in the subsequent paragraphs with detailed

discussions presented in the CCR (ENCORE, 2001a) and CCR Addendum #1 (ENCORE, 2002a). These areas are:

- Fiero
- DA
- MFD
- Off-site Areas

2.2.1 Fiero

The Fiero plant area comprises approximately 81 acres located at the southwestern portion of the Site, including Plant 17 (Figure 1-3). The area was formerly used for prototyping, storage, and other non-manufacturing processes.

2.2.2 Demolition Area

The DA consists of approximately 48 acres of the south-central portion of the Site. Currently, a United States Postal Service Regional Distribution Center occupies a portion of the DA. The three former main operational buildings (the Foundry [Plant 6], Final Vehicle Assembly [Plant 8], and Engine Construction [Plant 9]) were demolished in 1995, 1997, and 1997, respectively. The former plant locations are shown on Figure 1-3.

2.2.3 Metal Fabrication Division

The RACER-owned and -controlled portion of the MFD area consists of approximately 141 acres in the center of the Site (Figure 1-3), including Plants 15 and 25. Plants 5, 11, 12, a portion 14 (14 South), 23, 33, 49, and 56 were demolished prior to 2011. Demolition of Plant 25 was completed in 2012.

2.2.4 Off-site Areas

2.2.4.1 Pontiac School Board Property

The area currently owned by the City of Pontiac School Board (PSB) (Figure 1-2). At one time a series of open ditches traversed the PSB property from the Site to Harris

Lake, and it is believed that these ditches historically conveyed storm water from the Site to Harris Lake.

2.2.4.2 *Harris Lake*

A review of historical maps shows that the shape and size of Harris Lake has changed over the years. The lake appears to have become smaller, indicating that it has likely been used as a fill area. In addition, some foundry sand was observed during previous on-shore activities. A fill area is located along the north shore. It is believed that Harris Lake received storm water runoff from the Site via a series of ditches and culverts.

2.2.4.3 *Terry Lake*

Terry Lake is located downstream of Harris Lake (Figure 1-1). Terry Lake receives surface water from Harris Lake.

2.2.4.4 *Osmun Lake*

Osmun Lake is located downstream of Terry Lake (Figure 1-1). Osmun Lake receives surface water from Terry Lake along with storm water discharge from Fiero via Outfall 202.

2.3 RFI

The original RFI was initiated in June 2001 and completed in September 2011. Based on preliminary laboratory results obtained during the RFI and information obtained from the CCR Addendum #1, supplemental RFI activities were implemented. The field investigations supplemental to the RFI Work Plan were presented in numerous addenda as summarized in Table 2-1. RFI activities included the following:

- Soil, groundwater, and sediment sampling
- Site-wide hydrogeological investigation
- Test pits
- LNAPL presence delineation
- Delineation of groundwater impacts

- Hydraulic conductivity testing

Semi-annual groundwater sampling has also been conducted as a result of the RFI; however, it is discussed in this report and in the Environmental Indicators report (ENVIRON, 2002b). The results of field investigations performed and laboratory analysis for each AOI are provided in Section 4.

2.3.1 RFI Field Methods and Procedures

The following paragraphs summarize the field methods and procedures implemented during the completion of the all RFI activities. The specific RFI activities conducted in accordance with the RFI Work Plan (ENCORE, 2001d) and supplemental Work Plan Addenda Nos. 1 through 4, 8, 8A, 9 through 17, 19 through 23, 25, and 26 are summarized in Section 2.3.4. All RFI objectives, sampling methodologies, and analytical procedures were in accordance with those presented in the RFI Work Plan, including the Field Sampling Plan (FSP) (ENCORE, 2001g) and Quality Assurance Project Plan (QAPP) (ENCORE, 2001d), except as noted in Section 4.

Surface soil samples were collected as detailed in the RFI Work Plan. Surface soil samples were collected at the 0 to 2-foot interval using a hand auger or direct-push (i.e., Geoprobe) sampling technique.

As detailed in the RFI Work Plan, soil borings were advanced primarily using either spun casing or sonic sampling techniques. If the well location has restricted access either hollow-stem auger or direct-push using a Geoprobe was utilized). To provide a vertical profile of the subsurface, soil samples were collected continuously for visual classification using split-spoon sampling or direct-push methods from the ground surface to the bottom of each boring. Three soil samples were typically collected from each borehole and submitted for laboratory analysis for the AOI-specific list of constituents. Soil samples from the following intervals were submitted for laboratory analysis: 0 to 2 feet, 8 to 10 feet, and the 2-foot interval immediately above the water table interface. An additional 2-foot soil interval may have been submitted for analysis if it exhibited elevated photoionization detector (PID) readings or had visual staining and/or odor.

Monitoring wells were installed as detailed in the RFI Work Plan utilizing the spun-casing or sonic technique and were constructed of 2-inch inner diameter (ID) continuous-wire-wrapped polyvinyl chloride (PVC) screen with 10-foot screens. Due to height restrictions inside of buildings and Site access problems at some locations,

modifications to this drilling method and well construction materials were implemented. At locations where the drill rig with spun casing/sonic capabilities could not gain access due to height restrictions, monitoring wells were installed with as 4.25-inch HSA using a traditional drill rig (the well materials used were consistent with those stipulated in the RFI Work Plan). At the locations where the Geoprobe drill rig was used to install the monitoring wells (either due to inadequate overhead clearance or in areas of extreme terrain), a 4.25-inch HSA was utilized. In addition, the well screen materials at these locations were comprised of 2-inch ID, machine-slotted, pre-packed well screens. The pre-packed well screens are identical to traditional well screens with the exception that the screen is surrounded by a 4-inch diameter wire mesh that is filled with filter sand. The pre-packed well screens were installed through the HSA in order to provide an adequate filter pack. Details as to exact locations and modifications to monitoring well installation are discussed in Section 2.3.4.

Monitoring wells were developed by first removing a quantity of water equal to three times the volume of water lost during drilling (i.e., drilling water lost to the formation). Low-flow development techniques were then utilized to develop the well at 2-foot increments for the saturated length of the entire well screen.

Groundwater samples were collected using the low-flow purge and sample approach in accordance with the guidelines presented in the FSP (ENCORE, 2001g). As groundwater was purged from each monitoring well, field parameters (temperature, specific conductance, dissolved oxygen, and pH) were recorded. Sample collection was initiated when all the parameters stabilized and the turbidity stabilized below 5 nephelometric turbidity units (NTUs). In some instances, turbidity was not measured below 5 NTUs, but where readings did stabilize at a level higher for a period of greater than 1 hour, sample collection was initiated. A summary of field parameters is provided in Table 2-2.

For groundwater sampling, groundwater quality samples were submitted for selected parameters per AOI that may have included: VOCs, SVOCs, PCBs, dioxins, and inorganics analysis.

Sediment samples were collected as detailed in the RFI Work Plan (ENCORE, 2001d). Sediment samples were collected at discrete intervals using either a Ponar[®] sampler or Lexan[®] tubing. Surface water samples were collected as grab samples as detailed in the FSP (ENCORE, 2001g).

Field screening for PCBs was also performed using bioassay colorimetric techniques.

2.3.2 Laboratory Procedures

The AOI- and off-site area- specific analytical suites and laboratory methods for samples submitted to the laboratory are summarized in Table 2-3 (also presented in the QAPP). 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), metals (inorganics), PCBs, total cyanide (cyanide), hexavalent chromium, and dioxins. The AOI-specific constituent list was developed based on historical chemical usage at the AOI. Complete compound lists for TCL VOCs, TCL SVOCs, inorganics, and dioxins are provided in Appendix A.

The only variation to these methods was for the analysis of thallium in groundwater samples. Between the first round and second rounds of groundwater sampling, the method was modified from Method SW846-6010B to Method SW846-6020 to lower the detection and reporting limits. The data results from the collection of surface water samples and the first round of groundwater samples showed detections of thallium above the screening criteria. However, because the reporting limit was so close to the screening criteria, incidents of false detections were reported. To eliminate this problem, the analytical method was switched from SW846-6010B (reporting limit of 10 milligrams per liter [mg/L] and detection limit of 5 mg/L) to SW846-6020 (reporting limit of 1 mg/L and detection limit of 0.018 mg/L) to lower the detection limit eliminate the potential for false positives that would exceed the screening criteria.

2.3.3 Data Validation

A data validation assessment was completed on all final laboratory analytical data. A data usability summary report was prepared for each AOI or off-site area, summarizing the data validation assessment. All DUSRs are provided in the RFI (ENCORE, 2002d) or Supplemental RFI (ENCORE, 2003h).

2.3.4 RFI Field Activities

2.3.4.1 Site-wide Hydrogeologic Investigation (2001-2002)

Based on the limited amount of available information for the Site hydrogeologic setting, a Site-wide hydrogeologic investigation was conducted. The purpose of this investigation was to provide groundwater flow information necessary for final placement of the AOI groundwater monitoring wells;. A total of 35 groundwater monitoring wells were installed within three hydrogeologic zones with 22 installed

within the shallow water table zone, five installed within the intermediate glaciolacustrine zone, and eight installed within the upper sand and gravel zone. A total of eight of these monitoring wells originally installed are located what is now GM property. These wells installed as part of the Hydrogeologic Investigation were used in this report for the evaluation of groundwater flow but not for evaluating presence/absence of COCs.

Groundwater elevations were collected periodically (generally semi-annually) from each of these wells to identify a generalized groundwater flow direction for the Site. This information was used in part to identify the final placement of monitoring wells installed as part of the AOI investigations.

Two rounds of groundwater samples were collected from each of the Site-wide monitoring wells. In addition, the hydraulic conductivity for each of the wells was calculated either from information obtained during low-flow sampling or from slug tests.

Soil borings SB-01 through SB-03 were completed to assess soil background metal concentrations (Figure 2-2). Soil samples were collected from each of these borings from the 0 to 2-foot interval. Soil samples were also collected from the installation of select monitoring wells (MWP1, MWF2, GWM3, and GWP6) to be used in the evaluation of the soil background metal concentrations. Additional soil borings (BP01 and BP04) were completed at GWP6 to delineate arsenic impact in soil.

2.3.4.2 AOI and AOI Follow-up Investigation (2001-2011)

The investigations proposed for each AOI are described in the RFI Work Plan and selected RFI Work Plan Addenda (as noted in Table 2-1) (including types and number of borings, number of monitoring wells installed, and analytical suites). The results of these investigations are also provided in Section 4. The preliminary data evaluated during the completion of the RFI were used to implement follow-up investigations at specific AOIs based on exceedances of MDEQ Part 201 criteria (F-7, F-8, F-15, W-1, W-8, W-9, W-10, M-2, M-4, M-5, M-9, M-16, and M-19).

Pit and sump inspections were completed at AOIs F-7, F-8, F-15, W-6, W-10, M-9, M-16, M-17, and M-25 to evaluate the condition of the sump including staining and broken or cracked concrete. Based on these observations, additional investigations were completed in the form of soil borings and monitoring well installations at AOIs M-9, F-7, F-8, and F-15.

Test pits were completed using a backhoe to excavate the soil at AOI W-1 to characterize the fill placed in the former settling basin. Soil samples were collected and submitted for laboratory analysis.

All monitoring wells installed during the initial RFI and supplemental investigations were shallow wells with screened intervals that straddle the water table.

At AOI M-5, groundwater samples were scheduled to be collected from existing monitoring well MW1-99. However, the well was found to be damaged and groundwater samples could not be collected. Monitoring well MW1-99 was abandoned by first pulling the well from the ground, overdrilling with 4.25-inch augers (i.e., drilling to a point lower than elevation than the monitoring well was set), and backfilling with a cement/bentonite slurry.

After monitoring wells were installed, a total of three times the amount of water lost to the formation during drilling was removed by surging with a centrifugal or submersible pump as noted in the FSP to remove all fines (ENCORE, 2001g). Monitoring wells were then developed in two-foot increments using low-flow sampling methodology (minimal drawdown) as detailed in the FSP (ENCORE, 2001g). Two rounds of groundwater samples were collected from each of the monitoring wells installed during the AOI investigation. Only one round of groundwater samples was collected from monitoring wells installed during the AOI follow-up investigation.

The hydraulic conductivity for each of the monitoring wells was calculated either from information obtained during low-flow sampling or from slug tests. Groundwater elevations, including measurement for LNAPL at select monitoring wells, were collected on a semi-annual basis until 2009 when the frequency was modified to annually.

PCBs were delineated in the soil at AOI W-9. In these areas, soil samples were collected with a Geoprobe to assess the horizontal and vertical distribution of PCBs. Soil samples were collected in a 5- to 20-foot horizontal grid pattern at 2-foot intervals from ground surface to the top of the water table. These soil samples were field-screened with a bioassay field screening kit. Additional step-out borings were completed until the PCB field screening results were less than the screening criteria of 20 milligrams per kilogram (mg/kg) or until obstructions (e.g., building foundation and underground utilities) were encountered. The soil samples screened onsite that did not exceed the screening criteria were submitted to the laboratory for verification along with 10% of the samples that exceeded the screening criteria of 20 mg/kg.

2.3.4.3 Pontiac School Board Property (2001)

Based on information obtained during the preparation of the CCR Addendum #1 (ENCORE, 2002a), a sediment sampling, soil boring, and monitoring well installation program was completed at the PSB property. The work was performed in accordance with the RFI Work Plan Addendum #1 (ENCORE, 2001e).

Historical information indicates that at least two drainage ditches may have conveyed storm water from the Site to Harris Lake via the PSB property. A total of 10 soil borings were completed along the approximate alignment (based on historical air photos) of the former ditches from ground surface to the top of the water table. Soil samples were collected and submitted for analysis for VOCs, SVOCs, PCBs, and inorganics.

Soil and sediment samples were collected from catch basins and manholes along the abandoned storm sewer. Sediment samples were collected from within the pipes extending from the manhole or catch basins. Test pits were excavated at abandoned catch basins and manholes, and soil samples were collected from the bedding material around the outside of the pipes. Soil and sediment samples were submitted for analysis for VOCs, SVOCs, PCBs, inorganics, and dioxins.

Two monitoring wells were installed (Figure 4-6) at the downgradient portion of the PSB property in the vicinity of the culvert that crosses Saginaw Street and discharges into Harris Lake. Two rounds of groundwater samples were collected from these monitoring wells and were submitted for analysis for VOCs, SVOCs, PCBs, and inorganics.

2.3.4.4 Harris Lake (2001-2002)

A surface soil, surface water, sediment, fish sampling, sediment oil, and bathymetry investigative program was performed for Harris Lake. The work was completed in accordance with the RFI Work Plan Addenda #s 1 and 3. The types of samples collected (e.g., surface water, sediment, and soil) and the analytical suite for samples analyzed is provided in Section 4.

A total of 10 surface water samples were collected along the shoreline of Harris Lake in a manner that avoided disturbance to the bottom sediment. As described in RFI Work Plan Addendum #1, 13 sediment samples were collected at the 0 to 2-inch interval from 10 locations. In addition, sediment samples were collected from 10 locations from the 0 to 6-inch interval. Ten of the sediment sampling locations were collected from the

near shore area with three samples collected from the middle of the lake. As a part of RFI Work Plan Addendum #3 sampling effort, sediment samples were collected at multiple depths from an additional 13 locations along the shoreline of Harris Lake. A sediment sample was collected from a depth where marl was encountered (approximately 1 to 2 feet). Sediment samples were collected using Lexan[®] tubing or a Ponar[®] grab sampler.

An oil sample was obtained from the sediment at location SDHS-09. Sediment was collected and placed into a 5-gallon container which was agitated to release oil. The accumulated oil was collected and placed into appropriate sample containers for laboratory analysis of SVOCs, PCBs, and dioxins.

A total of 10 soil borings were completed on the north side of Harris Lake, and a total of three borings were completed on the south side of Harris Lake. The borings were completed from the ground surface to the top of the water table in areas of suspected fill material.

A permit was obtained from the Michigan Department of Natural Resources (MDNR) to complete the fish sampling program for Harris Lake. Originally, the fish were to be trapped using trap nets. However, due to difficult weather conditions, a variance to the permit was obtained from MDNR to use gill nets. Two types of fish samples were submitted to the laboratory for analysis: fillets of individual fish and whole fish from the same species that were composited.

In addition, a bathymetry survey was completed for Harris Lake. A copy of the bathymetry report is provided in Appendix B.

The potential health significance of the constituents found in the sediment, oil, and fish at Harris Lake were evaluated in a Baseline Risk Assessment (ENVIRON, 2002a). A Screening Ecological Risk Assessment was performed for Harris Lake (Exponent, 2002) to determine impacts, if any, to the biota of the lake and surrounding area. Sediments were also removed from Harris Lake as part of the Harris Lake IM (ENCORE, 2004b); therefore, Harris Lake is not discussed further in Section 5 of this report.

2.3.4.5 Terry Lake (2002)

Three sediment samples were collected from Terry Lake. The work was completed in accordance with the RFI Work Plan Addendum #3. The sediment samples were

collected in the area receiving water from Harris Lake. Samples were submitted for analysis for VOCs, SVOCs, PCBs, and inorganics.

2.3.4.6 Osmun Lake (2002)

Six sediment samples were collected from Osmun Lake. Three samples were collected from the area receiving discharge from the Fiero storm sewer, and three sediment samples were collected from the Terry Lake outlet to Osmun Lake. Samples were submitted for analysis for VOCs, SVOCs, PCBs, and inorganics.

In addition, a bathymetry survey was completed for Osmun Lake. A copy of the bathymetry report is provided in Appendix B.

2.3.4.7 LNAPL Investigation (2001-2005)

LNAPL was detected in the water table zone in the West Yard (AOI W-1) during previous investigations and in two additional areas during the implementation of the RFI, this area is referred to as LNAPL #1). In addition, LNAPL was initially thought to be detected in the Montcalm Production well; this production well is screened in the lower sand and gravel zone. The following paragraphs detail the investigations for LNAPL in both the water table zone (shallow) and the lower sand and gravel zone (deep).

Shallow LNAPL

During the implementation of the RFI, two LNAPL areas were encountered within the water table zone in AOIs W-10 and W-8 (LNAPL Areas # 2 and 3, respectively). Each location was investigated to delineate the horizontal extent of the LNAPL. Fingerprint analysis was also conducted as part of the LNAPL investigation. The analytical results of the fingerprint analysis can be found in the 2002 RFI (ENCORE, 2002d) and the Supplemental RFI (2003h). Several other LNAPL areas were encountered when conducting the Supplemental RFI (LNAPL Area # 4, 5, and 6) and subsequent investigation activities (LNAPL Areas # 9/10 and 11). LNAPL Area # 4 was encountered in AOI M-2, LNAPL Area No. # 5 was encountered in AOI M-16, and LNAPL Area # 6 was encountered in AOI W-9. LNAPL Area # 9/10 was encountered when LNAPL was observed in MWW8-13. LNAPL Area # 11 was encountered when delineating LNAPL Area # 9/10 and was located north and east of LNAPL Area # 3. In addition, LNAPL Area #1 was further delineated to the east, north, and southwest. LNAPL Areas # 1 and 2 are shown on Figure 2-3, and LNAPL Area # 3 is shown on

Figure 2-4. It should be noted that LNAPL Areas # 1 and 2 commingle as do LNAPL Areas # 9 and 10.

Even though LNAPL Area # 1 (Figure 2-3) was previously delineated, there remained uncertainty as to the accuracy of the delineation to the east because the methods used to delineate LNAPL Area # 1 differed from those used to define LNAPL Areas # 2 and 3. LNAPL Area # 1 was delineated by PID readings and visual observations of soil cuttings during drilling, whereas LNAPL Areas #. 2 and 3 were delineated by screening soil cuttings with a fluorescent/ultraviolet light. To address this uncertainty and develop a dataset that was comparable to LNAPL Areas No. 2 and 3, 12 borings were completed with a Geoprobe in the eastern portion of LNAPL Area # 1 to a depth of approximately 10 feet below the water table. The soils were then screened onsite with a fluorescent/ultraviolet light to detect the presence or absence of LNAPL. Based on these results, a monitoring well was installed to confirm the delineation.

The initial investigation at LNAPL Area # 2 (Figure 2-3) involved the collection of soils with a Geoprobe. The soil samples were collected continuously from ground surface down to a depth of approximately 10 feet below the water table and were then screened onsite with a fluorescent/ultraviolet light to detect the presence or absence of LNAPL. Four temporary 1-inch diameter piezometers were installed on all four sides of the monitoring well when LNAPL was detected to identify localized groundwater flow. Based on these results, two monitoring wells were installed upgradient and downgradient of the suspected LNAPL, and one monitoring well was installed within the suspected LNAPL area.

The depth to groundwater in LNAPL Area # 3 (Figure 2-4) was too deep and precluded the use of a Geoprobe. At this location, a conventional drill rig was used to install permanent wells to delineate the LNAPL around MWW8-03 where LNAPL was encountered. Four additional monitoring wells were then installed around MWW8-03 (to the north, south, east, and west); LNAPL was not detected in these monitoring wells. Through multi-phase extraction, 28 gallons of LNAPL was removed from LNAPL Area #3. Two temporary piezometers were installed in the area to aid in identifying groundwater flow direction. The four wells that do not have LNAPL present served as the upgradient, downgradient, and two lateral wells for delineation.

LNAPL Area # 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 # 4 was conducted to define the horizontal extent and thickness of LNAPL in this area. Nine additional monitoring wells were installed to delineate the

extent of the LNAPL. Only two monitoring wells (MWM2-04 and MWM2-06) had LNAPL in subsequent groundwater level monitoring events.

LNAPL Area # 5 is in AOI M-16 where LNAPL was encountered in two permanent wells in the basement of Plant 25 (MWM4-06 and MWM16-03). LNAPL was being collected from MWM16-03 and sent off-site for disposal prior to the demolition of Plant 25.

Four permanent wells were installed to delineate LNAPL Area # 6 around MWW9-02 where LNAPL was encountered (MWW9-03, MWW9-05, MWW9-06, and MWW9-07). LNAPL was not detected in these monitoring wells.

LNAPL Areas No. 9/10 and 11 were delineated by the installation of 46 soil borings and 20 monitoring wells in the AIR. LNAPL Areas No. 9 and 10 were found to commingle. LNAPL Area # 11 was isolated from LNAPL Areas No. 9 and 10. The LNAPL Mobility Evaluation (ENCORE, 2007a) refined the delineation of LNAPL Areas # 9/10 and 11. LNAPL recovery was conducted by multiphase high vacuum extraction at LNAPL Areas # 9 and 10. A total of 28 gallons of LNAPL (in addition to 28,165 gallons of water) were recovered during the extraction event. The low volume of LNAPL extracted demonstrates the LNAPL's limited mobility.

Production Well

A thin sheen was observed only once at the Montcalm Production Well (Figure 2-3) during purging for sample collection. The Montcalm Production Well was installed in the 1950s to a depth of 180 feet, predominately screened in the sand and gravel zone beneath the basal till layer. The production well was installed to supply coolant water to the foundry. There is no additional information for this well. To evaluate whether LNAPL was present in the lower sand and gravel zone, three deep monitoring wells (DWD10, DWD12, and DWD13) were installed in this zone. Two additional monitoring wells (GWD9 and GWD11) were installed in the upper sand and gravel zones (above the basal till layer) adjacent to the new deep wells to provide vertical hydraulic gradient between the various groundwater zones.

Since there was no longer a need for the Montcalm Production Well, it was abandoned by pumping neat cement, via a tremie pipe, from the bottom of the well to the ground surface. A licensed Michigan water well driller oversaw the operation and filed the appropriate forms with MDEQ.

2.4 Redevelopment Activities

Numerous activities were conducted as the Site discontinued operations. These activities were conducted in preparation for the eventual sale of the Site and/or redevelopment (i.e. the construction of the distribution center in the Demolition Area).

2.4.1 Demolition Area (2004-2008)

In 2004, GM entered into a Master Services Agreement with the United States Postal Service (USPS) to lease a 73-acre portion of the Demolition Area for redevelopment and construction of a USPS Distribution Center. This area was designated as the Area of Industrial Redevelopment (AIR) during redevelopment activities and then subsequently identified as the USPS property, after redevelopment concluded.

Several investigations and evaluations were completed in support of redevelopment activities at the USPS property. These include, but are not limited to: concrete and soil characterization; concrete inertness demonstration; soil management plan development; green space evaluation; environmental response sampling; methane investigation; AIR test pit and boring investigation; and interim measures. The USPS Property Redevelopment Report (EEC, 2008) summarizes the activities, investigations, and evaluations completed in support of redevelopment activities.

2.4.1.1 TP-10 and BW9-27 Excavation Area Soils (2007)

Former Plant 6, which was decommissioned and demolished in 1995, was located in the southeast corner of the USPS site. Historical information indicates that PCB fluids were utilized in hydraulic systems and transformers at the former Plant 6. During preparation of the USPS area for redevelopment, two former Plant 6 basements were located. The basements contained backfill material mixed with minor amounts of demolition debris. Laboratory analytical data for samples collected from the former Plant 6 basements indicated that the soil/backfill material near sample locations BW9-27 and AIR-TP-10 contained potentially elevated levels of PCBs (greater than 5 mg/kg). The redevelopment contractor determined that the backfill material did not meet the compaction requirements for the construction of a building in this area and therefore required removal from the basements. Excavated soil was stockpiled in 12 piles. Soil piles with data indicating PCBs present at concentrations greater than 25 mg/kg were transported off-site for disposal. Soil piles with data indicating PCB concentrations less than 25 mg/kg were relocated and placed in the former Plant 8 basement in accordance with the USEPA approval letter dated August 26, 2005.

Details of the IM can be found in “Interim Measures Report Risk-Based Fill Material Removal at Former Plant 6 Basement – AOI W-9” (ENCORE, 2007d).

2.4.2 Powertrain Excavated Soils (2007)

As part of redevelopment activities at the Powertrain portion of the GM Site, approximately 13,000 cubic yards of soil was excavated. The soils were excavated in the vicinity of the eastern portion of former Plant 18, located east of Glenwood Avenue at the Powertrain area (Figure 1-3). The soils were relocated and used to backfill the former Plant 8 basement in AOI W-5, which is located south of Plant 14 South in the MFD portion of the Site. An additional 24,000 cubic yards of soil from redevelopment activities at the Powertrain portion of the GM Site were placed on top of the filled basement resulting in the current bermed area. The former Plant 8 basement had been decommissioned and demolished in 1997, at which time it is believed that the basement was partially filled with backfill material.

The specific soil data collected from areas within this Powertrain excavation was presented in Table 1 of the letter report “Notice of Soil Relocation, General Motors Corporation – Pontiac North Campus, Pontiac, Michigan,” sent to MDEQ on March 7, 2007 (ENCORE, 2007b). The Notice of Soil Relocation demonstrated that the soils from the former Plant 18 excavation and from the former Plant 8 basement fill area were similarly impacted, and therefore the relocation of the soil was consistent with the requirements of Natural Resources and Environmental Protection Act (NREPA) section 20107a(1).

Based on the estimated depth of the former Plant 8 basement, the relocated soils from the Powertrain area are now present at a depth of between zero and 13 feet below ground surface (bgs) within AOI W-5.

2.4.3 Fiero Powerhouse

DTE Energy owns the assets from the ground up and leases the land from RACER (originally GM). RACER retained certain environmental obligations of the Fiero Powerhouse.

2.5 Interim Measures

IMs were completed at the Site in various areas during the RFI. While conducting the RFI, if an issue was determined to pose significant risk to human health or the

environment an IM was conducted. The IMs were conducted to address the issues and conduct correct actions in a timely manner, without having to wait until all investigations were complete. The IMs are summarized in Table 2-4.

2.6 Other Reports

To assess the need for LNAPL remediation in the AIR, the LNAPL mobility and plume stability in the AIR LNAPL areas other than LNAPL Area # 3 were evaluated in the report entitled, "LNAPL Mobility Evaluation" (ENCORE, 2007a). The evaluation was not conducted in LNAPL Area # 3 since GM/ENCORE and USPS had already implemented aggressive LNAPL recovery measures (multiphase extraction) in this area and the USPS structure was, at the time, being constructed. The remediation efforts in LNAPL Area # 3 are presented in the respective Interim Measures Report (ENCORE, 2007e). The LNAPL evaluation concluded that the remaining LNAPL is of limited mobility and is stable.

DRAFT

3. Environmental Setting

3.1 Location/Physiography

The Site is located in the City of Pontiac, Michigan as shown on Figure 1-1. The Site occupies portions of Sections 16, 17, 20, and 21 of Pontiac Township, Range 10E, Township 03N, in Oakland County.

The topography in the vicinity of the Site is characterized by relatively low relief and is defined by glacial melt deposits, as described in Section 3.8.1. The regional topography is also defined by direct or indirect glacial deposits but varies in relief, depending on depositional processes as described in Section 3.4. The majority of the Site is paved (some concrete paving, foundations, asphalt paving), with small areas that are covered by soil and grass/weeds. The portion of the Site occupied by the USPS is capped with soil overlying a geotextile membrane (Figure 2-1). Section 4 contains figures detailing site conditions.

3.2 Climate

Oakland County's weather is generally temperate, with an average winter temperature of 25.3° F and an average summer temperature of 70.2° F. The sun shines 38% of the time during the winter and 67% of the time in the summer. Average seasonal snowfall is 34.6 inches. Average annual precipitation is 29.6 inches with 58% (17.2 inches) occurring between the months of April and September. The average relative humidity for Oakland County is 80% (Feenstra, 1982). The prevailing winds are typically from the northwest in the winter months and the southwest in the summer months.

3.3 Land Use and Demographic Data

3.3.1 Land Use Patterns

The Site is zoned for industrial use, and areas surrounding the Site are zoned for residential, commercial, or industrial use (Figure 3-1). Columbia Avenue, which traverses the MFD, is not part of the property and is therefore considered off-site. Two city-owned parks (Perry Park and Oakland Park) are located south of the Site, and one (Jaycee Park) is located to the north. Residential neighborhoods are located east and west of the Site and also near the middle portion of the Site, south of SPO.

3.3.2 Economy, Population, and Housing Trends

The economy in the Pontiac area is primarily supported by manufacturing, which accounts for approximately 81% of total revenue for businesses located in Pontiac (U.S. Census Bureau, 1997). In addition, manufacturing provided approximately 70% of the income earned by employees working in Pontiac.

Residents of Pontiac work in several industries, including manufacturing (12%), retail (5%), health services (32%), and construction (5%). Unemployment, as of 2010, was relatively high with 20.4% of Pontiac residents in the labor force unemployed (U.S. Census Bureau, 2010).

The population of Pontiac has steadily dropped over the last 10 years falling from 66,337 in 2000 to 59,515 in 2010 (10.3% drop) reflecting a downturn in manufacturing as well as a trend in migration from older urban areas like Pontiac (U.S. Census Bureau, 2010).

With the declining population, the number of vacant housing units has increased from 2,102 in 2000 to 5,011 in 2010, even though the total number of housing units decreased from 26,336 to 22,220 over the same period. Of the 22,220 occupied housing units, 48% are occupied by the owner and 52% are occupied by renters. (U.S. Census Bureau, 2010).

3.3.3 Site Redevelopment Plans

Portions of the Site are intended for nonresidential "Brownfield" redevelopment. Currently, the USPS has a 700,000 square foot distribution center on a portion of the DA.

3.4 Regional Geology

East-central Oakland County is characterized by glaciofluvial deposits that are common to Oakland County. The regional overburden material consists of glacial till composed mainly of clay and some sands. Overburden material is regionally underlain by shales of Early Mississippian age.

3.4.1 Overburden

Continental glaciers advanced into this area of Michigan at least twice, once in each of the last two glacial stages of the Illinoian and Wisconsinan glaciers of the Pleistocene epoch. During the Wisconsinan stage, ice sheets of the Huron-Erie glacial lobe advanced from the southeast across the area of the Site. During the advance and retreat of this ice sheet, a series of end moraines (Fort Wayne, Defiance, and Birmingham) and a thick sequence of ground moraine (glacial till) composed of clay, silt, and rock fragments were deposited in this area. As the ice sheet retreated to the southeast, large volumes of meltwater formed glacial Lake Maumee between the Fort Wayne Moraine and the retreating glacier. The ice again advanced, forming the Defiance Moraine, and subsequently retreated, forming glacial Lake Arkona. As the ice advanced yet again from the east, the Birmingham Moraine was formed.

Pleistocene glaciation deposited glacial drift in a thickness of over 400 feet in parts of Oakland County. The buried bedrock surface is highly irregular. The Site is located in an area that is part of the lake plain of southeastern Michigan, formed by lakes that were ancestral to the present Great Lakes. Dunes, offshore bars, and lake-bottom sands, silts, and clays associated with the lakes are found in Oakland County. Figure 3-2 presents the regional surficial geology.

3.4.2 Bedrock

Oakland County is located along the southeast side of the Michigan Basin, a “bowl-like” feature in which the sedimentary rocks dip inward from all directions toward the center of the Lower Peninsula of Michigan.

The Coldwater Shale, of Early Mississippian age, is the first bedrock formation encountered in the area. The shale is primarily gray to dark gray. Other lithologies within this unit include red fossiliferous or nonfossiliferous shale, carbonate (limestone or dolomite), siltstone, and sandstone. Total thickness of the Coldwater Shale ranges across the Michigan Basin. In the vicinity of the Site, the unit may be up to 1,300 feet thick (Westjohn and Weaver, 1996). Located beneath the Coldwater Shale are sedimentary formations of the Berea Sandstone - Bedford Shale unit. Figure 3-3 presents the regional bedrock geology.

3.5 Regional Hydrogeology

Regional groundwater flow is typically to the south and east corresponding in general to flow within the Clinton River watershed. Water-bearing formations exist in both the unconsolidated and bedrock formations. In the Site area, four distinct water-bearing units are identified: unconfined water table aquifer, glacial aquifer, sand and gravel outwash aquifer and bedrock aquifer. Each unit is described below.

3.5.1 Unconfined Water Table Zone

The upper glacial deposits (till and glaciolacustrine) of the area contain an unconfined water table influenced by seasonal precipitation, local drainage patterns, and topography. The water table is located at a depth of approximately 10 to 30 feet bgs. The unconfined water table zone is not used for water supply purposes. The use of this zone as a potable supply is generally prohibited by Michigan Department of Public Health regulations (Part 127 of Act 368 [Groundwater Quality Control], 1978) because it is at a depth of less than 25 feet.

3.5.2 Glacial Zone

The regional glacial till is extensive, both areally and vertically. The glacial till moraines consist of poorly stratified clays, sand, and gravel that are not laterally continuous. This material does not transmit large quantities of water, and as a result, water-bearing zones within this unit are not considered significant aquifers. However, in some areas, glacial outwash underlies the moraine material. In the vicinity of the Site, the outwash appears in a more complex, bedded sequence with the moraine. It is within these interbedded layers of outwash that larger quantities of water can be yielded over longer periods of time. Figure 3-4 identifies the Site within the regional aquifer characterization.

3.5.3 Sand and Gravel Outwash Zone

The regional sand and gravel aquifer is composed of glacial outwash that generally consists of beds of well-sorted sand and gravel. This regional aquifer unit underlies the glacial till and the interbedded local outwash aquifers described above at a depth of approximately 150 feet. This unit is considered the most important aquifer in the region because it provides storage for large quantities of water that can be used for both residential and industrial supplies.

3.5.4 Bedrock Zone

On a regional basis, the Coldwater Shale and Bedford Shale are commonly considered nonproductive aquifers, typically yielding only small amounts of water. However, on a local basis, within parts of the region, the Coldwater Shale contains beds of sandstone. This occasional sandstone layer and the Berea Sandstone (where present) yield enough water for residential use. A more abundant water supply is found at greater depths but its use is impractical due to depth and significant increases in mineral content.

3.6 Surface Water/Drainage

Within the Site boundaries, surface water drainage is controlled by building and paved area drainage patterns. Storm water from the roofs of Site structures is directed through roof drains and downspouts to exterior Site surfaces or through underground piping to the storm sewer system. The majority of the Site is paved; therefore a majority of the storm water runoff from exterior Site surfaces enters into catch basins that discharge to the storm sewer system. There are currently three storm water discharge points from the RACER-owned portion of the Site, as shown on Figure 3-5. The storm water outfalls from the Site are:

- Fiero Outfall 101 to Harris Lake
- Fiero Outfall 202 to Osmun Lake
- Fiero Outfall 303 to Harris Lake

Storm water from the former MFD Outfall 001 discharged to the City of Pontiac sewer, after treatment at the Storm Water Detention Facility (SWDF) prior to discharge because of the presence of PCBs in previous samples collected from the outfall. The storm sewers flowing to Outfall 001 have been bulkheaded in March 2012, eliminating flow from the Site to Outfall 001 and the NPDES permit will be eliminated. GM LLC is currently leasing the Storm Water Detention Facility from RACER. In 2012, the SWDF will be cleaned and decommissioned since all flow to the SWDF has been bulkheaded from the SWDF.

Regarding local surface water drainage, the nearest surface water bodies to the Site are Harris Lake, Terry Lake, and Osmun Lake, which are approximately 600 to 3,200

feet southwest to west of the Site. These lakes eventually discharge into the Clinton River, which is located approximately 5,200 feet south of the Site.

On a regional scale, the Site is located within the Clinton River watershed, which includes an area of approximately 760 square miles within Oakland and Macomb counties. The Clinton River discharges into Lake St. Clair (approximately 25 miles to the east), which is used as a municipal water supply for the City of Detroit and surrounding communities.

3.7 Groundwater Use

Groundwater in the area near the Site is not used as a municipal water supply source. Local drinking water is supplied by the City of Detroit, which is obtained from Lake Huron.

There are no municipal drinking water supply wells within a 5-mile radius of the Site (MDEQ, 2012). The area surrounding the Site is on municipal water supply from the City of Detroit (MDNR, 1987b). The nearest private well is approximately 5,000 feet from the Site (Superior, 2000).

There are no production wells currently on Site. The last remaining production well was abandoned on February 27, 2002 (Montcalm Production Well).

3.8 Site Geology/Hydrogeology

This section describes the geologic setting for the Site based on available monitoring well and borehole data. Data developed during previous investigations along with information obtained during the implementation of the RFI were used for this assessment.

3.8.1 Site Geology

The Site overburden geology consists of four principal units: fill material, glaciolacustrine, glacial outwash, and basal till. Fill material is a generic term referring to reworked native soils, foundry sands, and imported soils resulting from preparation of the Site construction and reworking of the land over time. Glaciolacustrine deposits, composed of silts, clays with lenses of sands and gravels, are the most laterally continuous and thickest type of deposit present. Sand and gravel outwash is fairly extensive immediately above the basal till. Basal till is found across the entire Site. In

addition to these four units, a peat and marl unit is also present in the area of Harris Lake and the southwestern area of the Site. Subsurface stratigraphic data for the RFI are summarized in Table 3-1. Five geologic cross-sections were constructed across the Site along traverses shown on Figure 3-6. These cross-sections are labeled A-A' (Figure 3-7), B-B' (Figure 3-8), C-C' (Figure 3-9), D-D' (Figure 3-10), and E-E' (Figure 3-11). The Site stratigraphy as depicted on these cross-sections is discussed below.

Fill Material

Regrading and construction activities at the Site have resulted in the placement of reworked native soils and imported foreign soils. Fill material is present across the areas of the Site that have had either existing or former buildings present or other construction activities (e.g., loading docks, fill areas [AOI M-5], parking lots). These fill materials consist mainly of spent foundry sand that contain a variety of debris including slag fragments and steel casings. Gravel, gray clay stringers, clayey fill material, and light brown sand are intermixed with the foundry sand. Fill material, where present, can be up to 30 feet in depth but is typically between 4 to 8 feet in thickness.

In the area of the West Yard (AOI W-1), Former Central Foundry (AOI W-9), and the Railroad Marshalling Area (AOI W-10), the fill material is primarily foundry sand. In other areas of the DA, the fill material consists primarily of construction debris that was used to backfill old basements. Fill material in the remaining areas of the Site consists primarily of reworked native soils.

The fill material is thickest in the southwestern portion of the Site, primarily in the West Yard where it is upwards of 30 feet thick in the area of monitoring wells MW32-99 and MWD4, as shown on cross-sections A-A' (Figure 3-7) and B-B' (Figure 3-8). As depicted on cross-section B-B' (Figure 3-8), the fill material extends southwest and terminates at Harris Lake. This indicates that fill material was placed in the immediate area of Harris Lake (which is supported by historical air photos and soil boring logs from soil borings completed around Harris Lake). In addition, cross-section A-A' (Figure 3-7) shows that the fill material pinches out to the east (at the east edge of the Former Central Foundry - AOI W-9). Beneath these fill deposits in the southwestern portion of the Site and around Harris Lake, a peat and marl layer is present.

Along cross-section C-C' (Figure 3-9), the eastern portion only shows fill material at SPO (northern extent) and at Powertrain (location of previous tank excavation and backfill), whereas the area along the rest of cross-section C-C' shows native material (i.e., absence of fill material).

There is an absence of fill material across portions of the Site as shown on cross-section D-D' (Figure 3-10). The fill material becomes less continuous and not as thick farther north on the Site. In the area of AOIs M-16 and M-4, the fill material is approximately 4 feet thick, as shown on cross-section B-B' (Figure 3-8).

Cross-section E-E' (Figure 3-11) illustrates that the fill material is present across the West Yard and extends westward across Fiero. The fill material is approximately 10 feet thick in this area, and the majority of the fill material in the area of monitoring wells MWF12-01 and MWF12-02 consists of coal from GM's power plant. Farther east from Fiero the fill material is no longer present.

Glaciolacustrine Deposits Interbedded Outwash Deposits

Immediately underlying the fill material are glaciolacustrine deposits (see Figures 3-7 to 3-11). The glaciolacustrine deposits are highly variable with a wide variation in grain size and density; however, a majority of these deposits consist of clays, silts, and fine sands. The glaciolacustrine deposits are usually described as brown to gray, fine to coarse sand with varying amounts of silt and clay. Some of the glaciolacustrine deposits are composed primarily of fine to coarse sand and gravel or silt and clay. The majority of the glaciolacustrine deposits are water-bearing; however, there are areas composed primarily of clays and silts in which there is minimal groundwater.

The glaciolacustrine deposits are present from either ground surface or immediately below the fill material down to the upper outwash deposits. These glaciolacustrine deposits range in thickness from approximately 70 feet in the northern portion of the Site, as shown on cross-sections B-B' and C-C' (Figures 3-8 and 3-9), to more than 100 feet thick in the southern portion of the Site.

Near the east-central portion of the Site there is an isolated pocket of ablation till within the glaciolacustrine deposits (Figure 3-9). The ablation till is composed of gray gravelly clay.

Found within the glaciolacustrine deposits are interbedded outwash deposits. The most prominent of these outwash deposits is shown on cross-section A-A' (Figure 3-7). This outwash deposit extends the entire length of the Site from east to west and ranges in thickness from a few feet to over 40 feet. However, this same outwash deposit extends only partway onto the Site, as seen on cross-section E-E' (Figure 3-11). This outwash deposit appears to be hydraulically connected to Harris Lake, as shown on cross-section B-B' (Figure 3-8).

Other interbedded outwash deposits are illustrated on cross-sections A-A' through D-D' (Figures 3-7 through 3-10).

Upper Outwash Deposits

Immediately underlying the glaciolacustrine deposits is the first in a series of areal extensive glacial outwash deposits referred to as the upper outwash deposit. This upper outwash deposit is composed primarily of gray, fine to coarse sands and fine to coarse gravels, with some silt. This outwash deposit is continuous across the Site and is situated on top of the upper basal till unit. The upper outwash deposit ranges in thickness from 5 to 30 feet, as shown on cross-sections A-A', B-B', C-C', and D-D' (Figures 3-7 through 3-10). This upper outwash deposit dips slightly (approximately 20 feet) across the Site from the northwest to the southeast, which follows the dip of the underlying till deposits.

In the northern part of the Site, a small basal till unit is interbedded within the upper outwash deposits, as shown on cross-sections B-B' and C-C' (Figures 3-8 and 3-9). This basal till unit is only approximately 20 feet thick. From cross-sections B-B' and C-C' (Figures 3-8 and 3-9), it appears that this basal till unit is continuous across the Site from east to west but only extends a short distance south onto the Site before pinching out.

Basal Till Deposits

Basal till deposits at the Site are generally described as gray clay with silt, fine to medium sand, and some gravel. In addition to its poorly sorted (heterogeneous) grain size distribution, the till exhibits a higher density than the overlying glaciolacustrine deposits, as evidenced by increased blow counts recorded during split-spoon sampling.

The basal till is present across the entire Site, as presented in cross-sections A-A', B-B', C-C', and D-D' (Figures 3-7 through 3-10). This basal till unit was encountered in all the deep monitoring wells (GWM3, GWS2, GWF4, GWP6, GWP3, GWD8, GWD9, and GWD11) installed as part of the Site-wide hydrogeologic investigation. The base of the basal till unit can only be seen in the southern portion of the Site, as shown on cross-section A-A' (Figure 3-7) where monitoring wells (DWD10 and DWD12) were advanced through the basal till into the lower outwash deposits. The basal till unit ranges in thickness from 20 to 60 feet, as shown on cross-section A-A' (Figure 3-7), and the surface of this basal till dips gently toward the southeast. The basal till is expected to

act as a vertical barrier to any potential migration of groundwater or Site-related constituents.

In the southern portion of the Site, a second (lower) basal till unit is present, as depicted on cross-section A-A' (Figure 3-7). This basal till unit is generally described as gray clay, fine to medium sand, and some gravel. The thickness of the lower basal till unit could not be identified because borings in this area were not advanced deep enough to penetrate this unit. Between these two basal till units there is an outwash deposit (discussed below). The multiple sequences of basal till and glacial outwash represent a stagnation period in the retreat of the ice sheet where oscillation, retreat, and re-advancement occurred.

Lower Outwash Deposits

A deeper outwash layer overlays an additional basal till unit evident only in the southern portion of the Site (deeper monitoring wells were only installed in the southern portion of the Site). These outwash deposits are composed primarily of gray, fine to coarse sands and fine to coarse gravels, with some silt. These deposits are found between the upper and lower basal till units and range in thickness from 15 to 25 feet. Only the deep monitoring wells (DWD10, DWD12, and DWD13) were installed within these lower outwash deposits.

3.8.2 Site Hydrogeologic Setting

Unconfined Water Table Zone

Groundwater is present in the fill material and unconfined glaciolacustrine deposits at the Site. Groundwater elevation measurements were obtained semi-annually through 2009 and then annually after 2009 throughout the duration of the RFI. As additional monitoring wells were installed and surveying was completed, subsequent rounds of groundwater level measurements were collected. The most recent set of data is presented in Table 3-2 and include water levels obtained on September 20 and 21, 2011. A shallow groundwater contour map (Figure 3-12) for September 20 and 21, 2011 was generated for the unconfined water table from data presented in Table 3-2. Site groundwater is typically found at depths ranging from 4 to 35 feet bgs in this zone. In general, the groundwater flow direction follows the topography of the Site, with the horizontal component of the groundwater flow to the south and southwest toward a series of small lakes (Harris, Terry, and Osmun). The horizontal hydraulic gradient across the Site is 0.0047 (as calculated from MWS1 to MWD6). These monitoring

wells are located in the northeast and southwest corners of the Site, respectively, along the main axis of groundwater flow. However, there are localized groundwater flow variations as shown on Figure 3-12.

Located in the southwest portion of the Site is a groundwater seep along Montcalm Avenue east of the Saginaw gate. Monitoring wells MWW1-02 and MWW1-03 were installed along the seep (Figure 3-12). The data presented in Table 3-2 indicate that the groundwater elevation is at very close to the ground surface. In this area, the topography drops off and intercepts the water table, creating the seepage. This area is hydraulically at the downgradient portion of the Site.

In addition to the localized groundwater flow onsite, there are also Site areas where groundwater was not present within the interval targeted for well placement. At monitoring well MWM25-01 on RACER-owned property, groundwater failed to recharge after installation. This is due to the fact that the glaciolacustrine deposits in the immediate areas where the wells were installed are not abundant in water-bearing materials (sands) and more abundant in clays and silts. There is also an area in which an underground storage tank (AOI M-4) was removed as part of previous remedial actions. The excavation was backfilled with imported sand (cross-sections B-B' and C-C', Figures 3-8 and 3-9), which may support a perched groundwater system.

Glaciolacustrine Zone

Intermediate groundwater monitoring wells (IWF3, IWP2, IWP5, IWM2, and IWD7) were installed in the glaciolacustrine deposits as part of the Site-wide hydrogeologic investigation. These intermediate monitoring wells were installed in well clusters with monitoring wells installed in the unconfined water table and the upper sand and gravel outwash zone to allow for evaluation of vertical groundwater flow information. Water levels were obtained from these monitoring wells. This data is presented in Table 3-2. During the RFI, groundwater monitoring well IWP2 was occasionally dry due to the tight nature of the soils the well screen is situated in.

Upper Sand and Gravel Outwash Zone

A groundwater potentiometric map (Figure 3-13) for February 7 and 8, 2002 was generated for the upper sand and gravel outwash aquifer from data presented in Table 3-2. The groundwater potentiometric surface in the sand and gravel aquifer is typically measured at depths ranging from 40 to 75 feet. In general, the horizontal component of the groundwater flow is to the south-southeast toward the Clinton River, which is the regional groundwater discharge point. The horizontal hydraulic gradient across the Site was 0.0045 in February 2002 (as calculated from GWM3 to GWP3). As a comparison, the groundwater elevations collected in September 2011 showed similar depths (Table 3-2). The horizontal hydraulic gradient across the Site was 0.0044 in September 2011 (as calculated from GWM3 to GWP3). These monitoring wells are located in the northwest and southeast corners of the Site, respectively, along the main axis of groundwater flow.

Lower Sand and Gravel Outwash Zone

Three groundwater monitoring wells (DWD10, DWD12, and DWD13) were installed in the lower sand and gravel outwash zone. Groundwater level measurements were collected as summarized in Table 3-2. Based on these data, the groundwater flow direction is similar to the upper sand and gravel zone (i.e., toward the southeast).

Vertical Groundwater Flow

To identify vertical groundwater flow at the Site, equipotential lines were plotted and a flow net was developed on each of the cross-sections for the Site (Figures 3-7 to 3-11). As shown on each of the cross-sections, groundwater flow in the glaciolacustrine and upper outwash deposits (above the basal till) is primarily downward.

Vertical hydraulic gradients were calculated for each of the nested sets of monitoring wells across the Site. The vertical gradients were calculated for the water table monitoring well and the corresponding monitoring well installed in the upper sand and gravel outwash zone in each set (MWM1 and GWM3, MWS1 and GWS2, MWF2 and GWF4, MWD6 and GWD8, MWP4 and GWP6, and MWP1 and GWP3). In addition, the vertical hydraulic gradients were calculated based on two sets of monitoring wells constructed in the upper and lower sand and gravel outwash (GWD9 and DWD10 and GWD11 and DWD12).

In all instances, the vertical gradient is downward. The vertical hydraulic gradient between the water table zone and the upper sand and gravel outwash monitoring wells located on the north and west sides of the Site ranges from 0.37 to 0.47 (MWM1 and GWM3 - 0.38, MWS1 and GWS2 - 0.38, MWF2 and GWF4 - 0.42, and MWD6 and GWD8 - 0.37). The vertical hydraulic gradient between the water table zone and the upper sand and gravel outwash monitoring wells located on the north and east central and southeastern sides of the Site ranges from 0.65 to 0.71 (MWP4 and GWP6 - 0.65, and MWP1 and GWP3 - 0.71). The vertical hydraulic gradients between the monitoring wells installed in the upper and lower sand and gravel outwash zones were 0.12 between monitoring wells GWD9 and DWD10 and 0.37 between monitoring wells GWD9 and DWD10.

3.8.3 In-situ Hydraulic Conductivity Test Results

Hydraulic conductivity values were estimated from the data obtained from monitoring wells during low-flow sampling. In addition, in-situ rising-head hydraulic conductivity tests (slug tests) were also performed on a select number of monitoring wells installed during the RFI for which the above method was unable to give an accurate determination of the hydraulic conductivity.

Select parameters were recorded at regular intervals during low-flow purging and sampling for each monitoring well. In addition to the water quality parameters (e.g., temperature, turbidity, and pH), additional parameters were also recorded. These parameters included time purging was initiated, initial water level and water levels during purging, purge rate, time purging was completed, and total volume purged. In-situ horizontal conductivity values were calculated for each of the monitoring wells using the QSTRANSX program for unconfined, partially penetrating overburden wells (for the monitoring wells that straddle the water table) or for partially confined overburden wells (for the monitoring wells that were installed in the deeper sand and gravel outwash aquifer). A summary of hydraulic conductivity data for the monitoring wells at which hydraulic conductivity tests were conducted is presented in Table 3-3. The calculations and field data are presented in Appendix C.

Rising-head hydraulic conductivity tests (slug tests) were performed on select wells, which did not exhibit drawdown during low flow sampling due to their unanticipated high yield. These slug tests were performed in accordance with ASTM D4044-96. In-situ horizontal conductivity values were calculated for each of the monitoring wells using the AQTESOLV[®] program for unconfined, partially penetrating overburden wells (for the monitoring wells that straddle the water table) or for partially confined

overburden wells (for the monitoring wells that were installed in the deeper sand and gravel outwash aquifer).

The range of hydraulic conductivities of the monitoring wells installed in the unconfined water table zone is 1.5×10^0 to 2.34×10^{-5} centimeters per second (cm/sec). The range of hydraulic conductivities in the intermediate zone (glaciolacustrine deposits) is 2.5×10^{-4} to $< 10^{-7}$ cm/sec (based on dry well IWP2). The range of hydraulic conductivities in the upper and lower sand and gravel zones are 4.3×10^{-1} to 1.1×10^{-4} cm/sec and 1.6×10^{-3} to 6.0×10^{-3} cm/sec, respectively.

3.9 Semi-Annual Groundwater Monitoring

Groundwater monitoring events commenced in 2003. The groundwater sampling events were completed in accordance with the RCRA Environmental Indicators (EI) Report (ENVIRON, 2002b) until 2009. On October 30, 2009, MLC and GM Corporation jointly submitted a request to USEPA to modify the Groundwater Monitoring Program for the Site from semi-annual to annual sampling and to eliminate select wells from the sampling program. The USEPA responded via email to MLC and GM Corporation granting the request for modification to the plan. Additionally, MLC (and subsequently RACER) and GM Corporation have been conducting separate groundwater monitoring events since 2009 as part of the RFI.

Groundwater and LNAPL (if present) elevation measurements were recorded and groundwater samples were collected from a sub-set of the original list of monitoring wells presented in the EI Report (ENVIRON, 2002b) as approved by USEPA. Beginning with the annual event in 2009, a focused set of eight monitoring wells were sampled (MW-40-99, MWF1R, MWF7-01, MWF12-01, MWM16-21, MWM16-43, MWW1-04, and MWW10-03), as approved by the USEPA on November 23, 2009. The 2011 Annual Groundwater Report details the most recent groundwater sampling event (ARCADIS, 2011).

3.10 Background Soil Characterization

Background soil samples were collected from six locations where no manufacturing or management of production materials or wastes was known to have occurred (ENCORE, 2002). One sample location was eliminated because it had elevated arsenic levels. Ten additional locations were subsequently added to the background data set: two locations from the SWHI and eight locations from the F-17 investigation. These locations were selected based on professional judgment about historical land

use and evaluation of boring logs to assure that the locations represented native soil. Site-specific background levels were derived by removing outliers and then calculating Upper Tolerance Limits (95/95 UTLs), as recommended by USEPA (USEPA, 1992, 1998, 2010). ProUCL, version 4.1.00 (USEPA, 2010) was used for evaluating outliers and deriving UTLs. If the MDEQ state-wide background screening level (MDEQ, 2011) was higher than the site-specific background level, then the state-wide screening level was used as the BSL; otherwise, the site-specific background was used as the BSL. Sample locations, outliers, statistical methods, and resulting BSLs are shown in Table 3-4. Background soil sample locations are shown in Figure 2-2.

DRAFT

4. RFI Results and Discussion

This section provides a summary of the RFI results based on comparison of analytical data to the screening criteria. AOIs and off-site areas with exceedances of the screening criteria are carried forward into the human health risk analysis presented in Section 5. Table 4-1 provides a comprehensive review of the RFI activities and results. Information about the data evaluation and results are provided in the following sections.

4.1 Data Evaluation Methods

AOIs were included in this report if the original RFI concluded that further action was deemed necessary. The AOIs that the original CCR concluded that No Further Action was necessary were not re-screened. The No Further Action AOIs are included in this Report for informational purposes. If additional sampling was conducted after the original CCR, the AOI was screened for this Report.

Data from each AOI or off-site area are compared with applicable generic screening criteria developed under the authority of Michigan's Part 201 of the Natural Resources and Environmental Protection Act (NREPA) (1994 PA 451, as amended) and were revised March 25, 2011. The generic cleanup criteria associated with the potentially complete exposure pathways that will not be restricted through deed restrictions or other mechanisms are the "applicable" criteria for screening the site data.

Since there will be deed restrictions placed on the Site, it is appropriate to consider only the pathways that are applicable after the deed restrictions have been applied. Deed restrictions are administrative/legal mechanisms to assure that the exposure controls upon which this risk evaluation is based remain in effect and will include the following:

- Non-residential use of the Site.
- No use of groundwater at the Site, other than for a response activity.
- No intrusive activities into the subsurface without a Health and Safety Plan consistent with Michigan Occupational Safety and Health Administration (MIOSHA) requirements, and consistent with the Site Due Care Plan.

- All onsite barriers which prevent exposure to underlying soil (foundations, pavement, clean fill and geotextile membrane barriers) will remain in place, and there will be a mechanism to ensure their integrity and repair them after any short-term intrusive activities.
- Vapor barriers if any habitable buildings are constructed (Plant 25 and the USPS area only).

All applicable criteria for the AOIs and off-site areas are listed on their respective screening tables and on Table 4-2 (Tables 4-3 through 4-73 and Figures 4-7 through 4-11). Figures for AOIs with no exceedances are in Appendix F. In addition to screening against generic Part 201 criteria, soil data are screened against background screening levels (BSLs). Derivation of background levels is described in Section 3.10. The approach for evaluating the soil, groundwater, sediment, and surface water data is discussed below.

Groundwater data has been collected semi-annually or annually since 2003 to eliminate the need for screening based on leaching from soil to groundwater by illustrating that soil impacts have not leached to groundwater. Sewers that could provide a pathway for off-site movement of groundwater have been bulkheaded and, therefore, the groundwater-surface water interface (GSI) criteria will not be used for screening on-site data. Soil borings were done through the sewers to collect samples of the bedding material in the sewer investigation. These bedding samples showed no impact to the bedding material. Therefore, GSI protection criteria will not be used in samples in or near the bedding of the sewers. However, GSI criteria will be used to screen wells closest to Harris Lake. To be conservative, all residential soil and groundwater pathways will be evaluated off-site. Groundwater at the downgradient property boundary will also be screened against residential drinking water and GSI criteria. Notices of Off-site Migration have been previously filed with the MDEQ to note migration off-site of groundwater with impact greater than residential criteria.

Figure 4-1 provides a Conceptual Site Exposure Model (CSEM) that illustrates the potentially complete exposure pathways based on these deed restrictions, and Table 4-2 lists all applicable criteria based on the CSEM

4.2 Analytical Results

A summary of the RFI is presented in Table 4-1. Table 4-1 describes each AOI, summarizes the completed activities, identifies whether there were exceedances of the

applicable criteria, and highlights areas considered for further activity. Figures 4-2 through 4-6 show the features of the AOIs and off-site areas as well as the sampling locations.

Data tables comparing the RFI characterization data for an area with the screening criteria discussed above are presented in Tables 4-3 to 4-71. Complete data tables for each AOI/area are provided in Appendix F. Figures 4-7 through 4-32 show the spatial distribution of the RFI data for constituents having at least one concentration higher than the most conservative screening criteria.

If the maximum concentration of a constituent at an AOI or off-site area exceeds the applicable screening criteria, then that AOI or off-site area is considered to have a potentially significant release. AOIs and areas to evaluate that have potentially significant releases are evaluated further in the human health risk assessment in Section 5. It should be noted that classifying an AOI or off-site area as having a potentially significant release does not mean that it necessarily poses an unacceptable risk; rather it indicates that Site-specific factors should be considered in the risk assessment to determine whether the constituent or AOI or off-site area poses a potentially unacceptable risk.

5. Human Health Risk Evaluation

The purpose of the human health risk evaluation is to assess potential risks and hazards to humans based on a comparison of on- and off-site data to generic risk-based screening criteria. This evaluation does not provide numerical risk estimates or site-specific criteria, but rather provides a discussion of the potential for unacceptable risks and hazards to occur and recommendations for further assessment or corrective action in the Corrective Measures Proposal (CMP).

This risk evaluation is based on the screening of the maximum detected concentration in each area of evaluation presented in Section 4 (Investigation Results and Discussion). There are 52 areas of evaluation belonging to RACER, which include all of the onsite AOIs, the PSB property, Terry and Osmun Lakes, off-site groundwater, property boundary groundwater, Columbia Avenue groundwater (off-site), and GSI (at applicable wells) (see Figure 2-1). Where the maximum detected concentration of a constituent in an area of evaluation exceeds an applicable screening criterion, the risk is further assessed in this section. It should be noted that an exceedance of a screening criterion does not necessarily mean that there is an unacceptable risk; rather it indicates that Site-specific factors should be considered to evaluate whether the constituent could pose a potentially unacceptable risk.

5.1 Initial Screening

Data for each area of evaluation were compared to applicable generic screening criteria developed under the authority of Michigan's Part 201 of the NREPA (1994 PA 451, as amended) and revised March 25, 2011. These comparisons and supporting discussions are presented in Section 4. The choice of applicable screening criteria was based on the Site characteristics, and exposure controls through deed restrictions planned for the Site as corrective measures.

Of the 52 areas of evaluation identified, eight had at least one constituent that exceeded an applicable screening criterion. Table 5-1 provides a list of all areas of evaluation where at least one constituent exceeded an applicable risk-based criterion, and the criteria that were exceeded with the constituents exceeding the criteria. The constituents listed in Table 5-1 are the Constituents of Potential Concern (COPCs) for the risk evaluation. Table 5-1 includes those constituents with no applicable criteria.^[1]

^[1] Excluding calcium and potassium, which are essential nutrients.

Constituents with no available applicable Michigan criteria were not screened in Section 4. For constituents with no criteria that are present in those areas requiring further evaluation in the CMP (see Figure 5-1), screening criteria from other sources will be critically evaluated for appropriateness, or will be calculated based on available and appropriate toxicity data, as needed depending on the remedy selected.

Note that where there were soil screening criteria exceedances, the data were separated into surface soil (0-2 feet bgs) and subsurface soil (greater than 2 feet bgs) to facilitate further evaluation of potential risks. Likewise, groundwater with screening criteria exceedances were separated into data sets for shallow groundwater (shallow zone depth is 4-35 feet bgs) and intermediate/deep groundwater (intermediate zone depth is 25-45 feet bgs off-site¹ and deep zone depth is 25-70 feet bgs) because not all of the criteria applicable to shallow groundwater are also applicable to intermediate/deep groundwater. Vapor intrusion is only relevant to very shallow groundwater because that is where vapors emanate from and this shallow groundwater forms a barrier to volatilization from deeper groundwater zones. In addition, subsurface disturbances during construction activities typically occur up to a depth of 15 feet bgs (Alaska Department of Environmental Conservation [ADEC] 2000, Arizona Department of Environmental Quality [ADEQ] 2002, Indiana Department of Environmental Management [IDEM] 2012, Nebraska Department of Environmental Quality [NDEQ] 2008, State of Pennsylvania, not dated, Virginia Department of Environmental Quality [VDEQ] 2012), so groundwater contact is not relevant to groundwater zones below 15 feet.

5.2 Exposure Assessment

An exposure assessment is the qualitative or quantitative evaluation of the magnitude, frequency, duration, and routes of exposure. This exposure assessment includes an evaluation of the exposure setting, identification of exposure pathways, and quantification of exposure.

¹One well (IWD-7), located at the southwest corner of the USPS area (Figure 3-12), has an intermediate groundwater zone depth of less than 15 feet bgs.

5.2.1 Exposure Setting

This section summarizes characteristics of the setting that influence potential exposure. Additional detail about the Site setting and characteristics can be found in Section 3. Areas of evaluation (Figure 2-1) were assessed based on common features that affect the anticipated receptors and their potential for exposure.

Most of the Site is fenced with 6-foot chain link fencing (see Figure 2-1). The fence at the Fiero parking lot is topped with barbed wire. The USPS area is completely surrounded by fencing with a security gate. With the exception of AOI M-27, parts of AOI W-10, and the storm water detention facility, the Site is capped with foundations, concrete, asphalt, geotextile membrane, and/or clean soil fill. These characteristics are discussed further in Section 3 and Table 2-4. These surface covers will stay in place and will be protected by deed restrictions.

Currently, much of the Site is unoccupied except for 24-hour security located at the Fiero gate guard shack, and in a vehicle stationed at the southern access to Fiero. The USPS area (see Figure 2-1) contains an active 24-hour postal distribution facility. Except for the USPS area, future use of the Site is undefined, but could include removal of the onsite structures above the foundations and construction of new buildings above existing foundations for industrial use (based on planned restrictions to be included on the deed). Portions of the Site have already been sold.

Off-site land use is a mixture of residential, commercial, and industrial properties. Figure 3-1 depicts land use and zoning in the vicinity of the Site.

5.2.2 Exposure Pathway Analysis

An exposure pathway defines a possible path by which a receptor may come in contact with affected media. For an exposure pathway to be complete and exposure to occur, the following four elements must be present:

- A source and mechanism of chemical release
- A retention and/or transport medium
- A point of contact with the medium
- A route of exposure (e.g., inhalation, ingestion, dermal contact)

A complete exposure pathway must exist from the source to the human receptors for exposure/chemical intake to occur. If any one of the four elements is missing, the exposure pathway is incomplete and exposure will not occur. Exposure controls through deed restrictions are often used at environmentally challenged sites to prevent contact with an environmental media or constituents migrating from that media to receptors (i.e., to make a pathway incomplete). If exposure is prevented, then there is no risk or hazard associated with the presence of the constituent in environmental media.

An exposure pathway conceptual site model (CSM) (Figure 4-1) is presented that summarizes the means by which COPCs are released and transported within and among media and the exposure pathways and routes by which COPCs can contact human receptors given the Site characteristics, exposure barriers, and deed restrictions planned for the Site. Applicable screening criteria were chosen based on the exposure pathways included in the exposure pathway CSM (see Table 4-2).

5.2.2.1 Onsite

The potentially complete exposure pathways are limited onsite due to land and groundwater use restrictions planned as part of the corrective measures, as well as the presence of foundations, pavement, and engineered barriers that will stay in place as required by the planned deed restrictions. See Section 6 for further discussion of planned deed restrictions. Exposure pathways that are not complete onsite due to these controls are listed in Table 5-2. Table 5-2 also lists exposure pathways that are potentially complete onsite, as illustrated in the exposure pathway CSM (Figure 5-1). Exposure to volatiles in the ambient air originating from groundwater and LNAPL is possible onsite, but this pathway is generally considered insignificant.

LNAPL (primarily degraded kerosene, No. 6 fuel oil and/or diesel no. 2) has been identified in the shallow groundwater at AOIs M-16, W-10, W-1, W-2, W-5 and W-8 onsite (see Table 4-1). In general, receptors may be exposed to vapors emanating from LNAPL during excavation activities and in indoor air. However all potentially complete exposure pathways are prevented or controlled by exposure controls that will be enforced by deed restrictions (maintaining exposure barriers, health and safety requirements during digging, and vapor barriers on any habitable building) (see Table 5-2). Because exposure to LNAPL is prevented or controlled by these mechanisms, there is no risk or hazard associated with the presence of LNAPL at the Site under these conditions.

5.2.2.2 Off-site

At this time, no off-site restrictions are planned; therefore all residential soil and groundwater pathways are evaluated as potentially complete, including ingestion of groundwater as a drinking water source.

5.2.2.3 Exposure Characteristics of Areas Included in Risk Evaluation

Additional characteristics that affect potential exposure in areas of evaluation with exceedances of screening criteria are discussed below:

AOI M-27: AOI M-27 consists of the land beneath and immediately adjacent to the railroad tracks on the western side of the Site. Currently, no cap is present on AOI M-27, however deed restrictions for excavation activities are planned for this AOI. Therefore, this AOI is different than other areas of evaluation on the Site in that the non-residential direct contact and particulate inhalation exposure pathways to both surface and subsurface soil are potentially complete. A 6-foot chain link fencing is present in some areas, however, this area will be completely fenced to restrict access to this AOI (see Figure 2-1).

Off-site Groundwater: There are currently no drinking water wells present within one mile of the Site (see well survey in Appendix G). However, no restrictive covenants or ordinances on groundwater use are currently in place or planned for off-site areas; therefore, the future use of groundwater as a residential drinking water supply was evaluated as a potentially complete exposure pathway. Groundwater at the downgradient (i.e., south and southwest) property boundary is evaluated as off-site groundwater for the purposes of this risk evaluation to represent off-site groundwater where no monitoring wells are present. Groundwater at Columbia Avenue, which is offsite, is evaluated separately from groundwater offsite and downgradient of the southern end of the RACER site.

Discharge of groundwater to Harris Lake is a potential transport mechanism. Therefore the GSI is evaluated for wells closest to Harris Lake.

PSB Property: The PSB property is fenced and zoned for non-residential purposes (zoned M-1, light manufacturing). However, it is not readily available if there are deed restrictions on the PSB property. Since there are no deed restrictions that would prevent the Site from reverting to residential use sometime in the future, residential and non-residential exposure scenarios and pathways are considered potentially complete.

Currently, there are no plans for off-site restrictive covenants; therefore, all residential soil and groundwater exposure pathways are evaluated as potentially complete for the PSB property.

Sediments in Terry and Osmun Lakes: Although it is unlikely for residents living near Terry Lake (approximately 750 feet by 350 feet) and Osmun Lake (approximately 800 feet by 450 feet) to have significant contact with lake bottom sediments, the residential direct contact pathway is considered potentially complete for the purposes of this risk evaluation. The original RFI concluded that neither Terry Lake nor Osmun Lake required any further action.

5.2.3 Exposure Point Concentrations

The concentration that represents the Site for screening and risk assessment purposes is referred to as the exposure point concentration (EPC). The maximum detected concentration in each area of evaluation was used as the EPC in the initial screening of data (Section 4) to identify areas requiring further assessment in the risk evaluation. For some areas of evaluation that have screening criteria exceedances, it is appropriate to derive an EPC using a statistical approach that represents a conservative estimate of the concentrations to which an individual may be exposed over the exposure period within the exposure unit. Exposure units are defined as the area throughout which a receptor moves and encounters an environmental medium for the duration of the exposure. Unless there is site-specific evidence to the contrary, an individual receptor is assumed to be equally exposed to media within all portions of the exposure unit over the time frame of the risk assessment (USEPA, 2002).

AOI M-27 (railroad tracks on the western side of the property)

The EPCs used in the initial screening of the data were refined for AOI M-27, the railroad tracks on the western side of the property (see Figure 2-1). The M-27 exposure unit was assumed to be the entire AOI boundary (14 acres) because a non-residential (worker) receptor could be exposed to soil anywhere along the length of the railroad tracks due to the narrow shape of the track area. Within this exposure unit, statistically-derived EPCs were calculated as follows:

- AOI M-27 surface soil for the non-residential receptor only for arsenic (11 surface samples collected)

- AOI M-27 full column of soil (surface and subsurface) for the non-residential receptor for arsenic (27 subsurface samples plus 11 surface samples collected)

Data for AOI M-27 is presented in Tables 4-51 through 4-53 and sample locations are shown on Figure 4-26.

The EPC is an estimate of the arithmetic average concentration for a constituent (USEPA, 2002). Ideally, the EPC should be the true average concentration; however, because of the uncertainty associated with estimating the true average concentration based on a limited dataset, an upper confidence limit (UCL) should be used as the EPC. The 95% UCL concentrations were calculated using ProUCL statistical software, available from USEPA (version 4.1.00, USEPA 2010). When duplicate samples were collected, the maximum concentration detected in the parent sample or duplicate sample was used. The methods for calculating UCL concentrations were selected based on the results of distribution testing, censoring, and number of samples as recommended by USEPA (USEPA, 2010).

For AOI M-27, both surface and full column data sets were lognormal at the 5% significance level. Because the full column data set had a clear lognormal distribution without censoring (i.e., 100% detected), the 95% UCL of 7.8 mg/kg was calculated based on Land's H-statistic. This is below the non-residential direct contact screening criterion of 37 mg/kg. The surface soil data set was also clearly lognormally distributed without censoring, but due to the lower number of samples, the Chebyshev 95% UCL of 38.6 mg/kg was selected. This UCL is slightly above the non-residential direct contact screening criterion. The ProUCL output for these calculations is included in Appendix H.

Other Areas of Evaluation

For other areas of evaluation with exceedances of screening criteria, statistically-derived EPCs were not calculated for the following reasons:

- Off-site groundwater: statistical analyses are not appropriate due to the localized nature of contact with groundwater during excavation activity and drinking water exposure from an individual well.
- PSB property: not enough samples were available to support a statistical analysis based on Michigan-recommended residential-sized exposure units.

5.3 Risk Characterization

This section provides a discussion of each area of evaluation identified as having an exceedance of the screening criteria in Table 5-1. Results and recommendations are summarized in Figure 5-1.

5.3.1 Onsite

AOI M-27 (railroad tracks on the western side of the property)

The only constituent in AOI M-27 soil that exceeds applicable screening criteria is arsenic, which has a non-residential direct contact screening criterion of 37 mg/kg. One location in surface soil exceeds the screening criterion with an arsenic concentration of 66.4 mg/kg, and one location in subsurface soil (2-4 feet bgs) exceeds with an arsenic concentration of 39.3 mg/kg. However, the statistically-derived EPC for arsenic in the full soil column at AOI M-27 is 7.8 mg/kg, which is below the non-residential direct contact screening criterion of 37 mg/kg. The surface soil EPC for arsenic is 38.6 mg/kg, slightly above the screening criterion; however, exposure of a non-residential receptor to the railroad tracks is likely to be significantly lower than typical industrial site exposure because there would be little reason for a worker to be in contact with non-operational railroad tracks on a regular basis. Therefore, non-residential use of AOI M-27 would not likely result in unacceptable risks. However, AOI M-27 is recommended for further evaluation in the CMP due to this exceedance of direct contact criterion discussed below.

Off-site

Off-Site Groundwater

Offsite groundwater (Columbia Avenue, downgradient of the southern property boundary, and the Pontiac School Board property) and downgradient property boundary groundwater, exceeds residential drinking water screening criteria for several constituents (see Table 5-1 for a list of constituents exceeding criteria and constituents with no criteria). Concentrations in groundwater samples collected at the property boundary exceed the groundwater contact criterion for dioxins.

No drinking water wells were identified on or near the Site and these properties are serviced by the City of Pontiac municipal water system. However, because there are currently no off-site institutional controls or restrictive covenants that effectively prevent

the future use of groundwater, the off-site drinking water exposure pathway was evaluated as potentially complete. Therefore, further evaluation of risk and/or a proposal for corrective measures such as negotiation with the City of Pontiac for an ordinance that prevents use of groundwater, and restrictions on digging in the vicinity of the groundwater contact criteria exceedance, will be presented in the CMP.

Pontiac School Board Property Soil

Surface and subsurface soil at the PSB property exceeds residential direct contact screening criteria as follows:

- Dioxin equivalents: four surface/subsurface samples (TPPS-01, TPPS-02, TPPS-03 and TPPS-04, all at 0-6 feet bgs) are slightly above the residential direct contact criterion,
- Arsenic: seven samples in surface soil (BPS-05, BPS-06, BPS-07, BPS-08, BPS-09, BPS-10, and TPPS-01) and four samples in subsurface soil (BPS-06 at 8-10 feet bgs, BPS-08 at 2-4 feet bgs, BPS-09 at 2-4 feet bgs, and TPPS-01 at 0-6 feet bgs), with a maximum of 14.1 mg/kg, which is approximately double the criterion of 7.6 mg/kg.
- Lead: one sample in surface soil at 429 mg/kg, which is slightly above the criterion of 400 mg/kg (TPPS-01).

Benzene also exceeds the residential screening criterion for indoor air in one subsurface soil sample by a factor of approximately 2.6 (BPS-08 at 2-4 feet bgs). This can be attributed to an historic tank release by the Pontiac School Board (MDEQ Confirmed Release Number C-0228-93) and is not related to any historical GM operations. Because benzene is not site-related, it will not be included as a COPC in the CMP. Several constituents with no screening criteria were detected. Data are presented in Appendix F and sample locations are depicted on Figure 4-5. Due to the exceedances of screening criteria, further evaluation of risk and/or calculation of risk-based criteria, or a proposal for corrective measures, will be presented in the CMP. This could include negotiations with the City of Pontiac for a restrictive covenant on the property limiting property uses to non-residential. Groundwater at this property will be evaluated in the CMP as part of the off-site groundwater.

Groundwater Surface Water Interface

Concentrations in groundwater samples collected nearest to Harris Lake (approximately 300 feet from Harris Lake) exceed the Michigan GSI screening criteria as follows:

- Dioxin equivalents in four samples exceeded the criterion by a factor of up to 0.6
- Total and/or dissolved arsenic in two samples (both from MWPS-01 in 2001 and 2002) exceed the criterion by a factor of up to 0.5
- Total and/or dissolved mercury in two samples (MWPS-01 and MWPS-02, both in 2002) exceed the criterion by a factor of up to 200

In addition, several constituents with no screening criteria were detected. Therefore, discharge of groundwater to surface water at Harris Lake will be evaluated further in the CMP. This may include the derivation of mixing zone-based GSI criteria, fate and transport modeling, and/or additional data collection. Data for these wells is presented in Tables 4-24 and 4-34, and sample locations are depicted on Figure 4-5.

Terry and Osmun Lake Sediments

Terry Lake has one sediment sample out of a total of three samples that exceeds the residential direct contact screening criterion for benzo(a)pyrene by less than a factor of two (maximum sediment concentration was 3.5 mg/kg vs. residential direct contact criterion of 2 mg/kg). In addition, methyl acetate and methyl cyclohexane were detected but have no screening criteria; however, the levels of these constituents were extremely low (approximately 5 to 50 times lower than the detection limit) and would not be expected to be of concern at these levels. Osmun Lake has one sediment sample out of a total of six samples that exceeds the residential direct contact criterion for lead by less than a factor of one half (maximum sediment concentration was 592 mg/kg vs. a residential direct contact criterion of 400 mg/kg).

Exposure to sediments is expected to be lower than the exposure that is assumed for developing generic residential direct contact criteria for soil because the ingestion rate and number of days in contact would be lower for sediments than for soil. This is consistent with the site-specific risk assessment that was done for Harris Lake in 2002 (Environ, 2002a). In the Harris Lake risk assessment, intake of lake sediment was estimated to be approximately 22 times lower than intake of soil due to a lower ingestion rate and exposure frequency for sediment (assumes all other exposure characteristics are the same for soil and sediment). Based on this reduced intake, a sediment direct contact screening criterion could be as much as 22 times higher than the corresponding soil direct contact screening criterion. The assumption of a lower exposure rate is also consistent with state guidance. For example, the Virginia Voluntary Cleanup Program provides sediment screening criteria that are derived by reducing their residential direct contact criteria by a factor of ten (VDEQ, 2012). Therefore, based on available data, a comparison to available benchmarks, and reduced exposure to sediments, it is unlikely that the benzo(a)pyrene concentration of 3.5 mg/kg or lead concentration of 592 mg/kg in sediments would result in unacceptable risks.

5.4 Uncertainties

This human health risk evaluation is an evaluation of the potential for unacceptable risks to occur based on a comparison of Site concentrations of COPCs to available applicable Michigan screening criteria (Section 4). Data for constituents with no available applicable Michigan screening criteria were not screened in Section 4 and therefore did not impact which areas were carried through to the risk evaluation.

This screening of data does not take into consideration those constituents whose detection limits are greater than the screening criteria. For samples with elevated detection limits for some constituents, the presence and/or concentration of these constituents is uncertain. However, where detection limits are elevated there are generally detections of other COPCs, and potential problems would likely be identified where these COPCs are present above screening criteria. Detection limits for any future sampling in these areas should be below screening criteria, and any further evaluation in the CMP should include an assessment of the potential for these constituents to be present.

5.5 Conclusions and Recommendations

Based on the results of this human health risk evaluation, the following locations will be evaluated further in the CMP:

- AOI M-27 for the non-residential direct contact receptor
- Offsite groundwater (Columbia Avenue, downgradient of the southern property boundary, and on-site property boundary); and
- Pontiac School Board property soil and groundwater.

The results of this evaluation and recommendations for further evaluation are summarized in Figure 5-1.

It should be noted that this risk evaluation was developed based on the assumption that numerous exposure controls through deed restrictions will be in place onsite. In order for the conclusions to be valid, the deed restrictions must include the following provisions:

- Only non-residential use of the Site is allowed. Non-residential use is defined as all uses consistent with the exposure assumptions used to calculate generic non-residential criteria. (Applies everywhere onsite.)
- No use of groundwater at the Site, other than for environmental response activities (i.e., sampling of monitoring wells, operation of extraction wells, etc.). This applies everywhere onsite.

- Requirement that all existing onsite surface barriers which prevent exposure to underlying soil, groundwater, and LNAPL (foundations, pavement, clean fill and/or geotextile membrane barriers) will remain in place. An exposure barrier will be placed on all onsite areas of evaluation that are not currently capped (e.g., parts of AOI W-10) (see Figure 2-1). In addition, there will be a mechanism to regularly verify the integrity of all caps, such as an Operation and Maintenance plan, and to repair them after any unavoidable short-term intrusive activities. This applies everywhere onsite except AOI M-27 and the storm water detention facility.
- Requirement that any intrusive activities (i.e., repair of foundation or subsurface utilities, short-term construction and landscaping projects) into the subsurface beneath the cap must be consistent with MIOSHA requirements, including the use of a Health and Safety Plan and a trained professional to evaluate the Site data prior to initiating activities. All relevant Site data must be made available for the preparation of the Health and Safety Plan. Data may be made available as part of the Due Care Plan, RFI, or other document(s). This applies everywhere onsite except AOI M-27 and the storm water detention facility.
- Requirement that the construction of any building that will be occupied must incorporate a vapor barrier. Occupation of an existing building will require either the use of a presumptive remedy for vapor intrusion, or additional evaluation of the vapor intrusion pathway. This applies everywhere onsite except the storm water detention facility.
- A requirement to comply with all aspects of the site Due Care Plan(s). This applies everywhere onsite.

6. Summary/Conclusions

The RFI included field investigations at the AOIs noted in Table 4-1, identified in the CCR (ENCORE, 2001a) and CCR Addendum # 1 (ENCORE, 2002a), and the off-site areas (PSB, Harris Lake, and Terry and Osmun Lakes):

6.1 Objectives

The objectives of the RFI Work Plan and Work Plan Addenda were to:

- Evaluate Site-wide hydrogeologic conditions, as necessary, to properly investigate releases from AOIs.
- Characterize the nature and extent of releases of hazardous waste and/or hazardous constituents in environmental media at the Site.
- Assess potential risk to human health and the environment associated with releases of hazardous waste and/or hazardous constituents.
- Provide sufficient data to support the RCRA corrective action environmental indicators determination.
- Evaluate whether interim corrective measures are necessary to control current unacceptable risks, if any, to human health.
- Evaluate whether a corrective measures evaluation is necessary to mitigate current and future unacceptable risks, if any, to human health and the environment.
- Evaluate the impact, if any, from discharges from the Site to off-site areas.

6.2 Deed Restrictions Planned for the Site

Several deed restrictions are planned for the Site that effect the applicable criteria used for comparison purposes at the Site and include:

- Groundwater use will be restricted across the entire Site to eliminate the drinking water exposure pathway.

- Requirement that all existing onsite surface barriers which prevent exposure to underlying soil, groundwater and LNAPL (foundations, pavement, clean fill and/or geotextile membrane barriers) will remain in place.
- In fill area easements shown on Figure 6-1, intrusive activities (i.e., subsurface utilities, short-term construction and landscaping projects) must be consistent with MIOSHA requirements, including the use of a Health and Safety Plan and a trained professional to evaluate the site data prior to initiating activities. All relevant Site data must be made available for the preparation of the Health and Safety Plan. Data may be made available as part of the Due Care Plan, RFI, or other document(s).

6.3 Results of Data Screening

Based on the results of the RFI, eight areas were identified with constituent concentrations in exceedance of their applicable Michigan Part 201 screening criteria, AOI M-27 was the only on-site area that exceeded applicable criteria, which were selected based on the extensive deed restrictions planned for the site. Off-site areas were screened against significantly more restrictive residential criteria. Off-site areas exceeding these restrictive residential criteria included the PSB property and off-site groundwater. On-site downgradient groundwater, which was used to represent groundwater immediately downgradient of the southern property boundary, also exceeded residential criteria. Lastly, groundwater closest to Harris Lake (the nearest surface water body) exceeded GSI criteria. The findings of the field investigations are discussed in Section 4 of this RFI Report. The potential health significance of the COPCs found in soil, groundwater, and sediment are discussed in a risk evaluation (Section 5).

6.4 Results of the Risk Assessment and Recommendations for Further Evaluation

As noted in Table 4-1, 44 of the 52 AOIs have no significant release of hazardous constituents to the environment based on the applicable criteria for each AOI. The determination is based on a conservative approach in which the highest concentration of a constituent at an area is compared with applicable generic risk-based screening criteria. Those areas with exceedances of applicable criteria were evaluated further in the risk evaluation.

Based on the conclusions of the risk evaluation, six of the eight identified areas (AOI M-27, PSB Property, Onsite Downgradient Property Boundary Groundwater, Off-site



RCRA Facilities Investigation

Pontiac North Campus
Pontiac, Michigan

Groundwater, Columbia Avenue groundwater, and GSI Groundwater) will be evaluated further in the CMP. This evaluation may consist of proposing a remedy that would prevent exposure, such as an appropriate deed restriction, or may include additional risk evaluation.

Additionally, bis (2-ethyl hexyl) phthalate had two exceedances of the water solubility criteria at AOI's M-5 and M-32. The exceedance at AOI M-32 appears to be an outlier (though additional statistical evaluation would need to be conducted); however, AOI M-5 has LNAPL present that will be further addressed in the CMP and through a deed restriction.

DRAFT

7. References

- ADEC. 2000. *Risk Assessment Procedures Manual*. June 8, 2000.
- ADEQ. 2002. *Release Reporting and Corrective Action Guidance*. Underground Storage Tank Program. August 20, 2002.
- ARCADIS. December 2011, Annual Groundwater Monitoring Report, Pontiac North Campus. RACER Trust, Pontiac, Michigan.
- CRA. 2000a. Draft LNAPL Delineation, Pontiac North Complex. General Motors Corporation, Pontiac, Michigan. March 2000.
- CRA. 2000b. Draft Site Investigation Report, Pontiac North Complex Former A-2 Fill Area. General Motors Corporation, Pontiac, Michigan. March 2000.
- EEC. 2008 Property Redevelopment Report. Pontiac, Michigan. 2008.
- ENCORE. 2001a. Current Conditions Report, Pontiac North Campus. General Motors Corporation, Pontiac, Michigan. January 31, 2001.
- ENCORE. 2001b. Draft Environmental Review of PCB Issues and Storm Sewer Interim Measures, Pontiac North Campus. General Motors Corporation, Pontiac, Michigan. February 7, 2001.
- ENCORE. 2001c. Draft Storm Sewer Interim Measures, Pontiac North Campus. General Motors Corporation, Pontiac, Michigan. April 17, 2001.
- ENCORE. 2001d. RFI Work Plan, Pontiac North Campus. General Motors Corporation, Pontiac, Michigan. May 15, 2001.
- ENCORE. 2001e. RFI Work Plan Addendum #1, Pontiac North Campus. General Motors Corporation, Pontiac, Michigan. August 14, 2001.
- ENCORE. 2001f. RFI Work Plan Addendum #2, for AOI's M-9, F-7, F-8 and F-15, Pontiac North Campus. General Motors Corporation, Pontiac, Michigan. September 10, 2001.



RCRA Facilities Investigation

Pontiac North Campus
Pontiac, Michigan

- ENCORE. 2001g. Field Sampling Plan, Pontiac North Campus. General Motors Corporation, Pontiac, Michigan. May, 2001.
- ENCORE. 2002a. Current Conditions Report Addendum #1, Pontiac North Campus. General Motors Corporation, Pontiac, Michigan. February 13, 2002.
- ENCORE. 2002b. RFI Work Plan Addendum #3, Stage III – AOI and Harris Lake Follow Up Investigation, Pontiac North Campus. General Motors Corporation, Pontiac, Michigan. February 6, 2002.
- ENCORE. 2002c. Storm Sewer Supplemental Interim Measures, Pontiac North Campus. General Motors Corporation, Pontiac, Michigan.
- ENCORE. 2002d. RCRA Facility Investigation (RFI) Report, Pontiac North Campus, Pontiac, Michigan. April 29, 2002.
- ENCORE. 2003a. RFI Work Plan Addendum No. 4, for LNAPL Delineation – AOI M-2, Pontiac North Campus. General Motors Corporation, Pontiac, Michigan. March 14, 2003.
- ENCORE. 2003b. RFI Work Plan Addendum No. 5, Pontiac North Campus. General Motors Corporation, Pontiac, Michigan. April 10, 2003.
- ENCORE. 2003c. RFI Work Plan Addendum No. 6, Pontiac North Campus. General Motors Corporation, Pontiac, Michigan. April 10, 2003.
- ENCORE. 2003d. RFI Work Plan Addendum No. 7, Pontiac North Campus. General Motors Corporation, Pontiac, Michigan. April 10, 2003.
- ENCORE. 2003e. RFI Work Plan Addendum #8, for AOIs F-7, F-15, M-1, M-4, M-5, M-16, M-25, and P-6, Pontiac North Campus, General Motors Corporation, Pontiac, Michigan. May 19, 2003.
- ENCORE. 2003f. RFI Work Plan Addendum No. 9, Pontiac North Campus. General Motors Corporation, Pontiac, Michigan. August 1, 2003.
- ENCORE. 2003g. RFI Work Plan Addendum No. 8A, Pontiac North Campus. General Motors Corporation, Pontiac, Michigan. August 26, 2003.



RCRA Facilities Investigation

Pontiac North Campus
Pontiac, Michigan

- ENCORE. 2003h. Supplemental RCRA Facility Investigation (RFI) Report No. 1, Pontiac North Campus, Pontiac, Michigan. November 26, 2003.
- ENCORE. 2004a. RCRA Facility Investigation (RFI) Work Plan Addendum #11, Plant 14 Tunnels AOI M-26, Pontiac North Campus, Pontiac, Michigan. March 2, 2004.
- ENCORE. 2004b. Harris Lake Nearshore Sediment Removal Program, Pontiac North Campus, General Motors Corporation, Pontiac, Michigan. May 2004.
- ENCORE. 2004c. Completion Report for the Storm Sewer Pipe Removal at the Pontiac School Board Property, General Motors Corporation, Pontiac, Michigan. May 4, 2004.
- ENCORE. 2004d. Soil Removal at AOI W-9, Pontiac North Campus, Pontiac, Michigan. May 6, 2004.
- ENCORE. 2004e. Interim Measures Work Plan, Risk-Based Fill Material Removal at Former Plant 6 Basement – AOI W-9, Pontiac North Campus, Pontiac, Michigan. May 9, 2004.
- ENCORE. 2004f. RFI Work Plan Addendum No.13, Fiero (Plant 17) Sewer and Subsurface Investigations, Pontiac North Campus, General Motors Corporation, Pontiac, Michigan. August 30, 2004.
- ENCORE. 2004g. RFI Work Plan Addendum #12, Offsite Groundwater Investigation, Pontiac North Campus, General Motors Corporation, Pontiac, Michigan. November 29, 2004.
- ENCORE. 2004h. Completion Report for the Storm Sewer Pipe Removal at the Pontiac School Board Property, General Motors Corporation, Pontiac, Michigan. May 4, 2004.
- ENCORE. 2005. Completion Report for the Storm Sewer Removal, General Motors Corporation, Pontiac, Michigan.
- ENCORE. 2006a. RFI Work Plan Addendum #25, AOI F-17 Parking Lot West of Fiero, Pontiac North Campus, General Motors Corporation, Pontiac, Michigan. June 12, 2006.

- ENCORE. 2006b. RFI Work Plan Addendum #26, Offsite AOI M-32 Plant 15 Pits/Basement Investigation, Pontiac North Campus, General Motors Corporation, Pontiac, Michigan. October 12, 2006.
- ENCORE. 2007a. LNAPL Mobility Evaluation, Area of Industrial Redevelopment, General Motors Corporation – Pontiac North Campus, Pontiac, Michigan. February 7, 2007.
- ENCORE. 2007b. Notice of Soil Relocation, General Motors Corporation – Pontiac North Campus, Pontiac, Michigan. March 7, 2007.
- ENCORE. 2007c. Interim Measures Work Plan, Risk-Based Fill Material Removal at Former Plant 8 Basement – AOI W-5, Pontiac North Campus, Pontiac, Michigan. November 1, 2007.
- ENCORE. 2007d. Interim Measures Report, Risk-Based Fill Material Removal at Former Plant 6 Basement – AOI W-9, Pontiac North Campus, Pontiac, Michigan. February 28, 2007.
- ENCORE. 2007e. Interim Measures Report, LNAPL Area No. 3, Pontiac North Campus, General Motors Corporation, Pontiac, Michigan. February 5, 2007.
- ENCORE. 2008. Interim Measure – W-9, General Motors Corporation – Pontiac North Campus, Pontiac, Michigan. June 17, 2008.
- ENVIRON, 2002a. Baseline Human Health Risk Assessment for Harris Lake, Michigan. July 24, 2002.
- ENVIRON, 2002b. Environmental Indicators Report, Pontiac, Michigan. July 30, 2002.
- Exponent, 2002. Screening Ecological Risk Assessment for Harris Lake, Pontiac, Michigan. April 29, 2002.
- Feenstra, J.E. 1982. Soil Survey of Oakland County, Michigan. U.S. Department of Agriculture, Soil Conservation Service.
- GM. 1986. Certification Regarding Potential Releases from Solid Waste Management Units, C.P.C. – Pontiac Facility. General Motors Corporation, MID005356886. February 27, 1986.

- IDEM. 2012. Remediation Closure Guide. Office of Land Quality. January 6, 2012.
- MDEQ. 1999. Administrative rules, Part 4. Water quality standards. Latest revisions effective April 2, 1999. Michigan Department of Environmental Quality, Surface Water Quality Division.
- MDEQ. 2000. Michigan fish contaminant monitoring program. MI/DEQ/SWQ-00/122. Michigan Department of Environmental Quality.
- MDEQ. 2012. <http://wellviewer.rsgis.msu.edu/viewer.htm>
- MDNR. 1987a. Letter to GM, re: PCB Oil Spill Catalina Substation. May 27, 1987.
- MDNR. 1987b. Site Description/Executive Summary. GMC Pontiac Motor Division, Pontiac, Michigan. December 15, 1987.
- MDNR. 1988. Letter to GM, re: Container Storage Area Closure Certification. February 1988.
- MDNR. 1995. Letter to GM, re: Container Storage Area/Waste Purge Thinner Closure Report. March 15, 1995.
- Michigan Department of Public Health. 1978. (Part 127 of Act 368). Groundwater Quality Control.
- NDEQ, 2008. Protocol for VCP Remediation Goal Lookup Tables. Nebraska Voluntary Cleanup Program. October, 2008.
- Pennsylvania, State of, not dated. Pennsylvania Code, Subchapter C. Statewide Health Standards.
<http://www.pacode.com/secure/data/025/chapter250/subchapCtoc.html>.
Accessed February 27, 2012.
- PRC. 1992. Preliminary Assessment/Visual Site Inspection (PA/VS) Report. GM Corporation, Pontiac Fiero Plant, Pontiac, Michigan. November 5, 1992.
- RUST. 1995. RCRA Closure Report for the Container Storage Area/Waste Paint Thinner UST. GM Corporation, Pontiac Fiero Plant, Pontiac, Michigan. January, 1995.

- SUNPRO. 1996. Final Report – PCB Remediation Substation D-1, August 21, 1996.
- Superior. 2000. Leaking Underground Storage Tank Closure Report. CPC Pontiac – Car Wash, 985 Joslyn Road. February 2, 2000.
- U.S. Census Bureau. 1997 Economic Census.
- U.S. Census Bureau. 2010. <http://quickfacts.census.gov/qfd/states/26/2665440.html>.
- USEPA. 1980. Ambient water quality criteria for polychlorinated biphenyls. U.S. Environmental Protection Agency. Washington, DC.
- USEPA. 1998. Office of Solid Waste and Emergency Response (OSWER). Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities – Volumes 1, 2 and 3. EPA 530-D-98-001 A/B/C. July.
- USEPA. 1996. Supplemental guidance to RAGS: Region 4 Bulletins. U.S. Environmental Protection Agency, Region 4, Waste Management Division, Office of Technical Services, Atlanta, GA.
- USEPA. 1997. Ecological risk assessment guidance for Superfund: Process for designing and conducting ecological risk assessments. Interim Final. U.S. Environmental Protection Agency, Environmental Response Team, Edison, NJ.
- USEPA 2000. http://www.epa.gov/enviro/index_java.html.
- USEPA. 2002. Calculating Upper confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10. December.
- USEPA. 2010. ProUCL Version 4.1.00 Technical Guide (Draft). Office of Research and Development. EPA/600/R-07/041. May.
- VDEQ. 2012. Virginia Voluntary Remediation Program Risk Assessment Guidance. <http://www.deq.state.va.us/vrprisk/>. Accessed February 27, 2012.
- Western Michigan University (WMU). 1981. Hydrogeologic Atlas of Michigan. Western Michigan University, College of Arts & Sciences, Department of Geology.



RCRA Facilities Investigation

Pontiac North Campus
Pontiac, Michigan

Westjohn, D.B., and Weaver, T.L. 1996. Hydrogeologic Framework of Mississippian Rocks in the Central Lower Peninsula of Michigan. USGS Water-Resources Investigations Report 94-4246. Lansing, Michigan.

DRAFT

Tables

DRAFT

Table 2-1. Timeline, RACER Trust Pontiac North Campus, Pontiac, Michigan

Document	Date	AOI or Area Addressed			
		Fiero	Demolition Area	MFD	Other
Current Conditions Report	1/31/2001	F-1 to 14	W-1 to 13	M-1 to 25	
RFI Work Plan	5/15/2001	F-7,8,12,13 & 14	W-1,3,5,6,8,9,10,11 & 13	M-1,2,4,5,7,9,11,13,16,17,19,21,23,24 & 25	Storm sewer outfall 001 (ST-1)
RFI Work Plan Addendum #1	7/30/2001				Harris Lake & PSB
RFI Work Plan Addendum #2 for AOI's M-9, F-7, F-8, and F-15	9/10/2001	F-7,8 & 15		M-9	
RFI Work Plan Addendum #3 - Stage III - AOI and Harris Lake Follow-up Investigation	2/6/2001*				Harris Lake
RCRA Facility Investigation (RFI)	4/29/2002	F-7,8,12,13 & 14	W-1,3,5,6,8,9,10,11 & 13	M-1,2,4,5,7,9,11,13,16,17,19,21,23,24 & 25	
Interim Measures Work Plan - LNAPL Delineation AOI M-2	12/5/2002			M-2	
RFI Work Plan Addendum #4 for LNAPL Delineation AOI M-2	3/14/2003			M-2	
RFI Work Plan Addendum #8 for AOI's F-7, F-15, M-1, M-4, M-5, M-16, M-25, and P-6	5/19/2003	F-7 & 15		M-1,4,5,16 & 25	
RFI Work Plan Addendum #8A - AOI M-4 and AOI M-16 (To amend RFI Work Plan Addendum No. 8)	8/13/2003			M-4 & M-16	
Supplemental RFI #1	11/26/2003	F-7,8 & 15	W-1,8,9 & 10	M-1,2,4,5,7,9,16 & 25	
Corrective Measures Proposal	11/26/2003	F-1 to 14	W-1 to 13	M-1 to 25	Storm sewer outfall 001 (ST-1)
RFI Work Plan Addendum #9 - Supplemental Investigation of Demolition Area	6/27/2003		Supplemental Investigation		
RFI Work Plan Addendum #10 for AOI W-8 and LNAPL Area No. 3	1/13/2004		W-8 & LNAPL-3		
RFI Work Plan Addendum #11 - Plant 14 Tunnels, AOI M-26	Feb-04			M-26	
Interim Measures Work Plan - Soil Removal at AOI W-9	5/6/2004		W-9 soil removal		
Interim Measures Work Plan - BW9-27 and AIR-TP-10	5/6/2004				Plant 6 basement - BW9-27 & AIR-TP-10
RFI Work Plan Addendum #13 - Fiero (Plant 17) VOC Investigations	8/30/2004	Fiero Sewer & Subsurface Investigation			
RFI Work Plan Addendum #12 - Offsite Groundwater Investigation	11/29/2004				Off-site GW S. of Montcalm Ave.
RFI Work Plan Addendum #14 - Plant 15, AOI M-28	Apr-04			M-28	
RFI Work Plan Addendum #15 - AOI W-1 - LNAPL Area No. 7	6/3/2004		W-1 & LNAPL-7		
RFI Work Plan Addendum #16 - Plant 15 South Patio, AOI M-30	10/6/2004			M-30 Plant 15 S. Patio	
RFI Work Plan Addendum #17 - North of Plant 14, AOI M-29	10/26/2004			M-29	
RFI Work Plan Addendum #19 - Plant 15, AOI M-31	12/30/2004			M-31	
RFI Work Plan Addendum #20 - Supplemental Investigation of Demolition Area LNAPL Areas 9 and 10	2/2/2005		LNAPL-9 & 10		
RFI Work Plan Addendum #21 - Sub-Storm Sewer Investigation	2/2/2005		W-8 & 9		
RFI Work Plan Addendum #22 - Former Plant 6 Central Foundary - Basement Investigation, AOI W-9	4/18/2005		W-9		
RFI Work Plan Addendum #23 - Delineation of LNAPL Area No. 11 and Vadose Zone Soils Containing NAPL, AOI W-8	8/1/2005		W-8 & LNAPL-11		
RFI Work Plan Addendum #25 - AOI F-17, Parking Lot West of Fiero	6/12/2006	F-17			
RFI Work Plan Addendum #26 - AOI M-32, Plant 15 Pits/Basement Investigation	10/12/2006			M-32	
LNAPL Mobility Evaluation; Area of Industrial Redevelopment	2/7/2007		All of DA		
Interim Measures Work Plan - Risk-Based Fill Material Removal at Former Plant 8 Basement - AOI W-5	11/1/2007		W-5 fill removal (BW8-115)		
* Document is mistakenly dated February 6, 2001; it should be dated February 6, 2002.					

TABLE 2-2.

Groundwater Sampling Field Parameters, RACER Trust Pontiac North Campus, Pontiac, Michigan

Date	Well ID	pH	Cond	Temp	Turb	DO	ORP	DTW	Flow Rate mL/min	Volume Purged (gallons)
SITEWIDE										
8/23/2001	MWF1	6.95	1.91	19.52	1.88	5.48	44	25.98	100	NR
1/7/2002	MWF1	6.87	1.828	13.05	4.95	0.27	-166.8	25.66	250	3.5
9/10/2001	MWF2	6.42	1.46	16.5	4.09	6.09	177.1	21.28	NR	NR
1/9/2002	MWF2	6.67	1.499	10.32	3.27	4.29	-22.4	21.07	100	3
9/10/2001	IWF3	7.89	0.835	14.49	3.07	1.28	2.09	34.9	NR	NR
1/9/2002	IWF3	8.23	0.758	13.98	22.8	8.41	-228.2	34.63	200	14
9/10/2001	GWF4	6.64	1.17	18.44	4.51	1.04	-51.4		NR	NR
1/9/2002	GWF4	6.73	1.233	12.82	4.5	8.78	-86.5	46.22	175	9
9/12/2001	MWP1	6.5	3.23	17.19	0.81	29.1	32		NR	NR
1/8/2002	MWP1	7.14	2.892	5.37	4.98	8.3	57.6	17.45	40	NR
1/8/2002	IWP2	Monitoring Well was dry - No samples collected								
1/8/2002	GWP3	8.29	0.62	15.34	4.91	0.39	-175.5	76.73	500	NR
1/8/2002	MWP4	7.13	1.837	6.85	4.83	2.93	-78.3	13.1	100	6
9/20/2001	IWP5	Slow Recharge - Monitoring Well Purged Dry								
1/10/2002	IWP5	8.56	0.946	13.69	1000+	3.19	-74.8	57.73	NR	NR
9/18/2001	GWP6	8.39	0.476	13.27	21.6	1.86	50.8	NR	NR	NR
1/8/2002	GWP6	8.42	0.479	12.34	4.92	11.03	-214	56.16	175	13
8/27/2001	MWD1	7.62	1.66	23.55	4.42	1.87	215	13.38	NR	NR
1/9/2002	MWD1	7.12	3.79	10.39	2.77	4.6	75	15.94	100	6
8/29/2001	MWD2	10.8	2.45	21.3	4.1	1.31	31	17.72	NR	NR
1/9/2002	MWD2	10.55	2.972	9.58	0.3	0.41	-183	17.5	200	2.5
8/27/2001	MWD3	8.7	0.87	22.37	11.2	0.8	-208	14.4	100	NR
1/8/2002	MWD3	9.98	0.795	9.17	0	4.2	-13.5	14.33	200	4
1/8/2002	MWD4	Monitoring Well was dry - No samples collected								
8/27/2001	MWD5	8.23	3.53	20.61	3.07	0.69	112	26.22	NR	NR
1/8/2002	MWD5	8.4	1.92	11.37	2	0.51	6.4	25.74	250	6
9/11/2001	MWD6	6.95	6.29	22.97	1.88	24.35	-150	5.4	NR	NR
1/9/2002	MWD6	7.96	4.863	10.42	1.46	8.57	-167.5	5.33	NR	NR
9/11/2001	IWD7	6.77	1.51	15.44	4.62	0.43	-62	7.18	NR	NR
1/9/2002	IWD7	7.47	3.895	8.18	4.15	9.53	59.2	6.61	NR	NR
9/12/2001	GWD8	7.13	0.557	21.25	4.7	0.54	-128	76.8	NR	NR
9/14/2001	GWD8	7.26	1.28	15.02	4.49	0.82	-130	27.76	200	NR
1/10/2002	GWD8	8.44	1.562	10.05	4.42	0.94	-147.3	26.74	200	2.5
9/13/2001	MWM1	6.61	1.94	16.1	3.56	3.63	167	9.9	NR	NR
1/7/2002	MWM1	6.83	1.48	6.62	4.75	0.82	198.5	10.9	75	NR
9/13/2001	IWM2	7.34	0.7	18.12	71.7	1.9	21.2	45.4	NR	NR
1/7/2002	IWM2	7.48	0.802	14.56	4.27	0.53	34.2	48.3	500	NR
9/13/2001	GWM3	6.79	1.35	15.06	3.92	1.12	-94	45.6	NR	NR
1/7/2002	GWM3	7.27	1.432	11.47	4.94	0.39	-74.1	43.92	500	NR
8/22/2001	MWM4	7.27	2.1	14.3	2.78	7.89	292	21.67	100	NR
1/7/2002	MWM4	7.28	3.05	8.21	0.71	5.41	-5	21.52	150	2
8/24/2001	MWM5	6.69	4.3	15.89	4.51	1.8	-31	25.68	100	NR
1/8/2002	MWM5	6.69	4.21	10.38	3.35	0.28	-33	25.48	100	1.5
8/29/2001	MWM6	6.11	11.03	18.73	0.37	16.6	215	19.15	NR	NR
1/8/2002	MWM6	6.77	10.47	9.68	1.16	1.32	-12	18.94	150	2
8/22/2001	MWM7	7.53	3.7	16.07	2.54	3.97	-30	13.25	100	NR
1/8/2002	MWM7	Slow Recharge - Monitoring Well Purged Dry								
9/10/2001	MWM8	Slow Recharge - Monitoring Well Purged Dry								
1/8/2002	MWM8	Slow Recharge - Monitoring Well Purged Dry								
8/23/2001	MWM9	6.68	7.8	18.22	3.98	5.29	249	20.88	100	NR
1/8/2002	MWM9	6.66	8.64	6.19	5.34	0.84	-5	19.35	150	1.5
8/23/2001	MWM10	6.9	11.18	18.68	3.09	4.09	69	13.55	100	NR
1/7/2002	MWM10	6.79	11.57	11.33	10.3	2.14	-93.8	14	150	3
9/14/2001	MWS1	7.23	1.54	17.28	1.54	2.31	181	10.4	200	NR
1/7/2002	MWS1	7.74	1.235	10.66	1	4.81	103.1	10.11	150	2.5
9/19/2001	GWS2	7.27	0.569	15.7	4.2	0.41	-115.5	44.39	NR	NR
1/7/2002	GWS2	7.44	0.583	10.5	32	16.95	-176.6	42.89	250	17
1/22/2002	GWD9	7.29	1.146	12.55	4.23	0.2	-295.6	35.29	500	15
1/22/2002	DWD10	7.84	0.487	12.43	3.24	0.43	-213.3	43.55	500	18
1/29/2002	GWD11	8.17	1.39	11.7	4.83	0.27	-294	60.14	200	2.6
1/18/2002	DWD12	6.94	0.97	9.09	2.42	0.27	-249.9	69.53	250	4
2/1/2002	DWD13	7.7	0.54	9.32	12.1	0.1	-287	38.11	146	13

TABLE 2-2.

Groundwater Sampling Field Parameters, RACER Trust Pontiac North Campus, Pontiac, Michigan

Date	Well ID	pH	Cond	Temp	Turb	DO	ORP	DTW	Flow Rate mL/min	Volume Purged (gallons)
FIERO										
F-12										
9/5/2001	MWF12-01	6.58	1.37	16.79	1.13	7.89	143.6	19.78	NR	NR
1/4/2002	MWF12-01	6.79	2.38	14.58	2.04	2.94	94.6	18.27	400	3
9/5/2001	MWF12-02	6.57	2.16	15.33	0.98	0.65	-38.3	19.9	NR	NR
1/4/2002	MWF12-02	6.62	4.55	14.13	3.26	3.58	110.2	19.16	400	3
F-7										
10/11/2001	MWF7-01	9.9	1.58	19.09	62.4	0.3	-364	21.5	NR	NR
1/9/2002	MWF7-01	7.46	1.448	21.71	4.86	1.17	-182.8	21.16	500	13
10/11/2001	MWF7-02	7.82	0.555	19.95	3.09	3.6	102	21.42	NR	NR
	MWF7-02	7.84	0.702	19.8	4.21	2.64	-20.9	21.07	300	7
F-8										
10/12/2001	MWF8-01	6.84	1.35	13.35	4.95	1.98	-124	20.4	NR	NR
1/9/2002	MWF8-01	6.76	1.518	11.27	0.05	2.15	-118.6	20.17	200	2
F-15										
10/11/2001	MWF15-01	7.85	1.11	17.25	4.22	1.39	-185	20.2	NR	NR
1/9/2002	MWF15-01	7.22	0.835	17.45	3.82	0.8	-66.2	19.99	500	9
DEMOLITION AREA										
W-1										
8/28/2001	MWW1-01	6.73	1.05	22.52	3.78	4.63	-89	15.1	NR	NR
1/7/2002	MWW1-01	6.99	0.817	7.06	3.52	0.44	-100	10.6	150	1.5
1/17/2002	MWW1-02	6.43	1.35	3.79	1.26	0.49	67	3.55	100	2.5
1/17/2002	MWW1-03	6.51	2.35	3.81	1.65	0.33	80	4.47	150	2
2/19/2002	MWW1-04	10	3.53	9.61	2.06	0.58	62	4.85	350	6
1/7/2002	MW-10	7.53	1.22	9.3	1.85	0.5	-131	14.93	NR	NR
1/7/2002	MW-19S	6.74	1.15	9	3.56	0.39	-102	22.69	150	2.5
1/7/2002	MW28-99	7.95	1.82	10.86	7.76	1.73	-200	9	350	5
6/22/2001	MW-29-99	7.53	1.18	17.6	4.23	0.56	-98	11.02	100	3
1/10/2002	MW29-99	7.08	1.1	12.4	2.96	1.24	-110.7	11.32	500	10
6/25/2001	MW-30-99	6.76	1.53	18	0.98	0.12	-303	16.31	100	9.25
1/7/2002	MW30-99	6.93	1.3	7.85	4.46	0.48	-256.6	16.6	175	2
6/25/2001	MW-31-99	7.01	2.77	19.45	3.7	0.1	-264	21.42	100	7.2
1/7/2002	MW31-99	7.2	2.126	10.5	4.13	0.48	-278	21.2	250	2.5
6/25/2001	MW-33-99	7.61	1.07	18.1	1.02	3.99	-136	26.07	100	9.8
1/7/2002	MW33-99	8.58	1.03	12.85	0.03	6.6	170	24.62	150	5
8/28/2001	MW-34-99	7.47	0.81	19.3	1.98	2.73	-141	26.75	NR	NR
1/7/2002	MW34-99	8.52	0.831	13.13	0.12	1.82	-124.4	26.21	200	4.5
8/28/2001	MW-39-99	8.06	1.21	19.5	4.73	4.9	49	27	NR	NR
1/10/2002	MW40-99	7.22	0.909	11.51	4.57	2.59	-178.5	10.76	300	16
6/21/2001	MW-42-99	8.65	1.34	13.54	2.01	0.75	-205	18.77	100	7
1/7/2002	MW42-99	7.45	2.18	12.72	0.07	1.28	-246.8	19.04	300	4
W-5										
9/14/2001	MWW5-01	Slow Recharge - Monitoring Well Purged Dry								
1/9/2002	MWW5-01	6.72	1.338	9.24	0.25	0.68	-233.8	20.62	50	0.5
9/12/2001	MWW5-02	7.11	0.567	23.25	3.09	0.93	-217	14.09	NR	NR
1/9/2002	MWW5-02	6.98	0.99	10.77	4.18	2.36	36	14.97	120	10
W-8										
9/11/2001	MWW8-01	6.75	1.283	20.78	1.34	0.46	-267	20.86	NR	NR
1/9/2002	MWW8-01	7.07	2.71	9.91	0.72	0.25	-54	15.13	150	3
9/11/2001	MWW8-02	7.08	1.79	16.2	1.35	0.42	-250	16.19	NR	NR
9/17/2001	MWW8-03	7.59	0.719	19.7	4.78	NR	NR	28.9	NR	NR
1/9/2002	MWW8-04	7.9	0.758	3.97	0.17	0.64	-299	8.82	50	0.75
9/12/2001	MWW8-05	6.71	0.773	23.92	2.72	0.4	-233	13.23	NR	NR
1/9/2002	MWW8-05	7.06	10.46	9.68	2.55	0.31	-15	12.82	150	2.5
2/14-15/2002	MWW8-08	Slow Recharge - Monitoring Well Purged Dry - Sample Collected with Disposable Bailer								
2/12/2002	MWW8-10	7.8	1.6	8.52	18.1	0.22	NR	9.37	200	18
2/11/2002	MWW8-11	6.49	0.684	6.1	4.27	0.03	-232.5	6.61	100	3.6
2/13/2002	MWW8-12	13.57	4.57	5.16	12.8	3.77	NR	15.45	100	10
W-10										
9/6/2001	MWW10-01	6.67	1.61	20.21	1.45	0.37	-149	9.5	NR	NR

TABLE 2-2.

Groundwater Sampling Field Parameters, RACER Trust Pontiac North Campus, Pontiac, Michigan

Date	Well ID	pH	Cond	Temp	Turb	DO	ORP	DTW	Flow Rate mL/min	Volume Purged (gallons)
2/12/2002	MWW10-02	9.45	0.397	10.91	6.63	0.71	-52.9	15.27	0.125	10
2/11/2002	MWW10-03	7.2	0.611	7.16	2.71	2.87	NR	11.27	200	19
2/11/2002	MWW10-04	7.1	9.23	6.44	3.53	1.3	NR	10.45	100	4.5
2/12/2002	MWW10-06	6.96	1.998	12.74	NR	32.98	-243.6	14.78	250	11
MFD										
M-1										
9/10/2001	MWM1-01	7.42	0.493	21.14	3.8	5.49	-206	10.7	NR	NR
1/8/2002	MWM1-01	7.75	0.575	2.34	4	9.1	95	9.37	200	2
9/10/2001	MWM1-02	7.01	1.46	19.19	2.51	0.79	-226	13.82	NR	NR
1/8/2002	MWM1-02	7.23	1.496	13.12	3.82	0.65	-192.2	13.28	250	3
9/13/2001	MWM1-03	6.9	3.09	17.19	4.73	0.8	-93	14.48	NR	NR
1/8/2002	MWM1-03	7.15	3.779	10.1	4.95	0.94	-190.6	14.01	200	2.5
M-2										
8/30/2001	MWM2-01	7.44	7.91	17.45	4.23	3.41	228	12.62	NR	NR
1/8/2002	MWM2-01	6.82	8.29	13.01	2.12	2.89	167.7	12.2	500	9
8/30/2001	MWM2-02	6.96	4.11	17.6	3.96	0.91	95.1	16.55	NR	NR
1/8/2002	MWM2-02	6.67	3.48	15.68	3.13	0.81	-75.1	16.17	250	7
8/30/2001	MWM2-03	6.58	3.31	18.66	4.65	17.6	-60	16.6	NR	NR
1/8/2002	MWM2-03	6.57	3.13	16.11	1.49	0.72	38.6	16.23	150	8
8/30/2001	MWM2-04	6.61	1.46	20.15	4.75	17.65	-24.5	16.5	NR	NR
1/8/2002	MWM2-04	6.24	1.45	17.56	1.82	0.97	-49.4	16.14	150	7
1/31/2002	MWM2-05	12.7	0.94	17.37	3.85	0.15	-559	15.66	300	7
1/31/2002	MWM2-06	7.04	1.148	20.71	2.28	0.43	NR	16.45	300	12
1/31/2002	MWM2-07	6.96	1.168	19.8	NR	0.29	NR	16.52	300	15
1/31/2002	MWM2-08	11.09	1.48	17.07	3.66	0.14	-185	16.41	400	10
M-4										
8/20/2001	MWM4-01	7.14	1.77	15.18	3.21	0.14	-23	26.7	100	1.72
1/10/2002	MWM4-01	7.25	7.98	10.54	1.93	1.37	-126.7	26.73	130	4.5
8/20/2001	MWM4-02	7.69	8.33	18.07	3.28	0.33	-46	5.52	100	2.64
1/10/2002	MWM4-02	8.02	18.27	9.75	1.82	1.4	-166.7	4.07	500	9
8/20/2001	MWM4-03	8.14	4.01	16.07	3.98	0.16	-270	28.08	100	4.76
1/10/2002	MWM4-03	7.15	21.38	10.79	1.47	0.38	-123.3	25.14	150	7.5
1/10/2002	MWM4-04	7.33	13.75	8.3	3.61	7.43	-66	8.98	60	3.5
1/18/2002	MWM4-05	6.85	0.938	10.44	3.53	0.22	N/A	8.42	500	9
M-5										
9/17/2001	MW-2-99	6.47	18.84	20.83	1.52	12.23	-100.1	7	NR	NR
1/10/2002	MW-2-99	7.18	22.66	9.1	0.16	3.61	-281.4	7.47	100	1
9/17/2001	MWM5-01	6.68	11.96	22.47	3.87	4.29	-77	NR	NR	NR
1/10/2001	MWM5-01	7.58	20.66	8.38	0.29	3.29	-283.1	8.74	50	1.25
M-7										
9/18/2001	MWM7-01	Slow Recharge - Monitoring Well Purged Dry								
1/7/2002	MWM7-01	Slow Recharge - Monitoring Well Purged Dry								
9/17/2001	MWM7-02	6.69	9.75	18.23	0.38	1.68	-110	18.1	NR	NR
1/7/2002	MWM7-02	6.77	12.91	13.44	1.3	4.29	188.8	18.22	200	6.5
9/14/2001	MWM7-03	Slow Recharge - Monitoring Well Purged Dry								
1/8/2002	MWM7-03	Slow Recharge - Monitoring Well Purged Dry								
M-9										
2/1/2002	MWM9-02	11.77	19.8	3.65	2.68	4.97	NR	13.58	50	15
M-16										
9/13/2001	MWM16-01	7.11	2.49	15.67	4.83	0.45	-208	23.92	NR	NR
1/10/2002	MWM16-01	7.14	4.305	11.2	0.4	2.7	-216.8	23.95	250	2
1/31/2002	MWM16-02	7.13	1.43	6.85	5.61	2.77	65	23.82	100	3
M-25										
	MWM25-01	Monitoring Well was dry - No samples collected								
SCHOOL BUS YARD										
10/3/2001	MWPS-01	7.12	1.136	20.19	4.98	0.38	-182	4	NR	NR
10/3/2001	MWPS-02	11.66	6.444	18.59	4.43	1.05	-393	5.3	NR	NR
1/8/2002	MWPS-02	11.92	6.69	12.77	4.14	0.35	215.1	14.36	500	25

NR = no reading

Table 2-3. Summary of Analytical Methods, RACER Trust, Pontiac North Campus, Pontiac, Michigan

Parameter	Preparation Method	Laboratory Preparation SOP	Analytical Method	Laboratory Analytical SOP
Groundwater and Surface Water Samples				
VOC	SW-846 5030B ²	CORP-MS-0002NC	SW-846 8260B	CORP-MS-0002NC
BTEX	SW-846 5030B ²	CORP-MS-0002NC	SW-846 8021	CORP-GC-0001NC
SVOC	SW-846 3520C	CORP-OP-0001NC	SW-846 8270C	CORP-MS-0001NC
PCB	SW-846 3500C	CORP-OP-0001NC	SW-846 8082	CORP-GC-0001NC
Dioxins/Furans	SW-846 8290	DSP-161	SW-846 8290	DHR182
Metals				
ICP Metals	SW-846 3010A/3020A	CORP-IP-0003NC	SW-846 6010B	CORP-MT-0001NC
Mercury	SW-846 7470A	CORP-MT-0005NC	SW-846 7470A	CORP-MT-0005NC
Thallium	SW-846 3010A/3020A	CORP-IP-0003NC	SW-846 6020	NC-MT-0002
Cyanide	SW-846 9012A	NC-WC-0032	SW-846 9012A	NC-WC-0031
Hexavalent Chromium	SW-846 7196A	NC-WC-0024	SW-846 7196A	NC-WC-0024
Soil, Sediment and Sludge Samples				
VOC	SW-846 5035 ³	CORP-MS-0002NC	SW-846 8260B	CORP-MS-0002NC
BTEX	SW-846 5035 ³	CORP-MS-0002NC	SW-846 8021	CORP-GC-0001NC
SVOC	SW-846 3550B	CORP-OP-0001NC	SW-846 8270C	CORP-MS-0001NC
PCB	SW-846 3550B	CORP-OP-0001NC	SW-846 8082	CORP-GC-0001NC
Dioxins/Furans	SW-846 8290	DSP-105	SW-846 8290	DHR182
Metals				
ICP Metals	SW-846 3050A	CORP-IP-0002NC	SW-846 6010B	CORP-MT-0001NC
Mercury	SW-846 7471A	CORP-MT-0007NC	SW-846 7471A	CORP-MT-0007NC
Cyanide	SW-846 9012A	NC-WC-0032	SW-846 9012A	NC-WC-0031
Hexavalent Chromium ⁴	SW-846 3060A	RICH-WC-5005	SW-846 7196A	RICH-WC-5005
pH	SW-846 9045C	NC-WC-00160	SW-846 9045C	NC-WC-0010

Notes:

² SW-846 - "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods ", SW-846, 3rd Edition, Final Update III, 1996.

³ Sediment and sludge samples collected as bulk samples will be prepared in accordance with SW-846 Method 5030B.

Hexavalent Chromium analysis of soil samples will be completed by STL's Richland, Washington Laboratory

BTEX Benzene, Toluene, Ethylbenzene, and Xylene

PCB Polychlorinated Biphenyls

SVOC Semi-Volatile Organic Compounds

VOC Volatile Organic Compounds

Table 2-4. Interim Measures, RCRA Facilities Investigation Report, RACER Pontiac North Campus, Pontiac, Michigan

Area[Title of Interim Measure]	Work Plan Date	Historic Use	Chemicals of Concern	Date of Interim Measure Activities	Remedy	Interim Measure Completion Report
Storm Sewer Interim Measure/ [Draft Storm Sewers Interim Measures]	4/17/2001	As a result of detection of PCBs in the Stormwater Detention Facility and in the sewers in 2000, GM investigated on-site sewers.	PCBs	2001	- Major storm sewers were cleaned, sediment disposed of off-site. - A diverter chamber was modified to divert stormwater from north of Plant 14 to Outfall 002 to reduce the hydraulic load on the SWDF.	2002
Harris Lake/ [RFI Work Plan Addendum #1 and Nearshore Sediment Removal Program Design Report]	8/14/2001 & 04/2003	- Storm sewers from the site previously conveyed storm water from the site to Harris Lake, through the Pontiac School Board property. - Soil and sediment samples indicated the presence of oil.	None – aesthetic cleanup	July 2003	- Approximately 5,200 cubic yards of sediment within 15 ft. of the shoreline was hydraulically dredged to depths of a minimum of 0.5 ft and up to 10.5 ft. - The shoreline elevation was restored to original grade with clean backfill, covered with a geotextile and a 6- or 12-inch lift of limestone was placed on top.	2004
Pontiac School Board/ [RFI Work Plan Addendum #1]	8/14/2001	The property was historically used as a bus maintenance facility and had an active storm sewer that conveyed storm water from the Site to Harris Lake.	SVOCs	December 2003	- The storm sewer and manholes were over-excavated to remove potentially impacted soils. - Approximately 1000 lineal feet of 24-inch diameter storm sewer that was no longer in use and 4 manholes were removed from the property. Additionally, three laterals were abandoned in place. - The storm sewer and manholes were backfilled with clean soil.	2004
LNAPL 3 Removal Activities/ [RFI Work Plan Addendum #10 for AOI W-8, LNAPL Area No. 3 and Interim Measures Work Plan – LNAPL Recovery by Multi-Phase Extraction, AOI W-8/LNAPL Area No. 3]	9/27/2004	LNAPL was discovered during the RFI.	SVOCs in LNAPL	February to November 2004	- Approximately 588 gallons of LNAPL were removed via pneumatic skimming. - A multi phase extraction pilot study was conducted, showing that the majority of the free-phase LNAPL had been recovered.	2007
W-9 Former Central Foundry (Plant 6) (BW9-27/TP-10)/ [Interim Measures Work Plan – Soil Removal at AOI W-9]	5/6/2004	Historical information indicates that fluids containing PCBs were utilized in hydraulic systems and transformers at AOI W-9.	PCBs	March through June 2005	- Approximately 240 cubic yards of non-TSCA soil (less than 50 mg/kg PCBs) were excavated and disposed of off-site. - Approximately 1,280 cubic yards of TSCA soil (greater than 50 mg/kg) were excavated and disposed of off-site. - During the excavation activities, approximately 3,600 gallons of rainwater/rinseate containing low-level PCBs (0.013 milligrams per liter [mg/L]) were generated. The rainwater/rinseate was disposed of at EQ Detroit in Detroit, Michigan. - Verification samples were collected and analyzed according to the FSP and IM Work Plan following excavation activities. - A portion of the area where soils were excavated was capped by a concrete parking lot installed as part of the new USPS facility. The “uncapped” portion of the AOI W-9 PCB remediation area, along with the remaining green space on the USPS-leased property, has been covered with 16 inches of clean imported soil on top of a layer of geotextile (a Mirafi 140 NL 3.8-ounce geotextile).	2008

Table 2-4. Interim Measures, RCRA Facilities Investigation Report, RACER Pontiac North Campus, Pontiac, Michigan

Area[Title of Interim Measure]	Work Plan Date	Historic Use	Chemicals of Concern	Date of Interim Measure Activities	Remedy	Interim Measure Completion Report
Storm Sewer Removal/ [Memo to USEPA – 5/18/05]	5/18/2005	During development of the AIR property, a sewer line on the east side of the AIR and a sewer line on the west side were sampled then abandoned.	PCBs	May 2005	- The storm sewer line where the exceedance for PCBs at ST339 occurred was removed. The associated manholes were also removed. - The sediment, excavated material from around ST339 and the ST339 manhole structure were disposed of at the TSCA-approved facility at EQ's Wayne Disposal in Belleville, Michigan. - The remaining removed material was disposed of at Allied Waste's Oakland Heights facility in Auburn Hills, Michigan.	2005
BW8-115 Soil Removal (Plant 8 Basement)/ [Interim Measures Work Plan – Risk-Based Fill Material Removal at Former Plant 8 Basement – AOI W-5]	11/1/2007	- The former Plant 8 basement was demolished in 1997 and partially backfilled at the time. - Soil boring BW8-115 was collected while investigating W-5. The sample was collected from the backfill showed PCBs greater than 100 mg/kg at several depths.	PCBs	August to November 2005	- Soils greater than 50 mg/kg of PCBs from 0 to 2 feet and soils greater than 100 mg/kg of PCBs below 2 feet were excavated and disposed of off-site, based on USEPA-approved risk-based cleanup. - The remaining soil was regraded and topped with clean fill. The regraded soil was topped with 12 inches of crushed stone underlain by a non-woven geotextile.	2007
LNAPL 1, 2, & 7 Bailing	On-going	LNAPL Areas 1, 2, & 7 were discovered during the RFI investigation.	SVOCs, PCBs in LNAPL	On-going	- LNAPL is recovered from monitoring wells on a bi-weekly basis. - The recovered LNAPL is disposed of off-Site monthly after collection. - Adsorbent socks are also placed in several monitoring wells to collect LNAPL.	On-going

Table 3-1. Subsurface Stratigraphic Data Summary, RACER Trust Pontiac North Campus, Pontiac, Michigan

Well ID	TOC	Elevation P/Casing	Ground	Installation Date/Status	Total Depth	Screen Intake (ft bgs)		Screen Intake Elevation		Screened Zone
						Top	Bottom	Top	Bottom	
SITEWIDE										
MWF1	971.74	--	971.87	7/18/2001	34	24	34	947.87	937.87	Sand
MWF2	973.85	--	974.00	6/23/2001	30	20	30	954.00	944.00	Sand
IWF3	973.85	974.18	974.18	8/9/2001	60	50	60	924.18	914.18	Clay with some Sand seams
GW4	973.93	974.17	974.17	8/6/2001	84	74	84	900.17	890.17	Sand/Gravel
MWP1	982.48	--	982.70	6/29/2001	25	15	25	967.70	957.70	Silty Clay/Sand/Silt
IWP2	982.20	982.52	982.42	8/14/2001	60	50	60	932.42	922.42	Silty Clay
GWP3	982.25	--	982.55	7/26/2001	107	97	107	885.55	875.55	Silty-Sand
MWP4	977.31	--	974.76	6/25/2001	21	11	21	963.76	953.76	Silt Clay/Clay
IWP5	976.62	977.10	974.69	8/27/2001	60	50	60	924.69	914.69	Clay with Silt and Sand
GWP6	977.41	--	975.04	6/22/2001	92	82	92	893.04	883.04	Gravel
MWD1	967.64	--	967.86	7/24/2001	21	11	21	956.86	946.86	Silty-Clay
MWD2	970.45	970.75	967.94	8/16/2001	24	14	24	953.94	943.94	Fill Material/Silty-Clay
MWD3	970.58	--	968.14	6/15/2001	18	8	18	960.14	950.14	Sand/Silty-Clay
MWD4	973.56	--	971.37	7/17/2001	26	16	26	955.37	945.37	Silty Sand/Sand
MWD5	976.61	--	974.07	7/19/2001	31	21	31	953.07	943.07	Sand/Gravel
MWD6	945.23	--	945.36	7/17/2001	15	5	15	940.36	930.36	Sand
IWD7	945.24	945.49	945.40	8/21/2001	40	30	40	915.40	905.40	Silty-Clay
GWD8	945.24	945.45	945.42	6/30/2001	73	63	73	882.42	872.42	Gravel and Clay
MWM1	988.28	--	985.49	7/13/2001	15	5	15	980.49	970.49	Silty Clay/Sand
IWM2	987.92	988.35	985.93	8/23/2001	60	50	60	935.93	925.93	Silty Clay/Silty Sand
GWM3	988.32	--	985.62	7/12/2001	104	94	104	891.62	881.62	Sand and Gravel
MWM4	976.21	--	976.46	7/23/2001	25	15	25	961.46	951.46	Silt/Sand
MWM5	981.26	981.72	981.72	6/27/2001	34	24	34	957.72	947.72	Sand
MWM6	971.53	971.76	971.76	8/15/2001	26	16	26	955.76	945.76	Sand/Silt/Clay
MWM7	964.74	965.09	965.03	7/19/2001	15	5	15	960.03	950.03	Sand/Silty Sand
MWM8	964.10	--	964.51	7/20/2001	14	4	14	960.51	950.51	Silty Clay/Sandy Clay/Sand
MWM9	975.41	--	976.24	6/19/2001	23	13	23	963.24	953.24	Silty Clay
MWM10	965.98	--	965.82	6/21/2001	22	12	22	953.82	943.82	Sand/Silty-Clay
MWS1	983.18	--	983.29	7/17/2001	15	5	15	978.29	968.29	Silt/Clay/Sand
GWS2	983.51	--	983.52	7/13/2001	100	90	100	893.52	883.52	Sand and Clay
GWD9	952.58	953.00	950.05	12/5/2001	82	72	82	878.05	868.05	Clay/Sand/Silty Clay
DWD10	952.70	953.06	950.35	12/3/2001	151	141	151	809.35	799.35	Sand
GWD11	976.70	976.72	973.82	12/20/2001	96	86	96	887.82	877.82	Sandy Gravel/Silty Sand/Silty Clay/Sand
DWD12	976.54	976.87	974.68	12/11/2001	125	115	125	859.68	849.68	Sand
DWD13	945.28	--	945.51	1/18/2002	140	130	140	815.51	805.51	Gravel and Sand/Silty Clay
FIERO										
F-12										
MWF12-01	965.39	965.60	963.39	8/7/2001	26	16	26	947.39	937.39	Sand
MWF12-02	966.81	966.94	963.98	8/14/2001	25	15	25	948.98	938.98	Sand
F-7										
MWF7-01	970.30	970.47	970.46	9/20/2001	30	20	30	950.46	940.46	Sand
MWF7-02	970.58	970.99	970.99	9/24/2001	29	19	29	951.99	941.99	Sand
F-8										
MWF8-01	972.94	973.47	973.41	9/19/2001	28	18	28	955.41	945.41	Sand/Gravel
F-15										
MWF15-01	969.35	969.65	969.65	10/3/2001	29	19	29	950.65	940.65	Sand
POWERTRAIN										
P-6										
MWP6-01	985.48	985.73	985.76	8/2/2001	20	10	20	975.76	965.76	Sand and Gravel
MWP6-02	985.63	986.08	986.05	8/1/2001	20	10	20	976.05	966.05	Sand and Gravel/Silty Clay
MWP6-03	986.71	986.97	986.93	8/1/2001	28	18	28	968.93	958.93	Silty Clay
MWP6-04	988.15	988.37	988.33	7/30/2001	28	18	28	970.33	960.33	Silt and Clay
MWP6-05	981.38	981.38	981.60	1/16/2002	18	8	18	973.60	963.60	Silty Sand/Silty Clay
MWP6-06	980.67	980.95	980.95	1/17/2002	30	20	30	960.95	950.95	Sand/Silty Sand/Silty Clay
MWP6-07	982.94	983.32	968.08	1/9/2002	30	20	30	948.08	938.08	Silty Clay/Clayey Sand/Sand
MWP6-08	984.43	983.99	983.99	1/14/2002	35	25	35	958.99	948.99	Silty Clay
DEMOLITION AREA										
W-1										
MWW1-01	963.75	963.99	964.00	8/6/2001	20	10	20	954.00	944.00	Sand/Silt/Clay
MWW1-02	946.08	946.27	942.74	1/8/2002	11	1	11	941.74	931.74	Peat and Marl
MWW1-03	945.92	946.22	942.42	1/8/2002	11	1	11	941.42	931.42	Peat and Marl
MWW1-04	944.20	944.39	944.39	12/19/2001	13	3	13	941.39	931.39	Sand
MWW1-05	972.34	972.57	969.49	2/28/2002	33	23	33	946.49	936.49	Sand
MW-2*	966.34	966.27	964.34	11/9/1988	30	20	30	944.34	934.34	Silty Clay/Silty Sand
MW-3*	967.01	967.17	965.04	11/10/1988	30	20	30	945.04	935.04	Silt/Silty Sand

Table 3-1. Subsurface Stratigraphic Data Summary, RACER Trust Pontiac North Campus, Pontiac, Michigan

Well ID	TOC	Elevation P/Casing	Ground	Installation Date/Status	Total Depth	Screen Intake (ft bgs)		Screen Intake Elevation		Screened Zone
						Top	Bottom	Top	Bottom	
MW-4*	965.04	965.35	963.29	11/28/1988	30	20	30	943.29	933.29	Silt/Sand
MW-5*	966.48	966.48	964.48	11/29/1988	30	20	30	944.48	934.48	Silty Clay/Sand
MW-6*	966.42	966.42	964.31	3/7/1989	28	18	28	946.31	936.31	Sandy Clay/Sandy Silt/Silty Clay
MW-10*	966.88	967.03	964.72	5/29/1990	20	5	20	959.72	944.72	Sand/Silt
MW-11*	966.67	966.84	965.10	5/1/1990	20	5	20	960.10	945.10	Foundry Sand/Silty Clay/Sand
MW-13*	965.25	965.41	963.31	8/23/1991	14	4	14	959.31	949.31	Sand/Clay
MW16*	952.59	--	950.05	12/20/1995	10.5	3.5	8.5	946.55	941.55	Sand And Gravel(Fill)/Sand
DW16*	952.50	952.13	950.21	12/15/1995	19	14	19	936.21	931.21	Silt/Sand and Gravel/Clay
MW17*	948.55	--	946.16	12/20/1995	8.5	3.5	8.5	942.66	937.66	Sand and Cobbles(Fill)
DW17*	948.78	948.46	946.22	12/14/1995	15	10	15	936.22	931.22	Peat/Marl
MW18*	957.78	--	955.27	12/14/1995	17	12	17	943.27	938.27	Sand
DW19*	971.10	970.77	968.68	12/15/1995	39	34	39	934.68	929.68	Sand and Peat/Silt and Marl/Clay
MW-20*	971.20	--	968.73	12/20/1995	28	21	26	947.73	942.73	Sand(Fill)
DW20*	971.12	970.76	968.95	12/19/1995	44	37	42	931.95	926.95	Sand/Clay
MW22*	970.70	970.32	968.21	12/12/1995	26	19	24	949.21	944.21	Sand/Gravel/Silt (Fill)
DW22*	970.50	970.29	968.25	12/19/1995	36	31	36	937.25	932.25	Sand/Clay
MW23*	947.60	947.74	945.32	9/23/1996	9	4	9	941.32	936.32	Sand
MW24-99*	970.01	970.41	967.18	9/8/1999	22	12	22	955.18	945.18	Sand
MW25-99*	967.73	967.90	964.72	9/2/1999	12.5	7.5	12.5	957.22	952.22	Foundry Sand
MW26-99*	965.79	965.96	963.19	9/10/1999	14	6	14	957.19	949.19	Foundry Sand/Marl
MW27-99*	966.48	966.69	964.49	9/13/1999	12	7	12	957.49	952.49	Foundry Sand
MW28-99*	966.90	967.17	964.88	9/13/1999	12	7	12	957.88	952.88	Foundry Sand
MW29-99*	957.40	957.60	955.38	9/16/1999	18	8	18	947.38	937.38	Sand/Clay
MW30-99*	966.77	967.00	963.97	9/15/1999	19	14	19	949.97	944.97	Sand/Clay
MW31-99*	967.56	967.79	964.48	9/15/1999	24	14	24	950.48	940.48	Sand/Sand and Gravel
MW32-99*	966.72	966.93	964.08	9/14/1999	28	23	28	941.08	936.08	Sand/Gravel/Clay
MW33-99*	969.65	969.81	967.18	9/14/1999	26	16	26	951.18	941.18	Foundry Sand/Sand
MW34-99*	970.56	970.90	968.62	9/1/1999	30	20	30	948.62	938.62	Sand/Silt and Clay
MW35-99*	965.80	966.03	964.19	9/14/1999	28	18	28	946.19	936.19	Foundry Sand
MW36-99*	971.19	971.39	968.13	9/2/1999	24	14	24	954.13	944.13	Foundry Sand
MW 37-99*	969.76	969.91	968.49	9/2/1999	28	18	28	950.49	940.49	Foundry Sand/Clay
MW38-99*	970.19	970.56	967.66	9/3/1999	21	16	21	951.66	946.66	Foundry Sand/Silt/Sand
MW39-99*	971.49	971.71	969.04	9/1/1999	30	20	30	949.04	939.04	Foundry Sand/Silt
MW40-99*	952.32	952.72	949.86	8/31/1999	16	6	16	943.86	933.86	Foundry Sand
DW40-99*	952.27	952.49	949.25	9/9/1999	42	32	42	917.25	907.25	Sand and Gravel/Clay
MW41-99*	945.25	945.64	943.36	8/31/1999	7	3	7	940.36	936.36	Foundry Sand/Clay/Peat
DW41-99*	944.79	945.10	943.34	9/9/1999	36	26	36	917.34	907.34	Sand and Gravel
MW42-99*	970.45	970.67	967.78	9/13/1999	22	12	22	955.78	945.78	Foundry Sand/Peat
MW43-99*	969.08	969.42	966.83	9/9/1999	18	13	18	953.83	948.83	Sand/Clay
MW44-99*	971.89	972.07	969.63	9/9/1999	28	18	28	951.63	941.63	Sand/Clay
W-5										
MWW5-01	970.57	970.86	967.72	6/19/2001	22	12	22	955.72	945.72	Silty Clay/Sand/Sandy Clay
MWW5-02	970.21	970.65	967.71	8/30/2001	20.5	10.5	20.5	957.21	947.21	Silty Sand/Silty Clay
W-8										
MWW8-01	966.36	966.75	963.83	8/29/2001	26	16	26	947.83	937.83	Silty Clay/Sand
MWW8-02	970.80	970.97	967.73	8/29/2001	23.5	13.5	23.5	954.23	944.23	Sand/Silt
MWW8-03	970.50	970.79	967.96	9/5/2001	34	24	34	943.96	933.96	Clay/Sand
MWW8-04	970.40	970.69	967.94	9/5/2001	26	16	26	951.94	941.94	Silty Clay
MWW8-05	968.21	968.55	965.66	8/21/2001	17	7	17	958.66	948.66	Silty And/Clayey Sand/Clay
MWW8-06	970.45	970.93	968.00	12/11/2001	32	22	32	946.00	936.00	Silty Clay/Silty Sand
MWW8-07	970.41	970.57	967.89	12/12/2001	32.5	22.5	32.5	945.39	935.39	Silty Clay
MWW8-08	970.54	970.67	967.78	12/17/2001	34	24	34	943.78	933.78	Silty Clay/Clayey Silt/Sand
MWW8-09	970.27	970.54	967.93	1/28/2002	20	10	20	957.93	947.93	Silty Clay
MWW8-10	969.96	970.30	967.78	1/30/2002	21	11	21	956.78	946.78	Foundry Sand/Silty Sand-Clay
MWW8-11	970.34	970.66	967.93	2/4/2002	18	8	18	959.93	949.93	Silty Clay/Sandy Clay/Sand
MWW8-12	970.10	970.38	967.90	2/6/2002	18	8	18	959.90	949.90	Sandy Clay/Silty Clay
W-10										
MWW10-01	963.75	963.99	964.00	8/28/2001	20	10	20	954.00	944.00	Clay/Silty Sand/Sand
MWW10-02	970.03	970.43	967.61	1/28/2002	18	8	18	959.61	949.61	Silty Sand/Silt
MWW10-03	958.20	958.54	955.69	1/30/2002	16	6	16	949.69	939.69	Silty Sand/Silty Clay/Sand
MWW10-04	961.49	961.90	958.67	1/31/2002	14	4	14	954.67	944.67	Silty Sand
MWW10-05	963.98	964.29	964.29	2/4/2002	20	10	20	954.29	944.29	Silty Clay/Silty Sand
MWW10-06	964.29	964.50	964.50	2/5/2002	18	8	18	956.50	946.50	Silty Clay/Silty Sand

Table 3-1. Subsurface Stratigraphic Data Summary, RACER Trust Pontiac North Campus, Pontiac, Michigan

Well ID	TOC	Elevation P/Casing	Ground	Installation Date/Status	Total Depth	Screen Intake (ft bgs)		Screen Intake Elevation		Screened Zone
						Top	Bottom	Top	Bottom	
MFD										
M-1										
MWM1-01	967.53	--	964.96	7/26/2001	13	3	13	961.96	951.96	Sand/Silt
MWM1-02	964.27	--	964.65	7/25/2001	21	11	21	953.65	943.65	Sand
MWM1-03	964.94	965.19	965.17	8/27/2001	24	14	24	951.17	941.17	Sand
M-2										
MWM2-01	963.78	964.32	964.33	8/13/2001	20	10	20	954.33	944.33	Sand
MWM2-02	967.82	--	968.22	7/25/2001	22	12	22	956.22	946.22	Sand
MWM2-03	967.85	--	968.12	7/26/2001	21	11	21	957.12	947.12	Silty Clay/Sand
MWM2-04	967.68	967.93	967.89	7/30/2001	21	11	21	956.89	946.89	Silty Sand
MWM2-05	966.97	--	967.53	1/25/2002	24	14	24	953.53	943.53	Sand
MWM2-06	967.72	--	967.90	1/27/2002	25	15	25	952.90	942.90	Sand/Silt
MWM2-07	967.90	--	967.84	1/27/2002	25	15	25	952.84	942.84	Sand
MWM2-08	967.56	--	967.75	1/25/2002	24	14	24	953.75	943.75	Sand
M-4										
MWM4-01	983.12	983.50	983.43	8/6/2001	30	20	30	963.43	953.43	Sand
MWM4-02	982.30	982.83	982.87	8/7/2001	16	6	16	976.87	966.87	Gravel/Silt
MWM4-03	981.61	982.16	982.18	8/8/2001	32	22	32	960.18	950.18	Sand
MWM4-04	982.93	983.20	983.20	12/21/2001	19	9	19	974.20	964.20	Silty Clay/Sand
MWM4-05	985.70	985.82	983.04	1/8/2002	20	10	20	973.04	963.04	SandSilty Clay/Sand
M-5										
MW-2-99*	977.85	978.40	978.48	12/20/1999	13	8	13	970.48	965.48	Sand
MWM5-01	977.85	978.13	978.12	8/21/2001	16	6	16	972.12	962.12	Sand/Silt/Clay
M-7										
MWM7-01	963.73	--	964.15	7/20/2001	25	15	25	949.15	939.15	Silt Clay/Sand
MWM7-02	964.27	964.58	964.58	8/16/2001	27	17	27	947.58	937.58	Silt/Sand/Silty Clay
MWM7-03	967.91	968.16	968.16	8/23/2001	35	25	35	943.16	933.16	
M-9										
MWM9-01	967.59	967.99	968.07	10/3/2001	35	25	35	943.07	933.07	Clay
MWM9-02	965.21	--	965.42	1/23/2002	16	6	16	959.42	949.42	Silty Clay
M-16										
MWM16-01	979.90	980.24	980.24	8/28/2001	32	22	32	958.24	948.24	Sand
MWM16-02	979.83	--	980.15	1/25/2002	29	19	29	961.15	951.15	Sand
M-25										
MWM25-01	981.83	982.04	981.97	8/1/2001	24	12	24	969.97	957.97	Sand/Silt
PONTIAC SCHOOL BOARD										
MWPS-02	942.30	942.53	942.52	8/2/2001	15.5	5.5	15.5	937.02	927.02	Silty Sand/Clayey Silt
MWPS-01	942.03	942.20	939.46	8/1/2001	12.5	4.5	12.5	934.96	926.96	Silt/Sand

Notes:

1. TOC - top of casing
2. P/Casing - Protective casing
3. ft bgs - feet below ground surface
4. * - Monitoring wells installed during previous Site investigations.

Table 3-2. September 2011 Groundwater Elevation Summary, RACER Trust Pontiac North Campus, Pontiac, Michigan

Well ID	Top of Well Casing Elevation ¹	Depth to Water (ft)	Depth to LNAPL (ft)	Groundwater Elevation	LNAPL Thickness (ft)	Equivalent Groundwater Elevation ²
SITEWIDE						
MWP1R	982.67	17.67	--	965.00	--	--
SWDF-2	948.38	7.21	--	941.17	--	--
DWD10	952.70	42.71	--	909.99	--	--
DWD12	976.53	70.85	--	905.68	--	--
DWD13	945.28	37.39	--	907.89	--	--
GWD8R	950.39	30.87	--	919.52	--	--
GWD9	952.58	34.00	--	918.58	--	--
GWF4	973.93	46.35	--	927.58	--	--
GWM3	988.32	44.02	--	944.30	--	--
GWP3	983.94	77.20	--	906.74	--	--
GWP6	977.41	56.20	--	921.21	--	--
GWS2	983.51	42.95	--	940.56	--	--
IWD7R	950.51	12.35	--	938.16	--	--
IWF3	973.85	33.37	--	940.48	--	--
IWM2	987.92	43.57	--	944.35	--	--
IWP2	983.93	Dry	--	Dry	--	--
IWP5	976.62	52.64	--	923.98	--	--
MWF1R	--	25.57	--	--	--	--
MWF2	973.85	19.88	--	953.97	--	--
MWM1	988.28	8.35	--	979.93	--	--
MWP4	977.31	11.17	--	966.14	--	--
MWS1	983.17	10.23	--	972.94	--	--
OFFSITE						
MWOS-01	943.74	7.49	--	936.25	--	--
MWOS-05 D.P.	944.26	--	--	CNL	--	--
PZOS-01	945.08	--	--	CNL	--	--
PZOS-02	946.38	--	--	CNL	--	--
FIERO						
F-7						
MWF7-01	970.30	20.53	--	949.77	--	--
F-8						
MWF8-01	972.94	19.03	--	953.91	--	--
F-12						
MWF12-01	965.39	17.79	--	947.60	--	--
MWF12-02	966.81	18.63	--	948.18	--	--
MWF12-03	--	21.17	--	--	--	--
MWF12-05	--	19.25	--	--	--	--
MWF12-06	--	19.18	--	--	--	--
MWF12-07	--	22.75	--	--	--	--
MWF12-10	--	17.76	--	--	--	--
F-16						
MWF16-04	973.68	NM	--	CNA	--	--
MWF16-25	975.24	26.78	--	948.46	--	--
F-17						
PZ17-01	963.37	--	--	CNL	--	--
PZ17-02	977.43	24.25	--	953.18	--	--
PZ17-03	967.04	15.93	--	951.11	--	--
PZ17-04	972.47	20.42	--	952.05	--	--
PZ17-05	975.97	26.41	--	949.56	--	--
PONTIAC SCHOOL BOARD PROPERTY						
MWPS-02	942.30	5.28	--	937.02	--	--
DEMOLITION AREA						
W-1						
MWW1-01	963.65	3.95	--	959.70	--	--
MWW1-02	946.02	6.01	--	940.01	--	--
MWW1-03	945.92	6.70	--	939.22	--	--
MWW1-04	944.20	4.70	--	939.50	--	--
MWW1-06	943.63	4.99	--	938.64	--	--
MW-40-99	952.32	13.13	--	939.19	--	--

Table 3-2. September 2011 Groundwater Elevation Summary, RACER Trust Pontiac North Campus, Pontiac, Michigan

Well ID	Top of Well Casing Elevation ¹	Depth to Water (ft)	Depth to LNAPL (ft)	Groundwater Elevation	LNAPL Thickness (ft)	Equivalent Groundwater Elevation ²
MWD6R	950.49	NM	--	CNA	--	--
W-5						
MWW5-01	970.57	18.23	--	952.34	--	--
W-8						
MWW8-34	966.55	14.96	14.95	951.59	0.01	951.59
MWW8-36	968.62	17.11	16.51	951.51	0.60	951.39
MWW8-48	971.08	18.93	18.91	952.15	0.02	952.15
MWW8-65	969.62	34.55	31.07	935.07	3.48	934.38
RWW8-119	969.36	18.49	--	950.87	--	--
RWW8-124	967.77	16.91	--	950.86	--	--
RWW8-125	967.64	16.86	--	950.78	--	--
RWW8-129	966.71	16.03	--	950.68	--	--
RWW8-130	966.44	15.75	--	950.69	--	--
RWW8-131	966.01	14.88	--	951.13	--	--
RWW8-132	965.47	15.27	--	950.20	--	--
RWW8-133	966.34	17.55	15.51	948.79	2.04	948.38
W-9						
GWD11R	976.82	59.45	--	917.37	--	--
W-10						
MWW10-01	963.75	--	--	CNL	--	--
MWW10-03	958.20	9.35	--	948.85	--	--
MWW10-05	967.45	--	--	CNL	--	--
MWW10-07	967.51	6.68	--	960.83	--	--
MWW10-08	967.31	8.04	7.11	959.27	0.93	959.08
MFD						
M-1						
MWM1-01	--	--	--	CNL	--	--
MWM1-02	--	--	--	CNL	--	--
MWM1-03	964.94	12.99	--	951.95	--	--
MWM1-04	970.25	18.51	--	951.74	--	--
MWM1-05	--	--	--	CNL	--	--
M-2						
MWM2-25	967.18	14.81	--	952.37	--	--
M-4						
MWM4-05	985.70	8.05	--	977.65	--	--
MWM4-07	985.22	27.61	--	957.61	--	--
MWM4-06	961.10	Plant 25 basement wells. Could not access.				
MWM4-08	960.81					
M-16						
MWM16-03	960.92	NM	--	CNA	--	--
MWM16-04	980.20	22.04	--	958.16	--	--
MWM16-21	980.81	23.51	--	957.30	--	--
MWM16-22	982.91	23.60	--	959.31	--	--
MWM16-43	979.66	23.08	--	956.58	--	--
MWM16-49	984.79	--	--	CNL	--	--
MWM16-54	983.67	27.41	--	956.26	--	--

Notes:

NM = Not Measured

CNL = Could Not Locate

CNA = Could Not Access

1 - Elevation is in feet National Vertical Geodetic Datum (1988)

2 - The equivalent groundwater (GW) elevation is calculated where LNAPL is present using the LNAPL surface elevation, the thickness of LNAPL and the approximate specific density of the LNAPL (0.8). The calculation is as follows:

$$\text{Equivalent GW elevation} = \text{LNAPL surface elevation} - ((1 - \text{specific density of the LNAPL}) \times \text{LNAPL thickness})$$

Table 3-3. Hydraulic Conductivity Values, RACER Trust Pontiac North Campus, Pontiac, Michigan

Well ID	Calculated ⁴	Slug Test Data ⁵			
		Test 1	Test 2	Test 3	AVG.
SITEWIDE					
MWF1	5.58E-02	NA	NA	NA	--
MWF2	3.79E-02	NA	NA	NA	--
IWF3	2.52E-04	NA	NA	NA	--
GWF4	1.78E-02	NA	NA	NA	--
MWP1	1.24E-04	NA	NA	NA	--
IWP2 (1)	NA	NA	NA	NA	--
GWP3	8.03E-04	NA	NA	NA	--
MWP4	3.51E-05	NA	NA	NA	--
IWP5 (2)	NA	NA	NA	NA	--
GWP6	4.35E-01	NA	NA	NA	--
MWD1	4.54E-04	NA	NA	NA	--
MWD2	8.81E-04	NA	NA	NA	--
MWD3	1.89E-03	NA	NA	NA	--
MWD4 (2)	NA	NA	NA	NA	--
MWD5	7.53E-01	6.71E-02	NA	NA	6.71E-02
MWD6 (2)	NA	9.80E-03	NA	NA	9.80E-03
IWD7 (2)	NA	NA	NA	NA	--
GWD8	3.56E-03	1.21E-02	NA	NA	1.21E-02
MWM1	1.90E-02	5.97E-03	NA	NA	5.97E-03
IWM2	3.75E-05	5.89E-05	NA	NA	5.89E-05
GWM3 (2)	NA	9.86E-03	9.84E-03	NA	9.85E-03
MWM4	1.69E-02	NA	NA	NA	--
MWM5	5.97E-03	NA	NA	NA	--
MWM6	2.10E-03	NA	NA	NA	--
MWM7	5.42E-02	NA	NA	NA	--
MWM8	9.10E-04	NA	NA	NA	--
MWM9	1.38E-03	NA	NA	NA	--
MWM10	1.01E-03	NA	NA	NA	--
MWS1	3.11E-03	NA	NA	NA	--
GWS2	3.23E-03	NA	NA	NA	--
GWD9	2.15E-03	NA	NA	NA	--
DWD10	3.88E-03	NA	NA	NA	--
GWD11	1.15E-04	1.28E-04	NA	NA	--
DWD12	1.59E-03	NA	NA	NA	--
DWD13	5.90E-03	NA	NA	NA	--
FIERO					
F-12					
MWF12-01	1.60E-02	1.83E-01	1.78E-01	NA	1.80E-01
MWF12-02	1.50E+00	1.36E-01	NA	NA	1.36E-01
F-7					
MWF7-01	1.99E-02	NA	NA	NA	--
MWF7-02	1.59E-02	NA	NA	NA	--
F-8					
MWF8-01	2.74E-02	NA	NA	NA	--
F-15					
MWF15-01	3.40E-02	NA	NA	NA	--

Table 3-3. Hydraulic Conductivity Values, RACER Trust Pontiac North Campus, Pontiac, Michigan

Well ID	Calculated ⁴	Slug Test Data ⁵			
		Test 1	Test 2	Test 3	AVG.
DEMOLITION AREA					
W-1					
MWW1-01	8.15E-04	NA	NA	NA	--
MWW1-02	1.65E-03	7.28E-04	NA	NA	7.28E-04
MWW1-03	6.22E-03	1.98E-03	NA	NA	1.98E-03
MWW1-04	1.37E-01	8.69E-02	NA	NA	8.69E-02
MWW1-05 (2)	NA	NA	NA	NA	--
MW28-99	1.29E-02	NA	NA	NA	--
MW29-99	3.65E-02	NA	NA	NA	--
MW30-99	6.40E-03	NA	NA	NA	--
MW31-99	1.20E-02	NA	NA	NA	--
MW33-99 (2)	NA	8.67E-03	NA	NA	8.67E-03
MW34-99	2.88E-03	NA	NA	NA	--
MW42-99	1.29E-02	NA	NA	NA	--
W-5					
MWW5-01	2.98E-05	NA	NA	NA	--
MWW5-02	5.95E-04	NA	NA	NA	--
W-8					
MWW8-01	4.53E-03	NA	NA	NA	--
MWW8-02	2.17E-03	NA	NA	NA	--
MWW8-03	9.53E-04	NA	NA	NA	--
MWW8-04	2.34E-05	NA	NA	NA	--
MWW8-05 (2)	NA	NA	NA	NA	--
MWW8-06 (3)	NA	NA	NA	NA	--
MWW8-07 (3)	NA	NA	NA	NA	--
MWW8-08 (2)	NA	NA	NA	NA	--
MWW8-09 (3)	NA	NA	NA	NA	--
MWW8-10	8.09E-04	2.63E-04	3.80E-04	NA	3.22E-04
MWW8-11 (2)	NA	3.32E-04	1.80E-04	1.09E-04	2.07E-04
MWW8-12 (2)	NA	NA	NA	NA	--
W-10					
MWW10-01 (3)	NA	NA	NA	NA	--
MWW10-02	2.01E-03	3.31E-03	1.59E-02	NA	9.58E-03
MWW10-03	3.81E-02	NA	NA	NA	--
MWW10-04	1.44E-03	NA	NA	NA	--
MWW10-05 (3)	NA	NA	NA	NA	--
MWW10-06 (2)	NA	NA	NA	NA	--

Table 3-3. Hydraulic Conductivity Values, RACER Trust Pontiac North Campus, Pontiac, Michigan

Well ID	Calculated ⁴	Slug Test Data ⁵			
		Test 1	Test 2	Test 3	AVG.
MFD					
M-1					
MWM1-01	1.50E-03	6.88E-03	NA	NA	6.88E-03
MWM1-02	5.32E-01	NA	NA	NA	--
MWM1-03	4.90E-02	NA	NA	NA	--
M-2					
MWM2-01	NA	4.54E-02	NA	NA	4.54E-02
MWM2-02	5.42E-02	NA	NA	NA	--
MWM2-03	5.91E-03	NA	NA	NA	--
MWM2-04	1.68E-02	NA	NA	NA	--
MWM2-05	1.57E-02	3.39E-02	NA	NA	3.39E-02
MWM2-06	1.02E-01	NA	NA	NA	--
MWM2-07	1.94E-02	NA	NA	NA	--
MWM2-08	7.52E-03	NA	NA	NA	--
M-4					
MWM4-01	1.32E-02	NA	NA	NA	--
MWM4-02	1.10E+00	2.22E-02	9.09E-03	NA	1.57E-02
MWM4-03	1.70E-02	NA	NA	NA	--
MWM4-04	4.25E-04	NA	NA	NA	--
MWM4-05	3.40E-03	NA	NA	NA	--
M-5					
MW-2-99	2.23E-03	NA	NA	NA	--
MWM5-01	5.41E-05	NA	NA	NA	--
M-7					
MWM7-01	1.36E-04	NA	NA	NA	--
MWM7-02	3.89E-03	NA	NA	NA	--
MWM7-03 (3)	NA	NA	NA	NA	--
M-9					
MWM9-01 (1)	NA	NA	NA	NA	--
MWM9-02	NA	NA	NA	NA	--
M-16					
MWM16-01	7.21E-01	7.00E-02	NA	NA	7.00E-02
MWM16-02	9.46E-03	1.00E-02	NA	NA	1.00E-02
M-25					
MWM25-01 (1)	NA	NA	NA	NA	--
PONTIAC SCHOOL BOARD					
MWPS-02	9.94E-03	NA	NA	NA	--
MWPS-01	NA	3.67E-02	NA	NA	3.67E-02

Notes:

1. Monitoring well was dry
2. Hydraulic conductivity could not be calculated due to no drawdown during low flow sampling or well was purged dry during low flow sampling.
3. Hydraulic conductivity was not determined because monitoring well contains LNAPL.
4. Hydraulic conductivity was estimated using information obtained from low flow sampling (pump rate, drawdown, and purge volume).
5. Hydraulic conductivity determined from slug test (rising head).
6. NA - Hydraulic conductivity not determined.

Table 4-1. Summary of RFI Activities, RACER Trust Pontiac North Campus, Pontiac, Michigan

Area ID	AOI Description	Summary of Primary Materials Managed	RFI/IM Activities	Laboratory Analysis Performed	Analytical Results That Exceed Applicable Part 201 Criteria		LNAPL Results	Remedial Activities/Interim Measures Performed	Proposed Activity
					Soil	Groundwater			
LNAPL # 1 & 7	Located in W-1 and W-10 <i>LNAPL # 1 discovered during investigations completed prior to RFI</i>	None	- Completed 12 soil borings that were screened with fluorescent/ultraviolet light - Installed five monitoring wells	• VOCs • SVOCs • PCBs • Inorganics • Dioxins • Cyanide • Finger-	Not applicable	Not applicable	LNAPL PCBs detected = 180 mg/kg 2,3,7,8-TCDD = 4.16 x 10-3 mg/kg (Degraded fuel oil #6 and kerosene)	LNAPL is bailed from MWM10-01 on a bi-weekly basis. Oil sorbent socks are collecting LNAPL in MWM10-05 and MWM10-07.	Presented in CMP
LNAPL # 2	Located in W-1 and W-10 <i>Discovered when developing MWW10-01</i>	None	- Completed 37 soil borings that were screened with fluorescent/ultraviolet light - Installed five piezometers	• VOCs • SVOCs • PCBs • Inorganics • Dioxins • Cyanide • Finger-	Not applicable	Not applicable	LNAPL PCBs detected = 1400 mg/kg 2,3,7,8-TCDD = 4.16 x 10-3 mg/kg (Degraded diesel #2 and fuel oil #6)	LNAPL is bailed from MWM10-01 on a bi-weekly basis. Oil sorbent socks are collecting LNAPL in MWM10-05 and MWM10-07.	Presented in CMP
LNAPL # 3	Located in W-8 <i>Discovered when developing MWW8-03</i>	None	- Installed 7 groundwater monitoring wells - Installed 1 piezometer	• VOCs • SVOCs • PCBs • Inorganics • Finger-printing	Not applicable	Not applicable	LNAPL PCBs detected at 20.6 mg/kg 2,3,7,8-TCDD = 6.85 x 10-6 mg/kg (Kerosene and coolant 141-KC)	Approximately 588 gallons of LNAPL were removed via pneumatic skimming. A multi phase extraction pilot study was conducted, showing that the majority of the free-phase LNAPL had been recovered.	Presented in CMP
LNAPL # 5	Located in M-16 (Former Plant 25) <i>Discovered in MWM4-06 and MWM16-03</i>	None	Installed 43 groundwater monitoring wells (to delineate vinyl chloride, not LNAPL)	• VOCs • SVOCs • PCBs • Inorganics • Finger-printing	Not applicable	Not applicable	LNAPL PCBs detected at 98 mg/kg (Oils)	LNAPL was bailed from MWM4-06 on a bi-weekly basis until demolition of Plant 25 in 2011.	Presented in CMP
LNAPL # 9/10	Located in W-8 <i>Discovered when conducted sampling during the RFI Investigaton in MWW8-13</i>	None	- Completed 46 soil borings that were screened with fluorescent/ultraviolet light - Installed 20 groundwater monitoring wells	• VOCs • SVOCs • PCBs • Inorganics • Finger-printing	Not applicable	Not applicable	LNAPL PCBs detected at 28 mg/kg (Kerosene and coolant 141-KC)	A total of 28 gallons of LNAPL (in addition to 28,165 gallons of water) were recovered during the multiphase extraction event.	Presented in CMP
LNAPL #11	Located in W-5 <i>Discovered when developing MWW8-03</i>	None	Completed 15 soil borings	• VOCs • SVOCs • PCBs • Inorganics • Finger-printing	Not applicable	Not applicable	LNAPL PCBs detected at 12 mg/kg (Oily wastewater)	None needed, based on the LNAPL mobility report.	Presented in CMP
F-7	Wastewater Collection Sumps <i>Located in the basement of the Powerhouse</i>	Industrial wastewater	- Clean and inspect sumps - Installed 2 groundwater monitoring wells	• VOCs • SVOCs • PCBs • Inorganics	No exceedances	No exceedances	Not applicable	None needed	No Further Action
F-8	Paint Sludge Storage Area <i>Located north of Plant 17 in an unbermed 12" x 24' concrete pad with a corrugated roof</i>	Storage of non-hazardous paint sludge and sludge from filtering waste bonderite	- Road salt removed and concrete pad, trench, and sump was inspected for integrity of concrete - Installed 1 groundwater monitoring well	• VOCs • SVOCs • PCBs • Inorganics	No exceedances	No exceedances	Not applicable	None needed	No Further Action

Table 4-1. Summary of RFI Activities, RACER Trust Pontiac North Campus, Pontiac, Michigan

Area ID	AOI Description	Summary of Primary Materials Managed	RFI/IM Activities	Laboratory Analysis Performed	Analytical Results That Exceed Applicable Part 201 Criteria		LNAPL Results	Remedial Activities/Interim Measures Performed	Proposed Activity
					Soil	Groundwater			
F-12	Coal Storage Area <i>Located southeast of the Powerhouse</i>	Coal (Reported solvents added to coal to increase BTU)	Installed 2 groundwater monitoring wells	• VOCs • SVOCs • PCBs • Inorganics	No exceedances	No exceedances	Not applicable	None needed	No Further Action
F-13	Former Oily Pea Gravel, Concrete, and Debris Area <i>Located in the northeast corner of Plant 17</i>	Oily pea gravel, concrete, and debris	Completed 3 soil borings; oil material was removed in February 1996	• VOCs • SVOCs • PCBs • Inorganics	No exceedances	Groundwater not analyzed	Not applicable	None needed	No Further Action
F-14	Fuel AST Area <i>Located west of the low- pressure fly ash storage silos</i> <i>The area includes three ASTs: 1,000-gallon diesel tank (relocated), 300-gallon diesel tank (removed), and a 560-gallon gasoline tank (removed)</i> <i>Current 1,000-gallon diesel tank has secondary containment</i> <i>Former location no containment</i>	Diesel fuel and gasoline	Completed 2 soil borings	• BTEX • SVOCs • Lead	No exceedances	Groundwater not analyzed	Not applicable	None needed	No Further Action
F-15	Oil/Solvent Catch Basin <i>Located in the Fiero Loading dock</i>	Unknown oil sludge	• Completed 2 soil borings • Installed 1 groundwater monitoring well • Catch basin cleaned and inspected	• VOCs • SVOCs • PCBs • Inorganics	No exceedances	No exceedances	Not applicable	None needed	No Further Action
F-16	Fiero Plant 17 VOCs • <i>File review of historic NPDES permit indicated effluent limits for PCE; PCE was used as a degreaser and in metal fabrication operations.</i>	PCE	• Completed 7 soil borings • Installed 7 groundwater monitoring wells	• VOCs	No exceedances	No exceedances	Not applicable	None needed	No Further Action
F-17	Parking Lot West of Fiero <i>Located west of Plant 17</i>	Unknown - former businesses on the property included a filling station, automotive repair and agricultural	• Completed 21 soil borings • Installed 5 groundwater piezometers (only for groundwater levels)	• VOCs • SVOCs • PCBs • Inorganics	No exceedances	Groundwater not analyzed	Not applicable	None needed	No Further Action
W-1	West Yard • <i>Approximately 20 acres in size; Entire yard was historically used for materials management activities, including:</i> <i>-- disposal of foundry sand, refuse, sludge and trash;</i> <i>-- the storage of hazardous waste (former hazardous waste storage pad);</i> <i>-- former railroad marshalling area; and</i> <i>-- a backfilled settling basin</i>	• Impacted soils, groundwater, and LNAPL contain VOCs, SVOCs, metals, PCB and Dioxins	• Completed 27 soil borings • Installed 4 groundwater monitoring wells • Completed 5 test pits • Installed 1 LNAPL delineation monitoring well • Installed 5 site-wide hydrogeologic monitoring wells (1 shallow, 1 intermediate, 2 upper sand and gravel, 2 lower sand and gravel • Groundwater samples were collected at selected, previously installed, downgradient wells (MW-10, MW-19, MW28-99, MW29-99, MW30-99, MW31-99, MW33-99, MW34-99, MW39-99, MW40-99, and MW42-99) • Collected NAPL samples from 9 wells (MW-5, MW-6, MW-13, MW-22, MW24-99, MW25-99, MW36-99, MWW1-01 and MWW1-05)	• VOCs • SVOCs • PCBs • Inorganics • Dioxin • Cyanide	SOIL SAMPLES Total PCB (290 mg/kg) (>TSCA) Dioxins (4.82x10 ⁻² mg/kg)	SHALLOW WELLS No exceedances (based on deed restrictions) UPPER SAND AND GRAVEL WELLS No exceedances LOWER SAND AND GRAVEL WELLS No exceedances	See LNAPL Area #1	• Conducted LNAPL Mobility Evaluation to illustrate limited recoverability and mobility of LNAPL • Completed cap on area developed by USPS	LNAPL presented in CMP
W-3	Former Plant 8 Flammable Liquid Storage Tank Farm • <i>Total of nine ASTs</i> • <i>5 ASTs in the north area and 4 in the south area contained within a 3-foot high dike</i> • <i>13,000 to 26,000 gallons</i> • <i>Excess product in fill hoses was routinely emptied inside the diked area surrounding the ASTs</i>	• Flammable liquids • Diesel fuel • Line thinner • Gasoline • Solvents	• Completed 5 soil borings	• VOCs • SVOCs • Lead	No exceedances	Groundwater not analyzed	Not applicable	None needed	No Further Action

Table 4-1. Summary of RFI Activities, RACER Trust Pontiac North Campus, Pontiac, Michigan

Area ID	AOI Description	Summary of Primary Materials Managed	RFI/IM Activities	Laboratory Analysis Performed	Analytical Results That Exceed Applicable Part 201 Criteria		LNAPL Results	Remedial Activities/Interim Measures Performed	Proposed Activity
					Soil	Groundwater			
W-5	Plant 8 Basement AST Area - Seventeen ASTs ranging in size from 680 gallons to 11,300 gallons - Three tanks were located at Column L-67 within the basement - All other tanks are suspected to have been located at the west end of the basement	- Weak metallic wastewater - Alkali/oily wastewater	- Completed 3 soil borings - Installed 2 groundwater monitoring wells - Installed 2 shallow Sitewide hydrogeologic monitoring wells	- VOCs - SVOCs - PCBs - Inorganics	Total PCBs (110 mg/kg)	No exceedances	Not applicable	Interim Measure conducted where soils greater than 50 mg/kg from 0 to 2 feet and soils greater than 100 mg/kg below 2 feet were excavated and disposed of off-site. The remaining soil was regraded and topped with clean fill. The regraded soil was topped with 12 inches of crushed stone underlain by a non-woven geotextile.	No Further Action
W-6	Former Plant 8 Flammable Materials Storage Building - Seventeen tanks ranging in size from 15,000 gallons to 22,000 gallons - Doors of the building were above ground level causing the storage building to act as a diked area - The railroad and truck unloading areas contained catch basins that were connected to the WWTP	Oils	Completed 8 soil borings	- VOCs - SVOCs - PCBs - Lead	No exceedances	Groundwater not analyzed	Not applicable	None needed	No Further Action
W-8	Former Plant 9 Basement AST Area 12 ASTs ranging in size form 2,000 gallons to 14,000 gallons - The tanks were located along the north side of the Plant 9 basement - Kerosene-like odors noticed in storm sewer in this area	- Kerosene - Coolant (141-KC)	- Completed 8 surface soil samples - Completed 2 soil borings - Installed 5 groundwater monitoring wells - Installed 7 monitoring wells for NAPL delineation - Installed 1 shallow site-wide hydrogeologic monitoring well - Collected NAPL samples from monitoring well MWW8-03, MWW8-29, MWW8-34, MWW8-42, MWW8-52, MWW8-62, and MWW8-63	- VOCs - SVOCs - PCBs - Inorganics - Dioxins - Hexavalent Chromium	SURFACE SOIL No exceedances SOIL BORINGS No exceedances	No exceedances	Not applicable(See LNAPL Areas #3, 9 & 10)	- Conducted LNAPL Mobility Evaluation to illustrate limited recoverability and mobility of LNAPL - Completed recovery of 28 gallons of LNAPL by multiphase extraction at LNAPL Areas 9/10	LNAPL presented in 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	- Gasoline - Metals - PCBs - Arsenic - Resin	- Completed 13 surface soil samples - Completed 2 soil borings - Completed PCB soil delineation at 2 locations - Installed 4 Sitewide hydrogeologic monitoring wells (2 shallow, 1 upper sand and gravel, 1 lower sand and gravel)	UST BORINGS - BTEX SURFACE SAMPLES - VOCs - SVOCs - PCBs - Inorganics - Hexavalent Chromium	SURFACE SOIL No exceedances SOIL BORINGS Total PCBs (47 mg/kg)	No exceedances	Not applicable	A portion of the area where soils were excavated was capped by a concrete parking lot installed as part of the new USPS facility. The "uncapped" portion of the AOI W-9 PCB remediation area, along with the remaining green space on the USPS-leased property, has been covered with 16 inches of clean imported soil on top of a layer of geotextile (a Mirafi 140 NL 3.8-ounce geotextile).	LNAPL presented in CMP

Table 4-1. Summary of RFI Activities, RACER Trust Pontiac North Campus, Pontiac, Michigan

Area ID	AOI Description	Summary of Primary Materials Managed	RFI/IM Activities	Laboratory Analysis Performed	Analytical Results That Exceed Applicable Part 201 Criteria		LNAPL Results	Remedial Activities/Interim Measures Performed	Proposed Activity
					Soil	Groundwater			
W-10	Railroad Marshalling Area Drainage System • Extends the entire length of the western 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 the metal chips • Oils • PCBs	• Inspected sumps • Completed 9 soil borings • Installed 3 downgradient groundwater monitoring wells • Installed 3 monitoring wells for NAPL delineation • Collected NAPL sample from monitoring well MWW10-01	• VOCs • SVOCs • PCBs • Inorganics • Dioxins	SOIL No exceedances	No exceedances	Not applicable (See LNAPL Areas #1 and 2)	As part of the redevelopment of the USPS property, area has been capped with soil.	LNAPL presented in CMP
W-11	Salvage Yard Sump Drain • 69 barrels of unknown liquid were dumped down the Salvage Yard sump drain over an eight day period in 1985 • The location of the Salvage Yard sump drain is unclear • 2 possible sump locations	• Barrel contents unknown • WWTP influent and effluent analyzed for: Total Kjeldahl nitrogen, chloride, nickel, zinc, phosphorus, oil and grease on the days the dumping occurred	• Installed 1 downgradient monitoring well (installed as part of AOI W-1 investigation)	• VOCs • SVOCs • PCBs • Inorganics	Soils not analyzed	No exceedances	Not applicable	None needed	No Further Action
W-13	Montcalm Substation • Located east of Saginaw Street and north of Montcalm Avenue • Transformer oil that potentially contained PCBs was used at this location	• PCBs • Oils	• Completed 6 surface soil samples	• PCBs • SVOCs	No exceedances	Groundwater samples not collected	Not applicable	None needed	No Further Action
M-2	Former Plating Operations Area • Located in the western portion of Plant 2 • Types of plating included meacher (copper coating) and utilyte (nickel and chrome plating) • Plating pits showed evidence of corrosion during Site visit	• Metals (including copper, nickel, and hexavalent chromium) • Chlorinated solvents	• Completed 18 soil borings • Installed 8 groundwater monitoring wells • Installed 1 shallow Sitewide hydrogeologic monitoring well	• VOCs • SVOCs • PCBs • Inorganics • Cyanide • Hexavalent Chromium	No exceedances	No exceedances	Not applicable	None needed	No Further Action
M-4	Plant 25 Former Gasoline UST • Prior documented release (gasoline) from former UST (1,000 gal) • Approximately 1,100 cubic yards of soil were removed when the UST was removed in March 1985. • A recovery system was operated from 1985 to 1987. • MDNR granted "No Further Action" for the area in 1987.	• Gasoline (leaded and unleaded)	• Completed 6 soil borings • Installed 6 groundwater monitoring wells	• VOCs • Lead	No exceedances	No exceedances	Not applicable	None needed	No Further Action
M-5	A-2 Fill Area • Used for disposal of plant refuse and industrial waste including partially burned materials	• Wastewater sludge • PCBs • Partially burned waste	• Completed 7 soil borings • Installed 5 groundwater monitoring wells • Groundwater samples were collected from previously installed MW-2-99	• VOCs • PCBs • Inorganics • Dioxins	No exceedances	No exceedances	Not applicable	None needed	No Further Action
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	• Completed 3 soil borings • Installed 3 groundwater monitoring wells • Installed 1 shallow site-wide hydrogeologic monitoring well	• VOCs • SVOCs • PCBs • Inorganics	No exceedances	No exceedances	Not applicable	None needed	No Further Action

Table 4-1. Summary of RFI Activities, RACER Trust Pontiac North Campus, Pontiac, Michigan

Area ID	AOI Description	Summary of Primary Materials Managed	RFI/IM Activities	Laboratory Analysis Performed	Analytical Results That Exceed Applicable Part 201 Criteria		LNAPL Results	Remedial Activities/Interim Measures Performed	Proposed Activity
					Soil	Groundwater			
M-11	Plant 12 Former Gasoline Storage Area - Former 480-gallon unleaded gasoline AST located north of Plant 12 - Exact location unknown - No information available on removal of AST	Gasoline (unleaded)	Completed 3 soil borings	BTEX	No exceedances	Groundwater not analyzed	Not applicable	None needed	No Further Action
M-16	Plant 25 Basement Sump Area - Located in the basement of Plant 25 - Sludge tank, pumping system, and several floor sumps - Area currently being demolished - Several of the sumps and pits filled with grout, unable to ascertain condition - Previous evidence of water on foundation walls	- Sludges - Oils	- Cleaned and evaluated structural integrity of floor sumps - Installed 43 groundwater monitoring wells	- VOCs - SVOCs - PCBs - Inorganics	No exceedances	No exceedances (based on deed restrictions)	Not applicable (See LNAPL Area #5)	The 43 monitoring wells were installed to delineate vinyl chloride detected greater than the non-residential drinking water criteria of 0.002 mg/L. With a groundwater use deed restriction in place, drinking water criteria is no longer applicable.	No Further Action; Groundwater at southern boundary will be presented in the CMP
M-17	Plant 15 Southern Piping Trench - Located along the southern wall in the western portion of Plant 15 - Contains pipes that distribute wastewater below grade to the WWTP	- Metals - Alkali-Oily	Visually inspected piping trench	None	Soil not analyzed	Groundwater not analyzed	Not applicable	None needed	No Further Action
M-19	Plant 5 Southern Access Railway - Located in the southwestern end of Plant 5 - Soil exposed at ground surface	Unknown	Completed 11 surface soil samples	- VOCs - SVOCs - PCBs - Inorganics - Hexavalent Chromium	No exceedances	Groundwater not analyzed	Not applicable	None needed	No Further Action
M-23	Plants 25, 33, and 75, Substation, and Power Building - Located southwest of Plant 25 and north of Columbia Avenue - Transformer oil that potentially contained PCBs was used at the Substation and Power Building	PCBs	Completed 4 surface soil samples	- SVOCs - PCBs	No exceedances	Groundwater not analyzed	Not applicable	None needed	No Further Action
M-25	Plant 33 Basement Sump Area Floor sumps and several process pits filled with flowable material, unable to observe condition	- Oils - Metals	- Installed 1 soil boring - Installed 1 groundwater monitoring well	- VOCs - SVOCs - PCBs - Inorganics	No exceedances	No exceedances	Not applicable	None needed	No Further Action
M-27	Former Canadian National and Grand Trunk Railroad Property - Located west of Plants 14, 12, 15, and 25 - Phase I conducted on M-27	- Oils - Metals	- Installed 1 soil boring - Installed 1 groundwater monitoring well	- VOCs - SVOCs - PCBs - Inorganics	SURFACE SOIL Arsenic (66.4 mg/kg) SUBSURFACE SOIL No exceedances	No exceedances	Not applicable	None needed	Presented in CMP
M-28	Southern Plant 15 Area Located south of Plant 15 (M-17 & M-25)	- Oils - Metals	Installed 10 soil borings	- VOCs - SVOCs - PCBs - Inorganics	No exceedances	Groundwater not analyzed	Not applicable	None needed	No Further Action
M-30	Plant 15 South Patio Located south of Plant 15 to store dies/equipment	- Oils - PCBs	- Installed 10 soil borings - Installed 2 monitoring wells	- VOCs - SVOCs - PCBs - Inorganics	No exceedances	No exceedances	Not applicable	None needed	No Further Action
M-31	Plant 15 Includes pressed metal and hydroform operations.	- Oils - PCBs	- Installed 4 soil borings - Installed 3 monitoring wells	- VOCs - SVOCs - PCBs - Inorganics	No exceedances	No exceedances	Not applicable	None needed	No Further Action
M-32	Plant 15 Pits/Basement Located south of Plant 15	- Oils - PCBs	- Installed 6 soil borings - Installed 2 monitoring wells	- VOCs - SVOCs - PCBs - Inorganics	No exceedances	bis-(2-ethylhexyl)phthalate = 0.75 mg/L	Not applicable	None needed	No Further Action

Table 4-1. Summary of RFI Activities, RACER Trust Pontiac North Campus, Pontiac, Michigan

Area ID	AOI Description	Summary of Primary Materials Managed	RFI/IM Activities	Laboratory Analysis Performed	Analytical Results That Exceed Applicable Part 201 Criteria		LNAPL Results	Remedial Activities/Interim Measures Performed	Proposed Activity
					Soil	Groundwater			
M-34	Truck Well • Located south of Plant 14S	• Storm water drainage	• Installed 5 soil borings • Installed 1 monitoring well	• VOCs • SVOCs • PCBs • Inorganics	No exceedances	No exceedances	Not applicable	None needed	No Further Action
Pontiac School Board	Pontiac School Board • <i>The area that is currently owned by the City of Pontiac School Board was formerly a wetland area.</i> • <i>Historically, Howard Lake, the first of a chain of four lakes, is believed to have taken up part of the southwest corner of the property.</i> • <i>A series of open ditches traversed the PSB from the site to Harris Lake and it is believed that these ditches historically conveyed storm water from the site to the lakes.</i>	• Surface water drainage • Storm water	• Completed 10 soil borings • Installed 2 groundwater monitoring wells • Completed 5 sediment samples from storm sewer pipe • Completed 4 test pits	• VOCs • SVOCs • PCBs • Inorganics • Dioxins	BORINGS Arsenic (14.1 mg/kg) TEST PITS Arsenic (13.8 mg/kg) Lead (429 mg/kg)	No exceedances	Not applicable	The abandoned storm sewer line was excavated and removed.	No Further Action
Stormwater Detention Facility	Stormwater Detention Facility • <i>Located on the south side of Montcalm Avenue</i> • <i>Operational in May 1982, intercepting and treating the Site stormwater discharged to Outfall 001</i> • <i>During routine cleaning/inspection (Sept./2002) cracks in the concrete floor and degraded sections of rubber seals observed</i> • Subsurface investigation to determine if impacted storm water from pond was infiltrating into the subsurface	• Storm water	• Completed 11 soil borings • Collected 8 temporary groundwater samples • Installed 6 groundwater monitoring wells	• VOCs • SVOCs • PCBs • Inorganics	No exceedances	No exceedances	Not applicable	None needed	No Further Action
Off-Site Groundwater	• <i>Located on the southern property boundary along Montcalm Avenue and Columbia Avenue</i>	• Various sources	• 21 monitoring wells on the property boundary	• VOCs • SVOCs • PCBs • Inorganics	Not applicable	Acetone bis-(2-ethylhexyl)phthalate Methylene chloride Vinyl chloride Arsenic Barium Lead Manganese Thallium Vanadium	Not applicable	None needed	Presented in the CMP
GSI Wells	• <i>Located on the southern property boundary along Montcalm Avenue and at the Stormwater Detention Facility</i>	• Various sources	• 5 monitoring wells on the property boundary and the Stormwater Detention Facility	• VOCs • SVOCs • PCBs • Inorganics	Not applicable	Dioxins Arsenic Mercury	Not applicable	None needed	Presented in the CMP

Notes:
Soil and groundwater were compared to the criteria listed in Table 4-2.

Table 4-2. Relevant Screening Criteria, RACER Trust Pontiac North Campus, Pontiac, Michigan

Soil	Groundwater
On-Site Areas	
NRDC ^{1,2}	NRGVIA ^{1,3}
NRPSIC ^{1,2}	GCC ^{1,3}
NRVSICI	WS
NRSVIA ¹	FE
CSAT	GAI ^{1,3}
SSBC	
Downgradient Property Boundary	
NA	RDW
	RGVIA ³
	GCC ³
	GSI ³
	WS
	FE
	GAI ³
Off-Site Areas	
RDC ⁴	RDW
RPSIC	RGVIA ³
RVSICI	GCC ³
RSVIA	GSI ³
CSAT	WS
SSBC	FE
RDWP	GAI ³
GCCP	

¹ Only in areas with no cap (i.e., M-27, storm water detention facility)

² Surface soil at M-27 is also screened against residential criteria because the areas which are not capped, abut residential properties

³ Applies only to shallow groundwater zone

⁴ In addition, sediments in Terry and Osmun Lakes are screened against RDC

CSAT	Saturation concentration
DC	Direct contact criteria
DW	Drinking water criteria
DWP	Drinking water protection
FE	Flammability and explosivity screening level
GAI	Acute inhalation screening level
GCC	Groundwater contact criteria
GCCP	Groundwater contact criteria protection
GSI	Groundwater-surface water interface criteria
GSIP	Groundwater-surface water protection
GVIA	Groundwater volatilization to indoor air criteria
NA	Not applicable; soil is not screened as part of the property boundary
NR	Nonresidential
PSCI	Particulate soil inhalation criteria
R	Residential
SSBC	Site-specific background concentration
SVIA	Soil volatilization to indoor air criteria
VSICI	Volatile soil inhalation criteria, infinite source

Table 4-3. Screening Summary of Frequency and Maximum Detections in Soil for Sitewide Hydrogeologic Investigation, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	CSAT	NRVSICI	SSBC	Units
Detected VOCs							
Acetone	22	1	0.0053	110,000	160,000	--	mg/kg
Benzene	22	1	0.00085	400	45	--	mg/kg
Tetrachloroethene	22	1	0.0014	88	600	--	mg/kg
Toluene	22	3	0.0025	250	3,300	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	22	2	0.14	{NA}	1,800	--	mg/kg
Acenaphthene	22	1	0.057	{NA}	97,000	--	mg/kg
Anthracene	22	1	0.11	{NA}	1,600,000	--	mg/kg
Benzo(a)anthracene	22	2	0.7	{NA}	{NLV}	--	mg/kg
Benzo(a)pyrene	22	1	0.65	{NA}	{NLV}	--	mg/kg
Benzo(b)fluoranthene	22	3	0.76	{NA}	{ID}	--	mg/kg
Benzo(g,h,i)perylene	22	1	0.4	{NA}	{NLV}	--	mg/kg
Benzo(k)fluoranthene	22	1	0.4	{NA}	{NLV}	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	22	11	1.7	10,000	{NLV}	--	mg/kg
Butyl benzylphthalate (BBP)	22	1	0.094	310	{NLV}	--	mg/kg
Chrysene	22	3	0.85	{NA}	{ID}	--	mg/kg
Dibenz(a,h)anthracene	22	1	0.094	{NA}	{NLV}	--	mg/kg
Fluoranthene	22	3	2.1	{NA}	890,000	--	mg/kg
Indeno(1,2,3-cd)pyrene	22	1	0.35	{NA}	{NLV}	--	mg/kg
Naphthalene	22	1	0.13	{NA}	350	--	mg/kg
Phenanthrene	22	5	0.43	{NA}	190	--	mg/kg
Pyrene	22	3	1.7	{NA}	780,000	--	mg/kg
Detected Inorganics							
Antimony	22	2	0.524	{NA}	--	--	mg/kg
Arsenic	22	22	13	{NA}	--	8.05	mg/kg
Barium	22	22	2290	{NA}	--	75	mg/kg
Beryllium	22	12	1.32	{NA}	--	--	mg/kg
Cadmium	22	16	1.39	{NA}	--	--	mg/kg
Chromium	22	22	50.4	{NA}	--	23.2	mg/kg
Cobalt	22	22	8.74	{NA}	--	11.8	mg/kg
Copper	22	22	38.5	{NA}	--	--	mg/kg
Lead	22	22	56.2	{NA}	--	33.2	mg/kg
Manganese	22	22	1350	{NA}	--	631	mg/kg
Mercury	22	12	4.65	{NA}	--	--	mg/kg
Nickel	22	22	42	{NA}	--	29	mg/kg
Selenium	22	3	0.587	{NA}	--	--	mg/kg
Thallium	22	8	1.23	{NA}	--	--	mg/kg
Vanadium	22	22	17.4	{NA}	--	27.7	mg/kg
Zinc	22	22	79.9	{NA}	--	76.3	mg/kg

See notes at end of section.

Table 4-4. Screening Summary of Frequency and Maximum Detections in Groundwater for Sitewide Hydrogeologic Investigation, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	GAI	GCC	Units
Detected VOCs								
1,1,1-Trichloroethane	117	16	0.0084	1,330	{ID}	1,300 {(S)}	1,300 {(S)}	mg/L
1,1-Dichloroethane	117	13	0.0024	5,060	380	{ID}	2,400	mg/L
1,1-Dichloroethene	116	13	0.0014	2,250	97	140	11	mg/L
1,2,4-Trichlorobenzene	117	1	0.00041	300	{NA}	300 {(S)}	19	mg/L
1,4-Dichlorobenzene	117	2	0.00027	73.8	{NA}	{ID}	6.4	mg/L
2-Butanone (Methyl ethyl ketone) (MEK)	117	7	0.0049	240,000	{ID}	240,000 {(S)}	240,000 {(S)}	mg/L
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	109	5	0.0085	20,000	{ID}	20,000 {(S)}	13,000	mg/L
Acetone	117	22	3.1	1,000,000	15,000	1,000,000 {(D)}	31,000	mg/L
Benzene	117	3	0.0045	1,750	68	67	11	mg/L
Bromodichloromethane	116	1	0.00046	6,740	{ID}	{ID}	14	mg/L
Carbon disulfide	117	9	0.0094	1,190	13	{ID}	1,200 {(S)}	mg/L
Chloroethane	117	2	0.0018	5,740	110	{ID}	440	mg/L
Chloroform (Trichloromethane)	117	6	0.002	7,920	{ID}	{ID}	150	mg/L
Chloromethane (Methyl chloride)	117	18	0.00058	6,340	36	210	490	mg/L
cis-1,2-Dichloroethene	116	3	0.0076	3,500	530	{ID}	200	mg/L
Ethylbenzene	113	2	0.0065	169	43	170 {(S)}	170 {(S)}	mg/L
Methyl tert butyl ether (MTBE)	117	7	0.0052	46,800	{ID}	{ID}	610	mg/L
Methylene chloride	117	2	0.018	17,000	{ID}	{ID}	220	mg/L
Tetrachloroethene	113	13	0.0032	200	{ID}	200 {(S)}	12	mg/L
Toluene	117	7	0.019	526	61	{ID}	530 {(S)}	mg/L
Total 1,3 Dichloropropenes	116	2		2,800	130	{ID}	5.5	mg/L
trans-1,2-Dichloroethene	117	1	0.0008	6,300	230	{ID}	220	mg/L
Trichloroethene	117	3	0.0021	1,100	{ID}	1,100 {(S)}	22	mg/L
Trichlorofluoromethane (CFC-11)	117	1	0.00022	1,100	{ID}	1,100 {(S)}	1,100 {(S)}	mg/L
Vinyl chloride	117	1	0.0006	2,760	33	{ID}	1	mg/L
Xylene (total)	117	4	0.025	186	70	190 {(S)}	190 {(S)}	mg/L
Detected SVOCs								
2-Methylnaphthalene	116	2	0.00046	24.6	{ID}	{ID}	25 {(S)}	mg/L
4-Methylphenol	116	1	0.0021	- -	- -	- -	- -	mg/L
Anthracene	116	2	0.0012	0.0434	{ID}	{ID}	0.043 {(S)}	mg/L
bis(2-Ethylhexyl)phthalate (DEHP)	116	8	0.0088	0.34	{NA}	0.34 {(S)}	0.32 {(AA)}	mg/L
Butyl benzylphthalate (BBP)	116	1	0.00054	2.69	{ID}	{ID}	2.7 {(S)}	mg/L
Caprolactam	116	8	0.039	5,250,000	{NA}	1,000,000 {(D)}	390,000	mg/L
Carbazole	116	2	0.0016	7.48	{ID}	{ID}	7.4	mg/L
Diethyl phthalate	116	1	0.00071	1,080	{NA}	{ID}	1,100 {(S)}	mg/L
Di-n-butylphthalate (DBP)	116	2	0.00093	11.2	{NA}	{ID}	11 {(S)}	mg/L
Methylphenol (Cresol)	116	1	0.0021	28,000	{NA}	{ID}	810	mg/L
Naphthalene	116	2	0.00048	31	{NA}	31 {(S)}	31 {(S)}	mg/L
Phenol	116	6	0.018	82,800	{NA}	{ID}	29,000	mg/L
Detected Pests/PCBs								
Aroclor-1254 (PCB-1254)	100	1	0.000041	- -	- -	- -	- -	mg/L
Total PCBs	100	2	0.000041	0.0447	{ID}	{ID}	0.0033 {(AA)}	mg/L
Detected Inorganics								
Antimony	118	3	0.0107	{NA}	{ID}	{ID}	68	mg/L
Arsenic	119	84	0.0927	{NA}	{ID}	{ID}	4.3	mg/L
Barium	118	118	2.03	{NA}	{ID}	{ID}	14,000	mg/L
Beryllium	118	1	0.00056	{NA}	{ID}	{ID}	290	mg/L
Cadmium	118	12	0.0013	{NA}	{ID}	{ID}	190	mg/L
Chromium	118	45	0.0302	{NA}	{ID}	{ID}	460	mg/L
Cobalt	118	34	0.0146	{NA}	{ID}	{ID}	2,400	mg/L
Copper	118	11	0.0474	{NA}	{ID}	{ID}	7,400	mg/L
Lead	118	5	0.0135	{NA}	{ID}	{ID}	{ID}	mg/L
Manganese	118	112	1.08	{NA}	{ID}	{ID}	9,100	mg/L
Mercury	118	3	0.00011	0.056	{ID}	{ID}	0.056 {(S)}	mg/L
Nickel	118	45	0.0212	{NA}	{ID}	{ID}	74,000	mg/L
Selenium	118	4	0.0489	{NA}	{ID}	{ID}	970	mg/L
Silver	118	2	0.003	{NA}	{ID}	{ID}	1,500	mg/L
Thallium	118	14	0.0159	{NA}	{ID}	{ID}	13	mg/L
Vanadium	118	9	0.0766	{NA}	{ID}	{ID}	970	mg/L
Zinc	118	22	0.592	{NA}	{ID}	{ID}	110,000	mg/L

See notes at end of section.

Table 4-4. Screening Summary of Frequency and Maximum Detections in Groundwater for Sitewide Hydrogeologic Investigation, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	GAI	GCC	Units
Detected Inorganics-Filtered								
Antimony (dissolved)	30	5	0.0098	{NA}	{ID}	{ID}	68	mg/L
Arsenic (dissolved)	30	17	0.0259	{NA}	{ID}	{ID}	4.3	mg/L
Barium (dissolved)	30	30	1.5	{NA}	{ID}	{ID}	14,000	mg/L
Cadmium (dissolved)	30	10	0.0005	{NA}	{ID}	{ID}	190	mg/L
Chromium Total (dissolved)	30	6	0.0172	{NA}	{ID}	{ID}	460	mg/L
Cobalt (dissolved)	30	4	0.0058	{NA}	{ID}	{ID}	2,400	mg/L
Copper (dissolved)	30	3	0.0426	{NA}	{ID}	{ID}	7,400	mg/L
Manganese (dissolved)	30	28	0.9	{NA}	{ID}	{ID}	9,100	mg/L
Mercury (dissolved)	30	3	0.0001	0.056	{ID}	{ID}	0.056 {(S)}	mg/L
Nickel (dissolved)	30	10	0.0163	{NA}	{ID}	{ID}	74,000	mg/L
Selenium (dissolved)	30	2	0.0478	{NA}	{ID}	{ID}	970	mg/L
Thallium (dissolved)	30	12	0.0143	{NA}	{ID}	{ID}	13	mg/L
Vanadium (dissolved)	30	5	0.0732	{NA}	{ID}	{ID}	970	mg/L
Zinc (dissolved)	30	2	0.0236	{NA}	{ID}	{ID}	110,000	mg/L

See notes at end of section.

Table 4-5. Screening Summary of Frequency and Maximum Detections in Deep/Intermediate Groundwater for Sitewide Hydrogeologic Investigation, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	FE	GAI	GCC	WS	Units
Detected VOCs								
1,1-Dichloroethene	85	1	0.00048	97	140	11	2,250	mg/L
1,4-Dichlorobenzene	86	2	0.00027	{NA}	{ID}	6.4	73.8	mg/L
2-Butanone (Methyl ethyl ketone) (MEK)	86	3	0.0013	{ID}	240,000 {(S)}	240,000 {(S)}	240,000	mg/L
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	81	3	0.0085	{ID}	20,000 {(S)}	13,000	20,000	mg/L
Acetone	86	17	3.1	15,000	1,000,000 {(D)}	31,000	1,000,000	mg/L
Benzene	86	2	0.0045	68	67	11	1,750	mg/L
Carbon disulfide	86	9	0.0094	13	{ID}	1,200 {(S)}	1,190	mg/L
Chloroform (Trichloromethane)	86	3	0.00028	{ID}	{ID}	150	7,920	mg/L
Chloromethane (Methyl chloride)	86	12	0.00058	36	210	490	6,340	mg/L
Ethylbenzene	81	1	0.0065	43	170 {(S)}	170 {(S)}	169	mg/L
Isopropyl benzene	86	1	0.00061	29	{ID}	56 {(S)}	56	mg/L
Methyl tert butyl ether (MTBE)	86	7	0.0052	{ID}	{ID}	610	46,800	mg/L
Methylene chloride	86	3	0.018	{ID}	{ID}	220	17,000	mg/L
Styrene	83	1	0.0006	140	310 {(S)}	9.7	310	mg/L
Toluene	86	3	0.019	61	{ID}	530 {(S)}	526	mg/L
Total 1,3 Dichloropropenes	85	3		130	{ID}	5.5	2,800	mg/L
Total Trihalomethanes	85	3	0.00028	--	--	--	--	mg/L
Trichlorofluoromethane (CFC-11)	86	1	0.00022	{ID}	1,100 {(S)}	1,100 {(S)}	1,100	mg/L
Xylene (total)	86	3	0.025	70	190 {(S)}	190 {(S)}	186	mg/L
Detected SVOCs								
2-Methylnaphthalene	86	2	0.00046	{ID}	{ID}	25 {(S)}	24.6	mg/L
4-Methylphenol	86	1	0.0021	--	--	--	--	mg/L
bis(2-Ethylhexyl)phthalate (DEHP)	86	6	0.0088	{NA}	0.34 {(S)}	0.32 {(AA)}	0.34	mg/L
Butyl benzylphthalate (BBP)	86	1	0.00054	{ID}	{ID}	2.7 {(S)}	2.69	mg/L
Caprolactam	86	8	0.039	{NA}	1,000,000 {(D)}	390,000	5,250,000	mg/L
Diethyl phthalate	86	1	0.00071	{NA}	{ID}	1,100 {(S)}	1,080	mg/L
Di-n-butylphthalate (DBP)	86	2	0.00088	{NA}	{ID}	11 {(S)}	11.2	mg/L
Methylphenol (Cresol)	86	1	0.0021	{NA}	{ID}	810	28,000	mg/L
Naphthalene	86	2	0.00048	{NA}	31 {(S)}	31 {(S)}	31	mg/L
Phenol	86	7	0.018	{NA}	{ID}	29,000	82,800	mg/L
Detected Pests/PCBs								
Total PCBs	84	2		{ID}	{ID}	0.0033 {(AA)}	0.0447	mg/L
Detected Inorganics								
Arsenic	87	70	0.0413	{ID}	{ID}	4.3	{NA}	mg/L
Barium	86	86	0.585	{ID}	{ID}	14,000	{NA}	mg/L
Cadmium	86	5	0.00057	{ID}	{ID}	190	{NA}	mg/L
Chromium	86	43	0.0302	{ID}	{ID}	460	{NA}	mg/L
Cobalt	86	33	0.0146	{ID}	{ID}	2,400	{NA}	mg/L
Copper	86	3	0.0064	{ID}	{ID}	7,400	{NA}	mg/L
Lead	86	3	0.0135	{ID}	{ID}	{ID}	{NA}	mg/L
Manganese	86	80	0.255	{ID}	{ID}	9,100	{NA}	mg/L
Nickel	86	36	0.0212	{ID}	{ID}	74,000	{NA}	mg/L
Silver	86	1	0.0013	{ID}	{ID}	1,500	{NA}	mg/L
Thallium	86	3	0.000065	{ID}	{ID}	13	{NA}	mg/L
Vanadium	86	2	0.0049	{ID}	{ID}	970	{NA}	mg/L
Zinc	86	16	0.592	{ID}	{ID}	110,000	{NA}	mg/L
Detected Inorganics-Filtered								
Antimony (dissolved)	13	2	0.0027	{ID}	{ID}	68	{NA}	mg/L
Arsenic (dissolved)	13	9	0.0259	{ID}	{ID}	4.3	{NA}	mg/L
Barium (dissolved)	13	13	0.404	{ID}	{ID}	14,000	{NA}	mg/L
Cadmium (dissolved)	13	1	0.00028	{ID}	{ID}	190	{NA}	mg/L
Chromium Total (dissolved)	13	2	0.0023	{ID}	{ID}	460	{NA}	mg/L
Cobalt (dissolved)	13	1	0.0024	{ID}	{ID}	2,400	{NA}	mg/L
Manganese (dissolved)	13	11	0.172	{ID}	{ID}	9,100	{NA}	mg/L
Mercury (dissolved)	13	1	0.000072	{ID}	{ID}	0.056 {(S)}	0.056	mg/L
Nickel (dissolved)	13	2	0.0064	{ID}	{ID}	74,000	{NA}	mg/L
Vanadium (dissolved)	13	1	0.0025	{ID}	{ID}	970	{NA}	mg/L
Zinc (dissolved)	13	1	0.0236	{ID}	{ID}	110,000	{NA}	mg/L

See notes at end of section.

Table 4-6. Screening Summary of Frequency and Maximum Detections in Soil for AOI F-7, RACER Trust Pontiac Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	NRVSI	CSAT	SSBC	Units
Detected VOCs							
1,1,1-Trichloroethane	8	6	1.8	4,500	460	--	mg/kg
1,1-Dichloroethane	8	3	0.029	2,500	890	--	mg/kg
1,1-Dichloroethene	8	1	0.0091	3.7	570	--	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	8	2	0.23	35,000	27,000	--	mg/kg
Acetone	8	4	0.71	160,000	110,000	--	mg/kg
Benzene	8	2	0.16	45	400	--	mg/kg
Bromodichloromethane	8	1	0.0017	31	1,500	--	mg/kg
Chloroform (Trichloromethane)	8	3	0.057	150	1,500	--	mg/kg
Cyclohexane	8	3	2.2	--	--	--	mg/kg
Ethylbenzene	8	3	0.25	2,400	140	--	mg/kg
Isopropyl benzene	8	2	0.11	2,000	390	--	mg/kg
Methyl acetate	8	2	0.35	--	--	--	mg/kg
Methyl cyclohexane	8	3	4.9	--	--	--	mg/kg
Tetrachloroethene	8	5	0.93	600	88	--	mg/kg
Toluene	8	7	1.5	3,300	250	--	mg/kg
Total Trihalomethanes	8	3	0.057	--	--	--	mg/kg
Trichloroethene	8	2	0.055	260	500	--	mg/kg
Xylene (total)	8	2	3.5	54,000	150	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	8	2	1.2	1,800	{NA}	--	mg/kg
Anthracene	8	1	0.067	1,600,000	{NA}	--	mg/kg
Benzo(a)anthracene	8	2	0.42	{NLV}	{NA}	--	mg/kg
Benzo(a)pyrene	8	2	0.4	{NLV}	{NA}	--	mg/kg
Benzo(b)fluoranthene	8	2	0.6	{ID}	{NA}	--	mg/kg
Benzo(g,h,i)perylene	8	2	0.3	{NLV}	{NA}	--	mg/kg
Benzo(k)fluoranthene	8	2	0.24	{NLV}	{NA}	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	8	3	3.9	{NLV}	10,000	--	mg/kg
Butyl benzylphthalate (BBP)	8	2	0.4	{NLV}	310	--	mg/kg
Chrysene	8	2	0.45	{ID}	{NA}	--	mg/kg
Dibenz(a,h)anthracene	8	1	0.067	{NLV}	{NA}	--	mg/kg
Dibenzofuran	8	2	0.27	160	{NA}	--	mg/kg
Fluoranthene	8	2	0.7	890,000	{NA}	--	mg/kg
Indeno(1,2,3-cd)pyrene	8	2	0.23	{NLV}	{NA}	--	mg/kg
Naphthalene	6	2	0.83	350	{NA}	--	mg/kg
Phenanthrene	8	2	0.74	190	{NA}	--	mg/kg
Pyrene	8	2	0.56	780,000	{NA}	--	mg/kg
Detected Pests/PCBs							
Aroclor-1254 (PCB-1254)	8	2	1.6	--	--	--	mg/kg
Total PCBs	8	2	1.6	810	{NA}	--	mg/kg
Detected Inorganics							
Antimony	8	3	3.08	--	{NA}	--	mg/kg
Arsenic	8	8	39.4	--	{NA}	8.05	mg/kg
Barium	8	8	205	--	{NA}	75	mg/kg
Beryllium	8	4	0.995	--	{NA}	--	mg/kg
Cadmium	8	6	0.412	--	{NA}	--	mg/kg
Chromium	8	8	335	--	{NA}	23.2	mg/kg
Cobalt	8	8	7.97	--	{NA}	11.8	mg/kg
Copper	8	8	39.1	--	{NA}	--	mg/kg
Lead	8	8	496	--	{NA}	33.2	mg/kg
Manganese	8	8	303	--	{NA}	631	mg/kg
Mercury	8	2	0.302	--	{NA}	--	mg/kg
Nickel	8	8	134	--	{NA}	29	mg/kg
Selenium	8	3	10.5	--	{NA}	--	mg/kg
Thallium	8	3	1.14	--	{NA}	--	mg/kg
Vanadium	8	8	21.5	--	{NA}	27.7	mg/kg
Zinc	8	8	119	--	{NA}	76.3	mg/kg

See notes at end of section.

Table 4-7. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI F-7, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
1,1,1-Trichloroethane	17	16	0.036	1,330	{ID}	mg/L
1,1-Dichloroethane	17	16	0.023	5,060	380	mg/L
1,1-Dichloroethene	20	17	0.02	2,250	97	mg/L
Acetone	17	2	0.0016	1,000,000	15,000	mg/L
Bromodichloromethane	14	2	0.0022	6,740	{ID}	mg/L
Carbon disulfide	17	1	0.00047	1,190	13	mg/L
Chloroethane	17	3	0.0047	5,740	110	mg/L
Chloroform (Trichloromethane)	17	9	0.0095	7,920	{ID}	mg/L
Chloromethane (Methyl chloride)	17	4	0.0007	6,340	36	mg/L
cis-1,2-Dichloroethene	17	16	0.0028	3,500	530	mg/L
Tetrachloroethene	20	18	0.0063	200	{ID}	mg/L
Toluene	17	2	0.00026	526	61	mg/L
trans-1,2-Dichloroethene	17	4	0.00027	6,300	230	mg/L
Trichloroethene	17	12	0.00055	1,100	{ID}	mg/L
Detected SVOCs						
Caprolactam	11	1	0.0041	5,250,000	{NA}	mg/L
Detected Inorganics						
Arsenic	11	5	0.03	{NA}	{ID}	mg/L
Barium	11	11	0.127	{NA}	{ID}	mg/L
Cadmium	11	2	0.00068	{NA}	{ID}	mg/L
Chromium	11	3	0.0134	{NA}	{ID}	mg/L
Cobalt	11	1	0.0107	{NA}	{ID}	mg/L
Copper	11	1	0.0179	{NA}	{ID}	mg/L
Lead	11	1	0.003	{NA}	{ID}	mg/L
Manganese	11	11	0.573	{NA}	{ID}	mg/L
Mercury	11	1	0.00017	0.056	{ID}	mg/L
Nickel	11	4	0.0135	{NA}	{ID}	mg/L
Thallium	11	2	0.000046	{NA}	{ID}	mg/L
Vanadium	11	1	0.0171	{NA}	{ID}	mg/L
Zinc	11	5	0.169	{NA}	{ID}	mg/L
Detected Inorganics-Filtered						
Antimony (dissolved)	3	1	0.003	{NA}	{ID}	mg/L
Arsenic (dissolved)	3	1	0.0416	{NA}	{ID}	mg/L
Barium (dissolved)	3	3	0.0386	{NA}	{ID}	mg/L
Copper (dissolved)	3	1	0.0154	{NA}	{ID}	mg/L
Manganese (dissolved)	3	3	0.0324	{NA}	{ID}	mg/L
Nickel (dissolved)	3	1	0.0036	{NA}	{ID}	mg/L
Vanadium (dissolved)	3	2	0.0247	{NA}	{ID}	mg/L
Zinc (dissolved)	3	1	0.0158	{NA}	{ID}	mg/L

See notes at end of section.

**Table 4-8. Screening Summary of Frequency and Maximum Detections in Soil for AOI F-8, RACER Trust
Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected VOCs							
2-Butanone (Methyl ethyl ketone) (MEK)	4	2	0.0036	35,000	27,000	--	mg/kg
Acetone	4	2	0.0095	160,000	110,000	--	mg/kg
Methyl cyclohexane	4	1	0.0011	--	--	--	mg/kg
Toluene	4	4	0.005	3,300	250	--	mg/kg
Detected SVOCs							
bis(2-Ethylhexyl)phthalate (DEHP)	4	2	0.12	{NLV}	10,000	--	mg/kg
Phenol	4	1	0.27	{NLV}	12,000	--	mg/kg
Detected Inorganics							
Arsenic	4	4	3.86	--	{NA}	8.05	mg/kg
Barium	4	4	13.5	--	{NA}	75	mg/kg
Beryllium	4	1	0.0824	--	{NA}	--	mg/kg
Cadmium	4	4	0.261	--	{NA}	--	mg/kg
Chromium	4	4	5.63	--	{NA}	23.2	mg/kg
Cobalt	4	4	7.53	--	{NA}	11.8	mg/kg
Copper	4	4	15.2	--	{NA}	--	mg/kg
Lead	4	4	4.95	--	{NA}	33.2	mg/kg
Manganese	4	4	322	--	{NA}	631	mg/kg
Mercury	4	1	0.0099	--	{NA}	--	mg/kg
Nickel	4	4	9.03	--	{NA}	29	mg/kg
Thallium	4	3	0.943	--	{NA}	--	mg/kg
Vanadium	4	4	10.1	--	{NA}	27.7	mg/kg
Zinc	4	4	36.5	--	{NA}	76.3	mg/kg

See notes at end of section.

Table 4-9. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI F-8, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
Chloroform (Trichloromethane)	2	2	0.0028	7,920	--	mg/L
Detected Inorganics						
Barium	2	2	0.0582	--	--	mg/L
Cobalt	2	1	0.003	--	--	mg/L
Manganese	2	2	0.364	--	--	mg/L
Nickel	2	2	0.0077	--	--	mg/L
Thallium	2	1	0.000043	--	--	mg/L
Zinc	2	1	0.0212	--	--	mg/L
Detected Inorganics-Filtered						
Barium (dissolved)	2	2	0.0575	--	--	mg/L
Cadmium (dissolved)	2	1	0.00032	--	--	mg/L
Cobalt (dissolved)	2	2	0.0028	--	--	mg/L
Manganese (dissolved)	2	1	0.36	--	--	mg/L
Nickel (dissolved)	2	2	0.0067	--	--	mg/L
Thallium (dissolved)	2	2	0.0054	--	--	mg/L
Zinc (dissolved)	2	1	0.0133	--	--	mg/L

See notes at end of section.

Table 4-10. Screening Summary of Frequency and Maximum Detections in Soil for AOI F-12, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	NRVSI	CSAT	SSBC	Units
Detected VOCs							
Methyl cyclohexane	1	7	0.0006	--	--	--	mg/kg
Toluene	7	7	0.0023	3,300	250	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	1	7	0.63	1,800	{NA}	--	mg/kg
Benzo(a)anthracene	1	7	0.083	{NLV}	{NA}	--	mg/kg
Benzo(a)pyrene	1	7	0.081	{NLV}	{NA}	--	mg/kg
Benzo(b)fluoranthene	1	7	0.14	{ID}	{NA}	--	mg/kg
Benzo(g,h,i)perylene	1	7	0.072	{NLV}	{NA}	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	2	7	0.087	{NLV}	10,000	--	mg/kg
Butyl benzylphthalate (BBP)	1	7	0.13	{NLV}	310	--	mg/kg
Chrysene	1	7	0.12	{ID}	{NA}	--	mg/kg
Dibenzofuran	1	7	0.13	160	{NA}	--	mg/kg
Diethyl phthalate	1	7	0.21	{NLV}	740	--	mg/kg
Fluoranthene	1	7	0.15	890,000	{NA}	--	mg/kg
Naphthalene	1	7	0.39	350	{NA}	--	mg/kg
Phenanthrene	1	7	0.28	190	{NA}	--	mg/kg
Pyrene	1	7	0.16	780,000	{NA}	--	mg/kg
Detected Inorganics							
Arsenic	6	7	11.9	--	{NA}	8.05	mg/kg
Barium	6	7	32.5	--	{NA}	75	mg/kg
Beryllium	6	7	0.936	--	{NA}	--	mg/kg
Cadmium	5	7	0.568	--	{NA}	--	mg/kg
Chromium	6	7	9.63	--	{NA}	23.2	mg/kg
Cobalt	6	7	15.3	--	{NA}	11.8	mg/kg
Copper	6	7	29.2	--	{NA}	--	mg/kg
Lead	6	7	18	--	{NA}	33.2	mg/kg
Manganese	6	7	268	--	{NA}	631	mg/kg
Mercury	1	7	0.0471	--	{NA}	--	mg/kg
Nickel	6	7	19.3	--	{NA}	29	mg/kg
Selenium	1	7	1.11	--	{NA}	--	mg/kg
Vanadium	6	7	12.1	--	{NA}	27.7	mg/kg
Zinc	6	7	120	--	{NA}	76.3	mg/kg

See notes at end of section.

Table 4-11. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI F-12, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
1,1,1-Trichloroethane	33	33	0.081	1,330	{ID}	mg/L
1,1-Dichloroethane	33	33	0.025	5,060	380	mg/L
1,1-Dichloroethene	33	20	0.01	2,250	97	mg/L
Acetone	33	4	0.2	1,000,000	15,000	mg/L
Chloroform (Trichloromethane)	33	1	0.00017	7,920	{ID}	mg/L
Chloromethane (Methyl chloride)	33	4	0.00084	6,340	36	mg/L
cis-1,2-Dichloroethene	33	10	0.0016	3,500	530	mg/L
Toluene	33	1	0.00048	526	61	mg/L
Total 1,3 Dichloropropenes	33	3		2,800	130	mg/L
Trichloroethene	33	1	0.00014	1,100	{ID}	mg/L
Xylene (total)	33	1	0.00053	186	70	mg/L
Detected SVOCs						
bis(2-Ethylhexyl)phthalate (DEHP)	29	2	0.0037	0.34	{NA}	mg/L
Detected Inorganics						
Antimony	30	1	0.0022	{NA}	{ID}	mg/L
Arsenic	30	2	0.0028	{NA}	{ID}	mg/L
Barium	30	30	0.0997	{NA}	{ID}	mg/L
Cadmium	30	6	0.00094	{NA}	{ID}	mg/L
Chromium	30	1	0.0026	{NA}	{ID}	mg/L
Cobalt	30	17	0.0052	{NA}	{ID}	mg/L
Copper	30	6	0.0055	{NA}	{ID}	mg/L
Manganese	32	32	1.81	{NA}	{ID}	mg/L
Nickel	30	21	0.0155	{NA}	{ID}	mg/L
Selenium	30	2	0.0046	{NA}	{ID}	mg/L
Silver	30	1	0.0031	{NA}	{ID}	mg/L
Thallium	30	4	0.000077	{NA}	{ID}	mg/L
Vanadium	30	1	0.0022	{NA}	{ID}	mg/L
Zinc	30	8	0.0287	{NA}	{ID}	mg/L
Detected Inorganics-Filtered						
Barium (dissolved)	4	4	0.078	{NA}	{ID}	mg/L
Beryllium (dissolved)	4	1	0.00067	{NA}	{ID}	mg/L
Cadmium (dissolved)	4	1	0.00045	{NA}	{ID}	mg/L
Cobalt (dissolved)	4	2	0.0051	{NA}	{ID}	mg/L
Manganese (dissolved)	4	4	1.74	{NA}	{ID}	mg/L
Nickel (dissolved)	4	3	0.005	{NA}	{ID}	mg/L
Thallium (dissolved)	4	2	0.000077	{NA}	{ID}	mg/L

See notes at end of section.

Table 4-12. Screening Summary of Frequency and Maximum Detections in Soil for AOI F-13, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	NRVSI	CSAT	SSBC	Units
Detected VOCs							
1,1,1-Trichloroethane	8	6	0.015	4,500	460	--	mg/kg
Carbon disulfide	8	1	0.0016	1,600	280	--	mg/kg
Methyl acetate	8	1	0.0015	--	--	--	mg/kg
Tetrachloroethene	8	7	0.12	600	88	--	mg/kg
Toluene	8	6	0.0033	3,300	250	--	mg/kg
Detected SVOCs							
Benzo(a)anthracene	8	1	0.16	{NLV}	{NA}	--	mg/kg
Benzo(a)pyrene	8	1	0.18	{NLV}	{NA}	--	mg/kg
Benzo(b)fluoranthene	8	1	0.21	{ID}	{NA}	--	mg/kg
Benzo(g,h,i)perylene	8	1	0.13	{NLV}	{NA}	--	mg/kg
Benzo(k)fluoranthene	8	1	0.12	{NLV}	{NA}	--	mg/kg
Chrysene	8	1	0.18	{ID}	{NA}	--	mg/kg
Fluoranthene	8	1	0.3	890,000	{NA}	--	mg/kg
Indeno(1,2,3-cd)pyrene	8	1	0.11	{NLV}	{NA}	--	mg/kg
Phenanthrene	8	1	0.14	190	{NA}	--	mg/kg
Pyrene	8	1	0.3	780,000	{NA}	--	mg/kg
Detected Inorganics							
Arsenic	8	8	7.54	--	{NA}	8.05	mg/kg
Barium	8	8	28.9	--	{NA}	75	mg/kg
Beryllium	8	1	0.102	--	{NA}	--	mg/kg
Cadmium	8	8	0.208	--	{NA}	--	mg/kg
Chromium	8	8	5.5	--	{NA}	23.2	mg/kg
Cobalt	8	8	3.14	--	{NA}	11.8	mg/kg
Copper	8	8	11.7	--	{NA}	--	mg/kg
Lead	8	8	9.93	--	{NA}	33.2	mg/kg
Manganese	8	8	165	--	{NA}	631	mg/kg
Mercury	8	1	0.0578	--	{NA}	--	mg/kg
Nickel	8	8	8.85	--	{NA}	29	mg/kg
Selenium	8	1	0.477	--	{NA}	--	mg/kg
Vanadium	8	8	7.81	--	{NA}	27.7	mg/kg
Zinc	8	8	23.1	--	{NA}	76.3	mg/kg

See notes at end of section.

Table 4-13. Screening Summary of Frequency and Maximum Detections in Soil for AOI F-14, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected VOCs							
Toluene	6	2	0.0013	3,300	250	--	mg/kg
Detected SVOCs							
Benzo(a)anthracene	6	2	0.18	{NLV}	{NA}	--	mg/kg
Benzo(a)pyrene	6	2	0.17	{NLV}	{NA}	--	mg/kg
Benzo(b)fluoranthene	6	2	0.23	{ID}	{NA}	--	mg/kg
Benzo(g,h,i)perylene	6	1	0.11	{NLV}	{NA}	--	mg/kg
Benzo(k)fluoranthene	6	1	0.11	{NLV}	{NA}	--	mg/kg
Chrysene	6	2	0.21	{ID}	{NA}	--	mg/kg
Fluoranthene	6	2	0.42	890,000	{NA}	--	mg/kg
Indeno(1,2,3-cd)pyrene	6	1	0.088	{NLV}	{NA}	--	mg/kg
Phenanthrene	6	1	0.12	190	{NA}	--	mg/kg
Pyrene	6	2	0.33	780,000	{NA}	--	mg/kg
Detected Inorganics							
Lead	6	6	39.7	--	{NA}	33.2	mg/kg

See notes at end of section.

**Table 4-14. Screening Summary of Frequency and Maximum Detections in Soil for AOI F-15,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected VOCs							
1,1,1-Trichloroethane	19	7	91	4,500	460	--	mg/kg
1,1-Dichloroethane	19	12	6.5	2,500	890	--	mg/kg
1,1-Dichloroethene	19	4	2.2	3.7	570	--	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	19	5	0.38	35,000	27,000	--	mg/kg
Acetone	19	5	0.14	160,000	110,000	--	mg/kg
Benzene	19	3	0.04	45	400	--	mg/kg
Chloroethane	19	6	1.5	36,000	950	--	mg/kg
Cyclohexane	19	2	0.11	--	--	--	mg/kg
Ethylbenzene	19	2	0.2	2,400	140	--	mg/kg
Methyl acetate	19	2	0.27	--	--	--	mg/kg
Methyl cyclohexane	19	2	0.24	--	--	--	mg/kg
Methylene chloride	18	5	0.15	700	2,300	--	mg/kg
Tetrachloroethene	19	11	81	600	88	--	mg/kg
Toluene	18	6	0.18	3,300	250	--	mg/kg
Trichloroethene	19	7	0.21	260	500	--	mg/kg
Vinyl chloride	19	4	0.11	29	490	--	mg/kg
Xylene (total)	19	4	1.1	54,000	150	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	9	2	1.1	1,800	{NA}	--	mg/kg
2-Methylphenol	9	1	0.11	--	--	--	mg/kg
4-Methylphenol	9	1	0.15	--	--	--	mg/kg
Acenaphthene	9	1	0.083	97,000	{NA}	--	mg/kg
Acetophenone	9	1	0.18	52,000	1,100	--	mg/kg
Benzo(a)anthracene	9	1	0.076	{NLV}	{NA}	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	9	4	0.96	{NLV}	10,000	--	mg/kg
Carbazole	9	1	0.063	{NLV}	{NA}	--	mg/kg
Chrysene	9	1	0.2	{ID}	{NA}	--	mg/kg
Dibenzofuran	9	1	0.083	160	{NA}	--	mg/kg
Fluoranthene	9	1	0.44	890,000	{NA}	--	mg/kg
Fluorene	9	1	0.082	150,000	{NA}	--	mg/kg
Methylphenol (Cresol)	9	1	0.26	{NLV}	{NA}	--	mg/kg
Naphthalene	9	4	0.63	350	{NA}	--	mg/kg
Phenanthrene	9	1	0.95	190	{NA}	--	mg/kg
Phenol	9	1	0.45	{NLV}	12,000	--	mg/kg
Pyrene	9	1	0.23	780,000	{NA}	--	mg/kg
Detected Pests/PCBs							
Aroclor-1260 (PCB-1260)	9	1	0.011	--	--	--	mg/kg
Total PCBs	9	1	0.011	810	{NA}	--	mg/kg

**Table 4-14. Screening Summary of Frequency and Maximum Detections in Soil for AOI F-15,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	NRVSI	CSAT	SSBC	Units
Detected Inorganics							
Antimony	9	1	0.313	--	{NA}	--	mg/kg
Arsenic	9	9	29.3	--	{NA}	8.05	mg/kg
Barium	9	9	60	--	{NA}	75	mg/kg
Beryllium	9	9	0.434	--	{NA}	--	mg/kg
Cadmium	9	9	1.35	--	{NA}	--	mg/kg
Chromium	9	9	15.6	--	{NA}	23.2	mg/kg
Cobalt	9	9	7.64	--	{NA}	11.8	mg/kg
Copper	9	9	65	--	{NA}	--	mg/kg
Lead	9	9	30.1	--	{NA}	33.2	mg/kg
Manganese	9	9	582	--	{NA}	631	mg/kg
Mercury	9	6	0.0392	--	{NA}	--	mg/kg
Nickel	9	9	18.1	--	{NA}	29	mg/kg
Selenium	9	1	3.72	--	{NA}	--	mg/kg
Thallium	9	3	0.901	--	{NA}	--	mg/kg
Vanadium	9	9	20.2	--	{NA}	27.7	mg/kg
Zinc	9	9	80.4	--	{NA}	76.3	mg/kg

See notes at end of section.

Table 4-15. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI F-15, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
1,1,1-Trichloroethane	2	1	0.00061	1,330	{ID}	mg/L
1,1-Dichloroethane	2	2	0.0076	5,060	380	mg/L
Chloroform (Trichloromethane)	2	1	0.00054	7,920	{ID}	mg/L
Chloromethane (Methyl chloride)	2	1	0.00041	6,340	36	mg/L
Tetrachloroethene	2	1	0.00028	200	{ID}	mg/L
Toluene	2	2	0.00036	526	61	mg/L
Xylene (total)	2	1	0.00064	186	70	mg/L
Detected Inorganics						
Barium	2	2	0.0215	{NA}	{ID}	mg/L
Cadmium	2	1	0.00041	{NA}	{ID}	mg/L
Cobalt	2	2	0.0017	{NA}	{ID}	mg/L
Manganese	2	2	0.657	{NA}	{ID}	mg/L
Nickel	2	2	0.0074	{NA}	{ID}	mg/L
Thallium	2	1	0.000054	{NA}	{ID}	mg/L
Detected Inorganics-Filtered						
Barium (dissolved)	2	2	0.0214	{NA}	{ID}	mg/L
Manganese (dissolved)	2	2	0.633	{NA}	{ID}	mg/L
Nickel (dissolved)	2	1	0.0066	{NA}	{ID}	mg/L
Thallium (dissolved)	2	1	0.000064	{NA}	{ID}	mg/L

See notes at end of section.

**Table 4-16. Screening Summary of Frequency and Maximum Detections in Soil for AOI F-16,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	NRVSI	CSAT	SSBC	Units
Detected VOCs							
1,1,1-Trichloroethane	41	14	5.1	4,500	460	--	mg/kg
1,1-Dichloroethane	41	4	6.1	2,500	890	--	mg/kg
1,1-Dichloroethene	41	2	1.2	3.7	570	--	mg/kg
1,2-Dichloroethane	41	2	0.21	21	1,200	--	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	41	1	2.1	35,000	27,000	--	mg/kg
Acetone	41	8	6.8	160,000	110,000	--	mg/kg
Carbon tetrachloride	41	3	0.048	12	390	--	mg/kg
Chloroform (Trichloromethane)	41	6	0.21	150	1,500	--	mg/kg
cis-1,2-Dichloroethene	41	6	2.8	210	640	--	mg/kg
Cyclohexane	41	1	0.051	--	--	--	mg/kg
Ethylbenzene	41	2	43	2,400	140	--	mg/kg
Isopropyl benzene	41	2	1.1	2,000	390	--	mg/kg
Methyl acetate	41	6	0.078	--	--	--	mg/kg
Methyl cyclohexane	41	5	2.6	--	--	--	mg/kg
Methylene chloride	41	1	3.8	700	2,300	--	mg/kg
Tetrachloroethene	41	27	15	600	88	--	mg/kg
Toluene	41	7	190	3,300	250	--	mg/kg
Total Trihalomethanes	41	6	0.21	--	--	--	mg/kg
trans-1,2-Dichloroethene	41	1	0.059	330	1,400	--	mg/kg
Trichloroethene	41	6	0.94	260	500	--	mg/kg
Xylene (total)	41	3	290	54,000	150	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	21	3	0.11	1,800	{NA}	--	mg/kg
4-Methylphenol	21	1	0.054	--	--	--	mg/kg
Acenaphthene	21	2	0.79	97,000	{NA}	--	mg/kg
Anthracene	21	2	2.2	1,600,000	{NA}	--	mg/kg
Benzo(a)anthracene	21	6	3.3	{NLV}	{NA}	--	mg/kg
Benzo(a)pyrene	21	6	3.3	{NLV}	{NA}	--	mg/kg
Benzo(b)fluoranthene	21	6	3.6	{ID}	{NA}	--	mg/kg
Benzo(g,h,i)perylene	21	5	2.4	{NLV}	{NA}	--	mg/kg
Benzo(k)fluoranthene	21	4	1.6	{NLV}	{NA}	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	21	4	0.048	{NLV}	10,000	--	mg/kg
Butyl benzylphthalate (BBP)	21	2	1.1	{NLV}	310	--	mg/kg
Carbazole	21	2	0.86	{NLV}	{NA}	--	mg/kg
Chrysene	21	6	3.2	{ID}	{NA}	--	mg/kg
Dibenz(a,h)anthracene	21	1	0.5	{NLV}	{NA}	--	mg/kg
Dibenzofuran	21	4	0.55	160	{NA}	--	mg/kg
Di-n-butylphthalate (DBP)	21	2	0.034	{NLV}	760	--	mg/kg
Fluoranthene	21	6	9	890,000	{NA}	--	mg/kg
Fluorene	21	2	0.91	150,000	{NA}	--	mg/kg
Indeno(1,2,3-cd)pyrene	21	4	1.9	{NLV}	{NA}	--	mg/kg
Methylphenol (Cresol)	21	1	0.054	{NLV}	{NA}	--	mg/kg
Naphthalene	21	3	0.41	350	{NA}	--	mg/kg
Phenanthrene	21	6	7.9	190	{NA}	--	mg/kg
Pyrene	21	6	7.5	780,000	{NA}	--	mg/kg

See notes at end of section.

**Table 4-16. Screening Summary of Frequency and Maximum Detections in Soil for AOI F-16,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	NRVSI	CSAT	SSBC	Units
Detected Pests/PCBs							
Aroclor-1254 (PCB-1254)	21	1	0.018	--	--	--	mg/kg
Total PCBs	21	1	0.018	810	{NA}	--	mg/kg
Detected Inorganics							
Antimony	31	5	2.7	--	{NA}	--	mg/kg
Arsenic	31	31	30.3	--	{NA}	8.05	mg/kg
Barium	31	31	240	--	{NA}	75	mg/kg
Beryllium	31	8	0.68	--	{NA}	--	mg/kg
Cadmium	31	11	1.6	--	{NA}	--	mg/kg
Chromium	31	31	271	--	{NA}	23.2	mg/kg
Cobalt	31	31	14.3	--	{NA}	11.8	mg/kg
Copper	31	31	1240	--	{NA}	--	mg/kg
Lead	31	31	112	--	{NA}	33.2	mg/kg
Manganese	31	31	559	--	{NA}	631	mg/kg
Mercury	31	14	0.2	--	{NA}	--	mg/kg
Nickel	31	31	958	--	{NA}	29	mg/kg
Selenium	31	2	0.74	--	{NA}	--	mg/kg
Silver	31	1	7.4	--	{NA}	--	mg/kg
Thallium	31	4	1.1	--	{NA}	--	mg/kg
Vanadium	31	31	25.9	--	{NA}	27.7	mg/kg
Zinc	31	31	154	--	{NA}	76.3	mg/kg

See notes at end of section.

Table 4-17. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI F-16, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
1,1,1-Trichloroethane	52	38	0.17	1,330	{ID}	mg/L
1,1,2-Trichloroethane	52	1	0.00022	4,420	{NA}	mg/L
1,1-Dichloroethane	52	29	0.14	5,060	380	mg/L
1,1-Dichloroethene	52	23	0.024	2,250	97	mg/L
1,4-Dichlorobenzene	52	1	0.0003	73.8	{NA}	mg/L
2-Butanone (Methyl ethyl ketone) (MEK)	52	2	1.2	240,000	{ID}	mg/L
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	52	1	0.022	20,000	{ID}	mg/L
Bromodichloromethane	52	1	0.00073	6,740	{ID}	mg/L
Carbon disulfide	52	1	0.00044	1,190	13	mg/L
Carbon tetrachloride	52	13	0.0091	793	{ID}	mg/L
Chloroethane	52	3	0.0018	5,740	110	mg/L
Chloroform (Trichloromethane)	52	25	0.033	7,920	{ID}	mg/L
Chloromethane (Methyl chloride)	52	8	0.00045	6,340	36	mg/L
cis-1,2-Dichloroethene	52	21	0.025	3,500	530	mg/L
Ethylbenzene	52	2	0.53	169	43	mg/L
Isopropyl benzene	52	1	0.00062	56	29	mg/L
Tetrachloroethene	52	33	0.14	200	{ID}	mg/L
Toluene	52	3	5.9	526	61	mg/L
trans-1,2-Dichloroethene	52	13	0.0018	6,300	230	mg/L
Trichloroethene	52	26	0.033	1,100	{ID}	mg/L
Xylene (total)	52	3	3.3	186	70	mg/L
Detected SVOCs						
2,4-Dimethylphenol	13	1	0.0045	7,870	{ID}	mg/L
2-Methylphenol	13	2	0.039	--	--	mg/L
4-Methylphenol	13	2	0.027	--	--	mg/L
Caprolactam	13	2	0.0019	5,250,000	{NA}	mg/L
Methylphenol (Cresol)	13	2	0.066	28,000	{NA}	mg/L
Naphthalene	13	1	0.0012	31	{NA}	mg/L
Detected Inorganics						
Arsenic	48	14	0.0232	{NA}	{ID}	mg/L
Barium	45	45	0.158	{NA}	{ID}	mg/L
Cadmium	45	2	0.00052	{NA}	{ID}	mg/L
Chromium	45	5	0.0234	{NA}	{ID}	mg/L
Cobalt	45	14	0.0214	{NA}	{ID}	mg/L
Copper	45	6	0.0388	{NA}	{ID}	mg/L
Lead	45	4	0.0097	{NA}	{ID}	mg/L
Manganese	46	46	1.51	{NA}	{ID}	mg/L
Mercury	45	1	0.00021	0.056	{ID}	mg/L
Nickel	45	21	0.2	{NA}	{ID}	mg/L
Selenium	45	3	0.0042	{NA}	{ID}	mg/L
Silver	45	1	0.0023	{NA}	{ID}	mg/L
Thallium	45	6	0.00015	{NA}	{ID}	mg/L
Vanadium	45	7	0.0095	{NA}	{ID}	mg/L
Zinc	45	12	0.0741	{NA}	{ID}	mg/L

See notes at end of section.

Table 4-18. Screening Summary of Frequency and Maximum Detections in Soil for AOI F-17, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected VOCs							
2-Butanone (Methyl ethyl ketone) (MEK)	57	1	0.073	35,000	27,000	--	mg/kg
Acetone	57	1	0.16	160,000	110,000	--	mg/kg
Carbon tetrachloride	57	3	0.11	12	390	--	mg/kg
Chloroform (Trichloromethane)	57	1	0.029	150	1,500	--	mg/kg
Cyclohexane	57	2	0.094	--	--	--	mg/kg
Ethylbenzene	57	1	0.013	2,400	140	--	mg/kg
Methyl cyclohexane	57	7	0.17	--	--	--	mg/kg
Tetrachloroethene	57	5	2.2	600	88	--	mg/kg
Toluene	57	2	0.061	3,300	250	--	mg/kg
Total Trihalomethanes	57	1	0.029	--	--	--	mg/kg
Trichloroethene	57	3	0.03	260	500	--	mg/kg
Xylene (total)	57	10	0.16	54,000	150	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	46	2	0.11	1,800	{NA}	--	mg/kg
Acenaphthene	46	3	0.7	97,000	{NA}	--	mg/kg
Anthracene	46	4	2.1	1,600,000	{NA}	--	mg/kg
Benzo(a)anthracene	46	9	3.5	{NLV}	{NA}	--	mg/kg
Benzo(a)pyrene	46	8	3	{NLV}	{NA}	--	mg/kg
Benzo(b)fluoranthene	46	8	3.7	{ID}	{NA}	--	mg/kg
Benzo(g,h,i)perylene	46	7	1.8	{NLV}	{NA}	--	mg/kg
Benzo(k)fluoranthene	46	8	1.5	{NLV}	{NA}	--	mg/kg
Biphenyl (1,1-Biphenyl)	46	1	0.041	--	--	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	46	24	0.072	{NLV}	10,000	--	mg/kg
Butyl benzylphthalate (BBP)	46	2	0.061	{NLV}	310	--	mg/kg
Carbazole	46	2	0.68	{NLV}	{NA}	--	mg/kg
Chrysene	46	8	3.4	{ID}	{NA}	--	mg/kg
Dibenz(a,h)anthracene	46	2	0.51	{NLV}	{NA}	--	mg/kg
Dibenzofuran	46	2	0.44	160	{NA}	--	mg/kg
Di-n-butylphthalate (DBP)	46	3	0.027	{NLV}	760	--	mg/kg
Fluoranthene	46	11	8.9	890,000	{NA}	--	mg/kg
Fluorene	46	4	0.86	150,000	{NA}	--	mg/kg
Indeno(1,2,3-cd)pyrene	46	7	1.7	{NLV}	{NA}	--	mg/kg
Naphthalene	46	2	0.15	350	{NA}	--	mg/kg
Phenanthrene	46	10	6.9	190	{NA}	--	mg/kg
Pyrene	46	10	6.5	780,000	{NA}	--	mg/kg
Detected Pests/PCBs							
Aroclor-1254 (PCB-1254)	45	2	0.032	--	--	--	mg/kg
Total PCBs	45	2	0.032	810	{NA}	--	mg/kg
Detected Inorganics							
Antimony	45	15	1.4	--	{NA}	--	mg/kg
Arsenic	45	44	9.2	--	{NA}	8.05	mg/kg
Barium	45	45	63.7	--	{NA}	75	mg/kg
Beryllium	45	31	0.39	--	{NA}	--	mg/kg
Cadmium	45	18	0.52	--	{NA}	--	mg/kg
Chromium	45	45	24.4	--	{NA}	23.2	mg/kg

See notes at end of section.

Cobalt	45	45	11.3	--	{NA}	11.8	mg/kg
Copper	45	45	26.6	--	{NA}	--	mg/kg
Lead	45	45	51.3	--	{NA}	33.2	mg/kg
Manganese	45	45	834	--	{NA}	631	mg/kg
Mercury	45	36	0.22	--	{NA}	--	mg/kg
Nickel	45	45	27.9	--	{NA}	29	mg/kg
Selenium	45	1	0.46	--	{NA}	--	mg/kg
Thallium	45	10	1	--	{NA}	--	mg/kg
Vanadium	45	45	27.7	--	{NA}	27.7	mg/kg
Zinc	45	45	77.6	--	{NA}	76.3	mg/kg

See notes at end of section.

**Table 4-19. Screening Summary of Frequency and Maximum Detections in Soil for AOI W-1,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	CSAT	NRVSICI	SSBC	Units
Detected VOCs							
1,1,1-Trichloroethane	90	2	0.0039	460	4,500	--	mg/kg
1,1-Dichloroethane	90	4	0.17	890	2,500	--	mg/kg
1,2-Dichlorobenzene	34	2	0.45	210	46,000	--	mg/kg
1,3-Dichlorobenzene	34	1	0.11	170	94	--	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	90	35	1.6	27,000	35,000	--	mg/kg
2-Hexanone	90	3	0.0041	2,500	1,300	--	mg/kg
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	90	8	0.68	2,700	53,000	--	mg/kg
Acetone	90	51	2.2	110,000	160,000	--	mg/kg
Benzene	90	13	0.72	400	45	--	mg/kg
Carbon disulfide	90	4	0.0096	280	1,600	--	mg/kg
Chlorobenzene	90	1	0.11	260	920	--	mg/kg
Chloroethane	90	3	0.0052	950	36,000	--	mg/kg
cis-1,2-Dichloroethene	90	4	1.4	640	210	--	mg/kg
Cyclohexane	34	10	0.3	--	--	--	mg/kg
Dichlorodifluoromethane (CFC-12)	44	1	0.0014	1,000	63,000	--	mg/kg
Ethylbenzene	90	23	25	140	2,400	--	mg/kg
Isopropyl benzene	34	10	1.1	390	2,000	--	mg/kg
m&p-Xylene	7	2	4.9	--	--	--	mg/kg
Methyl acetate	34	8	34	--	--	--	mg/kg
Methyl cyclohexane	34	15	1.4	--	--	--	mg/kg
Methylene chloride	90	11	25	2,300	700	--	mg/kg
o-Xylene	7	1	2.7	--	--	--	mg/kg
Tetrachloroethene	90	12	5.6	88	600	--	mg/kg
Toluene	90	36	42	250	3,300	--	mg/kg
trans-1,2-Dichloroethene	90	1	0.18	1,400	330	--	mg/kg
Trichloroethene	90	5	2.3	500	260	--	mg/kg
Trichlorofluoromethane (CFC-11)	44	2	0.0015	560	110,000	--	mg/kg
Trifluorotrchloroethane (Freon 113)	34	3	0.0089	550	210,000	--	mg/kg
Vinyl chloride	90	1	0.015	490	29	--	mg/kg
Xylene (total)	90	27	150	150	54,000	--	mg/kg
Detected SVOCs							
1,4-Dichlorobenzene	49	1	0.0024	{NA}	260	--	mg/kg
2,4-Dimethylphenol	66	8	72	{NA}	{NLV}	--	mg/kg
2-Methylnaphthalene	65	36	150	{NA}	1,800	--	mg/kg
2-Methylphenol	65	9	1.3	--	--	--	mg/kg
3-Methylphenol	10	3	0.4	--	--	--	mg/kg
4-Methylphenol	65	11	70	--	--	--	mg/kg
Acenaphthene	66	16	36	{NA}	97,000	--	mg/kg
Acenaphthylene	66	2	2	{NA}	2,700	--	mg/kg
Anthracene	66	20	21	{NA}	1,600,000	--	mg/kg
Atrazine	34	1	0.096	{NA}	{NLV}	--	mg/kg
Benzo(a)anthracene	66	22	15	{NA}	{NLV}	--	mg/kg
Benzo(a)pyrene	66	16	8.6	{NA}	{NLV}	--	mg/kg
Benzo(b)fluoranthene	66	22	11	{NA}	{ID}	--	mg/kg
Benzo(g,h,i)perylene	66	19	4.5	{NA}	{NLV}	--	mg/kg
Benzo(k)fluoranthene	66	12	5.3	{NA}	{NLV}	--	mg/kg
Biphenyl (1,1-Biphenyl)	34	3	3.4	--	--	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	66	18	76	10,000	{NLV}	--	mg/kg
Butyl benzylphthalate (BBP)	66	24	1100	310	{NLV}	--	mg/kg
Carbazole	65	8	11	{NA}	{NLV}	--	mg/kg
Chrysene	66	26	16	{NA}	{ID}	--	mg/kg
Dibenz(a,h)anthracene	66	7	0.67	{NA}	{NLV}	--	mg/kg
Dibenzofuran	66	15	27	{NA}	160	--	mg/kg
Di-n-butylphthalate (DBP)	66	4	480	760	{NLV}	--	mg/kg

See notes at end of section.

**Table 4-19. Screening Summary of Frequency and Maximum Detections in Soil for AOI W-1,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	CSAT	NRVSCI	SSBC	Units
Di-n-octyl phthalate (DnOP)	66	1	37	140,000	{NLV}	--	mg/kg
Fluoranthene	66	30	82	{NA}	890,000	--	mg/kg
Fluorene	66	22	36	{NA}	150,000	--	mg/kg
Indeno(1,2,3-cd)pyrene	65	14	3.7	{NA}	{NLV}	--	mg/kg
Methylphenol (Cresol)	65	12	70	{NA}	{NLV}	--	mg/kg
Naphthalene	65	29	97	{NA}	350	--	mg/kg
Pentachloroethane	10	1	0.099	--	--	--	mg/kg
Phenanthrene	65	42	110	{NA}	190	--	mg/kg
Phenol	65	9	140	12,000	{NLV}	--	mg/kg
Pyrene	65	33	50	{NA}	780,000	--	mg/kg
Detected CDD/F							
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	27	18	0.00247	--	--	--	mg/kg
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	27	24	0.03358	--	--	--	mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	26	22	0.00364	--	--	--	mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	27	23	0.01711	--	--	--	mg/kg
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	26	10	0.000214	--	--	--	mg/kg
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	26	12	0.00167	--	--	--	mg/kg
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	27	7	0.000317	--	--	--	mg/kg
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	26	10	0.00086	--	--	--	mg/kg
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	27	18	0.00282	--	--	--	mg/kg
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	26	1	0.0000068	--	--	--	mg/kg
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	27	11	0.00232	--	--	--	mg/kg
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	27	13	0.000353	--	--	--	mg/kg
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	27	6	0.000414	--	--	--	mg/kg
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	26	12	0.000853	--	--	--	mg/kg
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	27	16	0.000775	--	--	--	mg/kg
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	27	17	0.000194	--	--	--	mg/kg
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	27	11	0.000132	--	--	--	mg/kg
WHO Dioxin TEQ(Human/Mammal-NDs used at 1/2 DL)	27	27	0.00191	{NA}	{NLV}	--	mg/kg
Detected Pests/PCBs							
Aroclor-1016 (PCB-1016)	83	1	0.06	--	--	--	mg/kg
Aroclor-1248 (PCB-1248)	84	37	54	--	--	--	mg/kg
Aroclor-1254 (PCB-1254)	83	10	290	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	83	19	5.8	--	--	--	mg/kg
Total PCBs	84	44	290	{NA}	810	--	mg/kg
Detected Inorganics							
Aluminum	31	31	10800	{NA}	--	--	mg/kg
Antimony	65	33	1740	{NA}	--	--	mg/kg
Arsenic	65	65	67.1	{NA}	--	8.05	mg/kg
Barium	65	65	5720	{NA}	--	75	mg/kg
Beryllium	65	27	1.05	{NA}	--	--	mg/kg
Cadmium	64	54	15.6	{NA}	--	--	mg/kg
Calcium	31	30	425000	--	--	--	mg/kg
Chromium	77	77	1660	{NA}	--	23.2	mg/kg
Cobalt	64	48	69.5	{NA}	--	11.8	mg/kg
Copper	65	65	4700	{NA}	--	--	mg/kg
Cyanide (total)	56	29	4.1	{NA}	--	--	mg/kg
Iron	31	31	376000	{NA}	--	--	mg/kg
Lead	64	63	3950	{NA}	--	33.2	mg/kg
Magnesium	31	31	23900	{NA}	--	--	mg/kg
Manganese	77	77	7260	{NA}	--	631	mg/kg
Mercury	65	29	2.23	{NA}	--	--	mg/kg
Nickel	65	65	601	{NA}	--	29	mg/kg
Potassium	31	7	2690	--	--	--	mg/kg
Selenium	65	11	7.67	{NA}	--	--	mg/kg
Silver	65	13	69.6	{NA}	--	--	mg/kg
Sodium	31	31	2490	{NA}	--	--	mg/kg
Thallium	65	18	7.72	{NA}	--	--	mg/kg
Tin	8	3	84	--	--	--	mg/kg
Vanadium	65	64	61.4	{NA}	--	27.7	mg/kg
Zinc	65	65	7400	{NA}	--	76.3	mg/kg

See notes at end of section.

Table 4-20. Screening Summary of Frequency and Maximum Detections in LNAPL W-1, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	Units
Detected VOCs				
1,1-Dichloroethene	12	1	17	mg/kg
1,2,4-Trichlorobenzene	7	1	0.13	mg/kg
1,2-Dichlorobenzene	8	2	30	mg/kg
1,2-Dichloroethane	11	1	1.2	mg/kg
1,3-Dichlorobenzene	8	1	0.56	mg/kg
1,4-Dichlorobenzene	8	1	1.2	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	11	2	0.61	mg/kg
Acetone	11	4	9.8	mg/kg
Benzene	11	3	0.23	mg/kg
Chlorobenzene	12	1	0.66	mg/kg
cis-1,2-Dichloroethene	11	1	0.08	mg/kg
Cyclohexane	5	4	6.1	mg/kg
Ethylbenzene	12	9	97	mg/kg
Isopropyl benzene	7	7	4.2	mg/kg
m&p-Xylene	6	6	190	mg/kg
Methyl cyclohexane	7	7	32	mg/kg
Methylene chloride	11	1	0.52	mg/kg
o-Xylene	6	6	70	mg/kg
Styrene	11	1	0.14	mg/kg
Tetrachloroethene	12	4	6.5	mg/kg
Toluene	12	8	34	mg/kg
Xylene (total)	15	13	260	mg/kg
Detected SVOCs				
2-Methylnaphthalene	7	3	320	mg/kg
Acenaphthene	7	1	40	mg/kg
Anthracene	7	1	43	mg/kg
Benzo(a)anthracene	7	1	70	mg/kg
Benzo(a)pyrene	7	1	54	mg/kg
Benzo(b)fluoranthene	7	1	75	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	7	1	110	mg/kg
Chrysene	7	1	94	mg/kg
Di-n-butylphthalate (DBP)	7	1	130	mg/kg
Fluoranthene	7	2	210	mg/kg
Fluorene	7	3	360	mg/kg
Phenanthrene	7	7	560	mg/kg
Pyrene	7	2	300	mg/kg
Detected CDD/F				
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	7	6	0.11963	mg/kg
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	7	7	0.07405	mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	7	6	0.16224	mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	7	6	0.03252	mg/kg
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	7	3	0.00594	mg/kg
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	7	2	0.00268	mg/kg
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	7	2	0.0018	mg/kg
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	7	4	0.00641	mg/kg
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	7	1	0.00147	mg/kg
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	7	1	0.00066	mg/kg
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	7	1	0.00031	mg/kg
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	7	2	0.00548	mg/kg
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	7	2	0.00151	mg/kg
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	7	1	6.7E-05	mg/kg
Dioxin/Furan TEQ(CAL/EPA)	7	7	0.00386	mg/kg
Total heptachlorodibenzofuran (HpCDF)	7	6	0.66289	mg/kg
Total heptachlorodibenzo-p-dioxin (HpCDD)	7	6	0.04221	mg/kg
Total hexachlorodibenzofuran (HxCDF)	7	6	0.19687	mg/kg
Total hexachlorodibenzo-p-dioxin (HxCDD)	7	6	0.02581	mg/kg
Total pentachlorodibenzofuran (PeCDF)	7	3	0.01033	mg/kg
Total pentachlorodibenzo-p-dioxin (PeCDD)	7	2	0.00291	mg/kg
Total tetrachlorodibenzofuran (TCDF)	7	5	0.02245	mg/kg
Total tetrachlorodibenzo-p-dioxin (TCDD)	7	1	0.00099	mg/kg
WHO Dioxin TEQ(Human/Mammal-NDs Excluded)	7	7	0.0117	mg/kg
WHO Dioxin TEQ(Human/Mammal-NDs used at 1/2 DL)	7	7	0.0041	mg/kg
2,3,7,8-TCDD Equivalent	7	7	0.0041	mg/kg

Table 4-20. Screening Summary of Frequency and Maximum Detections in LNAPL W-1,
RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	Units
Detected Pests/PCBs				
Aroclor-1242 (PCB-1242)	11	1	14	mg/kg
Aroclor-1248 (PCB-1248)	14	13	1400	mg/kg
Aroclor-1254 (PCB-1254)	12	1	28.2	mg/kg
Aroclor-1260 (PCB-1260)	11	1	4.7	mg/kg
Total PCBs	15	15	1400	mg/kg
Total PCBs-Realm/Encore	11	11	1550	mg/kg
Detected Inorganics				
Aluminum	2	2	191	mg/kg
Antimony	7	3	0.53	mg/kg
Arsenic	7	7	10.3	mg/kg
Barium	7	6	28.1	mg/kg
Beryllium	7	2	0.05	mg/kg
Cadmium	7	3	0.17	mg/kg
Calcium	2	2	289	mg/kg
Chromium	7	7	95.1	mg/kg
Cobalt	7	2	0.25	mg/kg
Copper	7	6	36.3	mg/kg
Cyanide (total)	2	2	0.39	mg/kg
Iron	2	2	426	mg/kg
Lead	7	6	8.6	mg/kg
Magnesium	2	2	22.9	mg/kg
Manganese	7	5	18.2	mg/kg
Mercury	7	3	0.09	mg/kg
Nickel	7	3	11.7	mg/kg
Potassium	2	2	12.7	mg/kg
Selenium	7	3	0.61	mg/kg
Thallium	7	1	0.49	mg/kg
Vanadium	7	5	6.7	mg/kg
Zinc	7	4	8.9	mg/kg

**Table 4-21. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI W-1,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
1,1-Dichloroethane	97	12	0.023	5,060	380	mg/L
1,2,4-Trichlorobenzene	97	5	0.0013	300	{NA}	mg/L
1,2-Dichlorobenzene	97	4	0.002	156	{NA}	mg/L
1,2-Dichloroethane	97	1	0.00045	8,520	2,500	mg/L
2-Butanone (Methyl ethyl ketone) (MEK)	97	31	0.0073	240,000	{ID}	mg/L
2-Hexanone	97	1	0.00083	16,000	{NA}	mg/L
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	96	9	0.0016	20,000	{ID}	mg/L
Acetone	97	24	0.033	1,000,000	15,000	mg/L
Benzene	97	17	0.091	1,750	68	mg/L
Carbon disulfide	97	7	0.0013	1,190	13	mg/L
Chloroethane	97	10	0.045	5,740	110	mg/L
Chloroform (Trichloromethane)	97	1	0.00081	7,920	{ID}	mg/L
Chloromethane (Methyl chloride)	97	10	0.00043	6,340	36	mg/L
cis-1,2-Dichloroethene	97	6	0.004	3,500	530	mg/L
Cyclohexane	97	13	0.019	--	--	mg/L
Ethylbenzene	97	8	0.02	169	43	mg/L
Isopropyl benzene	97	12	0.0086	56	29	mg/L
Methyl cyclohexane	97	13	0.0076	--	--	mg/L
Methyl tert butyl ether (MTBE)	97	3	0.0071	46,800	{ID}	mg/L
Methylene chloride	98	6	0.007	17,000	{ID}	mg/L
Tetrachloroethene	94	2	0.0007	200	{ID}	mg/L
Toluene	97	14	0.015	526	61	mg/L
trans-1,2-Dichloroethene	97	3	0.0021	6,300	230	mg/L
Trichloroethene	97	5	0.00089	1,100	{ID}	mg/L
Trichlorofluoromethane (CFC-11)	97	10	0.002	1,100	{ID}	mg/L
Vinyl chloride	97	9	0.018	2,760	33	mg/L
Xylene (total)	97	10	0.2	186	70	mg/L
Detected SVOCs						
2,4-Dimethylphenol	94	13	0.011	7,870	{ID}	mg/L
2-Methylnaphthalene	95	13	0.0067	24.6	{ID}	mg/L
2-Methylphenol	94	1	0.00043	--	--	mg/L
4-Methylphenol	95	10	0.021	--	--	mg/L
Acenaphthene	95	12	0.0024	4.24	{ID}	mg/L
Acetophenone	95	1	0.0027	6,100	{ID}	mg/L
Anthracene	95	3	0.0004	0.0434	{ID}	mg/L
Benzaldehyde	95	1	0.0013	--	--	mg/L
Benzo(a)pyrene	95	1	0.00036	0.00162	{ID}	mg/L
Biphenyl (1,1-Biphenyl)	95	2	0.001	--	--	mg/L
bis(2-Ethylhexyl)phthalate (DEHP)	95	10	0.014	0.34	{NA}	mg/L
Butyl benzylphthalate (BBP)	95	1	0.0029	2.69	{ID}	mg/L
Caprolactam	95	1	0.0028	5,250,000	{NA}	mg/L
Carbazole	95	9	0.0028	7.48	{ID}	mg/L
Dibenz(a,h)anthracene	95	1	0.00044	0.00249	{ID}	mg/L
Dibenzofuran	95	5	0.0018	10	{ID}	mg/L
Di-n-butylphthalate (DBP)	95	6	0.0023	11.2	{NA}	mg/L
Fluoranthene	95	4	0.0011	0.206	{ID}	mg/L
Fluorene	95	7	0.0022	1.98	{ID}	mg/L
Indeno(1,2,3-cd)pyrene	95	1	0.00041	0.000022	{ID}	mg/L
Methylphenol (Cresol)	95	11	0.021	28,000	{NA}	mg/L
Naphthalene	94	16	0.014	31	{NA}	mg/L
Pentachlorophenol	95	4	0.0031	1,850	{ID}	mg/L
Phenanthrene	95	6	0.0018	1	{ID}	mg/L
Phenol	95	4	0.019	82,800	{NA}	mg/L
Pyrene	95	7	0.00063	0.135	{ID}	mg/L

Table 4-21. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI W-1, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected CDD/F						
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	90	7	1.23E-08	--	--	mg/L
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	90	10	0.00000061	--	--	mg/L
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	90	7	1.36E-08	--	--	mg/L
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	90	9	0.00000011	--	--	mg/L
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	90	4	1.09E-08	--	--	mg/L
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	90	7	5.5E-09	--	--	mg/L
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	90	6	8.8E-09	--	--	mg/L
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	90	4	1.12E-08	--	--	mg/L
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	90	7	8.5E-09	--	--	mg/L
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	90	4	1.49E-08	--	--	mg/L
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	90	8	1.1E-08	--	--	mg/L
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	90	7	1.93E-08	--	--	mg/L
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	90	6	1.49E-08	--	--	mg/L
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	90	4	6.9E-09	--	--	mg/L
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	90	6	1.57E-08	--	--	mg/L
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	90	14	6.3E-08	--	--	mg/L
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	90	4	6E-09	--	--	mg/L
WHO Dioxin TEQ(Human/Mammal-NDs used at 1/2 DL)	90	90	3.32E-08	0.000019	{ID}	mg/L
Detected CDD/F-Filtered						
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF) (dissolved)	7	1	7.3E-09	--	--	mg/L
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) (dissolved)	7	4	0.00000006	--	--	mg/L
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) (dissolved)	7	1	2.7E-08	--	--	mg/L
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF) (dissolved)	7	1	1.2E-09	--	--	mg/L
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF) (dissolved)	7	1	5E-10	--	--	mg/L
WHO Dioxin TEQ(Human/Mammal-NDs used at 1/2 DL)	7	7	3.7E-09	0.000019	{ID}	mg/L
Detected Pests/PCBs						
Aroclor-1242 (PCB-1242)	101	3	0.00055	--	--	mg/L
Aroclor-1248 (PCB-1248)	101	13	0.0033	--	--	mg/L
Aroclor-1260 (PCB-1260)	101	6	0.00086	--	--	mg/L
Total PCBs	101	21	0.0033	0.0447	{ID}	mg/L
Detected Pests/PCBs-Filtered						
Aroclor-1242 (PCB-1242) (dissolved)	11	1	0.0004	--	--	mg/L
Total PCBs (Dissolved)	11	1	0.0004	0.0447	{ID}	mg/L
Detected Inorganics						
Antimony	102	19	0.0102	{NA}	{ID}	mg/L
Arsenic	100	72	0.0264	{NA}	{ID}	mg/L
Barium	100	97	4.57	{NA}	{ID}	mg/L
Cadmium	100	13	0.0031	{NA}	{ID}	mg/L
Chromium	100	21	0.0647	{ID}	{ID}	mg/L
Cobalt	100	18	0.0066	{NA}	{ID}	mg/L
Copper	100	20	0.0222	{NA}	{ID}	mg/L
Cyanide (total)	88	44	0.034	{NA}	{ID}	mg/L
Lead	100	9	0.0271	{NA}	{ID}	mg/L
Manganese	100	88	1.32	{NA}	{ID}	mg/L
Mercury	100	6	0.00012	0.056	{ID}	mg/L
Nickel	99	40	0.0351	{NA}	{ID}	mg/L
Selenium	100	3	0.005	{NA}	{ID}	mg/L
Silver	100	2	0.0042	{NA}	{ID}	mg/L
Sodium	1	1	135	{NA}	{ID}	mg/L
Thallium	100	8	0.0102	{NA}	{ID}	mg/L
Vanadium	102	34	0.0616	{NA}	{ID}	mg/L
Zinc	100	13	0.0703	{NA}	{ID}	mg/L

**Table 4-21. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI W-1,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected Inorganics-Filtered						
Antimony (dissolved)	31	5	0.0082	{NA}	{ID}	mg/L
Arsenic (dissolved)	31	19	0.0269	{NA}	{ID}	mg/L
Barium (dissolved)	31	30	4.07	{NA}	{ID}	mg/L
Beryllium (dissolved)	31	1	0.00075	{NA}	{ID}	mg/L
Cadmium (dissolved)	31	3	0.00069	{NA}	{ID}	mg/L
Chromium Total (dissolved)	31	5	0.0377	{ID}	{ID}	mg/L
Cobalt (dissolved)	31	11	0.0035	{NA}	{ID}	mg/L
Copper (dissolved)	31	3	0.0152	{NA}	{ID}	mg/L
Manganese (dissolved)	31	29	0.952	{NA}	{ID}	mg/L
Mercury (dissolved)	31	6	0.00013	0.056	{ID}	mg/L
Nickel (dissolved)	31	21	0.0159	{NA}	{ID}	mg/L
Thallium (dissolved)	31	7	0.0091	{NA}	{ID}	mg/L
Vanadium (dissolved)	31	6	0.0479	{NA}	{ID}	mg/L
Zinc (dissolved)	31	2	0.0209	{NA}	{ID}	mg/L

See notes at end of section.

Table 4-22. Screening Summary of Frequency and Maximum Detections in Soil for AOI W-3, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	CSAT	NRVSICI	SSBC	Units
Detected VOCs							
2-Butanone (Methyl ethyl ketone) (MEK)	10	1	0.0058	27,000	35,000	--	mg/kg
Acetone	10	4	0.023	110,000	160,000	--	mg/kg
Benzene	10	2	0.95	400	45	--	mg/kg
Cyclohexane	10	1	0.14	--	--	--	mg/kg
Ethylbenzene	10	4	1.7	140	2,400	--	mg/kg
Isopropyl benzene	10	3	0.91	390	2,000	--	mg/kg
Methyl cyclohexane	10	5	0.92	--	--	--	mg/kg
Methyl tert butyl ether (MTBE)	10	1	0.079	5,900	30,000	--	mg/kg
Toluene	10	3	5.3	250	3,300	--	mg/kg
Trifluorotrichloroethane (Freon 113)	10	1	0.003	550	210,000	--	mg/kg
Xylene (total)	10	6	34	150	54,000	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	10	6	23	{NA}	1,800	--	mg/kg
4-Methylphenol	10	1	0.41	--	--	--	mg/kg
Acenaphthene	10	3	1.8	{NA}	97,000	--	mg/kg
Benzo(g,h,i)perylene	10	1	0.064	{NA}	{NLV}	--	mg/kg
Biphenyl (1,1-Biphenyl)	10	1	3.8	--	--	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	10	1	0.34	10,000	{NLV}	--	mg/kg
Chrysene	10	2	0.075	{NA}	{ID}	--	mg/kg
Fluoranthene	10	2	0.1	{NA}	890,000	--	mg/kg
Fluorene	10	3	2.9	{NA}	150,000	--	mg/kg
Methylphenol (Cresol)	10	1	0.41	{NA}	{NLV}	--	mg/kg
Naphthalene	10	6	5.3	{NA}	350	--	mg/kg
Phenanthrene	10	5	4.9	{NA}	190	--	mg/kg
Pyrene	10	3	0.31	{NA}	780,000	--	mg/kg
Detected Inorganics							
Lead	10	10	243	{NA}	--	33.2	mg/kg

See notes at end of section.

Table 4-23. Screening Summary of Frequency and Maximum Detections in Soil for AOI W-5, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected VOCs							
1,1-Dichloroethane	19	3	0.28	2,500	890	--	mg/kg
1,1-Dichloroethene	19	1	0.029	3.7	570	--	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	19	3	0.0063	35,000	27,000	--	mg/kg
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	19	3	0.047	53,000	2,700	--	mg/kg
Acetone	19	6	0.17	160,000	110,000	--	mg/kg
Benzene	19	1	0.0011	45	400	--	mg/kg
Ethylbenzene	19	1	0.16	2,400	140	--	mg/kg
Isopropyl benzene	19	2	0.033	2,000	390	--	mg/kg
Methyl acetate	19	4	0.32	--	--	--	mg/kg
Methylene chloride	19	1	0.095	700	2,300	--	mg/kg
Tetrachloroethene	19	2	0.029	600	88	--	mg/kg
Toluene	19	12	1.4	3,300	250	--	mg/kg
Xylene (total)	19	4	0.93	54,000	150	--	mg/kg
Detected SVOCs							
2,4-Dimethylphenol	18	2	16	{NLV}	{NA}	--	mg/kg
2-Methylnaphthalene	18	6	1.9	1,800	{NA}	--	mg/kg
2-Methylphenol	18	2	0.67	--	--	--	mg/kg
4-Methylphenol	18	2	20	--	--	--	mg/kg
Acenaphthene	18	6	1.2	97,000	{NA}	--	mg/kg
Anthracene	18	8	1.9	1,600,000	{NA}	--	mg/kg
Benzo(a)anthracene	18	8	3.5	{NLV}	{NA}	--	mg/kg
Benzo(a)pyrene	18	6	2.4	{NLV}	{NA}	--	mg/kg
Benzo(b)fluoranthene	18	6	3.4	{ID}	{NA}	--	mg/kg
Benzo(g,h,i)perylene	18	5	1.8	{NLV}	{NA}	--	mg/kg
Benzo(k)fluoranthene	18	4	1.8	{NLV}	{NA}	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	18	10	21	{NLV}	10,000	--	mg/kg
Butyl benzylphthalate (BBP)	18	1	0.14	{NLV}	310	--	mg/kg
Carbazole	18	2	0.34	{NLV}	{NA}	--	mg/kg
Chrysene	18	9	3.8	{ID}	{NA}	--	mg/kg
Dibenz(a,h)anthracene	18	3	0.47	{NLV}	{NA}	--	mg/kg
Dibenzofuran	18	4	0.85	160	{NA}	--	mg/kg
Di-n-octyl phthalate (DnOP)	18	1	1.3	{NLV}	140,000	--	mg/kg
Fluoranthene	18	8	5.5	890,000	{NA}	--	mg/kg
Fluorene	18	5	7.3	150,000	{NA}	--	mg/kg
Indeno(1,2,3-cd)pyrene	18	4	1.7	{NLV}	{NA}	--	mg/kg
Methylphenol (Cresol)	18	2	20.7	{NLV}	{NA}	--	mg/kg
Naphthalene	18	5	1.6	350	{NA}	--	mg/kg
Phenanthrene	18	8	20	190	{NA}	--	mg/kg
Phenol	18	1	5	{NLV}	12,000	--	mg/kg
Pyrene	18	9	7.2	780,000	{NA}	--	mg/kg
Detected Pests/PCBs							
Aroclor-1242 (PCB-1242)	136	4	11	--	--	--	mg/kg
Aroclor-1248 (PCB-1248)	136	105	210	--	--	--	mg/kg
Aroclor-1254 (PCB-1254)	136	1	0.052	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	136	103	13	--	--	--	mg/kg
Total PCBs	136	114	223	810	{NA}	--	mg/kg

**Table 4-23. Screening Summary of Frequency and Maximum Detections in Soil for AOI W-5,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	NRVSI	CSAT	SSBC	Units
Detected Inorganics							
Antimony	22	10	0.92	--	{NA}	--	mg/kg
Arsenic	22	22	9.43	--	{NA}	8.05	mg/kg
Barium	22	22	279	--	{NA}	75	mg/kg
Beryllium	22	19	0.71	--	{NA}	--	mg/kg
Cadmium	22	16	0.81	--	{NA}	--	mg/kg
Chromium	22	22	18.6	--	{NA}	23.2	mg/kg
Cobalt	22	22	8.55	--	{NA}	11.8	mg/kg
Copper	22	22	21.5	--	{NA}	--	mg/kg
Lead	22	22	101	--	{NA}	33.2	mg/kg
Manganese	22	22	880	--	{NA}	631	mg/kg
Mercury	22	16	0.25	--	{NA}	--	mg/kg
Nickel	22	22	24	--	{NA}	29	mg/kg
Selenium	22	5	0.725	--	{NA}	--	mg/kg
Thallium	22	2	0.599	--	{NA}	--	mg/kg
Vanadium	22	22	24.1	--	{NA}	27.7	mg/kg
Zinc	22	22	190	--	{NA}	76.3	mg/kg
Detected SVOCs-TCLP							
3&4-Methylphenol	2	2	3.9	--	--	--	ug/L
Detected Inorganics-TCLP							
Arsenic	2	1	5.4	--	--	--	ug/L
Barium	2	2	390	--	--	--	ug/L
Chromium	2	2	29	--	--	--	ug/L
Selenium	2	2	7.1	--	--	--	ug/L

See notes at end of section.

Table 4-24. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI W-5, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
1,1-Dichloroethane	3	1	0.03	5,060	380	mg/L
1,1-Dichloroethene	3	1	0.00078	2,250	97	mg/L
Chloroethane	3	1	0.05	5,740	110	mg/L
Chloroform (Trichloromethane)	3	2	0.0021	7,920	{ID}	mg/L
cis-1,2-Dichloroethene	3	2	0.0011	3,500	530	mg/L
Methylene chloride	3	1	0.00077	17,000	{ID}	mg/L
Toluene	3	1	0.00058	526	61	mg/L
Vinyl chloride	3	1	0.00022	2,760	33	mg/L
Detected SVOCs						
Fluorene	3	2	0.0068	1.98	{ID}	mg/L
Detected Inorganics						
Arsenic	3	1	0.0057	{NA}	{ID}	mg/L
Barium	3	3	0.156	{NA}	{ID}	mg/L
Cadmium	3	1	0.00029	{NA}	{ID}	mg/L
Cobalt	3	1	0.0017	{NA}	{ID}	mg/L
Manganese	3	3	0.544	{NA}	{ID}	mg/L
Nickel	3	3	0.013	{NA}	{ID}	mg/L
Vanadium	3	1	0.0018	{NA}	{ID}	mg/L
Zinc	3	2	0.0185	{NA}	{ID}	mg/L
Detected Inorganics-Filtered						
Arsenic (dissolved)	3	1	0.0051	{NA}	{ID}	mg/L
Barium (dissolved)	3	3	0.178	{NA}	{ID}	mg/L
Cobalt (dissolved)	3	1	0.003	{NA}	{ID}	mg/L
Manganese (dissolved)	3	3	0.535	{NA}	{ID}	mg/L
Nickel (dissolved)	3	3	0.0143	{NA}	{ID}	mg/L
Thallium (dissolved)	3	1	0.0053	{NA}	{ID}	mg/L
Vanadium (dissolved)	3	1	0.001	{NA}	{ID}	mg/L

See notes at end of section.

**Table 4-25. Screening Summary of Frequency and Maximum Detections in Soil for AOI W-6,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	CSAT	NRVSICI	SSBC	Units
Detected VOCs							
2-Butanone (Methyl ethyl ketone) (MEK)	13	3	0.0082	27,000	35,000	--	mg/kg
Acetone	13	10	0.029	110,000	160,000	--	mg/kg
Benzene	13	2	0.042	400	45	--	mg/kg
Carbon disulfide	13	2	0.0017	280	1,600	--	mg/kg
cis-1,2-Dichloroethene	13	1	0.0015	640	210	--	mg/kg
Cyclohexane	13	2	0.017	--	--	--	mg/kg
Ethylbenzene	13	2	0.21	140	2,400	--	mg/kg
Isopropyl benzene	13	2	0.069	390	2,000	--	mg/kg
Methyl cyclohexane	13	3	0.1	--	--	--	mg/kg
Tetrachloroethene	13	2	0.0052	88	600	--	mg/kg
Toluene	13	2	0.32	250	3,300	--	mg/kg
Trichloroethene	13	1	0.0043	500	260	--	mg/kg
Xylene (total)	13	2	1.1	150	54,000	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	13	2	2.4	{NA}	1,800	--	mg/kg
Benzo(b)fluoranthene	13	1	0.073	{NA}	{ID}	--	mg/kg
Butyl benzylphthalate (BBP)	13	1	0.078	310	{NLV}	--	mg/kg
Chrysene	13	1	0.053	{NA}	{ID}	--	mg/kg
Fluoranthene	13	2	1.3	{NA}	890,000	--	mg/kg
Fluorene	13	1	3.7	{NA}	150,000	--	mg/kg
Naphthalene	13	1	0.06	{NA}	350	--	mg/kg
Phenanthrene	13	2	6	{NA}	190	--	mg/kg
Pyrene	13	2	1.4	{NA}	780,000	--	mg/kg
Detected Pests/PCBs							
Aroclor-1232 (PCB-1232)	13	1	5	--	--	--	mg/kg
Aroclor-1242 (PCB-1242)	13	1	0.56	--	--	--	mg/kg
Aroclor-1248 (PCB-1248)	13	3	0.65	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	13	2	0.053	--	--	--	mg/kg
Total PCBs	13	6	5	{NA}	810	--	mg/kg
Detected Inorganics							
Lead	13	13	19.2	{NA}	--	33.2	mg/kg

See notes at end of section.

Table 4-26. Screening Summary of Frequency and Maximum Detections in Soil for AOI W-8, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	CSAT	NRVSICI	SSBC	Units
Detected VOCs							
1,1,1-Trichloroethane	52	2	0.93	460	4,500	--	mg/kg
1,1,2-Trichloroethane	52	1	0.05	920	57	--	mg/kg
1,1-Dichloroethane	53	8	0.49	890	2,500	--	mg/kg
1,1-Dichloroethene	53	4	0.072	570	3.7	--	mg/kg
1,2-Dichlorobenzene	53	2	0.032	210	46,000	--	mg/kg
1,4-Dichlorobenzene	53	3	0.021	{NA}	260	--	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	53	19	0.17	27,000	35,000	--	mg/kg
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	53	5	0.018	2,700	53,000	--	mg/kg
Acetone	53	24	5.2	110,000	160,000	--	mg/kg
Benzene	52	8	0.057	400	45	--	mg/kg
Bromomethane (Methyl bromide)	53	1	0.044	2,200	13	--	mg/kg
Carbon disulfide	53	3	0.0016	280	1,600	--	mg/kg
Chloromethane (Methyl chloride)	53	1	0.01	1,100	120	--	mg/kg
Cyclohexane	53	4	0.083	--	--	--	mg/kg
Ethylbenzene	53	16	0.13	140	2,400	--	mg/kg
Isopropyl benzene	53	10	0.13	390	2,000	--	mg/kg
Methyl acetate	53	7	0.23	--	--	--	mg/kg
Methyl cyclohexane	53	14	0.1	--	--	--	mg/kg
Methylene chloride	53	6	0.075	2,300	700	--	mg/kg
Styrene	52	1	0.00024	520	3,300	--	mg/kg
Toluene	53	28	0.056	250	3,300	--	mg/kg
Trichloroethene	53	3	0.00075	500	260	--	mg/kg
Xylene (total)	53	16	0.77	150	54,000	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	57	22	9.9	{NA}	1,800	--	mg/kg
4-Methylphenol	56	2	0.034	--	--	--	mg/kg
Acenaphthene	57	10	1.2	{NA}	97,000	--	mg/kg
Anthracene	57	20	3.5	{NA}	1,600,000	--	mg/kg
Benzaldehyde	56	2	0.048	--	--	--	mg/kg
Benzo(a)anthracene	57	23	3.9	{NA}	{NLV}	--	mg/kg
Benzo(a)pyrene	56	13	6.1	{NA}	{NLV}	--	mg/kg
Benzo(b)fluoranthene	56	19	6.9	{NA}	{ID}	--	mg/kg
Benzo(g,h,i)perylene	57	12	3.4	{NA}	{NLV}	--	mg/kg
Benzo(k)fluoranthene	56	11	3.3	{NA}	{NLV}	--	mg/kg
Biphenyl (1,1-Biphenyl)	57	11	6	--	--	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	55	20	1.8	10,000	{NLV}	--	mg/kg
Butyl benzylphthalate (BBP)	55	1	0.77	310	{NLV}	--	mg/kg
Carbazole	56	4	1	{NA}	{NLV}	--	mg/kg
Chrysene	57	24	5.9	{NA}	{ID}	--	mg/kg
Dibenz(a,h)anthracene	56	2	1	{NA}	{NLV}	--	mg/kg
Dibenzofuran	57	9	1	{NA}	160	--	mg/kg
Di-n-butylphthalate (DBP)	56	3	3.6	760	{NLV}	--	mg/kg
Fluoranthene	57	31	11	{NA}	890,000	--	mg/kg
Fluorene	57	21	21	{NA}	150,000	--	mg/kg
Indeno(1,2,3-cd)pyrene	57	12	2.9	{NA}	{NLV}	--	mg/kg
Methylphenol (Cresol)	56	2	0.034	{NA}	{NLV}	--	mg/kg
Naphthalene	56	16	2.5	{NA}	350	--	mg/kg
Phenanthrene	57	37	42	{NA}	190	--	mg/kg
Phenol	55	1	0.11	12,000	{NLV}	--	mg/kg
Pyrene	57	31	11	{NA}	780,000	--	mg/kg

See notes at end of section.

**Table 4-26. Screening Summary of Frequency and Maximum Detections in Soil for AOI W-8,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	CSAT	NRVSICI	SSBC	Units
Detected Pests/PCBs							
Aroclor-1242 (PCB-1242)	141	3	0.067	--	--	--	mg/kg
Aroclor-1248 (PCB-1248)	141	81	160	--	--	--	mg/kg
Aroclor-1254 (PCB-1254)	142	5	0.42	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	143	56	7.8	--	--	--	mg/kg
Total PCBs	144	98	160	{NA}	810	--	mg/kg
Detected Inorganics							
Antimony	50	23	101	{NA}	--	--	mg/kg
Arsenic	67	67	91.9	{NA}	--	8.05	mg/kg
Barium	54	54	4,040	{NA}	--	75	mg/kg
Beryllium	54	34	1.07	{NA}	--	--	mg/kg
Cadmium	54	42	38.5	{NA}	--	--	mg/kg
Chromium	58	58	1,260	{NA}	--	23.2	mg/kg
Chromium VI (hexavalent)	2	2	2.04	{NA}	--	--	mg/kg
Cobalt	54	54	64.2	{NA}	--	11.8	mg/kg
Copper	54	54	25,800	{NA}	--	--	mg/kg
Lead	54	54	8,440	{NA}	--	33.2	mg/kg
Manganese	62	62	2,780	{NA}	--	631	mg/kg
Mercury	54	39	6.55	{NA}	--	--	mg/kg
Nickel	54	54	1,890	{NA}	--	29	mg/kg
Selenium	54	13	8.62	{NA}	--	--	mg/kg
Silver	54	4	2.61	{NA}	--	--	mg/kg
Thallium	54	23	2.12	{NA}	--	--	mg/kg
Vanadium	54	54	52	{NA}	--	27.7	mg/kg
Zinc	54	54	5,820	{NA}	--	76.3	mg/kg

See notes at end of section.

Table 4-27. LNAPL Screening Summary of Frequency and Maximum Detections for AOI W-8, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	Units
Detected VOCs				
1,1,1-Trichloroethane	7	1	11	mg/kg
1,1-Dichloroethane	7	1	23	mg/kg
1,2,4-Trichlorobenzene	7	1	0.078	mg/kg
1,4-Dichlorobenzene	7	1	0.033	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	7	1	0.26	mg/kg
Acetone	7	1	0.33	mg/kg
Carbon tetrachloride	7	1	170	mg/kg
Chloroform (Trichloromethane)	7	1	180	mg/kg
Cyclohexane	7	2	1	mg/kg
Ethylbenzene	7	7	29	mg/kg
Isopropyl benzene	7	7	29	mg/kg
Methyl cyclohexane	7	7	13	mg/kg
Methylene chloride	7	2	9.2	mg/kg
Toluene	7	5	10	mg/kg
Total Trihalomethanes	7	1	180	mg/kg
Xylene (total)	7	7	180	mg/kg
Detected SVOCs				
2-Methylnaphthalene	7	7	2200	mg/kg
Anthracene	7	4	230	mg/kg
Biphenyl (1,1-Biphenyl)	7	6	240	mg/kg
Fluoranthene	7	2	93	mg/kg
Fluorene	7	4	250	mg/kg
Naphthalene	7	3	880	mg/kg
Phenanthrene	7	7	820	mg/kg
Pyrene	7	3	85	mg/kg
Detected CDD/F				
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	1	1	0.00109	mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	1	1	0.000195	mg/kg
Dioxin/Furan TEQ(CAL/EPA)	1	1	3.04E-06	mg/kg
Total heptachlorodibenzo-p-dioxin (HpCDD)	1	1	0.00042	mg/kg
Total hexachlorodibenzofuran (HxCDF)	1	1	0.0000192	mg/kg
Total hexachlorodibenzo-p-dioxin (HxCDD)	1	1	0.0000377	mg/kg
Total pentachlorodibenzofuran (PeCDF)	1	1	0.0000333	mg/kg
Total tetrachlorodibenzofuran (TCDF)	1	1	0.000121	mg/kg
WHO Dioxin TEQ(Human/Mammal-NDs Excluded)	1	1	2.28E-06	mg/kg
WHO Dioxin TEQ(Human/Mammal-NDs used at 1/2 DL)	1	1	7.16E-06	mg/kg
2,3,7,8-TCDD Equivalent	1	1	6.85E-06	mg/kg
Detected Pests/PCBs				
Aroclor-1242 (PCB-1242)	7	4	16	mg/kg
Aroclor-1248 (PCB-1248)	7	3	28	mg/kg
Aroclor-1260 (PCB-1260)	7	2	4.4	mg/kg
Total PCBs	7	7	28	mg/kg

Table 4-27. LNAPL Screening Summary of Frequency and Maximum Detections for AOI W-8, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	Units
Detected Inorganics				
Arsenic	7	4	4.2	mg/kg
Barium	7	1	1.4	mg/kg
Chromium	7	1	0.82	mg/kg
Copper	7	4	3.9	mg/kg
Lead	7	3	6.7	mg/kg
Manganese	7	2	0.52	mg/kg
Mercury	7	1	0.03	mg/kg
Nickel	7	2	0.29	mg/kg
Selenium	7	4	0.78	mg/kg
Zinc	7	3	2.7	mg/kg

See notes at end of section.

Table 4-28. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI W-8, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
1,1-Dichloroethane	18	5	0.003	5,060	380	mg/L
2-Butanone (Methyl ethyl ketone) (MEK)	18	3	0.0044	240,000	{ID}	mg/L
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	18	9	0.0049	20,000	{ID}	mg/L
Acetone	18	5	0.029	1,000,000	15,000	mg/L
Benzene	18	7	0.00065	1,750	68	mg/L
Carbon disulfide	18	9	0.0042	1,190	13	mg/L
Chloroform (Trichloromethane)	18	4	0.00024	7,920	{ID}	mg/L
Chloromethane (Methyl chloride)	18	1	0.00026	6,340	36	mg/L
cis-1,2-Dichloroethene	18	2	0.0023	3,500	530	mg/L
Cyclohexane	18	1	0.00022	--	--	mg/L
Ethylbenzene	18	9	0.00081	169	43	mg/L
Isopropyl benzene	18	6	0.0017	56	29	mg/L
Methyl cyclohexane	18	1	0.00019	--	--	mg/L
Methylene chloride	16	1	0.0005	17,000	{ID}	mg/L
Styrene	18	1	0.0047	310	140	mg/L
Toluene	18	10	0.0023	526	61	mg/L
Total 1,3 Dichloropropenes	18	1		2,800	130	mg/L
trans-1,2-Dichloroethene	18	1	0.00063	6,300	230	mg/L
Trichloroethene	18	2	0.0026	1,100	{ID}	mg/L
Vinyl chloride	18	1	0.00031	2,760	33	mg/L
Xylene (total)	18	10	0.0029	186	70	mg/L
Detected SVOCs						
2,4-Dimethylphenol	18	2	5.8	7,870	{ID}	mg/L
2-Methylnaphthalene	18	4	0.0051	24.6	{ID}	mg/L
2-Methylphenol	18	1	0.36	--	--	mg/L
4-Methylphenol	18	2	9.5	--	--	mg/L
Acenaphthene	18	2	0.0031	4.24	{ID}	mg/L
Anthracene	18	2	0.00079	0.0434	{ID}	mg/L
Caprolactam	18	1	5.5	5,250,000	{NA}	mg/L
Fluorene	18	8	0.021	1.98	{ID}	mg/L
Methylphenol (Cresol)	18	2	9.86	28,000	{NA}	mg/L
Naphthalene	18	4	0.0026	31	{NA}	mg/L
Phenanthrene	18	9	0.028	1	{ID}	mg/L
Phenol	18	3	2.7	82,800	{NA}	mg/L
Detected CDD/F						
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	4	1	0.000000212	--	--	mg/L
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	4	1	1.9E-09	--	--	mg/L
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	4	1	3.1E-09	--	--	mg/L
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	4	1	3.3E-09	--	--	mg/L
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	4	1	1.7E-09	--	--	mg/L
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	4	1	1.6E-09	--	--	mg/L
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	4	1	1.1E-09	--	--	mg/L
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	4	2	1.3E-09	--	--	mg/L
WHO Dioxin TEQ(Human/Mammal-NDs used at 1/2 DL)	4	4	2.24E-08	0.000019	{ID}	mg/L
Detected Pests/PCBs						
Aroclor-1232 (PCB-1232)	17	1	0.0013	--	--	mg/L
Total PCBs	18	3	0.0013	0.0447	{ID}	mg/L

Table 4-28. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI W-8, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected Inorganics						
Antimony	18	1	0.0028	{NA}	{ID}	mg/L
Arsenic	18	15	0.0849	{NA}	{ID}	mg/L
Barium	18	17	1.03	{NA}	{ID}	mg/L
Beryllium	18	2	0.0054	{NA}	{ID}	mg/L
Cadmium	18	6	0.0039	{NA}	{ID}	mg/L
Chromium	18	6	0.295	{ID}	{ID}	mg/L
Cobalt	18	6	0.0879	{NA}	{ID}	mg/L
Copper	18	3	0.214	{NA}	{ID}	mg/L
Lead	18	2	0.122	{NA}	{ID}	mg/L
Manganese	18	17	5.41	{NA}	{ID}	mg/L
Mercury	18	5	0.00026	0.056	{ID}	mg/L
Nickel	18	15	0.307	{NA}	{ID}	mg/L
Thallium	18	3	0.0061	{NA}	{ID}	mg/L
Vanadium	18	8	0.239	{NA}	{ID}	mg/L
Zinc	18	3	0.631	{NA}	{ID}	mg/L
Detected Inorganics-Filtered						
Antimony (dissolved)	12	1	0.0025	{NA}	{ID}	mg/L
Arsenic (dissolved)	12	9	0.0341	{NA}	{ID}	mg/L
Barium (dissolved)	12	12	0.307	{NA}	{ID}	mg/L
Cadmium (dissolved)	12	2	0.00055	{NA}	{ID}	mg/L
Chromium Total (dissolved)	12	2	0.0476	{ID}	{ID}	mg/L
Cobalt (dissolved)	12	5	0.0095	{NA}	{ID}	mg/L
Copper (dissolved)	12	1	0.0052	{NA}	{ID}	mg/L
Manganese (dissolved)	12	12	3.24	{NA}	{ID}	mg/L
Mercury (dissolved)	12	2	0.00019	0.056	{ID}	mg/L
Nickel (dissolved)	12	9	0.0159	{NA}	{ID}	mg/L
Thallium (dissolved)	12	2	0.000031	{NA}	{ID}	mg/L
Vanadium (dissolved)	12	3	0.0038	{NA}	{ID}	mg/L
Zinc (dissolved)	12	2	0.039	{NA}	{ID}	mg/L

See notes at end of section.

Table 4-29. Screening Summary of Frequency and Maximum Detections in Soil for AOI W-9, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected VOCs							
1,1,1-Trichloroethane	23	3	0.0088	4,500	460	--	mg/kg
1,1-Dichloroethane	23	2	0.0031	2,500	890	--	mg/kg
1,2,4-Trichlorobenzene	23	4	0.0046	34,000	1,100	--	mg/kg
1,2-Dichlorobenzene	23	4	0.013	46,000	210	--	mg/kg
1,4-Dichlorobenzene	23	1	0.00085	260	{NA}	--	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	23	2	0.021	35,000	27,000	--	mg/kg
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	23	1	0.0061	53,000	2,700	--	mg/kg
Acetone	23	8	0.0095	160,000	110,000	--	mg/kg
Benzene	23	11	0.0042	45	400	--	mg/kg
Carbon disulfide	23	2	0.0049	1,600	280	--	mg/kg
Cyclohexane	23	1	0.0012	--	--	--	mg/kg
Ethylbenzene	23	5	0.0034	2,400	140	--	mg/kg
Isopropyl benzene	23	1	0.0012	2,000	390	--	mg/kg
Methyl cyclohexane	23	2	0.0013	--	--	--	mg/kg
Methylene chloride	23	7	0.0037	700	2,300	--	mg/kg
Styrene	23	4	0.00083	3,300	520	--	mg/kg
Toluene	23	12	0.0097	3,300	250	--	mg/kg
Trichloroethene	23	2	0.00051	260	500	--	mg/kg
Trifluorotrichloroethane (Freon 113)	23	2	0.0082	210,000	550	--	mg/kg
Xylene (total)	23	5	0.045	54,000	150	--	mg/kg
Detected SVOCs							
2,4-Dimethylphenol	30	2	3.6	{NLV}	{NA}	--	mg/kg
2-Methylnaphthalene	30	11	0.87	1,800	{NA}	--	mg/kg
4-Methylphenol	30	2	0.42	--	--	--	mg/kg
Acenaphthene	30	6	2.2	97,000	{NA}	--	mg/kg
Anthracene	30	10	3.4	1,600,000	{NA}	--	mg/kg
Benzo(a)anthracene	30	15	12	{NLV}	{NA}	--	mg/kg
Benzo(a)pyrene	30	15	8.8	{NLV}	{NA}	--	mg/kg
Benzo(b)fluoranthene	31	18	10	{ID}	{NA}	--	mg/kg
Benzo(g,h,i)perylene	30	14	4.8	{NLV}	{NA}	--	mg/kg
Benzo(k)fluoranthene	29	15	4.5	{NLV}	{NA}	--	mg/kg
Biphenyl (1,1-Biphenyl)	30	2	0.098	--	--	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	31	14	3.2	{NLV}	10,000	--	mg/kg
Carbazole	30	6	1.4	{NLV}	{NA}	--	mg/kg
Chrysene	30	16	14	{ID}	{NA}	--	mg/kg
Dibenz(a,h)anthracene	30	3	1.4	{NLV}	{NA}	--	mg/kg
Dibenzofuran	30	8	1	160	{NA}	--	mg/kg
Fluoranthene	31	17	28	890,000	{NA}	--	mg/kg
Fluorene	30	6	1.5	150,000	{NA}	--	mg/kg
Indeno(1,2,3-cd)pyrene	30	14	4.5	{NLV}	{NA}	--	mg/kg
Methylphenol (Cresol)	30	2	0.42	{NLV}	{NA}	--	mg/kg
Naphthalene	30	10	0.79	350	{NA}	--	mg/kg
Phenanthrene	31	18	16	190	{NA}	--	mg/kg
Phenol	30	1	0.096	{NLV}	12,000	--	mg/kg
Pyrene	31	18	28	780,000	{NA}	--	mg/kg
Detected Pests/PCBs							
Aroclor-1016 (PCB-1016)	203	4	11	--	--	--	mg/kg
Aroclor-1242 (PCB-1242)	204	23	19	--	--	--	mg/kg
Aroclor-1248 (PCB-1248)	201	126	490	--	--	--	mg/kg
Aroclor-1254 (PCB-1254)	202	18	330	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	201	22	0.56	--	--	--	mg/kg
Total PCBs	206	170	490	810	{NA}	--	mg/kg

**Table 4-29. Screening Summary of Frequency and Maximum Detections in Soil for AOI W-9,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	NRVSI	CSAT	SSBC	Units
Detected Inorganics							
Antimony	34	21	4.62	--	{NA}	--	mg/kg
Arsenic	43	43	13.3	--	{NA}	8.05	mg/kg
Barium	43	43	359	--	{NA}	75	mg/kg
Beryllium	35	25	0.85	--	{NA}	--	mg/kg
Cadmium	43	37	5.86	--	{NA}	--	mg/kg
Chromium	43	43	213	--	{NA}	23.2	mg/kg
Cobalt	43	43	22.5	--	{NA}	11.8	mg/kg
Copper	43	43	247	--	{NA}	--	mg/kg
Cyanide (total)	2	2	0.612	--	{NA}	--	mg/kg
Lead	43	43	394	--	{NA}	33.2	mg/kg
Manganese	63	63	10700	--	{NA}	631	mg/kg
Mercury	43	32	1.42	--	{NA}	--	mg/kg
Nickel	43	43	157	--	{NA}	29	mg/kg
Selenium	43	4	0.497	--	{NA}	--	mg/kg
Silver	43	9	0.898	--	{NA}	--	mg/kg
Thallium	43	6	1.01	--	{NA}	--	mg/kg
Vanadium	43	43	23.2	--	{NA}	27.7	mg/kg
Zinc	43	43	4870	--	{NA}	76.3	mg/kg

See notes at end of section.

**Table 4-30. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI W-9,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
1,1,1-Trichloroethane	22	1	0.00025	1,330	{ID}	mg/L
1,1-Dichloroethane	22	1	0.00019	5,060	380	mg/L
2-Butanone (Methyl ethyl ketone) (MEK)	22	3	0.0021	240,000	{ID}	mg/L
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	20	1	0.0026	20,000	{ID}	mg/L
Acetone	22	11	0.16	1,000,000	15,000	mg/L
Benzene	22	1	0.00029	1,750	68	mg/L
Carbon disulfide	22	3	0.0015	1,190	13	mg/L
Cyclohexane	22	1	0.00085	--	--	mg/L
Isopropyl benzene	22	1	0.00026	56	29	mg/L
Methyl cyclohexane	22	1	0.00086	--	--	mg/L
Tetrachloroethene	22	2	0.0045	200	{ID}	mg/L
Toluene	22	2	0.0012	526	61	mg/L
Total 1,3 Dichloropropenes	22	1		2,800	130	mg/L
Trichloroethene	22	1	0.00044	1,100	{ID}	mg/L
Trichlorofluoromethane (CFC-11)	22	2	0.0022	1,100	{ID}	mg/L
Xylene (total)	22	1	0.0013	186	70	mg/L
Detected SVOCs						
2,4-Dimethylphenol	22	1	0.011	7,870	{ID}	mg/L
bis(2-Ethylhexyl)phthalate (DEHP)	22	5	0.0016	0.34	{NA}	mg/L
Caprolactam	22	1	0.0014	5,250,000	{NA}	mg/L
Detected Pests/PCBs						
Aroclor-1260 (PCB-1260)	23	1	0.00005	--	--	mg/L
Total PCBs	23	1	0.00005	0.0447	{ID}	mg/L
Detected Inorganics						
Antimony	24	3	0.0238	{NA}	{ID}	mg/L
Arsenic	24	16	0.0228	{NA}	{ID}	mg/L
Barium	24	23	0.42	{NA}	{ID}	mg/L
Cadmium	24	3	0.00088	{NA}	{ID}	mg/L
Chromium	24	11	0.0568	{NA}	{ID}	mg/L
Cobalt	24	10	0.0093	{NA}	{ID}	mg/L
Copper	24	5	0.0188	{NA}	{ID}	mg/L
Lead	24	6	0.0784	{NA}	{ID}	mg/L
Manganese	24	23	0.902	{NA}	{ID}	mg/L
Mercury	24	3	0.00011	0.056	{ID}	mg/L
Nickel	24	13	0.0385	{NA}	{ID}	mg/L
Thallium	24	1	0.0124	{NA}	{ID}	mg/L
Vanadium	24	6	0.0128	{NA}	{ID}	mg/L
Zinc	24	5	0.0544	{NA}	{ID}	mg/L
Detected Inorganics-Filtered						
Antimony (dissolved)	5	2	0.008	{NA}	{ID}	mg/L
Arsenic (dissolved)	5	2	0.0041	{NA}	{ID}	mg/L
Barium (dissolved)	5	5	0.232	{NA}	{ID}	mg/L
Cadmium (dissolved)	5	1	0.00028	{NA}	{ID}	mg/L
Chromium Total (dissolved)	5	1	0.0104	{NA}	{ID}	mg/L
Cobalt (dissolved)	5	1	0.0014	{NA}	{ID}	mg/L
Copper (dissolved)	5	1	0.0044	{NA}	{ID}	mg/L
Manganese (dissolved)	5	5	0.242	{NA}	{ID}	mg/L
Nickel (dissolved)	5	4	0.0039	{NA}	{ID}	mg/L
Thallium (dissolved)	5	3	0.0074	{NA}	{ID}	mg/L
Vanadium (dissolved)	5	1	0.0023	{NA}	{ID}	mg/L
Zinc (dissolved)	5	1	0.0154	{NA}	{ID}	mg/L

See notes at end of section.

Table 4-31. Screening Summary of Frequency and Maximum Detections in Soil for AOI W-10, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	CSAT	NRVSI	SSBC	Units
Detected VOCs							
1,1,1-Trichloroethane	35	1	0.0021	460	4,500	--	mg/kg
1,4-Dichlorobenzene	35	2	0.017	{NA}	260	--	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	35	8	0.01	27,000	35,000	--	mg/kg
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	35	2	0.028	2,700	53,000	--	mg/kg
Acetone	35	13	0.089	110,000	160,000	--	mg/kg
Benzene	35	2	0.00068	400	45	--	mg/kg
Carbon disulfide	35	2	0.0034	280	1,600	--	mg/kg
Chloroethane	35	1	0.0066	950	36,000	--	mg/kg
Cyclohexane	35	2	0.083	--	--	--	mg/kg
Ethylbenzene	35	9	0.058	140	2,400	--	mg/kg
Isopropyl benzene	35	9	0.32	390	2,000	--	mg/kg
Methyl acetate	35	9	0.18	--	--	--	mg/kg
Methyl cyclohexane	35	6	0.57	--	--	--	mg/kg
Methylene chloride	35	4	0.33	2,300	700	--	mg/kg
Toluene	35	20	0.12	250	3,300	--	mg/kg
Trichloroethene	35	1	0.023	500	260	--	mg/kg
Xylene (total)	35	15	0.21	150	54,000	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	35	9	1.3	{NA}	1,800	--	mg/kg
Acenaphthene	35	1	0.17	{NA}	97,000	--	mg/kg
Acenaphthylene	35	2	0.08	{NA}	2,700	--	mg/kg
Anthracene	35	4	0.37	{NA}	1,600,000	--	mg/kg
Benzo(a)anthracene	35	5	0.8	{NA}	{NLV}	--	mg/kg
Benzo(a)pyrene	35	4	1.2	{NA}	{NLV}	--	mg/kg
Benzo(b)fluoranthene	35	4	2.4	{NA}	{ID}	--	mg/kg
Benzo(g,h,i)perylene	35	3	0.55	{NA}	{NLV}	--	mg/kg
Benzo(k)fluoranthene	35	6	0.51	{NA}	{NLV}	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	35	5	0.58	10,000	{NLV}	--	mg/kg
Butyl benzylphthalate (BBP)	35	2	0.15	310	{NLV}	--	mg/kg
Chrysene	35	9	1.5	{NA}	{ID}	--	mg/kg
Dibenz(a,h)anthracene	35	2	0.15	{NA}	{NLV}	--	mg/kg
Dibenzofuran	35	1	0.17	{NA}	160	--	mg/kg
Fluoranthene	35	12	3.1	{NA}	890,000	--	mg/kg
Fluorene	35	12	4.6	{NA}	150,000	--	mg/kg
Indeno(1,2,3-cd)pyrene	35	3	0.47	{NA}	{NLV}	--	mg/kg
Naphthalene	35	2	0.097	{NA}	350	--	mg/kg
Phenanthrene	35	15	7	{NA}	190	--	mg/kg
Phenol	35	1	0.092	12,000	{NLV}	--	mg/kg
Pyrene	35	15	2.9	{NA}	780,000	--	mg/kg
Detected Pests/PCBs							
Aroclor-1242 (PCB-1242)	35	2	1	--	--	--	mg/kg
Aroclor-1248 (PCB-1248)	35	18	7.2	--	--	--	mg/kg
Aroclor-1254 (PCB-1254)	35	3	1.1	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	35	6	0.21	--	--	--	mg/kg
Total PCBs	35	23	7.2	{NA}	810	--	mg/kg

**Table 4-31. Screening Summary of Frequency and Maximum Detections in Soil for AOI W-10,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	CSAT	NRV/SICI	SSBC	Units
Detected Inorganics							
Antimony	35	13	11.2	{NA}	--	--	mg/kg
Arsenic	35	35	27.4	{NA}	--	8.05	mg/kg
Barium	35	35	287	{NA}	--	75	mg/kg
Beryllium	35	26	2.8	{NA}	--	--	mg/kg
Cadmium	35	26	3.15	{NA}	--	--	mg/kg
Chromium	41	41	596	{NA}	--	23.2	mg/kg
Cobalt	35	35	20.3	{NA}	--	11.8	mg/kg
Copper	35	35	259	{NA}	--	--	mg/kg
Lead	35	35	4020	{NA}	--	33.2	mg/kg
Manganese	41	41	10000	{NA}	--	631	mg/kg
Mercury	35	24	0.261	{NA}	--	--	mg/kg
Nickel	35	35	137	{NA}	--	29	mg/kg
Selenium	35	18	7.88	{NA}	--	--	mg/kg
Thallium	35	19	1.78	{NA}	--	--	mg/kg
Vanadium	35	35	80	{NA}	--	27.7	mg/kg
Zinc	35	35	505	{NA}	--	76.3	mg/kg

See notes at end of section.

Table 4-32. LNAPL Screening Summary of Frequency and Maximum Detections for AOI W-10, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	Units
Detected VOCs				
1,1,2,2-Tetrachloroethane	3	1	0.28	mg/kg
1,4-Dichlorobenzene	3	1	0.069	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	3	1	0.62	mg/kg
Acetone	3	2	5.4	mg/kg
Chloromethane (Methyl chloride)	3	1	0.23	mg/kg
Cyclohexane	3	3	0.33	mg/kg
Ethylbenzene	3	3	2.1	mg/kg
Isopropyl benzene	3	3	2.7	mg/kg
Methyl cyclohexane	3	3	1.7	mg/kg
Toluene	3	3	1.4	mg/kg
Xylene (total)	3	3	16	mg/kg
Detected SVOCs				
2-Methylnaphthalene	3	1	170	mg/kg
Anthracene	3	1	64	mg/kg
Biphenyl (1,1-Biphenyl)	3	1	51	mg/kg
Fluoranthene	3	1	90	mg/kg
Fluorene	3	1	130	mg/kg
Phenanthrene	3	3	540	mg/kg
Pyrene	3	1	110	mg/kg
Detected CDD/F				
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	3	3	0.012	mg/kg
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3	3	0.02146	mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	3	3	0.013	mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	3	3	0.00555	mg/kg
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	3	2	0.00031	mg/kg
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	3	1	0.000304	mg/kg
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	3	1	0.000162	mg/kg
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	3	3	0.000555	mg/kg
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	3	1	0.000257	mg/kg
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	3	1	0.000312	mg/kg
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	3	1	0.000192	mg/kg
Dioxin/Furan TEQ(CAL/EPA)	3	3	0.000451	mg/kg
Total heptachlorodibenzofuran (HpCDF)	3	3	0.038	mg/kg
Total heptachlorodibenzo-p-dioxin (HpCDD)	3	3	0.01023	mg/kg
Total hexachlorodibenzofuran (HxCDF)	3	3	0.01625	mg/kg
Total hexachlorodibenzo-p-dioxin (HxCDD)	3	3	0.00317	mg/kg
Total pentachlorodibenzofuran (PeCDF)	3	2	0.00269	mg/kg
Total pentachlorodibenzo-p-dioxin (PeCDD)	3	1	0.000145	mg/kg
Total tetrachlorodibenzofuran (TCDF)	3	3	0.00467	mg/kg
Total tetrachlorodibenzo-p-dioxin (TCDD)	3	1	2.43E-05	mg/kg
WHO Dioxin TEQ(Human/Mammal-NDs Excluded)	3	3	0.00039	mg/kg
WHO Dioxin TEQ(Human/Mammal-NDs used at 1/2 DL)	3	3	0.000499	mg/kg
2,3,7,8-TCDD Equivalent	3	3	0.000516	mg/kg

Table 4-32. LNAPL Screening Summary of Frequency and Maximum Detections for AOI W-10, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	Units
Detected Pests/PCBs				
Aroclor-1248 (PCB-1248)	3	3	180	mg/kg
Aroclor-1260 (PCB-1260)	3	1	8.6	mg/kg
Total PCBs	3	3	189	mg/kg
Detected Inorganics				
Arsenic	3	3	10.8	mg/kg
Barium	3	2	6.7	mg/kg
Chromium	3	3	2.8	mg/kg
Cobalt	3	1	0.1	mg/kg
Copper	3	3	0.62	mg/kg
Lead	3	3	0.68	mg/kg
Manganese	3	2	4.6	mg/kg
Nickel	3	2	1.9	mg/kg
Selenium	3	1	0.83	mg/kg
Vanadium	3	3	2.7	mg/kg

See notes at end of section.

**Table 4-33. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI W-10,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
1,1,1-Trichloroethane	24	2	0.00062	1,330	{ID}	mg/L
1,1-Dichloroethane	24	3	0.0012	5,060	380	mg/L
2-Butanone (Methyl ethyl ketone) (MEK)	24	1	0.001	240,000	{ID}	mg/L
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	24	1	0.00024	20,000	{ID}	mg/L
Acetone	24	4	0.032	1,000,000	15,000	mg/L
Benzene	24	3	0.00058	1,750	68	mg/L
Bromodichloromethane	24	1	0.0003	6,740	{ID}	mg/L
Carbon disulfide	24	1	0.0002	1,190	13	mg/L
Chloroform (Trichloromethane)	24	3	0.00057	7,920	{ID}	mg/L
Ethylbenzene	24	4	0.001	169	43	mg/L
Isopropyl benzene	24	1	0.0003	56	29	mg/L
Methyl tert butyl ether (MTBE)	24	4	0.021	46,800	{ID}	mg/L
Toluene	24	4	0.0019	526	61	mg/L
Total 1,3 Dichloropropenes	23	1		2,800	130	mg/L
Xylene (total)	24	4	0.0078	186	70	mg/L
Detected SVOCs						
2-Methylnaphthalene	21	1	0.0075	24.6	{ID}	mg/L
bis(2-Ethylhexyl)phthalate (DEHP)	21	3	0.15	0.34	{NA}	mg/L
Fluoranthene	21	1	0.00082	0.206	{ID}	mg/L
Fluorene	21	1	0.0019	1.98	{ID}	mg/L
Naphthalene	21	1	0.0069	31	{NA}	mg/L
Detected CDD/F						
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	20	3	4.4E-09	--	--	mg/L
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	20	1	1.6E-09	--	--	mg/L
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	20	1	4E-09	--	--	mg/L
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	20	1	1.8E-09	--	--	mg/L
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	20	1	2.6E-09	--	--	mg/L
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	20	1	2E-09	--	--	mg/L
WHO Dioxin TEQ(Human/Mammal-NDs used at 1/2 DL)	20	20	2.13E-08	0.000019	{ID}	mg/L
Detected Pests/PCBs						
Aroclor-1232 (PCB-1232)	24	1	0.0007	--	--	mg/L
Aroclor-1248 (PCB-1248)	24	1	0.00028	--	--	mg/L
Total PCBs	24	2	0.0007	0.0447	{ID}	mg/L
Detected Inorganics						
Antimony	21	1	0.0023	{NA}	{ID}	mg/L
Arsenic	21	7	0.0633	{NA}	{ID}	mg/L
Barium	21	21	0.219	{NA}	{ID}	mg/L
Cadmium	21	1	0.0012	{NA}	{ID}	mg/L
Chromium	21	3	0.0184	{NA}	{ID}	mg/L
Cobalt	21	5	0.0114	{NA}	{ID}	mg/L
Copper	21	4	0.0106	{NA}	{ID}	mg/L
Lead	23	2	0.0019	{NA}	{ID}	mg/L
Manganese	22	21	4.12	{NA}	{ID}	mg/L
Mercury	21	2	0.000091	0.056	{ID}	mg/L
Nickel	21	6	0.0247	{NA}	{ID}	mg/L
Selenium	21	6	0.0063	{NA}	{ID}	mg/L
Thallium	21	2	0.0068	{NA}	{ID}	mg/L
Vanadium	21	4	0.0038	{NA}	{ID}	mg/L
Zinc	21	3	0.0208	{NA}	{ID}	mg/L

**Table 4-33. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI W-10,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected Inorganics-Filtered						
Arsenic (dissolved)	5	2	0.0591	{NA}	{ID}	mg/L
Barium (dissolved)	5	5	0.109	{NA}	{ID}	mg/L
Chromium Total (dissolved)	5	2	0.0065	{NA}	{ID}	mg/L
Cobalt (dissolved)	5	2	0.0111	{NA}	{ID}	mg/L
Copper (dissolved)	5	1	0.0046	{NA}	{ID}	mg/L
Manganese (dissolved)	5	5	0.483	{NA}	{ID}	mg/L
Nickel (dissolved)	5	3	0.0242	{NA}	{ID}	mg/L
Thallium (dissolved)	5	2	0.0055	{NA}	{ID}	mg/L
Vanadium (dissolved)	5	2	0.0024	{NA}	{ID}	mg/L

See notes at end of section.

Table 4-34. Screening Summary of Frequency and Maximum Detections in Soil for AOI W-13, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected SVOCs							
bis(2-Ethylhexyl)phthalate (DEHP)	6	4	1.7	{NLV}	10,000	--	mg/kg
Butyl benzylphthalate (BBP)	6	2	0.47	{NLV}	310	--	mg/kg
Di-n-octyl phthalate (DnOP)	6	1	2.8	{NLV}	140,000	--	mg/kg
Phenanthrene	6	1	1.1	190	{NA}	--	mg/kg
Detected Pests/PCBs							
Aroclor-1248 (PCB-1248)	6	3	0.59	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	6	4	0.25	--	--	--	mg/kg
Total PCBs	6	5	0.59	810	{NA}	--	mg/kg

See notes at end of section.

Table 4-35. Screening Summary of Frequency and Maximum Detections in Soil for AOI M-2, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	NRVSI	CSAT	SSBC	Units
Detected VOCs							
1,1,1-Trichloroethane	108	52	4.6	4,500	460	--	mg/kg
1,1,2-Trichloroethane	100	1	0.0041	57	920	--	mg/kg
1,1-Dichloroethane	108	57	44	2,500	890	--	mg/kg
1,1-Dichloroethene	108	17	1.8	3.7	570	--	mg/kg
1,2-Dichlorobenzene	108	5	0.074	46,000	210	--	mg/kg
1,2-Dichloroethane	108	3	0.33	21	1,200	--	mg/kg
1,3-Dichlorobenzene	108	1	0.00087	94	170	--	mg/kg
1,4-Dichlorobenzene	108	1	0.0013	260	{NA}	--	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	108	9	0.15	35,000	27,000	--	mg/kg
2-Hexanone	108	1	0.0056	1,300	2,500	--	mg/kg
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	108	12	1.8	53,000	2,700	--	mg/kg
Acetone	101	20	0.45	160,000	110,000	--	mg/kg
Benzene	99	6	0.025	45	400	--	mg/kg
Carbon disulfide	108	9	0.08	1,600	280	--	mg/kg
Chloroethane	108	3	0.12	36,000	950	--	mg/kg
Chloroform (Trichloromethane)	108	7	0.0044	150	1,500	--	mg/kg
cis-1,2-Dichloroethene	108	6	0.19	210	640	--	mg/kg
Cyclohexane	108	2	0.018	--	--	--	mg/kg
Ethylbenzene	105	15	0.22	2,400	140	--	mg/kg
Isopropyl benzene	108	11	0.15	2,000	390	--	mg/kg
Methyl acetate	108	13	0.57	--	--	--	mg/kg
Methyl cyclohexane	108	11	0.17	--	--	--	mg/kg
Methylene chloride	108	7	0.47	700	2,300	--	mg/kg
Styrene	106	3	0.00073	3,300	520	--	mg/kg
Tetrachloroethene	108	47	1.9	600	88	--	mg/kg
Toluene	99	37	3.7	3,300	250	--	mg/kg
Total Trihalomethanes	108	7	0.0044	--	--	--	mg/kg
trans-1,2-Dichloroethene	108	1	0.069	330	1,400	--	mg/kg
Trichloroethene	100	18	0.44	260	500	--	mg/kg
Trifluorotrichloroethane (Freon 113)	108	5	0.89	210,000	550	--	mg/kg
Vinyl chloride	108	2	0.081	29	490	--	mg/kg
Xylene (total)	108	15	0.74	54,000	150	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	90	9	12	1,800	{NA}	--	mg/kg
4-Methylphenol	90	1	0.11	--	--	--	mg/kg
Acenaphthene	93	6	6.2	97,000	{NA}	--	mg/kg
Anthracene	93	13	18	1,600,000	{NA}	--	mg/kg
Benzo(a)anthracene	90	1	6.1	{NLV}	{NA}	--	mg/kg
Benzo(g,h,i)perylene	93	2	0.11	{NLV}	{NA}	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	93	23	58	{NLV}	10,000	--	mg/kg
Butyl benzylphthalate (BBP)	93	1	1.5	{NLV}	310	--	mg/kg
Caprolactam	93	1	0.29	{NLV}	{NA}	--	mg/kg
Chrysene	93	4	7.2	{ID}	{NA}	--	mg/kg
Dibenzofuran	90	1	0.084	160	{NA}	--	mg/kg
Fluoranthene	93	17	31	890,000	{NA}	--	mg/kg
Fluorene	93	16	57	150,000	{NA}	--	mg/kg
Methylphenol (Cresol)	93	4	0.11	{NLV}	{NA}	--	mg/kg
Naphthalene	90	5	4.9	350	{NA}	--	mg/kg
Phenanthrene	84	26	87	190	{NA}	--	mg/kg
Pyrene	93	23	21	780,000	{NA}	--	mg/kg

Table 4-35. Screening Summary of Frequency and Maximum Detections in Soil for AOI M-2, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	NRVSI	CSAT	SSBC	Units
Detected Pests/PCBs							
Aroclor-1242 (PCB-1242)	113	21	18	--	--	--	mg/kg
Aroclor-1248 (PCB-1248)	113	18	190	--	--	--	mg/kg
Aroclor-1254 (PCB-1254)	113	1	0.8	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	113	5	0.64	--	--	--	mg/kg
Total PCBs	115	43	190	810	{NA}	--	mg/kg
Detected Inorganics							
Antimony	85	9	3.17	--	{NA}	--	mg/kg
Arsenic	93	93	19.4	--	{NA}	8.05	mg/kg
Barium	93	92	344	--	{NA}	75	mg/kg
Beryllium	93	73	4.53	--	{NA}	--	mg/kg
Cadmium	91	72	3.98	--	{NA}	--	mg/kg
Chromium	93	93	670	--	{NA}	23.2	mg/kg
Chromium VI (hexavalent)	65	11	7.76	--	{NA}	--	mg/kg
Cobalt	93	93	30.1	--	{NA}	11.8	mg/kg
Copper	93	93	2600	--	{NA}	--	mg/kg
Cyanide (total)	64	30	51.8	--	{NA}	--	mg/kg
Lead	92	92	215	--	{NA}	33.2	mg/kg
Manganese	93	93	2220	--	{NA}	631	mg/kg
Mercury	93	53	0.121	--	{NA}	--	mg/kg
Nickel	93	93	4140	--	{NA}	29	mg/kg
Selenium	90	5	3.83	--	{NA}	--	mg/kg
Silver	90	1	0.245	--	{NA}	--	mg/kg
Thallium	90	26	1.14	--	{NA}	--	mg/kg
Vanadium	93	93	33.2	--	{NA}	27.7	mg/kg
Zinc	93	93	364	--	{NA}	76.3	mg/kg

See notes at end of section.

Table 4-36. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-2, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
1,1,1-Trichloroethane	74	48	0.69	1,330	{ID}	mg/L
1,1,2-Trichloroethane	74	4	0.02	4,420	{NA}	mg/L
1,1-Dichloroethane	74	63	2.2	5,060	380	mg/L
1,1-Dichloroethene	74	44	0.093	2,250	97	mg/L
1,2,4-Trichlorobenzene	74	2	0.00051	300	{NA}	mg/L
1,2-Dichloroethane	74	15	0.015	8,520	2,500	mg/L
1,4-Dichlorobenzene	74	1	0.00022	73.8	{NA}	mg/L
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	74	4	0.032	20,000	{ID}	mg/L
Acetone	74	18	3.4	1,000,000	15,000	mg/L
Benzene	74	5	0.00045	1,750	68	mg/L
Bromodichloromethane	74	1	0.00048	6,740	{ID}	mg/L
Bromomethane (Methyl bromide)	74	1	0.001	14,500	{ID}	mg/L
Carbon disulfide	74	3	0.0049	1,190	13	mg/L
Chloroethane	74	15	0.058	5,740	110	mg/L
Chloroform (Trichloromethane)	74	11	0.0058	7,920	{ID}	mg/L
Chloromethane (Methyl chloride)	74	1	0.00015	6,340	36	mg/L
cis-1,2-Dichloroethene	74	20	0.09	3,500	530	mg/L
Ethylbenzene	68	2	0.00059	169	43	mg/L
Isopropyl benzene	74	1	0.0019	56	29	mg/L
Methyl cyclohexane	74	1	0.00063	--	--	mg/L
Methylene chloride	74	11	0.024	17,000	{ID}	mg/L
Styrene	74	1	0.0006	310	140	mg/L
Tetrachloroethene	74	20	0.0075	200	{ID}	mg/L
Toluene	74	8	0.002	526	61	mg/L
trans-1,2-Dichloroethene	74	6	0.0043	6,300	230	mg/L
Trichloroethene	74	27	0.056	1,100	{ID}	mg/L
Trifluorotrichloroethane (Freon 113)	74	1	0.00063	170	{ID}	mg/L
Vinyl chloride	74	20	0.027	2,760	33	mg/L
Xylene (total)	74	4	0.0032	186	70	mg/L
Detected SVOCs						
2,4-Dichlorophenol	69	1	0.0008	4,500	{ID}	mg/L
2,4-Dimethylphenol	69	5	0.0017	7,870	{ID}	mg/L
2-Chloronaphthalene	69	2	0.0033	6.74	{ID}	mg/L
2-Methylnaphthalene	69	5	0.0021	24.6	{ID}	mg/L
4-Methylphenol	69	1	0.00081	--	--	mg/L
Acenaphthene	69	2	0.00084	4.24	{ID}	mg/L
Anthracene	69	1	0.00078	0.0434	{ID}	mg/L
bis(2-Ethylhexyl)phthalate (DEHP)	69	3	0.024	0.34	{NA}	mg/L
Caprolactam	69	1	0.0019	5,250,000	{NA}	mg/L
Diethyl phthalate	69	4	0.0024	1,080	{NA}	mg/L
Dimethyl phthalate	69	1	0.0006	4,190	{NA}	mg/L
Di-n-butylphthalate (DBP)	69	4	0.0011	11.2	{NA}	mg/L
Fluorene	69	12	0.0044	1.98	{ID}	mg/L
Methylphenol (Cresol)	69	1	0.00081	28,000	{NA}	mg/L
Naphthalene	69	6	0.0019	31	{NA}	mg/L
Phenanthrene	69	12	0.0075	1	{ID}	mg/L

Table 4-36. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-2, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected Pests/PCBs						
Aroclor-1242 (PCB-1242)	70	1	0.00029	--	--	mg/L
Aroclor-1248 (PCB-1248)	70	1	0.00062	--	--	mg/L
Total PCBs	70	2	0.00062	0.0447	{ID}	mg/L
Detected Inorganics						
Antimony	70	3	0.005	{NA}	{ID}	mg/L
Arsenic	75	38	0.0486	{NA}	{ID}	mg/L
Barium	70	70	0.293	{NA}	{ID}	mg/L
Cadmium	70	9	0.0011	{NA}	{ID}	mg/L
Chromium	70	9	0.173	{NA}	{ID}	mg/L
Cobalt	70	49	0.0389	{NA}	{ID}	mg/L
Copper	70	11	0.251	{NA}	{ID}	mg/L
Cyanide (total)	15	6	0.55	{NA}	{ID}	mg/L
Lead	70	1	0.022	{NA}	{ID}	mg/L
Manganese	70	70	1.21	{NA}	{ID}	mg/L
Mercury	70	9	0.0001	0.056	{ID}	mg/L
Nickel	70	60	10.8	{NA}	{ID}	mg/L
Selenium	70	6	0.0123	{NA}	{ID}	mg/L
Silver	70	2	0.0011	{NA}	{ID}	mg/L
Thallium	70	16	0.00026	{NA}	{ID}	mg/L
Vanadium	70	14	0.0116	{NA}	{ID}	mg/L
Zinc	70	9	0.554	{NA}	{ID}	mg/L
Detected Inorganics-Filtered						
Antimony (dissolved)	7	2	0.0039	{NA}	{ID}	mg/L
Arsenic (dissolved)	7	2	0.0307	{NA}	{ID}	mg/L
Barium (dissolved)	7	7	0.209	{NA}	{ID}	mg/L
Cadmium (dissolved)	7	1	0.0003	{NA}	{ID}	mg/L
Chromium VI (hexavalent) (dissolved)	3	1	0.0079	{NA}	{ID}	mg/L
Cobalt (dissolved)	7	6	0.0187	{NA}	{ID}	mg/L
Copper (dissolved)	7	3	0.0168	{NA}	{ID}	mg/L
Manganese (dissolved)	7	7	1.17	{NA}	{ID}	mg/L
Mercury (dissolved)	7	1	0.000077	0.056	{ID}	mg/L
Nickel (dissolved)	7	7	0.168	{NA}	{ID}	mg/L
Selenium (dissolved)	7	1	0.0057	{NA}	{ID}	mg/L
Thallium (dissolved)	7	3	0.0056	{NA}	{ID}	mg/L
Vanadium (dissolved)	7	4	0.0058	{NA}	{ID}	mg/L
Zinc (dissolved)	7	2	0.0848	{NA}	{ID}	mg/L

See notes at end of section.

Table 4-37. Screening Summary of Frequency and Maximum Detections in Soil or AOI M-4, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected VOCs							
1,4-Dichlorobenzene	16	1	0.0015	260	{NA}	--	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	16	1	0.011	35,000	27,000	--	mg/kg
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	16	1	0.011	53,000	2,700	--	mg/kg
Acetone	16	1	0.061	160,000	110,000	--	mg/kg
Benzene	16	2	3.9	45	400	--	mg/kg
cis-1,2-Dichloroethene	16	1	0.0056	210	640	--	mg/kg
Cyclohexane	16	1	0.17	--	--	--	mg/kg
Ethylbenzene	16	2	0.39	2,400	140	--	mg/kg
Isopropyl benzene	16	2	0.018	2,000	390	--	mg/kg
Methyl acetate	16	1	0.056	--	--	--	mg/kg
Methyl cyclohexane	16	2	0.075	--	--	--	mg/kg
Tetrachloroethene	16	1	0.00067	600	88	--	mg/kg
Toluene	16	10	0.015	3,300	250	--	mg/kg
Trichloroethene	16	1	0.0013	260	500	--	mg/kg
Xylene (total)	16	2	0.76	54,000	150	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	1	1	0.21	1,800	{NA}	--	mg/kg
Anthracene	1	1	1.2	1,600,000	{NA}	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	1	1	0.45	{NLV}	10,000	--	mg/kg
Fluoranthene	1	1	1.1	890,000	{NA}	--	mg/kg
Fluorene	1	1	9.2	150,000	{NA}	--	mg/kg
Phenanthrene	1	1	7.9	190	{NA}	--	mg/kg
Pyrene	1	1	0.72	780,000	{NA}	--	mg/kg
Detected Pests/PCBs							
Aroclor-1260 (PCB-1260)	1	1	0.15	--	--	--	mg/kg
Total PCBs	1	1	0.15	810	{NA}	--	mg/kg
Detected Inorganics							
Arsenic	1	1	5.36	--	{NA}	8.05	mg/kg
Barium	1	1	16.9	--	{NA}	75	mg/kg
Cadmium	1	1	0.0616	--	{NA}	--	mg/kg
Chromium	1	1	6.1	--	{NA}	23.2	mg/kg
Cobalt	1	1	2.65	--	{NA}	11.8	mg/kg
Copper	1	1	5.97	--	{NA}	--	mg/kg
Lead	17	17	9.21	--	{NA}	33.2	mg/kg
Manganese	1	1	208	--	{NA}	631	mg/kg
Nickel	1	1	6.71	--	{NA}	29	mg/kg
Thallium	1	1	0.294	--	{NA}	--	mg/kg
Vanadium	1	1	9.45	--	{NA}	27.7	mg/kg
Zinc	1	1	16.9	--	{NA}	76.3	mg/kg

See notes at end of section.

Table 4-38. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-4, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
Acetone	14	4	0.17	1,000,000	15,000	mg/L
Benzene	26	9	1	1,750	68	mg/L
Bromodichloromethane	14	1	0.0003	6,740	{ID}	mg/L
Carbon disulfide	14	1	0.0021	1,190	13	mg/L
Chloroform (Trichloromethane)	14	3	0.0013	7,920	{ID}	mg/L
Cyclohexane	14	4	0.3	- -	- -	mg/L
Ethylbenzene	26	9	1.7	169	43	mg/L
Isopropyl benzene	14	5	0.022	56	29	mg/L
Methyl cyclohexane	14	4	0.063	- -	- -	mg/L
Methyl tert butyl ether (MTBE)	14	1	0.0012	46,800	{ID}	mg/L
Methylene chloride	6	3	0.014	17,000	{ID}	mg/L
Toluene	26	8	0.11	526	61	mg/L
Xylene (total)	26	6	1.4	186	70	mg/L
Detected Inorganics						
Barium	1	1	0.0902	{NA}	{ID}	mg/L
Manganese	1	1	0.214	{NA}	{ID}	mg/L

See notes at end of section.

**Table 4-39. Screening Summary of Frequency and Maximum Detections in Soil for AOI M-5,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected VOCs							
2-Butanone (Methyl ethyl ketone) (MEK)	13	2	0.003	35,000	27,000	--	mg/kg
2-Hexanone	13	1	0.0038	1,300	2,500	--	mg/kg
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	13	1	0.0018	53,000	2,700	--	mg/kg
Acetone	13	4	0.0096	160,000	110,000	--	mg/kg
Benzene	13	2	0.0021	45	400	--	mg/kg
Carbon disulfide	13	1	0.0021	1,600	280	--	mg/kg
Cyclohexane	10	1	0.0023	--	--	--	mg/kg
Ethylbenzene	13	2	0.066	2,400	140	--	mg/kg
Isopropyl benzene	10	1	0.0031	2,000	390	--	mg/kg
m&p-Xylene	3	1	0.11	--	--	--	mg/kg
Methyl cyclohexane	10	2	0.0057	--	--	--	mg/kg
o-Xylene	3	1	0.079	--	--	--	mg/kg
Toluene	13	3	0.0045	3,300	250	--	mg/kg
Xylene (total)	13	3	0.189	54,000	150	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	3	2	0.8	1,800	{NA}	--	mg/kg
Acenaphthene	3	2	0.6	97,000	{NA}	--	mg/kg
Acenaphthylene	3	1	0.3	2,700	{NA}	--	mg/kg
Anthracene	3	2	1.4	1,600,000	{NA}	--	mg/kg
Benzo(a)anthracene	3	2	3.6	{NLV}	{NA}	--	mg/kg
Benzo(a)pyrene	3	2	2.8	{NLV}	{NA}	--	mg/kg
Benzo(b)fluoranthene	3	2	3	{ID}	{NA}	--	mg/kg
Benzo(g,h,i)perylene	3	2	0.9	{NLV}	{NA}	--	mg/kg
Benzo(k)fluoranthene	3	2	2.2	{NLV}	{NA}	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	3	2	0.2	{NLV}	10,000	--	mg/kg
Butyl benzylphthalate (BBP)	3	2	0.4	{NLV}	310	--	mg/kg
Carbazole	3	1	0.7	{NLV}	{NA}	--	mg/kg
Chrysene	3	2	3.3	{ID}	{NA}	--	mg/kg
Dibenz(a,h)anthracene	3	1	0.4	{NLV}	{NA}	--	mg/kg
Dibenzofuran	3	1	0.5	160	{NA}	--	mg/kg
Fluoranthene	3	2	5.8	890,000	{NA}	--	mg/kg
Fluorene	3	2	1.2	150,000	{NA}	--	mg/kg
Indeno(1,2,3-cd)pyrene	3	2	1.2	{NLV}	{NA}	--	mg/kg
Naphthalene	3	2	0.7	350	{NA}	--	mg/kg
Phenanthrene	3	2	5.4	190	{NA}	--	mg/kg
Pyrene	3	2	5.6	780,000	{NA}	--	mg/kg
Detected CDD/F							
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	10	5	0.000564	--	--	--	mg/kg
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	10	8	0.01029	--	--	--	mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	10	5	0.000625	--	--	--	mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	10	7	0.00193	--	--	--	mg/kg
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	10	5	0.0000229	--	--	--	mg/kg
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	10	5	0.0000799	--	--	--	mg/kg
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	10	3	0.0000085	--	--	--	mg/kg
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	10	5	0.0000341	--	--	--	mg/kg
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	10	6	0.000163	--	--	--	mg/kg
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	10	3	0.0000015	--	--	--	mg/kg
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	10	7	0.0000699	--	--	--	mg/kg
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	10	4	0.000678	--	--	--	mg/kg
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	10	3	0.0000115	--	--	--	mg/kg
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	10	6	0.0000485	--	--	--	mg/kg
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	10	7	0.0000342	--	--	--	mg/kg
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	10	3	0.0000141	--	--	--	mg/kg
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	10	3	0.0000003	--	--	--	mg/kg
WHO Dioxin TEQ(Human/Mammal-NDs used at 1/2 DL)	10	10	0.0000967	{NLV}	{NA}	--	mg/kg

**Table 4-39. Screening Summary of Frequency and Maximum Detections in Soil for AOI M-5,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected Pests/PCBs							
4,4'-DDD	3	1	0.003	{NLV}	{NA}	--	mg/kg
4,4'-DDE	3	2	0.067	{NLV}	{NA}	--	mg/kg
4,4'-DDT	3	1	0.002	{NLV}	{NA}	--	mg/kg
Aroclor-1248 (PCB-1248)	13	9	3.9	--	--	--	mg/kg
Endrin aldehyde	3	1	0.036	--	--	--	mg/kg
Total PCBs	13	9	1.7	810	{NA}	--	mg/kg
Detected Inorganics							
Aluminum	3	3	6520	--	{NA}	--	mg/kg
Antimony	12	8	14.1	--	{NA}	--	mg/kg
Arsenic	12	12	9.26	--	{NA}	8.05	mg/kg
Barium	12	12	157	--	{NA}	75	mg/kg
Beryllium	12	9	0.37	--	{NA}	--	mg/kg
Cadmium	12	9	2.65	--	{NA}	--	mg/kg
Calcium	3	3	75800	--	--	--	mg/kg
Chromium	12	12	202	--	{NA}	23.2	mg/kg
Cobalt	12	12	7.52	--	{NA}	11.8	mg/kg
Copper	12	12	724	--	{NA}	--	mg/kg
Cyanide (total)	3	3	2.8	--	{NA}	--	mg/kg
Iron	3	3	51700	--	{NA}	--	mg/kg
Lead	16	16	1560	--	{NA}	33.2	mg/kg
Magnesium	3	3	18800	--	{NA}	--	mg/kg
Manganese	12	12	919	--	{NA}	631	mg/kg
Mercury	12	11	0.141	--	{NA}	--	mg/kg
Nickel	12	12	192	--	{NA}	29	mg/kg
Potassium	3	3	898	--	--	--	mg/kg
Selenium	12	1	0.7	--	{NA}	--	mg/kg
Silver	12	6	0.699	--	{NA}	--	mg/kg
Sodium	3	3	2370	--	{NA}	--	mg/kg
Thallium	12	6	0.676	--	{NA}	--	mg/kg
Vanadium	12	12	18.4	--	{NA}	27.7	mg/kg
Zinc	12	12	258	--	{NA}	76.3	mg/kg

See notes at end of section.

Table 4-40. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-5, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected SVOCs						
bis(2-Ethylhexyl)phthalate (DEHP)	2	1	0.51	0.34	{NA}	mg/L
Diethyl phthalate	2	1	0.0007	1,080	{NA}	mg/L
Phenol	2	2	0.0007	82,800	{NA}	mg/L
Detected Pests/PCBs						
Aroclor-1248 (PCB-1248)	16	3	0.00059	--	--	mg/L
Aroclor-1260 (PCB-1260)	16	1	0.0015	--	--	mg/L
Endrin ketone	2	1	0.00001	--	--	mg/L
Total PCBs	16	4	0.0015	0.0447	{ID}	mg/L
Detected Inorganics						
Aluminum	2	2	0.0954	{NA}	{ID}	mg/L
Antimony	5	2	0.00156	{NA}	{ID}	mg/L
Arsenic	5	3	0.0273	{NA}	{ID}	mg/L
Barium	15	15	4.8	{NA}	{ID}	mg/L
Cadmium	5	4	0.00404	{NA}	{ID}	mg/L
Calcium	2	2	584	--	--	mg/L
Chromium	5	2	0.0205	{NA}	{ID}	mg/L
Cobalt	5	3	0.0079	{NA}	{ID}	mg/L
Copper	5	2	0.00574	{NA}	{ID}	mg/L
Cyanide (total)	2	2	0.00003	{NA}	{ID}	mg/L
Iron	2	2	10.8	{NA}	{ID}	mg/L
Lead	5	2	0.00054	{NA}	{ID}	mg/L
Magnesium	2	2	70.8	{NA}	{ID}	mg/L
Manganese	15	14	3.63	{NA}	{ID}	mg/L
Nickel	5	2	0.0175	{NA}	{ID}	mg/L
Potassium	2	2	33.4	--	--	mg/L
Silver	5	2	0.00063	{NA}	{ID}	mg/L
Sodium	2	2	8730	{NA}	{ID}	mg/L
Thallium	5	1	0.00003	{NA}	{ID}	mg/L
Vanadium	5	2	0.0104	{NA}	{ID}	mg/L
Zinc	5	2	0.00991	{NA}	{ID}	mg/L
Detected Inorganics-Filtered						
Arsenic (dissolved)	3	1	0.0249	{NA}	{ID}	mg/L
Barium (dissolved)	3	3	4.72	{NA}	{ID}	mg/L
Cadmium (dissolved)	3	2	0.00066	{NA}	{ID}	mg/L
Chromium Total (dissolved)	3	2	0.0022	{NA}	{ID}	mg/L
Cobalt (dissolved)	3	1	0.008	{NA}	{ID}	mg/L
Manganese (dissolved)	3	3	3.57	{NA}	{ID}	mg/L
Nickel (dissolved)	3	2	0.016	{NA}	{ID}	mg/L
Thallium (dissolved)	3	2	0.0059	{NA}	{ID}	mg/L
Vanadium (dissolved)	3	1	0.01	{NA}	{ID}	mg/L
Zinc (dissolved)	3	1	0.0133	{NA}	{ID}	mg/L

See notes at end of section.

Table 4-41. Screening Summary of Frequency and Maximum Detections in Soil for AOI M-7, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected VOCs							
1,1,1-Trichloroethane	20	1	0.53	4,500	460	--	mg/kg
1,4-Dichlorobenzene	20	1	0.0029	260	{NA}	--	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	20	1	0.0032	35,000	27,000	--	mg/kg
Acetone	20	7	0.013	160,000	110,000	--	mg/kg
Benzene	20	2	0.017	45	400	--	mg/kg
Carbon disulfide	20	1	0.0025	1,600	280	--	mg/kg
cis-1,2-Dichloroethene	20	2	0.051	210	640	--	mg/kg
Cyclohexane	20	3	1.2	--	--	--	mg/kg
Ethylbenzene	20	3	0.073	2,400	140	--	mg/kg
Isopropyl benzene	20	2	0.046	2,000	390	--	mg/kg
Methyl acetate	20	1	0.065	--	--	--	mg/kg
Methyl cyclohexane	20	6	3.9	--	--	--	mg/kg
Methylene chloride	20	2	0.1	700	2,300	--	mg/kg
Tetrachloroethene	20	4	50	600	88	--	mg/kg
Toluene	20	3	0.021	3,300	250	--	mg/kg
trans-1,2-Dichloroethene	20	2	0.0057	330	1,400	--	mg/kg
Trichloroethene	20	3	1.3	260	500	--	mg/kg
Trifluorotrchloroethane (Freon 113)	20	1	0.64	210,000	550	--	mg/kg
Xylene (total)	20	2	0.24	54,000	150	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	20	1	0.19	1,800	{NA}	--	mg/kg
Benzo(a)anthracene	20	1	0.34	{NLV}	{NA}	--	mg/kg
Benzo(a)pyrene	20	1	0.51	{NLV}	{NA}	--	mg/kg
Benzo(b)fluoranthene	20	2	0.75	{ID}	{NA}	--	mg/kg
Benzo(g,h,i)perylene	20	1	0.37	{NLV}	{NA}	--	mg/kg
Benzo(k)fluoranthene	20	1	0.34	{NLV}	{NA}	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	20	2	1.2	{NLV}	10,000	--	mg/kg
Butyl benzylphthalate (BBP)	20	1	0.81	{NLV}	310	--	mg/kg
Chrysene	20	1	0.46	{ID}	{NA}	--	mg/kg
Dibenz(a,h)anthracene	20	1	0.13	{NLV}	{NA}	--	mg/kg
Fluoranthene	20	2	0.54	890,000	{NA}	--	mg/kg
Indeno(1,2,3-cd)pyrene	20	1	0.34	{NLV}	{NA}	--	mg/kg
Naphthalene	20	1	0.17	350	{NA}	--	mg/kg
Phenanthrene	20	3	0.37	190	{NA}	--	mg/kg
Pyrene	20	2	0.29	780,000	{NA}	--	mg/kg
Detected Pests/PCBs							
Aroclor-1242 (PCB-1242)	20	1	0.18	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	20	1	0.036	--	--	--	mg/kg
Total PCBs	20	1	0.216	810	{NA}	--	mg/kg

**Table 4-41. Screening Summary of Frequency and Maximum Detections in Soil for AOI M-7,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	NRVSI	CSAT	SSBC	Units
Detected Inorganics							
Antimony	20	4	0.664	--	{NA}	--	mg/kg
Arsenic	20	20	12.7	--	{NA}	8.05	mg/kg
Barium	20	20	63.3	--	{NA}	75	mg/kg
Beryllium	20	18	0.475	--	{NA}	--	mg/kg
Cadmium	20	15	0.625	--	{NA}	--	mg/kg
Chromium	20	20	30	--	{NA}	23.2	mg/kg
Cobalt	20	20	7.04	--	{NA}	11.8	mg/kg
Copper	20	20	27.3	--	{NA}	--	mg/kg
Lead	20	20	356	--	{NA}	33.2	mg/kg
Manganese	20	20	1030	--	{NA}	631	mg/kg
Mercury	20	13	0.0662	--	{NA}	--	mg/kg
Nickel	20	20	24.2	--	{NA}	29	mg/kg
Selenium	20	1	0.324	--	{NA}	--	mg/kg
Thallium	20	13	1.08	--	{NA}	--	mg/kg
Vanadium	20	20	18.8	--	{NA}	27.7	mg/kg
Zinc	20	20	93.4	--	{NA}	76.3	mg/kg

See notes at end of section.

Table 4-42. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-7, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
Acetone	5	2	42	1,000,000	15,000	mg/L
Benzene	5	1	0.00041	1,750	68	mg/L
Chloromethane (Methyl chloride)	5	1	0.00037	6,340	36	mg/L
Ethylbenzene	5	1	0.00023	169	43	mg/L
Tetrachloroethene	5	1	0.0036	200	{ID}	mg/L
Toluene	5	1	0.0018	526	61	mg/L
Xylene (total)	5	1	0.0012	186	70	mg/L
Detected SVOCs						
Caprolactam	5	1	0.12	5,250,000	{NA}	mg/L
Detected Inorganics						
Antimony	5	1	0.0027	{NA}	{ID}	mg/L
Arsenic	5	2	0.0146	{NA}	{ID}	mg/L
Barium	5	5	0.386	{NA}	{ID}	mg/L
Beryllium	5	1	0.00072	{NA}	{ID}	mg/L
Cadmium	5	5	0.0014	{NA}	{ID}	mg/L
Chromium	5	2	0.139	{NA}	{ID}	mg/L
Cobalt	5	4	0.0228	{NA}	{ID}	mg/L
Copper	5	2	0.0511	{NA}	{ID}	mg/L
Lead	5	2	0.0238	{NA}	{ID}	mg/L
Manganese	5	5	1.53	{NA}	{ID}	mg/L
Mercury	5	2	0.00034	0.056	{ID}	mg/L
Nickel	5	5	0.0941	{NA}	{ID}	mg/L
Thallium	5	4	0.0156	{NA}	{ID}	mg/L
Vanadium	5	2	0.059	{NA}	{ID}	mg/L
Zinc	5	3	0.146	{NA}	{ID}	mg/L
Detected Inorganics-Filtered						
Barium (dissolved)	5	5	0.315	{NA}	{ID}	mg/L
Cadmium (dissolved)	5	3	0.00059	{NA}	{ID}	mg/L
Cobalt (dissolved)	5	3	0.0136	{NA}	{ID}	mg/L
Manganese (dissolved)	5	5	1.72	{NA}	{ID}	mg/L
Mercury (dissolved)	5	1	0.000094	0.056	{ID}	mg/L
Nickel (dissolved)	5	5	0.069	{NA}	{ID}	mg/L
Thallium (dissolved)	5	5	0.0141	{NA}	{ID}	mg/L
Zinc (dissolved)	5	4	0.0445	{NA}	{ID}	mg/L

See notes at end of section.

**Table 4-43. Screening Summary of Frequency and Maximum Detections in Soil for AOI M-11,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected VOCs							
Benzene	1	9	0.0054	45	400	- -	mg/kg

See notes at end of section.

**Table 4-44. Screening Summary of Frequency and Maximum Detections in Soil for AOI M-16,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	NRVSI	CSAT	SSBC	Units
Detected VOCs							
1,1-Dichloroethane	19	1	0.00056	2,500	890	--	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	19	2	0.0057	35,000	27,000	--	mg/kg
Acetone	19	1	0.013	160,000	110,000	--	mg/kg
cis-1,2-Dichloroethene	19	2	0.049	210	640	--	mg/kg
Ethylbenzene	19	1	0.00033	2,400	140	--	mg/kg
Methyl acetate	16	2	0.084	--	--	--	mg/kg
Methyl cyclohexane	16	1	0.00057	--	--	--	mg/kg
Toluene	19	5	0.0027	3,300	250	--	mg/kg
trans-1,2-Dichloroethene	19	1	0.0011	330	1,400	--	mg/kg
Trichloroethene	19	2	0.29	260	500	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	19	4	1.2	1,800	{NA}	--	mg/kg
Acenaphthene	19	1	0.07	97,000	{NA}	--	mg/kg
Anthracene	19	4	0.26	1,600,000	{NA}	--	mg/kg
Benzo(a)anthracene	19	4	0.3	{NLV}	{NA}	--	mg/kg
Benzo(a)pyrene	19	2	0.3	{NLV}	{NA}	--	mg/kg
Benzo(b)fluoranthene	19	2	0.3	{ID}	{NA}	--	mg/kg
Benzo(g,h,i)perylene	19	3	0.29	{NLV}	{NA}	--	mg/kg
Benzo(k)fluoranthene	19	3	0.3	{NLV}	{NA}	--	mg/kg
Biphenyl (1,1-Biphenyl)	16	2	0.18	--	--	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	19	10	0.73	{NLV}	10,000	--	mg/kg
Butyl benzylphthalate (BBP)	19	2	0.15	{NLV}	310	--	mg/kg
Chrysene	19	5	0.4	{ID}	{NA}	--	mg/kg
Dibenz(a,h)anthracene	19	1	0.04	{NLV}	{NA}	--	mg/kg
Fluoranthene	19	6	0.7	890,000	{NA}	--	mg/kg
Fluorene	19	5	2.1	150,000	{NA}	--	mg/kg
Indeno(1,2,3-cd)pyrene	19	3	0.21	{NLV}	{NA}	--	mg/kg
Naphthalene	19	2	0.1	350	{NA}	--	mg/kg
Phenanthrene	19	6	20	190	{NA}	--	mg/kg
Pyrene	19	7	2.7	780,000	{NA}	--	mg/kg
Detected Pests/PCBs							
4,4'-DDE	3	2	0.006	{NLV}	{NA}	--	mg/kg
Aroclor-1242 (PCB-1242)	28	3	0.48	--	--	--	mg/kg
Aroclor-1248 (PCB-1248)	28	6	0.53	--	--	--	mg/kg
Aroclor-1254 (PCB-1254)	28	2	0.045	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	28	3	0.12	--	--	--	mg/kg
Total PCBs	28	12	0.587	810	{NA}	--	mg/kg

**Table 4-44. Screening Summary of Frequency and Maximum Detections in Soil for AOI M-16,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected Inorganics							
Aluminum	3	3	10300	--	{NA}	--	mg/kg
Antimony	19	7	0.92	--	{NA}	--	mg/kg
Arsenic	19	19	8.99	--	{NA}	8.05	mg/kg
Barium	19	19	941	--	{NA}	75	mg/kg
Beryllium	19	9	1.62	--	{NA}	--	mg/kg
Cadmium	19	19	2.22	--	{NA}	--	mg/kg
Calcium	3	3	32000	--	--	--	mg/kg
Chromium	19	19	73.4	--	{NA}	23.2	mg/kg
Cobalt	19	19	16.4	--	{NA}	11.8	mg/kg
Copper	19	19	183	--	{NA}	--	mg/kg
Cyanide (total)	3	2	1.6	--	{NA}	--	mg/kg
Iron	3	3	24300	--	{NA}	--	mg/kg
Lead	19	19	74.9	--	{NA}	33.2	mg/kg
Magnesium	3	3	7910	--	{NA}	--	mg/kg
Manganese	19	19	1130	--	{NA}	631	mg/kg
Mercury	19	5	0.126	--	{NA}	--	mg/kg
Nickel	19	19	168	--	{NA}	29	mg/kg
Potassium	3	3	867	--	--	--	mg/kg
Selenium	19	4	0.6	--	{NA}	--	mg/kg
Silver	19	4	0.319	--	{NA}	--	mg/kg
Sodium	3	3	1110	--	{NA}	--	mg/kg
Thallium	19	16	0.657	--	{NA}	--	mg/kg
Vanadium	19	19	27.8	--	{NA}	27.7	mg/kg
Zinc	19	19	212	--	{NA}	76.3	mg/kg

See notes at end of section.

Table 4-45. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-16, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
1,1,1-Trichloroethane	101	12	0.0033	1,330	{ID}	mg/L
1,1-Dichloroethane	101	11	0.033	5,060	380	mg/L
1,1-Dichloroethene	101	2	0.00048	2,250	97	mg/L
1,4-Dichlorobenzene	101	2	0.00029	73.8	{NA}	mg/L
2-Butanone (Methyl ethyl ketone) (MEK)	101	2	0.0014	240,000	{ID}	mg/L
Acetone	101	15	1.1	1,000,000	15,000	mg/L
Benzene	101	6	0.0004	1,750	68	mg/L
Bromodichloromethane	97	3	0.0033	6,740	{ID}	mg/L
Carbon disulfide	101	5	0.0034	1,190	13	mg/L
Chloroform (Trichloromethane)	101	6	0.0075	7,920	{ID}	mg/L
Chloromethane (Methyl chloride)	101	7	0.00025	6,340	36	mg/L
cis-1,2-Dichloroethene	101	13	0.18	3,500	530	mg/L
Cyclohexane	101	1	0.00019	- -	- -	mg/L
Dibromochloromethane	101	1	0.00078	2,600	{ID}	mg/L
Methyl tert butyl ether (MTBE)	101	2	0.011	46,800	{ID}	mg/L
Methylene chloride	101	2	0.021	17,000	{ID}	mg/L
Styrene	101	1	0.00058	310	140	mg/L
Tetrachloroethene	101	1	0.00048	200	{ID}	mg/L
Toluene	101	13	0.0024	526	61	mg/L
Total 1,3 Dichloropropenes	99	4		2,800	130	mg/L
trans-1,2-Dichloroethene	101	11	0.016	6,300	230	mg/L
Trichloroethene	101	4	0.00032	1,100	{ID}	mg/L
Vinyl chloride	102	40	0.023	2,760	33	mg/L
Detected SVOCs						
4-Methylphenol	51	1	0.00075	- -	- -	mg/L
Atrazine	51	1	0.0007	70	{ID}	mg/L
bis(2-Ethylhexyl)phthalate (DEHP)	51	13	0.0055	0.34	{NA}	mg/L
Butyl benzylphthalate (BBP)	51	1	0.0005	2.69	{ID}	mg/L
Caprolactam	51	8	0.0027	5,250,000	{NA}	mg/L
Di-n-butylphthalate (DBP)	51	1	0.00041	11.2	{NA}	mg/L
Fluorene	51	1	0.0019	1.98	{ID}	mg/L
Methylphenol (Cresol)	51	1	0.00075	28,000	{NA}	mg/L
Naphthalene	51	1	0.00043	31	{NA}	mg/L
Phenanthrene	51	1	0.0034	1	{ID}	mg/L
Detected Pests/PCBs						
Aroclor-1248 (PCB-1248)	78	2	0.0029	- -	- -	mg/L
Aroclor-1260 (PCB-1260)	78	1	0.00008	- -	- -	mg/L
Total PCBs	78	3	0.0029	0.0447	{ID}	mg/L

Table 4-45. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-16, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected Inorganics						
Antimony	51	1	0.0042	{NA}	{ID}	mg/L
Arsenic	51	20	0.0156	{NA}	{ID}	mg/L
Barium	51	51	0.64	{NA}	{ID}	mg/L
Cadmium	51	2	0.00045	{NA}	{ID}	mg/L
Chromium	51	11	0.0059	{NA}	{ID}	mg/L
Cobalt	51	10	0.028	{NA}	{ID}	mg/L
Copper	51	9	0.0056	{NA}	{ID}	mg/L
Manganese	51	48	1.09	{NA}	{ID}	mg/L
Nickel	51	19	0.0143	{NA}	{ID}	mg/L
Thallium	51	5	0.000077	{NA}	{ID}	mg/L
Vanadium	51	1	0.0017	{NA}	{ID}	mg/L
Zinc	51	5	0.0143	{NA}	{ID}	mg/L
Detected Inorganics-Filtered						
Arsenic (dissolved)	3	1	0.0085	{NA}	{ID}	mg/L
Barium (dissolved)	3	3	0.213	{NA}	{ID}	mg/L
Cobalt (dissolved)	3	1	0.0028	{NA}	{ID}	mg/L
Manganese (dissolved)	3	3	1.05	{NA}	{ID}	mg/L
Nickel (dissolved)	3	1	0.0036	{NA}	{ID}	mg/L
Zinc (dissolved)	3	2	0.0251	{NA}	{ID}	mg/L

See notes at end of section.

Table 4-46. Screening Summary of Frequency and Maximum Detections in Soil for AOI M-19, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected VOCs							
Methyl cyclohexane	7	1	0.0013	--	--	--	mg/kg
Toluene	7	6	0.0066	3,300	250	--	mg/kg
Detected SVOCs							
Acenaphthene	7	1	0.062	97,000	{NA}	--	mg/kg
Acenaphthylene	7	2	0.095	2,700	{NA}	--	mg/kg
Anthracene	7	3	0.31	1,600,000	{NA}	--	mg/kg
Benzo(a)anthracene	7	6	0.92	{NLV}	{NA}	--	mg/kg
Benzo(a)pyrene	7	7	1.2	{NLV}	{NA}	--	mg/kg
Benzo(b)fluoranthene	7	7	1.7	{ID}	{NA}	--	mg/kg
Benzo(g,h,i)perylene	7	7	1.4	{NLV}	{NA}	--	mg/kg
Benzo(k)fluoranthene	7	6	0.8	{NLV}	{NA}	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	7	5	2	{NLV}	10,000	--	mg/kg
Butyl benzylphthalate (BBP)	7	7	7.6	{NLV}	310	--	mg/kg
Carbazole	7	1	0.12	{NLV}	{NA}	--	mg/kg
Chrysene	7	7	1.3	{ID}	{NA}	--	mg/kg
Dibenz(a,h)anthracene	7	3	0.33	{NLV}	{NA}	--	mg/kg
Dibenzofuran	7	1	0.054	160	{NA}	--	mg/kg
Di-n-butylphthalate (DBP)	7	2	1.9	{NLV}	760	--	mg/kg
Fluoranthene	7	7	2.1	890,000	{NA}	--	mg/kg
Fluorene	7	1	0.066	150,000	{NA}	--	mg/kg
Indeno(1,2,3-cd)pyrene	7	6	0.93	{NLV}	{NA}	--	mg/kg
Naphthalene	7	1	0.052	350	{NA}	--	mg/kg
Phenanthrene	7	6	1.1	190	{NA}	--	mg/kg
Pyrene	7	7	1.5	780,000	{NA}	--	mg/kg
Detected Pests/PCBs							
Aroclor-1248 (PCB-1248)	7	2	1.5	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	7	6	0.86	--	--	--	mg/kg
Total PCBs	7	7	1.5	810	{NA}	--	mg/kg
Detected Inorganics							
Antimony	7	6	10.7	--	{NA}	--	mg/kg
Arsenic	7	7	55.6	--	{NA}	8.05	mg/kg
Barium	7	7	417	--	{NA}	75	mg/kg
Beryllium	7	5	3.65	--	{NA}	--	mg/kg
Cadmium	7	7	4.75	--	{NA}	--	mg/kg
Chromium	11	11	668	--	{NA}	23.2	mg/kg
Chromium VI (hexavalent)	4	4	1.96	--	{NA}	--	mg/kg
Cobalt	7	7	8.73	--	{NA}	11.8	mg/kg
Copper	7	7	174	--	{NA}	--	mg/kg
Lead	7	7	640	--	{NA}	33.2	mg/kg
Manganese	11	10	12600	--	{NA}	631	mg/kg
Mercury	7	7	5.39	--	{NA}	--	mg/kg
Nickel	7	7	93.4	--	{NA}	29	mg/kg
Selenium	7	3	1.14	--	{NA}	--	mg/kg
Silver	7	1	0.38	--	{NA}	--	mg/kg
Thallium	7	4	4.08	--	{NA}	--	mg/kg
Vanadium	7	7	171	--	{NA}	27.7	mg/kg
Zinc	7	7	1270	--	{NA}	76.3	mg/kg

See notes at end of section.

Table 4-47. Screening Summary of Frequency and Maximum Detections in Soil for AOI M-23, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected SVOCs							
Benzo(b)fluoranthene	4	1	0.095	{ID}	{NA}	--	mg/kg
Butyl benzylphthalate (BBP)	4	1	0.089	{NLV}	310	--	mg/kg
Chrysene	4	1	0.069	{ID}	{NA}	--	mg/kg
Fluoranthene	4	1	0.073	890,000	{NA}	--	mg/kg
Pyrene	4	1	0.068	780,000	{NA}	--	mg/kg
Detected Pests/PCBs							
Aroclor-1248 (PCB-1248)	4	1	0.029	--	--	--	mg/kg
Total PCBs	4	1	0.029	810	{NA}	--	mg/kg

See notes at end of section.

Table 4-48. Screening Summary of Frequency and Maximum Detections in Soil for AOI M-25, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected VOCs							
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	4	1	0.002	53,000	2,700	--	mg/kg
Acetone	4	1	0.018	160,000	110,000	--	mg/kg
Detected SVOCs							
Butyl benzylphthalate (BBP)	4	1	3.2	{NLV}	310	--	mg/kg
Detected Pests/PCBs							
Aroclor-1248 (PCB-1248)	4	2	0.16	--	--	--	mg/kg
Total PCBs	4	2	0.16	810	{NA}	--	mg/kg
Detected Inorganics							
Aluminum	1	1	8460	--	{NA}	--	mg/kg
Antimony	4	1	0.12	--	{NA}	--	mg/kg
Arsenic	4	4	9.4	--	{NA}	8.05	mg/kg
Barium	4	4	81.8	--	{NA}	75	mg/kg
Beryllium	4	4	0.64	--	{NA}	--	mg/kg
Cadmium	4	4	0.301	--	{NA}	--	mg/kg
Calcium	1	1	1820	--	--	--	mg/kg
Chromium	4	4	25.1	--	{NA}	23.2	mg/kg
Cobalt	4	4	9.38	--	{NA}	11.8	mg/kg
Copper	4	4	41.4	--	{NA}	--	mg/kg
Iron	1	1	16900	--	{NA}	--	mg/kg
Lead	4	4	14.1	--	{NA}	33.2	mg/kg
Magnesium	1	1	2870	--	{NA}	--	mg/kg
Manganese	4	4	731	--	{NA}	631	mg/kg
Mercury	4	3	0.0289	--	{NA}	--	mg/kg
Nickel	4	4	27.7	--	{NA}	29	mg/kg
Potassium	1	1	922	--	--	--	mg/kg
Silver	4	1	0.045	--	{NA}	--	mg/kg
Sodium	1	1	156	--	{NA}	--	mg/kg
Thallium	4	1	0.3	--	{NA}	--	mg/kg
Vanadium	4	4	20.5	--	{NA}	27.7	mg/kg
Zinc	4	4	64.3	--	{NA}	76.3	mg/kg

See notes at end of section.

Table 4-49. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-25, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
Total 1,3 Dichloropropenes	1	1		2,800	130	mg/L
Detected SVOCs						
Caprolactam	1	1	0.0012	5,250,000	{NA}	mg/L
Detected Inorganics						
Arsenic	1	1	0.0099	{NA}	{ID}	mg/L
Barium	1	1	0.0749	{NA}	{ID}	mg/L
Cadmium	1	1	0.00039	{NA}	{ID}	mg/L
Chromium	1	1	0.0015	{NA}	{ID}	mg/L
Cobalt	1	1	0.0022	{NA}	{ID}	mg/L
Copper	1	1	0.0033	{NA}	{ID}	mg/L
Manganese	1	1	0.386	{NA}	{ID}	mg/L
Nickel	1	1	0.006	{NA}	{ID}	mg/L

See notes at end of section.

Table 4-50. Screening Summary of Frequency and Maximum Detections in Surface Soil for AOI M-27, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	CSAT	NRDC	NRPSIC	NRSVIA	NRVSICI	RDC	RPSIC	RVSICI	SSBC	Units
Detected VOCs													
Ethylbenzene	4	1	0.12	140	140	13,000,000	140	2,400	140	10,000,000	720	--	mg/kg
Toluene	4	1	0.42	250	250	12,000,000	250	3,300	250	27,000,000	2,800	--	mg/kg
Xylene (total)	4	1	0.83	150	150	130,000,000	150	54,000	150	290,000,000	46,000	--	mg/kg
Detected SVOCs													
2-Methylnaphthalene	6	1	0.43	--	26,000	290,000	4,900	1,800	8,100	670,000	1,500	--	mg/kg
Benzo(a)anthracene	6	1	0.82	--	80	--	--	--	20	--	--	--	mg/kg
Benzo(a)pyrene	6	1	0.97	--	8	1,900	--	--	2	1,500	--	--	mg/kg
Benzo(b)fluoranthene	6	1	1.4	--	80	--	--	--	20	--	--	--	mg/kg
Benzo(g,h,i)perylene	6	1	0.74	--	7,000	350,000	--	--	2,500	800,000	--	--	mg/kg
Benzo(k)fluoranthene	6	1	1.1	--	800	--	--	--	200	--	--	--	mg/kg
Chrysene	6	1	1.1	--	8,000	--	--	--	2,000	--	--	--	mg/kg
Fluoranthene	6	1	1.3	--	130,000	4,100,000	1,000,000	890,000	46,000	9,300,000	740,000	--	mg/kg
Indeno(1,2,3-cd)pyrene	6	1	0.86	--	80	--	--	--	20	--	--	--	mg/kg
Phenanthrene	6	1	0.69	--	5,200	2,900	5,100	190	1,600	6,700	160	--	mg/kg
Pyrene	6	1	1.4	--	84,000	2,900,000	1,000,000	780,000	29,000	6,700,000	650,000	--	mg/kg
Detected Inorganics													
Arsenic	11	11	66.4	--	37	910	--	--	7.6	720	--	8.05	mg/kg
Barium	11	11	144	--	130,000	150,000	--	--	37,000	330,000	--	75	mg/kg
Cadmium	11	11	0.843	--	2,100	2,200	--	--	550	1,700	--	--	mg/kg
Chromium	11	11	39.6	--	9,200	240	--	--	2,500	260	--	23.2	mg/kg
Lead	11	11	218	--	900	44,000	--	--	400	100,000	--	33.2	mg/kg
Mercury	11	1	8.1	--	580	8,800	--	--	160	20,000	52	--	mg/kg
Selenium	11	3	1.04	--	9,600	59,000	--	--	2,600	130,000	--	--	mg/kg
Silver	11	1	0.623	--	9,000	2,900	--	--	2,500	6,700	--	--	mg/kg

See notes at end of section.

**Table 4-51. Screening Summary of Frequency and Maximum Detections in Subsurface Soil for AOI M-27,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	CSAT	NRDC	NRPSIC	NRSVIA	NRVSICI	SSBC	Units
Detected SVOCs										
2-Methylnaphthalene	27	1	3.3	{NA}	26,000	290,000	4,900	1,800	--	mg/kg
Benzo(a)anthracene	27	2	0.97	{NA}	80	{ID}	{NLV}	{NLV}	--	mg/kg
Benzo(a)pyrene	27	1	1.1	{NA}	8	1,900	{NLV}	{NLV}	--	mg/kg
Benzo(b)fluoranthene	27	2	1.5	{NA}	80	{ID}	{ID}	{ID}	--	mg/kg
Benzo(g,h,i)perylene	27	1	0.91	{NA}	7,000	350,000	{NLV}	{NLV}	--	mg/kg
Benzo(k)fluoranthene	27	1	1.2	{NA}	800	{ID}	{NLV}	{NLV}	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	3	1	0.2	10,000	10,000 {(C)}	890,000	{NLV}	{NLV}	--	mg/kg
Chrysene	27	2	1.2	{NA}	8,000	{ID}	{ID}	{ID}	--	mg/kg
Fluoranthene	27	3	1.8	{NA}	130,000	4,100,000	1,000,000 {(D)}	890,000	--	mg/kg
Indeno(1,2,3-cd)pyrene	27	1	0.78	{NA}	80	{ID}	{NLV}	{NLV}	--	mg/kg
Naphthalene	27	1	2.2	{NA}	52,000	88,000	470	350	--	mg/kg
Phenanthrene	27	1	2.6	{NA}	5,200	2,900	5,100	190	--	mg/kg
Pyrene	27	2	1.5	{NA}	84,000	2,900,000	1,000,000 {(D)}	780,000	--	mg/kg
Detected Pests/PCBs										
4,4'-DDE	1	1	0.001	{NA}	190	40,000	{NLV}	{NLV}	--	mg/kg
Aroclor-1248 (PCB-1248)	24	1	0.05	--	--	--	--	--	--	mg/kg
Total PCBs	24	1	0.00005	{NA}	16 {(T)}	6,500	16,000	810	--	mg/kg
Detected Inorganics										
Aluminum	1	1	10400	{NA}	370,000	--	--	--	--	mg/kg
Antimony	1	1	0.1	{NA}	670	5,900	--	--	--	mg/kg
Arsenic	27	27	39.3	{NA}	37	910	--	--	8.05	mg/kg
Barium	27	27	71.6	{NA}	130,000	150,000	--	--	75	mg/kg
Beryllium	1	1	0.52	{NA}	1,600	590	--	--	--	mg/kg
Cadmium	27	27	0.541	{NA}	2,100	2,200	--	--	--	mg/kg
Calcium	1	1	3060	--	--	--	--	--	--	mg/kg
Chromium	27	27	51	{NA}	9,200	240	--	--	23.2	mg/kg
Cobalt	1	1	3.68	{NA}	9,000	5,900	--	--	11.8	mg/kg
Copper	1	1	20.1	{NA}	73,000	59,000	--	--	--	mg/kg
Iron	1	1	12800	{NA}	580,000	--	--	--	--	mg/kg
Lead	27	27	84.4	{NA}	900	44,000	--	--	33.2	mg/kg
Magnesium	1	1	2350	{NA}	1,000,000	2,900,000	--	--	--	mg/kg
Manganese	1	1	77.3	{NA}	90,000	1,500	--	--	631	mg/kg
Mercury	27	3	0.14	{NA}	580	8,800	--	--	--	mg/kg
Nickel	1	1	13.1	{NA}	150,000	16,000	--	--	29	mg/kg
Potassium	1	1	658	--	--	--	--	--	--	mg/kg
Selenium	27	3	0.946	{NA}	9,600	59,000	--	--	--	mg/kg
Silver	27	1	0.058	{NA}	9,000	2,900	--	--	--	mg/kg
Sodium	1	1	783	{NA}	1,000,000	--	--	--	--	mg/kg
Thallium	1	1	0.07	{NA}	130	5,900	--	--	--	mg/kg
Vanadium	1	1	22.7	{NA}	5,500	--	--	--	27.7	mg/kg
Zinc	1	1	42.2	{NA}	630,000	{ID}	--	--	76.3	mg/kg

See notes at end of section.

**Table 4-52. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-27,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	FE	WS	GAI	GCC	NRGVIA	Units
Detected VOCs									
cis-1,2-Dichloroethene	4	1	0.068	530	3,500	{ID}	200	210	mg/L
trans-1,2-Dichloroethene	4	2	0.076	230	6,300	{ID}	220	200	mg/L
Vinyl chloride	4	1	0.063	33	2,760	{ID}	1	13	mg/L
Detected SVOCs									
Fluoranthene	4	1	0.005	{ID}	0.206	{ID}	0.21 {(S)}	0.21 {(S)}	mg/L
Detected Inorganics									
Arsenic	4	2	0.0171	{ID}	{NA}	{ID}	4.3	{NLV}	mg/L
Cadmium	4	1	0.0011	{ID}	{NA}	{ID}	190	{NLV}	mg/L
Lead	4	1	0.0764	{ID}	{NA}	{ID}	{ID}	{NLV}	mg/L

Table 4-53. Screening Summary of Frequency and Maximum Detections in Soil for AOI M-28, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	NRVSICI	CSAT	SSBC	Units
Detected VOCs							
Acetone	22	14	0.32	160,000	110,000	--	mg/kg
Methyl acetate	25	6	0.3	--	--	--	mg/kg
Styrene	25	1	0.046	3,300	520	--	mg/kg
Toluene	25	2	0.056	3,300	250	--	mg/kg
Total 1,3 Dichloropropenes	25	9		60	620	--	mg/kg
Xylene (total)	25	2	0.2	54,000	150	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	25	4	6.1	1,800	{NA}	--	mg/kg
Anthracene	25	5	1	1,600,000	{NA}	--	mg/kg
Benzo(a)anthracene	25	3	1.1	{NLV}	{NA}	--	mg/kg
Benzo(b)fluoranthene	25	2	0.026	{ID}	{NA}	--	mg/kg
Biphenyl (1,1-Biphenyl)	25	1	0.78	--	--	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	25	6	6	{NLV}	10,000	--	mg/kg
Chrysene	25	6	1.2	{ID}	{NA}	--	mg/kg
Fluoranthene	25	9	3.5	890,000	{NA}	--	mg/kg
Fluorene	25	5	5.3	150,000	{NA}	--	mg/kg
Naphthalene	25	1	4.7	350	{NA}	--	mg/kg
Phenanthrene	25	10	7.1	190	{NA}	--	mg/kg
Pyrene	25	9	3	780,000	{NA}	--	mg/kg
Detected Pests/PCBs							
Aroclor-1248 (PCB-1248)	25	8	0.31	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	25	5	0.038	--	--	--	mg/kg
Total PCBs	25	9	0.31	810	{NA}	--	mg/kg
Detected Inorganics							
Antimony	15	3	0.191	--	{NA}	--	mg/kg
Arsenic	25	25	8.14	--	{NA}	8.05	mg/kg
Barium	25	23	45.5	--	{NA}	75	mg/kg
Beryllium	25	21	0.408	--	{NA}	--	mg/kg
Cadmium	25	16	0.354	--	{NA}	--	mg/kg
Chromium	25	25	14.5	--	{NA}	23.2	mg/kg
Cobalt	25	25	20.4	--	{NA}	11.8	mg/kg
Copper	25	25	19.1	--	{NA}	--	mg/kg
Lead	25	25	8.15	--	{NA}	33.2	mg/kg
Manganese	25	25	1220	--	{NA}	631	mg/kg
Mercury	25	17	0.0366	--	{NA}	--	mg/kg
Nickel	25	25	19.9	--	{NA}	29	mg/kg
Selenium	25	1	1.2	--	{NA}	--	mg/kg
Thallium	25	3	0.807	--	{NA}	--	mg/kg
Vanadium	25	25	20	--	{NA}	27.7	mg/kg
Zinc	25	25	46	--	{NA}	76.3	mg/kg

**Table 4-54. Screening Summary of Frequency and Maximum Detections in Soil for AOI M-30,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	CSAT	NRVSICI	SSBC	Units
Detected VOCs							
2-Butanone (Methyl ethyl ketone) (MEK)	30	9	0.0079	27,000	35,000	--	mg/kg
Acetone	30	3	0.024	110,000	160,000	--	mg/kg
Benzene	30	2	0.00033	400	45	--	mg/kg
cis-1,2-Dichloroethene	30	1	0.0035	640	210	--	mg/kg
Methylene chloride	30	2	0.0051	2,300	700	--	mg/kg
Tetrachloroethene	30	1	0.0013	88	600	--	mg/kg
Toluene	30	7	0.0054	250	3,300	--	mg/kg
trans-1,2-Dichloroethene	30	1	0.0021	1,400	330	--	mg/kg
Trichloroethene	30	2	0.32	500	260	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	30	2	0.027	{NA}	1,800	--	mg/kg
4-Methylphenol	30	2	0.065	--	--	--	mg/kg
Acenaphthene	30	1	0.066	{NA}	97,000	--	mg/kg
Anthracene	30	1	0.11	{NA}	1,600,000	--	mg/kg
Benzo(a)anthracene	30	2	0.085	{NA}	{NLV}	--	mg/kg
Benzo(a)pyrene	30	3	0.44	{NA}	{NLV}	--	mg/kg
Benzo(b)fluoranthene	30	3	0.74	{NA}	{ID}	--	mg/kg
Benzo(g,h,i)perylene	30	3	0.58	{NA}	{NLV}	--	mg/kg
Benzo(k)fluoranthene	30	2	0.039	{NA}	{NLV}	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	30	3	0.055	10,000	{NLV}	--	mg/kg
Butyl benzylphthalate (BBP)	30	1	0.094	310	{NLV}	--	mg/kg
Carbazole	30	1	0.16	{NA}	{NLV}	--	mg/kg
Chrysene	30	2	0.093	{NA}	{ID}	--	mg/kg
Dibenzofuran	30	1	0.058	{NA}	160	--	mg/kg
Fluoranthene	30	4	0.38	{NA}	890,000	--	mg/kg
Fluorene	30	1	0.035	{NA}	150,000	--	mg/kg
Indeno(1,2,3-cd)pyrene	30	2	0.45	{NA}	{NLV}	--	mg/kg
Methylphenol (Cresol)	30	2	0.065	{NA}	{NLV}	--	mg/kg
Naphthalene	30	1	0.016	{NA}	350	--	mg/kg
Phenanthrene	30	2	0.55	{NA}	190	--	mg/kg
Pyrene	30	5	0.45	{NA}	780,000	--	mg/kg
Detected Pests/PCBs							
Aroclor-1248 (PCB-1248)	30	5	45	--	--	--	mg/kg
Aroclor-1254 (PCB-1254)	30	2	0.047	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	30	2	0.84	--	--	--	mg/kg
Total PCBs	30	8	45	{NA}	810	--	mg/kg
Detected Inorganics							
Antimony	30	2	0.35	{NA}	--	--	mg/kg
Arsenic	30	30	8.1	{NA}	--	8.05	mg/kg
Barium	30	30	57.4	{NA}	--	75	mg/kg
Beryllium	30	6	0.68	{NA}	--	--	mg/kg
Cadmium	30	19	2.5	{NA}	--	--	mg/kg
Chromium	30	30	19.8	{NA}	--	23.2	mg/kg
Cobalt	30	30	9.5	{NA}	--	11.8	mg/kg
Copper	30	30	37.3	{NA}	--	--	mg/kg
Lead	30	30	24.2	{NA}	--	33.2	mg/kg
Manganese	30	30	504	{NA}	--	631	mg/kg
Mercury	30	4	0.053	{NA}	--	--	mg/kg
Nickel	30	30	27.8	{NA}	--	29	mg/kg
Selenium	30	1	0.32	{NA}	--	--	mg/kg
Thallium	30	7	0.82	{NA}	--	--	mg/kg
Vanadium	30	30	25.4	{NA}	--	27.7	mg/kg
Zinc	30	30	137	{NA}	--	76.3	mg/kg

**Table 4-55. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-30,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected SVOCs						
bis(2-Ethylhexyl)phthalate (DEHP)	3	1	0.00076	0.34	{NA}	mg/L
Detected Inorganics						
Barium	3	3	0.153	{NA}	{ID}	mg/L
Chromium	3	1	0.0217	{NA}	{ID}	mg/L
Manganese	3	3	0.487	{NA}	{ID}	mg/L
Nickel	3	1	0.0087	{NA}	{ID}	mg/L
Selenium	3	1	0.0051	{NA}	{ID}	mg/L
Vanadium	3	1	0.001	{NA}	{ID}	mg/L

Table 4-56. Screening Summary of Frequency and Maximum Detections in Soil for AOI M-31, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	CSAT	NRVSI	SSBC	Units
VOCs							
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	18	1	0.014	2,700	53,000	--	mg/kg
Benzene	18	2	0.01	400	45	--	mg/kg
Cyclohexane	18	2	0.055	--	--	--	mg/kg
Ethylbenzene	18	2	0.032	140	2,400	--	mg/kg
Isopropyl benzene	18	2	0.057	390	2,000	--	mg/kg
Methyl acetate	18	2	0.11	--	--	--	mg/kg
Methyl cyclohexane	18	2	0.15	--	--	--	mg/kg
Methylene chloride	18	9	0.18	2,300	700	--	mg/kg
Toluene	18	1	0.083	250	3,300	--	mg/kg
Xylene (total)	18	2	0.16	150	54,000	--	mg/kg
SVOCs							
2,4-Dimethylphenol	18	1	0.048	{NA}	{NLV}	--	mg/kg
2-Methylnaphthalene	18	3	0.81	{NA}	1,800	--	mg/kg
2-Methylphenol	18	2	0.13	--	--	--	mg/kg
4-Methylphenol	18	3	0.17	--	--	--	mg/kg
Benzo(a)anthracene	18	1	0.021	{NA}	{NLV}	--	mg/kg
Benzo(a)pyrene	18	1	0.079	{NA}	{NLV}	--	mg/kg
Benzo(g,h,i)perylene	18	1	0.13	{NA}	{NLV}	--	mg/kg
Benzo(k)fluoranthene	18	1	0.065	{NA}	{NLV}	--	mg/kg
Biphenyl (1,1-Biphenyl)	18	1	0.15	--	--	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	18	2	6	10,000	{NLV}	--	mg/kg
Butyl benzylphthalate (BBP)	18	2	0.17	310	{NLV}	--	mg/kg
Carbazole	18	1	0.019	{NA}	{NLV}	--	mg/kg
Chrysene	18	2	0.018	{NA}	{ID}	--	mg/kg
Dibenz(a,h)anthracene	18	1	0.032	{NA}	{NLV}	--	mg/kg
Dimethyl phthalate	18	1	0.018	790	{NLV}	--	mg/kg
Di-n-butylphthalate (DBP)	18	2	0.04	760	{NLV}	--	mg/kg
Fluoranthene	18	3	0.069	{NA}	890,000	--	mg/kg
Fluorene	18	1	0.021	{NA}	150,000	--	mg/kg
Indeno(1,2,3-cd)pyrene	18	1	0.07	{NA}	{NLV}	--	mg/kg
Methylphenol (Cresol)	18	3	0.3	{NA}	{NLV}	--	mg/kg
Naphthalene	18	3	0.61	{NA}	350	--	mg/kg
N-Nitrosodiphenylamine	18	1	0.02	{NA}	{NLV}	--	mg/kg
Phenanthrene	18	5	0.63	{NA}	190	--	mg/kg
Phenol	18	1	0.061	12,000	{NLV}	--	mg/kg
Pyrene	18	3	0.056	{NA}	780,000	--	mg/kg
Inorganics							
Antimony	18	4	0.55	{NA}	--	--	mg/kg
Arsenic	18	18	9.7	{NA}	--	8.05	mg/kg
Barium	18	18	58.7	{NA}	--	75	mg/kg
Beryllium	18	11	0.82	{NA}	--	--	mg/kg
Cadmium	18	18	0.33	{NA}	--	--	mg/kg
Chromium	18	18	49.2	{NA}	--	23.2	mg/kg
Cobalt	18	18	10.7	{NA}	--	11.8	mg/kg
Copper	18	18	31	{NA}	--	--	mg/kg
Lead	18	18	14.2	{NA}	--	33.2	mg/kg
Manganese	18	18	1030	{NA}	--	631	mg/kg
Mercury	18	13	0.07	{NA}	--	--	mg/kg
Nickel	18	18	29.4	{NA}	--	29	mg/kg
Silver	18	1	0.22	{NA}	--	--	mg/kg
Thallium	18	9	1.8	{NA}	--	--	mg/kg
Vanadium	18	18	30.1	{NA}	--	27.7	mg/kg
Zinc	18	18	109	{NA}	--	76.3	mg/kg

**Table 4-57. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-31,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
Vinyl chloride	5	1	0.007	2,760	33	mg/L
Detected SVOCs						
Caprolactam	5	1	0.0016	5,250,000	{NA}	mg/L
Detected Inorganics						
Antimony	5	2	0.0051	{NA}	{ID}	mg/L
Barium	5	4	0.442	{NA}	{ID}	mg/L
Chromium	5	1	0.0036	{NA}	{ID}	mg/L
Cobalt	5	1	0.001	{NA}	{ID}	mg/L
Manganese	5	4	0.66	{NA}	{ID}	mg/L
Nickel	5	3	0.0074	{NA}	{ID}	mg/L
Thallium	5	1	0.000044	{NA}	{ID}	mg/L
Zinc	5	1	0.213	{NA}	{ID}	mg/L

**Table 4-58. Screening Summary of Frequency and Maximum Detections in Soil for AOI M-32,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	CSAT	NRVSICI	SSBC	Units
Detected VOCs							
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	33	1	0.09	2,700	53,000	--	mg/kg
Cyclohexane	33	1	0.078	--	--	--	mg/kg
Ethylbenzene	33	1	0.015	140	2,400	--	mg/kg
Isopropyl benzene	33	1	0.086	390	2,000	--	mg/kg
Methyl acetate	33	5	0.48	--	--	--	mg/kg
Methyl cyclohexane	33	1	0.13	--	--	--	mg/kg
Toluene	33	3	0.032	250	3,300	--	mg/kg
Trichloroethene	33	4	0.35	500	260	--	mg/kg
Xylene (total)	33	1	0.12	150	54,000	--	mg/kg
Detected SVOCs							
2-Methylnaphthalene	33	5	2.1	{NA}	1,800	--	mg/kg
Acenaphthene	33	5	11	{NA}	97,000	--	mg/kg
Acenaphthylene	33	1	2.7	{NA}	2,700	--	mg/kg
Anthracene	33	9	11	{NA}	1,600,000	--	mg/kg
Benzo(a)anthracene	33	8	17	{NA}	{NLV}	--	mg/kg
Benzo(a)pyrene	33	7	20	{NA}	{NLV}	--	mg/kg
Benzo(b)fluoranthene	33	7	22	{NA}	{ID}	--	mg/kg
Benzo(g,h,i)perylene	33	5	15	{NA}	{NLV}	--	mg/kg
Benzo(k)fluoranthene	33	5	11	{NA}	{NLV}	--	mg/kg
Biphenyl (1,1-Biphenyl)	33	2	0.074	--	--	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	33	4	1.1	10,000	{NLV}	--	mg/kg
Butyl benzylphthalate (BBP)	33	2	0.076	310	{NLV}	--	mg/kg
Caprolactam	33	2	0.27	{NA}	{NLV}	--	mg/kg
Carbazole	33	3	8.9	{NA}	{NLV}	--	mg/kg
Chrysene	33	8	22	{NA}	{ID}	--	mg/kg
Dibenz(a,h)anthracene	33	3	3.7	{NA}	{NLV}	--	mg/kg
Dibenzofuran	33	3	4.8	{NA}	160	--	mg/kg
Dimethyl phthalate	33	1	0.037	790	{NLV}	--	mg/kg
Fluoranthene	33	14	72	{NA}	890,000	--	mg/kg
Fluorene	33	8	9.5	{NA}	150,000	--	mg/kg
Indeno(1,2,3-cd)pyrene	33	5	14	{NA}	{NLV}	--	mg/kg
Naphthalene	33	3	4.1	{NA}	350	--	mg/kg
Phenanthrene	33	13	40	{NA}	190	--	mg/kg
Pyrene	33	16	87	{NA}	780,000	--	mg/kg
Detected Pests/PCBs							
Aroclor-1248 (PCB-1248)	33	5	0.22	--	--	--	mg/kg
Aroclor-1254 (PCB-1254)	33	3	0.78	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	33	2	0.015	--	--	--	mg/kg
Total PCBs	33	9	0.78	{NA}	810	--	mg/kg
Detected Inorganics							
Antimony	33	17	1.1	{NA}	--	--	mg/kg
Arsenic	33	33	28.6	{NA}	--	8.05	mg/kg
Barium	33	33	154	{NA}	--	75	mg/kg
Beryllium	33	17	0.69	{NA}	--	--	mg/kg
Cadmium	33	29	0.81	{NA}	--	--	mg/kg
Chromium	33	33	44.7	{NA}	--	23.2	mg/kg
Cobalt	33	33	10	{NA}	--	11.8	mg/kg
Copper	33	33	111	{NA}	--	--	mg/kg
Lead	33	33	102	{NA}	--	33.2	mg/kg
Manganese	33	33	2300	{NA}	--	631	mg/kg
Mercury	33	11	0.11	{NA}	--	--	mg/kg
Nickel	33	33	66.4	{NA}	--	29	mg/kg
Selenium	33	1	0.41	{NA}	--	--	mg/kg
Thallium	33	18	1.7	{NA}	--	--	mg/kg
Vanadium	33	33	24.8	{NA}	--	27.7	mg/kg
Zinc	33	33	105	{NA}	--	76.3	mg/kg

Table 4-59. Screening Summary of Frequency and Maximum Detections in Groundwater for AOI M-32, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
2-Butanone (Methyl ethyl ketone) (MEK)	15	2	0.0011	240,000	{ID}	mg/L
Bromodichloromethane	15	3	0.00055	6,740	{ID}	mg/L
Chloroform (Trichloromethane)	15	7	0.0037	7,920	{ID}	mg/L
Chloromethane (Methyl chloride)	15	5	0.0011	6,340	36	mg/L
cis-1,2-Dichloroethene	15	2	0.0075	3,500	530	mg/L
Toluene	15	1	0.00037	526	61	mg/L
trans-1,2-Dichloroethene	15	2	0.0029	6,300	230	mg/L
Trichloroethene	15	9	0.046	1,100	{ID}	mg/L
Detected SVOCs						
bis(2-Ethylhexyl)phthalate (DEHP)	14	7	0.75	0.34	{NA}	mg/L
Detected Pests/PCBs						
Aroclor-1260 (PCB-1260)	12	1	0.000051	--	--	mg/L
Total PCBs	12	1	0.000051	0.0447	{ID}	mg/L
Detected Inorganics						
Arsenic	11	3	0.00099	{NA}	{ID}	mg/L
Barium	11	11	0.0605	{NA}	{ID}	mg/L
Manganese	14	14	0.861	{NA}	{ID}	mg/L
Nickel	11	3	0.0036	{NA}	{ID}	mg/L
Selenium	11	6	0.0074	{NA}	{ID}	mg/L
Thallium	11	1	0.000059	{NA}	{ID}	mg/L
Zinc	11	3	0.0408	{NA}	{ID}	mg/L

**Table 4-60. Summary of Soil Sample Analytical Results M-34 Soil Screening,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	CSAT	NRVSICI	Units
Detected VOCs						
2-Butanone (Methyl ethyl ketone) (MEK)	12	4	66	27,000,000	35,000,000	ug/kg
Carbon tetrachloride	12	2	26	390,000	12,000	ug/kg
Chloroform (Trichloromethane)	12	1	14	1,500,000	150,000	ug/kg
Methyl acetate	12	1	55	--	--	ug/kg
Methyl cyclohexane	12	1	63	--	--	ug/kg
Xylene (total)	12	1	40	150,000	54,000,000	ug/kg
Detected SVOCs						
2-Methylnaphthalene	12	3	2400	{NA}	1,800,000	ug/kg
Acenaphthene	12	2	460	{NA}	97,000,000	ug/kg
Acenaphthylene	12	1	420	{NA}	2,700,000	ug/kg
Anthracene	12	2	890	{NA}	1,600,000,000	ug/kg
Benzo(a)anthracene	12	3	1400	{NA}	{NLV}	ug/kg
Benzo(a)pyrene	12	2	1100	{NA}	{NLV}	ug/kg
Benzo(b)fluoranthene	12	3	1400	{NA}	{ID}	ug/kg
Benzo(g,h,i)perylene	12	3	660	{NA}	{NLV}	ug/kg
Benzo(k)fluoranthene	12	3	680	{NA}	{NLV}	ug/kg
Biphenyl (1,1-Biphenyl)	12	1	260	--	--	ug/kg
bis(2-Ethylhexyl)phthalate (DEHP)	12	2	78	10,000,000	{NLV}	ug/kg
Butyl benzylphthalate (BBP)	12	2	20	310,000	{NLV}	ug/kg
Carbazole	12	1	270	{NA}	{NLV}	ug/kg
Chrysene	12	3	1400	{NA}	{ID}	ug/kg
Dibenz(a,h)anthracene	12	2	220	{NA}	{NLV}	ug/kg
Dibenzofuran	12	2	640	{NA}	160,000	ug/kg
Fluoranthene	12	4	3500	{NA}	890,000,000	ug/kg
Fluorene	12	2	1200	{NA}	150,000,000	ug/kg
Indeno(1,2,3-cd)pyrene	12	3	590	{NA}	{NLV}	ug/kg
Naphthalene	12	2	4400	{NA}	350,000	ug/kg
Phenanthrene	12	3	4800	{NA}	190,000	ug/kg
Phenol	12	1	230	12,000,000	{NLV}	ug/kg
Pyrene	12	3	2700	{NA}	780,000,000	ug/kg
Detected Pests/PCBs						
None Detected	--	--	--	--	--	--
Detected Inorganics						
Antimony	12	12	0.1	{NA}	--	mg/kg
Arsenic	12	12	6.6	{NA}	--	mg/kg
Barium	12	12	95.3	{NA}	--	mg/kg
Beryllium	12	12	0.33	{NA}	--	mg/kg
Cadmium	12	12	0.2	{NA}	--	mg/kg
Chromium	12	12	11.4	{NA}	--	mg/kg
Cobalt	12	12	7.2	{NA}	--	mg/kg
Copper	12	12	12.3	{NA}	--	mg/kg
Lead	12	12	6.5	{NA}	--	mg/kg
Manganese	12	12	343	{NA}	--	mg/kg
Mercury	12	1	0.038	{NA}	--	mg/kg
Molybdenum	12	12	4	{NA}	--	mg/kg
Nickel	12	12	17.1	{NA}	--	mg/kg
Selenium	12	11	0.32	{NA}	--	mg/kg
Thallium	12	12	0.32	{NA}	--	mg/kg
Vanadium	12	12	18.6	{NA}	--	mg/kg
Zinc	12	12	42.4	{NA}	--	mg/kg

**Table 4-61. Summary of WG Sample Analytical Results M-34 Groundwater Screening,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	WS	FE	Units
Detected VOCs						
Carbon disulfide	1	1	0.71	1,190,000	13,000	ug/L
Chloroform (Trichloromethane)	1	1	0.24	7,920,000	{ID}	ug/L
Cyclohexane	1	1	0.16	- -	- -	ug/L
Toluene	1	1	0.24	526,000	61,000	ug/L
Detected SVOCs						
Benzo(a)anthracene	1	1	0.25	9.4	{ID}	ug/L
bis(2-Ethylhexyl)phthalate (DEHP)	1	1	1.2	340	{NA}	ug/L
Chrysene	1	1	0.32	1.6	{ID}	ug/L
Fluoranthene	1	1	0.67	206	{ID}	ug/L
Phenanthrene	1	1	0.47	1,000	{ID}	ug/L
Pyrene	1	1	0.52	135	{ID}	ug/L
Detected Pests/PCBs						
Aroclor-1254 (PCB-1254)	1	1	0.035	- -	- -	ug/L
Total PCBs	1	1	0.035	44.7	{ID}	ug/L
Detected Inorganics						
Antimony	1	1	1.8	{NA}	{ID}	ug/L
Arsenic	1	1	64.5	{NA}	{ID}	ug/L
Barium	1	1	665	{NA}	{ID}	ug/L
Beryllium	1	1	4.4	{NA}	{ID}	ug/L
Cadmium	1	1	3.9	{NA}	{ID}	ug/L
Chromium	1	1	243	{NA}	{ID}	ug/L
Cobalt	1	1	60.2	{NA}	{ID}	ug/L
Copper	1	1	467	{NA}	{ID}	ug/L
Lead	1	1	120	{NA}	{ID}	ug/L
Manganese	1	1	2730	{NA}	{ID}	ug/L
Mercury	1	1	0.55	56	{ID}	ug/L
Nickel	1	1	221	{NA}	{ID}	ug/L
Selenium	1	1	7.6	{NA}	{ID}	ug/L
Silver	1	1	2.1	{NA}	{ID}	ug/L
Thallium	1	1	2.5	{NA}	{ID}	ug/L
Vanadium	1	1	182	{NA}	{ID}	ug/L
Zinc	1	1	588	{NA}	{ID}	ug/L

Table 4-62. Screening Summary of Frequency and Maximum Detections in Surface Soil for Pontiac School Board, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	CSAT	GCCP	RDC	RDWP	RPSIC	RSVIA	RVSICI	SSBC	Units
Detected VOCs												
2-Butanone (Methyl ethyl ketone) (MEK)	16	8	0.012	27,000	27,000 {(C)}	27,000 {(C,DD)}	260	67,000,000	27,000 {(C)}	29,000	--	mg/kg
Acetone	16	9	0.044	110,000	110,000 {(C)}	23,000	15	390,000,000	110,000 {(C)}	130,000	--	mg/kg
Benzene	16	1	0.0017	400	220	180	0.1	380,000	1.6	13	--	mg/kg
Carbon disulfide	16	1	0.0016	280	280 {(C)}	280 {(C,DD)}	16	47,000,000	76	1,300	--	mg/kg
Cyclohexane	16	1	0.0016	--	--	--	--	--	--	--	--	mg/kg
Methyl acetate	16	3	0.0028	--	--	--	--	--	--	--	--	mg/kg
Methyl cyclohexane	16	2	0.0016	--	--	--	--	--	--	--	--	mg/kg
Methylene chloride	16	4	0.0015	2,300	2,300 {(C)}	1,300	0.1	6,600,000	45	210	--	mg/kg
Toluene	16	13	0.0033	250	250 {(C)}	250 {(C)}	16	27,000,000	250 {(C)}	2,800	--	mg/kg
Detected SVOCs												
2-Methylnaphthalene	16	6	1.3	{NA}	5,500	8,100	57	670,000	2,700	1,500	--	mg/kg
Acenaphthene	16	3	0.19	{NA}	970	41,000	300	14,000,000	190,000	81,000	--	mg/kg
Acetophenone	16	1	0.077	1,100	1,100 {(C)}	1,100 {(C)}	30	33,000,000	1,100 {(C)}	44,000	--	mg/kg
Anthracene	16	2	0.13	{NA}	41	230,000	41	67,000,000	1,000,000 {(D)}	1,400,000	--	mg/kg
Benzo(a)anthracene	16	5	0.81	{NA}	{NLL}	20	{NLL}	{ID}	{NLV}	{NLV}	--	mg/kg
Benzo(a)pyrene	16	5	0.92	{NA}	{NLL}	2	{NLL}	1,500	{NLV}	{NLV}	--	mg/kg
Benzo(b)fluoranthene	16	8	1.5	{NA}	{NLL}	20	{NLL}	{ID}	{ID}	{ID}	--	mg/kg
Benzo(g,h,i)perylene	16	4	0.51	{NA}	{NLL}	2,500	{NLL}	800,000	{NLV}	{NLV}	--	mg/kg
Benzo(k)fluoranthene	16	4	0.35	{NA}	{NLL}	200	{NLL}	{ID}	{NLV}	{NLV}	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	16	3	0.19	10,000	{NLL}	2,800	{NLL}	700,000	{NLV}	{NLV}	--	mg/kg
Butyl benzylphthalate (BBP)	16	1	0.18	310	310 {(C)}	310 {(C)}	310 {(C)}	47,000,000	{NLV}	{NLV}	--	mg/kg
Caprolactam	16	1	0.38	{NA}	1,000,000 {(D)}	53,000 {(DD)}	120	670,000	{NLV}	{NLV}	--	mg/kg
Carbazole	16	1	0.084	{NA}	820	530	9.4	62,000	{NLV}	{NLV}	--	mg/kg
Chrysene	16	8	0.9	{NA}	{NLL}	2,000	{NLL}	{ID}	{ID}	{ID}	--	mg/kg
Dibenz(a,h)anthracene	16	1	0.12	{NA}	{NLL}	2	{NLL}	{ID}	{NLV}	{NLV}	--	mg/kg
Di-n-butylphthalate (DBP)	16	2	0.21	760	760 {(C)}	760 {(C)}	760 {(C)}	3,300,000	{NLV}	{NLV}	--	mg/kg
Fluoranthene	16	12	1.7	{NA}	730	46,000	730	9,300,000	1,000,000 {(D)}	740,000	--	mg/kg
Fluorene	16	3	0.23	{NA}	890	27,000	390	9,300,000	580,000	130,000	--	mg/kg
Indeno(1,2,3-cd)pyrene	16	3	0.46	{NA}	{NLL}	20	{NLL}	{ID}	{NLV}	{NLV}	--	mg/kg
Naphthalene	16	1	0.055	{NA}	2,100	16,000	35	200,000	250	300	--	mg/kg
Phenanthrene	16	10	0.92	{NA}	1,100	1,600	56	6,700	2,800	160	--	mg/kg
Pyrene	16	14	1.5	{NA}	480	29,000	480	6,700,000	1,000,000 {(D)}	650,000	--	mg/kg
Detected CDD/F												
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	4	2	0.0000559	--	--	--	--	--	--	--	--	mg/kg
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	4	3	0.000835	--	--	--	--	--	--	--	--	mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	4	3	0.0000544	--	--	--	--	--	--	--	--	mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	4	3	0.0000966	--	--	--	--	--	--	--	--	mg/kg
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	4	2	0.0000017	--	--	--	--	--	--	--	--	mg/kg
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	4	2	0.0000024	--	--	--	--	--	--	--	--	mg/kg
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	4	2	0.0000001	--	--	--	--	--	--	--	--	mg/kg
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	4	2	0.0000022	--	--	--	--	--	--	--	--	mg/kg
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	4	3	0.0000084	--	--	--	--	--	--	--	--	mg/kg
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	4	2	0.00000062	--	--	--	--	--	--	--	--	mg/kg
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	4	2	0.0000044	--	--	--	--	--	--	--	--	mg/kg
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	4	1	0.00000094	--	--	--	--	--	--	--	--	mg/kg
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	4	3	0.0000025	--	--	--	--	--	--	--	--	mg/kg
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	4	2	0.0000031	--	--	--	--	--	--	--	--	mg/kg
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	4	2	0.0000002	--	--	--	--	--	--	--	--	mg/kg
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	4	3	0.0000019	--	--	--	--	--	--	--	--	mg/kg
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	4	1	0.0000019	--	--	--	--	--	--	--	--	mg/kg
WHO Dioxin TEQ(Human/Mammal-NDs used at 1/2 DL)	4	4	0.0000168	{NA}	{NLL}	0.00000009 {(O)}	{NLL}	0.000071 {(O)}	{NLV}	{NLV}	--	mg/kg

Table 4-62. Screening Summary of Frequency and Maximum Detections in Surface Soil for Pontiac School Board, RACER Trust Pontiac North Campus, Pontiac, Michigan

	#	#	Maximum									
Detected Pests/PCBs												
Aroclor-1242 (PCB-1242)	16	2	0.1	--	--	--	--	--	--	--	--	mg/kg
Aroclor-1248 (PCB-1248)	16	1	0.04	--	--	--	--	--	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	16	3	0.041	--	--	--	--	--	--	--	--	mg/kg
Total PCBs	16	5	0.1	{NA}	{NLL}	4 {(T)}	{NLL}	5,200	3,000	240	--	mg/kg
Detected Inorganics												
Antimony	16	4	1.59	{NA}	--	180	4.3	13,000	{NLV}	{NLV}	--	mg/kg
Arsenic	16	16	14.1	{NA}	--	7.6	4.6	720	{NLV}	{NLV}	8.05	mg/kg
Barium	16	16	710	{NA}	--	37,000	1,300	330,000	{NLV}	{NLV}	75	mg/kg
Beryllium	16	16	0.806	{NA}	--	410	51	1,300	{NLV}	{NLV}	--	mg/kg
Cadmium	16	16	5.88	{NA}	--	550	6	1,700	{NLV}	{NLV}	--	mg/kg
Chromium	16	16	96.7	{NA}	--	2,500	30	260	{NLV}	{NLV}	23.2	mg/kg
Cobalt	16	16	6.64	{NA}	--	2,600	0.8	13,000	{NLV}	{NLV}	11.8	mg/kg
Copper	16	16	318	{NA}	--	20,000	5,800	130,000	{NLV}	{NLV}	--	mg/kg
Lead	16	16	429	{NA}	--	400	700	100,000	{NLV}	{NLV}	33.2	mg/kg
Manganese	16	16	832	{NA}	--	25,000	1	3,300	{NLV}	{NLV}	631	mg/kg
Mercury	16	10	0.426	{NA}	--	160	1.7	20,000	48	52	--	mg/kg
Nickel	16	16	58.2	{NA}	--	40,000	100	13,000	{NLV}	{NLV}	29	mg/kg
Selenium	16	2	2.23	{NA}	--	2,600	4	130,000	{NLV}	{NLV}	--	mg/kg
Silver	16	1	0.363	{NA}	--	2,500	4.5	6,700	{NLV}	{NLV}	--	mg/kg
Thallium	16	1	0.731	{NA}	--	35	2.3	13,000	{NLV}	{NLV}	--	mg/kg
Vanadium	16	16	24.2	{NA}	--	750 {(DD)}	72	{ID}	{NLV}	{NLV}	27.7	mg/kg
Zinc	16	16	883	{NA}	--	170,000	2,400	{ID}	{NLV}	{NLV}	76.3	mg/kg

Table 4-63. Screening Summary of Frequency and Maximum Detections in Subsurface Soil for Pontiac School Board, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	CSAT	GCCP	RDC	RDWP	RPSIC	RSVIA	RVSICI	SSBC	Units
Detected VOCs												
1,2-Dichlorobenzene	19	1	0.0012	210	210 {(C)}	210 {(C)}	14	100,000,000	210 {(C)}	39,000	--	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	19	9	0.013	27,000	27,000 {(C)}	27,000 {(C,DD)}	260	67,000,000	27,000 {(C)}	29,000	--	mg/kg
Acetone	19	17	0.084	110,000	110,000 {(C)}	23,000	15	390,000,000	110,000 {(C)}	130,000	--	mg/kg
Benzene	19	2	4.2	400	220	180	0.1	380,000	1.6	13	--	mg/kg
Carbon disulfide	19	3	0.003	280	280 {(C)}	280 {(C,DD)}	16	47,000,000	76	1,300	--	mg/kg
Cyclohexane	19	2	0.61	--	--	--	--	--	--	--	--	mg/kg
Ethylbenzene	19	1	2.2	140	140 {(C)}	140 {(C)}	1.5	10,000,000	87	720	--	mg/kg
Isopropyl benzene	19	1	0.14	390	390 {(C)}	390 {(C)}	91	5,800,000	390 {(C)}	1,700	--	mg/kg
Methyl acetate	19	3	0.14	--	--	--	--	--	--	--	--	mg/kg
Methyl cyclohexane	19	5	0.29	--	--	--	--	--	--	--	--	mg/kg
Methyl tert butyl ether (MTBE)	19	1	0.47	5,900	5,900 {(C)}	1,500	0.8	200,000,000	5,900 {(C)}	25,000	--	mg/kg
Methylene chloride	19	1	0.0019	2,300	2,300 {(C)}	1,300	0.1	6,600,000	45	210	--	mg/kg
Toluene	19	11	0.16	250	250 {(C)}	250 {(C)}	16	27,000,000	250 {(C)}	2,800	--	mg/kg
Xylene (total)	19	1	8.1	150	150 {(C)}	150 {(C)}	5.6	290,000,000	150 {(C)}	46,000	--	mg/kg
Detected SVOCs												
2-Methylnaphthalene	19	3	0.15	{NA}	5,500	8,100	57	670,000	2,700	1,500	--	mg/kg
Acenaphthene	19	2	0.17	{NA}	970	41,000	300	14,000,000	190,000	81,000	--	mg/kg
Acetophenone	19	1	0.077	1,100	1,100 {(C)}	1,100 {(C)}	30	33,000,000	1,100 {(C)}	44,000	--	mg/kg
Anthracene	19	4	0.27	{NA}	41	230,000	41	67,000,000	1,000,000 {(D)}	1,400,000	--	mg/kg
Benzo(a)anthracene	19	10	1.7	{NA}	{NLL}	20	{NLL}	{ID}	{NLV}	{NLV}	--	mg/kg
Benzo(a)pyrene	19	8	1.6	{NA}	{NLL}	2	{NLL}	1,500	{NLV}	{NLV}	--	mg/kg
Benzo(b)fluoranthene	19	9	2.9	{NA}	{NLL}	20	{NLL}	{ID}	{ID}	{ID}	--	mg/kg
Benzo(g,h,i)perylene	19	6	1.2	{NA}	{NLL}	2,500	{NLL}	800,000	{NLV}	{NLV}	--	mg/kg
Benzo(k)fluoranthene	19	3	1	{NA}	{NLL}	200	{NLL}	{ID}	{NLV}	{NLV}	--	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	19	2	0.082	10,000	{NLL}	2,800	{NLL}	700,000	{NLV}	{NLV}	--	mg/kg
Butyl benzylphthalate (BBP)	19	5	0.27	310	310 {(C)}	310 {(C)}	310 {(C)}	47,000,000	{NLV}	{NLV}	--	mg/kg
Caprolactam	19	1	1.4	{NA}	1,000,000 {(D)}	53,000 {(DD)}	120	670,000	{NLV}	{NLV}	--	mg/kg
Carbazole	19	2	0.18	{NA}	820	530	9.4	62,000	{NLV}	{NLV}	--	mg/kg
Chrysene	19	11	1.9	{NA}	{NLL}	2,000	{NLL}	{ID}	{ID}	{ID}	--	mg/kg
Dibenz(a,h)anthracene	19	1	0.18	{NA}	{NLL}	2	{NLL}	{ID}	{NLV}	{NLV}	--	mg/kg
Di-n-butylphthalate (DBP)	19	2	0.21	760	760 {(C)}	760 {(C)}	760 {(C)}	3,300,000	{NLV}	{NLV}	--	mg/kg
Fluoranthene	19	11	3.8	{NA}	730	46,000	730	9,300,000	1,000,000 {(D)}	740,000	--	mg/kg
Fluorene	19	2	0.11	{NA}	890	27,000	390	9,300,000	580,000	130,000	--	mg/kg
Indeno(1,2,3-cd)pyrene	19	4	1.1	{NA}	{NLL}	20	{NLL}	{ID}	{NLV}	{NLV}	--	mg/kg
Naphthalene	19	3	0.12	{NA}	2,100	16,000	35	200,000	250	300	--	mg/kg
Phenanthrene	19	13	1.3	{NA}	1,100	1,600	56	6,700	2,800	160	--	mg/kg
Pyrene	19	12	3	{NA}	480	29,000	480	6,700,000	1,000,000 {(D)}	650,000	--	mg/kg

Table 4-63. Screening Summary of Frequency and Maximum Detections in Subsurface Soil for Pontiac School Board, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	CSAT	GCCP	RDC	RDWP	RPSIC	RSVIA	RVSICI	SSBC	Units
Detected CDD/F												
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	4	2	0.0000559	--	--	--	--	--	--	--	--	mg/kg
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	4	3	0.000835	--	--	--	--	--	--	--	--	mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	4	3	0.0000544	--	--	--	--	--	--	--	--	mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	4	3	0.0000966	--	--	--	--	--	--	--	--	mg/kg
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	4	1	0.0000017	--	--	--	--	--	--	--	--	mg/kg
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	4	1	0.0000024	--	--	--	--	--	--	--	--	mg/kg
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	4	1	0.000001	--	--	--	--	--	--	--	--	mg/kg
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	4	1	0.0000022	--	--	--	--	--	--	--	--	mg/kg
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	4	3	0.0000084	--	--	--	--	--	--	--	--	mg/kg
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	4	1	0.00000061	--	--	--	--	--	--	--	--	mg/kg
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	4	1	0.0000044	--	--	--	--	--	--	--	--	mg/kg
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	4	1	0.00000094	--	--	--	--	--	--	--	--	mg/kg
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	4	2	0.0000025	--	--	--	--	--	--	--	--	mg/kg
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	4	1	0.0000031	--	--	--	--	--	--	--	--	mg/kg
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	4	2	0.000002	--	--	--	--	--	--	--	--	mg/kg
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	4	3	0.0000019	--	--	--	--	--	--	--	--	mg/kg
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	4	1	0.0000019	--	--	--	--	--	--	--	--	mg/kg
WHO Dioxin TEQ(Human/Mammal-NDs used at 1/2 DL)	4	4	0.0000168	{NA}	{NLL}	0.00000009 {(O)}	{NLL}	0.000071 {(O)}	{NLV}	{NLV}	--	mg/kg
Detected Pests/PCBs												
Aroclor-1242 (PCB-1242)	19	1	0.038	--	--	--	--	--	--	--	--	mg/kg
Aroclor-1248 (PCB-1248)	19	4	0.55	--	--	--	--	--	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	19	4	0.041	--	--	--	--	--	--	--	--	mg/kg
Total PCBs	19	8	0.55	{NA}	{NLL}	4 {(T)}	{NLL}	5,200	3,000	240	--	mg/kg
Detected Inorganics												
Antimony	19	6	2.9	{NA}	--	180	4.3	13,000	{NLV}	{NLV}	--	mg/kg
Arsenic	19	19	13.8	{NA}	--	7.6	4.6	720	{NLV}	{NLV}	8.05	mg/kg
Barium	19	19	977	{NA}	--	37,000	1,300	330,000	{NLV}	{NLV}	75	mg/kg
Beryllium	19	19	1.28	{NA}	--	410	51	1,300	{NLV}	{NLV}	--	mg/kg
Cadmium	19	19	5.88	{NA}	--	550	6	1,700	{NLV}	{NLV}	--	mg/kg
Chromium	19	19	167	{NA}	--	2,500	30	260	{NLV}	{NLV}	23.2	mg/kg
Cobalt	19	19	7.28	{NA}	--	2,600	0.8	13,000	{NLV}	{NLV}	11.8	mg/kg
Copper	19	19	318	{NA}	--	20,000	5,800	130,000	{NLV}	{NLV}	--	mg/kg
Lead	19	19	429	{NA}	--	400	700	100,000	{NLV}	{NLV}	33.2	mg/kg
Manganese	19	19	1160	{NA}	--	25,000	1	3,300	{NLV}	{NLV}	631	mg/kg
Mercury	19	15	0.426	{NA}	--	160	1.7	20,000	48	52	--	mg/kg
Nickel	19	19	154	{NA}	--	40,000	100	13,000	{NLV}	{NLV}	29	mg/kg
Selenium	19	5	0.938	{NA}	--	2,600	4	130,000	{NLV}	{NLV}	--	mg/kg
Silver	19	5	0.511	{NA}	--	2,500	4.5	6,700	{NLV}	{NLV}	--	mg/kg
Thallium	19	1	0.731	{NA}	--	35	2.3	13,000	{NLV}	{NLV}	--	mg/kg
Vanadium	19	19	25	{NA}	--	750 {(DD)}	72	{ID}	{NLV}	{NLV}	27.7	mg/kg
Zinc	19	19	5200	{NA}	--	170,000	2,400	{ID}	{NLV}	{NLV}	76.3	mg/kg

Table 4-64. Screening Summary of Frequency and Maximum Detections in Sediment for Pontiac School Board, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	RDC	CSAT	Units
Detected VOCs						
2-Butanone (Methyl ethyl ketone) (MEK)	5	2	0.021	27,000 {(C,DD)}	27,000	mg/kg
Acetone	5	5	0.1	23,000	110,000	mg/kg
Cyclohexane	5	2	0.028	260 {(C)}	260	mg/kg
Ethylbenzene	5	2	0.014	140 {(C)}	140	mg/kg
Isopropyl benzene	5	2	0.018	390 {(C)}	390	mg/kg
Methyl cyclohexane	5	2	0.02	{NA}	{NA}	mg/kg
Toluene	5	1	0.0021	250 {(C)}	250	mg/kg
Trichlorofluoromethane (CFC-11)	5	1	0.0022	560 {(C)}	560	mg/kg
Xylene (total)	5	2	0.095	150 {(C)}	150	mg/kg
Detected SVOCs						
2-Methylnaphthalene	5	3	3.2	8,100	{NA}	mg/kg
Acenaphthene	5	4	6.7	41,000	{NA}	mg/kg
Anthracene	5	5	10	230,000	{NA}	mg/kg
Benzo(a)anthracene	5	5	53	20	{NA}	mg/kg
Benzo(a)pyrene	5	5	50	2	{NA}	mg/kg
Benzo(b)fluoranthene	5	5	69	20	{NA}	mg/kg
Benzo(g,h,i)perylene	5	5	31	2,500	{NA}	mg/kg
Benzo(k)fluoranthene	5	5	32	200	{NA}	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	5	5	5.8	2,800	10,000	mg/kg
Butyl benzylphthalate (BBP)	5	3	11	310 {(C)}	310	mg/kg
Carbazole	5	3	5.5	530	{NA}	mg/kg
Chrysene	5	5	71	2,000	{NA}	mg/kg
Dibenz(a,h)anthracene	5	4	7.6	2	{NA}	mg/kg
Dibenzofuran	5	2	2.5	{ID}	{NA}	mg/kg
Fluoranthene	5	5	130	46,000	{NA}	mg/kg
Fluorene	5	5	5.7	27,000	{NA}	mg/kg
Indeno(1,2,3-cd)pyrene	5	5	28	20	{NA}	mg/kg
Naphthalene	5	2	0.78	16,000	{NA}	mg/kg
Phenanthrene	5	5	56	1,600	{NA}	mg/kg
Pyrene	5	5	120	29,000	{NA}	mg/kg
Detected CDD/F						
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	4	3	0.0000442	{NA}	{NA}	mg/kg
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	4	4	0.00206	{NA}	{NA}	mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	4	3	0.0000393	{NA}	{NA}	mg/kg
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	4	4	0.000219	{NA}	{NA}	mg/kg
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	4	2	0.0000051	{NA}	{NA}	mg/kg
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	4	1	0.0000019	{NA}	{NA}	mg/kg
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	4	2	0.0000025	{NA}	{NA}	mg/kg
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	4	2	0.0000088	{NA}	{NA}	mg/kg
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	4	2	0.0000056	{NA}	{NA}	mg/kg
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	4	1	0.0000014	{NA}	{NA}	mg/kg
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	4	2	0.0000015	{NA}	{NA}	mg/kg
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	4	1	0.0000004	{NA}	{NA}	mg/kg
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	4	1	0.0000024	{NA}	{NA}	mg/kg
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	4	4	0.0000085	{NA}	{NA}	mg/kg
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	4	1	0.0000011	{NA}	{NA}	mg/kg
Dioxin/Furan TEQ(CAL/EPA)	4	4	0.0000088	{NA}	{NA}	mg/kg
Total heptachlorodibenzofuran (HpCDF)	4	4	0.0000981	{NA}	{NA}	mg/kg
Total heptachlorodibenzo-p-dioxin (HpCDD)	4	4	0.000567	{NA}	{NA}	mg/kg
Total hexachlorodibenzofuran (HxCDF)	4	4	0.000118	{NA}	{NA}	mg/kg
Total hexachlorodibenzo-p-dioxin (HxCDD)	4	4	0.000152	{NA}	{NA}	mg/kg
Total pentachlorodibenzofuran (PeCDF)	4	4	0.000128	{NA}	{NA}	mg/kg
Total pentachlorodibenzo-p-dioxin (PeCDD)	4	4	0.0000298	{NA}	{NA}	mg/kg
Total tetrachlorodibenzofuran (TCDF)	4	4	0.000161	{NA}	{NA}	mg/kg
Total tetrachlorodibenzo-p-dioxin (TCDD)	4	3	0.0000133	{NA}	{NA}	mg/kg
WHO Dioxin TEQ(Human/Mammal-NDs Excluded)	4	4	8.26E-06	{NA}	{NA}	mg/kg
WHO Dioxin TEQ(Human/Mammal-NDs used at 1/2 DL)	4	4	8.35E-06	{NA}	{NA}	mg/kg
2,3,7,8-TCDD Equivalent	4	4	0.0000088	{NA}	{NA}	mg/kg

Table 4-64. Screening Summary of Frequency and Maximum Detections in Sediment for Pontiac School Board, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	RDC	CSAT	Units
Detected Pests/PCBs						
Aroclor-1242 (PCB-1242)	5	1	0.12	4 {(T)}	{NA}	mg/kg
Aroclor-1248 (PCB-1248)	5	4	0.27	4 {(T)}	{NA}	mg/kg
Aroclor-1254 (PCB-1254)	5	2	0.39	4 {(T)}	{NA}	mg/kg
Aroclor-1260 (PCB-1260)	5	4	0.17	4 {(T)}	{NA}	mg/kg
Total PCBs	5	5	0.39	4 {(T)}	{NA}	mg/kg
Detected Inorganics						
Antimony	5	4	5.18	180	{NA}	mg/kg
Arsenic	5	5	27.2	7.6	{NA}	mg/kg
Barium	5	5	227	37,000	{NA}	mg/kg
Beryllium	5	5	1.67	410	{NA}	mg/kg
Cadmium	5	5	7.43	550	{NA}	mg/kg
Chromium	5	5	141	2,500	{NA}	mg/kg
Cobalt	5	5	6.73	2,600	{NA}	mg/kg
Copper	5	5	271	20,000	{NA}	mg/kg
Lead	5	5	842	400	{NA}	mg/kg
Manganese	5	5	2350	25,000	{NA}	mg/kg
Mercury	5	5	0.335	160	{NA}	mg/kg
Nickel	5	5	50.3	40,000	{NA}	mg/kg
Silver	5	3	1.53	2,500	{NA}	mg/kg
Thallium	5	4	1.39	35	{NA}	mg/kg
Vanadium	5	5	25.5	750 {(DD)}	{NA}	mg/kg
Zinc	5	5	1740	170,000	{NA}	mg/kg

Table 4-65. Screening Summary of Frequency and Maximum Detections in Groundwater for Pontiac School Board, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	GAI	GCC	RDW	RGVIA	Units
Detected VOCs										
2-Butanone (Methyl ethyl ketone) (MEK)	4	1	0.004	240,000	{ID}	240,000 {(S)}	240,000 {(S)}	13	240,000 {(S)}	mg/L
Benzene	4	2	0.0014	1,750	68	67	11	0.005 {(A)}	5.6	mg/L
Carbon disulfide	4	1	0.00083	1,190	13	{ID}	1,200 {(S)}	0.8	250	mg/L
Cyclohexane	4	4	0.00044	--	--	--	--	--	--	mg/L
Ethylbenzene	4	2	0.00074	169	43	170 {(S)}	170 {(S)}	0.7 {(E)}	110	mg/L
Isopropyl benzene	4	3	0.00032	56	29	{ID}	56 {(S)}	0.8	56 {(S)}	mg/L
Methyl cyclohexane	4	4	0.00047	--	--	--	--	--	--	mg/L
Toluene	4	2	0.0024	526	61	{ID}	530 {(S)}	1 {(E)}	530 {(S)}	mg/L
Xylene (total)	4	3	0.0095	186	70	190 {(S)}	190 {(S)}	10 {(E)}	190 {(S)}	mg/L
Detected SVOCs										
2-Methylnaphthalene	4	1	0.00089	24.6	{ID}	{ID}	25 {(S)}	0.26	25 {(S)}	mg/L
4-Methylphenol	4	2	0.004	--	--	--	--	--	--	mg/L
Acenaphthene	4	1	0.0015	4.24	{ID}	{ID}	4.2 {(S)}	1.3	4.2 {(S)}	mg/L
Carbazole	4	2	0.0014	7.48	{ID}	{ID}	7.4	0.085	{NLV}	mg/L
Methylphenol (Cresol)	4	2	0.004	28,000	{NA}	{ID}	810	0.37	{NLV}	mg/L
Naphthalene	4	2	0.0068	31	{NA}	31 {(S)}	31 {(S)}	0.52	31 {(S)}	mg/L
Phenanthrene	4	1	0.0011	1	{ID}	{ID}	1 {(S)}	0.052	1 {(S)}	mg/L
Phenol	4	2	0.067	82,800	{NA}	{ID}	29,000	4.4	{NLV}	mg/L
Detected Inorganics										
Arsenic	5	4	0.0142	{NA}	{ID}	{ID}	4.3	0.01 {(A)}	{NLV}	mg/L
Barium	5	5	0.879	{NA}	{ID}	{ID}	14,000	2 {(A)}	{NLV}	mg/L
Cadmium	5	1	0.00047	{NA}	{ID}	{ID}	190	0.005 {(A)}	{NLV}	mg/L
Manganese	5	5	0.397	{NA}	{ID}	{ID}	9,100	0.86 {(E)}	{NLV}	mg/L
Mercury	5	2	0.00011	0.056	{ID}	{ID}	0.056 {(S)}	0.002 {(A)}	0.056 {(S)}	mg/L
Nickel	5	2	0.0155	{NA}	{ID}	{ID}	74,000	0.1 {(A)}	{NLV}	mg/L
Vanadium	5	1	0.0024	{NA}	{ID}	{ID}	970	0.0045	{NLV}	mg/L
Zinc	5	3	0.0197	{NA}	{ID}	{ID}	110,000	2.4	{NLV}	mg/L
Detected Inorganics-Filtered										
Antimony (dissolved)	5	1	0.0027	{NA}	{ID}	{ID}	68	0.006 {(A)}	{NLV}	mg/L
Arsenic (dissolved)	5	5	0.0151	{NA}	{ID}	{ID}	4.3	0.01 {(A)}	{NLV}	mg/L
Barium (dissolved)	5	5	0.909	{NA}	{ID}	{ID}	14,000	2 {(A)}	{NLV}	mg/L
Cadmium (dissolved)	5	1	0.00041	{NA}	{ID}	{ID}	190	0.005 {(A)}	{NLV}	mg/L
Manganese (dissolved)	5	3	0.414	{NA}	{ID}	{ID}	9,100	0.86 {(E)}	{NLV}	mg/L
Mercury (dissolved)	5	1	0.00025	0.056	{ID}	{ID}	0.056 {(S)}	0.002 {(A)}	0.056 {(S)}	mg/L
Nickel (dissolved)	5	2	0.0156	{NA}	{ID}	{ID}	74,000	0.1 {(A)}	{NLV}	mg/L
Vanadium (dissolved)	5	1	0.0025	{NA}	{ID}	{ID}	970	0.0045	{NLV}	mg/L

Table 4-66. Screening Summary of Frequency and Maximum Detections in Sediment for Terry Lake, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	RDC	CSAT	Units
Detected VOCs						
1,4-Dichlorobenzene	3	1	0.0072	400	{NA}	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	3	2	0.1	27,000 {(C,DD)}	27,000	mg/kg
Acetone	3	3	9.1	23,000	110,000	mg/kg
Chlorobenzene	3	1	0.022	260 {(C)}	260	mg/kg
Methyl acetate	3	1	0.018	--	--	mg/kg
Methyl cyclohexane	3	1	0.007	--	--	mg/kg
Xylene (total)	3	1	0.017	150 {(C)}	150	mg/kg
Detected SVOCs						
2-Methylnaphthalene	3	1	0.084	8,100	{NA}	mg/kg
Acenaphthene	3	2	0.39	41,000	{NA}	mg/kg
Anthracene	3	3	1.4	230,000	{NA}	mg/kg
Benzo(a)anthracene	3	3	3.5	20	{NA}	mg/kg
Benzo(a)pyrene	3	3	3.5	2	{NA}	mg/kg
Benzo(b)fluoranthene	3	3	4.9	20	{NA}	mg/kg
Benzo(g,h,i)perylene	3	3	1.7	2,500	{NA}	mg/kg
Benzo(k)fluoranthene	3	3	2.3	200	{NA}	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	3	3	1.3	2,800	10,000	mg/kg
Butyl benzylphthalate (BBP)	3	2	0.32	310 {(C)}	310	mg/kg
Carbazole	3	3	0.99	530	{NA}	mg/kg
Chrysene	3	3	4.4	2,000	{NA}	mg/kg
Dibenz(a,h)anthracene	3	2	0.48	2	{NA}	mg/kg
Fluoranthene	3	3	11	46,000	{NA}	mg/kg
Fluorene	3	2	0.57	27,000	{NA}	mg/kg
Indeno(1,2,3-cd)pyrene	3	3	1.7	20	{NA}	mg/kg
Phenanthrene	3	3	7.2	1,600	{NA}	mg/kg
Pyrene	3	3	7.9	29,000	{NA}	mg/kg
Detected Pests/PCBs						
Aroclor-1242 (PCB-1242)	3	2	0.19	--	--	mg/kg
Aroclor-1254 (PCB-1254)	3	1	0.11	--	--	mg/kg
Aroclor-1260 (PCB-1260)	3	2	0.035	--	--	mg/kg
Total PCBs	3	3	0.225	4 {(T)}	{NA}	mg/kg
Detected Inorganics						
Antimony	3	3	1.36	180	{NA}	mg/kg
Arsenic	3	3	4.62	7.6	{NA}	mg/kg
Barium	3	3	65.5	37,000	{NA}	mg/kg
Beryllium	3	3	0.127	410	{NA}	mg/kg
Cadmium	3	3	1.17	550	{NA}	mg/kg
Chromium	3	3	31.8	2,500	{NA}	mg/kg
Cobalt	3	3	3.13	2,600	{NA}	mg/kg
Copper	3	3	66.2	20,000	{NA}	mg/kg
Cyanide (total)	3	3	1.03	12	{NA}	mg/kg
Lead	3	3	176	400	{NA}	mg/kg
Manganese	3	3	506	25,000	{NA}	mg/kg
Mercury	3	3	0.0921	160	{NA}	mg/kg
Nickel	3	3	16.8	40,000	{NA}	mg/kg
Selenium	3	1	0.774	2,600	{NA}	mg/kg
Thallium	3	1	0.826	35	{NA}	mg/kg
Vanadium	3	3	11.3	750 {(DD)}	{NA}	mg/kg
Zinc	3	3	254	170,000	{NA}	mg/kg

Table 4-67. Screening Summary of Frequency and Maximum Detections in Sediment for Osmun Lake, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	RDC	CSAT	Units
Detected VOCs						
1,2-Dichlorobenzene	6	1	0.015	210 {(C)}	210	mg/kg
1,4-Dichlorobenzene	6	2	0.019	400	{NA}	mg/kg
2-Butanone (Methyl ethyl ketone) (MEK)	6	6	0.016	27,000 {(C,DD)}	27,000	mg/kg
Acetone	6	6	0.15	23,000	110,000	mg/kg
Ethylbenzene	6	2	0.0023	140 {(C)}	140	mg/kg
Isopropyl benzene	6	1	0.0037	390 {(C)}	390	mg/kg
Toluene	6	2	0.0036	250 {(C)}	250	mg/kg
Xylene (total)	6	1	0.008	150 {(C)}	150	mg/kg
Detected SVOCs						
Anthracene	6	1	0.17	230,000	{NA}	mg/kg
Benzo(a)anthracene	6	3	0.6	20	{NA}	mg/kg
Benzo(a)pyrene	6	3	0.63	2	{NA}	mg/kg
Benzo(b)fluoranthene	6	3	0.96	20	{NA}	mg/kg
Benzo(g,h,i)perylene	6	3	0.41	2,500	{NA}	mg/kg
Benzo(k)fluoranthene	6	3	0.51	200	{NA}	mg/kg
bis(2-Ethylhexyl)phthalate (DEHP)	6	3	2.5	2,800	10,000	mg/kg
Butyl benzylphthalate (BBP)	6	2	2.3	310 {(C)}	310	mg/kg
Chrysene	6	3	1.1	2,000	{NA}	mg/kg
Fluoranthene	6	4	2.2	46,000	{NA}	mg/kg
Fluorene	6	1	0.15	27,000	{NA}	mg/kg
Indeno(1,2,3-cd)pyrene	6	3	0.36	20	{NA}	mg/kg
Phenanthrene	6	3	0.84	1,600	{NA}	mg/kg
Pyrene	6	3	1.1	29,000	{NA}	mg/kg
Detected Pests/PCBs						
Aroclor-1242 (PCB-1242)	6	1	0.079	--	--	mg/kg
Aroclor-1254 (PCB-1254)	6	1	0.17	--	--	mg/kg
Total PCBs	6	1	0.249	4 {(T)}	{NA}	mg/kg
Detected Inorganics						
Antimony	6	3	10.6	180	{NA}	mg/kg
Arsenic	6	6	7.22	7.6	{NA}	mg/kg
Barium	6	6	341	37,000	{NA}	mg/kg
Beryllium	6	2	0.116	410	{NA}	mg/kg
Cadmium	6	6	1.9	550	{NA}	mg/kg
Chromium	6	6	123	2,500	{NA}	mg/kg
Cobalt	6	6	3.59	2,600	{NA}	mg/kg
Copper	6	6	89.3	20,000	{NA}	mg/kg
Lead	6	6	592	400	{NA}	mg/kg
Manganese	6	6	810	25,000	{NA}	mg/kg
Mercury	6	1	0.184	160	{NA}	mg/kg
Nickel	6	6	27.8	40,000	{NA}	mg/kg
Selenium	6	3	0.978	2,600	{NA}	mg/kg
Silver	6	1	0.923	2,500	{NA}	mg/kg
Thallium	6	4	0.986	35	{NA}	mg/kg
Vanadium	6	6	12.6	750 {(DD)}	{NA}	mg/kg
Zinc	6	6	405	170,000	{NA}	mg/kg

Table 4-68. Screening Summary of Frequency and Maximum Detections for Off-Site Groundwater, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	GAI	GCC	RDW	RGVIA	Units
Detected VOCs										
1,1-Dichloroethane	12	2	0.00031	5,060	380	{ID}	2,400	0.88	1,000	mg/L
Chloromethane (Methyl chloride)	12	3	0.00033	6,340	36	210	490	0.26	8.6	mg/L
Detected SVOCs										
bis(2-Ethylhexyl)phthalate (DEHP)	12	3	0.016	0.34	{NA}	0.34 {(S)}	0.32 {(AA)}	0.006 {(A)}	{NLV}	mg/L
Fluoranthene	12	1	0.00042	0.206	{ID}	{ID}	0.21 {(S)}	0.21 {(S)}	0.21 {(S)}	mg/L
Detected Inorganics										
Arsenic	15	6	0.0184	{NA}	{ID}	{ID}	4.3	0.01 {(A)}	{NLV}	mg/L
Barium	15	15	0.397	{NA}	{ID}	{ID}	14,000	2 {(A)}	{NLV}	mg/L
Cadmium	15	2	0.00056	{NA}	{ID}	{ID}	190	0.005 {(A)}	{NLV}	mg/L
Calcium	3	3	216	--	--	--	--	--	--	mg/L
Cobalt	15	9	0.0067	{NA}	{ID}	{ID}	2,400	0.04	{NLV}	mg/L
Copper	15	2	0.0039	{NA}	{ID}	{ID}	7,400	1.4 {(E)}	{NLV}	mg/L
Iron	3	3	16.8	{NA}	{ID}	{ID}	58,000	2 {(E)}	{NLV}	mg/L
Lead	15	1	0.0022	{NA}	{ID}	{ID}	{ID}	0.004 {(L)}	{NLV}	mg/L
Magnesium	3	3	73.3	{NA}	{ID}	{ID}	1,000,000 {(D)}	400	{NLV}	mg/L
Manganese	15	15	2.58	{NA}	{ID}	{ID}	9,100	0.86 {(E)}	{NLV}	mg/L
Mercury	14	0		0.056	{ID}	{ID}	0.056 {(S)}	0.002 {(A)}	0.056 {(S)}	mg/L
Nickel	15	9	0.0051	{NA}	{ID}	{ID}	74,000	0.1 {(A)}	{NLV}	mg/L
Potassium	3	3	11.6	--	--	--	--	--	--	mg/L
Sodium	3	3	85.6	{NA}	{ID}	{ID}	1,000,000 {(D)}	120	{NLV}	mg/L
Thallium	15	4	0.000073	{NA}	{ID}	{ID}	13	0.002 {(A)}	{NLV}	mg/L
Vanadium	15	1	0.0016	{NA}	{ID}	{ID}	970	0.0045	{NLV}	mg/L
Zinc	15	4	0.0172	{NA}	{ID}	{ID}	110,000	2.4	{NLV}	mg/L

Table 4-69. Screening Summary of Frequency and Maximum Detections for Downgradient Shallow Groundwater, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	GAI	GCC	GSI	RDW	RGVIA	Units
Detected VOCs											
1,1-Dichloroethane	67	1	0.00025	5,060	380	{ID}	2,400	0.74	0.88	1,000	mg/L
1,2,4-Trichlorobenzene	67	5	0.0013	300	{NA}	300 {(S)}	19	0.099 {(X)}	0.07 {(A)}	300 {(S)}	mg/L
2-Butanone (Methyl ethyl ketone) (MEK)	67	11	0.0021	240,000	{ID}	240,000 {(S)}	240,000 {(S)}	2.2	13	240,000 {(S)}	mg/L
2-Hexanone	67	1	0.00083	16,000	{NA}	{ID}	5,200	{ID}	1	4,200	mg/L
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	66	6	0.0016	20,000	{ID}	20,000 {(S)}	13,000	{ID}	1.8	20,000 {(S)}	mg/L
Acetone	67	16	0.033	1,000,000	15,000	1,000,000 {(D)}	31,000	1.7	0.73	1,000,000 {(D,S)}	mg/L
Benzene	67	1	0.00019	1,750	68	67	11	0.2 {(X)}	0.005 {(A)}	5.6	mg/L
Carbon disulfide	67	4	0.0011	1,190	13	{ID}	1,200 {(S)}	{ID}	0.8	250	mg/L
Chloroform (Trichloromethane)	67	1	0.00081	7,920	{ID}	{ID}	150	0.35	0.08 {(A,W)}	28	mg/L
Chloromethane (Methyl chloride)	67	4	0.00043	6,340	36	210	490	{ID}	0.26	8.6	mg/L
Methyl tert butyl ether (MTBE)	67	1	0.0071	46,800	{ID}	{ID}	610	7.1 {(X)}	0.24 {(E)}	47,000 {(S)}	mg/L
Methylene chloride	68	2	0.007	17,000	{ID}	{ID}	220	1.5 {(X)}	0.005 {(A)}	220	mg/L
Toluene	67	2	0.0012	526	61	{ID}	530 {(S)}	0.27	1 {(E)}	530 {(S)}	mg/L
Trichloroethene	67	1	0.00024	1,100	{ID}	1,100 {(S)}	22	0.2 {(X)}	0.005 {(A)}	15	mg/L
Trichlorofluoromethane (CFC-11)	67	10	0.002	1,100	{ID}	1,100 {(S)}	1,100 {(S)}	{NA}	2.6	1,100 {(S)}	mg/L
Xylene (total)	67	1	0.00069	186	70	190 {(S)}	190 {(S)}	0.041	10 {(E)}	190 {(S)}	mg/L
Detected SVOCs											
2,4-Dimethylphenol	68	11	0.011	7,870	{ID}	{ID}	520	0.38	0.37	{NLV}	mg/L
2-Methylnaphthalene	68	8	0.0024	24.6	{ID}	{ID}	25 {(S)}	0.019	0.26	25 {(S)}	mg/L
2-Methylphenol	68	1	0.00043	--	--	--	--	--	--	--	mg/L
4-Methylphenol	68	10	0.021	--	--	--	--	--	--	--	mg/L
Acenaphthene	68	9	0.0024	4.24	{ID}	{ID}	4.2 {(S)}	0.038	1.3	4.2 {(S)}	mg/L
Anthracene	68	3	0.0004	0.0434	{ID}	{ID}	0.043 {(S)}	{ID}	0.043 {(S)}	0.043 {(S)}	mg/L
Benzaldehyde	68	1	0.0013	--	--	--	--	--	--	--	mg/L
Benzo(a)pyrene	68	1	0.00036	0.00162	{ID}	{ID}	0.001 {(M,AA)}	{ID}	0.005 {(A)}	{NLV}	mg/L
Biphenyl (1,1-Biphenyl)	68	2	0.001	--	--	--	--	--	--	--	mg/L
bis(2-Ethylhexyl)phthalate (DEHP)	68	8	0.014	0.34	{NA}	0.34 {(S)}	0.32 {(AA)}	0.025	0.006 {(A)}	{NLV}	mg/L
Butyl benzylphthalate (BBP)	68	1	0.0029	2.69	{ID}	{ID}	2.7 {(S)}	0.067 {(X)}	1.2	{NLV}	mg/L
Caprolactam	68	2	0.0028	5,250,000	{NA}	1,000,000 {(D)}	390,000	{NA}	5.8	{NLV}	mg/L
Carbazole	68	8	0.0021	7.48	{ID}	{ID}	7.4	0.01 {(M)}	0.085	{NLV}	mg/L
Dibenz(a,h)anthracene	68	1	0.00044	0.00249	{ID}	{ID}	0.002 {(M,AA)}	{ID}	0.002 {(M)}	{NLV}	mg/L
Dibenzofuran	68	5	0.0018	10	{ID}	{ID}	{ID}	0.004	{ID}	10 {(S)}	mg/L
Di-n-butylphthalate (DBP)	68	4	0.0011	11.2	{NA}	{ID}	11 {(S)}	0.0097	0.88	{NLV}	mg/L
Fluoranthene	68	4	0.0011	0.206	{ID}	{ID}	0.21 {(S)}	0.0016	0.21 {(S)}	0.21 {(S)}	mg/L
Fluorene	68	4	0.0022	1.98	{ID}	{ID}	2 {(S)}	0.012	0.88	2 {(S)}	mg/L
Indeno(1,2,3-cd)pyrene	68	1	0.00041	0.000022	{ID}	{ID}	0.002 {(M,AA); (S)}	{ID}	0.002 {(M); (S)}	{NLV}	mg/L
Methylphenol (Cresol)	68	10	0.021	28,000	{NA}	{ID}	810	0.03 {(M)}	0.37	{NLV}	mg/L
Naphthalene	67	11	0.0071	31	{NA}	31 {(S)}	31 {(S)}	0.011	0.52	31 {(S)}	mg/L
Pentachlorophenol	68	4	0.0031	1,850	{ID}	{ID}	0.2	0.0028 {(G,X)}	0.001 {(A)}	{NLV}	mg/L
Phenanthrene	68	6	0.0018	1	{ID}	{ID}	1 {(S)}	0.002 {(M)}	0.052	1 {(S)}	mg/L
Phenol	68	4	0.019	82,800	{NA}	{ID}	29,000	0.45	4.4	{NLV}	mg/L
Pyrene	68	7	0.00063	0.135	{ID}	{ID}	0.14 {(S)}	{ID}	0.14 {(S)}	0.14 {(S)}	mg/L

Table 4-69. Screening Summary of Frequency and Maximum Detections for Downgradient Shallow Groundwater, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	GAI	GCC	GSI	RDW	RGVIA	Units
Detected CDD/F											
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	56	3	0.00000061	--	--	--	--	--	--	--	mg/L
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	56	1	0.000000002	--	--	--	--	--	--	--	mg/L
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	56	2	0.00000011	--	--	--	--	--	--	--	mg/L
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	56	1	1.5E-09	--	--	--	--	--	--	--	mg/L
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	56	1	9.8E-10	--	--	--	--	--	--	--	mg/L
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	56	12	0.000000063	--	--	--	--	--	--	--	mg/L
WHO Dioxin TEQ(Human/Mammal-NDs used at 1/2 DL)	56	56	2.13E-08	0.000019	--	--	0.00000001	0.00001	0.00000003	--	mg/L
Detected CDD/F-Filtered											
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD) (dissolved)	2	1	0.00000006	--	--	--	--	--	--	--	mg/L
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) (dissolved)	2	1	0.000000027	--	--	--	--	--	--	--	mg/L
WHO Dioxin TEQ(Human/Mammal-NDs used at 1/2 DL)	2	1	3.7E-09	0.000019	--	--	0.00000001	0.00000003	0.00003	--	mg/L
Detected Pests/PCBs											
Aroclor-1242 (PCB-1242)	78	3	0.00055	--	--	--	--	--	--	--	mg/L
Aroclor-1248 (PCB-1248)	78	10	0.0013	--	--	--	--	--	--	--	mg/L
Aroclor-1260 (PCB-1260)	78	7	0.00086	--	--	--	--	--	--	--	mg/L
Total PCBs	78	19	0.0013	0.0447	{ID}	{ID}	0.0033 {(AA)}	0.0002 {(M)}	0.0005 {(A)}	0.045 {(S)}	mg/L
Detected Inorganics											
Aluminum	7	1	0.291	{NA}	{ID}	{ID}	64,000	{NA}	0.3 {(V)}	{NLV}	mg/L
Antimony	83	18	0.0102	{NA}	{ID}	{ID}	68	0.13 {(X)}	0.006 {(A)}	{NLV}	mg/L
Arsenic	81	60	0.0228	{NA}	{ID}	{ID}	4.3	0.01	0.01 {(A)}	{NLV}	mg/L
Barium	81	77	0.42	{NA}	{ID}	{ID}	14,000	1.308 {(G)}	2 {(A)}	{NLV}	mg/L
Cadmium	81	8	0.0031	{NA}	{ID}	{ID}	190	0.0048 {(G,X)}	0.005 {(A)}	{NLV}	mg/L
Calcium	7	7	182	--	--	--	--	--	--	--	mg/L
Chromium	81	24	0.0647	{NA}	{ID}	{ID}	460	0.011	0.1 {(A)}	{NLV}	mg/L
Cobalt	81	13	0.0093	{NA}	{ID}	{ID}	2,400	0.1	0.04	{NLV}	mg/L
Copper	81	22	0.0222	{NA}	{ID}	{ID}	7,400	0.0216 {(G)}	1.4 {(E)}	{NLV}	mg/L
Cyanide (total)	52	22	0.034	{NA}	{ID}	{ID}	57	0.0052	0.2 {(A)}	{NLV}	mg/L
Iron	7	7	40.8	{NA}	{ID}	{ID}	58,000	{NA}	2 {(E)}	{NLV}	mg/L
Lead	81	9	0.0784	{NA}	{ID}	{ID}	{ID}	0.0309 {(G,X)}	0.004 {(L)}	{NLV}	mg/L
Magnesium	7	7	56.6	{NA}	{ID}	{ID}	1,000,000 {(D)}	{NA}	400	{NLV}	mg/L
Manganese	81	67	1.32	{NA}	{ID}	{ID}	9,100	4.767 {(G,X)}	0.86 {(E)}	{NLV}	mg/L
Mercury	77	5	0.00016	0.056	{ID}	{ID}	0.056 {(S)}	0.0000013	0.002 {(A)}	0.056 {(S)}	mg/L
Nickel	80	31	0.0385	{NA}	{ID}	{ID}	74,000	0.1243 {(G)}	0.1 {(A)}	{NLV}	mg/L
Potassium	7	7	13.3	--	--	--	--	--	--	--	mg/L
Selenium	81	1	0.005	{NA}	{ID}	{ID}	970	0.005	0.05 {(A)}	{NLV}	mg/L
Silver	81	1	0.0042	{NA}	{ID}	{ID}	1,500	0.0002 {(M)}	0.034	{NLV}	mg/L
Sodium	7	7	218	{NA}	{ID}	{ID}	1,000,000 {(D)}	{NA}	120	{NLV}	mg/L
Thallium	81	3	0.000045	{NA}	{ID}	{ID}	13	0.0037 {(X)}	0.002 {(A)}	{NLV}	mg/L
Vanadium	83	33	0.0616	{NA}	{ID}	{ID}	970	0.012	0.0045	{NLV}	mg/L
Zinc	81	13	0.0544	{NA}	{ID}	{ID}	110,000	0.2827 {(G)}	2.4	{NLV}	mg/L
Detected Inorganics-Filtered											
Antimony (dissolved)	11	1	0.0082	{NA}	{ID}	{ID}	68	0.13 {(X)}	0.006 {(A)}	{NLV}	mg/L
Arsenic (dissolved)	11	5	0.012	{NA}	{ID}	{ID}	4.3	0.01	0.01 {(A)}	{NLV}	mg/L
Barium (dissolved)	11	10	0.232	{NA}	{ID}	{ID}	14,000	1.308 {(G)}	2 {(A)}	{NLV}	mg/L
Cadmium (dissolved)	11	2	0.00031	{NA}	{ID}	{ID}	190	0.0048 {(G,X)}	0.005 {(A)}	{NLV}	mg/L
Chromium Total (dissolved)	11	3	0.0377	{NA}	{ID}	{ID}	460	0.011	0.1 {(A)}	{NLV}	mg/L
Cobalt (dissolved)	11	2	0.0023	{NA}	{ID}	{ID}	2,400	0.1	0.04	{NLV}	mg/L
Copper (dissolved)	11	4	0.0152	{NA}	{ID}	{ID}	7,400	0.0216 {(G)}	1.4 {(E)}	{NLV}	mg/L
Manganese (dissolved)	11	8	0.739	{NA}	{ID}	{ID}	9,100	4.767 {(G,X)}	0.86 {(E)}	{NLV}	mg/L
Mercury (dissolved)	11	1	0.000088	0.056	{ID}	{ID}	0.056 {(S)}	0.0000013	0.002 {(A)}	0.056 {(S)}	mg/L
Nickel (dissolved)	11	5	0.0071	{NA}	{ID}	{ID}	74,000	0.1243 {(G)}	0.1 {(A)}	{NLV}	mg/L
Vanadium (dissolved)	11	4	0.0479	{NA}	{ID}	{ID}	970	0.012	0.0045	{NLV}	mg/L
Zinc (dissolved)	11	1	0.0154	{NA}	{ID}	{ID}	110,000	0.2827 {(G)}	2.4	{NLV}	mg/L

Table 4-70. Screening Summary of Frequency and Maximum Detections for Downgradient Deep Groundwater Samples, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	RDW	Units
Detected VOCs							
1,1,1-Trichloroethane	74	1	0.00025	1,330	{ID}	0.2 {(A)}	mg/L
1,1-Dichloroethene	74	2	0.00048	2,250	97	0.007 {(A)}	mg/L
1,4-Dichlorobenzene	74	1	0.00027	73.8	{NA}	0.075 {(A)}	mg/L
2-Butanone (Methyl ethyl ketone) (MEK)	74	4	0.002	240,000	{ID}	13	mg/L
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	68	2	0.00036	20,000	{ID}	1.8	mg/L
Acetone	74	14	3.1	1,000,000	15,000	0.73	mg/L
Benzene	74	2	0.0045	1,750	68	0.005 {(A)}	mg/L
Carbon disulfide	74	10	0.0094	1,190	13	0.8	mg/L
Chloroethane	74	2	0.0018	5,740	110	0.43	mg/L
Chloroform (Trichloromethane)	74	3	0.00028	7,920	{ID}	0.08 {(A,W)}	mg/L
Chloromethane (Methyl chloride)	74	9	0.00058	6,340	36	0.26	mg/L
cis-1,2-Dichloroethene	74	3	0.0076	3,500	530	0.07 {(A)}	mg/L
Methyl tert butyl ether (MTBE)	74	7	0.0052	46,800	{ID}	0.24 {(E)}	mg/L
Methylene chloride	74	2	0.018	17,000	{ID}	0.005 {(A)}	mg/L
Tetrachloroethene	71	3	0.0032	200	{ID}	0.005 {(A)}	mg/L
Toluene	74	2	0.00038	526	61	1 {(E)}	mg/L
trans-1,2-Dichloroethene	74	1	0.0008	6,300	230	0.1 {(A)}	mg/L
Trichloroethene	74	3	0.0021	1,100	{ID}	0.005 {(A)}	mg/L
Trichlorofluoromethane (CFC-11)	74	3	0.0022	1,100	{ID}	2.6	mg/L
Vinyl chloride	74	1	0.0006	2,760	33	0.002 {(A)}	mg/L
Xylene (total)	74	1	0.00099	186	70	10 {(E)}	mg/L
Detected SVOCs							
2-Methylnaphthalene	74	2	0.00046	24.6	{ID}	0.26	mg/L
4-Methylphenol	74	1	0.0021	--	--	--	mg/L
Acenaphthene	74	3	0.0011	4.24	{ID}	1.3	mg/L
bis(2-Ethylhexyl)phthalate (DEHP)	74	6	0.0088	0.34	{NA}	0.006 {(A)}	mg/L
Butyl benzylphthalate (BBP)	74	1	0.00054	2.69	{ID}	1.2	mg/L
Caprolactam	74	6	0.039	5,250,000	{NA}	5.8	mg/L
Di-n-butylphthalate (DBP)	74	1	0.00088	11.2	{NA}	0.88	mg/L
Fluorene	74	3	0.00075	1.98	{ID}	0.88	mg/L
Methylphenol (Cresol)	74	1	0.0021	28,000	{NA}	0.37	mg/L
Naphthalene	74	4	0.00048	31	{NA}	0.52	mg/L
Phenol	74	6	0.018	82,800	{NA}	4.4	mg/L
Detected Pests/PCBs							
Aroclor-1260 (PCB-1260)	75	1	0.00005	--	--	--	mg/L
Total PCBs	75	1	0.00005	0.0447	{ID}	0.0005 {(A)}	mg/L
Detected Inorganics							
Arsenic	76	54	0.0413	{NA}	{ID}	0.01 {(A)}	mg/L
Barium	75	75	2.03	{NA}	{ID}	2 {(A)}	mg/L
Cadmium	75	5	0.00057	{NA}	{ID}	0.005 {(A)}	mg/L
Chromium	75	36	0.0302	{NA}	{ID}	0.1 {(A)}	mg/L
Cobalt	75	24	0.0136	{NA}	{ID}	0.04	mg/L
Copper	75	7	0.0064	{NA}	{ID}	1.4 {(E)}	mg/L
Lead	75	2	0.0135	{NA}	{ID}	0.004 {(L)}	mg/L
Manganese	75	72	1.08	{NA}	{ID}	0.86 {(E)}	mg/L
Mercury	75	1	0.00011	0.056	{ID}	0.002 {(A)}	mg/L
Nickel	75	31	0.0278	{NA}	{ID}	0.1 {(A)}	mg/L
Silver	75	1	0.0013	{NA}	{ID}	0.034	mg/L
Thallium	75	4	0.0124	{NA}	{ID}	0.002 {(A)}	mg/L
Vanadium	75	4	0.0049	{NA}	{ID}	0.0045	mg/L
Zinc	75	15	0.592	{NA}	{ID}	2.4	mg/L
Detected Inorganics-Filtered							
Antimony (dissolved)	12	2	0.0027	{NA}	{ID}	0.006 {(A)}	mg/L
Arsenic (dissolved)	12	6	0.0259	{NA}	{ID}	0.01 {(A)}	mg/L
Barium (dissolved)	12	12	1.5	{NA}	{ID}	2 {(A)}	mg/L
Cadmium (dissolved)	12	3	0.0005	{NA}	{ID}	0.005 {(A)}	mg/L
Chromium Total (dissolved)	12	2	0.0104	{NA}	{ID}	0.1 {(A)}	mg/L
Cobalt (dissolved)	12	2	0.0024	{NA}	{ID}	0.04	mg/L
Manganese (dissolved)	12	11	0.9	{NA}	{ID}	0.86 {(E)}	mg/L
Mercury (dissolved)	12	1	0.000072	0.056	{ID}	0.002 {(A)}	mg/L
Nickel (dissolved)	12	2	0.0064	{NA}	{ID}	0.1 {(A)}	mg/L
Thallium (dissolved)	12	3	0.0053	{NA}	{ID}	0.002 {(A)}	mg/L
Vanadium (dissolved)	12	1	0.0025	{NA}	{ID}	0.0045	mg/L
Zinc (dissolved)	12	1	0.0236	{NA}	{ID}	2.4	mg/L

Table 4-70a. Screening Summary of Frequency and Maximum Detections for Downgradient Deep Groundwater Samples on Columbia Avenue, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	WS	FE	RDW	Units
Detected VOCs							
1,1,1-Trichloroethane	8	4	0.0033	1,330	{ID}	0.2 {(A)}	mg/L
2-Butanone (Methyl ethyl ketone) (MEK)	8	1	0.00079	240,000	{ID}	13	mg/L
Acetone	8	1	0.0016	1,000,000	15,000	0.73	mg/L
Benzene	8	1	0.0004	1,750	68	0.005 {(A)}	mg/L
Bromodichloromethane	7	1	0.00023	6,740	{ID}	0.08 {(A,W)}	mg/L
Carbon disulfide	8	1	0.00054	1,190	13	0.8	mg/L
Chloroform (Trichloromethane)	8	1	0.00081	7,920	{ID}	0.08 {(A,W)}	mg/L
Methyl tert butyl ether (MTBE)	8	1	0.011	46,800	{ID}	0.24 {(E)}	mg/L
Toluene	8	3	0.00033	526	61	1 {(E)}	mg/L
Total 1,3 Dichloropropenes	8	1		2,800	130	0.0085	mg/L
Vinyl chloride	8	4	0.018	2,760	33	0.002 {(A)}	mg/L
Detected SVOCs							
bis(2-Ethylhexyl)phthalate (DEHP)	8	2	0.0034	0.34	{NA}	0.006 {(A)}	mg/L
Detected Pests/PCBs							
None Detected				--	--	--	--
Detected Inorganics							
Arsenic	8	2	0.0053	{NA}	{ID}	0.01 {(A)}	mg/L
Barium	8	8	0.462	{NA}	{ID}	2 {(A)}	mg/L
Chromium	8	2	0.0018	{NA}	{ID}	0.1 {(A)}	mg/L
Cobalt	8	1	0.0013	{NA}	{ID}	0.04	mg/L
Copper	8	1	0.0056	{NA}	{ID}	1.4 {(E)}	mg/L
Manganese	8	6	0.509	{NA}	{ID}	0.86 {(E)}	mg/L
Nickel	8	2	0.0079	{NA}	{ID}	0.1 {(A)}	mg/L
Detected Inorganics-Filtered							
Barium (dissolved)	1	1	0.0462	{NA}	{ID}	2 {(A)}	mg/L
Manganese (dissolved)	1	1	0.0968	{NA}	{ID}	0.86 {(E)}	mg/L
Zinc (dissolved)	1	1	0.0251	{NA}	{ID}	2.4	mg/L

**Table 4-70c. Summary of WG Sample Analytical Results Fiero Downgradient Wells,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	RDW	Units
Detected VOCs					
1,1,1-Trichloroethane	50	48	0.081	0.2 {(A)}	mg/L
1,1-Dichloroethane	50	48	0.025	0.88	mg/L
1,1-Dichloroethene	50	32	0.01	0.007 {(A)}	mg/L
1,2,4-Trichlorobenzene	50	1	0.00041	0.07 {(A)}	mg/L
Acetone	50	6	0.2	0.73	mg/L
Chloroform (Trichloromethane)	50	1	0.00017	0.08 {(A,W)}	mg/L
Chloromethane (Methyl chloride)	50	8	0.00084	0.26	mg/L
cis-1,2-Dichloroethene	50	10	0.0016	0.07 {(A)}	mg/L
Tetrachloroethene	50	10	0.00073	0.005 {(A)}	mg/L
Toluene	50	1	0.00048	1 {(E)}	mg/L
Total 1,3 Dichloropropenes	48	3		0.0085	mg/L
Total Trihalomethanes	45	1	0.00017	- -	mg/L
Trichloroethene	50	1	0.00014	0.005 {(A)}	mg/L
Xylene (total)	50	1	0.00053	10 {(E)}	mg/L
Detected SVOCs					
bis(2-Ethylhexyl)phthalate (DEHP)	43	3	0.0037	0.006 {(A)}	mg/L
Di-n-butylphthalate (DBP)	43	1	0.00093	0.88	mg/L
Detected Pests/PCBs					
None Detected					- -
Detected Pests/PCBs-Filtered					
None Detected					- -
Detected Inorganics					
Antimony	45	2	0.003	0.006 {(A)}	mg/L
Arsenic	45	9	0.0927	0.01 {(A)}	mg/L
Barium	45	45	0.431	2 {(A)}	mg/L
Cadmium	45	8	0.0013	0.005 {(A)}	mg/L
Chromium	45	2	0.0029	0.1 {(A)}	mg/L
Cobalt	45	18	0.0052	0.04	mg/L
Copper	45	7	0.0055	1.4 {(E)}	mg/L
Lead	45	1	0.0052	0.004 {(L)}	mg/L
Manganese	48	48	2.5	0.86 {(E)}	mg/L
Nickel	45	25	0.0155	0.1 {(A)}	mg/L
Selenium	45	3	0.0063	0.05 {(A)}	mg/L
Silver	45	2	0.0031	0.034	mg/L
Thallium	45	8	0.0076	0.002 {(A)}	mg/L
Vanadium	45	2	0.0069	0.0045	mg/L
Zinc	45	11	0.0287	2.4	mg/L
Detected Inorganics-Filtered					
Barium (dissolved)	7	7	0.19	2 {(A)}	mg/L
Beryllium (dissolved)	7	1	0.00067	0.004 {(A)}	mg/L
Cadmium (dissolved)	7	2	0.00045	0.005 {(A)}	mg/L
Cobalt (dissolved)	7	2	0.0051	0.04	mg/L
Copper (dissolved)	7	1	0.0049	1.4 {(E)}	mg/L
Manganese (dissolved)	7	7	1.74	0.86 {(E)}	mg/L
Nickel (dissolved)	7	5	0.005	0.1 {(A)}	mg/L
Thallium (dissolved)	7	4	0.0079	0.002 {(A)}	mg/L

**Table 4-71. Screening Summary of Frequency and Maximum Detections in Soil for Stormwater Detention Facility,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	CSAT	NRDC	NRPSIC	NRSVIA	NRVSICI	SSBC	Units
Detected VOCs										
Carbon disulfide	7	1	0.0018	280	280 {(C,DD)}	21,000,000	140	1,600	--	mg/kg
Methylene chloride	7	2	0.025	2,300	2,300 {(C)}	8,300,000	240	700	--	mg/kg
Toluene	7	4	0.002	250	250 {(C)}	12,000,000	250 {(C)}	3,300	--	mg/kg
Trichloroethene	7	1	0.0017	500	500 {(C,DD)}	2,300,000	37	260	--	mg/kg
Xylene (total)	7	3	0.0017	150	150 {(C)}	130,000,000	150 {(C)}	54,000	--	mg/kg
Detected SVOCs										
Anthracene	7	1	0.068	{NA}	730,000	29,000,000	1,000,000 {(D)}	1,600,000	--	mg/kg
Benzo(a)anthracene	7	2	0.15	{NA}	80	{ID}	{NLV}	{NLV}	--	mg/kg
Benzo(a)pyrene	7	1	0.14	{NA}	8	1,900	{NLV}	{NLV}	--	mg/kg
Benzo(b)fluoranthene	7	1	0.18	{NA}	80	{ID}	{ID}	{ID}	--	mg/kg
Benzo(g,h,i)perylene	7	1	0.11	{NA}	7,000	350,000	{NLV}	{NLV}	--	mg/kg
Benzo(k)fluoranthene	7	1	0.084	{NA}	800	{ID}	{NLV}	{NLV}	--	mg/kg
Carbazole	7	1	0.042	{NA}	2,400	78,000	{NLV}	{NLV}	--	mg/kg
Chrysene	7	2	0.18	{NA}	8,000	{ID}	{ID}	{ID}	--	mg/kg
Fluoranthene	7	3	0.33	{NA}	130,000	4,100,000	1,000,000 {(D)}	890,000	--	mg/kg
Indeno(1,2,3-cd)pyrene	7	1	0.085	{NA}	80	{ID}	{NLV}	{NLV}	--	mg/kg
Phenanthrene	7	2	0.28	{NA}	5,200	2,900	5,100	190	--	mg/kg
Pyrene	7	3	0.29	{NA}	84,000	2,900,000	1,000,000 {(D)}	780,000	--	mg/kg
Detected Pests/PCBs										
Aroclor-1242 (PCB-1242)	7	1	0.037	--	--	--	--	--	--	mg/kg
Aroclor-1248 (PCB-1248)	7	2	0.019	--	--	--	--	--	--	mg/kg
Aroclor-1260 (PCB-1260)	7	2	0.012	--	--	--	--	--	--	mg/kg
Total PCBs	7	3	0.049	{NA}	{(T)}	6,500	16,000	810	--	mg/kg
Detected Inorganics										
Antimony	7	1	0.304	{NA}	670	5,900	--	--	--	mg/kg
Arsenic	7	7	9.3	{NA}	37	910	--	--	8.05	mg/kg
Barium	7	7	69.4	{NA}	130,000	150,000	--	--	75	mg/kg
Beryllium	7	4	0.251	{NA}	1,600	590	--	--	--	mg/kg
Cadmium	7	7	0.847	{NA}	2,100	2,200	--	--	--	mg/kg
Chromium	7	7	20.6	{NA}	9,200	240	--	--	23.2	mg/kg
Cobalt	7	7	7.46	{NA}	9,000	5,900	--	--	11.8	mg/kg
Copper	7	7	27.2	{NA}	73,000	59,000	--	--	--	mg/kg
Lead	7	7	471	{NA}	900	44,000	--	--	33.2	mg/kg
Manganese	6	6	694	{NA}	90,000	1,500	--	--	631	mg/kg
Mercury	7	3	0.852	{NA}	580	8,800	--	--	--	mg/kg
Nickel	7	7	131	{NA}	150,000	16,000	--	--	29	mg/kg
Vanadium	7	7	21.7	{NA}	5,500	--	--	--	27.7	mg/kg
Zinc	6	6	51.8	{NA}	630,000	{ID}	--	--	76.3	mg/kg

**Table 4-72. Screening Summary of Frequency and Maximum Detections in Groundwater for Stormwater Detention Facility,
RACER Trust Pontiac North Campus, Pontiac, Michigan**

	# Results	# Detected	Maximum Detect	NRGVIA	WS	FE	GAI	GCC	Units
Detected VOCs									
Carbon disulfide	12	1	0.00042	550	1,190	13	{ID}	1,200 {(S)}	mg/L
Chloromethane (Methyl chloride)	12	1	0.00037	45	6,340	36	210	490	mg/L
Toluene	12	1	0.00054	530 {(S)}	526	61	{ID}	530 {(S)}	mg/L
Xylene (total)	12	1	0.00075	190 {(S)}	186	70	190 {(S)}	190 {(S)}	mg/L
Detected SVOCs									
Diethyl phthalate	12	1	0.0023	{NLV}	1,080	{NA}	{ID}	1,100 {(S)}	mg/L
Di-n-butylphthalate (DBP)	12	1	0.0011	{NLV}	11.2	{NA}	{ID}	11 {(S)}	mg/L
Detected Pests/PCBs									
Aroclor-1248 (PCB-1248)	16	1	0.0001	--	--	--	--	--	mg/L
Aroclor-1254 (PCB-1254)	16	1	0.00019	--	--	--	--	--	mg/L
Aroclor-1260 (PCB-1260)	15	3	0.000063	--	--	--	--	--	mg/L
Total PCBs	17	5	0.00019	0.045 {(S)}	0.0447	{ID}	{ID}	0.0033 {(AA)}	mg/L
Detected Inorganics									
Aluminum	7	1	0.291	{NLV}	{NA}	{ID}	{ID}	64,000	mg/L
Antimony	19	2	0.0035	{NLV}	{NA}	{ID}	{ID}	68	mg/L
Arsenic	19	13	0.0306	{NLV}	{NA}	{ID}	{ID}	4.3	mg/L
Barium	19	19	0.413	{NLV}	{NA}	{ID}	{ID}	14,000	mg/L
Beryllium	19	1	0.00069	{NLV}	{NA}	{ID}	{ID}	290	mg/L
Cadmium	19	4	0.0067	{NLV}	{NA}	{ID}	{ID}	190	mg/L
Calcium	7	7	182	--	--	--	--	--	mg/L
Chromium	19	2	0.09	{NLV}	{NA}	{ID}	{ID}	460	mg/L
Cobalt	19	4	0.028	{NLV}	{NA}	{ID}	{ID}	2,400	mg/L
Copper	19	3	0.156	{NLV}	{NA}	{ID}	{ID}	7,400	mg/L
Iron	7	7	40.8	{NLV}	{NA}	{ID}	{ID}	58,000	mg/L
Lead	19	2	0.164	{NLV}	{NA}	{ID}	{ID}	{ID}	mg/L
Magnesium	7	7	56.6	{NLV}	{NA}	{ID}	{ID}	1,000,000 {(D)}	mg/L
Manganese	19	18	1.64	{NLV}	{NA}	{ID}	{ID}	9,100	mg/L
Mercury	16	3	0.00093	0.056 {(S)}	0.056	{ID}	{ID}	0.056 {(S)}	mg/L
Nickel	19	7	0.0984	{NLV}	{NA}	{ID}	{ID}	74,000	mg/L
Potassium	7	7	13.3	--	--	--	--	--	mg/L
Selenium	19	1	0.0025	{NLV}	{NA}	{ID}	{ID}	970	mg/L
Sodium	7	7	218	{NLV}	{NA}	{ID}	{ID}	1,000,000 {(D)}	mg/L
Thallium	19	1	0.00025	{NLV}	{NA}	{ID}	{ID}	13	mg/L
Vanadium	19	3	0.087	{NLV}	{NA}	{ID}	{ID}	970	mg/L
Zinc	19	3	0.395	{NLV}	{NA}	{ID}	{ID}	110,000	mg/L
Detected Inorganics-Filtered									
Arsenic (dissolved)	4	1	0.0054	{NLV}	{NA}	{ID}	{ID}	4.3	mg/L
Barium (dissolved)	4	4	0.158	{NLV}	{NA}	{ID}	{ID}	14,000	mg/L
Cadmium (dissolved)	4	2	0.00031	{NLV}	{NA}	{ID}	{ID}	190	mg/L
Cobalt (dissolved)	4	1	0.0014	{NLV}	{NA}	{ID}	{ID}	2,400	mg/L
Copper (dissolved)	4	3	0.0085	{NLV}	{NA}	{ID}	{ID}	7,400	mg/L
Manganese (dissolved)	4	3	1.02	{NLV}	{NA}	{ID}	{ID}	9,100	mg/L
Nickel (dissolved)	4	1	0.0075	{NLV}	{NA}	{ID}	{ID}	74,000	mg/L
Vanadium (dissolved)	4	1	0.00072	{NLV}	{NA}	{ID}	{ID}	970	mg/L
Zinc (dissolved)	4	1	0.0359	{NLV}	{NA}	{ID}	{ID}	110,000	mg/L

Table 4-73. Screening Summary of Frequency and Maximum Detections for Groundwater Surfacewater Interface (GSI) Wells, RACER Trust Pontiac North Campus, Pontiac, Michigan

	# Results	# Detected	Maximum Detect	GSI	Units
Detected VOCs					
1,1-Dichloroethane	22	2	0.00031	0.74	mg/L
2-Butanone (Methyl ethyl ketone) (MEK)	22	2	0.004	2.2	mg/L
Acetone	22	1	0.0039	1.7	mg/L
Benzene	22	2	0.0014	0.2 {(X)}	mg/L
Carbon disulfide	22	1	0.00083	{ID}	mg/L
Chloromethane (Methyl chloride)	22	1	0.00043	{ID}	mg/L
Cyclohexane	22	4	0.00044	- -	mg/L
Ethylbenzene	22	2	0.00074	0.018	mg/L
Isopropyl benzene	22	3	0.00032	0.028	mg/L
Methyl cyclohexane	22	4	0.00047	- -	mg/L
Toluene	22	2	0.0024	0.27	mg/L
Xylene (total)	22	3	0.0095	0.041	mg/L
Detected SVOCs					
2-Methylnaphthalene	22	1	0.00089	0.019	mg/L
4-Methylphenol	22	2	0.004	- -	mg/L
Acenaphthene	22	1	0.0015	0.038	mg/L
bis(2-Ethylhexyl)phthalate (DEHP)	22	2	0.016	0.025	mg/L
Butyl benzylphthalate (BBP)	22	1	0.0029	0.067 {(X)}	mg/L
Carbazole	22	2	0.0014	0.01 {(M)}	mg/L
Di-n-butylphthalate (DBP)	22	1	0.00088	0.0097	mg/L
Fluoranthene	22	1	0.00042	0.0016	mg/L
Methylphenol (Cresol)	22	2	0.004	0.03 {(M)}	mg/L
Naphthalene	22	2	0.0068	0.011	mg/L
Phenanthrene	22	1	0.0011	0.002 {(M)}	mg/L
Phenol	22	2	0.067	0.45	mg/L
Detected CDD/F					
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	12	1	0.00000061	- -	mg/L
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	12	1	0.00000011	- -	mg/L
WHO Dioxin TEQ(Human/Mammal-NDs used at 1/2 DL)	12	12	1.64E-08	0.00000001	mg/L
Detected Pests/PCBs					
Aroclor-1260 (PCB-1260)	18	1	0.000055	- -	mg/L
Total PCBs	18	1	0.000055	0.0002 {(M)}	mg/L
Detected Inorganics					
Arsenic	24	18	0.0142	0.01	mg/L
Barium	24	23	0.879	1.308 {(G)}	mg/L
Cadmium	24	3	0.0031	0.0048 {(G,X)}	mg/L
Cobalt	24	3	0.0028	0.1	mg/L
Cyanide (total)	12	1	0.004	0.0052	mg/L
Manganese	24	22	0.531	4.767 {(G,X)}	mg/L
Mercury	24	2	0.00011	0.0000013	mg/L
Nickel	24	5	0.0155	0.1243 {(G)}	mg/L
Thallium	24	2	0.000073	0.0037 {(X)}	mg/L
Vanadium	24	9	0.0024	0.012	mg/L
Zinc	24	5	0.0197	0.2827 {(G)}	mg/L
Detected Inorganics-Filtered					
Antimony (dissolved)	6	1	0.0027	0.13 {(X)}	mg/L
Arsenic (dissolved)	6	5	0.0151	0.01	mg/L
Barium (dissolved)	6	6	0.909	1.308 {(G)}	mg/L
Cadmium (dissolved)	6	1	0.00041	0.0048 {(G,X)}	mg/L
Manganese (dissolved)	6	3	0.414	4.767 {(G,X)}	mg/L
Mercury (dissolved)	6	1	0.00025	0.0000013	mg/L
Nickel (dissolved)	6	2	0.0156	0.1243 {(G)}	mg/L
Vanadium (dissolved)	6	1	0.0025	0.012	mg/L

Table 5-1. Areas of Evaluation with Exceedences of Applicable Screening Criteria and their Constituents of Pontential Concern (COPCs)

RACER Trust Pontiac North Campus, Pontiac, Michigan

Area of Evaluation	Screening Table Number	Media with Exceedance(s)	Relevant Screening Criteria Exceeded	Constituents of Potential Concern (COPCs)
AOI M-27	4-50	Soil (surface)	NRDC	Arsenic
			RDC	Arsenic
	4-51	Soil (subsurface)	NRDC	Arsenic
On-Site Downgradient Property Boundary Groundwater	4-69	Groundwater (shallow) ¹	RDW	Methylene chloride
				bis(2-Ethylhexyl)phthalate (DEHP)
				Pentachlorophenol
				PCBs (total)
				Antimony (total and dissolved)
				Arsenic (total and dissolved)
				Iron (total)
				Lead (total)
				Manganese (total)
				Sodium (total)
				Vanadium (total and dissolved)
	4-70	Groundwater (intermed/deep) ²	GCC	Dioxins (TEQ)
			No criteria	Benzaldehyde
				Biphenyl
Off-Site Groundwater on Columbia Avenue	4-70a	Groundwater (intermed/deep) ²	RDW	Acetone
				Methylene chloride
				bis(2-Ethylhexyl)phthalate (DEHP)
				Arsenic (total and dissolved)
				Barium (total)
				Lead (total)
				Manganese (total and dissolved)
				Thallium (total)
				Vanadium (total and dissolved)
				Vinyl chloride
Off-Site Groundwater	4-68	Groundwater (shallow) ¹	RDW	bis(2-Ethylhexyl)phthalate (DEHP)
				Arsenic (total)
				Iron (total)
				Manganese (total)

Table 5-1. Areas of Evaluation with Exceedences of Applicable Screening Criteria and their Constituents of Potential Concern (COPCs)

RACER Trust Pontiac North Campus, Pontiac, Michigan

Area of Evaluation	Screening Table Number	Media with Exceedance(s)	Relevant Screening Criteria Exceeded	Constituents of Potential Concern (COPCs)
Pontiac School Board Property	4-62	Soil (surface)	RDC	Dioxins (TEQ)
				Arsenic
				Lead
			RDWP	Arsenic
				Chromium
				Manganese
			No criteria	Cyclohexane
				Methyl acetate
				Methyl cyclohexane
	4-63	Soil (subsurface)	RDC	Dioxins (TEQ)
				Arsenic
				Lead
			RSVIA	Benzene
			RDWP	Benzene
				Ethylbenzene
				Xylenes (total)
				Arsenic
				Chromium
				Manganese
				Nickel
				Zinc
			No criteria	Cyclohexane
				Methyl acetate
				Methyl cyclohexane
Pontiac School Board Property	4-65	Groundwater (shallow) ¹	RDW	Arsenic (total and dissolved)
			No criteria	Cyclohexane
				Methyl cyclohexane
Groundwater-Surface Water Interface Wells ³	4-73	Groundwater (shallow) ¹	GSI	Dioxins (TEQ)
				Arsenic (total and dissolved)
				Mercury (total and dissolved)
			No criteria	Cyclohexane
Terry Lake	4-66	Sediment	RDC	Benzo(a)pyrene
			No criteria	Methyl acetate
				Methyl cyclohexane
Osmun Lake	4-67	Sediment	RDC	Lead

Note: Refer to Figure 2-1 for locations of these areas of evaluation

¹ Depth to groundwater is 4-35 ft bgs

² Depth to groundwater is generally 25-45 ft bgs for intermediate zone and 25-70 ft bgs for deep zone

³ These are the wells closest to Harris Lake

GCC = groundwater contact criteria

GSI = groundwater-surface water interface criteria

NRDC = non-residential direct contact criteria

RDC = residential direct contact criteria

RDW = residential drinking water criteria

RDWP = residential drinking water protection criteria

RSVIA = residential soil volatilization to indoor air criteria

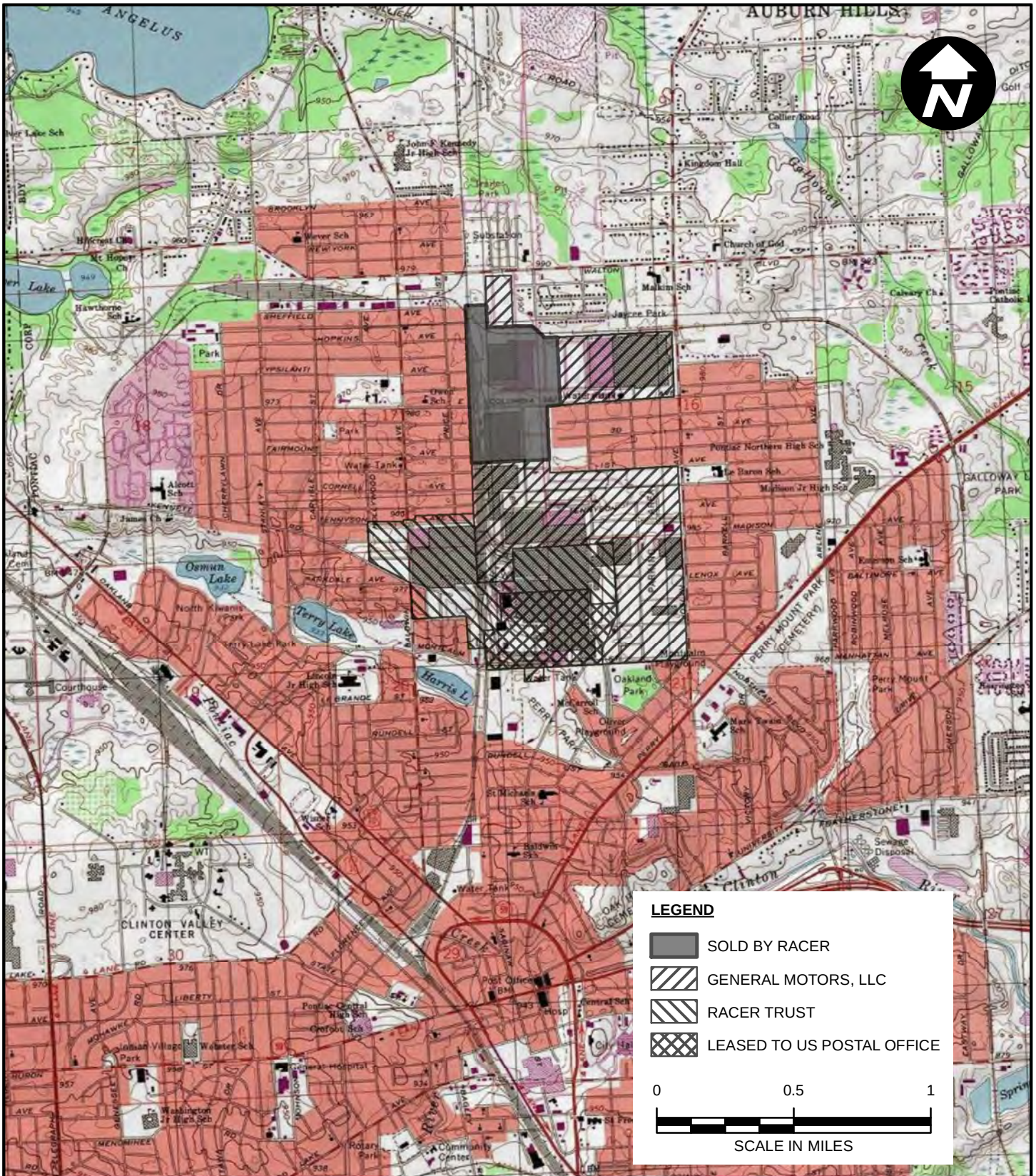
Notes:

Shaded	Shading indicates value is greater than the first listed criteria.
<i>Italics</i>	Italics indicates value is greater than the second listed criteria.
Bold	Bold-face type indicates value is greater than the third listed criteria.
<	Indicates value was not detected greater than the reporting limit.
J	Indicates value is estimated.

All criteria notes are listed on the following pages.

Figures

DRAFT

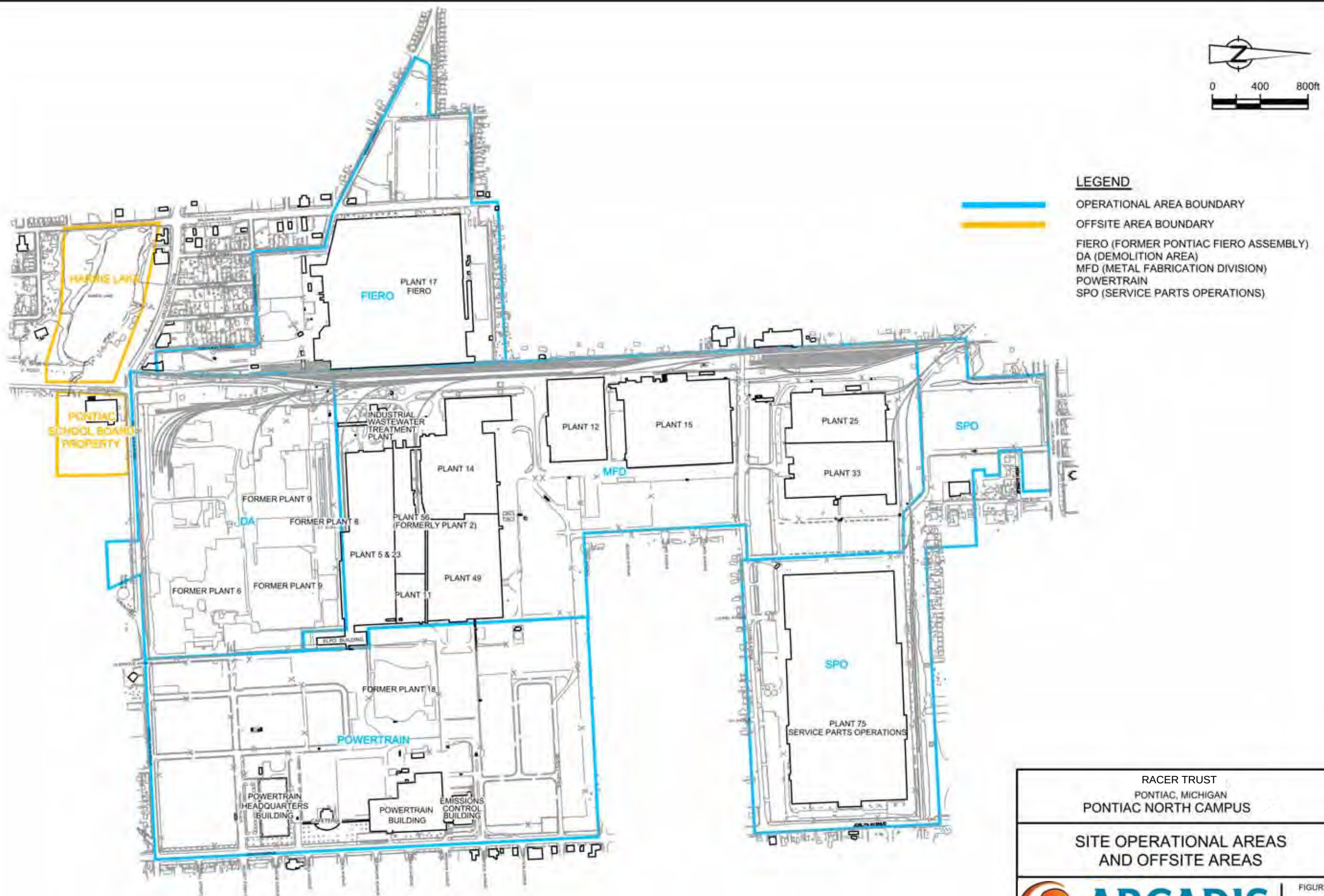


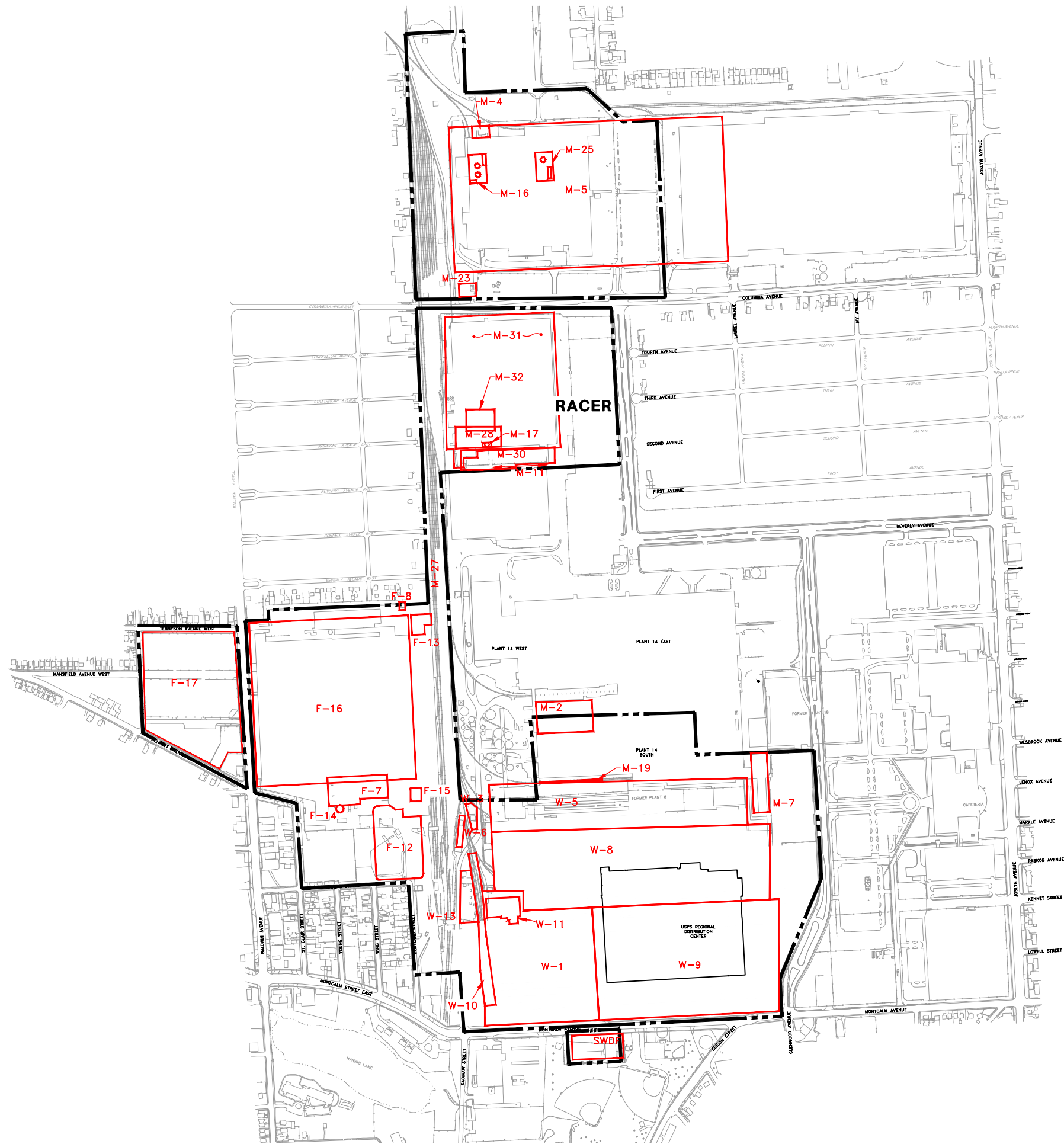
RACER TRUST
 PONTIAC NORTH CAMPUS
 PONTIAC, MICHIGAN

SITE LOCATION

ARCADIS

FIGURE
1-1





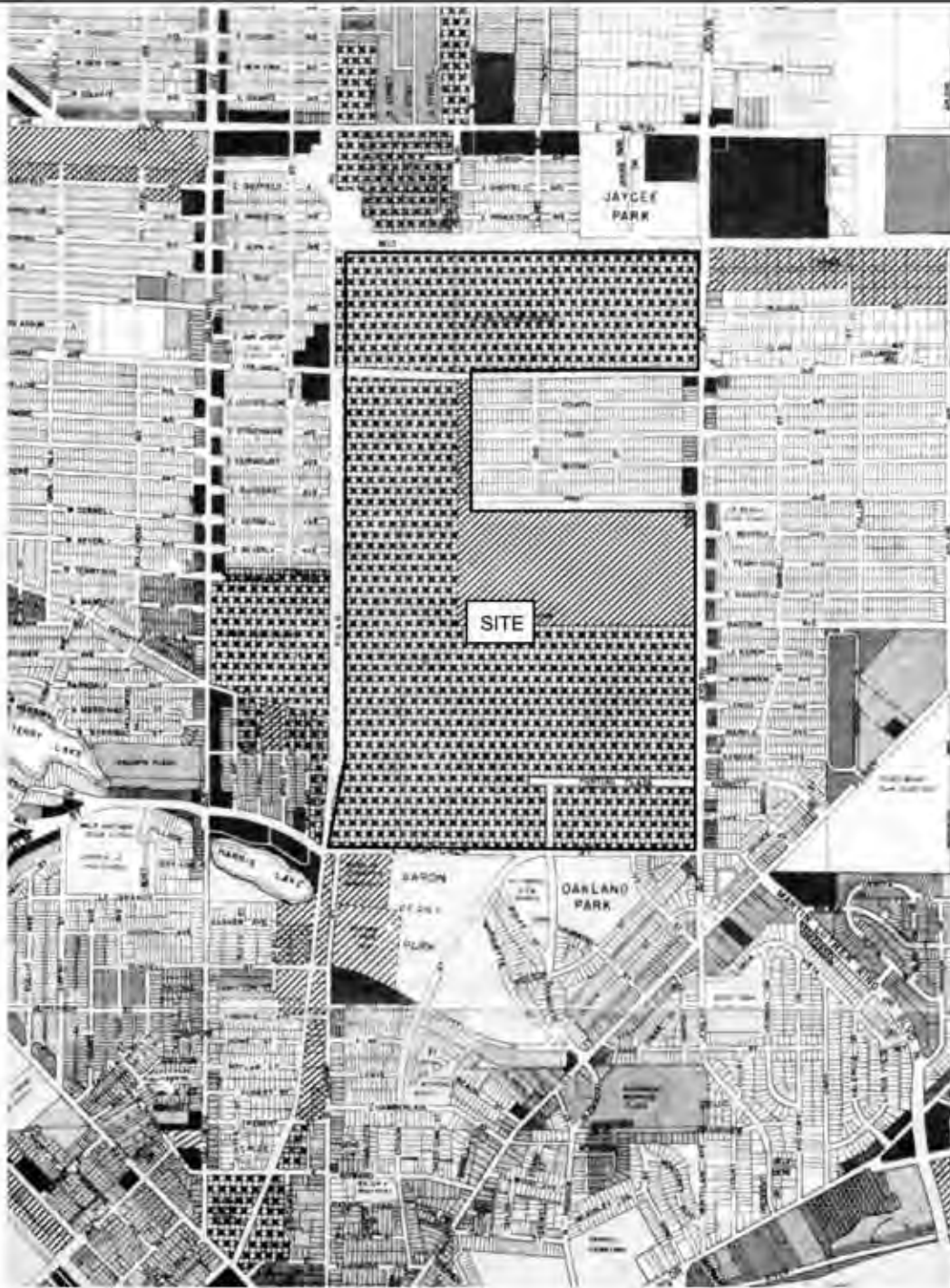
RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

AREAS OF INTEREST

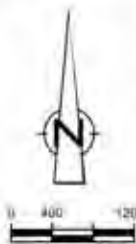




FIGURE
2-2



SOURCE: CITY OF PONTIAC PLANNING DIVISION,
COMMUNITY DEVELOPMENT DEPT. - D.B.



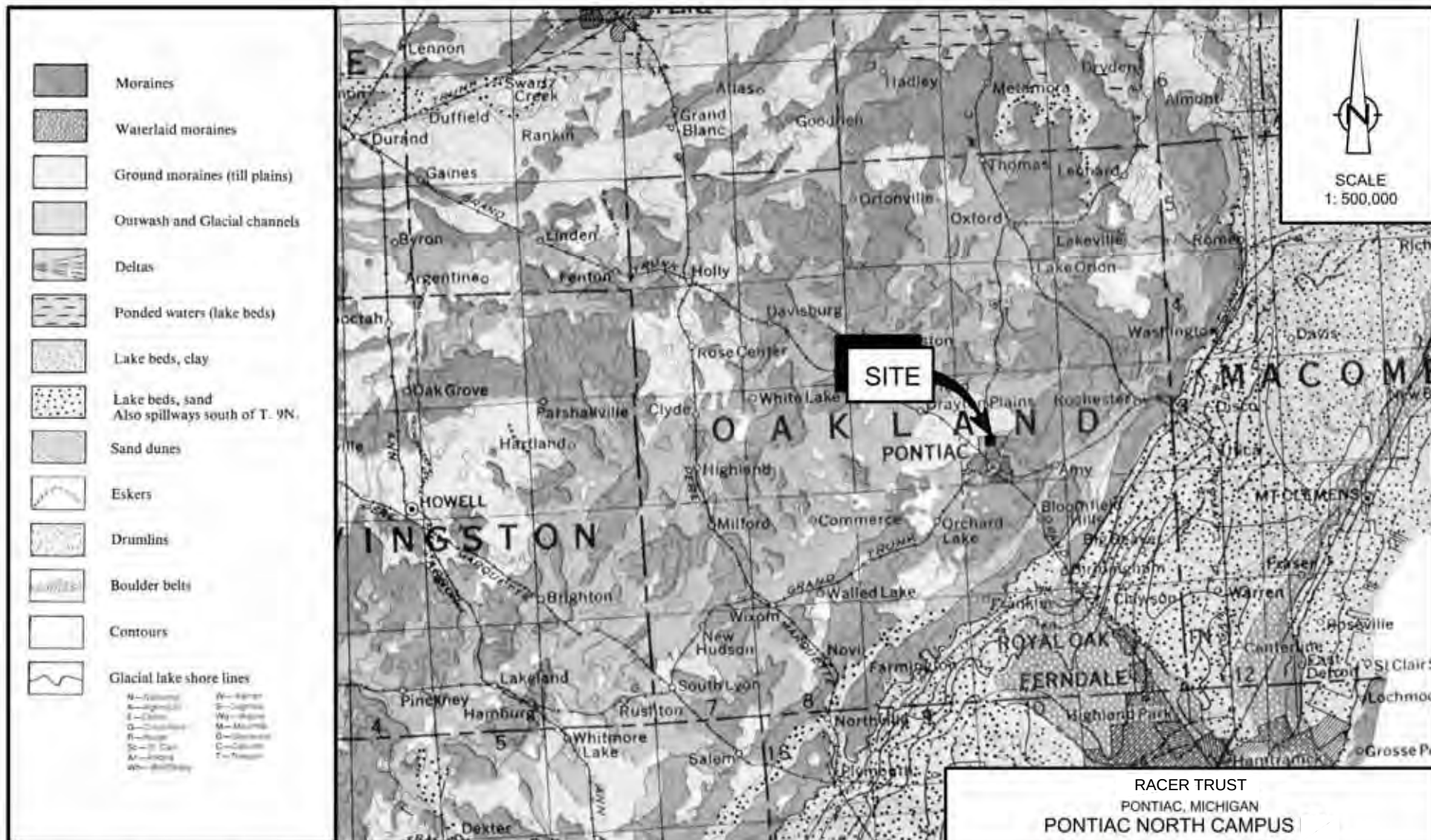
	R-1	Low Density Residential
	R-2	Medium Density Residential
	R-3	High Density Residential
	R-4	Medium Density Residential with Parking
	R-5	Medium Density Residential
	R-6	Medium Density Residential
	P-1	Professional Office

	C-C	Community Center
	C-O	Office/Commercial
	C-I	Community Center
	C-2	Community Center
	C-3	Community Center
	M-1	Medium Density Residential
	M-2	Medium Density Residential
	P-1	Professional Office

RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

CITY OF PONTIAC LAND USE MAP





SOURCE: HYDROGEOLOGIC ATLAS OF MICHIGAN, 1955
WESTERN MICHIGAN UNIVERSITY,
DEPARTMENT OF GEOLOGY

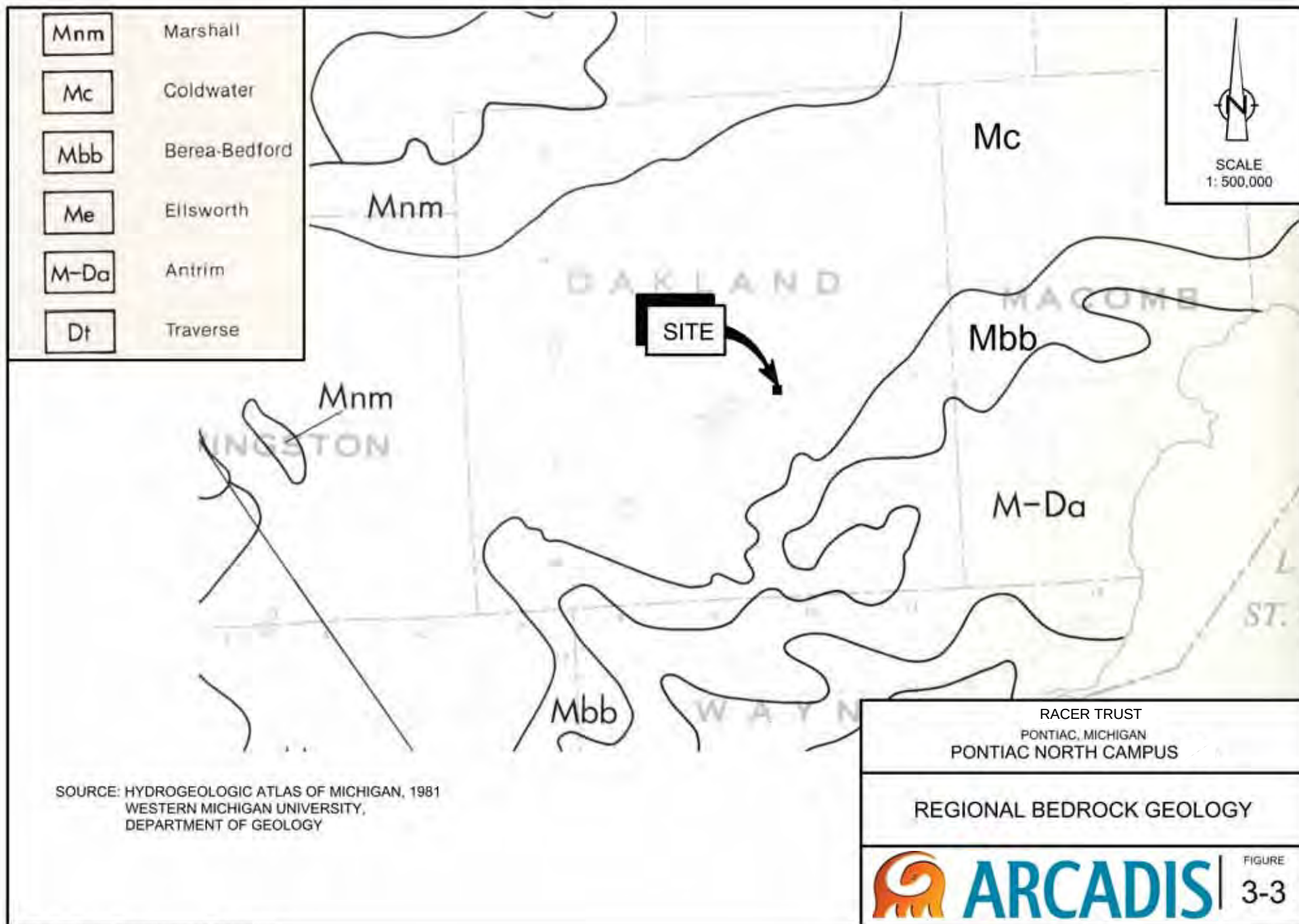
RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

REGIONAL SURFICIAL GEOLOGY



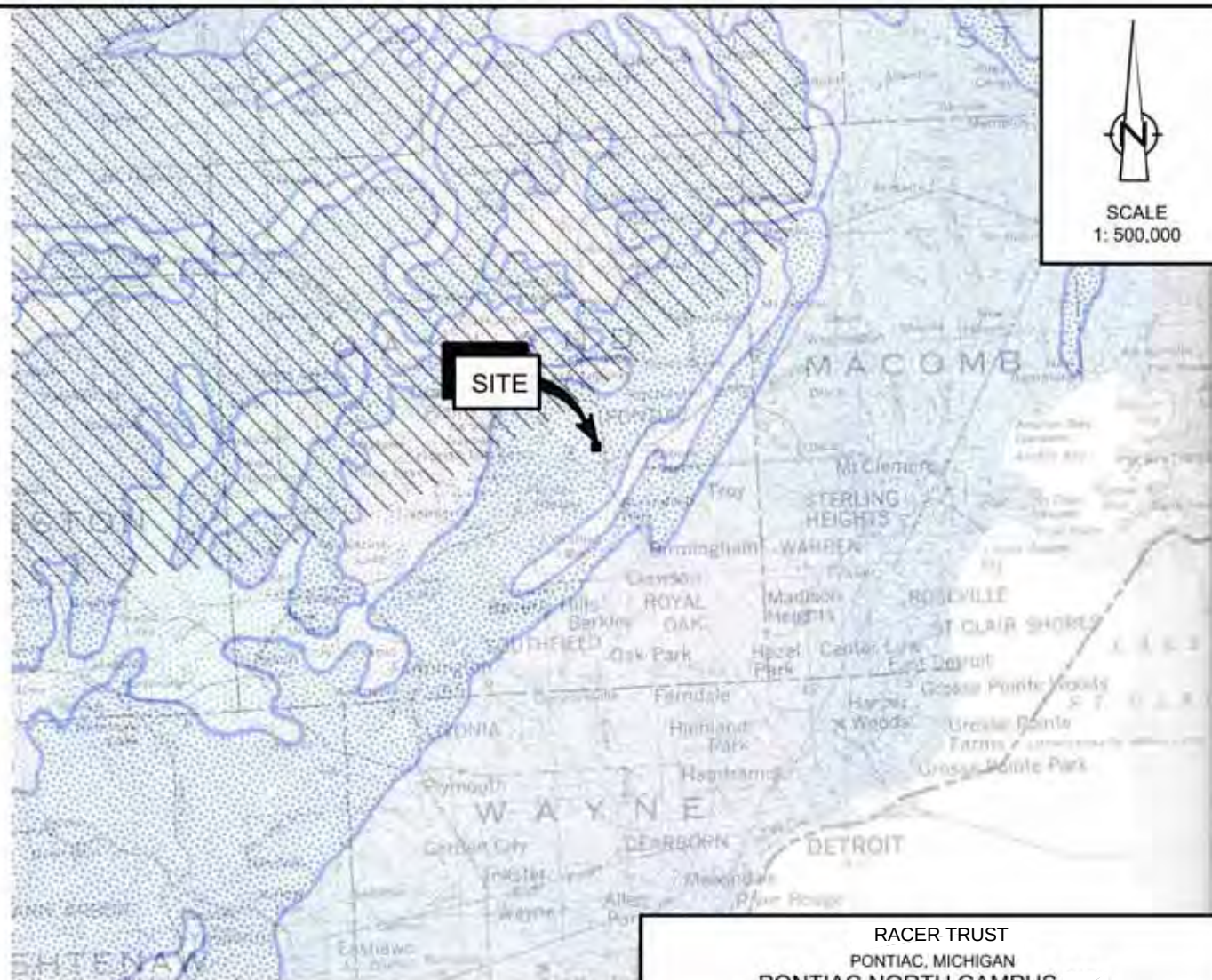
FIGURE

3-2



SOURCE: HYDROGEOLOGIC ATLAS OF MICHIGAN, 1981
WESTERN MICHIGAN UNIVERSITY,
DEPARTMENT OF GEOLOGY

- IV Drift may be an unconfined aquifer to bedrock
Not possible to delineate from available data
- III A Drift usually unconfined at or near the surface, generally consists of interbedded aquifers, aquicludes, and aquitards at depth.
B Drift may or may not be an aquifer at or near the surface. Drift generally consists of interbedded aquifers, aquicludes, and aquitards at depths
- Aquifer characteristics generally conform to category III, but drift may not be an aquifer in small discontinuous areas
- II Drift generally not an aquifer, may include thin interbedded aquifers at depth
- I Thin drift (0-30 feet) overlying bedrock



SCALE
1: 500,000

SOURCE: HYDROGEOLOGIC ATLAS OF MICHIGAN, 1981
WESTERN MICHIGAN UNIVERSITY,
DEPARTMENT OF GEOLOGY

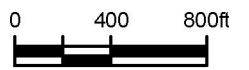
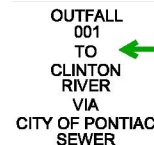
RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

AQUIFER CHARACTERIZATION
OF THE GLACIAL DRIFT



FIGURE

3-4



LEGEND

- | | |
|---|----------------------------------|
|  | FOOTPRINT OF
FORMER STRUCTURE |
|  | PROPERTY BOUNDARY |
|  | RAILROAD TRACKS |
|  | FENCE |
|  | AREA BOUNDARY |
|  | STORM SEWER OUTFALL |
|  | SANITARY SEWER OUTFALL |

FIERO (FORMER PONTIAC FIERO ASSEMBLY)
 DA (DEMOLITION AREA)
 MFD (METAL FABRICATION DIVISION)
 POWERTRAIN
 SPO (SERVICE PARTS OPERATIONS)

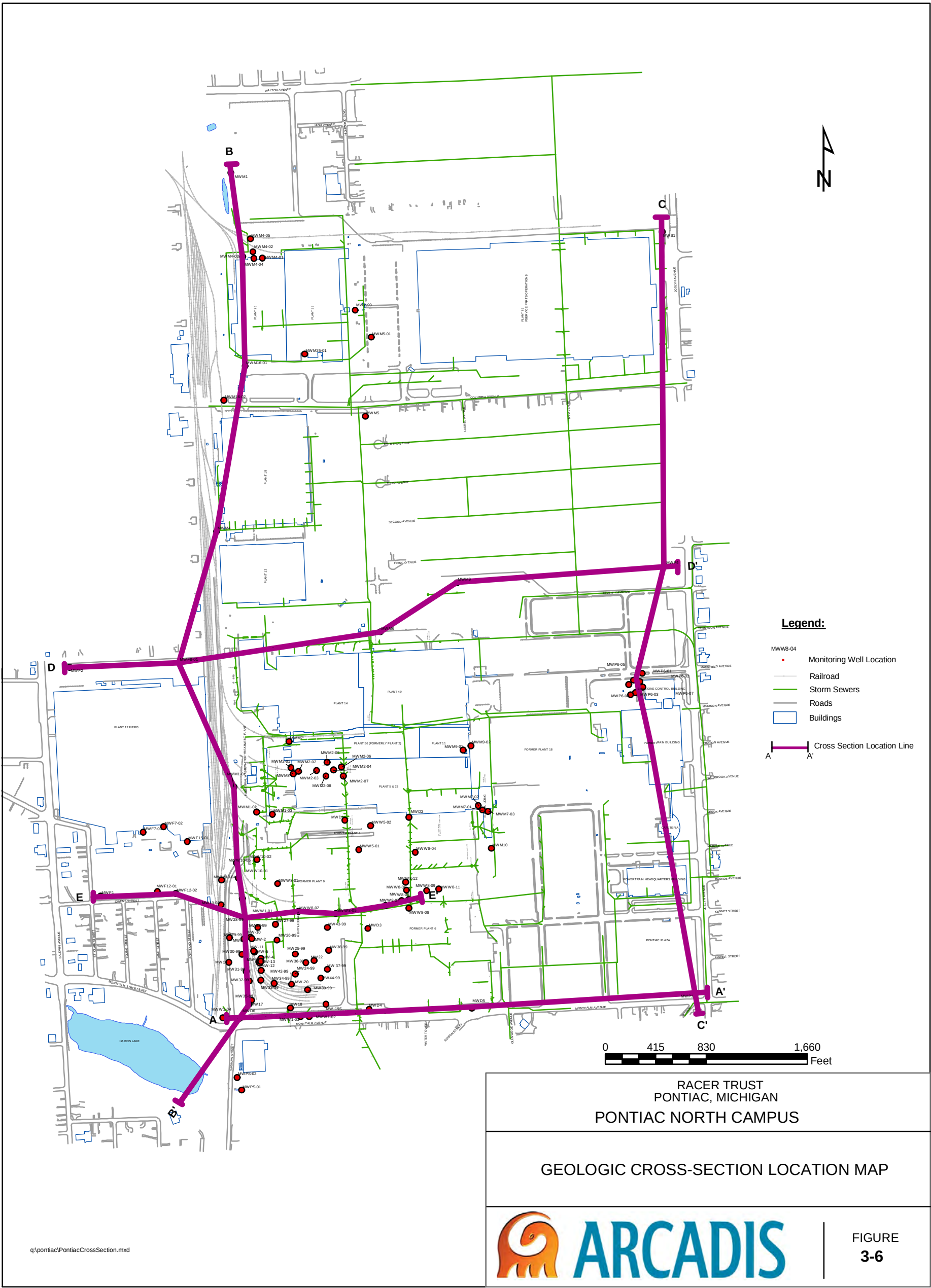
WALTON BLVD.

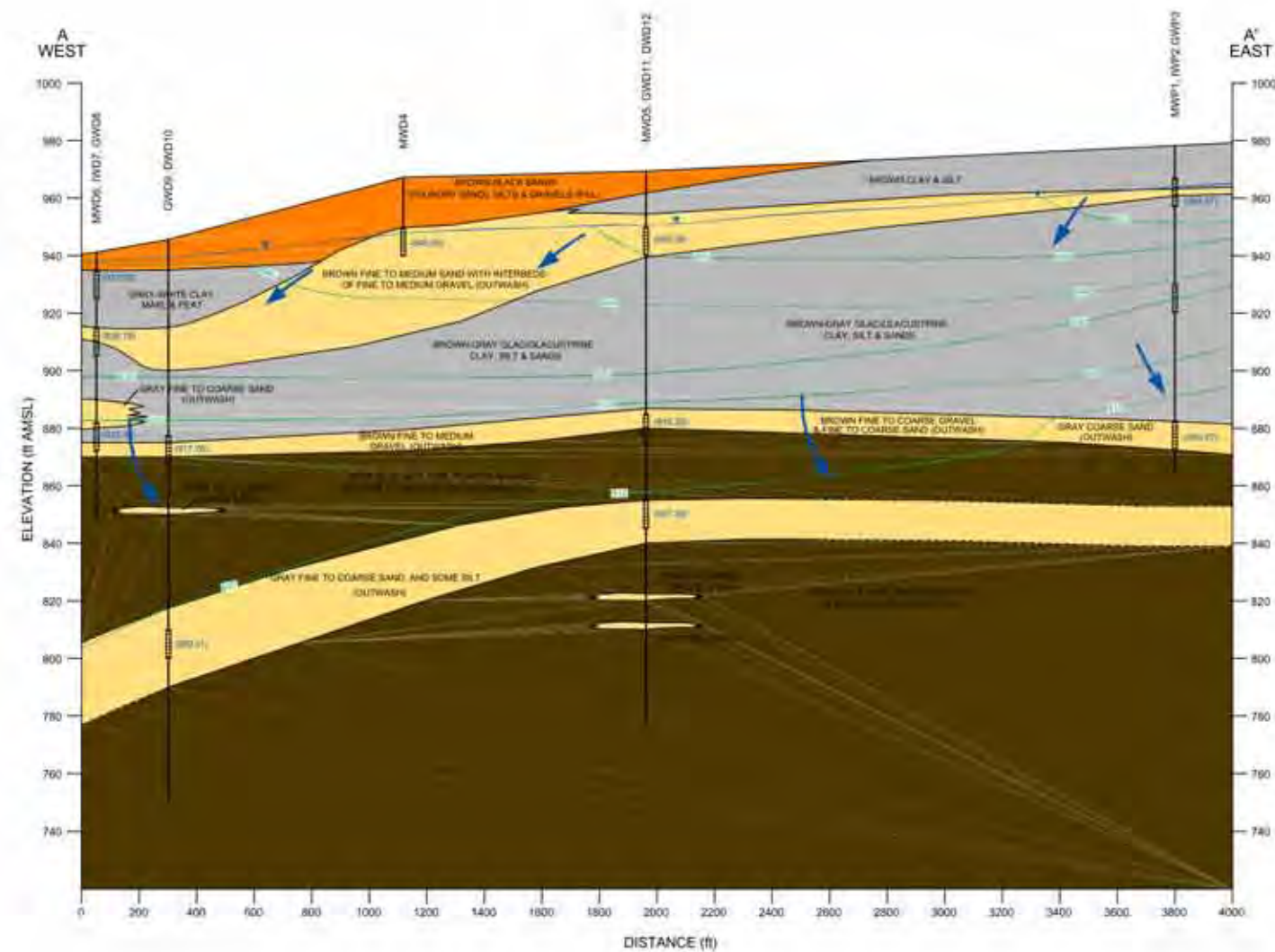
RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

STORM & SANITARY SEWER OUTFALLS



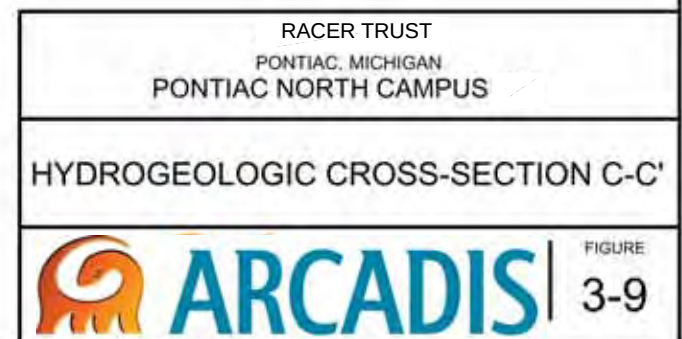
FIGURE
3-5

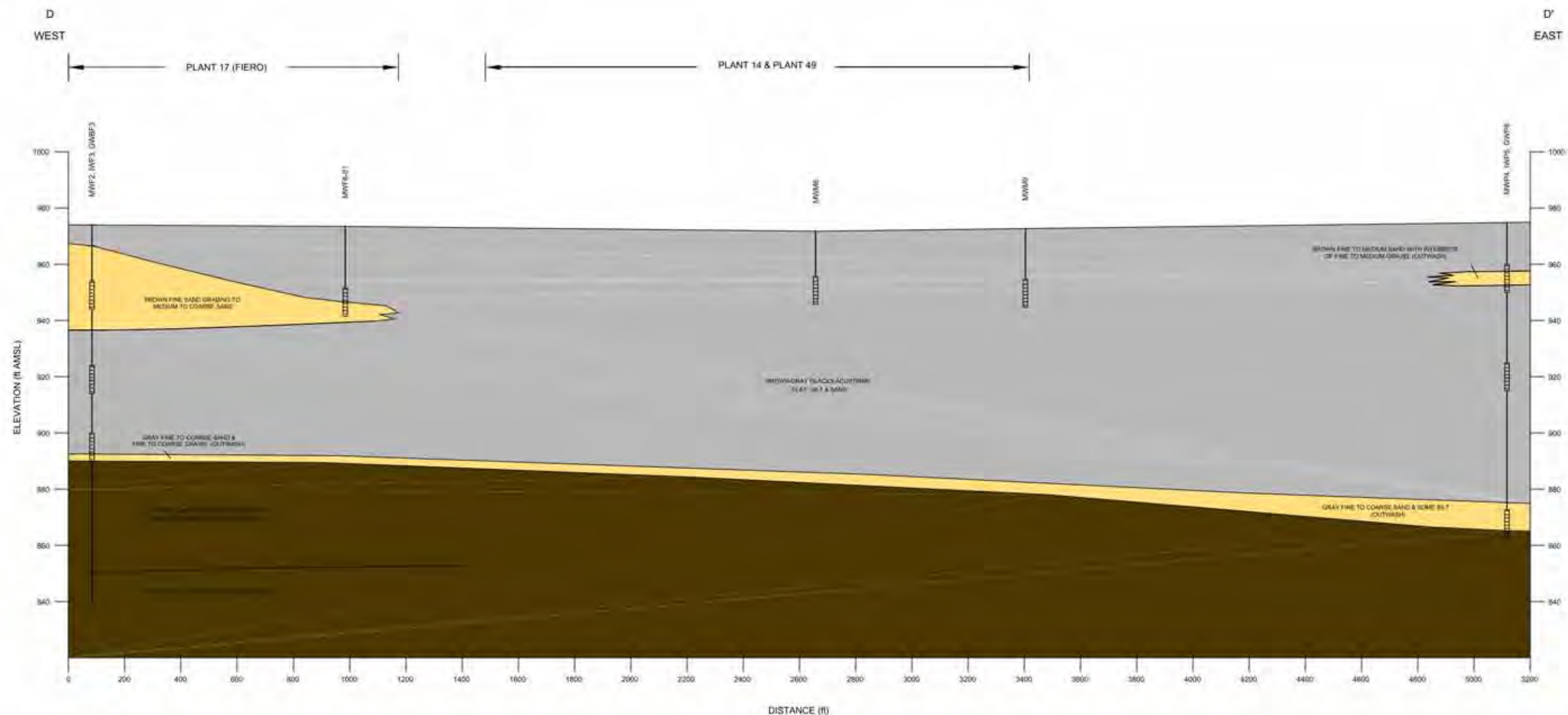




RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

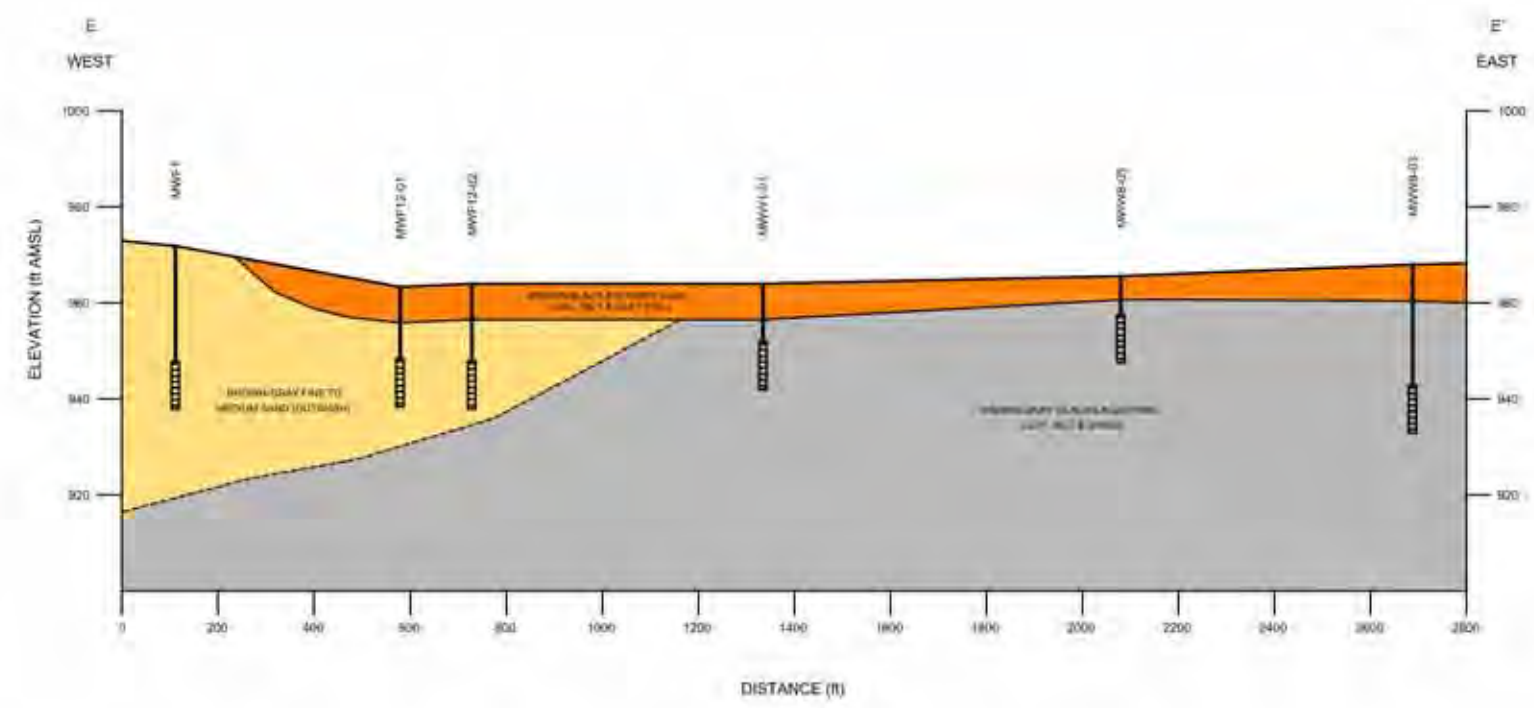
HYDROGEOLOGIC CROSS-SECTION A-A'





RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

HYDROGEOLOGIC CROSS-SECTION D - D'



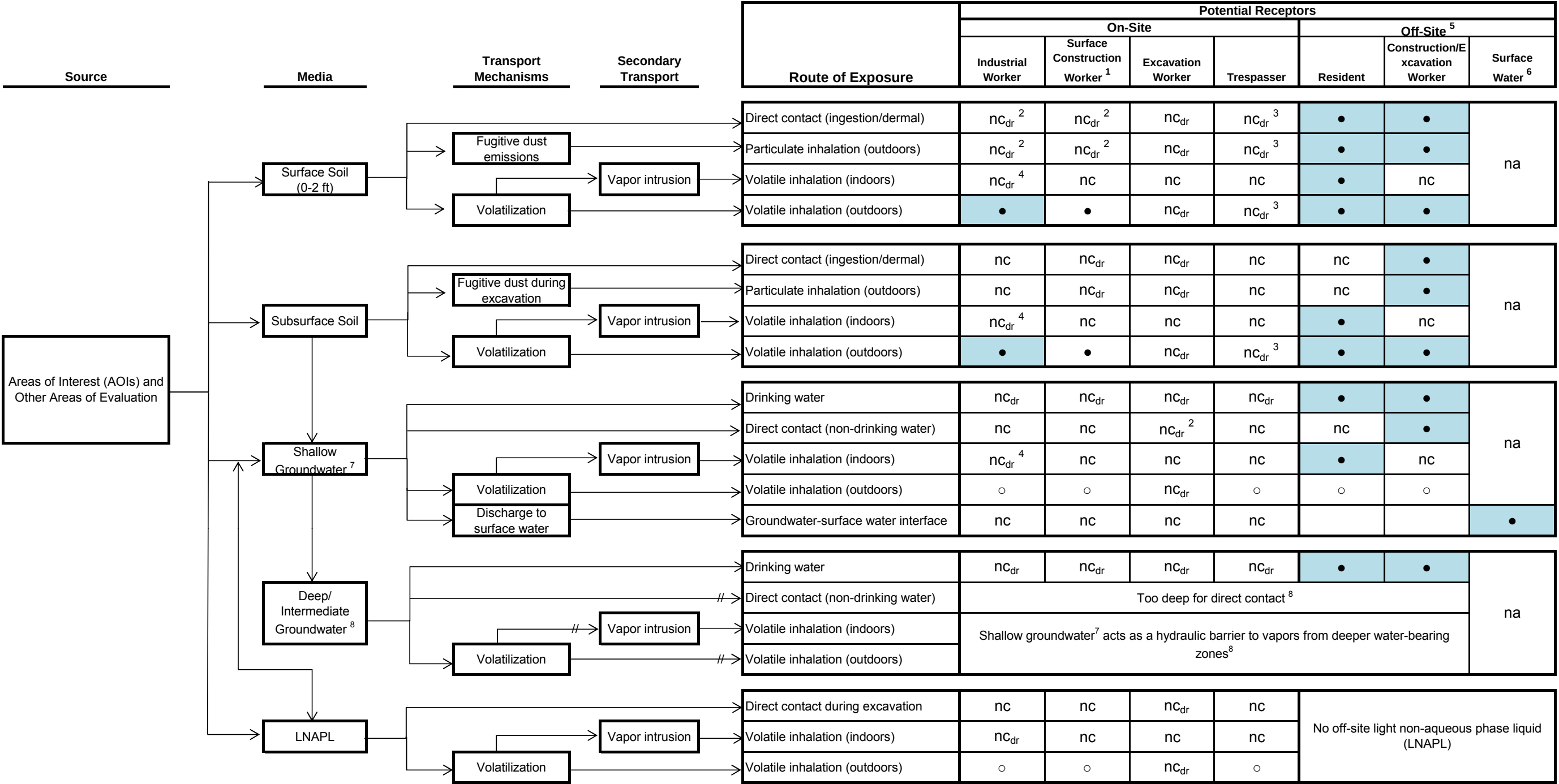
NOTE: FOR MULTIPLE WELLS AT A SINGLE WELL CLUSTER, CLUSTER IS REPRESENTED AS A SINGLE VERTICAL LINE WITH MULTIPLE SCREEN INTERVALS.



RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

HYDROGEOLOGIC CROSS-SECTION E - E'

Figure 4-1. Exposure Pathway Conceptual Site Model (CSM)



Key

● = pathway is potentially complete, and is addressed in this evaluation.

● = pathway is potentially complete, but exposure for this receptor will be less than the routine site worker; therefore, evaluation of the site worker is protective of this receptor.

○ = pathway is potentially complete but is considered to be insignificant at this site.

nc_{dr} = pathway is not complete due to deed restrictions that will be instituted as part of the corrective measures (e.g., land and groundwater use, maintaining surface barriers, restrictions on excavation, health and safety requirements, etc.).

nc = pathway is not complete due to receptor characteristics (e.g., construction workers are not exposed to indoor air because they do not work in an indoor environment, trespassers are not exposed to subsurface soil, etc.)

na = not applicable

¹ Assumes construction is occurring above surface barriers. If barriers are breached, deed restrictions requiring health and safety protections will be applicable.

² Except where no surface barrier exists (i.e., railroad tracks at AOI M-27 and storm water detention facility); in these areas, the direct contact and outdoor particulate/volatile inhalation pathways are potentially complete and will be evaluated for the site worker.

³ Except at the railroad tracks at AOI M-27 where trespassing by nearby residents is possible; in this areas, direct contact and outdoor particulate/volatile inhalation pathways are potentially complete for the trespasser.

⁴ Except where a deed restriction requiring a vapor barrier in the event of the construction of a habitable building is not required (i.e., AOI M-27 and storm water detention facility); in these areas, the indoor air pathway is potentially complete.

⁵ Includes groundwater at the downgradient property boundary, and on Columbia Avenue.

⁶ Residential contact with sediments in Terry and Osmun Lakes is also a potentially complete pathway.

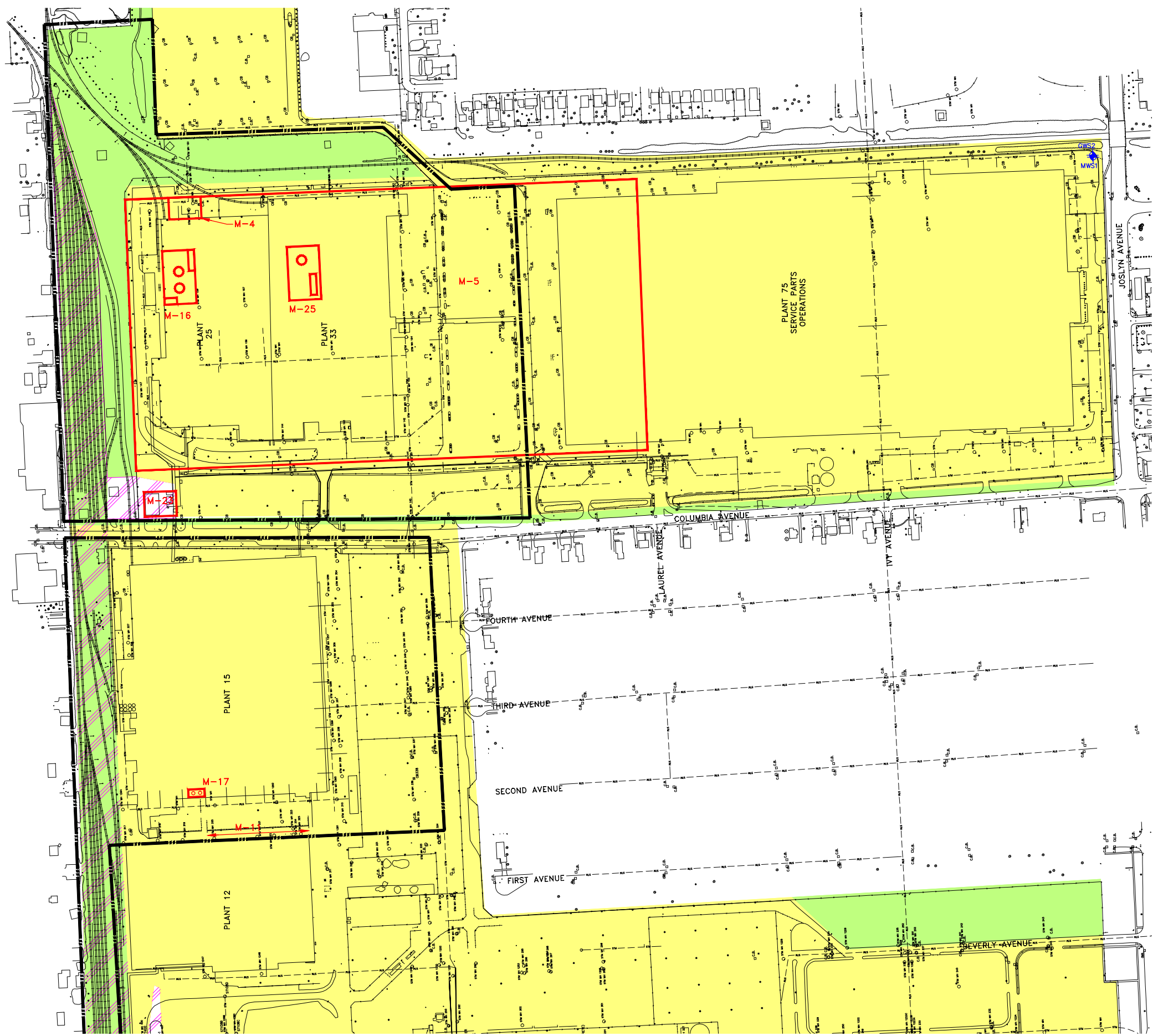
⁷ Depth to groundwater is 4-35 ft bgs.

⁸ Depth to groundwater is generally 25-45 ft bgs for intermediate zone and 25-70 ft bgs for deep zone.

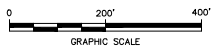




CITY: SYRACUSE, NY DIV: GROUP: ENV/MDV DB: G. STOWELL, L. POSENAUER, P. LISTER, PM: J. MCKENNA TR: V. STACEY LVR: ONE+OFF-REF (RZ)
G:\ENV\CAD\SYRACUSE\ACT\B0064607\2012\0003\DWG\64607C46.dwg LAYOUT: 4-4 SAVER: 6/28/2012 3:57 PM ACADVER: 18.1S (LMS TECH) PAGES: 10 PLOT: 6/28/2012 3:58 PM BY: LISTER, PAUL
XREFS: 64607X01 64607X00 64607X04
IMAGES: PROJECTNAME: -----



- LEGEND:
- 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-25 = PLANT 33 BASEMENT SUMP AREA
 - APPROXIMATE RACER TRUST PROPERTY BOUNDARY (NOWAK & FRAUS, JUNE 2012)
 - GRASS/SOIL/WEEDS
 - CONCRETE/ASPHALT
 - GRAVEL



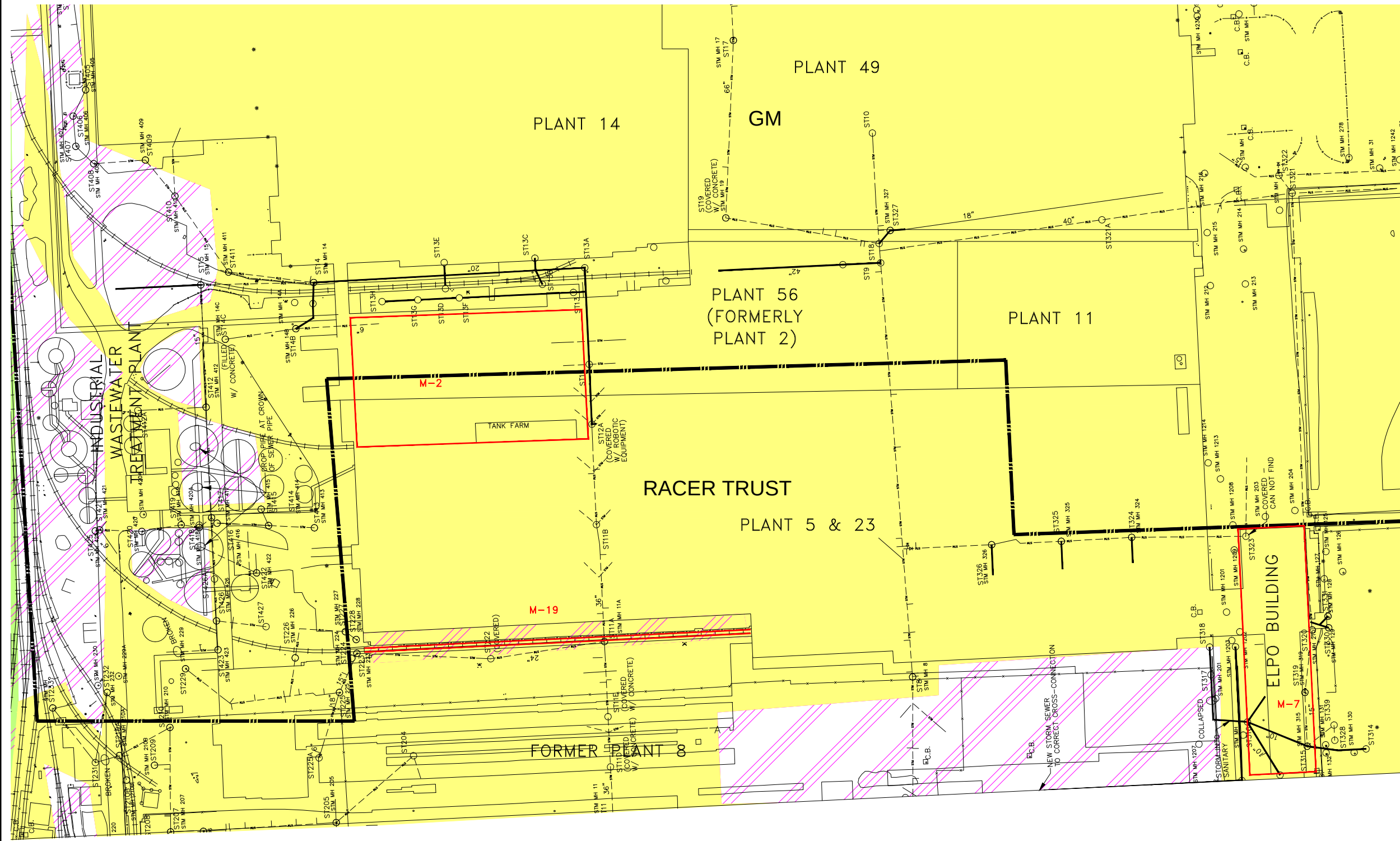
RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

MFD (NORTHERN SECTION)
GROUND COVER

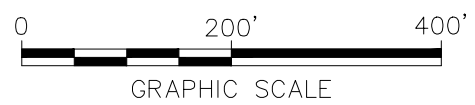


FIGURE
4-4

CITY: SYRACUSE, NY DIV: GROUP: EN/INDV DB: G. STOWELL, L. POSENAUER, P. LISTER, PM: J. MCKENNA, TM: C. KIKER, TR: V. STACEY, LVR: ON*OFF-REF (RZ)
G:\ENVCAD\SYRACUSE\ACT18064607\2012\0003\DWG\64607C49.DWG LAYOUT: 4-5 SAVED: 6/22/2012 1:29 PM ACADVER: 18.15 (LMS TECH) PAGES: 10 OF 10
XREFS: 64607X01 64607X00 64607X04
IMAGES: PROJECTNAME: -



- LEGEND:**
- APPROXIMATE AOI AREA
 - M-2 = FORMER PLATING OPERATION AREA
 - M-7 = ELPO BUILDING/FLAMMABLE LIQUID STORAGE BUILDING
 - M-13 = FORMER FUEL AST
 - M-19 = RAILROAD TRACKS
 - APPROXIMATE RACER TRUST PROPERTY BOUNDARY (NOWAK & FRAUS, JUNE 2012)
 - GRASS/SOIL/WEEDS
 - CONCRETE/ASPHALT
 - GRAVEL



RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

MFD (SOUTHERN SECTION)
GROUND COVER

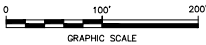


FIGURE
4-5



- LEGEND:
- MWM16-02 ◆ MONITORING WELL SAMPLE LOCATION
 - BM5-02 ▲ SOIL BORING SAMPLE LOCATION
 - SM23-03 △ SURFACE SOIL SAMPLE LOCATION
 - SDHS-21 ■ SEDIMENT SAMPLE LOCATION
 - SWHS-07 ● SURFACE WATER SAMPLE LOCATION
 - GRASS/SOIL/WEEDS
 - CONCRETE/ASPHALT
 - GRAVEL

NOTES:
ALL SAMPLE LOCATIONS ARE APPROXIMATE.

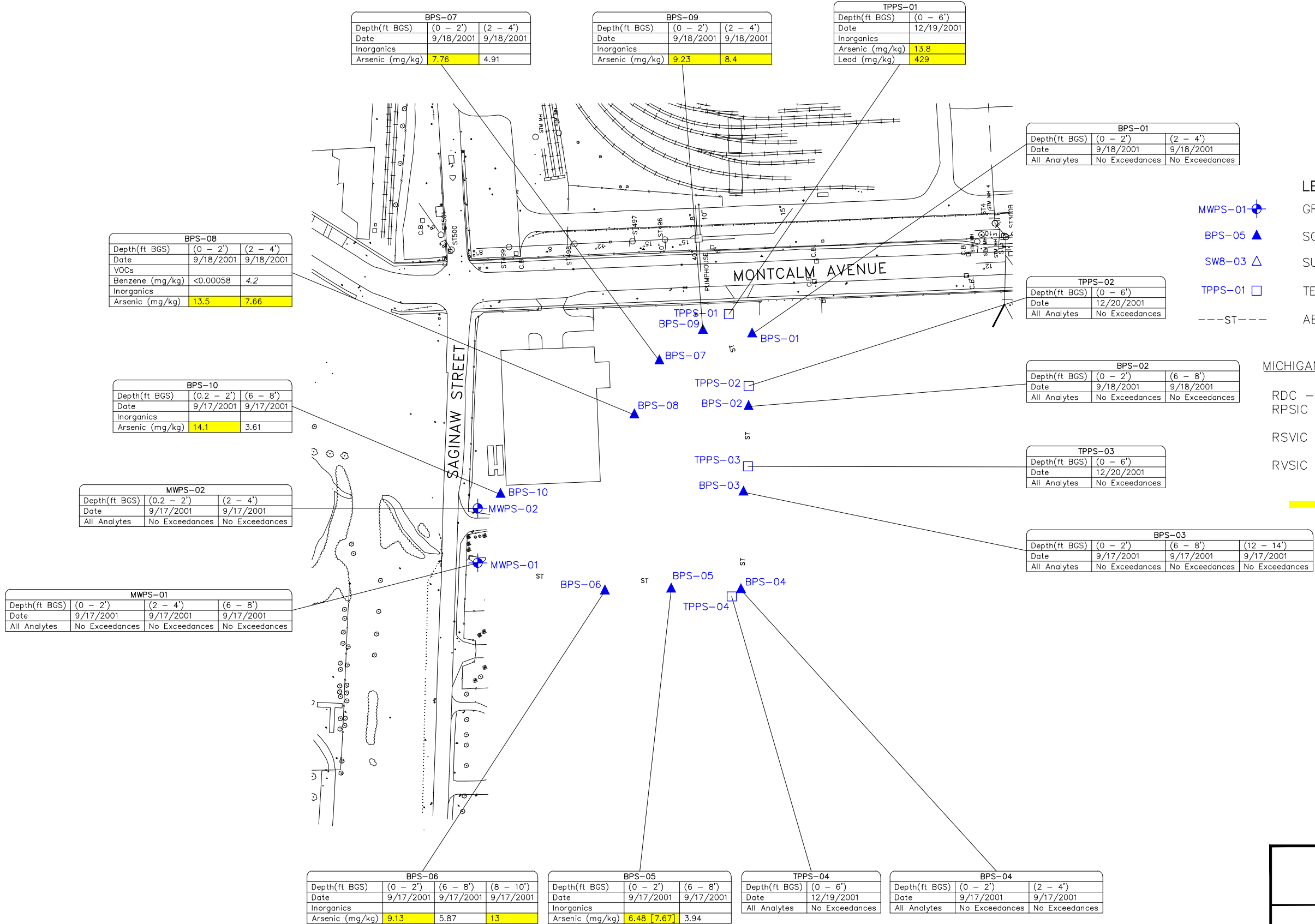


RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

HARRIS LAKE AND PSB
SAMPLE LOCATIONS AND
GROUND COVER



FIGURE
4-6



LEGEND:

MWPS-01 GROUNDWATER MONITORING WELL LOCATION

BPS-05 SOIL BORING LOCATION

SW8-03 SURFACE SOIL SAMPLE COLLECTION LOCATION

TPPS-01 TEST PIT SAMPLE COLLECTION LOCATION

---ST--- ABANDONED STORM SEWER LINE (APPROXIMATE)

MICHIGAN PART 201 GENERIC CRITERIA FOR SOILS

RDC - RESIDENTIAL DIRECT CONTACT CRITERIA

RPSIC - RESIDENTIAL PARTICULATE SOIL INHALATION CRITERIA

RSVIC - RESIDENTIAL SOIL VOLATILIZATION TO INDOOR AIR INHALATION CRITERIA

RVSIC - RESIDENTIAL INFINITE SOURCE VOLATILE SOIL INHALATION CRITERIA

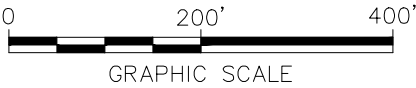
CONSTITUENT CONCENTRATION EXCEEDS NON-RESIDENTIAL SCREENING CRITERIA

NOTES:

1. ALL SAMPLE LOCATIONS ARE APPROXIMATE.

2. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION EQUIVALENT TO MILLIGRAMS PER KILOGRAM (mg/kg).

3. DUPLICATE ANALYSES ARE PRESENTED IN BRACKETS.



RACER TRUST
PONTIAC, MICHIGAN
PONTIAC NORTH CAMPUS

PONTIAC SCHOOL BOARD - SOIL

FIGURE
4-7

Figure 5-1. Summary of Human Health Risk Evaluation Conclusions and Recommendations
RACER Trust - Pontiac North Campus
Pontiac, Michigan

