
Current Conditions Report

***Pontiac North Campus
Volume IV of IV***

General Motors Corporation
Pontiac, Michigan

January 31, 2001



Table of Contents

Volume I

Section 1. Introduction	1-1
1.1 General	1-1
1.2 Areas of Interest	1-2
1.3 Purpose and Scope	1-3
1.4 Document Organization	1-3
Section 2. Description of Site	2-1
2.1 Site Location	2-1
2.2 Current and Historical Operations	2-1
2.2.1 Fiero.....	2-1
2.2.2 Demolition Area (DA).....	2-2
2.2.3 Metal Fabrication Division (MFD)	2-3
2.2.4 Powertrain.....	2-4
2.2.5 Service Parts Operations (SPO).....	2-5
2.3 Historical Mapping and Aerial Photographs.....	2-5
2.4 RCRA Regulatory History	2-5
2.4.1 CPC Pontiac Fiero Assembly Plant of GMC (USEPA ID No. MID 005356910)	2-5
2.4.1.1 Container Storage.....	2-6
2.4.1.2 Tank Storage and Treatment.....	2-6
2.4.2 GMC Central Foundry Division Pontiac Plant (USEPA ID No. MID 085470102)	2-6
2.4.3 CPC Pontiac of General Motors Corporation (USEPA ID No. MID 005356886)	2-7
2.4.3.1 Container Storage.....	2-7
2.4.3.2 Tank Storage and Treatment.....	2-8
2.4.3.3 Surface Impoundment Storage and Treatment	2-8
2.4.4 GMC Warehousing and Distribution Division (USEPA ID No. MID 076331289)	2-9
2.5 Historical and Current Waste Management Practices	2-9
2.5.1 Historical Waste Management Practices	2-9
2.5.2 Current Waste Management Practices.....	2-10
Section 3. Site Setting.....	3-1
3.1 Land Use	3-1
3.2 Demographics.....	3-1
3.3 Climate.....	3-1

3.4	Regional Geology	3-2
3.4.1	Overburden.....	3-2
3.4.2	Bedrock.....	3-2
3.5	Regional Hydrogeology	3-3
3.5.1	Unconfined Water Table Zone.....	3-3
3.5.2	Glacial Aquifer(s)	3-3
3.5.3	Lower Sand and Gravel Aquifer.....	3-4
3.5.4	Bedrock Aquifer(s).....	3-4
3.6	Regional Hydrology	3-4
3.7	Site Geology	3-4
3.8	Site Hydrogeology	3-5
3.9	Site Hydrology	3-5
Section 4.	Listing of Previous Investigations	4-1
4.1	Fiero.....	4-1
4.2	Demolition Area (DA).....	4-1
4.3	Metal Fabrication Division (MFD)	4-2
4.4	Powertrain.....	4-2
4.5	Service Parts Operation (SPO).....	4-3
Section 5.	Listing of Previous Remedial Actions.....	5-1
5.1	Fiero.....	5-1
5.2	Demolition Area (DA).....	5-1
5.3	Metal Fabrication Division (MFD)	5-2
5.4	Powertrain.....	5-2
5.5	Service Parts Operations (SPO).....	5-3
5.6	Sitewide Storm Sewer System	5-3
Section 6.	Areas of Interest.....	6-1
6.1	Fiero.....	6-1
6.1.1	Powerhouse Satellite Accumulation Areas (AOI F-1).....	6-2
6.1.1.1	Historical and Current Operations	6-2
6.1.1.2	Previous Investigations and Remedial Actions.....	6-2
6.1.1.3	Current Status.....	6-3
6.1.2	Waste Gasoline Accumulation Area (AOI F-2).....	6-3
6.1.2.1	Historical and Current Operations	6-3
6.1.2.2	Previous Investigations and Remedial Actions.....	6-3
6.1.2.3	Current Status.....	6-3

6.1.3 Container Storage Area (CSA) (AOI F-3)	6-4
6.1.3.1 Historical and Current Operations	6-4
6.1.3.2 Previous Investigations and Remedial Actions	6-4
6.1.3.3 Current Status	6-5
6.1.4 Closed Container Storage Area (CSA) (AOI F-4)	6-5
6.1.4.1 Historical and Current Operations	6-5
6.1.4.2 Previous Investigations and Remedial Actions	6-6
6.1.4.3 Current Status	6-6
6.1.5 Former Fiero Wastewater Treatment Plant (WWTP) (AOI F-5)	6-6
6.1.5.1 Historical and Current Operations	6-6
6.1.5.2 Previous Investigations and Remedial Actions	6-6
6.1.5.3 Current Status	6-7
6.1.6 Waste Purge Thinner UST and Three Product USTs (AOI F-6)	6-7
6.1.6.1 Historical and Current Operations	6-7
6.1.6.2 Previous Investigations and Remedial Actions	6-7
6.1.6.3 Current Status	6-8
6.1.7 Wastewater Collection Sumps (AOI F-7)	6-8
6.1.7.1 Historical and Current Operations	6-8
6.1.7.2 Previous Investigations and Remedial Actions	6-9
6.1.7.3 Current Status	6-9
6.1.8 Former Paint Sludge Storage Area (AOI F-8)	6-9
6.1.8.1 Historical and Current Operations	6-9
6.1.8.2 Previous Investigations and Remedial Actions	6-10
6.1.8.3 Current Status	6-10
6.1.9 Temporary Container Storage Area (CSA) (AOI F-9)	6-10
6.1.9.1 Historical and Current Operations	6-10
6.1.9.2 Previous Investigations and Remedial Actions	6-10
6.1.9.3 Current Status	6-11
6.1.10 High-Pressure Fly Ash Storage Silo (AOI F-10)	6-11
6.1.10.1 Historical and Current Operations	6-11
6.1.10.2 Previous Investigations and Remedial Actions	6-11
6.1.10.3 Current Status	6-11
6.1.11 Low-Pressure Fly Ash Storage Silos (AOI F-11)	6-12
6.1.11.1 Historical and Current Operations	6-12
6.1.11.2 Previous Investigations and Remedial Actions	6-12
6.1.11.3 Current Status	6-12
6.1.12 Coal Storage Area (AOI F-12)	6-12
6.1.12.1 Historical and Current Operations	6-13
6.1.12.2 Previous Investigations and Remedial Actions	6-13
6.1.12.3 Current Status	6-13

6.1.13	Former Oily Pea Gravel, Concrete, and Debris Area (AOI F-13)	6-13
6.1.13.1	Historical and Current Operations	6-13
6.1.13.2	Previous Investigations and Remedial Actions	6-13
6.1.13.3	Current Status	6-14
6.1.14	Fuel AST Area (AOI F-14)	6-14
6.1.14.1	Historical and Current Operations	6-14
6.1.14.2	Previous Investigations and Remedial Actions	6-14
6.1.14.3	Current Status	6-14
6.2	Demolition Area (DA)	6-15
6.2.1	West Yard (AOI W-1)	6-15
6.2.1.1	Historical and Current Operations	6-15
6.2.1.2	Previous Investigation and Remedial Actions	6-16
6.2.1.3	Current Status	6-18
6.2.2	Former Hazardous Waste Storage Pad (AOI W-2)	6-18
6.2.2.1	Historical and Current Operations	6-18
6.2.2.2	Previous Investigations and Remedial Actions	6-19
6.2.2.3	Current Status	6-20
6.2.3	Former Plant 8 Flammable Liquid Storage Tank Farm (AOI W-3)	6-20
6.2.3.1	Historical and Current Operations	6-20
6.2.3.2	Previous Investigations and Remedial Actions	6-21
6.2.3.3	Current Status	6-21
6.2.4	Transformer Substation D-1 (AOI W-4)	6-21
6.2.4.1	Historical and Current Operations	6-21
6.2.4.2	Previous Investigations and Remedial Actions	6-22
6.2.4.3	Current Status	6-22
6.2.5	Plant 8 Basement AST Area (AOI W-5)	6-22
6.2.5.1	Historical and Current Operations	6-22
6.2.5.2	Previous Investigations and Remedial Actions	6-22
6.2.5.3	Current Status	6-23
6.2.6	Former Plant 8 Flammable Materials Storage Building (AOI W-6)	6-23
6.2.6.1	Historical and Current Operations	6-23
6.2.6.2	Previous Investigations and Remedial Actions	6-23
6.2.6.3	Current Status	6-23
6.2.7	Plant 9 Turbo Tank (Tank 9-1) (AOI W-7)	6-24
6.2.7.1	Historical and Current Operations	6-24
6.2.7.2	Previous Investigations and Remedial Actions	6-24
6.2.7.3	Current Status	6-24
6.2.8	Former Plant 9 Basement AST Area (AOI W-8)	6-24
6.2.8.1	Historical and Current Operations	6-24
6.2.8.2	Previous Investigations and Remedial Actions	6-25
6.2.8.3	Current Status	6-25

6.2.9	Former Central Foundry (Plant 6) Resin Spill and UST (AOI W-9)	6-25
6.2.9.1	Historical and Current Operations	6-25
6.2.9.2	Previous Investigations and Remedial Actions	6-25
6.2.9.3	Current Status	6-28
6.2.10	Railroad Marshalling Area Drainage System (AOI W-10)	6-28
6.2.10.1	Historical and Current Operations	6-28
6.2.10.2	Previous Investigations and Remedial Actions	6-28
6.2.10.3	Current Status	6-29
6.2.11	Salvage Yard Sump Drain (AOI W-11)	6-29
6.2.11.1	Historical and Current Operations	6-29
6.2.11.2	Previous Investigations and Remedial Actions	6-29
6.2.11.3	Current Status	6-30
6.2.12	Catalina Substation (AOI W-12)	6-30
6.2.12.1	Historical and Current Operations	6-30
6.2.12.2	Previous Investigations and Remedial Actions	6-30
6.2.12.3	Current Status	6-30
6.2.13	Montcalm Substation (AOI W-13)	6-30
6.2.13.1	Historical and Current Operations	6-31
6.2.13.2	Previous Investigations and Remedial Actions	6-31
6.2.13.3	Current Status	6-31
6.3	Metal Fabrication Division (MFD)	6-31
6.3.1	Wastewater Treatment Plant Area (AOI M-1)	6-32
6.3.1.1	Historical and Current Operations	6-32
6.3.1.2	Previous Investigations and Remedial Actions	6-32
6.3.1.3	Current Status	6-33
6.3.2	Former Plating Operations Area (AOI M-2)	6-33
6.3.2.1	Historical and Current Operations	6-33
6.3.2.2	Previous Investigations and Remedial Actions	6-34
6.3.2.3	Current Status	6-34
6.3.3	Former Track 31 (AOI M-3)	6-34
6.3.3.1	Historical and Current Operations	6-35
6.3.3.2	Previous Investigations and Remedial Actions	6-35
6.3.3.3	Current Status	6-36
6.3.4	Plant 25 Former Gasoline UST and Current Gasoline AST Location (AOI M-4)	6-36
6.3.4.1	Historical and Current Operations	6-36
6.3.4.2	Previous Investigations and Remedial Actions	6-36
6.3.4.3	Current Status	6-37
6.3.5	Former A-2 Fill Area (AOI M-5)	6-38
6.3.5.1	Historical and Current Operations	6-38
6.3.5.2	Previous Investigations and Remedial Actions	6-38
6.3.5.3	Current Status	6-39

6.3.6 Plant 5 Hydraulic Fluid Spill (AOI M-6)	6-39
6.3.6.1 Historical and Current Operations	6-39
6.3.6.2 Previous Investigations and Remedial Actions	6-39
6.3.6.3 Current Status	6-40
6.3.7 ELPO Building (AOI M-7)	6-40
6.3.7.1 Historical and Current Operations	6-40
6.3.7.2 Previous Investigations and Remedial Actions	6-41
6.3.7.3 Current Status	6-41
6.3.8 Plant 25 Oil Storage Area (AOI M-8)	6-41
6.3.8.1 Historical and Current Uses	6-41
6.3.8.2 Previous Investigations and Remedial Actions	6-42
6.3.8.3 Current Status	6-42
6.3.9 Plant 11 Heat Treat Oil Storage Area (AOI M-9)	6-42
6.3.9.1 Historical and Current Operations	6-42
6.3.9.2 Previous Investigations and Remedial Actions	6-43
6.3.9.3 Current Status	6-43
6.3.10 Plant 23 Basement AST Area (AOI M-10)	6-43
6.3.10.1 Historical and Current Operations	6-43
6.3.10.2 Previous Investigations and Remedial Actions	6-43
6.3.10.3 Current Status	6-43
6.3.11 Plant 12 Former Gasoline Storage Area (AOI M-11)	6-44
6.3.11.1 Historical and Current Operations	6-44
6.3.11.2 Previous Investigations and Remedial Actions	6-44
6.3.11.3 Current Status	6-44
6.3.12 AST East of Plant 49 (AOI M-12)	6-45
6.3.12.1 Historical and Current Operations	6-45
6.3.12.2 Previous Investigation and Remedial Actions	6-45
6.3.12.3 Current Status	6-45
6.3.13 ASTs Area West of Plant 14 (AOI M-13)	6-45
6.3.13.1 Historical and Current Operations	6-45
6.3.13.2 Previous Investigations and Remedial Actions	6-46
6.3.13.3 Current Status	6-46
6.3.14 Current AST Area East of Plant 12 (AOI M-14)	6-46
6.3.14.1 Historical and Current Uses	6-46
6.3.14.2 Previous Investigations and Remedial Actions	6-47
6.3.14.3 Current Status	6-47
6.3.15 Track 26 (AOI M-15)	6-47
6.3.15.1 Historical and Current Operations	6-47
6.3.15.2 Previous Investigations and Remedial Actions	6-47
6.3.15.3 Current Status	6-48

6.3.16	Plant 25 Basement Sump Area (AOI M-16)	6-48
6.3.16.1	Historical and Current Operations	6-48
6.3.16.2	Previous Investigations and Remedial Actions	6-48
6.3.16.3	Current Status	6-49
6.3.17	Plant 15 Southern Piping Trench (AOI M-17)	6-49
6.3.17.1	Historical and Current Operations	6-49
6.3.17.2	Previous Investigations and Remedial Actions	6-49
6.3.17.3	Current Status	6-49
6.3.18	Plant 5 Waste Accumulation Area (AOI M-18)	6-49
6.3.18.1	Historical and Current Operations	6-50
6.3.18.2	Previous Investigations and Remedial Actions	6-50
6.3.18.3	Current Status	6-50
6.3.19	Plant 5 Southern Access Railway (AOI M-19)	6-50
6.3.19.1	Historical and Current Operations	6-51
6.3.19.2	Previous Investigations and Remedial Actions	6-51
6.3.19.3	Current Status	6-51
6.3.20	Plant 23 Basement Area (AOI M-20)	6-51
6.3.20.1	Historical and Current Operations	6-51
6.3.20.2	Previous Investigations and Remedial Actions	6-52
6.3.20.3	Current Status	6-52
6.3.21	Plant 14 Transformer Station (AOI M-21)	6-52
6.3.21.1	Historical and Current Operations	6-52
6.3.21.2	Previous Investigations and Remedial Actions	6-52
6.3.21.3	Current Status	6-53
6.3.22	Plant 15 - Columbia Avenue Switch House (AOI M-22)	6-53
6.3.22.1	Historical and Current Operations	6-53
6.3.22.2	Previous Investigations and Remedial Actions	6-53
6.3.22.3	Current Status	6-53
6.3.23	Plants 25, 33, and 75 Substation and Power Building (AOI M-23)	6-53
6.3.23.1	Historical and Current Operations	6-54
6.3.23.2	Previous Investigations and Remedial Actions	6-54
6.3.23.3	Current Status	6-54
6.3.24	Plant 12 Transformer Oil Spill (AOI M-24)	6-54
6.3.24.1	Historical and Current Operations	6-54
6.3.24.2	Previous Investigations and Remedial Actions	6-55
6.3.24.3	Current Status	6-55
6.3.25	Plant 33 Basement Sump Area (AOI M-25)	6-55
6.3.25.1	Historical and Current Operations	6-55
6.3.25.2	Previous Investigations and Remedial Actions	6-55
6.3.25.3	Current Status	6-56

6.4	Powertrain.....	6-56
6.4.1	Former Powertrain UST Farm (AOI P-1)	6-56
6.4.1.1	Historical and Current Operations	6-56
6.4.1.2	Previous Investigations and Remedial Actions	6-57
6.4.1.3	Current Status.....	6-58
6.4.2	Existing Powertrain UST Farm (AOI P-2)	6-58
6.4.2.1	Historical and Current Operations	6-58
6.4.2.2	Previous Investigations and Remedial Actions	6-59
6.4.2.3	Current Status.....	6-59
6.4.3	Car Wash (AOI P-3).....	6-60
6.4.3.1	Historical and Current Operations	6-60
6.4.3.2	Previous Investigations and Remedial Actions	6-60
6.4.3.3	Current Status.....	6-61
6.4.4	Powertrain Former Used Oil UST and Utility Line (AOI P-4)	6-61
6.4.4.1	Historical and Current Operations	6-61
6.4.4.2	Previous Investigations and Remedial Actions	6-62
6.4.4.3	Current Status.....	6-63
6.4.5	Powertrain Former Stoddard Solvent UST (AOI P-5).....	6-63
6.4.5.1	Historical and Current Operations	6-63
6.4.5.2	Previous Investigations and Remedial Actions	6-63
6.4.5.3	Current Status.....	6-64
6.4.6	Emissions Control Building Former UST Farm and Stoddard Solvent AST (AOI P-6).....	6-64
6.4.6.1	Historical and Current Operations	6-64
6.4.6.2	Previous Investigations and Remedial Actions	6-65
6.4.6.3	Current Status.....	6-65
6.4.7	Former Plant 18 Coolant AST Location (AOI P-7).....	6-65
6.4.7.1	Historical and Current Operations	6-66
6.4.7.2	Previous Investigations and Remedial Actions	6-66
6.4.7.3	Current Status.....	6-66
6.4.8	Former Vacant Lot UST (AOI P-8)	6-66
6.4.8.1	Historical and Current Operations	6-66
6.4.8.2	Previous Investigations and Remedial Actions	6-67
6.4.8.3	Current Status.....	6-67
6.5	Service Parts Operations (SPO).....	6-67
6.5.1	Former SPO Gasoline UST Location (AOI S-1)	6-68
6.5.1.1	Historical and Current Uses.....	6-68
6.5.1.2	Previous Investigations and Remedial Actions	6-68
6.5.1.3	Current Status.....	6-68
6.5.2	Former SPO Diesel UST Location (AOI S-2)	6-68
6.5.2.1	Historical and Current Uses.....	6-69
6.5.2.2	Previous Investigations and Remedial Actions	6-69
6.5.2.3	Current Status.....	6-69

6.6	Sitewide Storm Sewer System	6-69
6.6.1	Storm Sewer Outfall 001.....	6-69
6.6.1.1	Historical and Current Operations	6-70
6.6.1.2	Previous Investigations and Remedial Actions.....	6-70
6.6.1.3	Current Status.....	6-70

References

List of Acronyms

Tables

2-1	Historical and Current Site Buildings
2-2	RCRA Hazardous Waste Codes
6-1	Areas of Interest - Fiero
6-2	Storage Tank Summary - Fiero
6-3	Historic Data Summary - AOI F-3
6-4	Historic Data Summary - AOI F-6
6-5	Areas of Interest - Demolition Area
6-6	Storage Tank Summary - Demolition Area
6-7	Historic Data Summary - AOI W-1
6-8	Historic Data Summary - AOI W-2
6-9	Historic Data Summary - AOI W-9
6-10	Areas of Interest - Metal Fabrication Division
6-11	Storage Tank Summary - Metal Fabrication Division
6-12	Historic Data Summary - AOI M-3
6-13	Historic Data Summary - AOI M-4
6-14	Historic Data Summary - AOI M-5/S-3
6-15	Historic Data Summary - AOI M-15
6-16	Areas of Interest - Powertrain
6-17	Storage Tank Summary - Powertrain
6-18	Historic Data Summary - AOI P-1
6-19	Historic Data Summary - AOI P-2
6-20	Historic Data Summary - AOI P-3
6-21	Historic Data Summary - AOI P-4
6-22	Historic Data Summary - AOI P-5
6-23	Historic Data Summary - AOI P-8
6-24	Areas of Interest - Service Parts Operation
6-25	Storage Tank Summary - Service Parts Operation
6-26	Historic Data Summary - AOI S-1

- 6-27 Historic Data Summary - AOI S-2
- 6-28 Site Storm Sewer System Area of Interest

Figures

- 1-1 Site Location
- 1-2 Site Facilities
- 1-3 Site Operational Areas
- 1-4 Summary of Operational Areas and Facilities

- 2-1 Storm Sewer Outfalls

- 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 Aquifer Vulnerability to Surface Contamination
- 3-6 River Basins

- 6-1 Areas of Interest - Fiero
- 6-2 Areas of Interest - Demolition Area
- 6-3 Current Estimated Extent of LNAPL
- 6-4 Soil Boring and Monitoring Well Locations
- 6-5 Areas of Interest - Metal Fabrication Division
- 6-6 Areas of Interest - Powertrain
- 6-7 Areas of Interest - Service Parts Operation

Appendices

- A SWMU Documentation
- B Topographic Map, Sanborn Map, and Aerial Photograph Review
- C RCRA Facility Information for CPC Pontiac Fiero Assembly Plant (MID 005356910)
- D RCRA Facility Information for GMC Central Foundry Division – Pontiac Plant (MID 085470102)
- E RCRA Facility Information for CPC Pontiac Division of GMC - Pontiac (MID 005356886)
- F Demographic Information, 1990 Census
- G Container Storage Area (AOI F-3)/Waste Purge Thinner (AOI F-6)
- H Closed Container Storage Area (AOI F-4)
- I Temporary Container Storage Area (AOI F-9)

Volume II

J West Yard (AOI W-1)

Volume III

K Hazardous Waste Storage Pad (AOI W-2)
L Former Plant 8 Flammable Liquid Tank Farm (AOI W-3)
M Transformer Substation D-1 (AOI W-4)
N Former Plant 9 Turbo Tank (AOI W-7)
O Former Central Foundry (Plant 6) (AOI W-9)
P Railroad Marshalling Area Drainage System (AOI W-10)
Q Salvage Yard Sump Drain (AOI W-11)
R Catalina Substation (AOI W-12)
S Former Track 31 (AOI M-3)
T Former A-2 Fill Area (AOI M-5)
U Track 26 (AOI M-15)

Volume IV

V Former Powertrain UST Farm (AOI P-1)
W Existing Powertrain UST Farm (AOI P-2)
X Car Wash UST Farm (AOI P-3)
Y Powertrain Former Used Oil UST and Utility Line (AOI P-4)
Z Powertrain Former Stoddard Solvent UST (AOI P-5)
AA Former Vacant Lot UST (AOI P-8)
AB Former SPO Gasoline UST (AOI S-1)
AC Former SPO Diesel UST (AOI S-2)
AD Site Storm Sewer System

Appendix V

Appendix V

- V-1 Underground Storage Tank Removal Monitoring (TEC, 1990b)
- V-2 Remedial Investigation Report (TEC, 1991)
- V-3 Site Investigation Report (TEC, 1993)
- V-4 Closure Investigation, CPC Pontiac Old and New Tank Farm (Atwell Hicks, 1994a)
- V-5 Letter from MDNR re: Closure Investigation Report for Laboratory Tank Farms (MDNR, 1994)

Appendix W

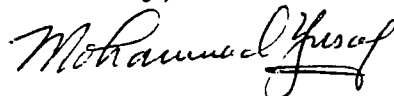
Mr. Dallas Geisler

-2-

September 30, 1994

If you have any further questions regarding this matter, please contact Mr. Paul Owens at Southeast Michigan District Office, MDNR, Underground Storage Tank Division, 38980 Seven Mile Road, Livonia, Michigan 48152, or at telephone number 313-953-1534.

Sincerely,

A handwritten signature in cursive script that reads "Mohammad Yusaf".

Mohammad Yusaf, P.E., Chief
Field Operations Section
Underground Storage Tank Division
517-373-3135

cc: Mr. Fred Roeser, Atwell-Hicks, Inc.
Ms. Valerie Burgess-Byrd, MDNR
Mr. Paul Owens, MDNR

V-1

STATE OF MICHIGAN



JOHN ENGLER, Governor

DEPARTMENT OF NATURAL RESOURCES

Stevens T. Mason Building, P.O. Box 30028, Lansing, MI 48909

ROLAND HARMES, Director

NATURAL RESOURCES
COMMISSION

JERRY C. BARTNIK
JERRY DEVUYST
L. EISELE
JES P. HILL
DAVID HOLLI
JOEY M. SPANO
JORDAN B. TATTER

September 30, 1994

Mr. Dallas Geisler
CPC Pontiac
General Motors Corporation
One Pontiac Plaza
Pontiac, MI 48340-2952

Dear Mr. Geisler:

SUBJECT: Closure Investigation Report for Laboratory Tank Farms
CPC Pontiac (old and new tank farms)
985 Joslyn Road, Pontiac, MI
MERA Site ID #630338

The Michigan Department of Natural Resources (MDNR) is in receipt of the Closure Report dated August 24, 1994 prepared by Atwell-Hicks, Inc. describing the response actions undertaken with regard to the underground storage tank (UST) release at this facility. General Motors Corporation, through Atwell-Hicks, Inc., has requested MDNR concurrence that no further remedial actions are necessary to abate the release of regulated substances from the laboratory tank farm UST system (old & new tank farms). The release was reported to the Michigan State Police Fire Marshall Division on April 12, 1990. Based on staff review of the summary of work performed, we concur that the contamination, associated with the former UST system, is below Type-B levels.

According to the work summary, the activities at this site consisted of the excavation and proper disposal of contaminated soils and the removal and proper disposal of contaminated groundwater. Soil and groundwater samples were collected to verify mitigation of contamination to acceptable concentrations.

The MDNR is unable to express any opinion as to other contaminants beyond those found and remediated as part of this release. We make no warranty as to the fitness of the site for any general or specific use, and prospective purchasers or users are advised to use due diligence in acquiring or using this site. This site will not be considered for inclusion of the Act 307 List as a site of environmental contamination with regard to this incident.



*J - FYI
- file*

Chevrolet-Pontiac-Canada Group
Headquarters
General Motors Corporation
30001 Van Dyke Avenue
Warren, Michigan 48090-9020



December 7, 1990

Ms. Cheryl Wallace
Michigan Dept. of Natural Resources
Southeastern Michigan
505 W. Main Street
Northville, Michigan 48167

Dear Mr. Wallace:

Attached is a report summarizing the initial abatement measures and site characterization of the Underground Storage Tank (UST) Site closure at the Chevrolet-Pontiac-Canada Group North Engineering Building located at 895 Joslyn Road, Pontiac, Michigan.

The UST leak detection system indicated a release had occurred and the State Fire Marshall's office was notified on April 12, 1990. In August, 1990 all of the USTs were permanently closed. Contaminated soil was discovered during removal of the USTs and all soil excavated was found to be non-hazardous, however, the soil contained concentrations of Total Petroleum Hydrocarbons which required the appropriate disposal of all excavated soil.

In order to determine the full horizontal and vertical extent and location of soils contamination, the CPC group has obtained the services of Testing Engineers & Consultants, Inc. (TEC) to perform a site characterization and investigation of the surrounding area to determine the appropriate corrective action plan.

The scheduled completion and submittal of the information on the site characterization and proposed corrective action is planned for the spring of 1990.

If you have any questions or comments, please contact the writer at (313) 575-4304.

Mark Hoffman
Mark Hoffman
Plant Engineering

MH/sw/152

cc: Fire Marshall

V-5

bc: A. Ehrbar
T. Blakeslee
J. Deboo
F. Simone
S. Gearhart
D. Galia
W. Barrott
D. Rugg

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
General Motors Corporation
30001 Van Dyke Avenue
Warren, Michigan 48090-9020

UNDERGROUND STORAGE TANK
REMOVAL MONITORING

CPC NORTH FACILITY
LABORATORY TANK FARM
895 JOSLYN AVENUE
PONTIAC, MICHIGAN

Testing Engineers & Consultants, Inc.
P.O. Box 249
1333 Rochester Road
Troy, Michigan 48099
(313) 588-6200 or Dial (313) T-E-S-T-I-N-G

Date Issued: 26 October 1990
Date Reissued: 06 December 1990

Hydriane Version: 3.2 <16C20>

Date: 6/27/94 9:47 PM

Sample Name : 94-1796-1

Data File : C:\junk\DATA2\0305366.raw Date: 6/27/94 9:27 PM

Sequence File: C:\JUNK\DATA\03100371.seq Cycle: 7 Channel: A

Injection : 970_-1 Peak/Val: 0/0 Operator:

Sample Amount : 1.0000 Dilution Factor : 1.00

DETER REPORT

Peak Time	Component	Area	Height	Area	Rel	Amount
#	[min.]	[uV*sec]	[uV]	[%]		ug/Kg
12	7.73 mHe	4492	517	0.53	99	0.13
21	10.46 Benzene	320136	49633	37.84	88	8.26
23	11.67 Surrogate	479557	69588	56.69	93	0.00
26	13.02 Toluene	14902	3529	1.76	98	-13.38
32	15.08 Ethyl Benzene	6160	1155	0.73	99	0.22
33	15.23 m&P Xylene	13893	3063	1.64	99	0.07
34	15.79 o-xylene	6816	1439	0.81	99	-0.20

100.00

-4.91



Testing Engineers & Consultants, Inc.

1511 Michigan Mutual Bldg. • 28 W. Adams • Detroit, MI 48226
313-588-6200 or Dial 313-T-E-S-T-I-N-G

John Banicki, P.E.
Kenneth Cummins, L.S., P.E.
Gerald M. Belian, P.E.
Elihu Geer, PhD.
Michael Davinich,

TEC Report Number: 21278-1
Date Issued: 26 October 1990
Date Reissued: 06 December 1990

CPC Group Headquarters
General Motors Corporation
30001 Van Dyke Avenue
Warren, Michigan 48090-9020

Attention: Mr. Mark Hoffman

Re: Underground Storage Tank
Removal Monitoring;
CPC North Facility,
Laboratory Tank Farm,
895 Joslyn Avenue,
Pontiac, Michigan

Dear Mr. Hoffman:

Testing Engineers & Consultants, Inc. has completed the sampling of the soil surrounding seven underground storage tanks at the CPC North Facility, Laboratory Tank Farm. The attached document summarizes the field work completed 10 September 1990 and contains the project specifications, including results of the field sampling and laboratory analysis.

We are pleased to provide this service. Should you have any questions or desire further information, please do not hesitate to contact this office at your earliest convenience.

Respectfully submitted,

TESTING ENGINEERS & CONSULTANTS, INC.

Frederick G. Roeser JSC
Frederick G. Roeser
Project Geologist

G. M. Belian
Gerald M. Belian, P.E.
Executive Vice President

FGR/GMB/rjc
Enclosure



All services undertaken subject to the following general policy: Reports are submitted for exclusive use of the clients to whom they are addressed. Their significance is subject to the adequacy and representative character of the samples and to the comprehensiveness of the tests, examinations and surveys made. No quotations from reports or use of TEC's name is permitted except as expressly authorized by TEC in writing.

CONSULTING ENGINEERS & FULL-SERVICE PROFESSIONAL TESTING AND INSPECTION
OFFICES IN ANN ARBOR, DETROIT, FLINT, LANSING AND TROY



Chromatogram

Sample Name : 94-1796-1
 FileName : C:\junk\DATA2\PID5366.raw
 Method : SHORT.ins
 Start Time : 0.00 min
 Scale Factor: 0

End Time : 20.00 min
 Plot Offset: -50 mV
 Sample #: 19
 Date: 6/27/94 9:48 PM
 Time of Injection: 6/27/94 9:27 PM
 Low Point: -50.00 mV
 Plot Scale: 1000 mV
 High Point: 950.00 mV

Page 1 of 1

Response [mV]

0 200 400 600 800

3.70
 3.97
 4.88
 5.15
 5.51
 5.88
 6.00
 6.50
 7.15
 7.40
 7.73
 7.99
 8.28
 8.50
 8.77
 9.10
 9.66
 10.02
 10.46
 11.31
 11.67
 12.31
 12.90
 13.47
 13.78
 14.24
 14.53
 14.93
 15.08
 15.79
 16.06
 16.30
 16.66

MTBE

BENZENE

SURROGATE

TOLUENE

ETHYL BEN

O-XYLENE

Time [min]

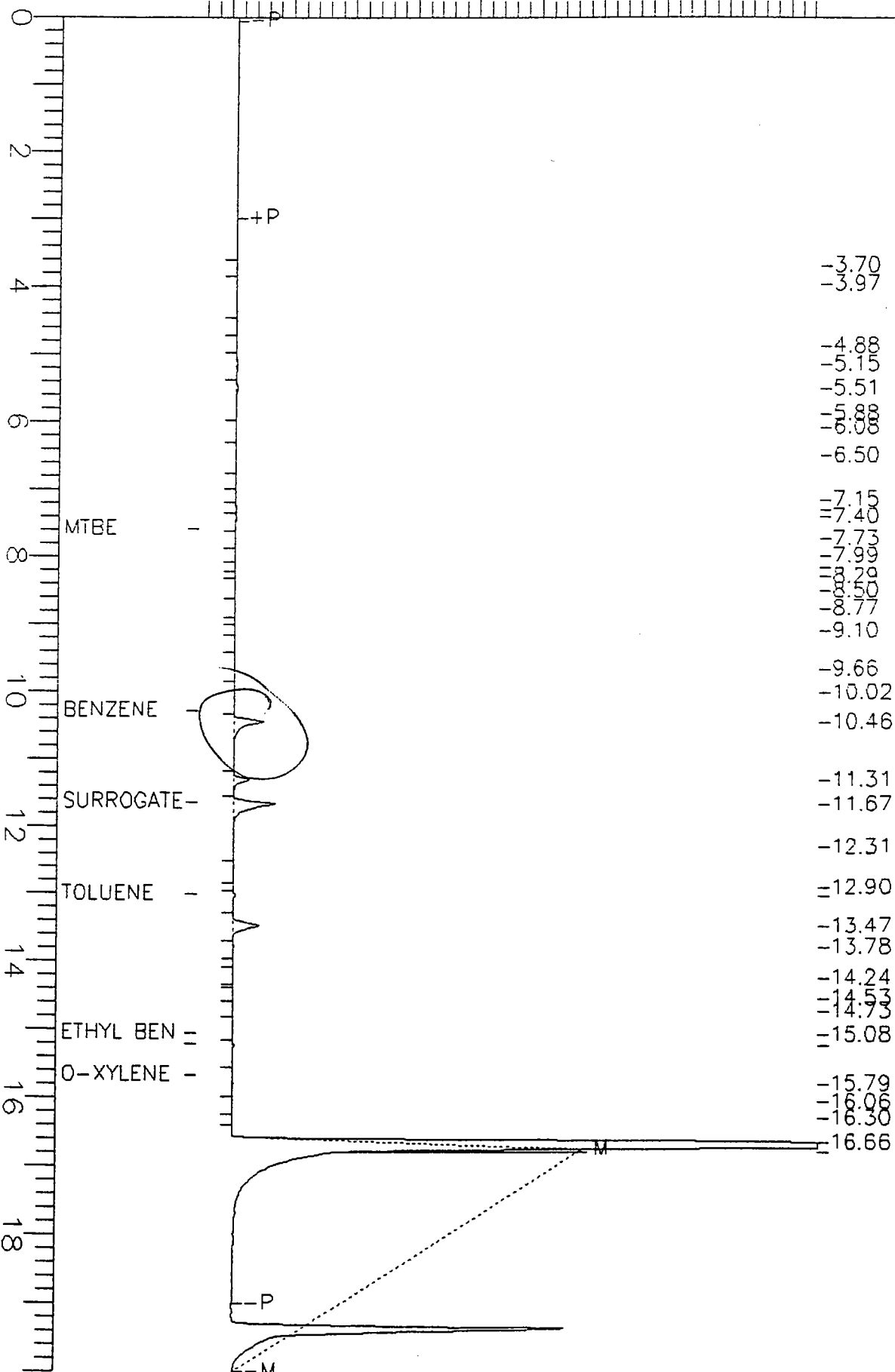


TABLE OF CONTENTS

	<u>Page</u>
1.0 PURPOSE	1
2.0 SITE LOCATION	1
3.0 BACKGROUND	2
4.0 PRELIMINARY FIELD SAMPLING	2
5.0 FIELD MONITORING	2
6.0 FIELD SAMPLING	4
7.0 LABORATORY ANALYSES	5
8.0 CONCLUSIONS AND RECOMMENDATIONS	5
FIGURE 1 - SITE LOCATION MAP	
FIGURE 2 - TANK DIAGRAM	
FIGURE 3 - CONFIRMATION SAMPLING	
FIGURE 4 - BLUEPRINT	
FIGURE 5 - PROPOSED BORING LOCATIONS	
APPENDIX A - TABLES	A-1 TO A-3
APPENDIX B - ANALYTICAL RESULTS	B-1 TO B-48

Software Version: 3.2 <16C20>

Date: 6/23/94 1:55 AM

Sample Name : 94-1796-1

Data File : C:\junk\DATA2\0905280.raw Date: 6/23/94 1:34 AM

Sequence File: C:\junk\DATA\0900031.seq Cycle: 14 Channel : 4

Injection Amount : 970_-1 Back/Vol: 0/0 Operator:

Sample Amount : 1.0000 Dilution Factor : 1.00

TEXT REPORT

Peak Time	Component Name	Area [uV*sec]	Height [uV]	Area Bl [%]	Amount ug/Kg
# [min]					
10	7.78 mHe	1054	137	0.10 EB	-4.18
18	10.51 Benzene	310126	45683	29.17 UB	6.36
20	11.72 Surrogate	569471	81256	53.57 UB	0.00
25	13.08 Toluene	17068	3064	1.61 UB	-13.45
31	15.13 Ethyl Benzene	13971	2328	1.31 UB	0.53
32	15.29 M&P Xylene	106222	18298	9.99 UB	3.64
33	15.85 O-xylene	45212	7310	4.25 UC	1.48

100.00

-5.61

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
26 October 1990

TEC Report Number: 21278-1 (Page 1 of 7)

1.0 PURPOSE

Testing Engineers & Consultants, Inc. was retained by the General Motors Corporation, Chevrolet-Pontiac-Canada (CPC) Group, to provide the necessary site assessment by sampling the soils surrounding seven gasoline underground storage tanks (USTs). These tanks ranged in size from 1,700 to 10,000 gallons at the CPC Pontiac North Facility, Laboratory Tank Farm, located at 895 Joslyn Road, in Pontiac, Michigan. Please refer to Figures 1 through 5 for Site Location Maps.

The purpose of this investigation was to examine the soils surrounding the USTs and determine if any contamination was present due to releases. Soil samples from the bottom of the excavation area and walls were field tested for volatile components. Field tests below detectable levels (2 units of needle deflection) of the HNU Photo-ionizer were used as preliminary indicators of the limits of contamination.

Soil samples were transported to Testing Engineers & Consultants, Inc.'s in-house laboratory and analyzed for gasoline constituents. This document summarizes the field work completed as of 10 September 1990. Air monitoring was performed on the interior of the USTs, both in place and when the tanks were removed and placed on the adjacent concrete slab. 7

2.0 SITE LOCATION

The site is located at 895 Joslyn Avenue in Pontiac, Michigan. The UST excavation area (tank farm) was located adjacent to the south

.....continued

Chromatogram

```
Sample Name : 94-179
FileName   : C:\junk\DA
Method     : SHORT.ins
Start Time : 0.00 min
Scale Factor: 0
```

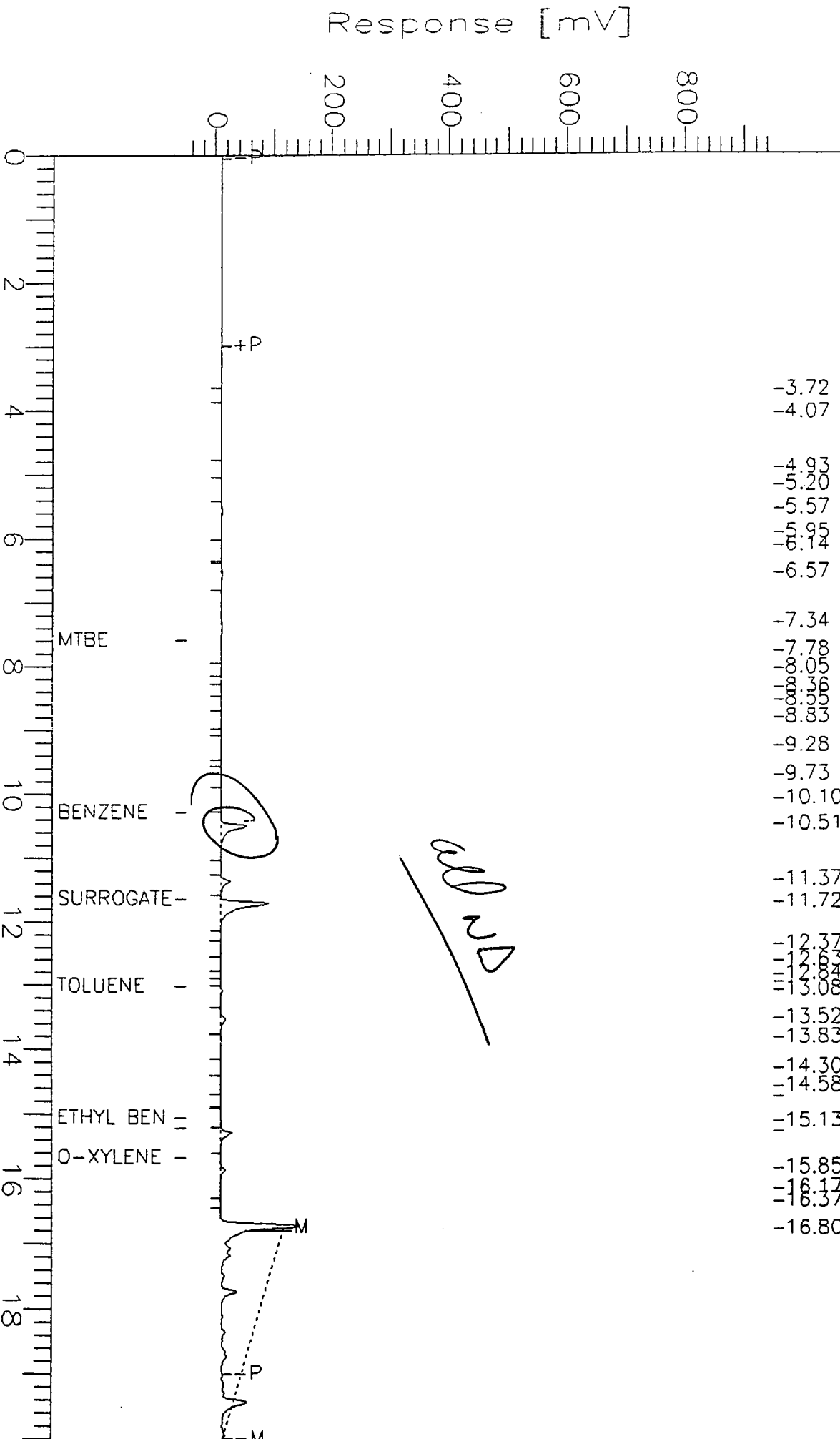
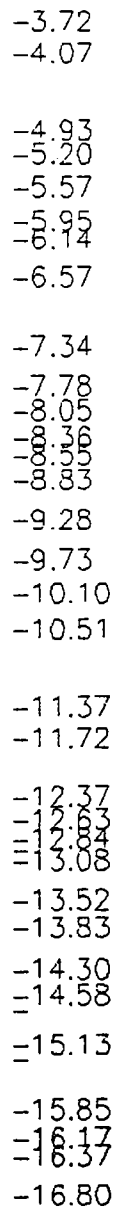
End Time : 20.00 min
Plot Offset: -50 mV

Sample #: 1
Date : ~~6/23/94~~ 1:55 AM
Time of Injection: 6/23/94
Low Point : ~50.00 mV
Plot Scale: 1000 mV

1:34 AM
High

4 AM
High Point : 950.00 mV

Page 1 of 1



CPC Group Headquarters
Mr. Mark Hoffman
26 October 1990

TEC Report Number: 21278-1 (Page 2 of 7)

2.0 SITE LOCATION (Cont'd)

wall of the Engine Test Laboratory. Please refer to Figure 2 and 4 for Tank Diagrams.

3.0 BACKGROUND

The tank farm consisted of seven gasoline USTs that were mounted on concrete cradles, resting on a concrete slab approximately 18 inches thick. A concrete sump was located adjacent to Tank G.

Prior to the start of demolition, the tanks were emptied and cleaned to minimize fire hazards. Steel pilings were driven as the excavation began, and wooden shoring was erected to minimize wall cave-in.

4.0 PRELIMINARY FIELD SAMPLING

Surface soil samples within the tank excavation area (approximately 3.0 feet below surface elevation) were collected and analyzed for Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) to determine if these soils could be used as backfill. If contamination was present, the soil would be stockpiled and subsequently disposed of. Field screening and corresponding laboratory analyses revealed that soils collected within the excavation zone contained slightly elevated levels of BTEX components (please see Appendix B for Analytical Results), and thus, would not be suitable for backfill.

5.0 FIELD MONITORING

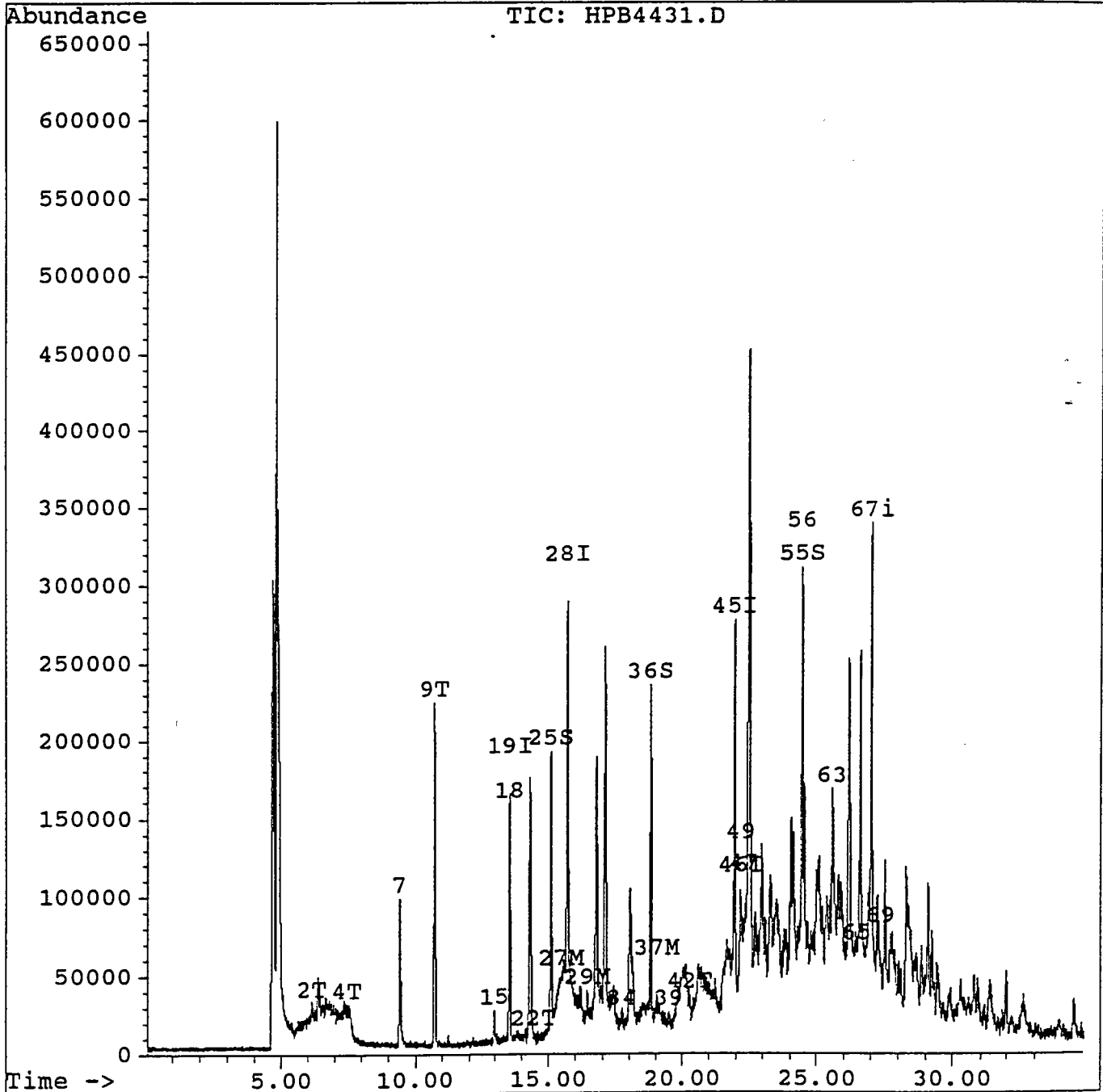
A Staff Geologist from Testing Engineers & Consultants, Inc. (TEC) was on-site to monitor the removal of approximately twelve

.....continued

QUANT REPORT

Operator ID: RENEE Date Acquired: 23 Jun 94 7:02 pm
 Data File: C:\CHEMPC\DATA\062294\HPB4431.D
 Name:
 Misc: 94-1796 #4 1gram
 Method: VOAME1.M
 Title: VOAME1.M
 Last Calibration: Fri Jun 10 11:43:47 1994
 Quantitated using Multiple Level Calibration

Handwritten signature/initials



TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
26 October 1990

TEC Report Number: 21278-1 (Page 3 of 7)

5.0 FIELD MONITORING (Cont'd)

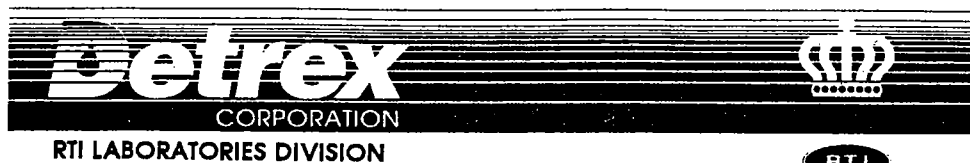
hundred yards of soil surrounding the USTs. Minority Earthmovers was contracted to conduct the excavation by the general contractor, Freeman Darling. Filler leads above the USTs were removed in conjunction with the removal of the USTs. The excavated area was approximately 72' x 36' x 15' in size. The soil lithology within the excavation area included a one foot layer of crushed concrete fill, underlain by a black sand to approximately 9.0 feet in depth, which is underlain by a brown clay with sand and pebble.

The tanks were air monitored (both in place and on the adjacent concrete slab). Please see Table 1 for lower explosive limit levels. The USTs were scraped free of soil clinging to their perimeter and hauled by C & H Trucking to Sam Allen Scrap Yard in Pontiac, Michigan.

Perched water in the excavation area accumulated as the excavation progressed. This water was tested and exhibited elevated levels of BTEX components (please see Appendix B for the Analytical Results - water sample, TEC I.D. Number 23640). The contaminated water was pumped each morning by Inland Waters (Detroit) and taken to the General Motors on-site waste water treatment facility. A water sample was also collected on the east side of the excavation area and exhibited slightly elevated BTEX levels (TEC I.D. Number 23735).

Soil samples from the excavation zone were analyzed in the field utilizing an HNU Photo-ionizer. The HNU Photo-ionizer is a portable trace gas analyzer that can be used to measure a wide variety of organic vapors in the soil and air. Soil samples from the excavation

.....continued



CONFIDENTIAL REPORT OF EVALUATION
Lab. No. : 94-1796B

Page : 4

Included with this report are three chromatograms. They are:

- 1) 94-1796 #4 1 gram; 8240 analysis.
- 2) 94-1796-1 #1 Total BTEX analysis; 1st run.
- 3) 94-1796-1 #1 Total BTEX analysis; 2nd run.

The purpose for including these raw data are twofold. The reason for including the 8240 chromatogram is to illustrate the magnitude of hydrocarbon contamination for this soil sample. For comparison purposes, a clean 8240 scan would appear as a flat line with nine distinct peaks present (four from internal standards, and three from surrogates).

The reason for including the remaining two chromatograms is to illustrate the presence of benzene in sample 94-1796 #1. For the raw data dated 6/23/94, the benzene concentration is 6.36 ppb (not dry weight corrected). For the raw data dated 6/27/94, the benzene concentration is 8.26 ppb (not dry weight corrected). Benzene for this sample has been reported as Not Detected at 10 ppb.

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
26 October 1990

TEC Report Number: 21278-1 (Page 4 of 7)

5.0 FIELD MONITORING (Cont'd)

zone registered levels up to 300 parts per million (ppm). These soils were hauled to the north parking lot (concrete), stockpiled on visqueen, and bordered with bales of straw. The soil removal continued until the bottom elevation of the concrete slab perimeter was reached.

6.0 FIELD SAMPLING

Samples were collected from the floor of the excavation area on both the north and south ends of each removed tank. Soil samples, two from the east wall, two from the west wall, four from the south wall, and four from the north wall, were collected in distinctly labelled, Teflon-lined glass jars and submitted to TEC's in-house laboratory for BTEX analyses. Please see Table 2 for sample collection dates and Figure 3 for confirmation sampling locations. In some areas, a layer of black sand approximately two inches thick remained above the brown clay. Field screening did not detect the presence of volatile components except for an area south of the sump and west of Tank G. This area consisted of approximately two yards of black sand which exhibited levels of 200 ppm utilizing an HNU Photo-ionizer. This material was not removed from the excavation area.

A two inch layer of black sand was observed on the walls of the excavation area, none of which exhibited detectable levels of organic vapors. The south piping was associated with a tank truck unloading station that had previously been removed. The east piping was part of a displacement process for product removal. The east piping rested on a concrete trench and extended from the tank farm

.....continued

CONFIDENTIAL REPORT OF EVALUATION
Lab. No. : 94-1796B

Page : 3

QA/QC DATA

=====

1. SURROGATE % RECOVERY

VOLATILE COMPOUNDS (Method EPA 8240)

	Results(%)	
	=====	
	4	Limits(%)
	===	=====
1,2 Dichloroethane-d4--	130	76 - 114
Toluene-d8-----	93	88 - 110
4-Bromofluorobenzene---	119	86 - 115

2. METHOD BLANKS (ORGANICS):

FILE ID	FRACTION	COMPOUND	RESULTS
=====	=====	=====	=====
HPB4429	VOA	All Compounds	ND
PID5286	VOA	All Compounds	ND

SAMPLE PROCESSING DATA

=====

	8240	BTEX
	=====	=====
Date Extracted/Digested:--	NA	NA
Extracted/Digested by:---	NA	ND
Date Analyzed:-----	06/23/94	06/24/94 & 6/28/94*
Analyzed by:-----	CY	RE
File ID:-----	HPB4431	PID5280,82,83
Batch #:-----	062394	062494
Dilution:-----	1:5	NONE

* = Re-analysis date.

LOD-S = Limit of Detection for the reported sample(s)

MDL = Method Detection Limit or Contract Required Detection Limit.

NA = Not Applicable or Not Analyzed

ND = Not Detected or less than MDL

Results are reported in ppb on a dry-weight basis for soils
unless otherwise specified.

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
26 October 1990

TEC Report Number: 21278-1 (Page 5 of 7)

6.0 FIELD SAMPLING (Cont'd)

into the building. The south and east piping was removed subsequent to TEC's project monitoring by General Motors in-house personnel. No soil samples were collected to assess contamination impact of this area.

7.0 LABORATORY ANALYSES

The following samples exhibited elevated levels of BTEX components (EPA Method 8020): benzene levels collected from bottom south, Tank F (BS2); and benzene levels collected from the east wall (north side, EW2). The remaining samples exhibited levels below Michigan Department of Natural Resources (MDNR) remediation guidelines, Criteria B, for soil contamination. Please see Table 2 for a summation of field and analytical results.

8.0 CONCLUSIONS AND RECOMMENDATIONS

Testing Engineers & Consultants, Inc. has completed the sampling of the soils surrounding seven gasoline USTs at the CPC North Facility, Laboratory Tank Farm. Field screening, utilizing an HNU Photo-ionizer, detected volatiles in the black sand fill adjacent to the USTs at levels up to 300 ppm in the vicinity of Tank G. These soils were placed on visqueen in the north concrete parking lot and await a hazardous waste characterization and subsequent landfill approval to be performed by another firm.

Bottom samples displayed levels above the MDNR site remediation, Criteria B guidelines for BTEX components at sample location BS2

.....continued

CONFIDENTIAL REPORT OF EVALUATION
Lab. No. : 94-1796B

Page : 2

COMPOUNDS	MDL (ppb)	LOD-S (ppb)	4 (ppb)
=====	=====	=====	=====
VOLATILE ORGANIC COMPOUNDS (Method EPA 8240)			
Acetone	100	500	ND
Benzene	10	50	ND
Bromodichloromethane	10	50	ND
Bromoform	10	50	ND
Bromomethane	10	50	ND
2-Butanone	100	500	ND
Carbon disulfide	100	500	ND
Carbon tetrachloride	10	50	ND
Chlorobenzene	10	50	ND
Chloroethane	10	50	ND
Chloroform	10	50	ND
Chloromethane	10	50	ND
Dibromochloromethane	10	50	ND
1,1-Dichloroethane	10	50	ND
1,2-Dichloroethane	10	50	ND
1,1-Dichloroethene	10	50	ND
1,2-Dichloroethene (total)	10	50	ND
1,2-Dichloropropane	10	50	ND
cis-1,3-Dichloropropene	10	50	ND
trans-1,3-Dichloropropene	10	50	ND
Ethylbenzene	10	50	ND
2-Hexanone	100	500	ND
Methylene chloride	10	50	ND
4-Methyl-2-pentanone	200	1000	ND
Styrene	10	50	ND
1,1,2,2,-Tetrachloroethane	10	50	ND
Tetrachloroethene	10	50	ND
Toluene	10	50	ND
1,1,1-Trichloroethane	10	50	ND
1,1,2-Trichloroethane	10	50	ND
Trichloroethene	10	50	ND
Vinyl acetate	10	50	ND
Vinyl chloride	10	50	ND
Xylenes	10	50	ND

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
26 October 1990

TEC Report Number: 21278-1 (Page 6 of 7)

8.0 CONCLUSIONS AND RECOMMENDATIONS (Cont'd)

(bottom south, Tank F). The east wall (north side, EW2) displayed elevated levels of BTEX components in an apparent fill area of some non-associated piping. TEC recommends further investigation of this area, including the placement of soil borings. See Figure 5 for location of proposed soil borings. These pipes have been removed subsequent to TEC's monitoring efforts according to CPC Headquarters GMC personnel.

The void space within piping observed on the east wall of the excavation zone displayed elevated levels of organic volatiles. This piping (part of a displacement process for product removal) and accompanying concrete containment trench have been removed subsequent to TEC's departure from the site. Air monitoring of the void space within piping segments observed on the south wall of the excavation zone (associated with a previously removed tank truck unloading station south of the tank farm) also exhibited elevated levels of organic volatiles. These piping segments were demolished after TEC's departure from the site. TEC recommends additional work (borings) in both these areas to determine the presence or absence of soil contamination. See Figure 5 for proposed boring locations.

Field screening detected elevated levels of organic volatiles in an area south of the sump and west of Tank G, approximately 10.0 feet in depth, that was not excavated and may contain contaminants. A boring should be placed in this area to determine vertical extent, if any, of contamination. See Figure 5 for proposed boring locations.

It is the professional opinion of Testing Engineers & Consultants, Inc. that this site is not remediated in regard to

.....continued

NH
2/10

CONFIDENTIAL REPORT OF EVALUATION

Submitted by : Frederick Roeser

Lab. No. : 94-1796B

Client : Atwell-Hicks
Ann Arbor, MI

Report Date : 06/29/94

Sample ID :

CPC Old & New Lab - Project #41159
5 Soil Samples

Object :

Analysis: BTEX (#1,3,5); Analysis: SPLP BTEX (#2): 8420 Scan (#4)
(B report issued subsequent to re-analysis of sample #2)

Results and Discussion :

SAMPLE IDENTIFICATION

SAMPLE MATRIX

1 - SB-1 5'
2 - SB-1 5'
3 - SB-2 5'
4 - SB-3 5'
5 - SB-4 21'

Soil
Soil
Soil
Soil
Soil

PARAMETER	MDL (ppb)	LOD-S (ppb)	1 (ppb)	3 (ppb)	5 (ppb)
BTEX (Method EPA 8020)					
Benzene	10	10	ND	ND	ND
Toluene	10	10	ND	ND	ND
Ethylbenzene	10	10	ND	ND	ND
Xylenes	30	30	ND	ND	ND

SPLP EXTRACTION

PARAMETER	MDL (ppb)	LOD-S (ppb)	2 (ppb)
BTEX (Method EPA 8020)			
Benzene	1	1	ND
Toluene	1	1	ND
Ethylbenzene	1	1	ND
Xylenes	1	1	ND

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
26 October 1990

TEC Report Number: 21278-1 (Page 7 of 7)

8.0 CONCLUSIONS AND RECOMMENDATIONS (Cont'd)

contaminants released from USTs at the CPC Pontiac North Tank Farm. Testing Engineers & Consultants, Inc. recommends borings to determine the lateral and vertical migrational limits of petroleum contaminants.

This report, documenting initial abatement, should be forwarded to the MDNR, Livonia Office for review, and the Michigan State Fire Marshal's Office for their records.

* * * *



REPORT OF ANALYTICAL SERVICES

TO: Atwell-Hicks
540 Avis Drive
P.O. Box 2981
Ann Arbor, MI 48106

Report Date: 07/05/94

Lab Number: 94-1796B

Customer P.O. #:

Customer #:

RTI Quote #:

Attn: Frederick Roeser

PART / SAMPLE IDENTIFICATION:

CPC Old & New Lab - Project #41159
5 Soil Samples

TEST RECORDS:

Received: 06/29/94 Sample Prep. Completed: 06/29/94 Test Completed: 06/29/94

WORK REQUESTED / PERFORMED:

Analysis: BTEX (#1,3,5); Analysis: SPLP BTEX (#2): 8420 Scan (#4)
(B report issued subsequent to re-analysis of sample #2)

THE RESULTS OF ALL TESTS and/or ANALYSES REQUESTED ARE REPORTED ON THE PAGES WHICH FOLLOW.

Number of pages including this page 9 .

APPROVED BY: *Frederick Roeser* **REPORTED BY:** *RTI*

The data and information presented herein, while not guaranteed, are to the best of our knowledge accurate and true. No warranty or guarantee implied or expressed is made regarding these analytical results, since securing and properly preserving representative samples and since the sample custody chains are beyond RTI control. The results provided by RTI are neither intended to suggest product merchantability, nor for use in infringement of any existing patent. RTI will not assume any liability or responsibility for any such infringement, Alteration, or reproduction other than in its entirety is not authorized by RTI Laboratories, Inc.

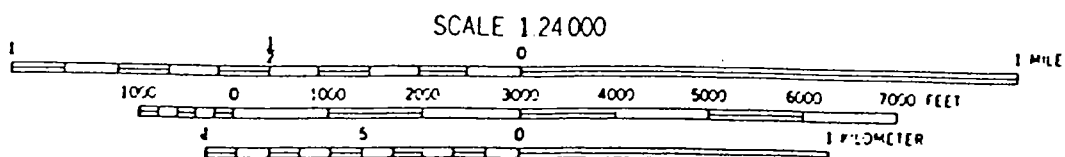
SITE LOCATION MAP



FIGURE 1

CPC PONTIAC NORTH

PONTIAC, MICHIGAN



CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

CONFIDENTIAL REPORT OF EVALUATION
Lab. No. : 94-1862A

Page : 2

QA/QC DATA

1. METHOD BLANKS (ORGANICS):

FILE ID	FRACTION	COMPOUND	RESULTS
PID5405	BTEX	All Compounds	ND

SAMPLE PROCESSING DATA

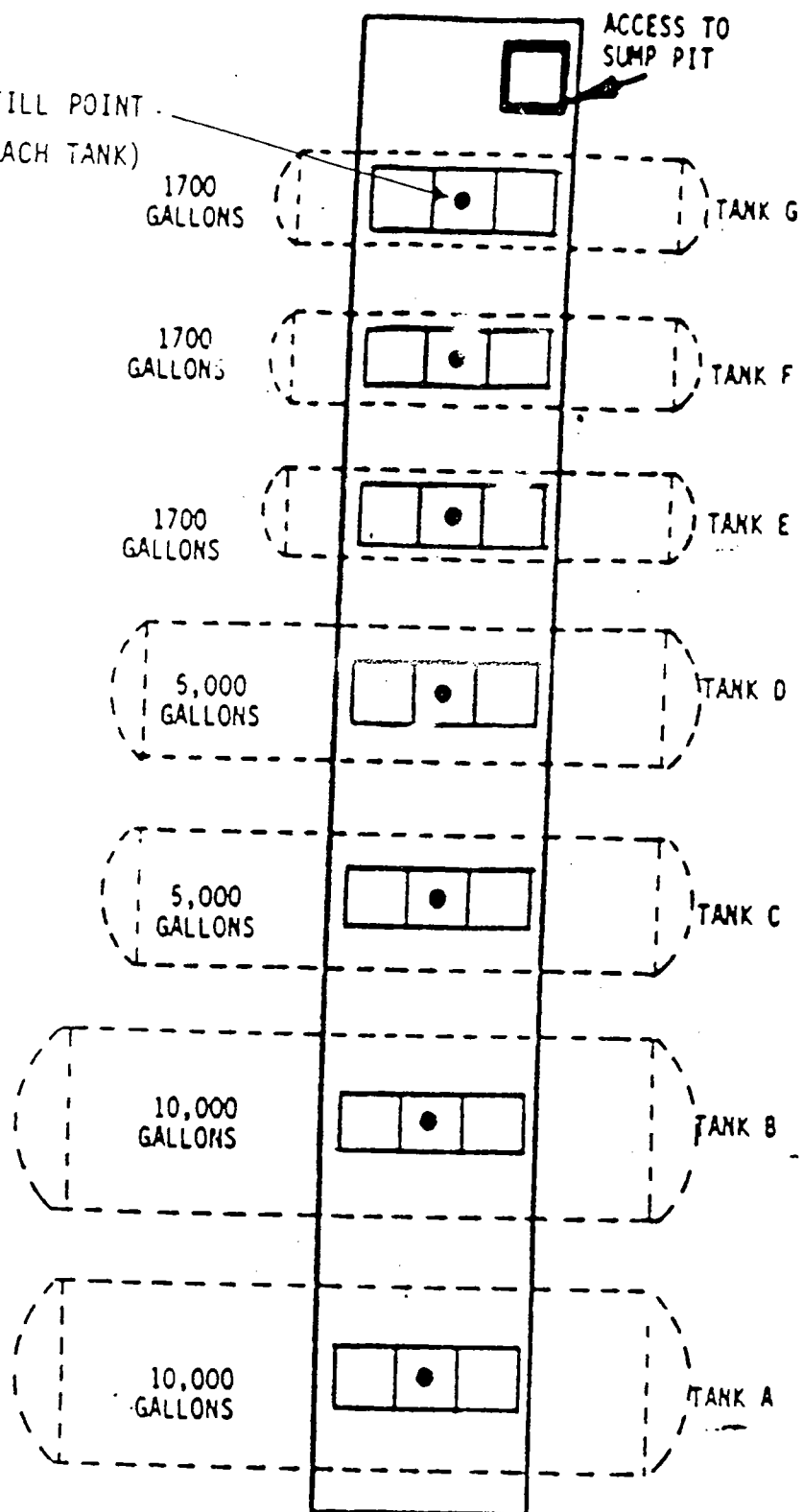
	BTEX	METALS
Date Extracted/Digested:-	NA	06/28/94
Extracted/Digested by:---	NA	CY
Date Analyzed:-----	06/30/94	06/28/94
Analyzed by:-----	CY	CY
File ID:-----	PID5399	NA
Batch #:-----	063094	062894
Dilution:-----	NONE	NONE

LOD-S = Limit of Detection for the reported sample(s)
MDL = Method Detection Limit or Contract Required Detection Limit.
NA = Not Applicable or Not Analyzed
ND = Not Detected or less than MDL
Results are reported in ppb unless otherwise specified.

NORTH

TANK FILL POINT
(ONE ON EACH TANK)

ACCESS TO
SUMP PIT



UNDERGROUND TANK FARM

Figure 2

CONFIDENTIAL REPORT OF EVALUATION

Submitted by : Fred Roeser

Lab. No. : 94-1862A

Client : Atwell-Hicks
Ann Arbor, MI

Report Date : 06/30/94

Sample ID :

CPC Lab Tank Form - Project #41159
1 Water Sample

Object :

Analysis: BTEX & TOTAL LEAD

Results and Discussion :

SAMPLE IDENTIFICATION

=====

1 - MW-D (SB-4)

SAMPLE MATRIX

=====

Water

PARAMETER	MDL (ppb)	LOD-S (ppb)	1 (ppb)
=====	=====	=====	=====
BTEX (Method EPA 8020)			
Benzene	1	1	ND
Toluene	1	1	ND
Ethylbenzene	1	1	ND
Xylenes	1	1	ND

PARAMETERS	MDL (ppb)	LOD-S (ppb)	1 (ppb)
=====	=====	=====	=====
METALS (Method EPA 3020A, 7421)			
Lead	3.0	3.0	ND

CPC PONTIAC LABORATORY TANK FARM 21278-1 10-17-90

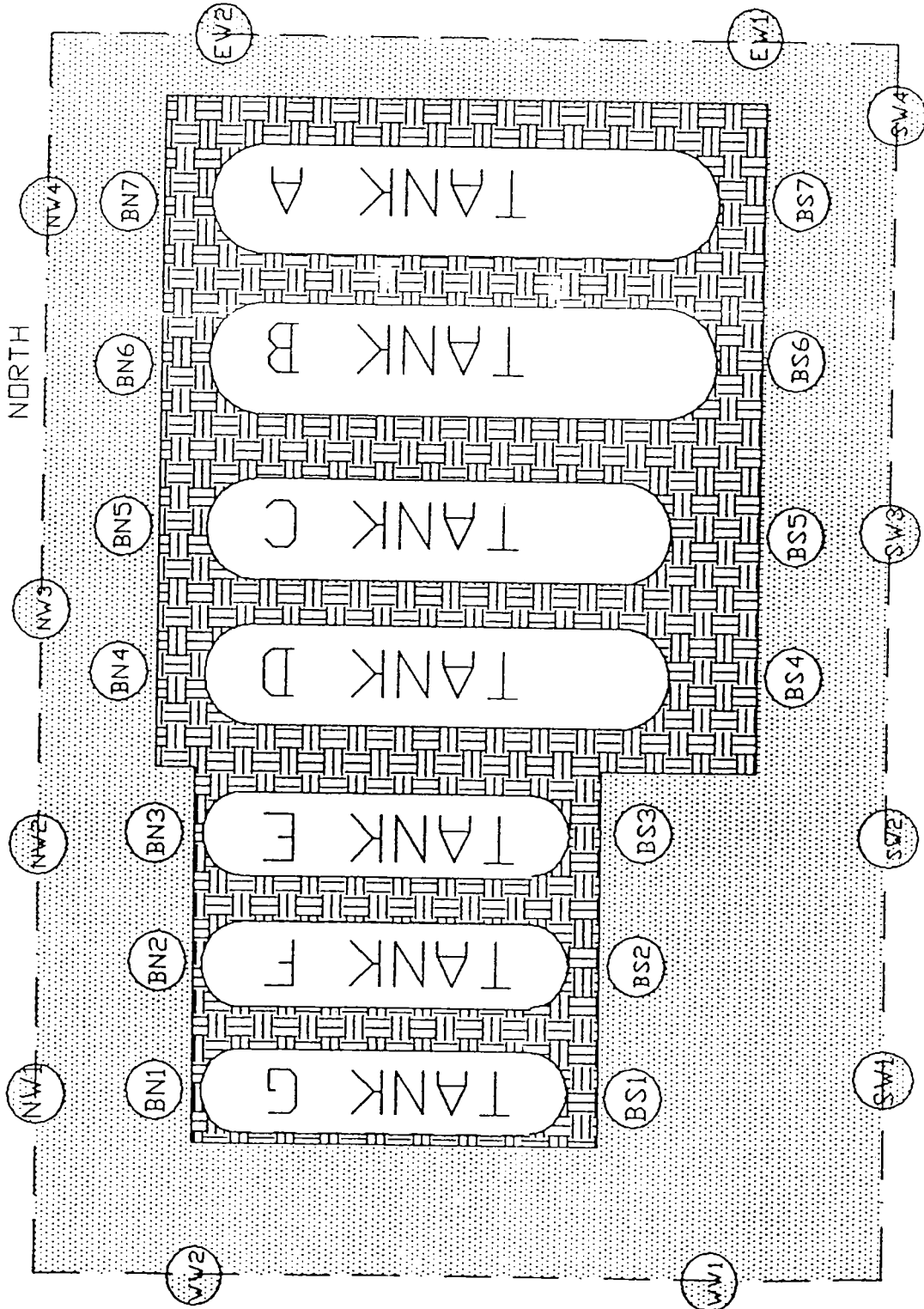
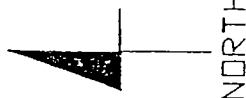
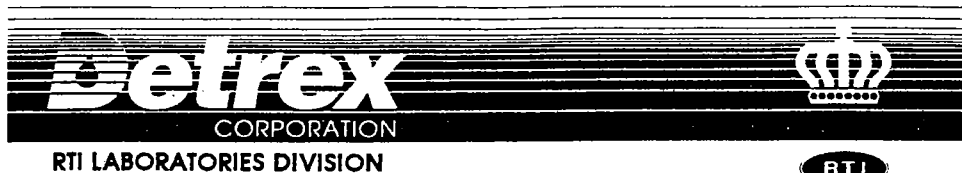


Figure 3

LEGEND

	CONCRETE PAD
	EXCAVATION ZONE
	NORTH WALL SAMPLE
	NORTH BOTTOM SAMPLE
	EAST WALL SAMPLE
	WEST WALL SAMPLE
	SOUTH BOTTOM SAMPLE
	SOUTH WALL SAMPLE



REPORT OF ANALYTICAL SERVICES

TO: Atwell-Hicks
540 Avis Drive
P.O. Box 2981
Ann Arbor, MI 48106

Report Date: 06/30/94

Lab Number: 94-1862A

Customer P.O. #: E0278

Attn: Fred Roeser

Customer #:

RTI Quote #:

PART / SAMPLE IDENTIFICATION:

CPC Lab Tank Form - Project #41159
1 Water Sample

TEST RECORDS:

Received: 06/22/94 **Sample Prep. Completed:** 06/30/94 **Test Completed:** 06/30/94

WORK REQUESTED / PERFORMED:

Analysis: BTEX & TOTAL LEAD

THE RESULTS OF ALL TESTS and/or ANALYSES REQUESTED ARE REPORTED ON THE PAGES WHICH FOLLOW.

Number of pages including this page 3.

APPROVED BY:

REPORTED BY:

The data and information presented herein, while not guaranteed, are to the best of our knowledge accurate and true. No warranty or guarantee implied or expressed is made regarding these analytical results, since securing and properly preserving representative samples and since the sample custody chains are beyond RTI control. The results provided by RTI are neither intended to suggest product merchantability, nor for use in infringement of any existing patent. RTI will not assume any liability or responsibility for any such infringement, alteration, or reproduction other than in its entirety is not authorized by RTI Laboratories, Inc.

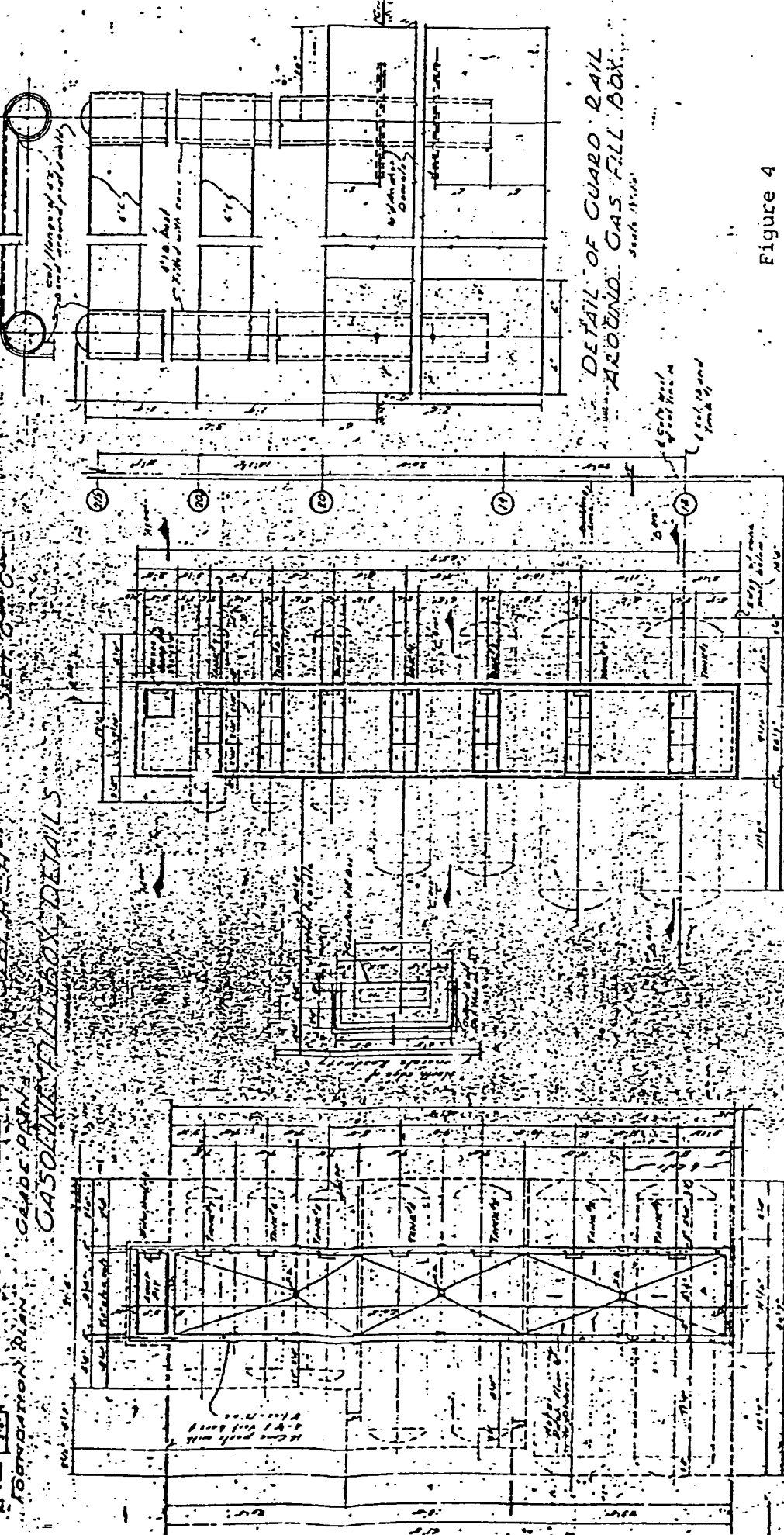
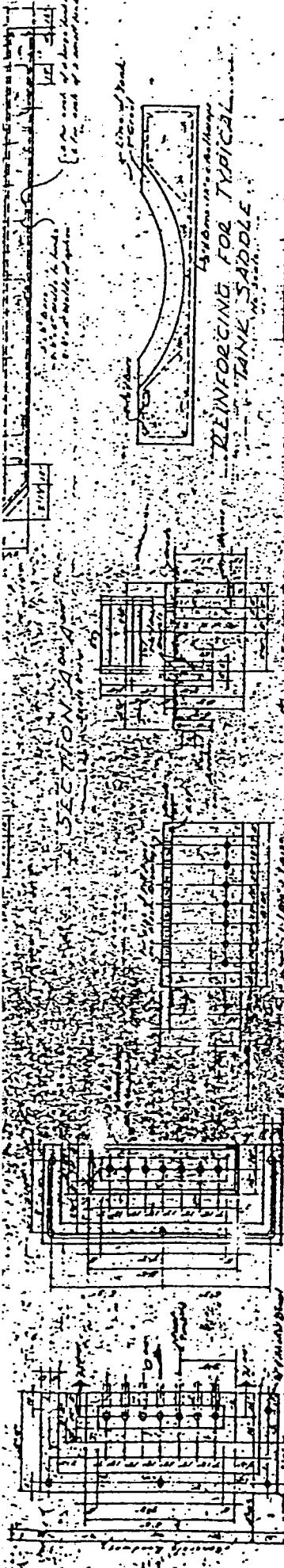
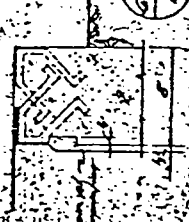


Figure 4

GASOLINE TANK FARM

APPENDIX E
LABORATORY RESULTS FOR GROUNDWATER



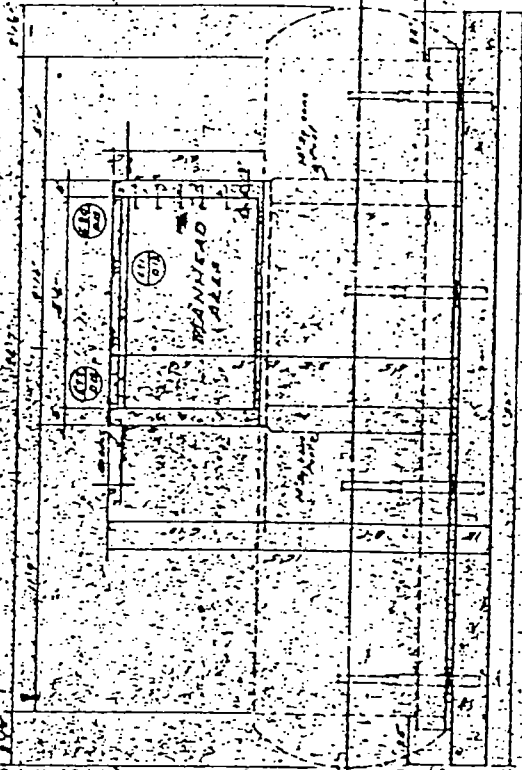
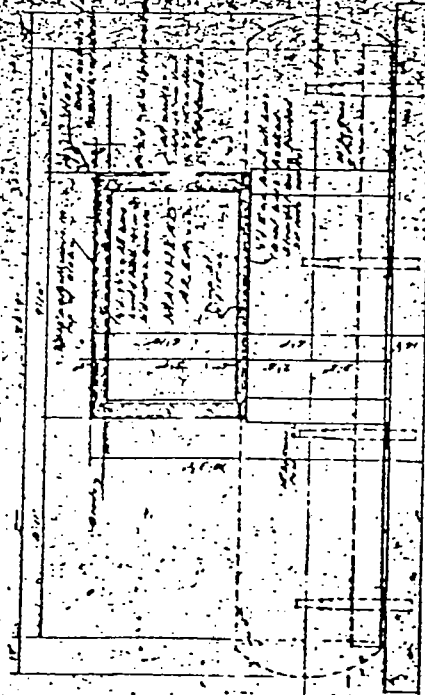
620/019

620/019

620/019

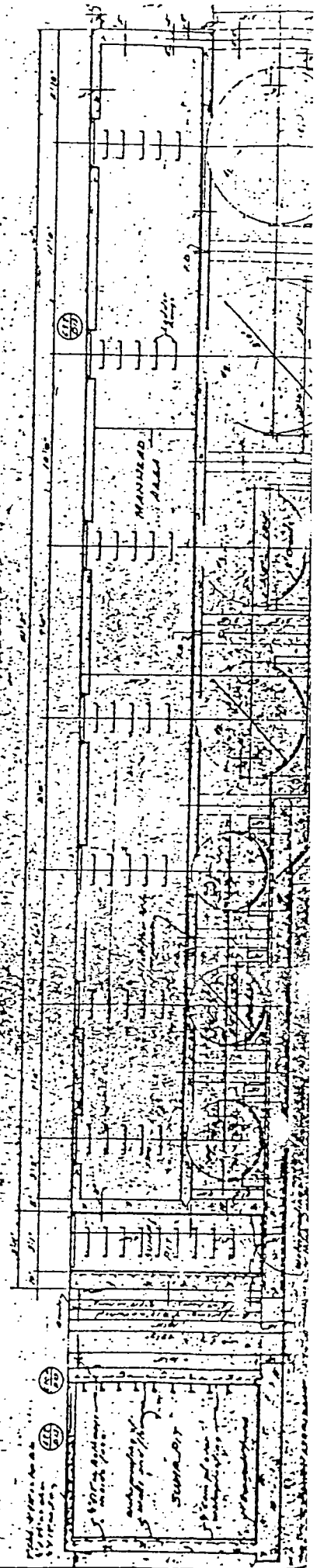
620/019

DETAILS



SECTION C-C

SECTION A-A



CONFIDENTIAL REPORT OF EVALUATION
Lab. No. : 94-1796B

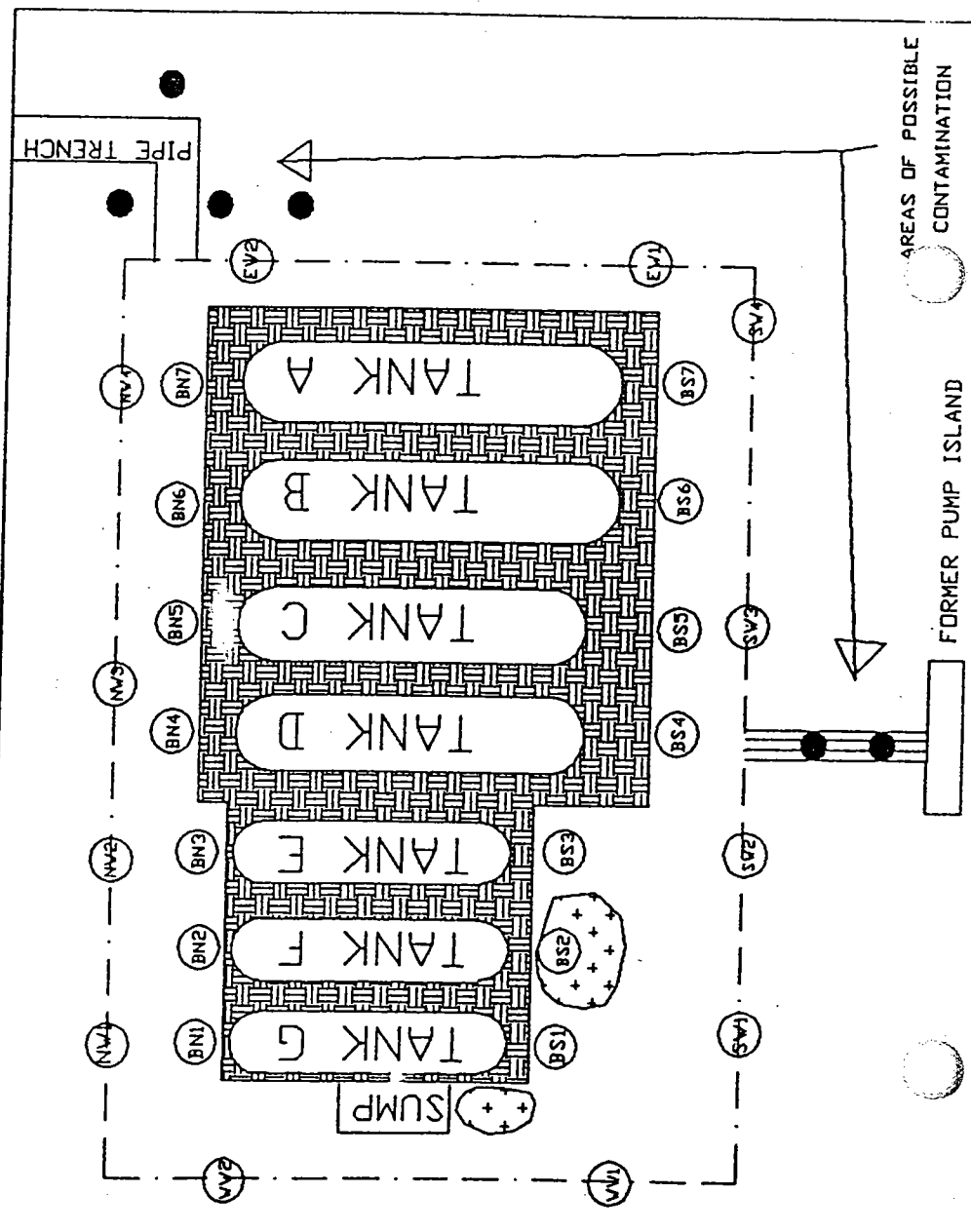
Page : 2

COMPOUNDS	MDL (ppb)	LOD-S (ppb)	4 (ppb)
=====	=====	=====	=====
VOLATILE ORGANIC COMPOUNDS (Method EPA 8240)			
Acetone	100	500	ND
Benzene	10	50	ND
Bromodichloromethane	10	50	ND
Bromoform	10	50	ND
Bromomethane	10	50	ND
2-Butanone	100	500	ND
Carbon disulfide	100	500	ND
Carbon tetrachloride	10	50	ND
Chlorobenzene	10	50	ND
Chloroethane	10	50	ND
Chloroform	10	50	ND
Chloromethane	10	50	ND
Dibromochloromethane	10	50	ND
1,1-Dichloroethane	10	50	ND
1,2-Dichloroethane	10	50	ND
1,1-Dichloroethene	10	50	ND
1,2-Dichloroethene (total)	10	50	ND
1,2-Dichloropropane	10	50	ND
cis-1,3-Dichloropropene	10	50	ND
trans-1,3-Dichloropropene	10	50	ND
Ethylbenzene	10	50	ND
2-Hexanone	100	500	ND
Methylene chloride	10	50	ND
4-Methyl-2-pentanone	200	1000	ND
Styrene	10	50	ND
1,1,2,2,-Tetrachloroethane	10	50	ND
Tetrachloroethene	10	50	ND
Toluene	10	50	ND
1,1,1-Trichloroethane	10	50	ND
1,1,2-Trichloroethane	10	50	ND
Trichloroethene	10	50	ND
Vinyl acetate	10	50	ND
Vinyl chloride	10	50	ND
Xylenes	10	50	ND

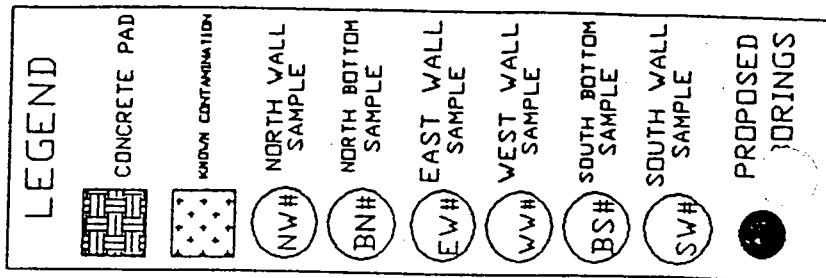
BUILDING

FIGURE 5

CPC PONTIAC LABORATORY TANK
21278-1 10-17-90



BUILDING



CONFIDENTIAL REPORT OF EVALUATION

Submitted by : Frederick Roeser

Lab. No. : 94-1796B

Client : Atwell-Hicks
Ann Arbor, MI

Report Date : 06/29/94

Sample ID :

CPC Old & New Lab - Project #41159
5 Soil Samples

Object :

Analysis: BTEX (#1,3,5); Analysis: SPLP BTEX (#2): 8420 Scan (#4)
(B report issued subsequent to re-analysis of sample #2)

Results and Discussion :

SAMPLE IDENTIFICATION

SAMPLE MATRIX

=====	=====
1 - SB-1 5'	Soil
2 - SB-1 5'	Soil
3 - SB-2 5'	Soil
4 - SB-3 5'	Soil
5 - SB-4 21'	Soil

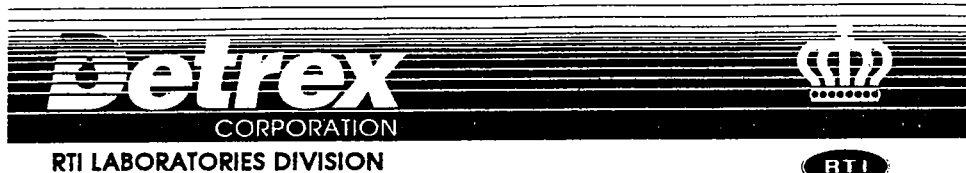
PARAMETER	MDL	LOD-S	1	3	5
=====	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
=====	=====	=====	=====	=====	=====
BTEX (Method EPA 8020)					
Benzene	10	10	ND	ND	ND
Toluene	10	10	ND	ND	ND
Ethylbenzene	10	10	ND	ND	ND
Xylenes	30	30	ND	ND	ND

SPLP EXTRACTION

PARAMETER	MDL	LOD-S	2
=====	(ppb)	(ppb)	(ppb)
=====	=====	=====	=====
BTEX (Method EPA 8020)			
Benzene	1	1	ND
Toluene	1	1	ND
Ethylbenzene	1	1	ND
Xylenes	1	1	ND

APPENDIX A

TABLES



REPORT OF ANALYTICAL SERVICES

TO: Atwell-Hicks
540 Avis Drive
P.O. Box 2981
Ann Arbor, MI 48106

Report Date: 06/29/94

Lab Number: 94-1796B

Customer P.O. #:

Customer #:

RTI Quote #:

Attn: Frederick Roeser

PART / SAMPLE IDENTIFICATION:

CPC Old & New Lab - Project #41159
5 Soil Samples

TEST RECORDS:

Received: 06/29/94 Sample Prep. Completed: 06/29/94 Test Completed: 06/29/94

WORK REQUESTED / PERFORMED:

Analysis: BTEX (#1,3,5); Analysis: SPLP BTEX (#2): 8420 Scan (#4)
(B report issued subsequent to re-analysis of sample #2)

THE RESULTS OF ALL TESTS and/or ANALYSES REQUESTED ARE REPORTED ON THE PAGES WHICH FOLLOW.

Number of pages including this page 4.

APPROVED BY:

REPORTED BY:

The data and information presented herein, while not guaranteed, are to the best of our knowledge accurate and true. No warranty or guarantee implied or expressed is made regarding these analytical results, since securing and properly preserving representative samples and since the sample custody chains are beyond RTI control. The results provided by RTI are neither intended to suggest product merchantability, nor for use in infringement of any existing patent. RTI will not assume any liability or responsibility for any such infringement, Alteration, or reproduction other than in its entirety is not authorized by RTI Laboratories, Inc.

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
26 October 1990

TEC Report Number: 21278-1 (Page A-1)

TABLE 1

<u>Tank</u>	<u>Size</u>	<u>Lower Explosive Limit In-place</u>	<u>On Adjacent Concrete Slab</u>
1 (G)	1,700	.04	.04
2 (F)	1,700	.04-.05	.04
3 (E)	1,700	.06	.04
4 (D)	5,000	.08	.05
5 (C)	5,000	.06	.04
6 (B)	10,000	.05	.03
7 (A)	10,000	.05	.03

APPENDIX D
LABORATORY RESULTS FOR SOIL

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
26 October 1990

TEC Report Number: 21278-1 (Page A-1)

TABLE 1

<u>Tank</u>	<u>Size</u>	<u>Lower Explosive Limit In-place</u>	<u>On Adjacent Concrete Slab</u>
1 (G)	1,700	.04	.04
2 (F)	1,700	.04-.05	.04
3 (E)	1,700	.06	.04
4 (D)	5,000	.08	.05
5 (C)	5,000	.06	.04
6 (B)	10,000	.05	.03
7 (A)	10,000	.05	.03

MONITORING WELL INSTALLATION DETAIL

ATWELL-HICKS INC.
ANN ARBOR, MICHIGAN

CLIENT: CPC PONTIAC O&N TANK FARM
PROJECT: 41159
DATE: 6-13-94

MWD

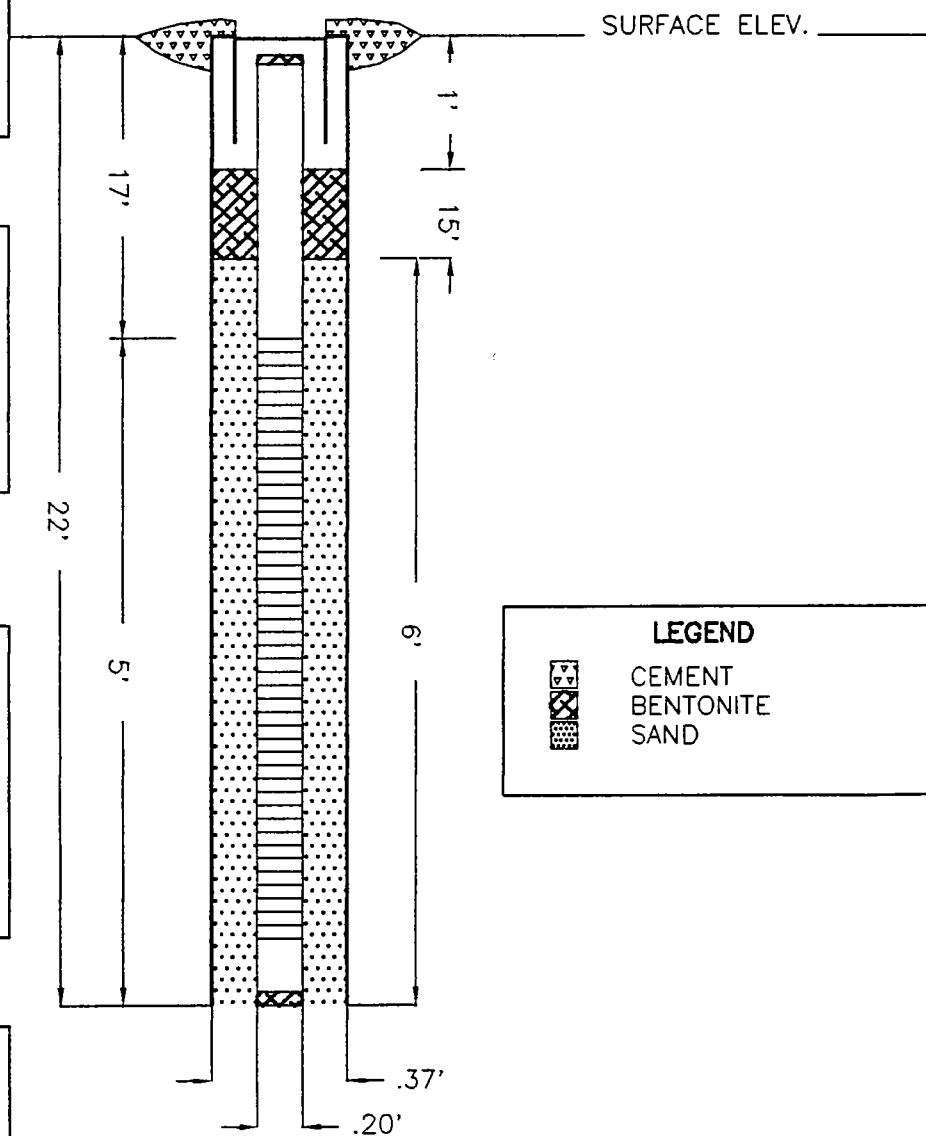
WELL NO.: MWD
DATE STARTED: 6-13-94
DATE COMPLETED: 6-13-94
GEOLOGIST/TECHNICIAN
MAO HUANG, FRED ROESER
DRILLER: RAU DRILLING

MATERIAL QUANTITIES
RISER:
SCREEN:
SAND:
BENTONITE:
CEMENT/BENTONITE GROUT:

SUMMARY OF SCREENED
LITHOLOGY:

FEET TO GROUNDWATER

SUMMARY OF DIMENSIONS
TOS TO SURFACE:
SURFACE TO TOP OF
BENTONITE SEAL:
LENGTH OF BENTONITE
SEAL:
LENGTH OF FILTER PACK:
TOTAL DEPTH OF BORING:



DR: RML
CAD FILE: 1159EV02

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
26 October 1990

TEC Report Number: 21278-1 (Page A-2)

TABLE 2

<u>TEC Soil I.D. Number</u>	<u>GM Number</u>	<u>Collected On</u>	<u>HNU (ppm)</u>	<u>B</u>	<u>T</u>	<u>E</u>	<u>mp-2</u>
				<u>(ppb)</u>			
23647 WW1	West wall, south side	08-30-90	2 ppm	8.4	<	<	<
23683 WW2	West wall, north side	09-05-90	1 ppm	<	12.4	<	<
23734 EW1	East wall, south side	09-07-90	0 ppm	<	<	<	<
23736 EW2	East wall, north side	09-07-90	7 ppm	36.3	<	63.4	92.
23737 SW1	South wall, adjacent to Tank G	09-07-90	1 ppm	<	<	<	<
23679 SW2	South wall, adjacent to Tank E	09-04-90	0 ppm	<	<	<	<
23685 SW3	South wall, adjacent to Tank C	09-05-90	7 ppm	<	<	<	<
23733 SW4	South wall, adjacent to Tank A	09-07-90	11 ppm	<	<	<	<
23678 NW1	South wall, adjacent to Tank G	09-04-90	0 ppm	<	<	<	<
23684 NW2	South wall, adjacent to Tank E	09-05-90	1 ppm	<	<	<	<
23726 NW3	South wall, adjacent to Tank C	09-06-90	0 ppm	<	<	<	<
23732 NW4	South wall, adjacent to Tank A	09-07-90	5 ppm	<	<	<	<
23646 BN1	Bottom north, adjacent to Tank G	08-30-90	2 ppm	<	16.1	<	<
23723 BN1 (resampled)	Bottom north, adjacent to Tank G	09-06-90	1 ppm	<	<	<	<
23686 BN2	Bottom north, adjacent to Tank F	09-05-90	1 ppm	<	<	<	<
23725 BN3	Bottom north, adjacent to Tank E	09-06-90	0 ppm	<	<	<	<

.....continued

APPENDIX C
MONITORING WELL SPECIFICATION

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
26 October 1990

TEC Report Number: 21278-1 (Page A-2)

TABLE 2

TEC Soil I.D. Number	GM Number	Collected On	HNU (ppm)	B	T (ppb)	E	mp-1
23647 WW1	West wall, south side	08-30-90	2 ppm	8.4	<	<	<
23683 WW2	West wall, north side	09-05-90	1 ppm	<	12.4	<	<
23734 EW1	East wall, south side	09-07-90	0 ppm	<	<	<	<
23736 EW2	East wall, north side	09-07-90	7 ppm	36.3	<	63.4	92.
23737 SW1	South wall, adjacent to Tank G	09-07-90	1 ppm	<	<	<	<
23679 SW2	South wall, adjacent to Tank E	09-04-90	0 ppm	<	<	<	<
23685 SW3	South wall, adjacent to Tank C	09-05-90	7 ppm	<	<	<	<
23733 SW4	South wall, adjacent to Tank A	09-07-90	11 ppm	<	<	<	<
23678 NW1	South wall, adjacent to Tank G	09-04-90	0 ppm	<	<	<	<
23684 NW2	South wall, adjacent to Tank E	09-05-90	1 ppm	<	<	<	<
23726 NW3	South wall, adjacent to Tank C	09-06-90	0 ppm	<	<	<	<
23732 NW4	South wall, adjacent to Tank A	09-07-90	5 ppm	<	<	<	<
23646 BN1	Bottom north, adjacent to Tank G	08-30-90	2 ppm	<	16.1	<	<
23723 BN1 (resampled)	Bottom north, adjacent to Tank G	09-06-90	1 ppm	<	<	<	<
23686 BN2	Bottom north, adjacent to Tank F	09-05-90	1 ppm	<	<	<	<
23725 BN3	Bottom north, adjacent to Tank E	09-06-90	0 ppm	<	<	<	<

.....continued

BORING LOG

SB-4

ATWELL-HICKS INC.
ANN ARBOR, MICHIGAN

CLIENT: CPC PONTIAC O+N TANK FARM
PROJECT NO.: 41159
DATE: 6-13-94

BORING: SB-4
LOCATION:

GEOLOGIST/TECHNICIAN:
FRED ROESER, MAO HUANG
DRILLER: RAU DRILLING
DATE STARTED: 6-13-94
DATE COMPLETED: 6-13-94

SAMPLING TECHNIQUE
SPLIT SPOON ☒
SHELBY TUBE ☐

LEGEND

PID: PHOTOIONIZATION
DETECTOR
SS: SPLIT SPOON SAMPLE
ST: SHELBY TUBE
NR: NO RECOVERY
ND: NOT DETECTED
▽ GROUNDWATER
EOB: END OF BORING

* GROUNDWATER ENCOUNTERED
____ ft.

DEPTH IN FEET	SOIL SAMPLE INT.	BLOW COUNT	N. VAL.	PID (ppm)	SOIL DESCRIPTION TYPE, TEXTURE, MOISTURE, COLOR
0		3			1' CONCRETE
		4		0	TOP FILL
2		4		0	CLAY FILL
4		6			
		4			
		7		0	DENSE BROWN CLAY WITH MEDIUM SAND
6		3			
		7			
		7			
8		9			
		4		0	BROWN CLAY WITH SOME SAND
		6			
10		10			
		14			
12		3		0	BROWN CLAY WITH LITTLE SILT AND PEBBLE
		7			
		7			
14		10		0	DENSE GRAY CLAY WITH SILT AND PEBBLE
		4			
		7			
		10			
16		20		0	DENSE GRAY CLAY WITH SILT AND PEBBLE
		4			
		4			
		6			
18		10		0	
		4			
		6			
		8			
20		16		0	1' MEDIUM SAND LENSE
		3			
		3			DENSE GRAY CLAY WITH SILT AND PEBBLE
		3			
22					EOB
24					
26					
28					
30					
32					
34					
36					

DR: TRS
CAD FILE: 1159EV01

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
26 October 1990

TEC Report Number: 21278-1 (Page A-3)

TABLE 2 (Cont'd)

TEC Soil I.D. Number	GM Number	Collected On	HNU (ppm)	B	T (ppb)	E	mp-
23722 BN4	Bottom north, adjacent to Tank D	09-06-90	2 ppm	<	<	<	<
23724 BN5	Bottom north, adjacent to Tank C	09-06-90	0 ppm	<	<	<	<
23773 BN6	Bottom north, adjacent to Tank B	09-10-90	0 ppm	<	<	<	<
23774 BN7	Bottom north, adjacent to Tank A	09-10-90	0 ppm	<	<	<	<
23645 BS1	Bottom south, adjacent to Tank G	08-30-90	0 ppm	<	<	<	<
23680 BS2	Bottom south, adjacent to Tank F	09-04-90	1 ppm	26.3	<	<	<
23738 BS3	Bottom south, adjacent to Tank E	09-10-90	0 ppm	<	<	<	<
23739 BS4	Bottom south, adjacent to Tank D	09-10-90	5 ppm	<	<	<	<
23740 BS5	Bottom south, adjacent to Tank C	09-10-90	0 ppm	<	<	<	<
23775 BS6	Bottom south, adjacent to Tank B	09-10-90	0 ppm	<	<	<	<
23776 BS7	Bottom south, adjacent to Tank A	09-10-90	2 ppm	<	<	<	<

*All samples registered below the method limit of detection for ortho xylene.

BORING LOG

SB-3

ATWELL-HICKS INC.
ANN ARBOR, MICHIGAN

CLIENT: CPC PONTIAC O+N TANK FARM
PROJECT NO.: 41159
DATE: 6-13-94

BORING: SB-3
LOCATION:

GEOLOGIST/TECHNICIAN:
FRED ROESER, MAO HUANG
DRILLER: RAU DRILLING
DATE STARTED: 6-13-94
DATE COMPLETED: 6-13-94

SAMPLING TECHNIQUE
SPLIT SPOON ☒
SHELBY TUBE ☐

LEGEND

PID: PHOTOIONIZATION
DETECTOR
SS: SPLIT SPOON SAMPLE
ST: SHELBY TUBE
NR: NO RECOVERY
ND: NOT DETECTED
▽ GROUNDWATER
EOB: END OF BORING

* GROUNDWATER ENCOUNTERED
____ ft.

DEPTH IN FEET	SOIL SAMPLE INT.	BLOW COUNT	N VAL.	PID (ppm)	SOIL DESCRIPTION TYPE, TEXTURE, MOISTURE, COLOR
0					6" ASPHALT
2					
4		4 6 4 7		0	BLACK SAND WITH SOME SILT AND CLAY
6					EOB
8					
10					
12					
14					
16					
18					
20					
22					
24					
26					
28					
30					
32					
34					
36					

DR: TRS
CAD FILE: 1159EV01

APPENDIX B
ANALYTICAL RESULTS

BORING LOG

SB-1

ATWELL-HICKS INC.
ANN ARBOR, MICHIGAN

CLIENT: CPC PONTAC O+N TANK FARM
PROJECT NO.: 41159
DATE: 6-13-94

BORING: SB-1
LOCATION:

GEOLOGIST/TECHNICIAN:
FRED ROESER, MAO HUANG
DRILLER: RAU DRILLING
DATE STARTED: 6-13-94
DATE COMPLETED: 6-13-94

SAMPLING TECHNIQUE
SPLIT SPOON ☒
SHELBY TUBE ☐

LEGEND

PID: PHOTOIONIZATION
DETECTOR
SS: SPLIT SPOON SAMPLE
ST: SHELBY TUBE
NR: NO RECOVERY
ND: NOT DETECTED
▽ GROUNDWATER
EOB: END OF BORING

* GROUNDWATER ENCOUNTERED
____ ft.

DEPTH IN FEET	SOIL SAMPLE INT.	BLOW COUNT	N VAL.	PID (ppm)	SOIL DESCRIPTION TYPE, TEXTURE, MOISTURE, COLOR
0					6" CONCRETE
2					
4		2 3 11 19		0	CLAY BACKFILL
6					EOB
8					
10					
12					
14					
16					
18					
20					
22					
24					
26					
28					
30					
32					
34					
36					

DR: TRS
CAD FILE: 1159EV01

REPORT: 21278

DATE: 28 AUGUST 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

SAMPLE IDENTIFICATION

<u>T.E.C. LAB ID #</u>	<u>SAMPLE DESCRIPTION</u>
23593	Soil Sample #1
23594	Soil Sample #2
23595	Soil Sample #3
23596	Soil Sample #4
23597	Soil Sample #5
23598	Soil Sample #6
23599	Soil Sample #7

APPENDIX B
SOIL BORING LOGS

REPORT: 21278

B-2

DATE: 28 AUGUST 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23593

SAMPLE DESCRIPTION: SOIL SAMPLE #1

Aromatic Volatile Organics in Soil 1

<u>COMPOUND</u>	<u>CONCENTRATION (ug/kg)</u>
Benzene	
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<10
	<5

Results are reported on a dry weight basis. Moisture content is 11.4%

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



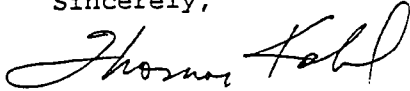
Scott Chandler, IHIT
Laboratory Director

Mr. Geisler
May 11, 1994

page 3

If you have any questions regarding this matter please contact Paul Owens at
(313) 953-1534.

Sincerely,

A handwritten signature in cursive script, appearing to read "Thomas Kohl".

Thomas Kohl, CIH
Southeast MI District Supervisor
USTD, South

cc: Valerie Burgess-Byrd, MDNR
Paul Owens, MDNR
Pete Ollila, MDNR
Fred Roeser, Attwell-Hicks, Inc.
Andy Foerg, Testing Engineers & Consultants, Inc.

REPORT: 21278

DATE: 28 AUGUST 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23594

SAMPLE DESCRIPTION: SOIL SAMPLE #2

Aromatic Volatile Organics in Soil 1COMPOUNDCONCENTRATION(ug/kg)

Benzene	
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<10
	<5

Results are reported on a dry weight basis. Moisture content 8.9%

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott Chandler, IHIT
Laboratory Director

Concerning the Car Wash Tank Farm Area:

1. The extent of soil contamination has been define in the horizontal dimension, however the vertical extent of contamination needs to be determined.
2. Permanent monitoring wells must be installed in this area to determine the hydrogeologic characteristics and whether or not groundwater has been impacted by the release. These wells can be used as part of the long term monitoring that will be required at this site in order to obtain an approved Type-C closure.
3. As discussed at the April 12, 1994 meeting with MDNR staff, there exists an underground high-voltage line to the north of the former car wash tank excavation. Please provide additional information on this utility line including the exact location and depth.
4. Based on a review by MDNR staff geologist, there is not enough information to label the groundwater at this site "groundwater not in an aquifer". According to the geologist's review, the groundwater may have the ability to store and transmit contaminants. Based on the meeting of April 12, 1994, the remedial goal for this area is an Industrial Type-C Closure. According the Michigan Environmental Response Act (MERA), P.A. 307, 1982 Operational Memo #14, if the groundwater will not be used as a source of drinking water on site, the need for groundwater remediation will be dictated by reasonably foreseeable off-site groundwater uses, and the generic industrial drinking water criteria are not applicable. If this can be verified at this site, then Type-C direct contact criteria can be used as a final clean-up goal for soil contamination and groundwater clean-up will be based on potential for off-site impact. Note: Rule 705 (5) says that the 'vertical and horizontal extent of contamination shall not increase after the initiation of a remedial action'.
5. The Industrial Type-C proposal must include a monitoring plan, O&M plan and should address all items in Rules 717 and 719 of the MERA.

The necessary work to address the items of this letter should be conducted and a complete report, including Type-C proposal for the Car Wash Tank Farm area should be submitted to this office by September 15, 1994.

Any additional work required at this site should be conducted according the Leaking Underground Storage Tank (LUST) Act, P.A. 478 as amended by Act 213 of 1993.

Please notify this office in writing, at least 72 hours prior to conducting any work, to allow staff the opportunity to monitor all site activities.

This should not be construed as a sign-off on all investigations or corrective actions that may be needed at this site.

REPORT: 21278
DATE: 28 AUGUST 1990
CLIENT: CPC GROUP HEADQUARTERS
PROJECT: UST DEMOLITION PONTIAC TANK FARM
TEC LAB ID #: 23595
SAMPLE DESCRIPTION: SOIL SAMPLE #3

Aromatic Volatile Organics in Soil 1

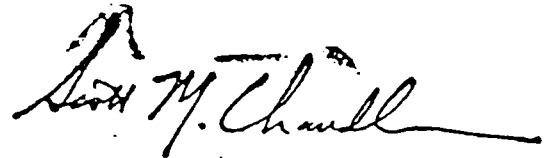
<u>COMPOUND</u>	<u>CONCENTRATION (ug/kg)</u>
Benzene	
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<10
	<5

Results are reported on a dry weight basis. Moisture content is 11.1%

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott Chandler, IHIT
Laboratory Director

NATURAL RESOURCES
COMMISSION

JERRY C. BARTNIK
LARRY DEVUYST
UL EISELE
MES P. HILL
DAVID HOLLI
JOEY M. SPANO
JORDAN B. TATTER

STATE OF MICHIGAN



JOHN ENGLER, Governor

DEPARTMENT OF NATURAL RESOURCES

ROLAND HARMES, Director

SOUTHEAST MICHIGAN DISTRICT HEADQUARTERS
UNDERGROUND STORAGE TANK DIVISION
38980 Seven Mile Road
Livonia, Michigan 48152

May 11, 1994

RECEIVED MAY 13 1994

Mr. Dallas Geisler
CPC Pontiac
General Motors Corporation
One Pontiac Plaza
Pontiac, MI 48340-2952
Mail Code 4915

Re: Audit
GM - CPC Pontiac, 985 Joslyn, Pontiac, MI 48340
Laboratory tank farms (new & old); and car wash tank farm

Dear Mr. Geisler,

The Michigan Department of Natural Resources (MDNR) staff have completed an audit for the above referenced facility. This letter also serves as a follow up to your meeting with MDNR staff on April 12, 1994. Based on the information present in the file for this site, you are hereby requested to conduct additional investigations (as discussed in the April meeting) and address the following items:

Concerning the Laboratory Tank Farm (old tank farm):

1. An additional monitoring well should be placed to the southwest of the old tank farm (regionally downgradient) in order to verify that groundwater has not been impacted by this release. This well should be screened from 15-20 feet below ground level. A groundwater sample should be collected and analyzed for BTEX and dissolved Lead.

Concerning the Laboratory Tank Farm (new tank farm):

1. A soil sample from SB-11 had a benzene level of 53 ppb. This is above Type-B criteria. An additional sample should be collected from this exact location in order to conduct a leachate test. Total BTEX concentration should be determined prior to conducting the leach test. Also, an additional sample should be collected from the same depth, north of SB-11, to verify lateral delineation.
2. The soil sample collected from 5' below ground level at MW-2 showed matrix interference and a method of detection limit (MDL) of 10,000 ppb was used for each BTEX component. This area should be re-sampled and analyzed for different organic compounds to determine the source of the matrix interference.

The new tank farm area and the old tank farm area can be addressed separately at this time. However, since the contamination in both areas is apparently from the same source, closure of both areas should be done concurrently.

REPORT: 21278

DATE: 28 AUGUST 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23596

SAMPLE DESCRIPTION: SOIL SAMPLE #4

Aromatic Volatile Organics in Soil 1COMPOUNDCONCENTRATION (ug/kg)

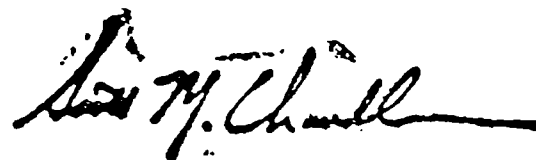
Benzene	
Toluene	<5
Ethylbenzene	<5
m + p Xylene	<5
o-Xylene	<10
	<5

Results are reported on a dry weight basis. Moisture content is 14.6%

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott Chandler, IHIT
Laboratory Director

APPENDIX A

MICHIGAN DEPARTMENT OF NATURAL RESOURCES'
LETTER DATED MAY 11, 1994

REPORT: 21278

DATE: 28 AUGUST 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23597

SAMPLE DESCRIPTION: SOIL SAMPLE #5

Aromatic Volatile Organics in Soil 1COMPOUNDCONCENTRATION (ug/kg)

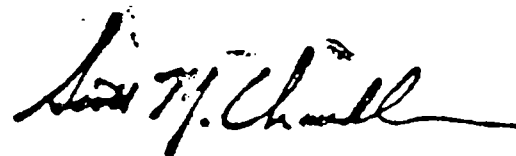
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

Results are reported on a dry weight basis. Moisture content is 10.1%

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott Chandler, IHIT
Laboratory Director

was analyzed for VOCs by Method 8240. No matrix interferences were discovered and all parameters of the 8240 Method were less than detection limits.

AHI has completed its investigation of the old and new laboratory tank farm. Based upon AHI's current investigation, as well as TEC's previous investigation, the following exposure pathways can be considered.

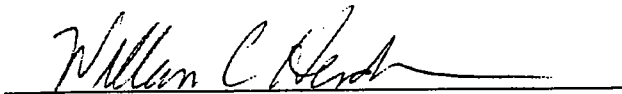
- . Contamination of groundwater in aquifers. Within 30 feet of the surface, groundwater exists in sandy or silty lenses. The regional gradient for this area is southwest. The groundwater sampled in TEC MW-1, TEC MW-2, and AHI's MWD have all indicated non-detect for analyzed parameters. Monitoring Well MWD is downgradient of the contaminant source. There is no groundwater contamination evident at this site.
- . Groundwater impacts on surface water. There is no surface water locally proximate to the contaminant source. Also, there is no groundwater impact at this site.
- . Inhalation and Direct Contact. The site is entirely covered with concrete and asphalt. There are no plans to use the soil as a resource, therefore, there is no risk of exposure via these pathways.
- . Soil Contamination. There are limited areas of BTEX remaining in the soil. These areas are not laterally connected and based upon a SPLP leachate result, the soil matrix is not conducive to leachable concentrations to groundwater. This is evidenced by both the leachate test as well as the lack of evidence of groundwater contamination at the site.

It is AHI's opinion that this site meets the closure requirements for MDNR's Type B closure criteria.

Atwell-Hicks, Inc. Project No. 41159

This report submitted by:


Frederick G. Roeser
Senior Hydrogeologist


William C. Henderson
Manager, Environmental Services

REPORT: 21278

DATE: 28 AUGUST 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23598

SAMPLE DESCRIPTION: SOIL SAMPLE #6

Aromatic Volatile Organics in Soil 1COMPOUNDCONCENTRATION (ug/kg)

Benzene	<5
Toluene	8.9
Ethylbenzene	10.3
m + p-Xylene	15.6
o-Xylene	34.3

Results are reported on a dry weight basis. Moisture content is 11.2%

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott Chandler, IHIT
Laboratory Director

Detailed laboratory results are presented in Appendix D for soil and in Appendix E for groundwater. Table 2 summarizes the laboratory results.

4.0 CONCLUSIONS AND RECOMMENDATIONS

AHI conducted this closure investigation at CPC Pontiac located at 985 Joslyn in Pontiac, Michigan in order to meet the site closure requirements requested by the MDNR. Four soil borings and one monitoring well were performed during this investigation. Five soil samples and one groundwater sample were collected and analyzed for BTEX, VOCs and lead. The subject site is composed of clay. BTEX, VOCs or lead were not detected in these samples.

Based on the results obtained from this subsurface investigation and previous TEC investigation, it is concluded:

1. The subject site is an industrial site and the primary activity at the site is industrial in nature. Access to the site is reliably restricted consistent with its use.
2. The site geology consists of clay with silty/sandy lenses. This kind of clay extends to a depth of 30 feet below grade and generally has very low permeability.
3. Groundwater at the site exists in some sand lenses and silt seams at a depth of more than 14 feet below ground surface. Due to low recharge through the thick clay, this groundwater is considered as perched water.
4. Monitoring Well MWD was placed to the southwest of the old tank farm (regional downgradient) in this investigation. A soil sample at 21 feet below grade was collected and analyzed for BTEX. BTEX was found to be non-detect. Groundwater collected from this monitoring well (screen interval between 17 and 22 feet) did not reveal the presence of any BTEX or dissolved lead.
5. During the TEC investigation, BTEX was found at 55 ppb in TEC's Boring SB-11. In the current investigation an adjacent sample was collected and analyzed for both BTEX and BTEX by SPLP. Upon receiving non-detect results for both analyses, further inquiry into the results was made at the contract laboratory. It was stated that benzene was found at this location but below 10 ppb. It was also noted that non targeted hydrocarbon peaks were detected (see Appendix F for RTI chromatgrams for SB1). Based upon this fact and the fact that the SPLP extract was detected at less than one ppb, there is no indication that benzene is leachable to ground water. AHI's SB2 was non-detect and, therefore, verifies the lateral extent of contamination.
6. In reference to SB2, which was located adjacent to TEC's MW-2, the same soil type was encountered at 5.0 feet. This sample

REPORT: 21278

DATE: 28 AUGUST 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23599

SAMPLE DESCRIPTION: SOIL SAMPLE #7

Aromatic Volatile Organics in Soil 1

COMPOUND

CONCENTRATION (ug/kg)

Benzene	
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<10
	<5

Results are reported on a dry weight basis. Moisture content is 6.3%

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott Chandler, IHIT
Laboratory Director

analyzed at RTI Laboratories in Livonia, Michigan during this investigation. Table 1 lists information on these samples and the parameters analyzed.

Two soil samples were taken at 5 feet below grade in Soil Boring SB1 and were analyzed for BTEX and for BTEX by SPLP, respectively. One soil sample was collected at a depth of 5 feet in Soil Boring SB2 to detect the presence/absence of BTEX. At 5 feet in Soil Boring SB3, one soil sample was taken for VOC analysis. In Soil Boring SB4, one soil sample was collected at 21 feet below grade and analyzed for BTEX.

One groundwater sample was collected in MWD on June 12, 1994. This sample was analyzed for BTEX and lead.

TABLE 1
INFORMATION OF ANALYZED SAMPLES

Sample Type	Sample ID	Depth (ft.)	Analyzed Parameters
Soil	SB1	5.0	BTEX
Soil	SB1	5.0	SPLP BTEX
Soil	SB2	5.0	BTEX
Soil	SB3	5.0	VOCs
Soil	SB4	21.0	BTEX
Groundwater	MWD		BTEX, lead

TABLE 2
SUMMARY OF LABORATORY RESULTS

Sample ID	Depth (feet)	Analytes*					
		Benzene	Toluene	Ethylbenzene	Xylene	VOCs	Lead
SB1	5.0	ND	ND	ND	ND	NA	NA
SB1	5.0	ND**	ND**	ND**	ND**	NA	NA
SB2	5.0	ND	ND	ND	ND	NA	NA
SB3	5.0	NA	NA	NA	NA	ND	NA
SB4	21.0	ND	ND	ND	ND	NA	NA
MWD		ND	ND	ND	ND	NA	ND
MDNR Type B Criteria for Soil							
		24	2,200	620	1,200		80
MDNR Type C Criteria for soil							
		240	92,000	40,000			1,000
MDNR Type B Criteria for groundwater							
		1.2	790	74	280		4.0

* Presented in $\mu\text{g/L}$

** SPLP extraction

VOCs = volatile organic compounds

ND = not detected or less than method detection limit

NA = not analyzed

REPORT: 21278

DATE: 4 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

SAMPLE IDENTIFICATION

T.E.C. LAB ID #

23640

SAMPLE DESCRIPTION

Water Sample; West
Side

2.3 Monitoring Well Construction

Monitoring Well MWD was installed in Soil Boring SB4 (Figure 2). The well was constructed of 2-inch polyvinyl chloride (PVC) casing with a 5-foot long 0.010-inch slot PVC screen. The well screen was set between 17 and 22 feet to intersect a 1-foot thick sand lense found at 20-21 feet below grade. A coarse sand filter pack was added around the annulus of the monitoring well to approximate one foot above the top of the screen. The remaining annular space was filled to near surface level with bentonite to prevent vertical migration of contaminants from the surface materials. The monitoring well was completed with flush mount well guard concreted in place and secured using expanding well plug with padlock. A detailed "as built" well construction diagram is included in Appendix C.

2.4 Monitoring Well Sampling

Groundwater in Monitoring Well MWD was sampled using a teflon bailer on June 21, 1994, after measuring the static water level and purging three times the well volume. The sample was collected in appropriate jars for storage (at approximately 4°C) prior to chemical analysis. All sampling, sample handling, packaging, preservation, and storage of sample was conducted according to USEPA protocols (SW-846, 3rd edition). The groundwater sample was managed under strict chain-of-custody protocols and analyzed at an independent laboratory.

3.0 RESULTS AND DISCUSSIONS

3.1 Site Geology and Hydrogeology

Based on the soil boring logs of this investigation and the previous study by TEC, the site geology was found to consist of clay to a depth of more than 30 feet. Backfill sand was encountered in Soil Boring SB3 and in TEC's MW-1 and MW-2 area to a depth of approximately 5 feet. Some sand lenses and silt seams were found to be interbedded with the clays in Soil Boring SB4 and in TEC's MW-1 and MW-2, and were generally at depths of more than 14 feet below grade.

Groundwater has been encountered in TEC's MW-1 and MW-2 screened at depths between 15 and 20 feet, and between 20 and 25 feet, respectively. During this investigation, groundwater was encountered in Monitoring Well MWD (SB4) screened at depth between 17 and 22 feet. Groundwater in this area was believed to be carried by the sand lenses and silt seams and to be present in a perched zone due to its slow recharge.

3.2 Laboratory Analysis

In order to meet the MDNR's requirement for site closure, a total of five soil samples and one groundwater sample were collected and

REPORT: 21278

DATE: 4 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23640

SAMPLE DESCRIPTION: WATER SAMPLE; WEST SIDE

Aromatic Volatile Organics in Perched Water 1

<u>COMPOUND</u>	<u>CONCENTRATION (ug/L)</u>
Benzene	10,554
Toluene	76,347
Ethylbenzene	7,101
m + p-Xylene	28,991
o-Xylene	12,804

ug/L = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott Chandler, IHIT
Laboratory Director

2.0 METHODS OF INVESTIGATION

The methods used in this subsurface investigation include drilling of four soil borings, installation of one monitoring well, collection of soil and groundwater samples, and laboratory analysis of soil and ground water samples.

2.1 Soil Borings

AHI retained Rau Drilling, Inc. of Bay City, Michigan to drill four soil borings (SB1 to SB4) on June 13, 1994. Of these four soil borings, SB4 was converted to a monitoring well (MWD).

Figure 2 illustrates the locations of these soil borings and monitoring well. These locations were determined based on the request of the MDNR staff geologists (Appendix A).

Soil Boring SB1 was located at about one foot north of TEC's SB-11 and was advanced to a depth of 5 feet. Soil Boring SB2 was located at approximately 5 feet northwest of TEC's SB-11 to verify the lateral migration of benzene (55 ppb) detected in TEC's SB-11 in TEC's previous investigation. Soil Boring SB2 was advanced to 5 feet below grade. Soil Boring SB3 was located at about one foot north of TEC's MW-2 (see Figure 2) in order to re-collect a sample in this area. Soil Boring SB3 was advanced to a depth of 5 feet below grade. Soil Boring SB4 was placed to the southwest of the old tank farm (regionally downgradient) (see Figure 2) in order to verify that groundwater has not been impacted. This soil boring was advanced to a depth of 22 feet and later was converted to a monitoring well (MWD).

Detailed soil boring logs are presented in Appendix B. Appendix C illustrates monitoring well specification for MWD.

2.2 Soil Sampling

Hollow-stem augers were used in the soil borings and 2-foot long split-spoons were used to collect soil samples. The auger flights and split-spoons were decontaminated prior to each use.

After the driller collected the soil sample, the soil sample was physically checked by AHI's field geologist. Concentration of airborne ionizable gases and vapors of the soil sample was screened using the MICROTIP HL-200 Hand-Held Air Monitor/Photoionization Detector (PID). Soil samples were contained in clean jars and stored in an ice-packed cooler while in the field.

During this investigation, a total of five soil samples were collected in order to meet MDNR's requirement. Two samples were taken at 5 feet in Soil Boring SB1. At a depth of 5 feet below grade, samples were collected from Soil Borings SB2 and SB3, respectively. In Soil Boring SB4, a soil sample was collected at 21 feet below grade.

REPORT: 21278

DATE: 4 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

SAMPLE IDENTIFICATION

<u>T.E.C. LAB ID #</u>	<u>SAMPLE DESCRIPTION</u>
23645	Soil Sample; Bottom South #1
23646	Soil Sample; Bottom North #1
23647	Soil Sample; West Wall #1 (South Side)

REPORT: 21278
DATE: 4 SEPTEMBER 1990
CLIENT: CPC GROUP HEADQUARTERS
PROJECT: UST DEMOLITION PONTIAC TANK FARM
TEC LAB ID #: 23645
SAMPLE DESCRIPTION: SOIL SAMPLE; BOTTOM SOUTH #1

Aromatic Volatile Organics in Soil 1

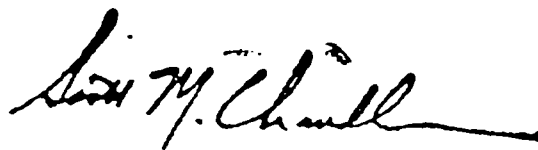
<u>COMPOUND</u>	<u>CONCENTRATION (ug/kg)</u>
Benzene	
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<10
	<5

Results are reported on a dry weight basis. Moisture content is 10.4%

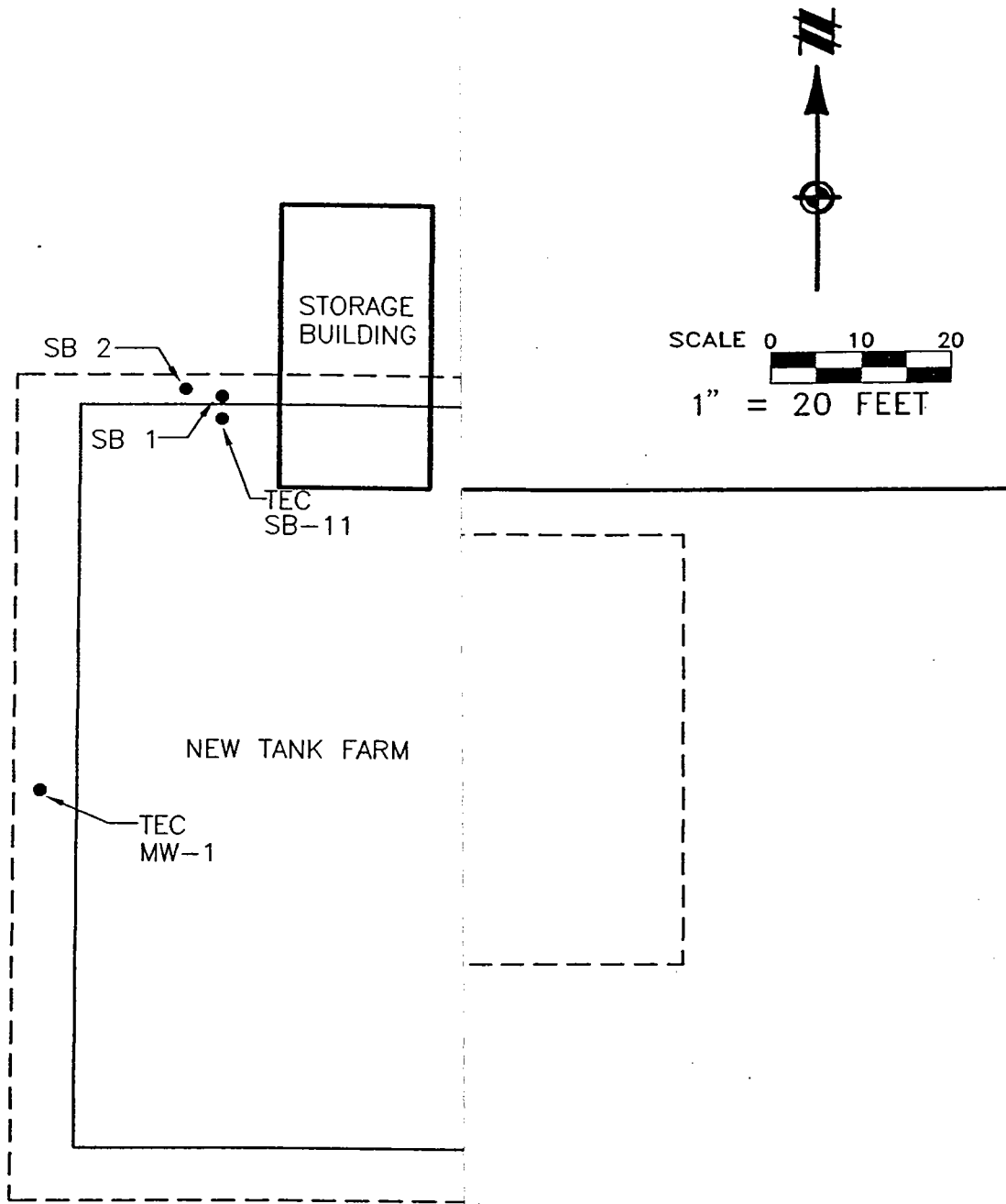
ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott Chandler, IHIT
Laboratory Director



NO.: 41159
25-94

FIGURE: 2 SITE DESCRIPTION
CPC PONTIAC -
985 JOSLYN
PONTIAC, MICHIGAN

ATWELL-HICKS, INC.

CIVIL ENGINEERING SURVEYING PLANNING
ENVIRONMENTAL SERVICES

DRIVE • P.O. BOX 2981 • ANN ARBOR, MI 48108
313/994-4000 • FAX 313/994-1599

REPORT: 21278

DATE: 4 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23646

SAMPLE DESCRIPTION: SOIL SAMPLE; BOTTOM NORTH #1

Aromatic Volatile Organics in Soil 1

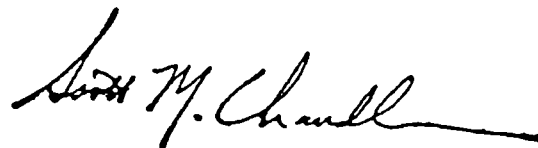
<u>COMPOUND</u>	<u>CONCENTRATION (ug/kg)</u>
Benzene	<5
Toluene	16.1
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

Results are reported on a dry weight basis. Moisture content is 9.8%

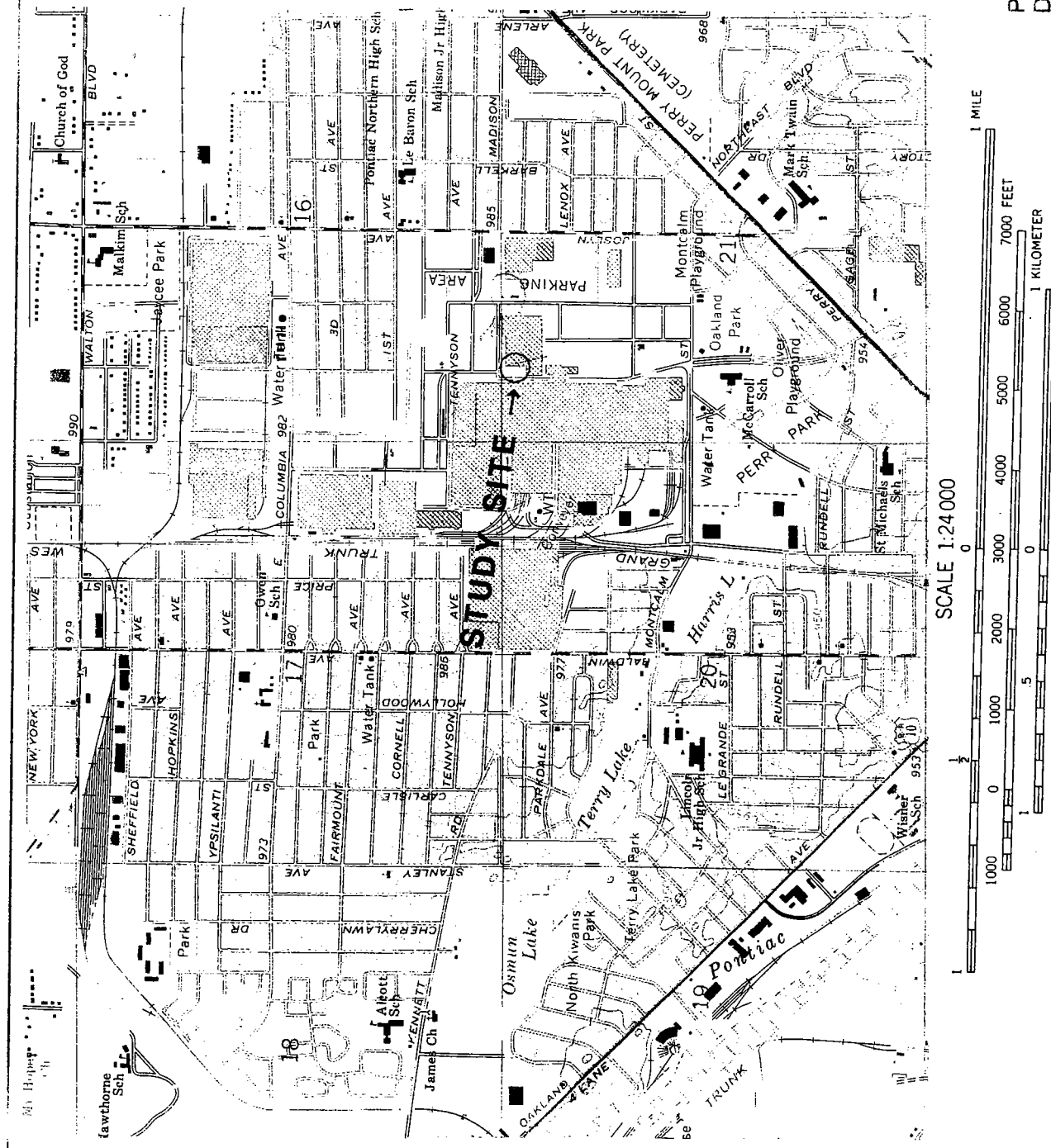
ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott Chandler, IHIT
Laboratory Director



PROJECT NO.: 41159
DATE: 7-08-94

SOURCE: USGS 7.5 MINUTE QUADRANGLE
PONTIAC NORTH
(PHOTO REVISED 1983)

FIGURE 1: LOCATION OF STUDY SITE
CPC PONTIAC - O+N TANK FARM
985 JOSLYN
PONTIAC, MICHIGAN

ATWELL-HICKS, INC.
CIVIL ENGINEERING SURVEYING PLANNING
ENVIRONMENTAL SERVICES
1241 S MAPLE ROAD • P.O. BOX 2981 • ANN ARBOR, MI 48106
313/994-4000 • FAX 313/971-1111

REPORT: 21278

DATE: 4 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23647

SAMPLE DESCRIPTION: SOIL SAMPLE; WEST WALL #1 (SOUTH SIDE)

Aromatic Volatile Organics in Soil 1

COMPOUNDCONCENTRATION (ug/kg)

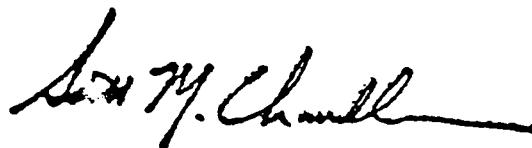
Benzene	8.4
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

Results are reported on a dry weight basis. Moisture content is 9.2%

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott Chandler, IHIT
Laboratory Director

1.0 INTRODUCTION

Atwell-Hicks, Inc. (hereafter referred to as AHI) was retained by Mr. Dallas Geisler of CPC Pontiac to perform a closure investigation for the CPC Pontiac old and new tank farm site located at 985 Joslyn in Pontiac, Michigan (Figure 1).

This closure investigation was requested by the Michigan Department of Natural Resources (MDNR) staff geologists based on their audit of a subsurface investigation for the above mentioned site conducted by Testing Engineers & Consultants, Inc. (hereafter referred to as TEC). In MDNR's letter of May 11, 1994 (Appendix A), the following investigations were requested for the closure of the subject site (refer to Figure 2 for site description).

1. An additional monitoring well should be placed to the southwest of the old tank farm (regionally downgradient) in order to verify that groundwater has not been impacted. This well should be screened from 15-20 feet below ground surface. A groundwater sample should be collected and analyzed for benzene, toluene, ethylbenzene and xylene (BTEX), and dissolved lead.
2. An additional soil sample should be collected from the same location of TEC's SB-11 to conduct a BTEX leachate test. Total BTEX concentration should be determined prior to the leachate test. Also, an additional soil sample should be collected from the same depth, north of TEC's SB-11, to verify lateral delineation.
3. TEC's MW-2 area should be re-sampled and analyzed for volatile organic compounds (VOCs) to determine the source of the matrix interference revealed in TEC's investigation.

Based on the MDNR requirement, the objectives of this subsurface investigation include:

- . Install four soil borings and one monitoring well at the locations required by the MDNR.
- . Collect a groundwater sample from the downgradient monitoring well and soil samples from the soil borings at the depths specified by the MDNR.
- . Analyze the groundwater and soil samples for BTEX, BTEX (SPLP), VOCs and lead, as specified by the MDNR.
- . Prepare a site Closure Report based on the investigation activities.

REPORT: 21278

DATE: 7 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION REMOVAL PONTIAC TANK FARM

SAMPLE IDENTIFICATION

<u>T.E.C. LAB ID #</u>	<u>SAMPLE DESCRIPTION</u>
23678	Soil Sample; North Wall #1, 9/4/90
23679	Soil Sample; South Wall #2, 9/4/90
23680	Soil Sample; Bottom South, Tank 2, 9/4/90
23681	Field Blank, 9/4/90

EXECUTIVE SUMMARY

Atwell-Hicks, Inc. (AHI) was retained to CPC Pontiac to provide environmental consulting services related to the underground storage tank system at its facility (old and new laboratory tank farm) located at 985 Joslyn in Pontiac, Michigan.

In response to the requests from the Michigan Department of Natural Resources (MDNR) staff geologists regarding closure of the subject site. AHI 1) performed five soil borings at the locations requested by MDNR, 2) installed one monitoring well at the location as specified by MDNR, 3) collected five soil samples, and one groundwater sample, 4) analyzed these samples for MDNR specified parameters, and 5) prepared this report for Type B criteria closure of the subject site.

The site geology is characterized by silty clay to a depth of more than 30 feet. Groundwater generally exists in more permeable zones of the clay which correspond to some silt and sand lenses at depths of more than 14 feet below grade. Due to slow recharge, this groundwater is considered as perched water.

Groundwater was found to be not impacted. Based on the nature of the subject site, AHI considers that this site meets the closure requirements for MDNR's Type B closure criteria.

Contamination has been defined in both the horizontal and vertical direction in the soil to below Type B Criteria. Groundwater samples from the area do not indicate any elevated levels of analyzed parameters.

REPORT: 21278

DATE: 7 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23678

SAMPLE DESCRIPTION: SOIL SAMPLE; NORTH WALL #1 9/4/90

Aromatic Volatile Organics in Soil 1

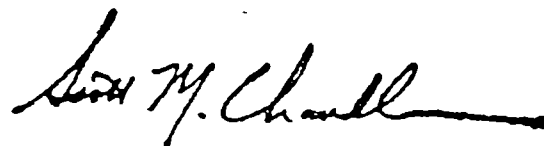
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<10
	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 11.2%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott M. Chandler, IHIT
Laboratory Director

CONTENTS

<u>Section</u>	<u>Page</u>
EXECUTIVE SUMMARY.....	ii
1.0 INTRODUCTION.....	1
2.0 METHODS OF INVESTIGATION.....	2
2.1 Soil Borings.....	2
2.2 Soil Sampling.....	2
2.3 Monitoring Well Construction.....	3
2.4 Monitoring Well Sampling.....	3
3.0 RESULTS AND DISCUSSIONS.....	3
3.1 Site Geology and Hydrogeology.....	3
3.2 Laboratory Analysis.....	3
4.0 CONCLUSIONS.....	5

Figures

Figure 1. Location of Study Site

Figure 2. Site Description

Tables

Table 1. Information of Analyzed Samples

Table 2. Summary of Laboratory Results

Appendices

Appendix A. Michigan Department of Natural Resources' letter dated
May 11, 1994

Appendix B. Soil Boring Logs

Appendix C. Monitoring Well Specification

Appendix D. Laboratory Results for Soil

Appendix E. Laboratory Results for Groundwater

Appendix F. RTI Laboratories Chromatograms

REPORT: 21278
DATE: 7 SEPTEMBER 1990
CLIENT: CPC GROUP HEADQUARTERS
PROJECT: UST DEMOLITION PONTIAC TANK FARM
TEC LAB ID #: 23679
SAMPLE DESCRIPTION: SOIL SAMPLE; SOUTH WALL #2, 9/4/90

Aromatic Volatile Organics in Soil 1

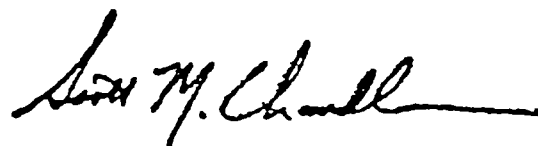
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<10
	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 9.1%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott M. Chandler, IHIT
Laboratory Director



ATWELL-HICKS, INC.

Civil Engineering/
Surveying/
Planning/
Environmental
Services

CLOSURE INVESTIGATION

AT THE

**CPC PONTIAC OLD AND NEW TANK FARM
985 JOSLYN
PONTIAC, MICHIGAN**

PREPARED FOR

**MR. DALLAS GEISLER
CPC PONTIAC
GENERAL MOTORS CORPORATION
ONE PONTIAC PLAZA
PONTIAC, MICHIGAN 48340-2952
MAIL CODE 4915**

540 Avis Drive
Ann Arbor, Michigan
48108
Tel: (313) 994-4000
FAX: (313) 994-1599

ATWELL-HICKS, INC. PROJECT NO. 41159

AUGUST 5, 1994

REPORT: 21278

DATE: 7 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23680

SAMPLE DESCRIPTION: SOIL SAMPLE; BOTTOM SOUTH TANK 2, 9/4/90

Aromatic Volatile Organics in Soil 1

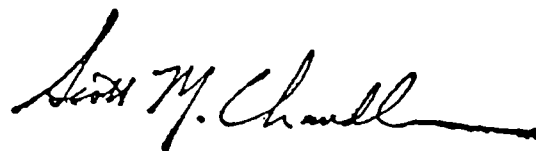
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	26.3
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 10.4%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott M. Chandler, IHIT
Laboratory Director

A T W E L L - H I C K S , I N C .

540 Avis Drive
P.O. Box 2981
Ann Arbor, Michigan 48106
313 994 4000 • FAX: 313 994 1599

August 5, 1994

Mr. Dallas Geisler
CPC Pontiac
General Motors Corporation
One Pontiac Plaza
Pontiac, MI 48340-2952
Mail Code 4915

Atwell-Hicks, Inc. Project No. 41159

RE: Closure investigation at CPC Pontiac old and new tank farm
located at 985 Joslyn in Pontiac, Michigan

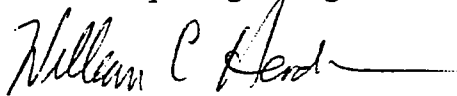
Dear Mr. Geisler:

Atwell-Hicks, Inc. (AHI) was retained by CPC Pontiac to provide environmental consulting services related to the underground storage tank system at its facility located at 985 Joslyn in Pontiac, Michigan. Please find enclosed a copy of AHI's Closure Investigation Report for the CPC Pontiac old and new tank farm site. Should you have any questions or desire further information regarding this report, please do not hesitate to contact me at (313) 994-4000.

Sincerely,
ATWELL-HICKS, INC.



Frederick G. Roeser
Senior Hydrogeologist



William C. Henderson
Manager, Environmental Services

FGR/sjw
x:\envrpt\cpc41159.si

Enclosure



REPORT: 21278

DATE: 7 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23681

SAMPLE DESCRIPTION: FIELD BLANK, 9/4/90

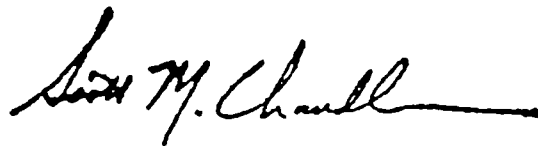
Aromatic Volatile Organics in Water 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/L)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/L = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott M. Chandler, IHIT
Laboratory Director

REPORT: 21278

DATE: 7 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

SAMPLE IDENTIFICATION

<u>T.E.C. LAB ID #</u>	<u>SAMPLE DESCRIPTION</u>
23683	Soil Sample; West Wall #2, 9/5/90
23684	Soil Sample; North Wall #2 , 9/5/90
23685	Soil Sample; South Wall #3, 9/5/90
23686	Soil Sample; Bottom North #2, 9/5/90
23687	Field Blank, 9/5/90

V-4

REPORT: 21278

DATE: 7 SEPTEMBER 1990

CLIENT: CFC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23683

SAMPLE DESCRIPTION: SOIL SAMPLE; WEST WALL #2, 9/5/90

Aromatic Volatile Organics in Soil 1

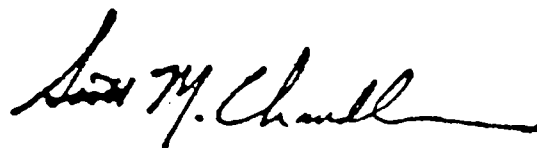
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	12.4
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 13.0%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott M. Chandler, IHIT
Laboratory Director

REPORT: 21278

DATE: 7 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23684

SAMPLE DESCRIPTION: SOIL SAMPLE; NORTH WALL #2, 9/5/90

Aromatic Volatile Organics in Soil 1

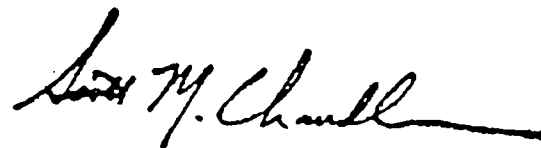
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<10
	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 10.2%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott M. Chandler, IHIT
Laboratory Director



NATIONAL
ENVIRONMENTAL
TESTING, INC.

Auburn Hills Division
1700 Harmon Road
Auburn Hills, MI 48328
Tel: (313) 391-2050
Fax: (313) 391-9698

ANALYTICAL REPORT

Dallas Giesler
GNC CPC GRP-PONTIAC OPS
One Pontiac Plaza
Pontiac, MI 48058

11/23/1992

Job No.: 92.52713

Sample No.: 116729

Wells

Sample Description: Trip Blank 11/18

Date Taken: 11/18/1992

Date Received: 11/18/1992

Parameter	Result	Unit	Date Analyzed	Lab Tech.	Methodology
Lead, dissolved	<0.003	mg/L	11/20/1992	mah	7421 (1)
UST VOLATILE COMPOUNDS					
Benzene	<1.0	ug/L	11/19/1992	njd	8020 (1)
Toluene	<1.0	ug/L	11/19/1992	njd	8020 (1)
Ethyl Benzene	<1.0	ug/L	11/19/1992	njd	8020 (1)
Xylene	<3.0	ug/L	11/19/1992	njd	8020 (1)

Susan K. Scott
Project Manager

REPORT: 21278

DATE: 7 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23685

SAMPLE DESCRIPTION: SOIL SAMPLE; SOUTH WALL #3, 9/5/90

Aromatic Volatile Organics in Soil 1

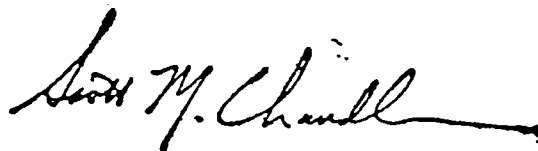
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<10
	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 9.7%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott M. Chandler, IHIT
Laboratory Director



NATIONAL
ENVIRONMENTAL
TESTING, INC.

Auburn Hills Division
1700 Harmon Road
Auburn Hills, MI 48326
Tel: (313) 391-2050
Fax: (313) 391-9098

ANALYTICAL REPORT

Dallas Giesler
QMC CPC GRP-PONTIAC OPS
One Pontiac Plaza
Pontiac, MI 48058

11/23/1992

Job No.: 92.52713
Sample No.: 116728

Wells

Sample Description: MW-2 11/18

Date Taken: 11/18/1992

Date Received: 11/18/1992

Parameter	Result	Unit	Date Analyzed	Lab Tech.	Methodology
Lead, dissolved	0.005	mg/L	11/20/1992	msh	7421 (1)
UST VOLATILE COMPOUNDS					
Benzene	<1.0	ug/L	11/19/1992	njd	8020 (1)
Toluene	<1.0	ug/L	11/19/1992	njd	8020 (1)
Ethyl Benzene	<1.0	ug/L	11/19/1992	njd	8020 (1)
Xylene	<3.0	ug/L	11/19/1992	njd	8020 (1)

Susan K. Scott

Susan K. Scott
Project Manager

REPORT: 21278

DATE: 7 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23686

SAMPLE DESCRIPTION: SOIL SAMPLE; BOTTOM NORTH #2, 9/5/90

Aromatic Volatile Organics in Soil 1

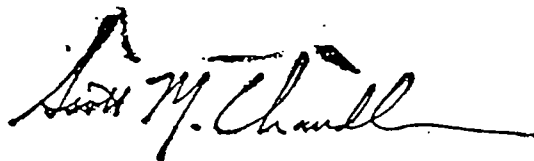
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 10.2%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott M. Chandler, IHIT
Laboratory Director



NATIONAL
ENVIRONMENTAL
TESTING, INC.

Auburn Hills Division
1700 Harmon Road
Auburn Hills, MI 48326
Tel: (313) 391-2050
Fax: (313) 391-9698

ANALYTICAL REPORT

Dallas Giesler
GMC - CPC GRP-PONTIAC OPS
One Pontiac Plaza
Pontiac, MI 48058

11/23/1992

Job No.: 92-52713
Sample No.: 116727

Wells

Sample Description: MW-1 11/18

Date Taken: 11/18/1992

Date Received: 11/18/1992

Parameter	Result	Unit	Date Analyzed	Lab Tech.	Methodology
Lead, dissolved	<0.003	mg/L	11/20/1992	mah	7421 (1)
UST VOLATILE COMPOUNDS					
Benzene	<1.0	ug/L	11/19/1992	njd	8020 (1)
Toluene	<1.0	ug/L	11/19/1992	njd	8020 (1)
Ethyl Benzene	<1.0	ug/L	11/19/1992	njd	8020 (1)
Xylene	<3.0	ug/L	11/19/1992	njd	8020 (1)

Susan K. Scott
Susan K. Scott
Project Manager

REPORT: 21278

DATE: 7 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23687

SAMPLE DESCRIPTION: FIELD BLANK, 9/5/90

Aromatic Volatile Organics in Water 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/L)</u>
Benzene	
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<10
	<5

ug/L = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott M. Chandler, IHIT
Laboratory Director

4252713 116729 B-13

NETDATE COMPLETED: 11-18-92FIELD NOTES & OBSERVATIONS
GROUNDWATER SAMPLE COLLECTION:Account CPC PontiacDate: 11-18-92 Time: 200 Weather: cloudy coldField Personnel: Banninger

Observers: _____

Well Identification: Trip BlankSampling Method: directSample Appearance: clearTotal number of containers filled: 4 (1 qt plain 3 vials) (list)Filtered: Qt Plain into pt HNO₃Non-Filtered: 3 vials

pH - 1) _____ Conductivity - 1) _____

2) _____ 2) _____

3) _____ 3) _____

4) _____ 4) _____

Re-Dox - 1) _____ Temperature °F _____

2) _____

3) _____

4) _____

Comments: Filled in bottle room prior to sampling

WELL LOCK INFORMATION

Does the well have a lock? NO

General Condition: _____

Well locked upon completion: _____

Chain of Custody: Relinquished By: [Signature] Date: 11-18-92Received By: Carlyn Paschall Date: 11-18-92

REPORT: 21278
DATE: 10 SEPTEMBER 1990
CLIENT: CPC GROUP HEADQUARTERS
PROJECT: UST DEMOLITION PONTIAC TANK FARM

SAMPLE IDENTIFICATION

<u>T.E.C. LAB ID #</u>	<u>SAMPLE DESCRIPTION</u>
23732	Soil Sample; North Wall #4, 9-7-90
23733	Soil Sample; South Wall #4, 9-7-90
23734	Soil Sample; East Wall #1, 9-7-90
23735	Water Sample; East Side, 9-7-90

NETDATE COMPLETED: 11-18-92FIELD NOTES & OBSERVATIONS
GROUNDWATER SAMPLE COLLECTION:Account CPC PontiacDate: 11-18-92 Time: 230 Weather: cloudy coldField Personnel: Banninger

Observers: _____

Well Identification: MW3Sampling Method: disposable bailerSample Appearance: clearTotal number of containers filled: 4, Qt Plain 3Vog (1st)Filtered: Qt plain into pt ANO₃Non-Filtered: 3Vog

pH - 1)	_____	-conductivity - 1)	_____
2)	_____	2)	_____
3)	_____	3)	_____
4)	_____	4)	_____

Re-Dox - 1)	_____	Temperature °F	_____
2)	_____		
3)	_____		
4)	_____		

Comments: Save remaining sample in Qt Plain

WELL LOCK INFORMATION

Does the well have a lock? NO

General Condition: _____

Well locked upon completion: _____

Chain of Custody: Relinquished By: Bob Banninger Date: 11-18-92
Received By: Carshyn Parshian Date: 11-18-92

REPORT: 21278

DATE: 10 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITIONPONTIAC TANK FARM

TEC LAB ID #: 23732

SAMPLE DESCRIPTION: SOIL SAMPLE; NORTH WALL #4, 9-7-90

Aromatic Volatile Organics in Soil 1

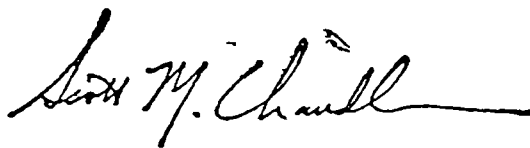
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 4.3%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott M. Chandler, IHIT
Laboratory Director

NETDATE COMPLETED: 11-18-92FIELD NOTES & OBSERVATIONS
GROUNDWATER SAMPLE COLLECTION:Account CPC PontiacDate: 11-18-92Time: 220Weather: cloudy coldField Personnel: Benninger

Observers: _____

Well Identification: MW 1Sampling Method: disposable bailerSample Appearance: clearTotal number of containers filled: 5, 1 Qt Plain 3u09 (list)Filtered: Qt Plain into Qt HNO₃Non-Filtered: 3u09

pH - 1) _____

2) _____

3) _____

4) _____

Conductivity - 1) _____

2) _____

3) _____

4) _____

Re-Dox - 1) _____

2) _____

3) _____

4) _____

Temperature °F _____

Comments: save remaining sample in Qt Plain

WELL LOCK INFORMATION

Does the well have a lock? no

General Condition: _____

Well locked upon completion: _____

Chain of Custody: Relinquished By: Mark Benninger Date: 11-18-92Received By: Carolyn Paslean Date: 11-18-92

REPORT: 21278

DATE: 10 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITIONPONTIAC TANK FARM

TEC LAB ID #: 23733

SAMPLE DESCRIPTION: SOIL SAMPLE; SOUTH WALL #4, 9-7-90

Aromatic Volatile Organics in Soil 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<10
	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 9.1%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott M. Chandler, IHIT
Laboratory Director



Field Notes

Monitoring Well Data Sheet

RECEIVED
DEC 01 1992

DEC 01 1932

TESTING ENGINEERS
& CONSULTANTS, INC.

POINT :

UPC Pontiac

Field Personnel:

Banning

Observer:

1-17-92

Weather:

cloudy cold

Time on-site:

2½ hours

11-8-92

Weather:

cloudy cold

Time on-site:

$\frac{1}{2}$ hour

[illegible]

Program:

Carlynn Paslean 11/18/9

17/18/92

COMMENTS:

REPORT: 21278

DATE: 10 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITIONPONTIAC TANK FARM

TEC LAB ID #: 23734

SAMPLE DESCRIPTION: SOIL SAMPLE; EAST WALL #1, 9-7-90

Aromatic Volatile Organics in Soil 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 5.6%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott M. Chandler, IHIT
Laboratory Director

REPORT: 26217

DATE: 9 NOVEMBER 1992

CLIENT: CPC GROUP HEADQUARTERS - GENERAL MOTORS CORPORATION

PROJECT: WORKPLAN PREPARATION & SITE INVESTIGATION

TEC LAB ID #: 31109

SAMPLE DESCRIPTION: SOIL BORING #2 @ 12.5'; BLACK SAND & GREY CLAY

Total Metals in Soil

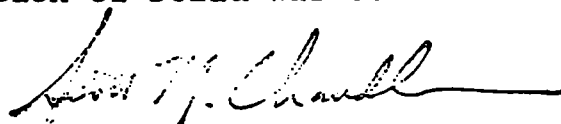
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(mg/kg)</u>
Lead	<5.0

mg/kg = parts per million

Results are reported on a dry weight basis. Moisture content is 12.3%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

EPA Method 6010: "Inductively Coupled Plasma Atomic Emission Spectrometry." Test Methods for the Evaluation of Solid Waste. EPA SW-846. November, 1986.


Scott M. Chandler, CIH
 Laboratory Director

REPORT: 21278

DATE: 10 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23735

SAMPLE DESCRIPTION: WATER SAMPLE, EAST SIDE, 9-7-90

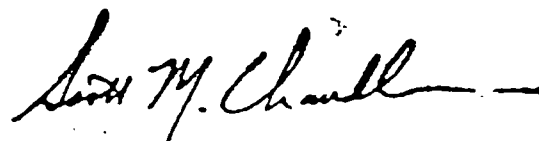
Aromatic Volatile Organics in Perched Water 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/L)</u>
Benzene	10.1
Toluene	12.5
Ethylbenzene	<5
m + p-Xylene	316
o-Xylene	225

ug/L = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott M. Chandler, IHIT
Laboratory Director

REPORT: 26217

DATE: 9 NOVEMBER 1992

CLIENT: CPC GROUP HEADQUARTERS - GENERAL MOTORS CORPORATION

PROJECT: WORKPLAN PREPARATION & SITE INVESTIGATION

TEC LAB ID #: 31108

SAMPLE DESCRIPTION: SOIL BORING #2 @ 10'; BROWN SAND

Total Metals in Soil

PARAMETER

CONCENTRATION
(mg/kg)

Lead

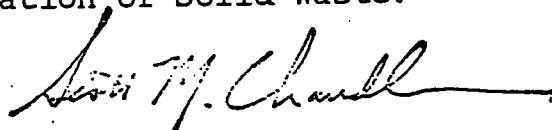
<5.0

mg/kg = parts per million

Results are reported on a dry weight basis. Moisture content is 11.8%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

EPA Method 6010: "Inductively Coupled Plasma Atomic Emission Spectrometry." Test Methods for the Evaluation of Solid Waste. EPA SW-846. November, 1986.


Scott M. Chandler, CIH
Laboratory Director

REPORT: 21278

DATE: 10 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

SAMPLE IDENTIFICATION

<u>T.E.C. LAB ID #</u>	<u>SAMPLE DESCRIPTION</u>
23722	Soil Sample; Bottom North Tank #4, 9-6-90
23723	Soil Sample; Bottom North Tank #1, 9-6-90
23724	Soil Sample; Bottom North Tank #5, 9-6-90
23725	Soil Sample; Bottom North Tank #3, 9-6-90
23726	Soil Sample; North Wall Sample #3, 9-6-90

REPORT: 26217

DATE: 9 NOVEMBER 1992

CLIENT: CPC GROUP HEADQUARTERS - GENERAL MOTORS CORPORATION

PROJECT: WORKPLAN PREPARATION & SITE INVESTIGATION

TEC LAB ID #: 31107

SAMPLE DESCRIPTION: SOIL BORING #1 @ 10'; BROWN HARD CLAY

Total Metals in Soil

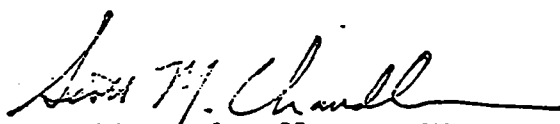
<u>PARAMETER</u>	<u>CONCENTRATION</u> (mg/kg)
Lead	<5.0

mg/kg = parts per million

Results are reported on a dry weight basis. Moisture content: is 9.2%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

EPA Method 6010: "Inductively Coupled Plasma Atomic Emission Spectrometry." Test Methods for the Evaluation of Solid Waste. EPA SW-846. November, 1986.


Scott M. Chandler, CIH
Laboratory Director

REPORT: 21278

DATE: 10 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23722

SAMPLE DESCRIPTION: SOIL SAMPLE; BOTTOM NORTH TANK #4, 9-6-90

Aromatic Volatile Organics in Soil 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 10.5%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott M. Chandler, IHIT
Laboratory Director

REPORT: 26217

DATE: 9 NOVEMBER 1992

CLIENT: CPC GROUP HEADQUARTERS - GENERAL MOTORS CORPORATION

PROJECT: WORKPLAN PREPARATION & SITE INVESTIGATION

TEC LAB ID #: 31106

SAMPLE DESCRIPTION: SOIL BORING #1 @ 5'; BLACK SAND & BROWN CLAY

Total Metals in Soil

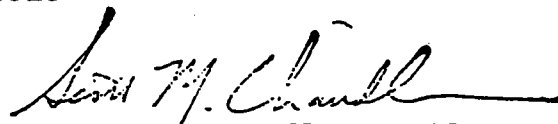
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(mg/kg)</u>
Lead	<5.0

mg/kg = parts per million

Results are reported on a dry weight basis. Moisture content is 11.1%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

EPA Method 6010: "Inductively Coupled Plasma Atomic Emission Spectrometry." Test Methods for the Evaluation of Solid Waste. EPA SW-846. November, 1986.


Scott M. Chandler, CIH
Laboratory Director

REPORT: 21278

DATE: 10 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23723

SAMPLE DESCRIPTION: SOIL SAMPLE; BOTTOM NORTH TANK #1, 9-6-90

Aromatic Volatile Organics in Soil 1

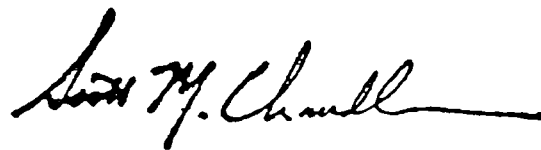
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 8.9%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott M. Chandler, IHIT
Laboratory Director

REPORT: 26217

DATE: 9 NOVEMBER 1992

CLIENT: CPC GROUP HEADQUARTERS - GENERAL MOTORS CORPORATION

PROJECT: WORKPLAN PREPARATION & SITE INVESTIGATION

TEC LAB ID #: 31109

SAMPLE DESCRIPTION: SOIL BORING #2 @ 12.5'; BLACK SAND & GREY CLAY

Aromatic Volatile Organics

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<10.
Toluene	<10.
Ethylbenzene	<10.
m + p-Xylene	<10.
o-Xylene	<10.

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 12.3%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

EPA Method 8240: "Gas Chromatography/Mass Spectrometry for Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA-SW846. November 1986.


Scott M. Chandler, CIH
Laboratory Director

REPORT: 21278

DATE: 10 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23724

SAMPLE DESCRIPTION: SOIL SAMPLE; BOTTOM NORTH TANK #5, 9-6-90

Aromatic Volatile Organics in Soil 1

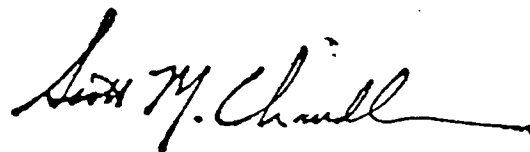
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 9.3%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott M. Chandler, IHIT
Laboratory Director

REPORT: 26217

DATE: 9 NOVEMBER 1992

CLIENT: CPC GROUP HEADQUARTERS - GENERAL MOTORS CORPORATION

PROJECT: WORKPLAN PREPARATION & SITE INVESTIGATION

TEC LAB ID #: 31108

SAMPLE DESCRIPTION: SOIL BORING #2 @ 10'; BROWN SAND

Aromatic Volatile Organics

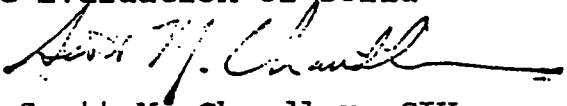
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<10.
Toluene	<10.
Ethylbenzene	<10.
m + p-Xylene	<10.
o-Xylene	<10.

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 11.8%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

EPA Method 8240: "Gas Chromatography/Mass Spectrometry for Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA-SW846. November 1986.


Scott M. Chandler, CIH
Laboratory Director

REPORT: 21278

DATE: 10 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23725

SAMPLE DESCRIPTION: SOIL SAMPLE; BOTTOM NORTH TANK #3, 9-6-90

Aromatic Volatile Organics in Soil 1

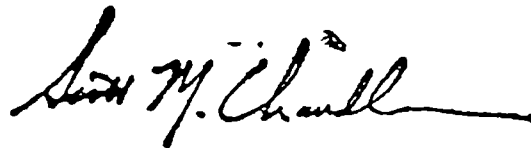
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 10.6%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott M. Chandler, IHIT
Laboratory Director

REPORT: 26217

DATE: 9 NOVEMBER 1992

CLIENT: CPC GROUP HEADQUARTERS - GENERAL MOTORS CORPORATION

PROJECT: WORKPLAN PREPARATION & SITE INVESTIGATION

TEC LAB ID #: 31107

SAMPLE DESCRIPTION: SOIL BORING #1 @ 10'; BROWN HARD CLAY

Aromatic Volatile Organics

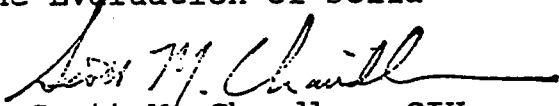
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<10.
Toluene	<10.
Ethylbenzene	<10.
m + p-Xylene	<10.
o-Xylene	<10.

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 9.2%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

EPA Method 8240: "Gas Chromatography/Mass Spectrometry for Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA-SW846. November 1986.


Scott M. Chandler, CIH
Laboratory Director

REPORT: 21278

DATE: 10 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23726

SAMPLE DESCRIPTION: SOIL SAMPLE; NORTH WALL #3, 9-6-90

Aromatic Volatile Organics in Soil 1

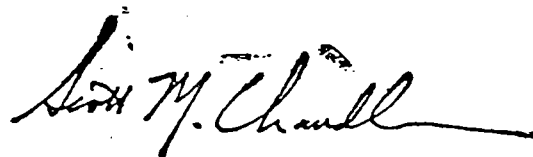
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 9.1%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott M. Chandler, IHIT
Laboratory Director

REPORT: 26217

DATE: 9 NOVEMBER 1992

CLIENT: CPC GROUP HEADQUARTERS - GENERAL MOTORS CORPORATION

PROJECT: WORKPLAN PREPARATION & SITE INVESTIGATION

TEC LAB ID #: 31106

SAMPLE DESCRIPTION: SOIL BORING #1 @ 5'; BLACK SAND & BROWN CLAY

Aromatic Volatile Organics

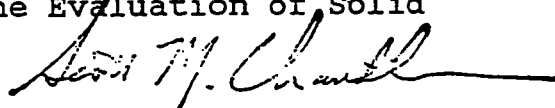
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<10.
Toluene	<10.
Ethylbenzene	<10.
m + p-Xylene	<10.
o-Xylene	<10.

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 11.1%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

EPA Method 8240: "Gas Chromatography/Mass Spectrometry for Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA-SW846. November 1986.


Scott M. Chandler, CIH
Laboratory Director

REPORT: -21278

DATE: 12 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

SAMPLE IDENTIFICATION

<u>T.E.C. LAB ID #</u>	<u>SAMPLE DESCRIPTION</u>
23736	Soil Sample; East Wall #2 (North Side), 9-10-90
23737	Soil Sample; South Wall #1 (Wes Side), 9-10-90
23738	Soil Sample; Bottom South Tank #3, 9-10-90
23739	Soil Sample; Bottom South Tank #4, 9-10-90
23740	Soil Sample; Bottom South Tank #5, 9-10-90
23741	Water Sample; Field Blank , 9/10/90

REPORT: 26217

DATE: 9 NOVEMBER 1992

CLIENT: CPC GROUP HEADQUARTERS - GENERAL MOTORS CORPORATION

PROJECT: WORKPLAN PREPARATION & SITE INVESTIGATION

SAMPLE IDENTIFICATION

<u>TEC LAB ID #</u>	<u>SAMPLE DESCRIPTION</u>
31106	Soil Boring #1 @ 5'; Black Sand & Brown Clay
31107	Soil Boring #1 @ 10'; Brown Hard Clay
31108	Soil Boring #2 @ 10'; Brown Sand
31109	Soil Boring #2 @ 12.5'; Black Sand & Grey Clay

REPORT: 21278

DATE: 12 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23736

SAMPLE DESCRIPTION: SOIL SAMPLE; EAST WALL #2 (NORTH SIDE),
9-10-90

Aromatic Volatile Organics in Soil 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	36.3
Toluene	<5
Ethylbenzene	63.4
m + p-Xylene	92.5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 12.9%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott M. Chandler, IHIT
Laboratory Director

APPENDIX B

LABORATORY RESULTS

REPORT: 21278

DATE: 12 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23737

SAMPLE DESCRIPTION: SOIL SAMPLE; SOUTH WALL #1 (WEST SIDE),
9-10-90

Aromatic Volatile Organics in Soil 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 11.1%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott M. Chandler, IHIT
Laboratory Director



REPORT: 21278

DATE: 12 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23738

SAMPLE DESCRIPTION: SOIL SAMPLE; BOTTOM SOUTH TANK #3, 9/10/90

Aromatic Volatile Organics in Soil 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

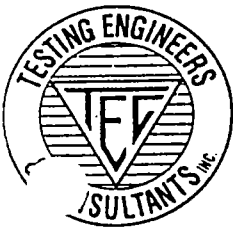
ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 8.6%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott M. Chandler, IHIT
Laboratory Director



Testing Engineers & Consultants, Inc.

1333 Rochester Road • P.O. Box 249 • Troy, Michigan 48099-0249
313-588-6200 or Dial 313-T-E-S-T-I-N-G
Fax 313-588-6232

A-3

BORING NO. # MW-3 JOB NO. 26217 PROJECT WORKPLAN PREPARATION & SITE INVESTIGATION
Ground Surface (Elev.) _____ CPC North Facility, Laboratory Tank Farm
Datum _____ 895 Joslyn Avenue
CLIENT CPC Group Headquarters Location Pontiac, Michigan
Started: October 19, 1992 Completed October 19, 1992
Logged By: H. Li

DEPTH IN FEET	SAMPLE TYPE	"N"	STRATA CHANGE	SOIL CLASSIFICATION	PID ppm	WELL DATA
			6"	CONCRETE		
	SS	8 7 9		Brown SAND With Gravel	ND	
5	SS	7 7 8			ND	
	SS	7 9 9			ND	SCREENED
10	SS	6 5 4	10'0"		ND	
	SS	4 4 6	12'6"	Gray CLAY	ND	
				END OF BORING		
15						
20						
25						

"N" - Standard Penetration Resistance
S.S. - 2" O.D. Split Spoon Sample
L.S. - Sectional Liner Sample
S.T. - Shelby Tube Sample
A.S. - Auger Sample

PID - Photoionization Detector
ppm - Parts Per Million
ND - Not Detected

WATER ENCOUNTERED None
AT COMPLETION

Boring No. MW-3/Ln

REPORT: 21278

DATE: 12 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23739

SAMPLE DESCRIPTION: SOIL SAMPLE; BOTTOM SOUTH TANK #4, 9/10/90

Aromatic Volatile Organics in Soil 1

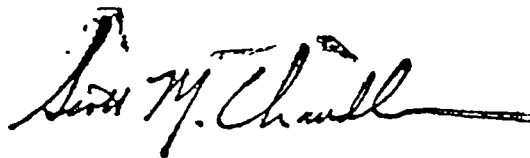
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

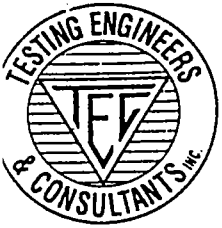
ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 14.0%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott M. Chandler, IHIT
Laboratory Director



Testing Engineers & Consultants, Inc.

1333 Rochester Road • P.O. Box 249 • Troy, Michigan 48099-0249

313-588-6200 or Dial 313-T-E-S-T-I-N-G

Fax 313-588-6232

A-2

BORING NO. # 2 JOB NO. 26217 PROJECT WORKPLAN PREPARATION & SITE INVESTIGATION
Ground Surface (Elev.) _____ CPC North Facility, Laboratory Tank Farm
Datum _____ 895 Joslyn Avenue
CLIENT CPC Group Headquarters Location Pontiac, Michigan
Started: October 19, 1992 Completed October 19, 1992
Logged By: H. Li

DEPTH IN FEET	SAMPLE TYPE	"N"	STRATA CHANGE	SOIL CLASSIFICATION	PID ppm	WELL DATA
			6"	CONCRETE		
	SS	11 13 14		Brown SAND With Gravel	ND	
5	SS	9 14 17			ND	
	SS	13 13 12			ND	
10	SS	5 6 13	9'0"	Moist Brown SAND With Gravel	ND	
	SS	4 4 5	11'0" 11'1"	Black SAND Gray CLAY	2.0	
15	SS				ND	
20	SS		20'0"	END OF BORING	ND	
25						

"N" - Standard Penetration Resistance
S.S. - 2" O.D. Split Spoon Sample
L.S. - Sectional Liner Sample
S.T. - Shelby Tube Sample
A.S. - Auger Sample

PID - Photoionization Detector
ppm - Parts Per Million
ND - Not Detected

WATER ENCOUNTERED None
AT COMPLETION

Boring No. 2/ln

REPORT: 21278

DATE: 12 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23740

SAMPLE DESCRIPTION: SOIL SAMPLE; BOTTOM SOUTH TANK #5, 9/10/90

Aromatic Volatile Organics in Soil 1

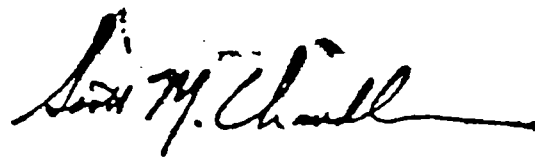
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/kg = parts per billion

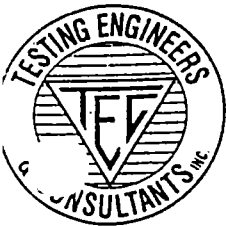
Results are reported on a dry weight basis. Moisture content is 9.9%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott M. Chandler, IHIT
Laboratory Director



Testing Engineers & Consultants, Inc.

1333 Rochester Road • P.O. Box 249 • Troy, Michigan 48099-0249
 313-588-6200 or Dial 313-T-E-S-T-I-N-G
 Fax 313-588-6232

A-1

BORING NO. # 1	JOB NO. 26217	PROJECT WORKPLAN PREPARATION & SITE INVESTIGATION
Ground Surface (Elev.)		CPC North Facility, Laboratory Tank Farm
Datum		895 Joslyn Avenue
CLIENT CPC Group Headquarters	Location Pontiac, Michigan	
	Started: October 19, 1992	Completed: October 19, 1992
	Logged By: H. Li	

DEPTH IN FEET	SAMPLE TYPE	"N"	STRATA CHANGE	SOIL CLASSIFICATION	PID ppm	WELL DATA
			1'0"	CONCRETE		
	SS	3 3 4		Black Clayey SAND	ND	
			4'0"			
	SS	3 2 3	4'6"	Black SAND	ND	
5---				Brown CLAY With Trace Of Gravel		
	SS	5 6 8			ND	
			8'6"			
	SS	9 14 17		Brown Hard CLAY	ND	
10---			11'0"			
	SS	5 7 9		Gray CLAY With Trace Of Gravel	ND	
	SS	4 5 6			ND	
15---						
	SS	6 8 12	20'0"		ND	
20---				END OF BORING		
25---						

"N" - Standard Penetration Resistance
 S.S. - 2" O.D. Split Spoon Sample
 L.S. - Sectional Liner Sample
 S.T. - Shelby Tube Sample
 A.S. - Auger Sample

PID - Photoionization Detector
 ppm - Parts Per Million
 ND - Not Detected

WATER ENCOUNTERED None
 AT COMPLETION

Boring No. 1/Ln

REPORT: 21278

DATE: 12 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23741

SAMPLE DESCRIPTION: WATER SAMPLE; FIELD BLANK, 9/10/90

Aromatic Volatile Organics in Water 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/L)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/L = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott M. Chandler, IHIT
Laboratory Director

APPENDIX A

SOIL BORING LOGS

REPORT: 21278

DATE: 12 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

SAMPLE IDENTIFICATION

<u>T.E.C. LAB ID #</u>	<u>SAMPLE DESCRIPTION</u>
23773	Soil Sample; Bottom North Tank #6, 9-10-90
23774	Soil Sample; Bottom North Tank #7, 9-10-90
23775	Soil Sample; Bottom South Tank #6, 9-10-90
23776	Soil Sample; Bottom South Tank #7, 9-10-90

REPORT: 21278

-DATE: 12, SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23773

SAMPLE DESCRIPTION: SOIL SAMPLE; BOTTOM NORTH TANK #6, 9-10-90

Aromatic Volatile Organics in Soil 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 10.5%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

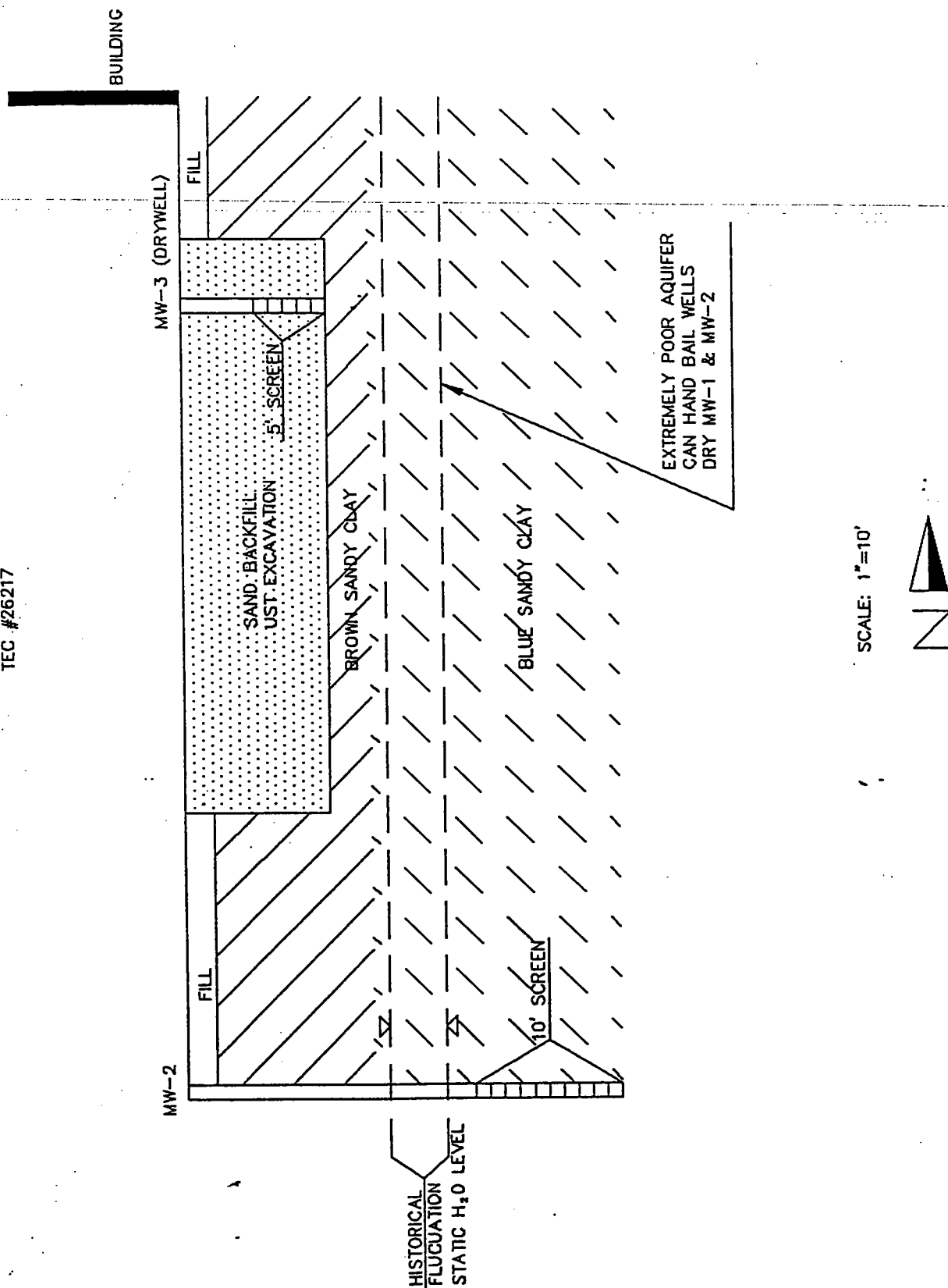
1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott M. Chandler, IHIT
Laboratory Director

FIGURE 3 CROSS SECTION

TEC #26217



REPORT: 21278

DATE: 12 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23774

SAMPLE DESCRIPTION: SOIL SAMPLE; BOTTOM NORTH TANK #7, 9-10-90

Aromatic Volatile Organics in Soil 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 10.7%

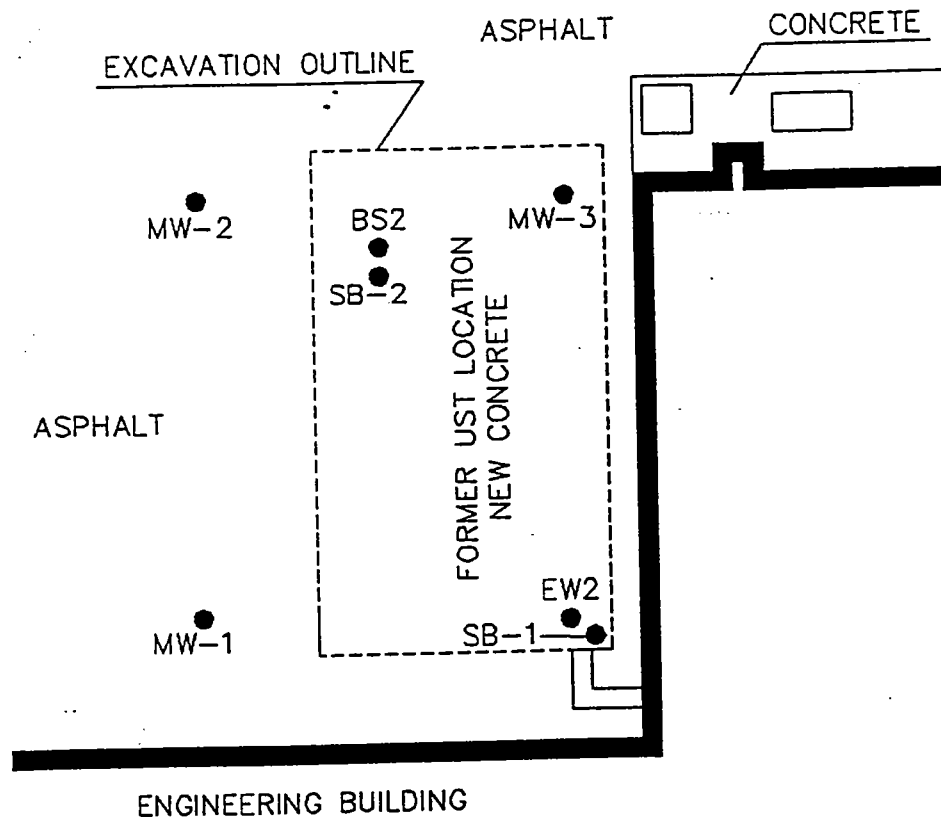
A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott M. Chandler, IHIT
Laboratory Director

FIGURE 2 BORING & WELL LOCATION DIAGRAM

TEC #26217



SCALE: 1"=30'



REPORT: 21278

DATE: 12 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23775

SAMPLE DESCRIPTION: SOIL SAMPLE; BOTTOM SOUTH TANK #6, 9/10/90

Aromatic Volatile Organics in Soil 1

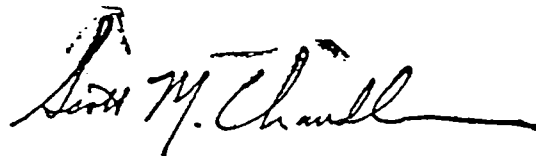
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/kg = parts per billion

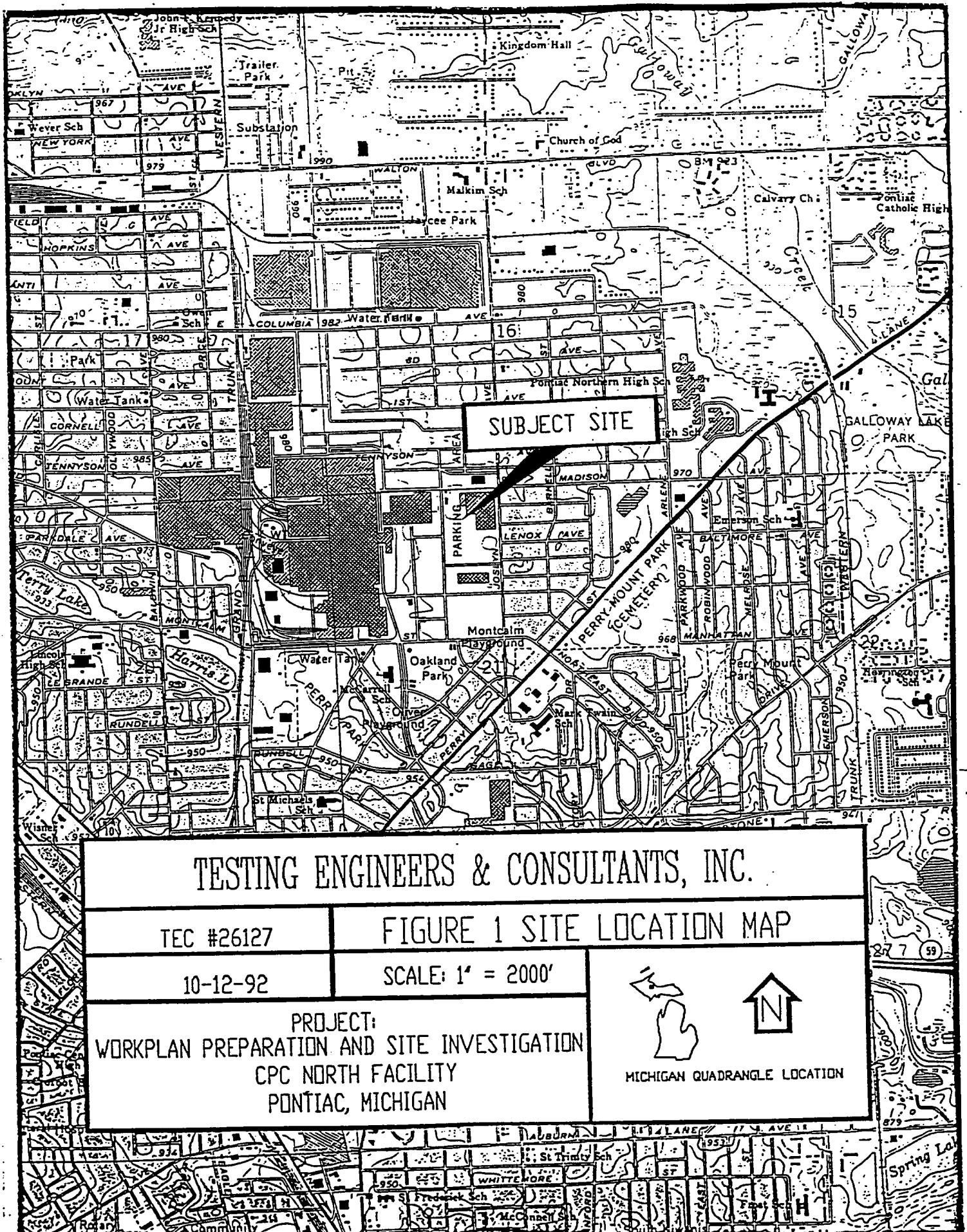
Results are reported on a dry weight basis. Moisture content is 13.2%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott M. Chandler, IHIT
Laboratory Director



REPORT: 21278

DATE: 12 SEPTEMBER 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST DEMOLITION PONTIAC TANK FARM

TEC LAB ID #: 23776

SAMPLE DESCRIPTION: SOIL SAMPLE; BOTTOM SOUTH TANK #7, 9/10/90

Aromatic Volatile Organics in Soil 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 12.5%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott M. Chandler, IHIT
Laboratory Director

Testing Engineers & Consultants, Inc.

CPC Group Headquarters
Mr. Dallas Geisler
05 January 1993

TEC Report Number: 26217-1 (Page 6 of 6)

8.0 SUMMARY

TEC has completed the Site Investigation at the CPC North Facility in Pontiac, Michigan. The investigation was required by the MDNR to confirm that water and soil on the site have not been contaminated by BTEX and Lead. The investigation included the drilling of two soil borings, the installation of one monitoring well, and the collection and analysis of samples. The results of the laboratory analysis did not indicate the presence of BTEX and Lead in any of the soil samples. Ground water was not encountered on the site.

9.0 RECOMMENDATION

The investigation has confirmed that soil and water on the site has not been impacted by BTEX and Lead. Thus, we recommend that the site be closed.

* * * * *

Testing Engineers & Consultants, Inc.

CPC Group Headquarters
Mr. Dallas Geisler
05 January 1993

TEC Report Number: 26217-1 (Page 5 of 6)

6.0 DISCUSSION OF SOILS (Cont'd)

investigation performed did not detect any elevated readings. Therefore, TEC cannot recommend any further work in this area. The original contamination found at EW2 must have been in such a small area that either volatilization or natural biologic degradation occurred in this area.

Soil Boring 2 was placed directly adjacent to BS2 as requested by the MDNR. The 10.0 foot sample was analyzed due to the fact that this depth corresponded to the original excavation floor. The 12.5 foot sample was analyzed due to the fact that a PID reading was registered at this interval. Due to the fact that no analyzed parameters were discovered in either sample, no further work is recommended in this area.

7.0 DISCUSSION OF WATER

MW-3 was placed in the area of the original MW-3 (destroyed during excavation). It was reasoned in previous reports that the original water encountered in MW-3 was perched water that infiltrated into the tank excavation pit. Due to the fact that the pit was excavated and the area repaved, infiltration into the backfill was halted. Because the source of the infiltration has been halted (cracks in the old concrete), no water is currently entering the pit. Therefore, it is logical that MW-3 is now dry. Furthermore, it proves that there is no communication of this water to the saturated sand seams encountered at greater depths, which is the source of water found in MW-1 and MW-2. These wells were sampled and are still uncontaminated. Due to the fact the source of contamination and associated contaminated soils were removed, and the fact that there is no communication between the original perched water and the deeper saturated sand seams, it can be concluded that there is no and never was any aquifer contamination as a result of the tank farm. Please refer to the Cross Section Map (Figure 3) to illustrate this conclusion.

.....continued

V-2

Testing Engineers & Consultants, Inc.

CPC Group Headquarters
Mr. Dallas Geisler
05 January 1993

TEC Report Number: 26217-1 (Page 4 of 6)

4.0 LABORATORY ANALYSIS OF SOILS

Four soil samples (SB-1 at 5.0 and 10.0 feet and SB-2 at 5.0 and 12.5 feet) were submitted to TEC's Analytical Laboratory to test for the presence of chemical contamination.

The samples were analyzed for BTEX and Lead according to TEC's workplan. The laboratory results did not indicate the presence of BTEX or Lead at or above the method detection limit (MDL) in any of the soil samples. Refer to Appendix B for the Laboratory Results.

5.0 LABORATORY ANALYSIS OF WATER

MW-1 and MW-2 were purged and sampled on 17 November 1992. The static water levels were 16.10 and 13.15 feet below the top of casing, which are consistent with historical levels on the site. As mentioned previously, MW-3 was dry, so no sample could be collected.

The water samples from MW-1 and MW-2 were analyzed for BTEX and Lead. The laboratory results did not indicate the presence of BTEX and Lead in any of the submitted water samples. Refer to Appendix B for the Laboratory Results.

6.0 DISCUSSION OF SOILS

Soil Boring 1 was placed directly adjacent to EW2 as requested by the MDNR. Field screening did not indicate any detectable readings at any depth. Therefore, the 5.0 sample was analyzed for BTEX and Lead due to the fact that this is the depth that would correspond to the original sample depth of EW2. The 10.0 foot sample from this boring was also analyzed because this is the depth that would correspond to the floor of the original excavation. Neither of these samples indicated any detectable levels of the analyzed compounds, nor did any of the sampling intervals indicate elevated field readings. Additionally, samples collected from the previous

.....continued

Testing Engineers & Consultants, Inc.

CPC Group Headquarters
Mr. Dallas Geisler
05 January 1993

TEC Report Number: 26217-1 (Page 3 of 6)

2.2 Monitoring Well Installation

One monitoring well (MW-3) was installed on 19 October 1992 to confirm that water on the site has not been contaminated. The monitoring well location is shown in Figure 2. The well was installed in the former tank excavation. The boring was advanced to 12.5 feet, at which time the natural clay strata was encountered. This boring was sampled every 2.5 feet, and all samples were field screened with a PID. No readings were detected. Refer to Appendix A for the PID readings and Soil Boring Logs.

The monitoring well was constructed of 2 inch I.D., Schedule 40, PVC well casing (riser) and well screen. The five foot screen was installed from 5.0 to 10.0 feet below grade. The annular space between the PVC well screen and the boring wall was backfilled with coarse silica sand. The filter pack was extended from the bottom of the boring to approximately one foot above the top of the well screen. A one foot thick seal of granular bentonite was installed in the annular space immediately above the sand pack. The remaining annular space was filled with grout.

No ground water was encountered during the installation of MW-3 on 19 October 1992. No water was found in MW-3 on 21 October 1992 when an attempt to develop the well was performed. A final attempt to develop MW-3 was made on 27 October 1992; however, the well was still dry. On 17 November 1992, National Environmental Testing, Inc. (NET) sampled MW-1 and MW-2 (previously installed wells that were not destroyed during excavation of the tanks). NET noted that MW-3 was still dry.

3.0 SUBSURFACE CONDITION

On-site Boring Logs, presented in Appendix A, indicated that the near surface geology below the concrete consists of sandy fill to depths from 4.5 feet in SB-1 to 11.1 feet in SB-2. Beneath the sandy fill is a layer of clay, which extends to the completion depths of the borings.

.....continued

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
General Motors Corporation
30001 Van Dyke Avenue
Warren, Michigan 48090-9020

REMEDIAL INVESTIGATION REPORT

CPC NORTH FACILITY
LABORATORY TANK FARM
895 JOSLYN AVENUE
PONTIAC, MICHIGAN

Testing Engineers & Consultants, Inc.
P.O. Box 249
1333 Rochester Road
Troy, Michigan 48099
(313) 588-6200 or Dial (313) T-E-S-T-I-N-G

Date Issued: 18 February 1991
Date Reissued: 03 April 1991

Testing Engineers & Consultants, Inc.

CPC Group Headquarters
Mr. Dallas Geisler
05 January 1993

TEC Report Number: 26217-1 (Page 2 of 6)

2.0 FIELD ACTIVITIES

2.1 Soil Borings

Two soil borings (SB-1 and SB-2) were performed at the previous sampling locations BS2 and EW2 (TEC Report Number 22166) to verify that the two areas are not impacted by BTEX above Type B levels. See Figure 2 for the soil boring locations. The borings were terminated at a depth of 20.0 feet according to TEC's workplan. Ground water was not encountered in either of the borings.

All of the borings were drilled with a CME-45 truck-mounted drill rig using 3 1/4 inch inside diameter (I.D) hollow-stem augers. The augers and associated drilling equipment were decontaminated using a steam cleaner prior to the initiation of drilling and between each boring.

During drilling activities, soil samples were collected with a 2 inch outside diameter (O.D.) split-spoon sampler at 2.5 or 5.0 foot intervals to the completion depth of the boring. The collected samples were immediately placed in precleaned jars with Teflon lids, and then transported to TEC's laboratory. The split-spoon sampler, sample extraction implements, and any equipment which came in contact with the samples were decontaminated using the following standard procedure: 1) Alconox detergent solution wash; 2) tap water rinse; 3) Methanol rinse; and 4) deionized water rinse.

Upon collection, the samples were field screened with an HNU Photoionization Detector (PID) for the presence of organic vapors and other trace gases. The HNU PID is a trace gas analyzer which has a detection limit range of approximately 1.0 to 2,000 parts per million (ppm). Trace gases (2.0 ppm) were detected in the 12.5 foot sample collected from SB-2. The remaining samples did not indicate the presence of trace gases. The results of the field analysis are presented in Appendix A (Soil Boring Logs).

.....continued



Testing Engineers & Consultants, Inc.

P.O. Box 249 • 1333 Rochester Road • Troy, Michigan 48099

313-588-6200 or Dial 313-T-E-S-T-I-N-G

Fax 313-588-6232

TEC Report Number: 22166-1
Date Issued: 18 February 1991
Date Reissued: 03 April 1991

CPC Group Headquarters
General Motors Corporation
30001 Van Dyke Avenue
Warren, Michigan 48090-9020

Attention: Mr. Mark Hoffman

Re: Remedial Investigation Report;
CPC North Facility,
Laboratory Tank Farm,
895 Joslyn Avenue,
Pontiac, Michigan

Dear Mr. Hoffman:

Testing Engineers & Consultants, Inc. has completed the soil borings and sampling of the soil surrounding the former Laboratory Tank Farm at the CPC North Facility. The attached document summarizes the field work completed 25 January 1991 and contains the project specifications, including results of the field sampling and laboratory analysis.

We are pleased to provide this service. Should you have any questions or desire further information, please do not hesitate to contact this office at your earliest convenience.

Respectfully submitted,

TESTING ENGINEERS & CONSULTANTS, INC.

Frederick G. Roeser
Project Geologist

Gerald M. Belian, P.E.
Executive Vice President

FGR/GMB/dz
Enclosure



All services undertaken subject to the following general policy. Reports are submitted for exclusive use of the clients to whom they are addressed. Their significance is subject to the adequacy and representative character of the samples and to the comprehensiveness of the tests, examinations and surveys made. No quotations from reports or use of TEC's name is permitted except as expressly authorized by TEC in writing.

CONSULTING ENGINEERS & FULL-SERVICE PROFESSIONAL TESTING AND INSPECTION

OFFICES IN ANN ARBOR, DETROIT, FLINT, LANSING, AND TROY
TEC Subsidiary: American Testing Laboratories, Inc. (ATL), Orlando, Florida



Testing Engineers & Consultants, Inc.

CPC Group Headquarters
Mr. Dallas Geisler
05 January 1993

TEC Report Number: 26217-1 (Page 1 of 6)

1.0 INTRODUCTION

Testing Engineers & Consultants, Inc. (TEC) was retained by Mr. Dallas Geisler, of the CPC Group Headquarters - General Motors Corporation, to perform a Site Investigation at the CPC North Facility in Pontiac, Michigan. See Figure 1 for a Site Location Map.

As discussed in TEC's Workplan (TEC Report Number 22166-WP), this Site Investigation was requested by the Michigan Department of Natural Resource (MDNR). The MDNR recommended a Hydrogeological Study to confirm that ground water has not been impacted by the former underground storage tanks (USTs) on the site. The MDNR also suggested soil borings in two areas (Figure 2) to determine whether the two areas are impacted by benzene, toluene, ethylbenzene, and xylenes (BTEXs) above Type B levels.

This investigation included one permanent monitoring well and two soil borings in accordance with our workplan. The investigation also included water and soil sample collection and laboratory analysis.

The information contained in this report has been based upon presently accepted practices in assessing potentially contaminated soil and ground water. The regulations governing soil compounds and required "cleanup" levels where contaminants are present, are currently being developed by federal, state, county, and various regional authorities. Further evolution of standards, guidelines, and enforcement responsibility is anticipated, which may alter currently accepted practices. Changes in the present guidelines may require further expenditures for "cleanup" or additional exploration as result of previously existing conditions.

.....continued

TABLE OF CONTENTS

	<u>Page</u>
1.0 PURPOSE	1
2.0 SITE LOCATION	1
3.0 BACKGROUND	2
4.0 SOIL BORINGS	3
5.0 LABORATORY ANALYSIS	3
6.0 SUMMARY	4

List of Figures and Appendices

FIGURE 1 - SITE LOCATION MAP

FIGURE 2 - BORING LOCATION DIAGRAM

APPENDIX A - FIELD PROCEDURES

A-1

APPENDIX B - SOIL BORING LOGS

B-1 TO B-8

APPENDIX C - LABORATORY RESULTS

C-1 TO C-19

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION.....	1
2.0 FIELD ACTIVITIES.....	2
2.1 Soil Borings.....	2
2.2 Monitoring Well Installation.....	3
3.0 SUBSURFACE CONDITION.....	3
4.0 LABORATORY ANALYSIS OF SOIL.....	4
5.0 LABORATORY ANALYSIS OF WATER.....	4
6.0 DISCUSSION OF SOILS.....	4
7.0 DISCUSSION OF WATER.....	5
8.0 SUMMARY.....	6
9.0 RECOMMENDATION.....	6
FIGURE 1 - SITE LOCATION MAP	
FIGURE 2 - BORING AND WELL LOCATION MAP	
FIGURE 3 - CROSS SECTION MAP	
APPENDIX A - SOIL BORING LOGS.....	A-1 TO A-3
APPENDIX B - LABORATORY RESULTS.....	B-1 TO B-16

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
18 February 1991

TEC Report Number: 22166-1 (Page 1 of 5)

1.0 PURPOSE

Testing Engineers & Consultants, Inc. was retained by the General Motors Corporation, Chevrolet-Pontiac-Canada (CPC) Group, to provide the necessary remedial investigation by conducting soil borings and sampling the soils surrounding an area where seven gasoline underground storage tanks (USTs) were formally located. The tanks of the Laboratory Tank Farm, CPC Pontiac North Facility, located at 895 Joslyn Road in Pontiac, Michigan, were removed in September of 1990. The removal activities are documented in TEC Report Number 21278-1.

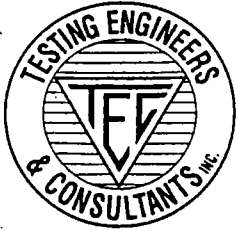
The purpose of this investigation was to examine the soils surrounding the UST area and determine if any contamination was present. All soil samples from the borings were field screened for volatile components. Selected soil samples were submitted to TEC's in-house laboratory for chemical analysis.

This document summarizes the field work and associated analytical data completed as of 25 January 1991.

2.0 SITE LOCATION

The site is located at 895 Joslyn Avenue in Pontiac, Michigan. The UST excavation area (tank farm) was located adjacent to the south wall of the Engine Test Laboratory. Please refer to Figure 1 for a Site Location Map.

.....continued



Testing Engineers & Consultants, Inc.

1333 Rochester Road • P.O. Box 249 • Troy, Michigan 48099-0249
313-588-6200 or Dial 313-T-E-S-T-I-N-G
Fax 313-588-6232

TEC Workplan Number: 26217-1
Date Issued: 05 January 1993

CPC Group Headquarters
General Motors Corporation
One Pontiac Plaza
Pontiac, Michigan 48340
Mail Code 4915

Attention: Mr. Dallas Geisler

Re: Site Investigation;
CPC North Facility,
Laboratory Tank Farm,
895 Joslyn Avenue,
Pontiac, Michigan

Dear Mr. Geisler:

Testing Engineers & Consultants, Inc. has completed the Site Investigation at the above referenced site. Our findings and recommendation are enclosed in the following report.

We are pleased to provide this service. Should you have any questions or desire further information, please do not hesitate to contact this office at your earliest convenience.

Respectfully submitted,

TESTING ENGINEERS & CONSULTANTS, INC.

Frederick G. Roeser
Project Hydrogeologist

Gerald M. Belian, P.E.
Executive Vice President

FGR/GMB/mc
Enclosures

Copyright 1993 Testing Engineers & Consultants, Inc. All Rights Reserved.

All services undertaken subject to the following policy. Reports are submitted for exclusive use of the clients to whom they are addressed. Their significance is subject to the adequacy and representative character of the samples and to the comprehensiveness of the tests, examinations and surveys made. No quotations from reports or use of TEC's name is permitted except as expressly authorized by TEC in writing.

CONSULTING ENGINEERS & FULL-SERVICE PROFESSIONAL TESTING AND INSPECTION

OFFICES IN ANN ARBOR, DETROIT, FLINT, LANSING, AND TROY
TEC Subsidiary: American Testing Laboratories, Inc. (ATL), Orlando, Florida

1991
25th
ANNIVERSARY

CPC Group Headquarters
Mr. Mark Hoffman
18 February 1991

TEC Report Number: 22166-1 (Page 2 of 5)

3.0 BACKGROUND

The land usage of the site under investigation is classified as industrial. The site had possible soil contamination resulting from USTs formally utilized on the property. According to the Underground Storage Tank Removal Monitoring Report issued by TEC on 06 December 1990, excavation of the immediate area around the tanks was performed. Subsequent sampling indicated that benzene was still present in the soils located on the northeast wall and south bottom (just south of Tank F).

Two monitoring wells are located just to the south of the UST area and have been monitored by TEC.

The subject site is located in Oakland County, Michigan, which experiences an average winter temperature of 25.3 degrees F. The average seasonal snowfall is 34.6 inches, and the sun shines 38 percent of the time during the winter season. The average summer temperature is 70.2 degrees F, with 58 percent of the annual precipitation occurring between the months of April and September. During the summer season, the sun shines 67 percent of the time. The relative humidity for Oakland County is 80 percent with the prevailing wind coming from the southwest (Feenstra, 1982).

The site geology consists of a nearly level glacial lake plain. The depth to bedrock is approximately 300 feet. There are no known records of water wells within a half mile radius of the subject site according to Gary Frick, R.S., M.P.H., Environmental Health Services Supervisor, Oakland County Environmental Health Department.

.....continued

Testing Engineers & Consultants, Inc.

CPC Group Headquarters
General Motors Corporation
One Pontiac Plaza
Pontiac, Michigan 48340
Mail Code 4915

SITE INVESTIGATION
CPC NORTH FACILITY
LABORATORY TANK FARM

895 JOSLYN AVENUE
PONTIAC, MICHIGAN

Testing Engineers & Consultants, Inc.
P.O. Box 249
1333 Rochester Road
Troy, Michigan 48083-6015
(313) 588-6200 or Dial (313) T-E-S-T-I-N-G

05 January 1993

CPC Group Headquarters
Mr. Mark Hoffman
18 February 1991

TEC Report Number: 22166-1 (Page 3 of 5)

4.0 SOIL BORINGS

A total of eight soil borings were completed to a depth of 20.0 feet on the subject site. Appendix B contains detailed boring logs. The soil borings were placed adjacent to the former UST area to determine if the surrounding soils had been impacted by the presence of former USTs. A detailed description of the field procedures can be found in Appendix A.

Field screening of the samples indicated elevated levels of volatile organics in one sample. The 7.5 foot sample in boring SB-2 produced a reading of 60 parts per million (ppm) on the HNU Photo-ionizer.

5.0 LABORATORY ANALYSIS

A total of 16 discrete samples were submitted for chemical testing by TEC's in-house laboratory. The samples were analyzed for Aromatic Volatile Organics (AVOs, EPA Method 8020). Two samples from each of the eight borings were tested. Sample depths for chemical testing were chosen to assist in the detection of possible contamination. None of the samples produced detectable levels of AVOs, including the sample which had produced a reading on the HNU during field screening. Laboratory results can be found in Appendix C.

Ground water samples for the two monitoring wells were tested in TEC's laboratory for AVOs. Neither of the wells have produced detectable levels of AVOs in multiple sampling events. The most recent laboratory results can be found in Appendix C.

.....continued

CPC Group Headquarters
Mr. Mark Hoffman
18 February 1991

TEC Report Number: 22166-1 (Page 4 of 5)

6.0 SUMMARY

Testing Engineers & Consultants, Inc. has completed the soil borings and sampling of the soils surrounding the former location of seven gasoline USTs at the CPC North Facility, Laboratory Tank Farm. Field screening, utilizing an HNU Photo-ionizer, detected volatiles in the black sand found in the 7.5 foot sample of boring SB-2. However, analytic testing of the sand produced non-detectable levels of AVOs. Chemical testing of the remainder of the samples produced no detectable levels of AVOs.

In the opinion of TEC, there are still some minor pockets of contamination remaining around the edges of the former tank farm. This investigation determined that there was no contamination associated with the southern and eastern pipe runs. No ground water was encountered during the investigation, and the monitoring wells which are located south of the excavation confirm that there is no ground water contamination. The contamination that remained from the original excavation does not appear to have migrated into the natural soils. The contamination found in samples WW1, BN1, and WW2 (Report Number 21278-1) were well below Type B criteria, and soil borings verified that this contamination has not migrated. Samples BS2 and EW2 did have levels of Benzene slightly above Type B criteria. However, surrounding samples and subsequent soil borings indicated that these contaminated soils are limited in areal and vertical extent. Therefore, due to the fact that there is a stiff clay separating the remaining minor amounts of soil contamination from

.....continued

V-3

CPC Group Headquarters
Mr. Mark Hoffman
18 February 1991

TEC Report Number: 22166-1 (Page 5 of 5)

6.0 SUMMARY (Cont'd)

the ground water table, and the fact that the entire area is covered with asphalt and concrete, eliminating surface water or air contamination, this site is recommended by TEC to be accepted for Type B closure.

The information contained in this report has been based on presently accepted practices in assessing potentially affected soil and ground water contamination. The regulations governing soil contamination issues, including action levels for various chemical compounds and required "cleanup" levels where contaminants are present, are presently being developed by federal, state, county, and various other regional authorities. Further, evolution of standards and guidelines and enforcement responsibility is anticipated, which may alter currently accepted practices. Changes in the present guidelines may require further expenditures for "cleanup" or additional exploration as a result of previously existing conditions.

This report, documenting the remediation investigation, should be forwarded to the MDNR - Livonia Office, and the Michigan State Fire Marshal's office for their records.

* * * *

This is a detailed street map of the Perry Park area in Chicago, Illinois. The map shows a grid of streets including Columbia Ave, Water St, Madison Ave, Lenox Ave, and Perry Mount Park. Key landmarks such as the Church of God, Markim Sch, Lee Park, and the Perry Mount Cemetery are labeled. The map also shows various schools like McCarrall Sch, Oliver Playground, and St. Michael's Sch. The area is bounded by the city limits on the right and the Lake Michigan shoreline at the bottom.

CPC PONTIAC NORTH :

CONTOUR INTERVAL 10 FEET
DASH IS MEAN SEA LEVEL

REPORT: 18721

DATE: 22 AUGUST 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST MONITORING

TEC LAB ID #: 23475

SAMPLE DESCRIPTION: MONITORING WELL #1; AUGUST EVENT

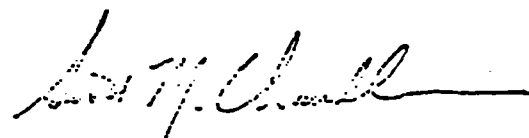
Aromatic Volatile Organics in Groundwater 1

<u>COMPOUND</u>	<u>CONCENTRATION (ug/L)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/L = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott Chandler, IHIT
Laboratory Director

CPC PONTIAC LABORATORY TANK FARM

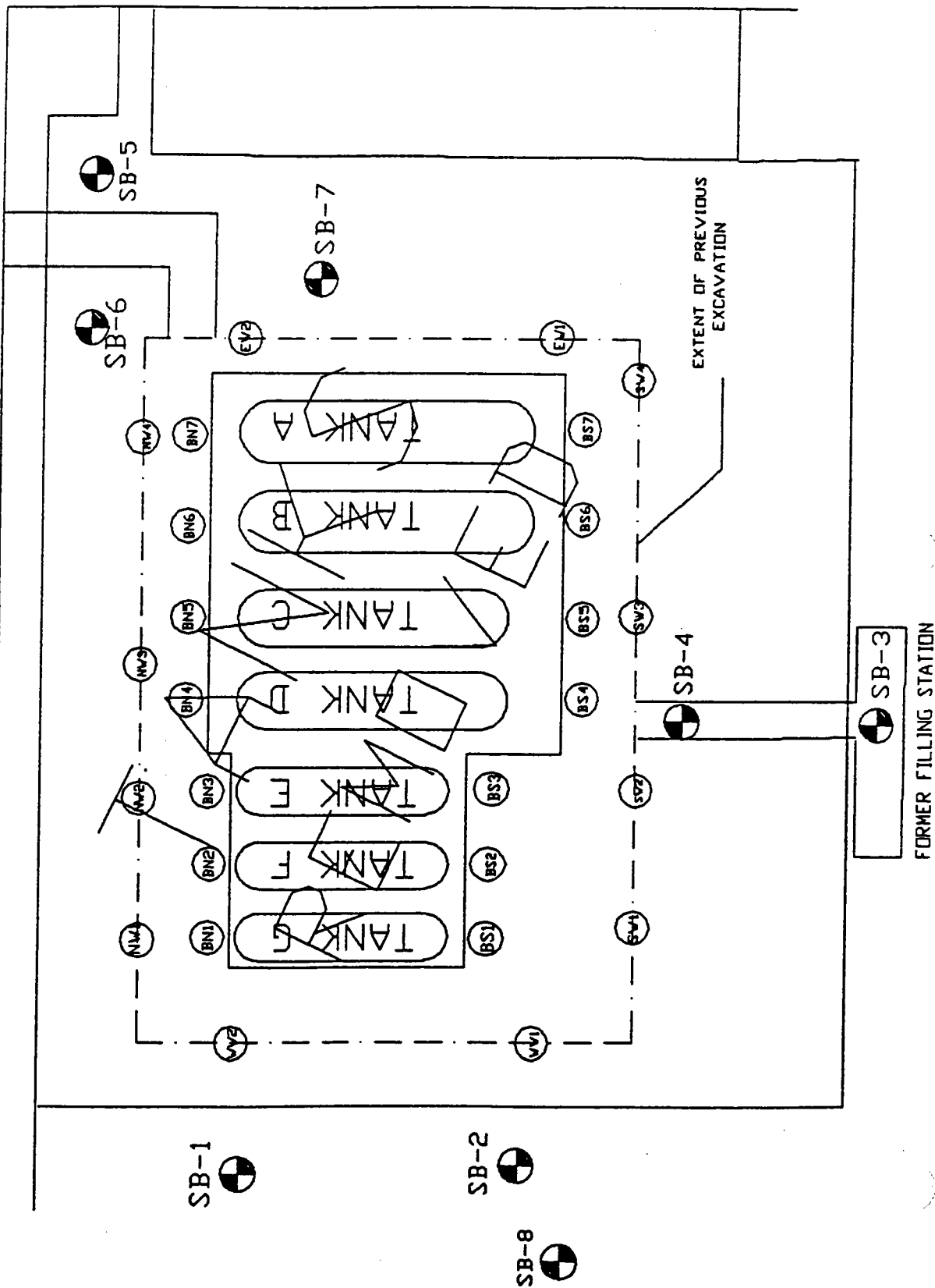


FIGURE 2

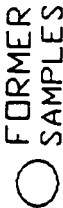
LEGEND



BORINGS



NORTH



FORMER
SAMPLES

REPORT: 18721

DATE: 22 AUGUST 1990

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: UST MONITORING

TEC LAB ID #: 23476

SAMPLE DESCRIPTION: MONITORING WELL #2; AUGUST EVENT

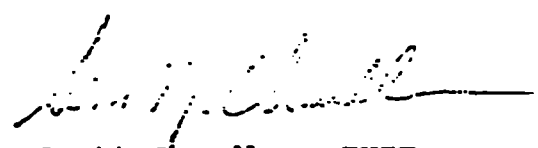
Aromatic Volatile Organics in Groundwater 1

<u>COMPOUND</u>	<u>CONCENTRATION (ug/L)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

ug/L = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott Chandler, IHIT
Laboratory Director

APPENDIX A
FIELD PROCEDURES

REPORT: 22166

DATE: 7 FEBRUARY 1991

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: SOIL CONTAMINATION EVALUATION

TEC LAB ID #: 25718

SAMPLE DESCRIPTION: SOIL BORING #8 @ 10.0' BLUE BROWN SANDY CLAY

Aromatic Volatile Organics in Soil 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 12.7%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.


Scott M. Chandler, CIH
Laboratory Director

CPC Group Headquarters
Mr. Mark Hoffman
18 February 1991

TEC Report Number: 22166-1 (Page A-1)

FIELD PROCEDURES

All soil borings were conducted using hollow-stem augers advanced by a truck-mounted rotary-type drilling rig. Soil samples were collected by the use of a split-spoon sampler driven into undisturbed strata using the Standard Penetration Test (ASTM Standard D-1586). Samples were collected every 2.5 feet to a depth of 10.0 feet, and then every 5.0 feet to the end of the boring. Soil samples were classified in the field in accordance with the Unified Soil Classification System.

Strict environmental protocol was adhered to during all drilling and sampling operations. This protocol included steam cleaning the augers prior to each boring. Before each soil sample, the split-spoon sampler was washed with Alconox detergent, rinsed with Methanol, and then rinsed with de-ionized water.

As the split-spoon sampler was opened for soil collection, a HNU Photo-ionizer was used to screen the soil for organic vapors. Soil samples were collected in pre-cleaned glass jars with Teflon-lined lids. Samples were immediately placed in a cooler until delivered to TEC's in-house laboratory. Standard chain of custody procedures were followed throughout the handling of the samples.

The borings were backfilled with natural soils and sealed with either concrete or asphalt patch.

REPORT: 22166

DATE: 7 FEBRUARY 1991

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: SOIL CONTAMINATION EVALUATION

TEC LAB ID #: 25717

SAMPLE DESCRIPTION: SOIL BORING #8 @ 5.0' BLUE BROWN SANDY CLAY

Aromatic Volatile Organics in Soil 1

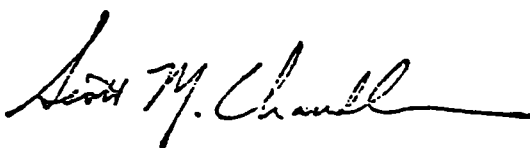
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 9.5%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.


Scott M. Chandler, CIH
Laboratory Director

APPENDIX B
SOIL BORING LOGS

REPORT: 22166

DATE: 7 FEBRUARY 1991

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: SOIL CONTAMINATION EVALUATION

TEC LAB ID #: 25716

SAMPLE DESCRIPTION: SOIL BORING #7 @ 15.0' BLUE CLAY

Aromatic Volatile Organics in Soil 1

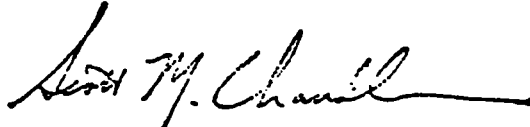
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 12.5%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.


Scott M. Chandler, CIH
Laboratory Director



TESTING ENGINEERS & CONSULTANTS, INC.

P.O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 — 588-6200



soil borings

soil evaluation

foundation investigation

instrumentation

BORING NO. # 1 JOB NO. 22166 PROJECT CPC PONTIAC LABORATORY TANK FARM
Ground Surface (Elev.) _____
Datum _____
CLIENT CPC Headquarters Location Pontiac, Michigan
Started: 24 January 1991 Completed 25 January 1991
Driller: B. Howey

DEPTH IN FEET	SAMPLE TYPE	"N"	STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
		7	6"	ASPHALT			
	SS	7		Brown & Blue Mottled Clay-FILL			
		6					
		4					
	SS	3					
		2					
5--		2					
	SS	3	6'0"				
		2	6'6"	Black SAND			
				Blue & Brown Variegated CLAY			
		4					
	SS	7					
		10					
10--		3					
	SS	4					
		6					
			12'6"				
	SS	3		Moist Blue CLAY			
		4					
		9					
15--							
		4					
	SS	8					
		10					
20--			20'0"				
				END OF BORING			
25--							

"N" - Standard Penetration Resistance
S.S. - 2" O.D. Split Spoon Sample
L.S. - Sectional Liner Sample
S.T. - Shelby Tube Sample
B.S. - Bottle Sample

d - Natural Density-lbs. cu. ft.
'H-N' - Housel Penetration Resistance
H.S. - Housel Sample
q_u - Unconfined Compression lbs. sq. ft.
w - H₂O% of dry weight

WATER ENCOUNTERED None
AT COMPLETION None

Boring No. 1/ln

REPORT: 22166

DATE: 7 FEBRUARY 1991

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: SOIL CONTAMINATION EVALUATION

TEC LAB ID #: 25757

SAMPLE DESCRIPTION: SOIL BORING #7 @ 5.0' BLACK SAND AND CLAY

Aromatic Volatile Organics in Soil 1

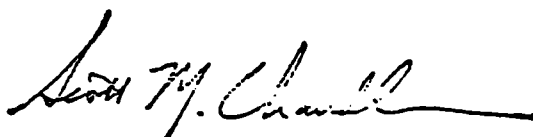
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 8.3%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.


Scott M. Chandler, CIH
Laboratory Director



TESTING ENGINEERS & CONSULTANTS, INC.

P.O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 — 588-6200



soil borings

soil evaluation

foundation investigation

instrumentation

BORING NO. # 2 JOB NO. 22166 PROJECT CPC PONTIAC LABORATORY TANK FARM
Ground Surface (Elev.) _____
Datum _____
CLIENT CPC Headquarters Location Pontiac, Michigan
Started: 24 January 1991 Completed 25 January 1991
Driller: B. Howey

DEPTH IN FEET	SAMPLE TYPE	"N"	STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
		7	6"	ASPHALT			
	SS	9		Brown & Blue Mottled Clay-FILL			
		10					
		4					
	SS	5					
		3					
5---		2					
	SS	3	6'0"	Black SAND			
		2					
		4					
	SS	9	9'0"	Blue & Brown Variegated CLAY			
		11					
10---		5					
	SS	8					
		10					
		3	12'6"	Moist Blue CLAY			
	SS	4					
		9					
15---							
		5					
	SS	9					
		10					
20---			20'0"	END OF BORING			
25---							

"N" - Standard Penetration Resistance
S.S. - 2" O.D. Split Spoon Sample
L.S. - Sectional Liner Sample
S.T. - Shelby Tube Sample
B.S. - Bottle Sample

d - Natural Density-lbs. cu. ft.
'H-N' - Housel Penetration Resistance
H.S. - Housel Sample
q_u - Unconfined Compression lbs. sq. ft.
w - % of dry weight

WATER ENCOUNTERED None
AT COMPLETION None

Boring No. 2/ln

REPORT: 22166

DATE: 7 FEBRUARY 1991

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: SOIL CONTAMINATION EVALUATION

TEC LAB ID #: 25714

SAMPLE DESCRIPTION: SOIL BORING #6 @ 15.0' BLUE CLAY

Aromatic Volatile Organics in Soil 1

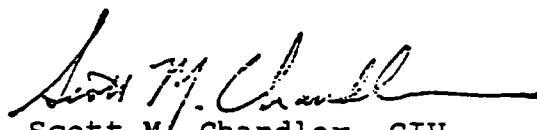
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 12.2%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.


Scott M. Chandler, CIH
Laboratory Director



TESTING ENGINEERS & CONSULTANTS, INC.

P.O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 — 588-6200



soil borings

soil evaluation

foundation investigation

instrumentation

BORING NO. # 3 JOB NO. 22166 PROJECT CPC PONTIAC LABORATORY TANK FARM
Ground Surface (Elev.) _____
Datum _____
CLIENT CPC Headquarters Location Pontiac, Michigan
Started: 24 January 1991 Completed 25 January 1991
Driller: B. Howey

DEPTH IN FEET	SAMPLE TYPE	"N"	STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
			6"	CONCRETE			
	SS	7 4 6		Brown & Blue Clay-FILL			
		4 3 2					
5--	SS	2 2 2	5'0"	Blue & Brown CLAY With Pebbles			
		4 8 10					
10--	SS	4 5 6	11'0"	Blue CLAY			
		2 5 10					
15--							
	SS	5 10 10					
20--			20'0"	END OF BORING			
25--							

"N" - Standard Penetration Resistance
S.S. - 2" O.D. Split Spoon Sample
L.S. - Sectional Liner Sample
S.T. - Shelby Tube Sample
B.S. - Bottle Sample

d - Natural Density-lbs. cu. ft.
'H-N' - Housel Penetration Resistance
H.S. - Housel Sample
q_u - Unconfined Compression lbs. sq. ft.
w - H₂O% of dry weight

WATER ENCOUNTERED None
AT COMPLETION None

Boring No. 3/1n

REPORT: 22166

DATE: 7 FEBRUARY 1991

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: SOIL CONTAMINATION EVALUATION

TEC LAB ID #: 25713

SAMPLE DESCRIPTION: SOIL BORING #6 @ 5.0' BLACK SAND

Aromatic Volatile Organics in Soil 1

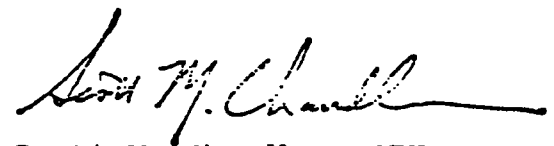
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 10.5%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott M. Chandler, CIH
Laboratory Director



TESTING ENGINEERS & CONSULTANTS, INC.
P.O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 — 588-6200



soil borings soil evaluation foundation investigation instrumentation

BORING NO. # 4 JOB NO. 22166 PROJECT CPC PONTIAC LABORATORY TANK FARM
Ground Surface (Elev.) _____
Datum _____
CLIENT CPC Headquarters Location Pontiac, Michigan
Started: 24 January 1991 Completed 25 January 1991
Driller: B. Howey

DEPTH IN FEET	SAMPLE TYPE	"N"	STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
		6	6"	CONCRETE			
	SS	6		Black FILL Sand With Very Sandy Blue Clay			
		6					
		4					
	SS	5					
		2					
5--			5'0"				
		5		Very Sandy Brown CLAY			
	SS	10					
		10					
			7'6"				
		4		Blue & Brown Variegated CLAY			
	SS	8					
		8					
10--							
		4					
	SS	6					
		5					
			12'6"				
	SS	4		Blue CLAY			
		5					
		11					
15--							
		4					
	SS	8					
		14					
20--			20'0"				
				END OF BORING			
25--							

"N" - Standard Penetration Resistance
S.S. - 2" O.D. Split Spoon Sample
L.S. - Sectional Liner Sample
S.T. - Shelby Tube Sample
B.S. - Bottle Sample

d - Natural Density-lbs. cu. ft.
'H-N' - Housel Penetration Resistance
H.S. - Housel Sample
q_u - Unconfined Compression lbs. sq. ft.
w_u - H₂O% of dry weight

WATER ENCOUNTERED None
AT COMPLETION None

Boring No. 4/Ln

REPORT: 22166

DATE: 7 FEBRUARY 1991

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: SOIL CONTAMINATION EVALUATION

TEC LAB ID #: 25712

SAMPLE DESCRIPTION: SOIL BORING #5 @ 15.0' BLUE CLAY

Aromatic Volatile Organics in Soil 1

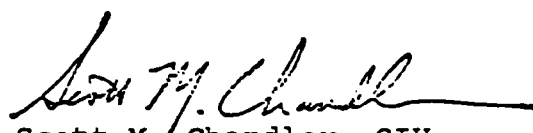
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 16.2%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.


Scott M. Chandler, CIH
Laboratory Director



TESTING ENGINEERS & CONSULTANTS, INC.

P.O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 — 588-6200



soil borings

soil evaluation

foundation investigation

instrumentation

BORING NO. # 5 JOB NO. 22166 PROJECT CPC PONTIAC LABORATORY TANK FARM

Ground Surface (Elev.) _____

Datum _____

CLIENT CPC Headquarters Location Pontiac, Michigan

Started: 24 January 1991 Completed 25 January 1991

Driller: B. Howey

DEPTH IN FEET	SAMPLE TYPE	"N"	STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
		7	6"	CONCRETE			
	SS	7		Brown & Blue Clay-FILL			
		6					
		4					
		3					
	SS	2	4'6"				
5--		2		Black SAND			
		4	6'0"				
	SS	2		Black Sandy CLAY			
		4					
		8					
	SS	8	9'0"				
10--				Brown & Blue Variegated CLAY			
		3					
		4					
	SS	6					
		5	13'0"				
		4		Blue CLAY			
		9					
15--							
		5					
		5					
	SS	10					
20--			20'0"				
				END OF BORING			
25--							

"N" - Standard Penetration Resistance
S.S. - 2" O.D. Split Spoon Sample
L.S. - Sectional Liner Sample
S.T. - Shelby Tube Sample
B.S. - Bottle Sample

d - Natural Density-lbs. cu. ft.
'H-N' - Housel Penetration Resistance
H.S. - Housel Sample
q_u - Unconfined Compression lbs. sq. ft.
w - H₂O of dry weight

WATER ENCOUNTERED None
AT COMPLETION None

Boring No. 5/ln

REPORT: 22166

DATE: 7 FEBRUARY 1991

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: SOIL CONTAMINATION EVALUATION

TEC LAB ID #: 25711

SAMPLE DESCRIPTION: SOIL BORING #5 @ 5.0' BLACK SAND AND CLAY

Aromatic Volatile Organics in Soil 1

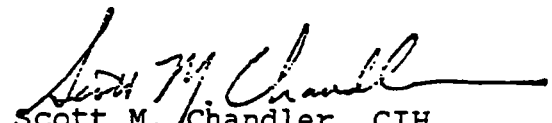
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 11.5%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.


Scott M. Chandler, CIH
Laboratory Director



TESTING ENGINEERS & CONSULTANTS, INC.

P.O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 — 588-6200



soil borings

soil evaluation

foundation investigation

instrumentation

BORING NO. # 6 JOB NO. 22166 PROJECT CPC PONTIAC LABORATORY TANK FARM
Ground Surface (Elev.) _____
Datum _____
CLIENT CPC Headquarters Location Pontiac, Michigan
Started: 24 January 1991 Completed 25 January 1991
Driller: B. Howey

DEPTH IN FEET	SAMPLE TYPE	"N"	STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
		7	6"	CONCRETE			
	SS	2		Blue & Brown Clay-FILL			
		6					
		4					
	SS	5					
		1					
5			5'0"	Black SAND			
	SS	3					
		3					
		3	7'0"	CLAY With Brick & Black Sand			
		5					
	SS	7					
		9	9'6"	Blue & Brown Variegated CLAY			
10		2					
	SS	8					
		4					
		6					
	SS	9					
		7					
15			15'0"	Blue CLAY			
		5					
	SS	6					
		4					
20			20'0"	END OF BORING			
25							

"N" - Standard Penetration Resistance
S.S. - 2" O.D. Split Spoon Sample
L.S. - Sectional Liner Sample
S.T. - Shelby Tube Sample
B.S. - Bottle Sample

d - Natural Density-lbs. cu. ft.
"H-N" - Housel Penetration Resistance
H.S. - Housel Sample
q_u - Unconfined Compression lbs. sq. ft.
w - % of dry weight

WATER ENCOUNTERED None
AT COMPLETION None

Boring No. 6/ln

REPORT: 22166

DATE: 7 FEBRUARY 1991

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: SOIL CONTAMINATION EVALUATION

TEC LAB ID #: 25710

SAMPLE DESCRIPTION: SOIL BORING #4 @ 10.0' BLUE BROWN SANDY CLAY

Aromatic Volatile Organics in Soil 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 9.9%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.


Scott M. Chandler, CIH
Laboratory Director



TESTING ENGINEERS & CONSULTANTS, INC.

P.O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 — 588-6200



soil borings : soil evaluation foundation investigation instrumentation

BORING NO. # 7 JOB NO. 22166 PROJECT CPC PONTIAC LABORATORY TANK FARM
Ground Surface (Elev.) _____
Datum _____
CLIENT CPC Headquarters Location Pontiac, Michigan
Started: 24 January 1991 Completed 25 January 1991
Driller: B. Howey

DEPTH IN FEET	SAMPLE TYPE	"N"	STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
			6"	CONCRETE			
	SS	7 7 6		Black & Brown Clay-FILL			
		8 2 9					
5	SS	3 4 2	5'0"	Black SAND			
		9 2 9	7'0"	Blue & Brown Variegated CLAY			
10	SS	5 4 5					
	SS	6 6 6					
15			15'0"	Blue CLAY			
	SS	8 8 10					
20			20'0"	END OF BORING			
25							

"N" - Standard Penetration Resistance
S.S. - 2" O.D. Split Spoon Sample
L.S. - Sectional Liner Sample
S.T. - Shelby Tube Sample
B.S. - Bottle Sample

d - Natural Density-lbs. cu. ft.
'N-N' - Housel Penetration Resistance
H.S. - Housel Sample
q_u - Unconfined Compression lbs. sq. ft.
w - % of dry weight

WATER ENCOUNTERED None
AT COMPLETION None

Boring No. 7/ln

REPORT: 22166

DATE: 7 FEBRUARY 1991

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: SOIL CONTAMINATION EVALUATION

TEC LAB ID #: 25709

SAMPLE DESCRIPTION: SOIL BORING #4 @ 2.5' BLACK SAND AND CLAY

Aromatic Volatile Organics in Soil 1

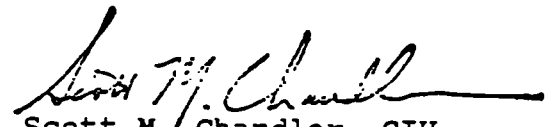
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 9.1%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.


Scott M. Chandler, CIH
Laboratory Director



TESTING ENGINEERS & CONSULTANTS, INC.

P.O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 — 588-6200



B-8

soil borings

soil evaluation

foundation investigation

instrumentation

BORING NO. # 8	JOB NO. 22166	PROJECT CPC PONTIAC LABORATORY TANK FARM
Ground Surface (Elev.)		
Datum		
CLIENT CPC Headquarters	Location Pontiac, Michigan	
	Started: 26 January 1991	Completed 25 January 1991
	Driller: B. Howey	

DEPTH IN FEET	SAMPLE TYPE	"N"	STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
		7	6"	CONCRETE			
	SS	7		Brown & Blue Sandy Clay-FILL			
		6					
		6					
	SS	8					
		9	4'6"				
5---		4		Brown & Blue Variegated CLAY			
	SS	2					
		3					
		5					
	SS	7					
		9					
10---			10'0"	END OF BORING			
15---							
20---							
25---							

"N" - Standard Penetration Resistance
S.S. - 2" O.D. Split Spoon Sample
L.S. - Sectional Liner Sample
S.T. - Shelby Tube Sample
B.S. - Bottle Sample

d - Natural Density-lbs. cu. ft.
'H-N' - Housel Penetration Resistance
H.S. - Housel Sample
q_u - Unconfined Compression lbs. sq. ft.
w - H₂O% of dry weight

WATER ENCOUNTERED None
AT COMPLETION None

Boring No. 8/ln

REPORT: 22166

DATE: 7 FEBRUARY 1991

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: SOIL CONTAMINATION EVALUATION

TEC LAB ID #: 25708

SAMPLE DESCRIPTION: SOIL BORING #3 @ 15.0' BLUE CLAY

Aromatic Volatile Organics in Soil 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 13.6%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.


Scott M. Chandler, CIH
Laboratory Director

APPENDIX C
LABORATORY RESULTS

REPORT: 22166

DATE: 7 FEBRUARY 1991

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: SOIL CONTAMINATION EVALUATION

TEC LAB ID #: 25707

SAMPLE DESCRIPTION: SOIL BORING #3 @ 5.0' BROWN BLUE SANDY CLAY

Aromatic Volatile Organics in Soil 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 10.3%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.


Scott M. Chandler, CIH
Laboratory Director

REPORT: 22166

DATE: 7 FEBRUARY 1991

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: SOIL CONTAMINATION EVALUATION

SAMPLE IDENTIFICATION

<u>TEC LAB ID #</u>	<u>SAMPLE DESCRIPTION</u>
25703	Soil Boring #1 @ 5.0' Sandy Clay Fill
25704	Soil Boring #1 @ 12.5' Blue Clay
25705	Soil Boring #2 @ 7.5' Black Sand
25706	Soil Boring #2 @ 10.0' Brown Blue Sandy Clay
25707	Soil Boring #3 @ 5.0' Brown Blue Sandy Clay
25708	Soil Boring #3 @ 15.0' Blue Clay
25709	Soil Boring #4 @ 2.5' Black Sand and Clay
25710	Soil Boring #4 @ 10.0' Blue Brown Sandy Clay
25711	Soil Boring #5 @ 5.0' Black Sand and Clay
25712	Soil Boring #5 @ 15.0' Blue Clay
25713	Soil Boring #6 @ 5.0' Black Sand
25714	Soil Boring #6 @ 15.0' Blue Clay
25715	Soil Boring #7 @ 5.0' Black Sand and Clay
25716	Soil Boring #7 @ 15.0' Blue Clay
25717	Soil Boring #8 @ 5.0' Blue Brown Sandy Clay
25718	Soil Boring #8 @ 10.0' Blue Brown Sandy Clay

REPORT: 22166
DATE: 7 FEBRUARY 1991
CLIENT: CPC GROUP HEADQUARTERS
PROJECT: SOIL CONTAMINATION EVALUATION
TEC LAB ID #: 25706
SAMPLE DESCRIPTION: SOIL BORING #2 @ 10.0' BROWN BLUE SANDY CLAY

Aromatic Volatile Organics in Soil 1

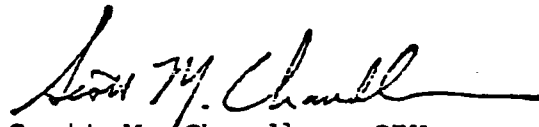
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 9.9%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.


Scott M. Chandler, CIH
Laboratory Director

REPORT: 22166

DATE: 7 FEBRUARY 1991

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: SOIL CONTAMINATION EVALUATION

TEC LAB ID #: 25703

SAMPLE DESCRIPTION: SOIL BORING #1 @ 5.0' SANDY CLAY FILL

Aromatic Volatile Organics in Soil 1

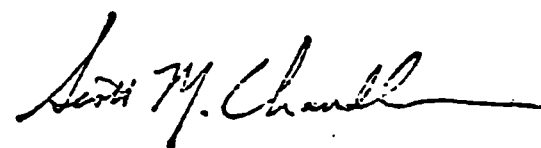
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 12.7%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott M. Chandler, CIH
Laboratory Director

REPORT: 22166

DATE: 7 FEBRUARY 1991

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: SOIL CONTAMINATION EVALUATION

TEC LAB ID #: 25705

SAMPLE DESCRIPTION: SOIL BORING #2 @ 7.5' BLACK SAND

Aromatic Volatile Organics in Soil 1

<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 12.7%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.


Scott M. Chandler, CIH
Laboratory Director

REPORT: 22166

DATE: 7 FEBRUARY 1991

CLIENT: CPC GROUP HEADQUARTERS

PROJECT: SOIL CONTAMINATION EVALUATION

TEC LAB ID #: 25704

SAMPLE DESCRIPTION: SOIL BORING #1 @ 12.5' BLUE CLAY

Aromatic Volatile Organics in Soil 1

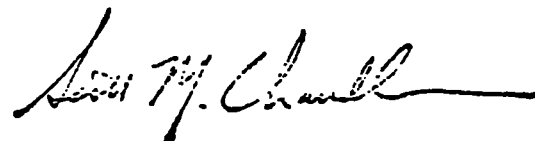
<u>PARAMETER</u>	<u>CONCENTRATION</u> <u>(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<5

ug/kg = parts per billion

Results are reported on a dry weight basis. Moisture content is 10.6%

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.



Scott M. Chandler, CIH
Laboratory Director

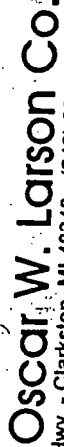
Appendix W

Appendix W

- W-1 Site Investigation – Soils Removal (TEC, 1989)
- W-2 Final Site Investigation, New Tank Farm (TEC, 1990a)
- W-3 Letter to MDEQ, re: Suspected Release Report (GM, 2000)

Appendix X

W-1



Fax #'s (248) 620-0071 - (248) 620-0072

SOLD TO:

LOCATION:

G.M. Powke - Train

Joslyn Rd.
Pontiac, Mich.

JOB/CALL NO.:

WILL RETURN ☐

JOB COMPLETE ☐

WILL RETURN ☐

[illegible]

TERMS: Net due upon Receipt. Interest Charge
1½% per month after 30 days

CUSTOMER COPY

Rec. by Robert W. Duh Date 7-18-00

ATTACHMENT B

TESTING ENGINEERS & CONSULTANTS, INC.

**CPC Group Headquarters
General Motors Corporation
30001 Van Dyke Avenue
Warren, Michigan 48090-9020**

**RELEASE NUMBER 8001
SITE INVESTIGATION - SOILS REMOVAL
CPC ENGINEERING NORTH BUILDING
PONTIAC, MICHIGAN**

**Testing Engineers & Consultants, Inc.
P.O. Box 249
1333 Rochester Road
Troy, Michigan 48099
(313) 588-6200 of Dial 313 T-E-S-T-I-N-G**

22 November 1989



CT&E Environmental Services Inc.

2 of 2

GM Worldwide Facilities - Pontiac

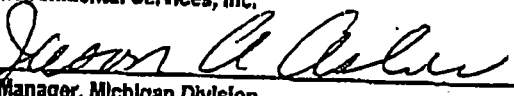
Sample ID: 3003111002
Client Sample ID: AT05651
Collected: 06/29/2000 00:00
Received: 06/30/2000 09:44
Matrix: Aqueous
Location: Brighton Analytical for SSOE
Project: Client
Sampled By: Client

Comments:

Only 500 mL of sample volume was submitted for analysis. The reporting detection limit is based upon a PQL of 2.5 ug/L.

Test Description	Result	Unit	Reporting Detection Limit	Method	Date / Time Prepared	Analyzed	Analyst
GC/MS SEMIVOLATILE ORGANIC ANALYSIS							
Naphthalene	ND	ug/L	5.0	EPA 625	06/30/00 12:45	06/30/00 23:14	JLS

Respectfully submitted,
CT&E Environmental Services, Inc.


Project Manager, Michigan Division

Qualifiers

- ND Not detected
- B Unknown contaminant
- D Estimation
- J Estimated result
- M Matrix interference
- N Presumptive evidence by GC/MS library search
- 2 Concentration exceeds calibration range

Certification Numbers: WI #999959180; MI #0021; AK UST #048; ND R-081; MD #266; IN C-MI-01

Reported: 7/17/2000



Testing Engineers & Consultants, Inc.

P.O. Box 249 • 1333 Rochester Road • Troy, Michigan 48099
313-588-6200 or Dial 313-T-E-S-T-I-N-G

T.E.C. Report Number: 17699-1
Date Reissued: 22 November 1989

John Banicki, P.E.
Kenneth Cummins, L.S., P.E.
Gerald M. Belian, P.E.
Ellen Geer, PhD, P.E.
(1902-1985)
Michael Davinich

CPC Group Headquarters
General Motors Corporation
30001 Van Dyke Avenue,
Warren, Michigan 48090-9020

Attention: Mr. Mark Hoffman

Re: Release Number 8001
Site Investigation - Soils Removal
CPC Engineering North Building
New Underground Storage Tank Farm
Pontiac, Michigan

Dear Mr. Hoffman:

Testing Engineers and Consultants, Inc. has completed the supervision of the excavation of the New Tank Farm located at the CPC Engineering North Building, in the City of Pontiac, Oakland County, Michigan. The attached document contains the project specifications, including field sampling methods, and results of the laboratory analyses of selected soil samples. The analytical results are discussed in the text and are included in the Appendices.

Testing Engineers and Consultants, Inc. is very pleased to provide these services. Should you have any questions or desire further information, please do not hesitate to contact this office at your earliest convenience.

Respectfully submitted,

TESTING ENGINEERS AND CONSULTANTS, INC.

Robert J. Nowakowski
Staff Geologist

Gerald M. Belian, P.E.
Executive Vice-President

RJN/GMB/rjn
Enclosure



All services undertaken subject to the following general policy: Reports are submitted for exclusive use of the clients to whom they are addressed. Their significance is subject to the adequacy and representative character of the samples and to the comprehensiveness of the tests, examinations and surveys made. No quotations from reports or use of TEC'S name is permitted except as expressly authorized by TEC in writing.

CONSULTING ENGINEERS & FULL-SERVICE PROFESSIONAL TESTING AND INSPECTION
OFFICES IN ANN ARBOR, DETROIT, FLINT, LANSING AND TROY



MEMBER



CT&E Environmental Services Inc.
XXXXXXXXXXXXXXXXXXXX

**Michigan Division
Analytical Report**

Work Order: 3003111
Brighton Analytical 6/29/00

Report Date: 7/17/2000

Project: Brighton Analytical for SSOE

Client: GM Worldwide Facilities - Pontiac
220 E. Columbia Ave.
MC 483-049-201
Pontiac, MI 48340

Attention: Tom Ramos

Michigan Division
1200 Conrad Industrial Drive
Ludington, MI 49431

231-843-1877 - Phone
231-845-9942 - Fax

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
09 October 1989

T.E.C. Report Number 17699-2 (Page 1)

**RELEASE NUMBER 8001
SITE INVESTIGATION - SOILS REMOVAL
CPC ENGINEERING NORTH BUILDING
PONTIAC, MICHIGAN**

1.0 INTRODUCTION

1.1 Purpose

Testing Engineers and Consultants, Inc. was contracted by CPC Group Headquarters to supervise the removal of contaminated soils for an excavation of a New Tank Farm at the CPC Engineering North Building, in Pontiac, Michigan. The purpose of this project is to identify the contaminated soils (to be landfilled) during the excavation and outline the remaining contamination surrounding the excavation. When the New Tank Farm is completed, the investigation of the soils contamination will procede as outlined in this report.

1.2 Location

The site of soil contamination under investigation is located at the Chevrolet-Pontiac-Canada Group North Facility in Pontiac, Michigan. More specifically, it is located on the southwest end of the CPC Engineering Building, just south of a Storage Building. Figure 1 indicates the location of the CPC Facility on a topographic map and Figure 2 locates the tank farm under investigation within the CPC Facility.

.....continued

ATTACHMENT A

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
09 October 1989

T.E.C. Report Number 17699-2 (Page 2)

1.3 Site History

Testing Engineers & Consultants, Inc. was initially contracted by CPC Group Headquarters to perform a preliminary environmental soil assessment (T.E.C. Report Number 17699-1). This assessment consisted of one boring at the request of the client in a location determined by the client. The study was performed for geotechnical purposes in order to determine the soil capacities and characteristics and to give an indication of whether or not the soils in the tank area are contaminated. At this time no contamination was encountered in the excavation area. When the excavation for the New Tank Farm started, contaminated soils were encountered near the southeast corner of the storage building (see Figure 3, the Site Plan). As a result, Testing Engineers & Consultants, Inc. was contracted to oversee the excavation and identify any areas of contamination. This took place between 06 September 1989 and 29 September 1989. A geologist from Testing Engineers & Consultants, Inc. was on-site continuously during the excavation. The soils were monitored for the presence of contamination during the excavation and any contaminated soils were temporarily stored on-site awaiting the approval of an appropriate landfill (City of Pontiac Landfill). Soils that were uncontaminated were also stored to be used as landfill cover at the City of Pontiac Landfill. Throughout the duration of this project samples were analyzed in the Testing Engineers & Consultants, Inc. laboratory for Total Petroleum Hydrocarbons and Hazardous Waste Characterization.

.....continued

Ms. Terri Harmon
MDEQ - Storage Tank Division
July 19, 2000
Page 2 of 2

If you have any questions, or need additional information, please contact me at (248) 857-2287.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert W. Doyle". The signature is stylized with a large "R" and a long horizontal stroke.

Robert W. Doyle, CHMM
Environmental Engineer
GM-WFG-Pontiac North Campus

cc: Doug Pentzien
File

Attachments

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
09 October 1989

T.E.C. Report Number: 17699-2 (Page 3)

2.0 FIELD MONITORING

2.1 Air Monitoring

All air monitoring utilized an HNU Photo-ionizer. The photo-ionizer is a portable trace gas analyzer that can be used to measure a wide variety of organic vapors including chlorinated hydrocarbons, heterocyclics and aromatics, aldehydes and ketones as well as several inorganic gases including hydrogen sulfide and ammonia. This method is particularly suited to the detection of the various components of organic fuels such as gasoline. The limit of detection for most species is 0.1 parts per million (ppm) with a range up to 2000 ppm. During the course of the remediation, the air was continuously monitored for the presence of volatile contaminants. On 13 September 1989, a 6 foot section of abandoned sewer pipe was located during the excavation which contained approximately 1 gallon of free-product (gasoline). This spilled out releasing explosive levels of gasoline vapors. Air monitoring results within the pit at this time exceeded 15 parts per million which was well over the allowable threshold limit of 2 parts per million for benzene (a common component of gasoline). At this time, all work was halted and the sewer pipe capped. An emulsifier was used in the sewer pipe to mitigate the fire hazard and to safely handle its removal. No other elevated levels of gasoline vapors were encountered during the remainder of the excavation.

2.2 Soil Monitoring

During the course of the excavation, soil samples from the walls and the sides of the pit were monitored in the field for the presence of

.....continued



**Worldwide Facilities Group
Metal Fabricating Division – Pontiac North Campus
Environmental Services**

July 19, 2000

Ms. Terri Harmon
Storage Tank Division
Michigan Department of Environmental Quality
PO Box 30157
Lansing, MI 48909-7657

**Subject: Suspected Release Report - Incident Number S-600-00 - 6/29/00
General Motors - Pontiac North Campus - Facility Number 0-001623**

Dear Ms. Harmon:

This letter responds to the suspected release report dated June 29, 2000. During a subsurface investigation in the vicinity of the fuel tank farm, low concentration of naphthalene was detected in the groundwater. General Motors believes that the low-level naphthalene detected by the investigation was not related to the active tank farm. GM has prepared and conducted the following investigation to support this claim:

- The tank farm consists of double-walled vaulted tanks with cathodic protection. There have been no recorded problems with the cathodic protection system. There have also been no alarms from the leak detection system; both on the interstitial monitor and the tracetek line leak detection system.
- A GM approved contract laboratory re-analyzed the groundwater sample. Using method EPA 625, this sample returned with a "Non-Detect" result for naphthalene, at a reporting detection limit of 5.0 ug/L. This sample was analyzed at a quality assurance/quality control level III. Please see the attached CT&E Environmental Services, Inc. analytical results. (Attachment A)
- On July 18, 2000, a third-party contractor conducted an interstitial test on each tank. Using helium, 3 PSI of pressure was put on the interstice of the six tanks and all six tanks held pressure for one hour. The interstitial monitors were also pulled, which showed no liquid present and no gasoline odor. Please see the attached Oscar W. Larson Co. work report. (Attachment B)

Based on this information, GM requests that the MDEQ Storage Tank Division cancel the subject suspected release report, incident number S-600-00.

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
09 October 1989

T.E.C. Report Number: 17699-2 (Page 4)

2.2 Soil Monitoring (cont'd)

contamination. This was also accomplished with an HNU Photo-ionizer. The purpose of the soil monitoring was to delineate the extent of contamination in the soils remaining at the edge of the excavation. The results of this field monitoring indicate the presence of residual contamination (below 20 parts per million) in the east and west walls of the excavation. No contamination was encountered in the south wall while the north wall, especially in the northeast corner of the excavation, indicated over 100 parts per million of contamination. The floor of the excavation is a firm, blue clay and did not reveal any contamination. Heavy rains washed some contaminants into the pit leaving some residual contamination. Field screening results of the floor of the excavation indicated less than 20 parts per million of an unknown organic vapor. Duplicate soil samples were preserved and submitted to the laboratory for confirmation of field results.

3.0 EXCAVATION

The excavation was completed on 28 September 1989 and is approximately 90 feet long by 65 feet wide by 17 feet deep in its largest dimensions. There was approximately 2767 cubic yards of soil removed with about one-half of this contaminated. The floor of the excavation still has low levels of Total Petroleum Hydrocarbons (Lab ID #20176) but has been concreted over for structural purposes. Representative samples were collected from the floor and sides of the excavation and were submitted to the laboratory for analysis.

.....continued

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
09 October 1989

T.E.C. Report Number: 17699-2 (Page 5)

4.0 ANALYTICAL RESULTS

Three sets of sampling and analytical testing were completed for this project. All analytical results are included in Appendix A. On 15 September 1989, two samples of the excavated fill were evaluated for Total Petroleum Hydrocarbons (EPA Method 418.1) and Hazardous Waste Characterization. The purpose of this series of testing was to obtain an indication of general characteristics of the removed soils. The results indicated between 64 and 131 parts per million (Lab ID #20071 and Lab ID #20072) Total Petroleum Hydrocarbons (TPH). The Hazardous Waste Characterization (HWC) indicated this excavation material is not classified as a hazardous waste.

Following the initial set of testing, contaminated material was separated from uncontaminated material. On 29 September 1989 a sample from each was submitted to the laboratory. The results of testing these two sets of materials indicated 759 ppm of TPH (Lab ID #20162) for the contaminated material and 26 ppm of TPH (Lab ID #20163) for the uncontaminated material. Once again, the results of the HWC indicated the material is not a hazardous waste.

On 03 October 1989, samples from each of the walls and the floor of the excavation were tested for Total Petroleum Hydrocarbons. The results indicated 134 ppm of TPH (Lab ID #20175) for the west wall, 206 ppm TPH (Lab ID #20177) for the east wall, non-detectable amounts for the south wall (Lab ID #20178), 46 ppm TPH (Lab ID #20179) for the northwest wall, 387 ppm TPH (Lab ID #20180) for the northeast wall and 141 ppm TPH (Lab ID #20176) for the floor of the excavation. The locations for these samples are located on Figure 3, the Site Plan.

.....continued

W-3

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
09 October 1989

T.E.C. Report Number: 17699-1 (Page 6)

5.0 SUMMARY

Testing Engineers & Consultants, Inc. has completed the initial phase of remediation of the contaminated soils discovered during the excavation for a New Tank Farm. Approximately 2767 cubic yards of soil were removed from the excavation with about one-half of this considered contaminated enough to be disposed of at a Type II Landfill. Field and laboratory testing of samples during the soils removal indicated some remaining contamination in the walls and floor of the excavation. It is likely that the results are skewed due to the effect of rainwater draining into the pit. As a result, Testing Engineers & Consultants, Inc. recommends soil borings be placed around the pit to better define the extent of contamination before a plan of remediation can be developed.

This next phase of investigation would consist of the placement of ten soil borings to a depth of 15 feet each. These would be located surrounding the excavation site to determine the extent of contaminated soils still remaining as well as the levels of contamination within the soils. Figure 4, the proposed site plan, illustrates the approximate locations of the proposed borings in reference to the excavation.

Presently, it is not known whether or not the groundwater has been adversely affected at this site. It is not likely that the groundwater

.....continued

REPORT: 17699

DATE: 10 JANUARY 1990

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TEC LAB ID #: 21089

SAMPLE DESCRIPTION: COMPOSITE #9; @ 3.0', 7.0', 10.0' & 15.0'

Aromatic Volatile Organics in Soil 1

<u>COMPOUND</u>	<u>CONCENTRATION (ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

Results are reported on a dry weight basis. Moisture content is 5.9 %

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott Chandler, IHIT
Laboratory Director

TESTING ENGINEERS & CONSULTANTS, INC.

CPC Group Headquarters
Mr. Mark Hoffman
09 October 1989

T.E.C. Report Number: 17699-2 (Page 7)

5.0 SUMMARY (cont'd)

has been contaminated for several reasons. The site is underlain by thick sequences of clay that extend from the surface to depths greater than 20 feet. During the excavation, which was completed to a depth of 17 feet, no groundwater was encountered and it was observed that the contaminated soils extended to a depth of 10 feet. If during the course of the next phase of the investigation, groundwater is encountered, the Michigan Department of Natural Resources will be notified and a workplan will be drafted to reflect the change in site conditions.

* * * * *

REPORT: 17699

DATE: 10 JANUARY 1990

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TEC LAB ID #: 21088

SAMPLE DESCRIPTION: COMPOSITE #8; @ 10.0' & 15.0'

Aromatic Volatile Organics in Soil 1

<u>COMPOUND</u>	<u>CONCENTRATION (ug/kg)</u>
Benzene	
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<10
	<5

Results are reported on a dry weight basis. Moisture content is 11.6%

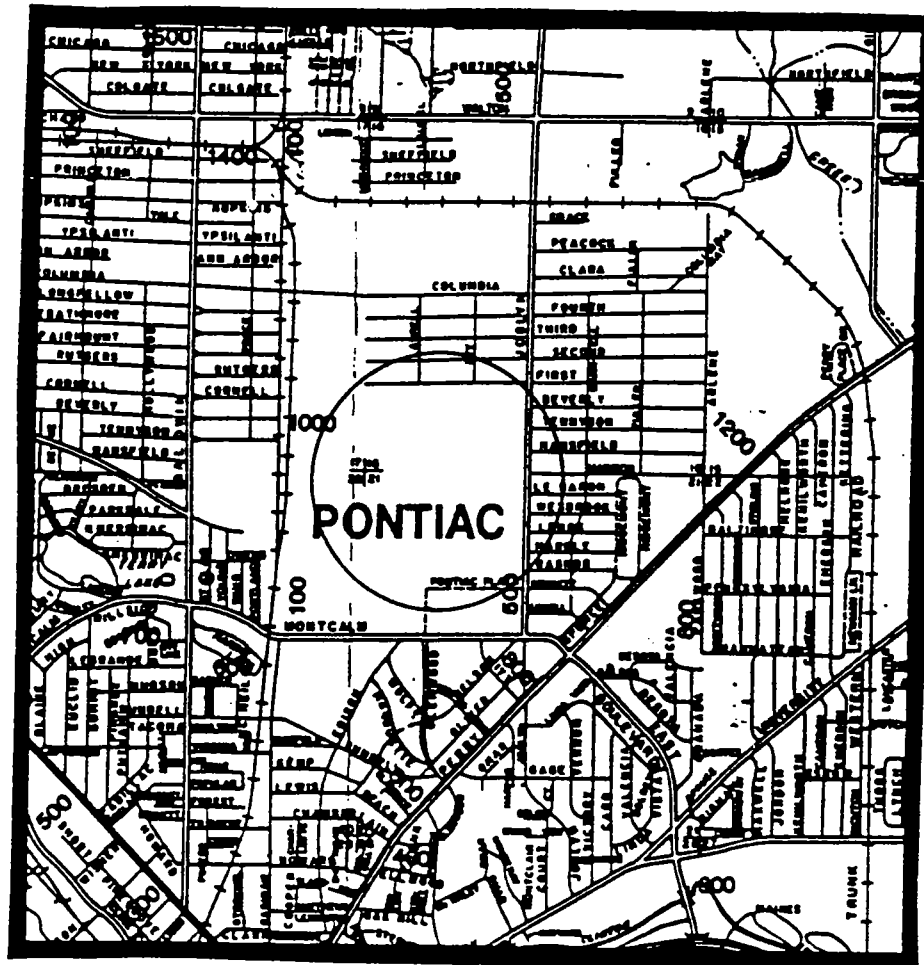
ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott Chandler, IHIT
Laboratory Director

FIGURE 1 Site Location Map



PONTIAC
OAKLAND COUNTY, MICHIGAN



REPORT: 17699

DATE: 10 JANUARY 1990

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TEC LAB ID #: 21086

SAMPLE DESCRIPTION: SOIL SAMPLE #8 @ 3.0'; BROWN MIXED SAND

Aromatic Volatile Organics in Soil 1

<u>COMPOUND</u>	<u>CONCENTRATION(ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

Results are reported on a dry weight basis. Moisture content is 5.6 %

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott Chandler, IHIT
Laboratory Director

CPC PONTIAC COMPLEX

PONTIAC DIVISION HEADQUARTERS
CPC PONTIAC ENGINE OPERATIONS
CPC PONTIAC PRESSED METAL
CPC PONTIAC FIERO ASSEMBLY
CPC ENGINEERING NORTH
CENTRAL FOUNDRY DIVISION
SERVICE PARTS OPERATION

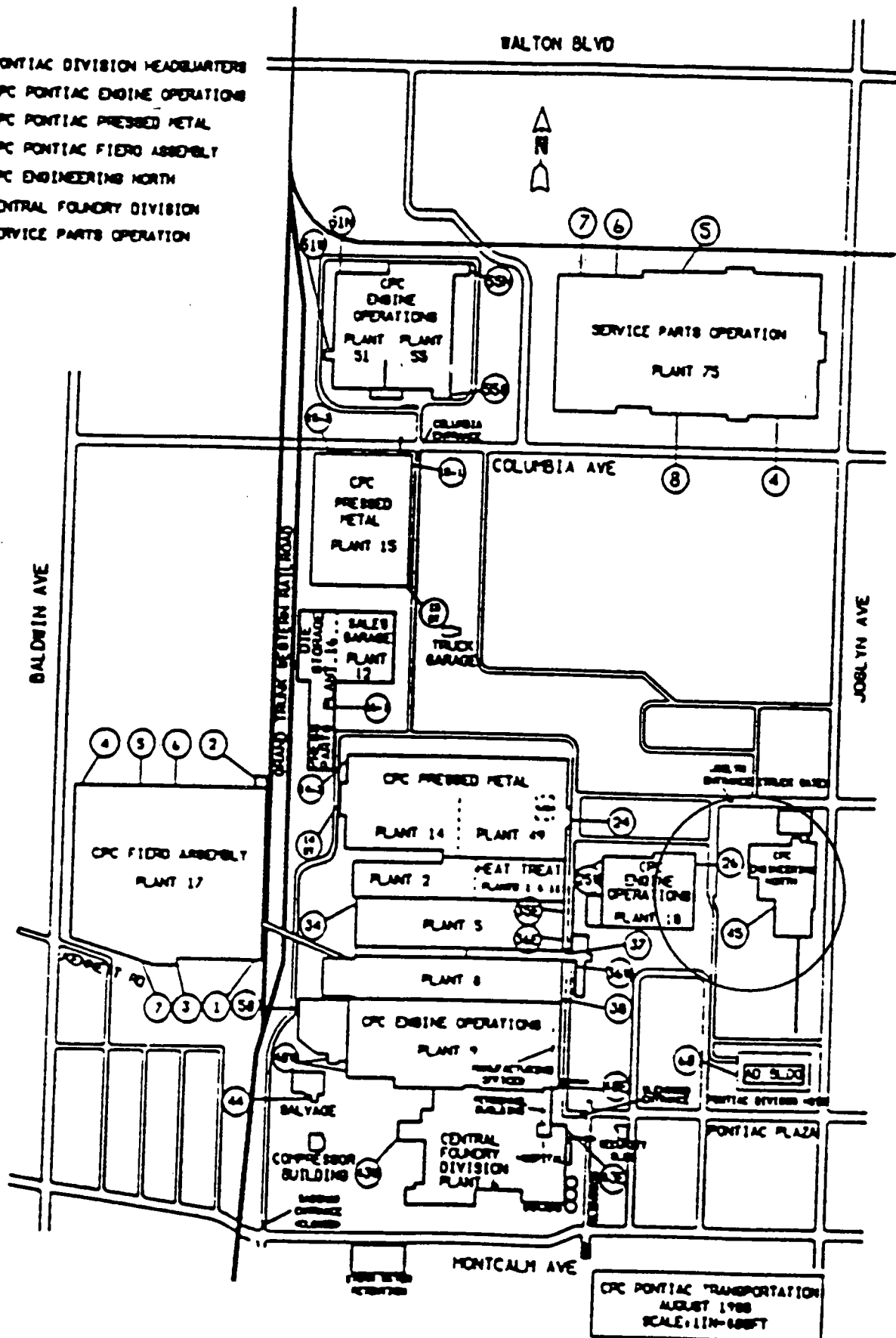


FIGURE 2 SITE PLAN

REPORT: 17699

DATE: 10 JANUARY 1990

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TEC LAB ID #: 21085

SAMPLE DESCRIPTION: COMPOSITE #7; @ 10.0' & 15.0'

Aromatic Volatile Organics in Soil 1

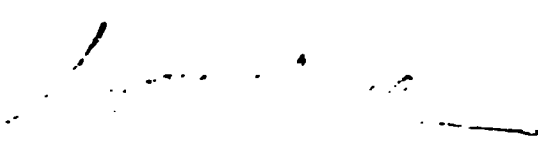
<u>COMPOUND</u>	<u>CONCENTRATION (ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

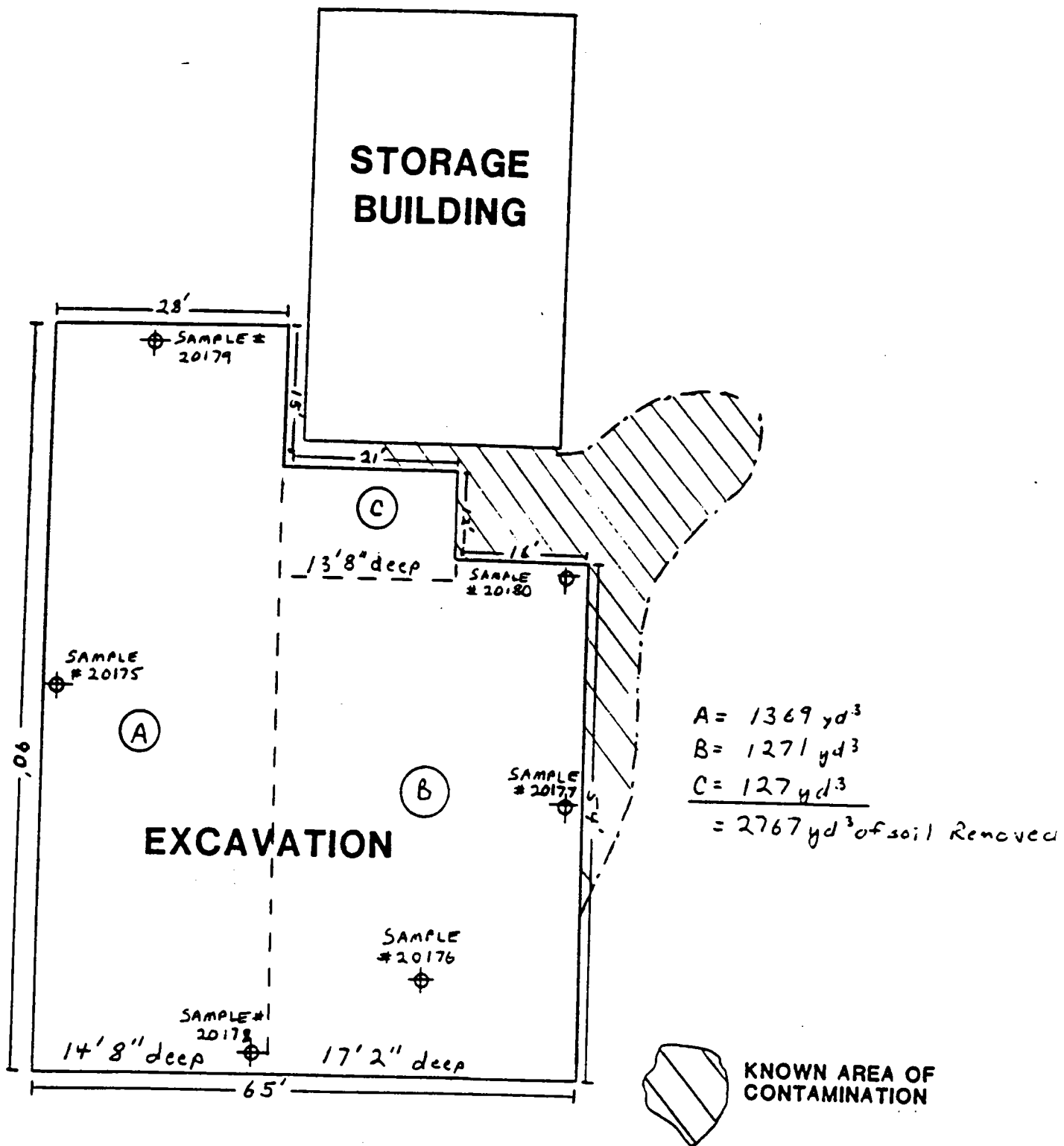
Results are reported on a dry weight basis. Moisture content is 11.9%

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.


Scott Chandler, IHIT
Laboratory Director



REPORT: 17699

DATE: 10 JANUARY 1990

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TEC LAB ID #: 21084

SAMPLE DESCRIPTION: SOIL SAMPLE #7 @ 7.0'; BROWN SANDY CLAY

Aromatic Volatile Organics in Soil 1

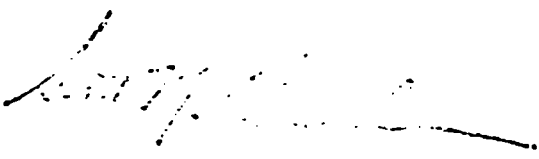
<u>COMPOUND</u>	<u>CONCENTRATION (ug/kg)</u>
Benzene	
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<5
o-Xylene	<10
	<5

Results are reported on a dry weight basis. Moisture content is 11.4%

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.


Scott Chandler, IHIT
Laboratory Director

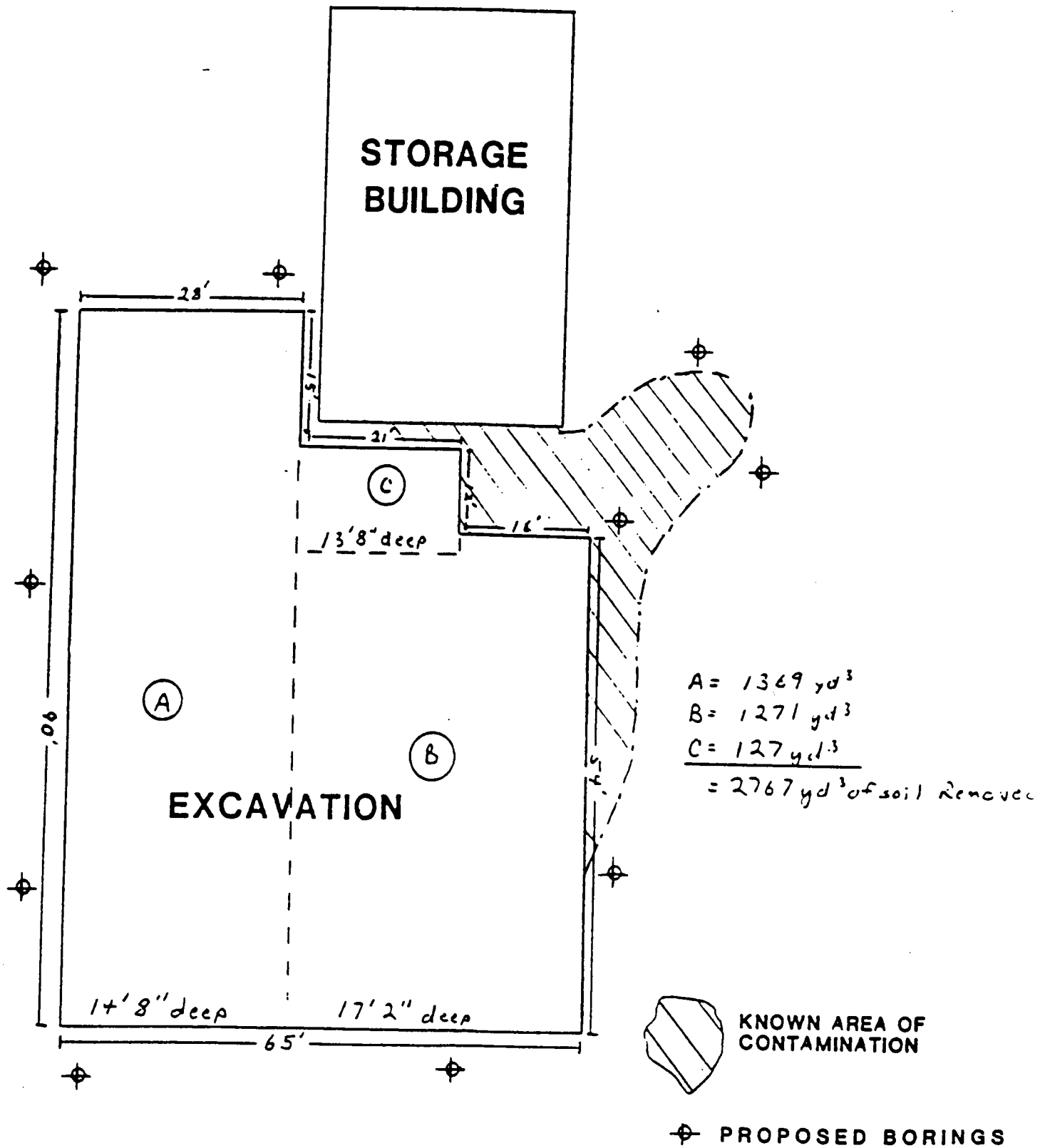


FIGURE 4 PROPOSED SITE PLAN

REPORT: 17699

DATE: 10 JANUARY 1990

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TEC LAB ID #: 21083

SAMPLE DESCRIPTION: SOIL SAMPLE #7 @ 3.0'; BROWN SANDY CLAY

Aromatic Volatile Organics in Soil 1

<u>COMPOUND</u>	<u>CONCENTRATION (ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

Results are reported on a dry weight basis. Moisture content is 13.4%.

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott Chandler, IHIT
Laboratory Director

**APPENDIX A
ANALYTICAL RESULTS**

REPORT: 17699

DATE: 10 JANUARY 1990

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TEC LAB ID #: 21082

SAMPLE DESCRIPTION: COMPOSITE #6; @ 3.0', 7.0', 10.0' & 15.0'

Aromatic Volatile Organics in Soil 1

<u>COMPOUND</u>	<u>CONCENTRATION (ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

Results are reported on a dry weight basis. Moisture content is 12.0%

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott Chandler, IHIT
Laboratory Director

REPORT: 17699

DATE: 15 SEPTEMBER 1989

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

SAMPLE IDENTIFICATION

TEC LAB ID #

20071

20072

SAMPLE DESCRIPTION

Sample A: Fill

Sample B: Fill

REPORT: 17699

DATE: 10 JANUARY 1990

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TEC LAB ID #: 21081

SAMPLE DESCRIPTION: COMPOSITE #5; @ 3.0', 7.0', 10.0' & 15.0'

Aromatic Volatile Organics in Soil 1

<u>COMPOUND</u>	<u>CONCENTRATION (ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

Results are reported on a dry weight basis. Moisture content is 8.8 %

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott Chandler, IHIT
Laboratory Director

REPORT: 17699

DATE: 15 SEPTEMBER 1989

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TOTAL PETROLEUM HYDROCARBONS 1

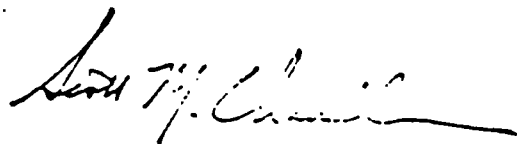
<u>TEC LAB ID #</u>	<u>SAMPLE DESCRIPTION</u>	<u>RESULTS (mg/Kg)</u>	<u>% MOISTURE</u>
20071	Sample A: Fill	64	17.6
20072	Sample B: Fill	131	14.0

Results are reported on a dry weight basis

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

mg/Kg = Parts per million

1 EPA Method 418.1 "Petroleum Hydrocarbons, Total Recoverable".
Methods for Chemical Analysis of Water and Wastes
EPA-600/4-79-020. March 1983.



Scott M. Chandler, IHIT
Laboratory Director.

REPORT: 17699

DATE: 10 JANUARY 1990

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TEC LAB ID #: 21080

SAMPLE DESCRIPTION: COMPOSITE #4; @ 3.0', 7.0', 10.0' & 15.0'

Aromatic Volatile Organics in Soil 1

<u>COMPOUND</u>	<u>CONCENTRATION (ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

Results are reported on a dry weight basis. Moisture content is 10.1%

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott Chandler, IHIT
Laboratory Director

TESTING ENGINEERS & CONSULTANTS, INC.

REPORT: 17699

DATE: 15 SEPTEMBER 1989

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TEC LAB ID #: 20071

SAMPLE DESCRIPTION: SAMPLE A. FILL

PHYSICAL CHARACTERISTICS OF WASTE

COLOR	PHYSICAL STATE AT 70°F	LAYERS	CORROSIVITY	FLASHPOINT CLOSED CUP OF
Brown	X Solid Semi-Solid Liquid Powder	Multi Bilayer X Single	pH 9.6	>200

REACTIVITY DATA

	EPA MAX	RESULT
Cyanide (mg/Kg)	250	<50
Sulfide (mg/Kg)	500	<50

METALS BY EPA EXTRACTION PROCEDURE #1310

METAL	EPA MAXIMUM ALLOWABLE CONCENTRATION (mg/L)	SAMPLE (mg/L)
Arsenic	5.0	<0.005
Barium	100.0	0.38
Cadmium	1.0	0.10
Chromium	5.0	0.37
Copper	100.0 (Michigan)	0.28
Lead	5.0	0.84
Mercury	0.2	<0.001
Selenium	1.0	<0.03
Silver	5.0	<0.04
Zinc	500.0 (Michigan)	0.22

Scott M. Chandler

Scott M. Chandler, IHIT
Laboratory Director

SMC/cp

REPORT: 17699

DATE: 10 JANUARY 1990

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TEC LAB ID #: 21079

SAMPLE DESCRIPTION: COMPOSITE #3; @ 3.0', 7.0', 10.0' & 15.0'

Aromatic Volatile Organics in Soil 1

<u>COMPOUND</u>	<u>CONCENTRATION (ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

Results are reported on a dry weight basis. Moisture content is 10.5%

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott Chandler, IHIT
Laboratory Director

TESTING ENGINEERS & CONSULTANTS, INC.

REPORT: 17699

DATE: 15 SEPTEMBER 1989

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TEC LAB ID #: 20072

SAMPLE DESCRIPTION: SAMPLE B: FILL

PHYSICAL CHARACTERISTICS OF WASTE

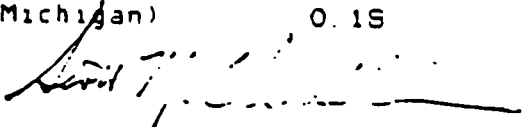
COLOR	PHYSICAL STATE AT 70oF	LAYERS	CORROSIVITY	FLASHPOINT CLOSED CUP OF
Brown	X Solid Semi-Solid Liquid Powder	Multi Bilayer X Single	pH 9.5	>200

REACTIVITY DATA

	EPA MAX	RESULT
Cyanide (mg/Kg)	250	<50
Sulfide (mg/Kg)	500	<50

METALS BY EPA EXTRACTION PROCEDURE #1310

METAL	EPA MAXIMUM ALLOWABLE CONCENTRATION (mg/L)	SAMPLE (mg/L)
Arsenic	5.0	<0.005
Barium	100.0	0.07
Cadmium	1.0	0.10
Chromium	5.0	0.32
Copper	100.0 (Michigan)	0.28
Lead	5.0	0.78
Mercury	0.2	<0.001
Selenium	1.0	<0.03
Silver	5.0	<0.04
Zinc	500.0 (Michigan)	0.15


Scott M. Chandler, IHIT
Laboratory Director

SMC:cp

REPORT: 17699

DATE: 10 JANUARY 1990

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TEC LAB ID #: 21078

SAMPLE DESCRIPTION: COMPOSITE #2; @ 3.0', 7.0', 10.0' & 15.0'

Aromatic Volatile Organics in Soil 1

<u>COMPOUND</u>	<u>CONCENTRATION (ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

Results are reported on a dry weight basis. Moisture content is 11.7%

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott Chandler, IHIT
Laboratory Director

REPORT: 17699

DATE: 29 SEPTEMBER 1989

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

SAMPLE IDENTIFICATION

TEC LAB ID #

20162

20163

SAMPLE DESCRIPTION

Sample #3 Composite;
Contaminated; Fill

Sample #4 Composite;
Uncontaminated; Fill

REPORT: 17699

DATE: 10 JANUARY 1990

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TEC LAB ID #: 21077

SAMPLE DESCRIPTION: COMPOSITE #1; @ 3.0', 7.0', 10.0' & 15.0'

Aromatic Volatile Organics in Soil 1

<u>COMPOUND</u>	<u>CONCENTRATION (ug/kg)</u>
Benzene	<5
Toluene	<5
Ethylbenzene	<5
m + p-Xylene	<10
o-Xylene	<5

Results are reported on a dry weight basis. Moisture content is 12.0%

ug/kg = parts per billion

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 8020; "Aromatic Volatile Organics". Test Methods for the Evaluation of Solid Waste. EPA SW846. November, 1986.

Scott Chandler, IHIT
Laboratory Director

REPORT: 17699

DATE: 29-SEPTEMBER 1989

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TOTAL PETROLEUM HYDROCARBONS 1

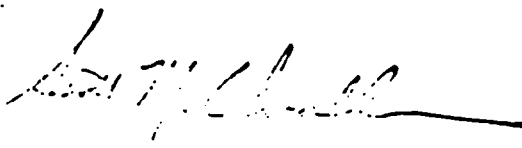
<u>TEC LAB ID #</u>	<u>SAMPLE DESCRIPTION</u>	<u>RESULTS (mg/Kg)</u>	<u>% MOISTURE</u>
20162	Sample #3 Compositd; Contaminated; Fill	759	8.8
20163	Sample #4 Compositd; Uncontaminated; Fill	26	14.6

Results are reported on a dry weight basis.

mg/Kg = Parts per million

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection.

1 EPA Method 418.1 "Petroleum Hydrocarbons, Total Recoverable".
Methods for Chemical Analysis of Water and Wastes
EPA-600/4-79-020 March 1983.


Scott M. Chandler, IHIT
Laboratory Director

REPORT: 17699

DATE: 10 JANUARY 1990

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANKS FARMS

SAMPLE IDENTIFICATION

<u>TEC LAB ID #</u>	<u>SAMPLE DESCRIPTION</u>
21087	Soil Sample #8; @ 7.0' Brown Clayey Sand
21088	Composite #8; @ 10.0' & 15.0'
21089	Composite #9; @ 3.0', 7.0', 10.0' & 15.0'

REPORT: 17699

DATE: 29 SEPTEMBER 1989

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TEC LAB ID #: 20162

SAMPLE DESCRIPTION: SAMPLE #3 COMPOSITE; CONTAMINATED; FILL

PHYSICAL CHARACTERISTICS OF WASTE

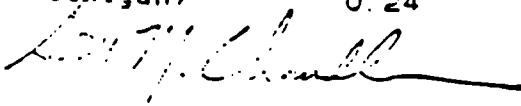
COLOR	PHYSICAL STATE AT 70oF	LAYERS	CORROSIVITY	FLASHPOINT CLOSED CUP OF
Brown	X Solid Semi-Solid Liquid Powder	Multi Bilayer X Single	pH 9.6	>200

REACTIVITY DATA

	EPA MAX	RESULT
Cyanide (mg/Kg)	250	<50
Sulfide (mg/Kg)	500	<50

METALS BY EPA EXTRACTION PROCEDURE #1310

METAL	EPA MAXIMUM ALLOWABLE CONCENTRATION (mg/L)	SAMPLE (mg/L)
Arsenic	5.0	<0.005
Barium	100.0	0.14
Cadmium	1.0	0.05
Chromium	5.0	0.16
Copper	100.0 (Michigan)	0.27
Lead	5.0	0.49
Mercury	0.2	<0.001
Selenium	1.0	<0.03
Silver	5.0	<0.04
Zinc	500.0 (Michigan)	0.24


Scott M. Chandler, IHIT
Laboratory Director

REPORT: 17699

DATE: 10 JANUARY 1990

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

SAMPLE IDENTIFICATION

<u>TEC LAB ID #</u>	<u>SAMPLE DESCRIPTION</u>
21077	Composite #1; @ 3.0', 7.0', 10.0' & 15.0'
21078	Composite #2; @ 3.0', 7.0', 10.0' & 15.0'
21079	Composite #3; @ 3.0', 7.0', 10.0' & 15.0'
21080	Composite #4; @ 3.0', 7.0', 10.0' & 15.0'
21081	Composite #5; @ 3.0', 7.0', 10.0' & 15.0'
21082	Composite #6; @ 3.0', 7.0', 10.0' & 15.0'
21083	Soil Sample #7; @ 3.0' Brown Sandy Clay
21084	Soil Sample #7; @ 7.0' Brown Sandy Clay
21085	Composite #7; @ 10.0' & 15.0'
21086	Soil Sample #8; @ 3.0' Brown Mixed Sand

TESTING ENGINEERS & CONSULTANTS, INC.

REPORT: 17699

DATE: 29 SEPTEMBER 1989

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TEC LAB ID #: 20163

SAMPLE DESCRIPTION: SAMPLE #4 COMPOSITE; UNCONTAMINATED; FILL

PHYSICAL CHARACTERISTICS OF WASTE

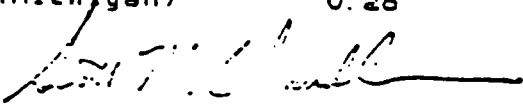
COLOR	PHYSICAL STATE AT 70oF	LAYERS	CORROSIVITY	FLASHPOINT CLOSED CUP OF
Brown	X Solid Semi-Solid Liquid Powder	Multi Bilayer X Single	pH 9.4	>200

REACTIVITY DATA

	EPA MAX	RESULT
Cyanide (mg/Kg)	250	<50
Sulfide (mg/Kg)	500	<50

METALS BY EPA EXTRACTION PROCEDURE #1310

METAL	EPA MAXIMUM ALLOWABLE CONCENTRATION (mg/L)	SAMPLE (mg/L)
Arsenic	5.0	<0.005
Barium	100.0	0.31
Cadmium	1.0	0.06
Chromium	5.0	0.20
Copper	100.0 (Michigan)	0.25
Lead	5.0	0.58
Mercury	0.2	<0.001
Selenium	1.0	<0.03
Silver	5.0	<0.04
Zinc	500.0 (Michigan)	0.26


 Scott M. Chandler, IHIT
 Laboratory Director

APPENDIX C
ANALYTICAL RESULTS

REPORT: 17699

DATE: 3 OCTOBER 1989

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

SAMPLE IDENTIFICATION

<u>TEC LAB ID #</u>	<u>SAMPLE DESCRIPTION</u>
20175	West Wall; Brown Sandy Clay
20176	Floor; Blue Clay
20177	East Wall; Blue Clay
20178	South Wall; Brown Sandy Clay
20179	North West Wall; Brown Sandy Clay
20180	North East Wall; Sandy Clay



TESTING ENGINEERS & CONSULTANTS, INC.
P.O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 — 588-6200



soil borings

soil evaluation

foundation investigation

instrumentation

BORING NO. # 9 JOB NO. 17699-3 PROJECT NEW TANK FARMS
Ground Surface (Elev.) _____
Datum _____
CLIENT C-P-C Headquarters Location Pontiac, Michigan
Started: 3 January 1990 Completed 3 January 1990
Driller: T. Byrnes

HOLLOW STEM AUGERS

DEPTH IN FEET	SAMPLE TYPE	"N"	STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
			4"	ASPHALT			
				Frozen Black Foundry Sand-FILL			
	SS	8 11 10	2'6"	Stiff Moist Brown Sandy CLAY With Pebbles			
5--							
	SS	8 8 10					
			8'0"				
	SS	6 8 10		Stiff Moist Brown Sandy CLAY With Pebbles & Occasional Wet Gray Silt Lenses			
10--							
			12'0"	Stiff Moist Blue Sandy CLAY With Pebbles			
	SS	4 6 11					
15--			15'0"				
				END OF BORING			
20--							
25--							

"N" - Standard Penetration Resistance
S.S. - 2" O.D. Split Spoon Sample
S.S. - Sectional Liner Sample
S.T. - Shelby Tube Sample
Bottle Sample

d - Natural Density-lbs. cu. ft.
"H-M" - Housel Penetration Resistance
H.S. - Housel Sample
q_u - Unconfined Compression lbs. sq. ft.
w - H₂O% of dry weight

WATER ENCOUNTERED None
AT COMPLETION None

Boring No. 9/Ln

REPORT: 17699

DATE: 3 OCTOBER 1989

CLIENT: CHEVROLET PONTIAC CANADA HEADQUARTERS

PROJECT: NEW TANK FARMS

TOTAL PETROLEUM HYDROCARBONS 1

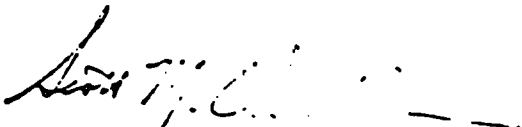
<u>TEC LAB ID #</u>	<u>SAMPLE DESCRIPTION</u>	<u>RESULTS (mg/Kg)</u>	<u>% MOISTURE</u>
20175	West Wall; Brown Sandy Clay	134	3.2
20176	Floor; Blue Clay	141	6.0
20177	East Wall; Blue Clay	206	6.8
20178	South Wall; Brown Sandy Clay	<20	5.5
20179	North West Wall; Brown Sandy Clay	46	11.3
20180	North East Wall; Sandy Clay	387	3.0

Results are reported on a dry weight basis.

mg/Kg = Parts per million

A less than symbol (<) indicates that the parameter was not detected at or above the stated limit of detection

1 EPA Method 418.1 "Petroleum Hydrocarbons; Total Recoverable".
Methods for Chemical Analysis of Water and Wastes.
EPA-600/4-79-020 March 1983.


Scott M. Chandler, IHIT
Laboratory Director



TESTING ENGINEERS & CONSULTANTS, INC.

P.O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 - 588-6200



soil borings

soil evaluation

foundation investigation

instrumentation

BORING NO. # 8 JOB NO. 17699-3 PROJECT NEW TANK FARMS
Ground Surface (Elev.) _____
Datum _____
Client C-P-C Headquarters Location Pontiac, Michigan
Started: 3 January 1990 Completed 3 January 1990
Driller: T. Byrnes
HOLLOW STEM AUGERS

DEPTH IN FEET	SAMPLE TYPE	"N"	STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
				CONCRETE			
	SS	3 3 3	1'6"	Loose Moist Brown SAND With Pebbles-Possible Fill			
5			4'6"	Stiff Moist Brown Sandy CLAY With Pebbles			
	SS	7 9 10					
			8'0"	Firm Moist Blue Sandy CLAY With Pebbles			
10	SS	3 5 6					
	SS	3 5 5	15'0"	END OF BORING			
15							
20							
25							

" - Standard Penetration Resistance
S. - 2" O.D. Split Spoon Sample
S. - Sectional Liner Sample
T. - Shelby Tube Sample
S. - Bottle Sample

d - Natural Density-lbs. cu. ft.
'N-M' - Housel Penetration Resistance
H.S. - Housel Sample
q_u - Unconfined Compression lbs. sq. ft.
w - H₂O% of dry weight

WATER ENCOUNTERED None
AT COMPLETION None

Boring No. 8/1n

W-2



TESTING ENGINEERS & CONSULTANTS, INC.

P.O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 — 588-6200



soil borings

soil evaluation

foundation investigation

instrumentation

NG NO. # 7 JOB NO. 17699-3 PROJECT NEW TANK FARMS
nd Surface (Elev.) _____
m. _____
NT C-P-C Headquarters Location Pontiac, Michigan
Started: 3 January 1990 Completed 3 January 1990
Driller: T. Byrnes

HOLLOW STEM AUGERS

TH IN FEET	SAMPLE TYPE	"N"	STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
			3"	Frozen Brown SAND & ASPHALT CONCRETE			
	SS	14 14 10	2'0"	Frozen Brown SAND & Gravel-Possible Fill			
			3'0"	Stiff Moist Brown Sandy CLAY With Pebbles			
5--	SS	8 11 11					
			8'0"				
	SS	3 4 6		Firm Moist Blue Sandy CLAY With Pebbles			
10--							
	SS	3 4 6					
15--			15'0"	END OF BORING			
20--							
25--							

- Standard Penetration Resistance
- 2" O.D. Split Spoon Sample
- 6" Diameter Lateral Sample
- 4" by 6" Tube Sample
- Bottle Sample

- d - Natural Density-lbs. cu. ft.
- 'H-W' - Housel Penetration Resistance
- H.S. - Housel Sample
- q_u - Unconfined Compression lbs. sq. ft.
- w - H₂O% of dry weight

WATER ENCOUNTERED None
AT COMPLETION None

Boring No. 7/ln



TESTING ENGINEERS & CONSULTANTS, INC.

P.O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 — 588-6200



soil borings

soil evaluation

foundation investigation

instrumentation

LOG NO. # 6 JOB NO. 17699-3 PROJECT NEW TANK FARMS
d Surface (Elev.) _____

T C-P-C Headquarters Location Pontiac, Michigan
Started: 3 January 1990 Completed 3 January 1990
Driller: T. Byrnes
HOLLOW STEM AUGERS

DEPTH IN FEET	SAMPLE		STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
	TYPE	"N"					
5--	SS	17 9 8	2'6"	Frozen Brown SAND & Gravel-Possible Fill			
				Stiff Moist Brown Sandy CLAY With Pebbles			
5--	SS	7 8 8	5'6"	Stiff Moist Brown Very Sandy CLAY With Pebbles & Occasional Brown Sand Lense			
0--	SS	5 6 7	8'0"	Firm Moist Blue Sandy CLAY With Pebbles			
5--	SS	4 5 16	14'6"				
			15'0"	Medium Compact Moist Gray SAND			
				END OF BORING			

Standard Penetration Resistance
2" O.D. Split Spoon Sample
Sectional Liner Sample
Shelby Tube Sample
Bottle Sample

d - Natural Density-lbs. cu. ft.
'H-M' - Housel Penetration Resistance
H.S. - Housel Sample
q_u - Unconfined Compression lbs. sq. ft.
w - H₂O% of dry weight

WATER ENCOUNTERED None
AT COMPLETION None

Boring No. 6/ln

CPC Group Headquarters
General Motors Corporation
30001 Van Dyke Avenue
Warren, Michigan 48090-9020

RELEASE NUMBER 8004
FINAL SITE INVESTIGATION
NEW UNDERGROUND STORAGE TANK FARM
CPC ENGINEERING NORTH BUILDING
PONTIAC, MICHIGAN

Testing Engineers & Consultants, Inc.
P.O. Box 249
1333 Rochester Road
Troy, Michigan 48099
(313) 588-6200 of Dial 313 T-E-S-T-I-N-G

30 January 1990



TESTING ENGINEERS & CONSULTANTS, INC.

P. O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 — 588-6200



soil borings

soil evaluation

foundation investigation

instrumentation

LOG NO. # 5 JOB NO. 17699-3 PROJECT NEW TANK FARMS
Ground Surface (Elev.) _____

at C-P-C Headquarters Location Pontiac, Michigan
Started: 3 January 1990 Completed 3 January 1990
Driller: T. Byrnes

HOLLOW STEM AUGERS

DEPTH FEET	SAMPLE TYPE	SAMPLE "N"	STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
			2"	ASPHALT			
			1'6"	CONCRETE			
	SS	4 6 7	2'6"	Frozen Brown SAND-Possible Fill			
				Firm Moist Brown Sandy CLAY With Pebbles			
5--			4'0"	Stiff Moist Brown Sandy CLAY With Pebbles & Light Oxidation			
	SS	9 10 13					
			8'0"	Stiff Moist Blue Sandy CLAY With Pebbles			
10--	SS	4 6 9					
	SS	6 9 11	15'0"	END OF BORING			
15--							
20--							
25--							

Standard Penetration Resistance
S.D. Split Spoon Sample
Sectional Liner Sample
Shelby Tube Sample
Bottle Sample

d - Natural Density-lbs. cu. ft.
'H-N' - Housel Penetration Resistance
H.S. - Housel Sample
q_u - Unconfined Compression lbs. sq. ft.
w - H₂O% of dry weight

WATER ENCOUNTERED None
AT COMPLETION None

Boring No. 5/ln



Testing Engineers & Consultants, Inc.
P.O. Box 249 • 1333 Rochester Road • Troy, Michigan 48099
313-588-6200 or Dial 313-T-E-S-T-I-N-G
Fax 313-588-6232

T.E.C. Report Number: 17699-3
Date Issued: 30 January 1990

CPC Group Headquarters
General Motors Corporation
30001 Van Dyke Avenue,
Warren, Michigan 48090-9020

Attention: Mr. Mark Hoffman

Re: Release Number 8004
Final Site Investigation
New Underground Storage Tank Farm
CPC North, Pontiac, Michigan

Dear Mr. Hoffman:

Testing Engineers and Consultants, Inc. has completed the final phase in the remediation and investigation of the "New Tank Farm", located at the CPC North Facility in Pontiac, Michigan. The attached document outlines the work completed to date.

Testing Engineers and Consultants, Inc. is very pleased to provide these services. Should you have any questions or desire further information, please do not hesitate to contact this office at your earliest convenience.

Respectfully submitted,

TESTING ENGINEERS AND CONSULTANTS, INC.

Robert J. Nowakowski

Robert J. Nowakowski
Staff Geologist

Gerald M. Belian

Gerald M. Belian, P.E.
Executive Vice-President

RJN/GMB/rjn
Enclosure



All services undertaken subject to the following general policy. Reports are submitted for exclusive use of the clients to whom they are addressed. Their significance is subject to the adequacy and representative character of the samples and to the comprehensiveness of the tests, examinations and surveys made. No quotations from reports or use of TEC's name is permitted except as expressly authorized by TEC in writing.

CONSULTING ENGINEERS & FULL-SERVICE PROFESSIONAL TESTING AND INSPECTION

OFFICES IN ANN ARBOR, DETROIT, FLINT, LANSING, AND TROY
TEC Subsidiary: American Testing Laboratories, Inc. (ATL), Orlando, Florida





TESTING ENGINEERS & CONSULTANTS, INC.

P.O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 - 588-6200



soil borings

soil evaluation

foundation investigation

instrumentation

BOREHOLE NO. # 4 JOB NO. 17699-3 PROJECT NEW TANK FARMS

Ground Surface (Elev.) _____

ENT C-P-C Headquarters Location Pontiac, Michigan

Started: 2 January 1990 Completed 2 January 1990

Driller: T. Byrnes

HOLLOW STEM AUGERS

DEPTH IN FEET	SAMPLE		STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
	TYPE	"N"					
			1'0"	ASPHALT & Concrete			
	SS	20 14 14	2'0"	Frozen Brown & Gray SAND-Possible Fill			
				Stiff Moist Brown Sandy Variegated CLAY With Pebbles			
5'			5'6"				
	SS	6 10 12		Stiff Moist Brown Sandy CLAY With Pebbles & Occasional Brown Sand Lense			
			8'0"				
10'	SS	6 9 11		Stiff Moist Blue Sandy CLAY With Pebbles			
15'	SS	7 11 13	15'0"				
				END OF BORING			
20'							
25'							

- Standard Penetration Resistance
- 2" O.D. Split Spoon Sample
- Sectional Liner Sample
- Shelby Tube Sample
- Bottle Sample

- d - Natural Density-lbs. cu. ft.
- "H-N" - Housel Penetration Resistance
- H.S. - Housel Sample
- q_u - Unconfined Compression lbs. sq. ft.
- w - H₂O% of dry weight

WATER ENCOUNTERED None
AT COMPLETION None

Boring No. 4/ln

CPC Group Headquarters
Mr. Mark Hoffman
10 January 1990

T.E.C. Report Number 17699-3 (Page 1)

RELEASE NUMBER 8004
FINAL SITE INVESTIGATION
NEW UNDERGROUND STORAGE TANK FACILITY
CPC ENGINEERING NORTH BUILDING
PONTIAC, MICHIGAN

INTRODUCTION

Testing Engineers and Consultants, Inc. was contracted by CPC Group Headquarters to supervise the removal of contaminated soils for an excavation of a New Tank Farm at the CPC Engineering North Building, in Pontiac, Michigan. This project was completed on 22 November 1989, with a report issued reflecting this work (T.E.C. Report Number: 17699-2). At this time contaminated soils were removed and transported to a Type I Landfill. At the completion of this project, it was suspected that some contaminated soils remained in the northeast corner of the excavation. As a result, further soils exploration took place to define the soil conditions surrounding this excavation, and define any further remediation if necessary.

LOCATION

The site under investigation is located at the Chevrolet-Pontiac-Canada Group North Facility in Pontiac, Michigan. More specifically, the site is located at the southwest end of the CPC Engineering Building, just south of a Storage Building. Figure 1 indicates the location of the CPC Facility on a topographic map and Figure 2 locates the tank farm under investigation within the CPC Facility. All figures are located in Appendix A.

.....continued



TESTING ENGINEERS & CONSULTANTS, INC.

P.O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 - 588-6200



soil borings

soil evaluation

foundation investigation

instrumentation

BORING NO. # 3 JOB NO. 17699-3 PROJECT NEW TANK FARMS
Ground Surface (Elev.) _____
Datum _____
CLIENT C-P-C Headquarters Location Pontiac, Michigan
Started: 2 January 1990 Completed 2 January 1990
Driller: T. Byrnes
HOLLOW STEM AUGERS

DEPTH IN FEET	SAMPLE TYPE	"N"	STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
				Frozen SOIL On Top Of Concrete			
			1'6"				
	SS	20	2'0"	Frozen Brown Sandy CLAY			
		14		Stiff Moist Brown Sandy Variegated CLAY With Pebbles			
		14					
			4'0"				
5--				Stiff Moist Brown Sandy CLAY With Pebbles & Light Oxidation			
	SS	7					
		10					
		11					
			8'0"				
	SS	9		Stiff Moist Brown & Blue Sandy CLAY With Pebbles & Oxidation			
10--		13					
		17					
			12'0"				
				Stiff Moist Blue Sandy CLAY With Pebbles & Occasional Medium Gray Sand Lense			
	SS	4					
15--		12					
		14	15'0"				
				END OF BORING			
20--							
25--							

" - Standard Penetration Resistance
S - " O.D. Split Spoon Sample
S - Sectional Liner Sample
T - Shelby Tube Sample
S - Bottle Sample

d - Natural Density-lbs. cu. ft.
'H-W' - Housel Penetration Resistance
H.S. - Housel Sample
q_u - Unconfined Compression lbs. sq. ft.
w - H₂O% of dry weight

WATER ENCOUNTERED 15'0"
AT COMPLETION 3'0" Cave-In

Boring No. 3/1n

PC Group Headquarters
Mr. Mark Hoffman
30 January 1990

P.E.C. Report Number 17699-3 (Page 2)

SOIL BORINGS

A total of nine soil borings were completed to a depth of 15 feet in a pattern that entirely surround the excavation of the New Tank Farm. These borings were completed on 2 January 1990. The soil boring locations are illustrated in Figure 3, the Site Plan and the soil boring logs are included in Appendix B. In particular soil borings were concentrated in the northeast corner of the excavation, where it was suspected that some contamination remained.

Soil samples were collected at depths of 3.0, 7.0, 10.0 feet and every 5 feet thereafter. These samples were analyzed for possible volatile organics in the field utilizing an HNU Photoionizer. The photoionizer has an analytical range of 0.2 to 2000 ppm (parts per million) for most contaminants and is calibrated daily against a standard calibration gas. The results of the field screening indicated no detectable levels of contamination in any of the samples.

ANALYTICAL RESULTS

Prior to analysis, collected soil samples were composited for the entire boring for soil borings #1 through #6 and boring #9. In addition, composites were made of the 10.0 and 15.0 foot samples of soil borings #7 and #8. For both of these soil borings the 3.0 and 7.0 foot samples were tested separately. More analyses were performed on soil samples of borings #7 and #8 because they were completed in the area of suspected soil contamination. All samples were tested for Aromatic Volatile Organics (EPA Method 8020). In all previous work on-site, Total Petroleum Hydrocarbons were used in the soil analysis. However,

.....continued



TESTING ENGINEERS & CONSULTANTS, INC.
P.O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 - 588-6200



soil borings

soil evaluation

foundation investigation

instrumentation

BORING NO. # 2 JOB NO. 17699-3 PROJECT NEW TANK FARMS
Ground Surface (Elev.) _____
Datum _____
CLIENT C-P-C Headquarters Location Pontiac, Michigan
Started: 2 January 1990 Completed 2 January 1990
Driller: T. Byrnes
HOLLOW STEM AUGERS

DEPTH IN FEET	SAMPLE		STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
	TYPE	"N"					
			1/2"	ASPHALT			
			8"	Frozen Black Foundry Sand-FILL			
			1'6"	Frozen Brown Medium SAND With Pebbles-Possible Fill			
				Stiff Moist Brown Sandy Variegated CLAY With Pebbles & Oxidation			
5			5'6"				
	SS	7 12 20		Extremely Stiff Moist Brown Sandy CLAY With Pebbles			
			8'0"				
10				Firm Moist Bluish Brown Sandy CLAY With Pebbles			
	SS	3 5 8					
			11'6"				
				Firm Moist Blue Sandy CLAY With Pebbles			
15			14'0"				
	SS	2 11 12	15'0"	Medium Compact Moist Brown Clayey SAND With Pebbles			
				END OF BORING			
20							
25							

"N" - Standard Penetration Resistance
S.S. - 2" O.D. Split Spoon Sample
L.S. - Sectional Liner Sample
S.T. - Shelby Tube Sample
B.S. - Bottle Sample

d - Natural Density-lbs. cu. ft.
"H-N" - Housel Penetration Resistance
H.S. - Housel Sample
q_u - Unconfined Compression lbs. sq. ft.
w - H₂O% of dry weight

WATER ENCOUNTERED None
AT COMPLETION None

Boring No. 2/ln

CPC Group Headquarters
Mr. Mark Hoffman
30 January 1990

T.E.C. Report Number: 17699-3 (Page 3)

ANALYTICAL RESULTS (cont'd)

the preliminary work has illustrated that the contamination is in the form of gasoline which is highly volatile. As a result, it was decided that Aromatic Volatile Organics would be a more accurate test method for this site.

A total of 13 samples were tested and every sample indicated non-detectable levels of Aromatic Volatile Organics (EPA Method 8020). The results are included in Appendix C.

SUMMARY

Testing Engineers & Consultants, Inc. has completed the final phase of the investigation and remediation of the New Tank Farm at the CPC North Facility, in Pontiac, Michigan. Previously, contaminated soils were excavated and transported to a Type II Landfill, as referenced in T.E.C. Report Number, 17699-2. At this time it was suspected that some contaminated soils remained in the northeast corner of the excavation. As a result, another series of soil borings were completed surrounding the excavation. This was combined with extensive testing of composited and selected soil samples. All results indicate that no contamination remains surrounding the excavation. In addition, no ground water was encountered during the course of this study so it is apparent that this resource has not been affected.

From all information ascertained during the course of this study it is the professional opinion of Testing Engineers & Consultants, Inc. that this site has been entirely remediated and no further work is necessary. A copy of this report should be sent to the Michigan Department of Natural Resources for confirmation of site closure.

* * * * *



TESTING ENGINEERS & CONSULTANTS, INC.

P.O. BOX 249 • 1333 Rochester Road • Troy, Michigan 48099
313 — 588-6200



soil borings

soil evaluation

foundation investigation

instrumentation

BORING NO. # 1 JOB NO. 17699-3 PROJECT NEW TANK FARMS

Ground Surface (Elev.) _____

Datum _____

CLIENT C-P-C Headquarters Location Pontiac, Michigan

Started: 2 January 1990 Completed 2 January 1990

Driller: T. Byrnes

HOLLOW STEM AUGERS

DEPTH IN FEET	SAMPLE TYPE	"N"	STRATA CHANGE	SOIL CLASSIFICATION	w	d	q _u
				Frozen Brown SAND & Pebbles-Possible Fill			
	SS	15 9 5	2'0"	Medium Compact Moist Brown Medium To Fine SAND With Pebbles-Possible Fill			
			4'0"	Stiff Moist Brown Sandy CLAY With Pebbles & Light Oxidation			
5--	SS	8 11 14					
			8'6"	Firm Moist Blue Sandy CLAY With Pebbles			
10--	SS	5 6 7					
			15'0"	END OF BORING			
15--	SS	3 5 7					
20--							
25--							

- " - Standard Penetration Resistance
- S. - 2" O.D. Split Spoon Sample
- 3. - Sectional Liner Sample
- 4. - Shelby Tube Sample
- 5. - Bottle Sample

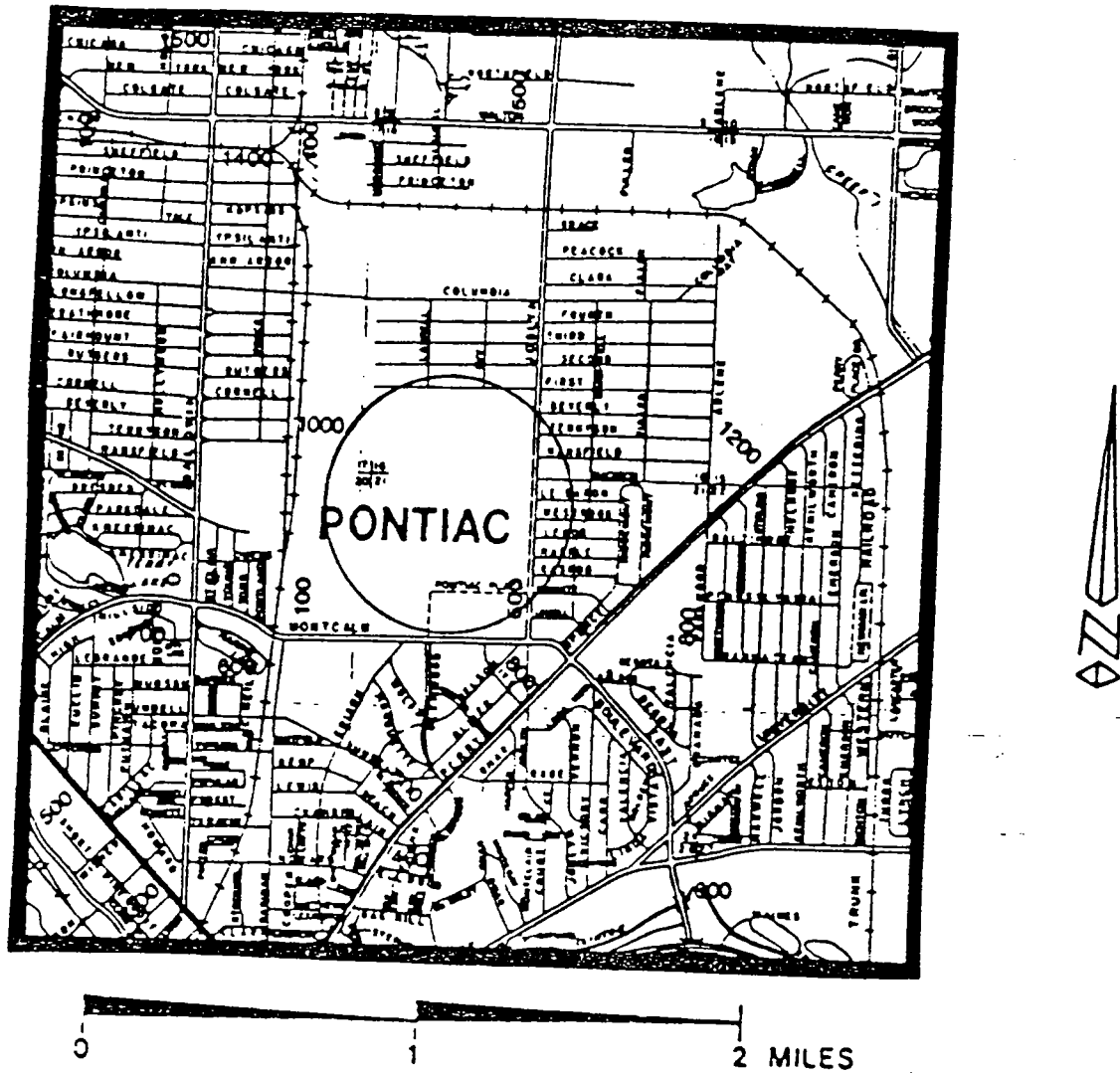
- d - Natural Density-lbs. cu. ft.
- "N-W" - Housel Penetration Resistance
- H.S. - Housel Sample
- q_u - Unconfined Compression lbs. sq. ft.
- w - H₂O% of dry weight

WATER ENCOUNTERED None
AT COMPLETION None

Boring No. 1/Ln

APPENDIX B
SOIL BORING LOGS

FIGURE 1 Site Location Map



PONTIAC
OAKLAND COUNTY, MICHIGAN



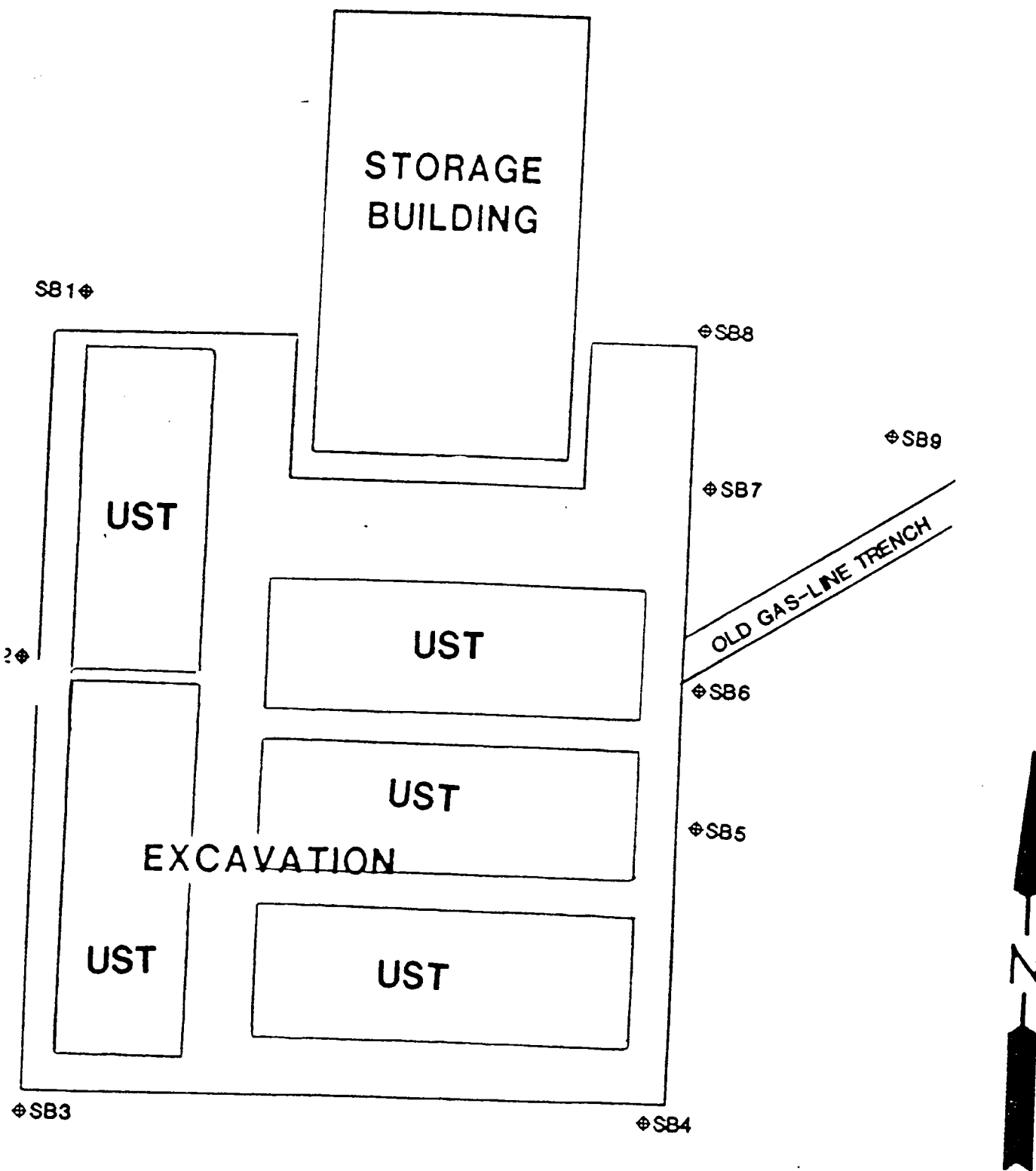


FIGURE 3 SITE PLAN

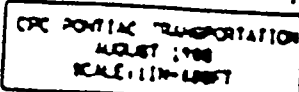


FIGURE 2 SITE PLAN

Appendix X

Appendix X

- X-1 UST Site Assessment Report and Closure or Change-In-Status Registration Form (CRA, 2000a)
- X-2 LUST Closure (Superior, 2000)
- X-3 Letter to GM, re: Site Assessment Report for General Motors, Pontiac Site (MDEQ, 2000)



JOHN ENGLER, Governor
DEPARTMENT OF ENVIRONMENTAL QUALITY

"Better Service for a Better Environment"
HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: www.deq.state.mi.us
RUSSELL J. HARDING, Director

REPLY TO:

STORAGE TANK DIVISION
TOWN CENTER
PO BOX 30157
LANSING MI 48909-7657

February 16, 2000

Mr. Tom Ramos
Pontiac Site Operations
General Motors
220 E. Columbia MC 483-049-201
Pontiac, MI 48340

Dear Mr. Ramos:

SUBJECT: Site Assessment Report for General Motors-Pontiac Site Operations, One Pontiac Plaza, Pontiac, Oakland County, Facility Number 0-001623

This is in response to the above-subject Underground Storage Tank Site Assessment Report and Closure or Change-In-Service Registration form received by this office on January 20, 2000. The site assessment report is for the closure of one-twenty thousand gallon gasoline storage tank.

The test methodology and level of detection of the methodology are acceptable. The containment concentrations are below the method detection levels and there is no evidence of a confirmed release. Based on the submitted information, no further remedial action is required.

If you have additional questions concerning this matter, please contact me.

Sincerely,

A handwritten signature in cursive script that reads "Marcia Jo Besonen".

Marcia Jo Besonen, Engineer
Technical Review Unit
517-373-3290

X-1

X-3

**UNDERGROUND STORAGE TANK SYSTEM SITE ASSESSMENT REPORT AND
CLOSURE OR CHANGE-IN-SERVICE REGISTRATION FORM**

Information is required under Part 211, Underground Storage Tank Regulations, of the Natural Resources and Environmental Protection Act, Act 451 of the Public Acts of 1994, being Sections 324.21101 to 324.21113 of the Michigan Compiled Laws Annotated. Any owner who knowingly fails to notify or submits false information shall be subject to a misdemeanor and/or civil penalties not to exceed \$5000 per day for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS: For permanent closure and change-in-service, complete all the information on this form and submit with the site assessment analytical results, chain of custody and site sketch which indicates the location and depths of tanks, piping, and samples. This form must be received within 45 days of the samples being taken. The owner is required to keep a copy of the site assessment report for a minimum of three years. See reverse side of this form for additional information.		FACILITY ID NUMBER 0-001623
I. OWNERSHIP OF TANKS		II. LOCATION OF TANKS
NAME OF OWNER (CORPORATION, INDIVIDUAL, ETC.) General Motors - Pontiac Site Operations		FACILITY NAME OR COMPANY SITE IDENTIFIER General Motors - Pontiac Site Operations
STREET ADDRESS 220 E. Columbia MC 483-049-201		STREET ADDRESS (PO BOX NOT ACCEPTABLE) One Pontiac Plaza
CITY Pontiac	STATE MI	ZIP CODE 48340
AREA CODE & TELEPHONE NUMBER (248) 857-0421		CONTACT PERSON FOR LOCATION Tom Ramos
		AREA CODE & TELEPHONE NUMBER (248) 857-0421

III. TANK INFORMATION

TANK NUMBER	CW 3				
TANK SIZE	20,000 gal				
SUBSTANCE STORED	Gasoline				
DATE LAST USED	> 2 yrs				
DATE CLOSED	12/7/99				
REMOVED FROM GROUND	12/7/99				
CLOSED IN PLACE (IN TYPE OF FILL)	N/A				
Ch. IN-SERVICE	N/A				
OWNER'S NAME Tom Ramos	OWNER'S SIGNATURE <i>Tom Ramos</i>	DATE 1/19/00			

IV. SUBMITTER INFORMATION

SUBMITTED BY (COMPANY NAME) Conestoga-Rovers & Associates		NAME (INDIVIDUAL) Liz Marsh Faler	
SIGNATURE <i>Liz Marsh Faler</i>	DATE 1/18/00	AREA CODE & TELEPHONE NUMBER (734) 942-0909	

DO NOT WRITE BELOW THIS LINE (FOR OFFICE USE ONLY)**SITE ASSESSMENT REVIEW REPORT**

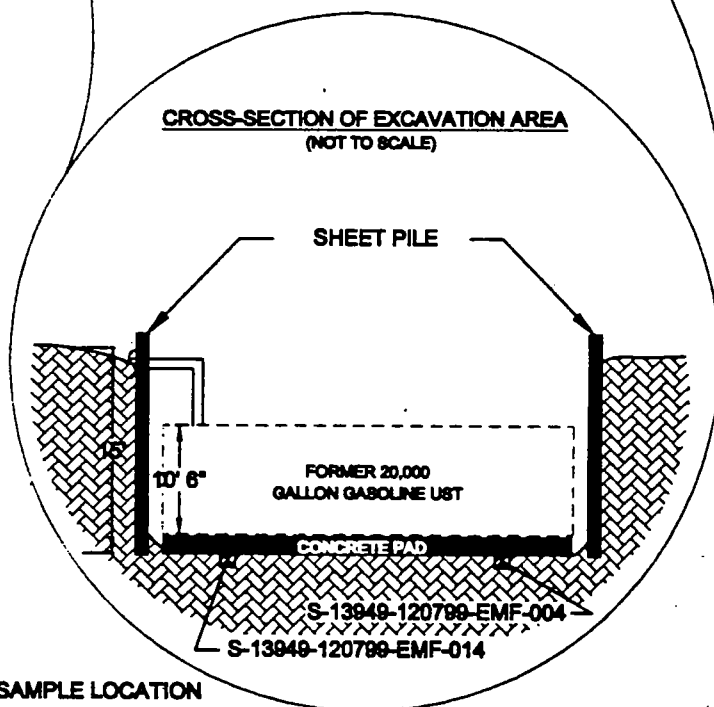
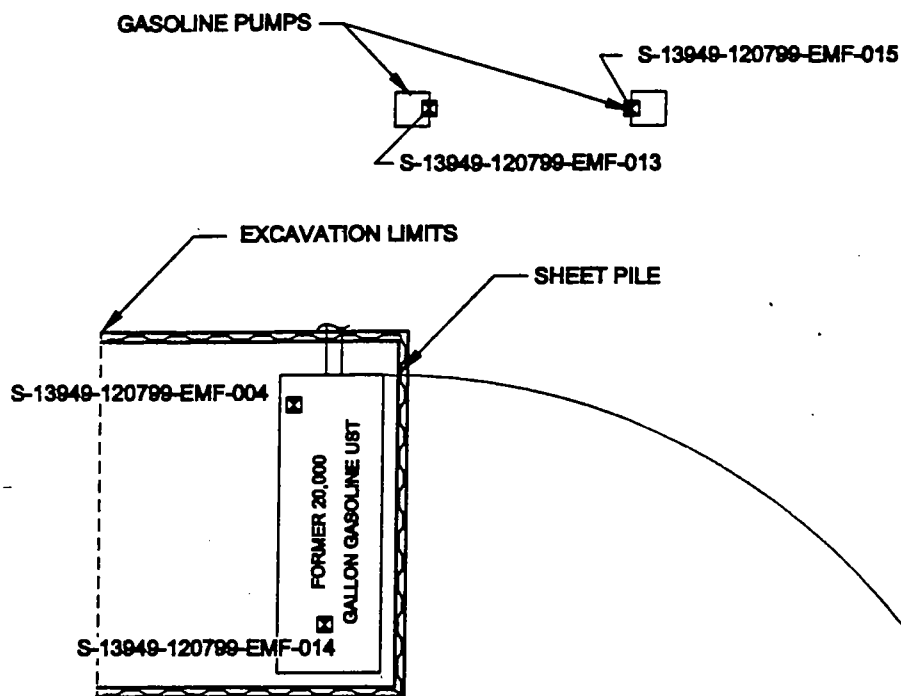
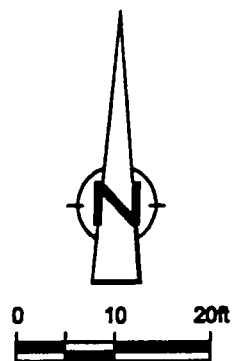
Your site assessment has been reviewed by the Storage Tank Division staff and the following determination has been made:

- ☐ The contamination concentration is below the threshold detection levels, and there is no evidence of a confirmed release.
- ☐ The test methodology or level of detection is faulty. The data submitted is not considered valid. Please perform another site assessment and forward a copy of the results to this office within 45 days.
- ☐ The number of sampling points analyzed are considered inadequate to make a determination of the cleanliness of the site. Please perform another site assessment and forward a copy of the results to this office within 45 days.
- ☐ The contaminant concentrations are greater than the threshold detection levels and there is evidence of a confirmed release. A confirmed release report is being generated. Follow reporting requirements in accordance with 451 PA 1994, Part 213, as amended.
- ☐ The soils excavated and removed from the site were greater than allowable volumes. A confirmed release was not reported to this office within 24 hours per the Michigan Underground Storage Tank Rules (MUSTR) prior to excavation of contaminated soil. A confirmed release report is being generated. Follow reporting requirements in accordance with 451 PA 1994, Part 213, as amended.

SIGNATURE OF REVIEWER	DATE OF REVIEW

OWNER SHALL RETAIN GOLDENROD COPY
MAIL WHITE, PINK AND CANARY COPIES TO:STORAGE TANK DIVISION
DEPARTMENT OF ENVIRONMENTAL QUALITY
PO BOX 30157
LANSING, MI 48909-7657

EQP3881 (1/99)



LEGEND

- S-13949-120799-EMF-013 APPROXIMATE SOIL SAMPLE LOCATION

NOTES:

CONCRETE PAD WAS LEFT IN-PLACE. PAD WAS BROKEN IN CERTAIN AREAS TO COLLECT SOIL SAMPLES.

PIPING WAS CAPPED AND LEFT IN-PLACE.

figure 1

SAMPLE LOCATIONS & EXCAVATION LIMITS FORMER UST CPC PONTIAC - CAR WASH Pontiac, Michigan

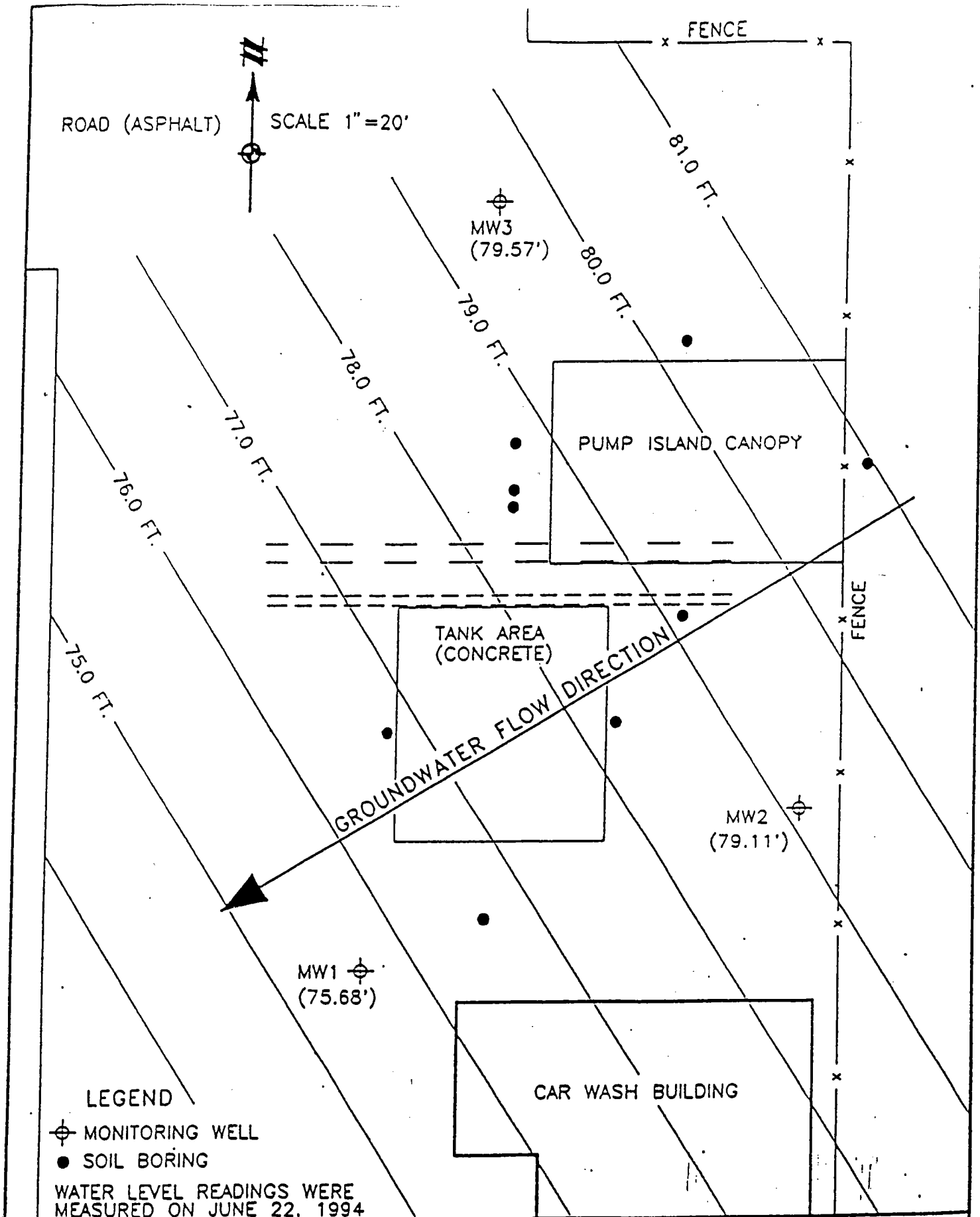


FIGURE 5
PROJECT NO.: 41307
DATE: 8-29-94

GROUNDWATER CONTOUR MAP
CPC PONTIAC-CAR WASH SITE
985 JOSLYN
PONTIAC, MI.

DWG. BY: RML
CADD FILE: 1180CV02

ATWELL-HICKS, INC.
CIVIL ENGINEERING SURVEYING PLANNING
ENVIRONMENTAL SERVICES

340 AMS DRIVE • P.O. BOX 2981 • ANN ARBOR, MI 48108
313/994-4000 • FAX 313/994-1599

SUMMARY OF SITE ASSESSMENT SOIL SAMPLE RESULTS
CPC - PONTIAC CAR WASH SITE
PONTIAC, MICHIGAN

Sample ID (S-13949-)	Residential Drinking Water Criteria µg/kg	Groundwater Contact Criteria µg/kg	Residential Direct Contact Criteria µg/kg	120799-EMF-004 Excavation Floor 15'	120799-EMF-013 Excavation Floor 15'	120799-EMF-014 Dispenser/Pipeline 2'	120799-EMF-015 Dispenser/Pipeline 2'
Sample Location							
Sample Depth (feet bgs)							
Date Sampled				12/07/99	12/07/99	12/07/99	12/07/99
Date Analyzed				12/09/99	12/09/99	12/09/99	12/09/99
VOCs							
Benzene	100	180,000	88,000	ND (52)	ND (49)	ND (46)	ND (55)
Ethylbenzene	1,500	140,000	140,000	ND (52)	ND (49)	ND (46)	ND (55)
Toluene	16,000	250,000	250,000	ND (52)	ND (49)	ND (46)	ND (55)
Total Xylenes	5,600	150,000	150,000	ND (260)	ND (240)	ND (230)	ND (280)

Notes:

bgs - below ground surface

ND (52) - Parameter not detected above detection limit in parentheses

A T W E L L - H I C K S, I N C.

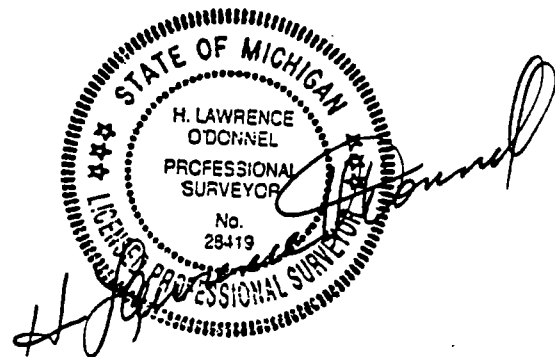
540 Avis Drive
PO Box 2981
Ann Arbor Michigan 48106
313 994 4000 • FAX 313 994 1599

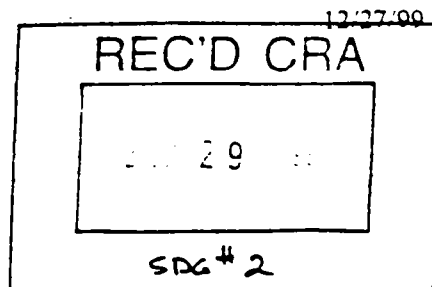
Section 16, SW 1/4 &
Section 21, NW 1/4
T3N, R10E
City of Pontiac
CPC Pontiac
41307

May 11, 1995

**A 0.25 ACRE PARCEL OF LAND
IN THE SW 1/4 OF SECTION 16, T3N, R10E,
AND THE NW 1/4 OF SECTION 21, T3N, R10E,
CITY OF PONTIAC**

BEGINNING at a point 45.70 feet east and 1,338.10 feet south of the southeast corner of Lot 412 of Highwood Subdivision as recorded in Liber 21 of Plats, page 32, Oakland County Records, Oakland County, Michigan; thence S88°53'44"E 86.26 feet; thence S01°06'16"W 128.74 feet; thence N88°53'44"W 86.26 feet; thence N01°06'16"E 128.74 feet for a Place of Ending, being a part of the southwest 1/4 of Section 16, T3N, R10E, City of Pontiac, and the northwest 1/4 of Section 21, T3N, R10E, City of Pontiac, containing 0.25 acres of land, more or less, and being subject to all easements, reservations, exceptions, conditions, and restrictions of record, if any.





Technical Report for

Conestoga-Rovers & Associates

CPC Pontiac Car Wash Site

13949

Accutest Job Number: E60135C

ORIGINAL ANALYTICAL REPORT

Project#: 13949 Lab#: _____

Name: GM CPC Pontiac Car Wash

Description

Event: UST Pull

Samples: 4 Soils

Analysis: BTEX

TAT: 3 day - met

Lab: Accutest

Report to:

Conestoga Rovers & Associates
11100 Metro Airport Center Drive
Suite 160
Romulus, MI 48174

ATTN: Paul Wiseman

Checked Against Preliminary Data:

Date: 12/29/99 Init: Paul

Date of Validation Memo: _____

Invoice Approval Date: _____

Comments: _____

Total number of pages in report: 14

Vincent J. Pugliese
President

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, KS, MA, MD, NC, PA, RI, SC, VA

Results relate only to the items tested.

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.

STATE OF MICHIGAN
COUNTY OF *[county where District Supervisor signs]*

The foregoing instrument was acknowledged before me this _____ day of _____, _____,
by _____ (month) (year)

Notary Public
[Print or type name]
[Commissioned in] County, [State]

My Commission Expires: _____

IN WITNESS WHEREOF, the said Owner of the above-described Property has caused this Notice to be executed on this
_____ day of _____, _____.
(month) (year)

Owner *[signature]*

Owner name and address *[Print or type]*

Signed in the presence of:

Witness *[Signature]*

Witness *[Signature]*

Witness *[Print or type name]*

Witness *[Print or type name]*

The notary shall not also serve as a witness.

STATE OF MICHIGAN
COUNTY OF *[Oakland]*

The foregoing instrument was acknowledged before me this _____ day of _____, _____,
by _____ (month) (year)

Notary Public
[Print or type name]
[Commissioned in] County, [State]

My Commission Expires: _____

Prepared by:



Sample Summary

Conestoga-Rovers & Associates

Job No: E60135C

CPC Pontiac Car Wash Site
Project No: 13949

Sample Number	Collected Date	Time By	Received	Matrix Code Type	Client Sample ID
E60135-4A	12/07/99	09:20 LF	12/08/99	SO Soil	S-13949-120799-EMF-004
E60135-13A	12/07/99	11:10 LF	12/08/99	SO Soil	S-13949-120799-EMF-013
E60135-14A	12/07/99	11:20 LF	12/08/99	SO Soil	S-13949-120799-EMF-014
E60135-15A	12/07/99	11:30 LF	12/08/99	SO Soil	S-13949-120799-EMF-015

NOTICE OF DISCHARGE OF LAND AND RESOURCE USE RESTRICTIONS

General Motors Corp. One Pontiac Plaza, Owner, has received approval from the MDEQ, by this instrument, to discharge the notice of land and resource use restrictions imposed in Liber 15780, Page 474, Office of [Oakland] Register of Deeds and recorded on 10/27/95. The previously recorded document that set forth these restrictions was recorded for certain property located in the City of Pontiac, County of Oakland (the "Property"). This Property is described as:

See Attachment A for legal description of Property
See Attachment B for a survey of Property

The Owner has provided information to the MDEQ in which the Owner states that

The site was previously closed under Type C Criteria. The site was subsequently characterized under the current Risk Based Corrective Action Criteria and the site was determined to meet Residential Criteria for the applicable exposure pathways.

The undersigned persons executing this Notice of Discharge are the Owner, or a person with the express written permission of the Owner, and a representative of the MDEQ, who both certify that they are duly authorized and have been empowered to execute and deliver this Notice of Discharge.

District Supervisor

Date

District Supervisor [Print or type name]
Storage Tank Division
Michigan Department of Environmental Quality

Signed in the presence of:

Witness [Signature]

Witness [Signature]

Witness [Print or type name]

Witness [Print or type name]

The notary shall not also serve as a witness



TABLE OF CONTENTS
COMMERCIAL C LABORATORY DATA DELIVERABLES

TITLE/COVER PAGE

TABLE OF CONTENTS

SECTION 1 GENERAL

- A. Results Summary
- B. Chain of Custody

SECTION 2 GC/MS SUPPORT DATA (grouped by fraction)

- A. Methodology Summary
- B. Conformance/Non-conformance Summary
- C. Surrogate Recovery Results Summary (Form 2)
- D. Matrix Spike/Matrix Spike Duplicate Summary (Form 3)
- E. Blank Spike Summary
- E. Method Blank Summary (Form 4)

SECTION 3 GC SUPPORT DATA

- A. Methodology Summary
- B. Conformance/Non-conformance Summary
- C. Surrogate Recovery Results Summary (Form 2)
- D. Matrix Spike/Matrix Spike Duplicate Summary (Form 3)
- D. Blank Spike Summary
- E. Method Blank Summary (Form 4)

SECTION 4 METALS SUPPORT DATA (sorted by Instrument Type - ICP, Furnace, Flame, Mercury)

- A. Methodology Summary
- B. Conformance/Non-conformance Summary
- C. Batch Quality Control Summary
 - Method Blank Summary
 - Duplicate, Matrix Spike Summary
 - Lab Control/Spike Blank Summary
 - Serial Dilution Summary

SECTION 5 GENERAL CHEMISTRY/PETROLEUM HYDROCARBON SUPPORT DATA

- A. Methodology Summary
- B. Conformance/Non-Conformance Summary
- C. Batch Quality Control Summary
 - Duplicate Summary
 - Matrix Spike Summary
 - Method Blank, Spike Blank Summary

Com C 1/20/98

APPENDIX F
NOTICE OF DISCHARGE OF LAND USE & RESOURCE USE RESTRICTIONS



Report of Analysis

Page 1 of 1

Client Sample ID: S-13949-120799-EMF-004
Lab Sample ID: E60135-4A
Matrix: SO - Soil
Method: SW846 8260B
Project: CPC Pontiac Car Wash Site

Date Sampled: 12/07/99
Date Received: 12/08/99
Percent Solids: 87.5

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	O25715.D	1	12/09/99	XLC	n/a	n/a	VO1811
Run #2							

Purgeable Aromatics

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	52	ug/kg	
100-41-4	Ethylbenzene	ND	52	ug/kg	
108-88-3	Toluene	ND	52	ug/kg	
1330-20-7	Xylene (total)	ND	260	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		80-120%
17060-07-0	1,2-Dichloroethane-D4	79%		70-121%
2037-26-5	Toluene-D8	89%		81-117%
460-00-4	4-Bromofluorobenzene	85%		74-121%

(a) Methanol preservation/extraction.

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Benzene Site Specific UCL Calculation:

The soil samples utilized in this UCL were chosen from all of the soil samples collected from the Subject Property. Listed below are the soil samples used and their respective sampling depths.

CPC 1991	TEC 1991	TEC 1994	AHI 1994
245 (376: 13.0')	1,938 (B-1 15.0')	<1,000 (SB-3 7.0')	<10 (SB1 10.0')
<10 (377: 13.0')	<5 (B-1 20.0')	<1,000 (SB-3 13.0')	
<10 (381: 2.5')	<5 (B-2 15.0')	<10 (SB-5 5.0')	
5,900 (382: 7.0')	<5 (B-2 20.0')	<10 (SB-6 5.0')	
	<5 (B-3 5.0')		
	<5 (B-3 7.5')		
	22 (B-4 5.0')		
	<5 (B-4 7.5')		

9,150 total

mean = $9,150/17 = 538$

standard deviation = 1,473

standard error of the mean = $1,473/\sqrt{17} = 357$

UCL = $538 + (1.746 * 357) = 1,161$

UCL for Benzene = 1,161 ug/kg (ppb)

mean is total / # of samples (X)

calculate standard deviation with calculator (S)

standard error of the mean $Sx = S / \sqrt{(\# \text{ of samples})}$

t = from chart for one-tail 95% UCL

UCL = $X + (t * Sx)$



Report of Analysis

Page 1 of 1

Client Sample ID: S-13949-120799-EMF-013
Lab Sample ID: E60135-13A
Matrix: SO - Soil
Method: SW846 8260B
Project: CPC Pontiac Car Wash Site

Date Sampled: 12/07/99
Date Received: 12/08/99
Percent Solids: 86.0

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	O25717.D	1	12/09/99	XLC	n/a	n/a	VO1811
Run #2							

Purgeable Aromatics

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	49	ug/kg	
100-41-4	Ethylbenzene	ND	49	ug/kg	
108-88-3	Toluene	ND	49	ug/kg	
1330-20-7	Xylene (total)	ND	240	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	82%		80-120%
17060-07-0	1,2-Dichloroethane-D4	71%		70-121%
2037-26-5	Toluene-D8	81%		81-117%
460-00-4	4-Bromofluorobenzene	82%		74-121%

(a) Methanol preservation/extraction.

3

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Benzene Site Specific UCL Calculation:

The soil samples utilized in this UCL were chosen from all of the soil samples collected from the Subject Property. Listed below are the soil samples used and their respective sampling depths.

CPC 1991	TEC 1991	TEC 1994	AHI 1994
245 (376: 13.0')	1,938 (B-1 15.0')	<10 (SB-1 7.0')	<10 (SB1 10.0')
<10 (377: 13.0')	<5 (B-1 20.0')	<10 (SB-1 13.0')	<10 (SB1 15.0')
<10 (378: 13.0')	<5 (B-2 15.0')	<10 (SB-2 7.0')	<10 (SB2 15.0')
<10 (379: 13.0')	<5 (B-2 20.0')	<10 (SB-2 13.0')	<10 (SB3 15.0')
<10 (380: 13.0')	<5 (B-3 5.0')	<1000 (SB-3 7.0')	
<10 (381: 2.5')	<5 (B-3 7.5')	<1000 (SB-3 13.0')	
5,900 (382: 7.0')	22 (B-4 5.0')	<10 (SB-4 7.0')	
	<5 (B-4 7.5')	<10 (SB-4 13.0')	
		<10 (SB-5 5.0')	
		<10 (SB-6 5.0')	
		<10 (SB-7 10.0')	
		<10 (SB-8 5.0')	

10,225 total

mean = $10,225/31 = 330$

standard deviation = 1,114

standard error of the mean = $1,114/\sqrt{31} = 200$

UCL = $330 + (1.697 * 200) = 669$

UCL for Benzene = 669 ug/kg (ppb)

mean is total / # of samples (X)

calculate standard deviation with calculator (S)

standard error of the mean $Sx = S / \sqrt{(\# \text{ of samples})}$

t = from chart for one-tail 95% UCL

UCL = $X + (t * Sx)$



Report of Analysis

Page 1 of 1

Client Sample ID: S-13949-120799-EMF-014
Lab Sample ID: E60135-14A
Matrix: SO - Soil
Method: SW846 8260B
Project: CPC Pontiac Car Wash Site

Date Sampled: 12/07/99
Date Received: 12/08/99
Percent Solids: 87.9

Run #1 ^a	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	O25718.D	1	12/09/99	XLC	n/a	n/a	VO1811

Purgeable Aromatics

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	46	ug/kg	
100-41-4	Ethylbenzene	ND	46	ug/kg	
108-88-3	Toluene	ND	46	ug/kg	
1330-20-7	Xylene (total)	ND	230	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		80-120%
17060-07-0	1,2-Dichloroethane-D4	79%		70-121%
2037-26-5	Toluene-D8	90%		81-117%
460-00-4	4-Bromofluorobenzene	85%		74-121%

(a) Methanol preservation/extraction.

4

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

APPENDIX E
95% UCL CALCULATIONS



Report of Analysis

Page 1 of 1

Client Sample ID: S-13949-120799-EMF-015
Lab Sample ID: E60135-15A
Matrix: SO - Soil
Method: SW846 8260B
Project: CPC Pontiac Car Wash Site

Date Sampled: 12/07/99
Date Received: 12/08/99
Percent Solids: 85.9

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	O25719.D	1	12/09/99	XLC	n/a	n/a	VO1811
Run #2							

Purgeable Aromatics

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	55	ug/kg	
100-41-4	Ethylbenzene	ND	55	ug/kg	
108-88-3	Toluene	ND	55	ug/kg	
1330-20-7	Xylene (total)	ND	280	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	82%		80-120%
17060-07-0	1,2-Dichloroethane-D4	83%		70-121%
2037-26-5	Toluene-D8	91%		81-117%
460-00-4	4-Bromofluorobenzene	81%		74-121%

(a) Methanol preservation/extraction.

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

TABLE 2
SUMMARY OF ANALYTIC RESULTS

Sample ID	Type	Depth (ft)	Benzene	Toluene	Ethylbenzene	Xylene
SB1	Soil	10	ND	ND	884	3,004
SB1	Soil	15	ND	ND	ND	ND
SB2	Soil	15	ND	ND	ND	ND
SB3	Soil	15	ND	ND	ND	ND
MW1	Groundwater		ND	ND	ND	ND
MW2	Groundwater		ND	ND	ND	ND
MW3	Groundwater		ND	ND	ND	ND

Note: in $\mu\text{g}/\text{kg}$ or part per billion (ppb)
ND = not detected or less than method detection limit

Based on laboratory analysis of soil samples collected by CPC during initial abatement activities, by TEC in previous subsurface investigations, and by AHI in this hydrogeologic investigation, the extent of contamination has been defined both horizontally and vertically. Please refer to Section 1: Introduction of this report for a summary of analytic results.

Based on analytic results, it was found that all toluene, ethylbenzene and xylene levels in soil samples at the subject site were below the MDNR Type C Criteria for soil. The zone of contamination for benzene (greater than 200 ppb) was found to be approximately 24 feet by 14 feet by 14 feet (depth), with a volume of about 175 cubic yards. The zone of benzene contamination (greater than 200 ppb) is illustrated in Figures 2 and 3.

4.0 CONCLUSIONS

The site geology basically consists of silty clay with a thickness in excess of 27 feet. The groundwater flows with a velocity of 0.10 m/year at the subject site. Therefore, the silty clay at the site should be characterized as an aquitard, instead of aquifer. Contamination in the vadose zone has not intercepted the groundwater table.

Based on soil and aquifer characteristics, there is not a significant potential migration pathway from the vadose zone to the groundwater table. The evidence to date supports this conclusion.

CONEST A-ROVERS & ASSOCIATES, INC.
11100 Meridian Airport Center Drive - Suite 160
Romulus, MI 48174 (734) 942-0909

CHAIN OF CUSTODY RECORD

SAMPLER'S SIGNATURE: hiz Faler PRINTED NAME: hiz Faler

REFERENCE NUMBER:
13949

PROJECT NAME:
APC Pontiac - Car Wash Site

PARAMETERS
BTEX

CONTAINERS
2

SEQ. No. DATE TIME

SAMPLE TYPE

001 12/7/99 1120 S-13949-EMF-004
002 1110 -013
003 1120 -014
004 1130 -015

REMARKS

3-day
FAT

1107 IE

TOTAL NUMBER OF CONTAINERS
8

RELINQUISHED BY: hiz Faler DATE: 12/7/99 TIME: 1015 RECEIVED BY: Feder DATE: 12-4-01 TIME: 1030
RELINQUISHED BY: Feder DATE: 12-4-01 TIME: 1030 RECEIVED BY: Feder DATE: 12-4-01 TIME: 1030
RELINQUISHED BY: Feder DATE: 12-4-01 TIME: 1030 RECEIVED BY: Feder DATE: 12-4-01 TIME: 1030

METHOD OF SHIPMENT: Feder

AIR BILL No.

White - Fully Executed Copy
Yellow - Receiving Laboratory Copy

Pink - Shipper Copy
Goldenrod - Sampler Copy

SAMPLE TEAM:

hiz Faler
Bob Schloesser

RECEIVED FOR LABORATORY BY:

DATE: 12-4-01 TIME: 1030

The detailed slug test data and hydraulic conductivity calculation results based on the Hvorslev Method are included in Appendix D.

The Bouwer Rice Method was used as well to calculate hydraulic conductivities. Using the AQTESOLV program, the Bouwer Rice Method indicated that hydraulic conductivity values for MW1 and MW2 were 1.0×10^{-6} cm/s and 6.9×10^{-6} cm/s. These values were in general agreement with the Hvorslev Method. The detailed slug test data and hydraulic conductivity calculation results for the Bouwer Rice Method are presented in Appendix E.

3.3.4 Groundwater Flow Rate

The site geology characterization indicated that soils at the subject site was silty clay. The porosity of silt ranges between 0.35 and 0.50 and the porosity of clay ranges between 0.40 and 0.70 (Ground Water by Freeze and Cherry, 1979). The porosity of soil at the subject site is assumed to be 0.50.

The average hydraulic conductivity value of Monitoring Wells MW1 and MW2 obtained from the Hvorslev Method is 3.1×10^{-6} cm/s. This value is used to represent hydraulic conductivity for this site.

The linear porewater velocity v is defined as following:

$$v = \frac{Ki}{n}$$

where

K = hydraulic conductivity;
 i = hydraulic gradient;
 n = porosity.

Based on $K = 3.1 \times 10^{-6}$ cm/s, $i = 0.05$ and $n = 0.50$, the linear porewater velocity v is:

$$v = \frac{3.1 \times 10^{-6} \text{ cm/s} \times 0.05}{0.5}$$

= 3.1×10^{-7} cm/s
= 0.10 m/year
= 0.33 ft/year

3.3.5 Discussion of Contamination Extent

During this subsurface investigation, AHI submitted four soil samples and three groundwater samples to an independent laboratory for benzene, toluene, ethylbenzene and xylenes (BTEX) analysis. Table 2 summarizes analytic results of these four soil samples and three groundwater samples. The detailed laboratory results for soil and groundwater are included in Appendices F and G, respectively.

CASE NARRATIVE
(ORGANIC FRACTION)

SDG E60135C

4 soil samples were received at Accutest Laboratories on 12/08/99 for analysis by SW846-8260B for volatile methodology.

On the volatile analysis

- Instrument Model: HP5970MSD
- Column: DB-624- 75m x 0.53 mm x 3.0 um
- The sample E60135-4A (for QC batch VO1811) is used as the matrix spike (MS) and matrix spike duplicate (MSD).

Qualifiers reported on all fractions are

- "ND" indicating compound was analyzed but not detected,
- "J" indicating estimated value where the concentration is less than the RDL,
- "E" indicating estimated value where the concentration exceeds calibration range, and
- "B" indicating compound is found in associated method blank as well as in the sample

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package and in the computer-readable data submitted on diskette has been authorized by the laboratory manager or his designee, as verified by the following signature.

Ming-Hwa Reitan


QC Supervisor

3.3.2 Hydraulic Gradient

The hydraulic gradient i is defined as the following:

$$i = \frac{(h_1 - h_2)}{L}$$

where

$(h_1 - h_2)$ = hydraulic head difference;
 L = distance between the hydraulic heads h_1 and h_2 .

Based on the hydraulic contour map (Figure 5), the hydraulic gradient i is:

$$i = \frac{80.0 \text{ ft} - 75.0 \text{ ft}}{100.0 \text{ ft}} = 0.05$$

3.3.3 Hydraulic Conductivities/Slug Tests

Slug tests were performed on July 20, 1994, at the subject site. The slug test data for Monitoring Wells MW1, MW2 and MW3 are presented in Appendix D for the Hvorslev Method and in Appendix E for the Bouwer Rice Method.

The Hvorslev Method was used to calculate hydraulic conductivities (Ground Water by Freeze and Cherry, 1979). Based on this method, the hydraulic conductivity K is calculated using the following equation:

$$K = \frac{r^2 \ln(L/R)}{2LT_0}$$

where

r = inner radius of well casing;
 L = length of piezometer intake;
 R = radius of piezometer intake;
 T_0 = basic time log.

Using the Hvorslev Method, the hydraulic conductivity for MW1 was determined to be 1.1×10^{-6} cm/s, and the hydraulic conductivity for MW2 was determined to be 5.1×10^{-6} cm/s. These values are within the hydraulic conductivity range for glacial tills (Ground Water by Freeze and Cherry, 1979).

The hydraulic conductivity value for MW3 was not available since the recovery rate (log scale) versus time relation was not a straight line. This was probably caused by rapid release of water from the filter sand pack and insufficient removal of water from the well.

GC/MS

SUPPORT DATA SUMMARY

TABLE 1
MONITORING WELL CHARACTERISTICS AND STATIC WATER LEVELS

Monitoring Well ID	Screened Interval from TOC (ft)	TOC Elevation (ft)	Depth to Water from TOC (ft)	Water Level Elevation (ft)
MW1	15-25	99.18	23.50	75.68
MW2	17-22	100.11	21.00	79.11
MW3	17-22	99.41	19.84	79.57

Note: 1) TOC = top of casing
2) elevation measurements are referred to an on-site benchmark of 100.00 feet
3) static water levels were measured on June 22, 1994

3.2 Site Geology

Based on information provided by CPC Pontiac and soil boring logs of this subsurface investigation and previous TEC investigations, two geologic cross-sections, A-A and B-B, are presented in Figures 3 and 4, respectively. Please refer to Figure 2 for the cross-section locations. The elevations are referred to an on-site benchmark of 100.00 feet.

The site geology basically consists of silty clay with thickness in excess of 27 feet. The entire subject site is covered with concrete or asphalt. Backfill sand was encountered to a depth of approximately 15 feet below grade to the north of the tank area (Figures 3 and 4).

There is an underground sewer line and a high voltage electricity ductway at the north side of the sheet pile. The high voltage electricity ductway is just next to the sheet pile and is about 5 feet below grade. The sewer line is about 9 feet north of the sheet pile and about 10 feet below grade. Please refer to Figures 2 and 3 for their locations.

3.3 Site Hydrogeology

3.3.1 Groundwater Flow Direction

The static water level readings of monitoring wells (MW1, MW2 and MW3) were measured on June 22, 1994 (Table 1). The groundwater contour map is shown in Figure 5. Based on the groundwater contour map, groundwater flow direction was determined to be toward the southwest.

GC/MS METHODOLOGY SUMMARY

VOLATILE ORGANIC METHOD 8260

This method can be summarized as follows: For low level contamination, an insert gas is bubbled through 5ml sample. The purgeables are efficiently transferred from the aqueous phase to the vapor phase. The vapor is swept through a sorbent column where the purgeables are trapped. When purging is complete, the sorbent tube is heated and backflushed with helium to desorb trapped sample components. The analytes are desorbed directly to a large bore capillary on capillary precolumn before being flash evaporated to a narrow bore capillary for analysis.

The column is temperature programmed to separate the analytes which are then detected with a mass spectrometer (MS) interfaced to the gas chromatograph. Wide bore capillary columns require a jet separator, whereas narrow bore capillary columns can be directly interfaced to the ion source.

Analytes eluted from the capillary column are introduced into the mass spectrometer via a jet separator or a direct connection. Identification of target analytes is accomplished by comparing their mass spectra with the electron impact spectra of authentic standard. Quantitation is accomplished by comparing the response of a major (quantitation) on relative to internal standard with a five-point calibration curve.

screen. The remaining annular space was filled to near surface level with bentonite to prevent vertical migration of contaminants from the surface materials. The monitoring well was completed with flush mount well guard concreted in place and secured using expanding well plug with padlock. Detailed "as built" well construction diagrams for these three monitoring wells are presented in Appendix C.

2.4 Monitoring Well Sampling

Groundwater in these three monitoring wells were sampled using teflon bailers on June 22, 1994, after measuring the static water levels and purging three times the well volume in each well. The samples were contained in appropriate jars for storage (at approximately 4°C) prior to chemical analysis. All sampling, sample handling, packaging, preservation, and storage of sample was conducted according to USEPA protocols (SW-846, 3rd edition). Groundwater samples were managed under strict chain-of-custody protocols and analyzed at an independent laboratory.

2.5 Slug Tests

Slug tests were performed in Monitoring Wells MW1, MW2 and MW3 on July 20, 1994, in order to measure hydraulic conductivities for soils at the subject site. An In-Situ Hermit 2000 Data Logger (SE 2000) and Pressure Transducer (PXD-260) were used for the slug test. During the slug test, a disposable teflon bailer was instantaneously removed from the monitoring well. The water table readings prior to and after removal of the bailer were recorded by the data logger. The Hvorslev Method was used to calculate the hydraulic conductivities for these monitoring wells.

3.0 RESULTS OF THE INVESTIGATION

3.1 Monitoring Well Survey and Static Water Level Measurement

The elevation survey was conducted on June 22, 1994. All elevations were referred to an on-site benchmark of 100.00 feet. Table 1 summarizes the screen intervals, the relative elevations of top of casings, and the static water levels of Monitoring Wells MW1, MW2 and MW3.



ACCUTEST.

GC/MS Analysis Case Narrative/Conformance/Non-Conformance Summary

	NO	YES
Fraction: <u>Volatile</u>		
1. Chromatograms Labeled/Compounds Identified. <i>(Field Samples and Method Blanks)</i>	[]	[N/A]
2. GC/MS Tune Meet Criteria.	[]	[N/A]
3. GC/MS Tuning Frequency - Performed every 24 hours for 600 series and 12 hours for 8000 series.	[]	[N/A]
4. GC/MS Calibration - Initial Calibration performed within 30 days before sample analysis and continuing calibration performed within 24 hours of samples analysis for 600 series and 12 hours for 8000 series.	[]	[N/A]
5. GC/MS Calibration Requirements		
a. Calibration Check Compounds	[]	[N/A]
b. System Performance Check Compounds	[]	[N/A]
6. Blank Contamination	[✓]	[]
If yes, list compounds and in each blank: _____		
7. Surrogate Recoveries Meets Criteria.	[]	[✓]
If not met, list those samples which fall outside the acceptable range and confirmed by reanalysis: _____		
8. Matrix Spike/Matrix Spike Duplicate Recoveries Meet Criteria.	[]	[✓]
If not met, refer to MS/MSD and blank spike summaries: _____		
9. Internal Standard Area/Retention Time Shift Meet Criteria	[]	[N/A]
If not met, list those samples which fall outside the acceptable range and confirmed by reanalysis: _____		
10. Extraction Holding Time Met	[]	[N/A]
If not met, list number of days exceeded for each samples: _____		
11. Analysis Holding Time Met	[]	[✓]
If not met, list number of days exceed for each sample: _____		

Additional Comments: _____

QC Review Signature: Michelle Walker

Date: 12/23/99

2.0 METHODS OF INVESTIGATION

The methods used in this subsurface investigation include drilling four soil borings, installation of three monitoring wells, collection and analysis of soil and groundwater samples, hydraulic conductivity measurement (slug test) and groundwater flow direction determination.

2.1 Soil Boring

Through soliciting contractor bids, AHI retained Rau Drilling, Inc. of Bay City, Michigan to provide soil boring and monitoring well installation services. Four soil borings (SB1 to SB4) were performed during this subsurface investigation at the subject site. Of these four soil borings, SB2 was converted into Monitoring Well 2 (MW2), Soil Boring SB3 was converted into Monitoring Well 1 (MW1), and Soil Boring SB4 was converted into Monitoring Well 3 (MW3). Figure 2 shows the locations of these soil borings and monitoring wells, plus CPC Pontiac's initial abatement sampling locations and the soil borings in TEC's previous investigations.

Soil Boring SB1 was placed about one foot south of TEC's SB-3 and was advanced to a depth of 17 feet. Soil Boring SB2 was placed east of the tank area and was advanced to a depth of 27 feet. Soil Boring SB3 was located southwest of the tank area and had a depth of 25 feet. Soil Boring SB4 was placed to the north of the tank area and was advanced to a depth of 27 feet below grade. Detailed soil boring logs are presented in Appendix B.

2.2 Soil Sampling

Hollow-stem augers were used in the soil borings and 2-foot long split-spoons were used to collect soil samples. The auger flights and split-spoons were decontaminated prior to each use.

After the driller collected the soil sample, the soil sample was physically checked by AHI's field geologist. Concentration of airborne ionizable gases and vapors of the soil sample was screened using the MICROTIP HL-200 Hand-Held Air Monitor/Photoionization Detector (PID). Soil samples were contained in clean jars and stored in an ice-packed cooler while in the field.

Depths of soil samples and PID readings are included in the soil boring logs (see Appendix B).

2.3 Monitoring Well Construction

Three monitoring wells were constructed during this subsurface investigation. Each monitoring well was constructed of 2-inch polyvinyl chloride (PVC) casing with a 5-foot long 0.010-inch slot PVC screen. A coarse sand filter pack was added around the annulus of the monitoring well to approximate one foot above the top of the

Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: E60135C
Account: CRAMI Conestoga-Rovers & Associates
Project: CPC Pontiac Car Wash Site

Method: SW846 8260B

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
E60135-4A	O25715.D	90.0	79.0	89.0	85.0
E60135-13A	O25717.D	82.0	71.0	81.0	82.0
E60135-14A	O25718.D	92.0	79.0	90.0	85.0
E60135-15A	O25719.D	82.0	83.0	91.0	81.0
E60135-4AMS	O25840.D	88.0	77.0	90.0	92.0
E60135-4AMSD	O25841.D	85.0	76.0	88.0	77.0
VO1811-BS	O25847.D	97.0	84.0	98.0	90.0
VO1811-MB1	O25713.D	93.0	79.0	96.0	101.0
VO1811-MB2	O25838.D	97.0	82.0	89.0	105.0

Surrogate Compounds	Recovery Limits

S1 = Dibromofluoromethane	80-120%
S2 = 1,2-Dichloroethane-D4	70-121%
S3 = Toluene-D8	81-117%
S4 = 4-Bromofluorobenzene	74-121%

1.0 INTRODUCTION

Atwell-Hicks, Inc. (hereafter referred to as AHI) was retained by Mr. Dallas Geisler of CPC Pontiac to perform a closure investigation for the CPC Pontiac Car Wash site located at 985 Joslyn in Pontiac, Michigan (Figure 1).

This closure investigation was requested by the Michigan Department of Natural Resources (MDNR) staff geologists based on their audit of a subsurface investigation for the above mentioned site conducted by Testing Engineers & Consultants, Inc. (hereafter referred to as TEC). In MDNR's letter of May 11, 1994 (Appendix A), the following investigation was requested for the subject site (refer to Figure 2 for site description):

1. The extent of soil contamination has been defined in the horizontal dimension. However, the vertical extent of contamination needs to be determined.
2. Permanent monitoring wells must be installed in this area to determine the hydrogeologic characteristics and whether or not groundwater has been impacted by the release. These wells can be used as part of the long term monitoring that will be required at this site in order to obtain an approved MDNR Type C closure.
3. More information is needed to verify that groundwater at this site is not in an aquifer in order to obtain an approved MDNR Type C closure.
4. Provide additional information on the high voltage line at the site including the exact location and depth.

Based on the MDNR requirement, the objectives of this subsurface investigation include:

- Perform four soil borings at the subject site;
- Collect and analyze soil samples to define the vertical extent of contamination at the subject site;
- Install three monitoring wells;
- Collect and analyze groundwater samples to verify whether or not the groundwater has been impacted by the release;
- Characterize site geology including locations of underground utility lines (especially the high voltage electricity line);
- Characterize site hydrogeology including groundwater flow rate and direction.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: E60135C
Account: CRAMI Conestoga-Rovers & Associates
Project: CPC Pontiac Car Wash Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
E60135-4AMS ^a	O25840.D	1	12/14/99	XLC	n/a	n/a	VO1811
E60135-4AMSD	O25841.D	1	12/14/99	XLC	n/a	n/a	VO1811
E60135-4A ^a	O25715.D	1	12/09/99	XLC	n/a	n/a	VO1811

The QC reported here applies to the following samples:

Method: SW846 8260B

E60135-4A, E60135-13A, E60135-14A, E60135-15A

CAS No.	Compound	E60135-4A ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	2620	2510	96	2330	89	7	78-125/18
100-41-4	Ethylbenzene	ND	2620	2480	95	2310	88	7	83-122/19
108-88-3	Toluene	ND	2620	2460	94	2410	92	2	78-120/48
1330-20-7	Xylene (total)	ND	7840	7540	96	6980	89	8	81-120/18

CAS No.	Surrogate Recoveries	MS	MSD	E60135-4A	Limits
1868-53-7	Dibromofluoromethane	88%	85%	90%	80-120%
17060-07-0	1,2-Dichloroethane-D4	77%	76%	79%	70-121%
2037-26-5	Toluene-D8	90%	88%	89%	81-117%
460-00-4	4-Bromofluorobenzene	92%	77%	85%	74-121%

(a) Methanol preservation/extraction.

CONTENTS

<u>Section</u>	<u>Page</u>
1.0 INTRODUCTION	1
2.0 METHODS OF INVESTIGATION	2
2.1 Soil Borings	2
2.2 Soil Sampling	2
2.3 Monitoring Well Construction	2
2.4 Monitoring Well Sampling	3
2.5 Slug Test	3
3.0 RESULTS OF THE INVESTIGATION	3
3.1 Monitoring Well Survey and Static Water Level Measurement	3
3.2 Site Geology	4
3.3 Site Hydrogeology	4
3.3.1 Groundwater Flow Direction	4
3.3.2 Hydraulic Gradient	5
3.3.3 Hydraulic Conductivities/Slug Tests	5
3.3.4 Groundwater Flow Rate	6
3.3.5 Characterization of Contamination Zone	6
4.0 CONCLUSIONS	7

Tables

1. Monitoring Well Characteristics and Static Water Levels
2. Summary of Analytic Results

Figures

1. Location of Study Site
2. Site Description Map
3. Geologic Cross-Section A-A
4. Geologic Cross-Section B-B
5. Groundwater Contour Map

Appendices

- A. MDNR's Response Letter Dated May 11, 1994
- B. Soil Boring Logs
- C. Monitoring Well Characteristics
- D. Slug Test Data and Hydraulic Conductivity Calculation Results for the Hvorslev Method
- E. Slug Test Data and Hydraulic Conductivity Calculation Results for the Bouwer Rice Method
- F. Laboratory Results for Soil
- G. Laboratory Results for Groundwater

Blank Spike Summary

Job Number: E60135C
 Account: CRAMI Conestoga-Rovers & Associates
 Project: CPC Pontiac Car Wash Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VO1811-BS	O25847.D	1	12/14/99	XLC	n/a	n/a	VO1811

The QC reported here applies to the following samples:

Method: SW846 8260B

E60135-4A, E60135-13A, E60135-14A, E60135-15A

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2440	98	78-125
100-41-4	Ethylbenzene	2500	2430	97	83-122
108-88-3	Toluene	2500	2540	102	78-120
1330-20-7	Xylene (total)	7500	7600	101	81-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	97%	80-120%
17060-07-0	1,2-Dichloroethane-D4	84%	70-121%
2037-26-5	Toluene-D8	98%	81-117%
460-00-4	4-Bromofluorobenzene	90%	74-121%

PART 2

HYDROGEOLOGIC INVESTIGATION

CPC PONTIAC - CAR WASH SITE

Method Blank Summary

Job Number: E60135C
 Account: CRAMI Conestoga-Rovers & Associates
 Project: CPC Pontiac Car Wash Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VO1811-MB1	O25713.D	1	12/09/99	XLC	n/a	n/a	VO1811

The QC reported here applies to the following samples:

Method: SW846 8260B

E60135-4A, E60135-13A, E60135-14A, E60135-15A

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	50	ug/kg	
100-41-4	Ethylbenzene	ND	50	ug/kg	
108-88-3	Toluene	ND	50	ug/kg	
1330-20-7	Xylene (total)	ND	250	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	93%	80-120%
17060-07-0	1,2-Dichloroethane-D4	79%	70-121%
2037-26-5	Toluene-D8	96%	81-117%
460-00-4	4-Bromofluorobenzene	101%	74-121%

APPENDIX D
HYDROGEOLOGIC INVESTIGATION

Method Blank Summary

Page 1 of 1

Job Number: E60135C
Account: CRAMI Conestoga-Rovers & Associates
Project: CPC Pontiac Car Wash Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VO1811-MB2	O25838.D	1	12/14/99	XLC	n/a	n/a	VO1811

The QC reported here applies to the following samples:

Method: SW846 8260B

VO1811-BS, E60135-4AMS, E60135-4AMSD

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	50	ug/kg	
100-41-4	Ethylbenzene	ND	50	ug/kg	
108-88-3	Toluene	ND	50	ug/kg	
1330-20-7	Xylene (total)	ND	250	ug/kg	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	97%	80-120%
17060-07-0	1,2-Dichloroethane-D4	82%	70-121%
2037-26-5	Toluene-D8	89%	81-117%
460-00-4	4-Bromofluorobenzene	105%	74-121%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

X-2

☒ TEST

☐ PERMANENT

Job No. LA-1302

WELL LOG No. TW 80-A CITY Pontiac

County Oakland

Owner City of Pontiac

Township Pontiac

Section 32

Location

State Michigan

From Land Description SW $\frac{1}{4}$, SW $\frac{1}{4}$, SE $\frac{1}{4}$, T3N, R10E

From Street or Road $\pm$ 600' West of Bagley Street, & $\pm$ 400' North of Golf Drive.

FORMATION FOUND - DESCRIBE FULLY	FROM NATURAL GROUND LEVEL			
	Depth to Top of Stratum	Depth to Bottom of Stratum	Thickness of Stratum	Static Water Level
Top Soil and Gravelly Clay	0	5	5	
Gravelly Clay	5	15	10	
Gravelly Clay and Sand	15	20	5	
Sand and Gravel w/Little Clay	20	25	5	
Clay	25	30	5	
Clay and Gravel	30	35	5	
Gravelly Clay	35	40	5	
Clay	40	50	10	
Gravelly Clay	50	55	5	
Sand w/Little Clay	55	70	15	
Sand and Gravel, w/Little Clay	70	85	15	
Sand w/Little Clay	85	90	5	
Sand	90	95	5	
Sand w/Little Clay	95	100	5	
Sand and Coal	100	110	10	30
Sand w/Little Strips of Clay	110	115	5	
Sand w/Little Clay	115	120	5	
Clay w/Sand Strips	120	130	10	
Mushy Clay	130	140	10	

Hole 7 7/8 "Drilled by: { Cable Tool _____ Rotary X _____ Jetting _____
Reverse Circ. _____ Bucket _____ Auger _____

Rotary Hole Grouted: Neat Cement _____ Drilling Mud B-3 _____ Other _____

Casing 2 "OD From $\pm$ 24 "above ground to 105 feet below ground. Weight _____ Pounds _____ ft

Screen 1 1/2 "Set from 105 to 110 feet Make Johnson Type CS Slot 0.25

Pumping test None GPM drawdown to _____ feet after _____ hours pumping

Date Completed 11/26/80 Driller T. Giles



DEPARTMENT OF NATURAL RESOURCES LANSING

☒ TEST

☐ PERMANENT

Job No. LA-1302

WELL LOG No. 80-B CITY Pontiac

County Oakland

Owner City of Pontiac

Township Pontiac

Section 32

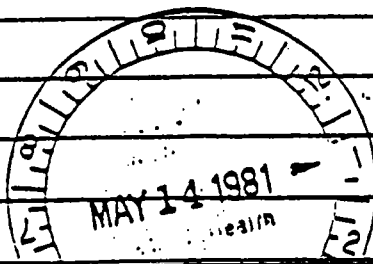
Location

State Michigan

From Land Description SW $\frac{1}{4}$, SE $\frac{1}{4}$, SW $\frac{1}{4}$, T3N, R10E

From Street or Road $\pm$ 825' West of Bagley Road $\pm$ 300' North of Golf Drive.

FORMATION FOUND - DESCRIBE FULLY	FROM NATURAL GROUND LEVEL			
	Depth to Top of Stratum	Depth to Bottom of Stratum	Thickness of Stratum	Str. Wat. Lev.
Top Soil and Clay	0	5	5	
Sandy Clay	5	25	20	
Sand	25	35	10	
Clay w/Little Sand	35	40	5	
Gravelly Clay	40	50	10	
Clay w/Little Gravel	50	60	10	
Clay w/Little Sand and Gravel	60	65	5	
Gravelly Clay	65	80	15	
Gravel w/Little Clay	80	100	20	
Sand and Gravel w/Little Clay	100	115	15	20
Shale, Gravel, Sand and Little Clay	115	125	10	
Gravelly Clay	125	145	20	
Clay	145	160	15	



Hole 7 7/8 "Dia Drilled by:

Cable Tool ☒ Rotary ☒
Reverse Circ. ☒ Bucket ☒

Jetting ☐

Auger ☐

Rotary Hole Grouted: Neat Cement ☐ Drilling Mud B-3 ☒ Other ☐

Casing 2 "OD From $\pm$ 24 "above ground to 111 feet below ground. Weight ☐ Pounds per foot

Screen 1 $\frac{1}{2}$ " Set from 111 to 115 feet Make Johnson Type CS Slot 10

Pumping test None ☐ GPM drawdown to ☐ feet after ☐ hours pumping

Date Completed 12/12/80 Driller T. Giles

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - STORAGE TANK DIVISION
LEAKING UNDERGROUND STORAGE TANK
CLOSURE REPORT

INSTRUCTIONS: COMPLETION OF THIS REPORT WITH ALL APPLICABLE INFORMATION IS MANDATORY. The Certified Underground Storage Tank Professional (CP) MUST sign below. Failure to submit this report within the stated time period may result in administrative penalties as provided for in Part 213, Section 21313a of 1994 PA 451, as amended.

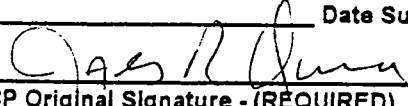
FACILITY NAME: CPC Pontiac - Car Wash FACILITY ID NUMBER: 0-001623
ADDRESS: 985 Joslyn Road
CITY: Pontiac ZIP: 48340 COUNTY: Oakland
DATE(S) RELEASE DISCOVERED: December 1990 CONFIRMED RELEASE NUMBER(S): C-2679-90
O/O NAME: General Motors
O/O ADDRESS: One Pontiac Plaza, Pontiac STATE: MI ZIP: 48340
CONTACT PERSON: Tom Ramos PHONE NUMBER: 248-857-0421

ANSWER ALL QUESTIONS (DO NOT LEAVE BLANKS):

1. a. Has the UST been emptied? ☒ YES ☐ NO (If no, explain why):
b. Has the UST system been properly closed? ☒ YES ☐ NO (If no, explain why):
2. Free product present: a. Currently? ☐ YES ☒ NO If YES, total gallons recovered since last report:
b. Previously? ☐ YES ☒ NO If YES, total gallons recovered to date:
3. Have vapors been identified in any confined spaces (basement, sewers, etc.)? ☐ YES ☒ NO
4. State the number of homes where drinking water is or was affected as a result of a release from this facility: 0
5. Estimated distance and direction from point of release to nearest:
a. Private well: 5,000 b. Municipal well: >1 mile c. Surface water/wetland: >3/4 mile
6. Since last report: a. cubic yards of soil remediated: 0 b. gallons of groundwater remediated: 0
7. Totals to date: a. cubic yards of soil remediated: unknown b. gallons of groundwater remediated: 0
8. Michigan RBCA Site Classification (1-4): 4 Previous RBCA Site Classification (1-4): 4
9. Has contamination migrated off-site above Tier 1 Residential RBSLs ☐ YES ☒ NO
If YES, have off-site impacted parties been notified (per Section 21309a(3) of Part 213) ☐ YES ☐ NO
10. Is an institutional control required for contamination that has migrated or will migrate off-site? ☐ YES ☒ NO
11. Was site closure based on eliminating any groundwater pathway? ☒ YES ☐ NO

CERTIFICATION OF REPORT COMPLETION

I, the undersigned CP, hereby attest to the best of my knowledge and belief that the statements in this document and all attachments are true, accurate and complete. I certify that it was submitted to the Storage Tank Division (STD) on
Date Submitted (REQUIRED)


CP Original Signature - (REQUIRED) 2-9-00 Date Frederick G. Roeser
PRINT QC Project Manager's Name

James R. Quince Superior Environmental
PRINT CP's Name CONSULTANT
14641 16th Ave. Marne MI 48435 (616) 677-5255 (616) 677-5258
ADDRESS TELEPHONE NO. FAX NO.

CERTIFICATION OF CLOSURE

1. Type of RBCA Evaluation: ☒ Tier 1 ☐ Tier 2 ☐ Tier 3
 2. Closure report based on which type of land use?: ☒ Residential ☐ Commercial III ☐ Commercial IV ☐ Industrial
 3. Institutional Controls: ☒ None ☐ Notice of Corrective Action ☐ Restrictive Covenant ☐ Other
- I certify under penalty of law that corrective actions associated with the above referenced release at this facility were completed in accordance with Part 213, Act 451, P.A. 1994 as amended, and current departmental guidance and procedures available at the time the work was completed.
- I further certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

CP Signature - (REQUIRED)

Date

PLEASE RETURN THIS COMPLETED REPORT AND ASSOCIATED ATTACHMENTS TO THE APPROPRIATE STD DISTRICT OFFICE, ACCORDING TO PAGE 2.



NORTHERN COMPANY
LANSING

☒ TEST
☐ PERMANENT

Job No. LA-1305

WELL LOG No. 80-C CITY Pontiac County Oakland

Owner City of Pontiac Township Pontiac

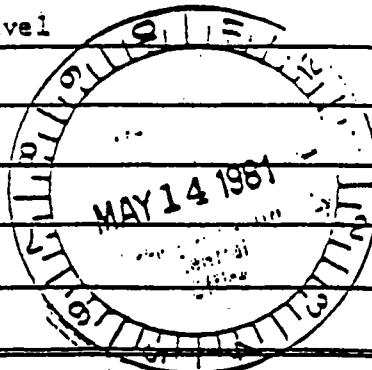
Section 32

Location State Michigan

From Land Description NW $\frac{1}{4}$, SE $\frac{1}{4}$, SW $\frac{1}{4}$, T3N, R10C

From Street or Road

FORMATION FOUND - DESCRIBE FULLY	FROM NATURAL GROUND LEVEL			
	Depth to Top of Stratum	Depth to Bottom of Stratum	Thickness of Stratum	Stratum
Top Soil Turning to Brown Clay	0	5	5	
Hard Brown Clay	5	15	10	
Sand w/Little Gravel and Clay	15	20	5	
Gray Silty Sand	20	35	15	
Gray Clay Mixed w/Little Gravel	35	40	5	
Hard Gray Clay	40	45	5	
Hard Gray Clay w/Little Gravel	45	50	5	
Hard Gray Clay w/Little Sand and Gravel	50	55	5	
Gray Clay w/Little Gravel	55	60	5	
Sand, Gravel, and Little Clay	60	70	10	
Sand and Little Gravel	70	80	10	
Sand and Small Gravel	80	100	20	
Fine Sand w/Little Small Gravel	100	110	10	12'
Fine Sand	110	147	37	
Gray Clay	147	157	10	
Hard Rock	157	158	1	
Gray Clay	158	160	2	



Hole 4 $\frac{1}{2}$ " Dia Drilled by: { Cable Tool _____ Rotary X Jetting _____
Reverse Circ. _____ Bucket _____ Auger _____

Rotary Hole Grouted: Neat Cement _____ Drilling Mud B-3 Other _____

Casing 2" OD From + 24" above ground to 100 feet below ground. Weight _____ Pounds

Screen 1 $\frac{1}{2}$ " Set from 100 to 110 feet Make Johnson Type CS Slot .025

Pumping test None GPM drawdown to _____ feet after _____ hours pumping

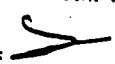
Date Completed 12/18/80 Driller M. Hedrick

STORAGE TANK DIVISION OFFICES AND LOCATIONS

Determine in which county/city the UST is located. Return this form and associated reports to the office listed next to that county/city in the following table.

COUNTY	STD OFFICE	COUNTY	STD OFFICE	COUNTY	STD OFFICE	COUNTY	STD OFFICE
Alcona	Gaylord	Dickinson	Marquette	Lake	Cadillac	Oceana	Grand Rapids
Alger	Marquette	Eaton	Shiawassee	Lapeer	Shiawassee	Ogemaw	Gaylord
Allegan	Plainwell	Emmet	Gaylord	Leelanau	Cadillac	Ontonagon	Marquette
Alpena	Gaylord	Genesee	Shiawassee	Lenawee	Jackson	Osceola	Cadillac
Antrim	Gaylord	Gladwin	Gaylord	Livingston	Shiawassee	Oscoda	Gaylord
Arenac	Gaylord	Gogebic	Marquette	Luce	Marquette	Otsego	Gaylord
Baraga	Marquette	Grand Traverse	Cadillac	Mackinac	Marquette	Ottawa	Grand Rapids
Barry	Plainwell	Gratiot	Shiawassee	Macomb	SE Michigan	Presque Isle	Gaylord
Bay	Saginaw-Bay	Hillsdale	Jackson	Manistee	Cadillac	Roscommon	Gaylord
Benzie	Cadillac	Houghton	Marquette	Marquette	Marquette	Saginaw	Saginaw-Bay
Berrien	Plainwell	Huron	Saginaw-Bay	Mason	Cadillac	Sanilac	Saginaw-Bay
Branch	Jackson	Ingham	Shiawassee	Mecosta	Grand Rapids	Schoolcraft	Marquette
Calhoun	Jackson	Ionia	Grand Rapids	Menominee	Marquette	Shiawassee	Shiawassee
Cass	Plainwell	Iosco	Gaylord	Midland	Saginaw-Bay	St Clair	SE Michigan
Charlevoix	Gaylord	Iron	Marquette	Missaukee	Cadillac	St Joseph	Plainwell
Cheboygan	Gaylord	Isabella	Saginaw-Bay	Monroe	SE Michigan	Tuscola	Saginaw-Bay
Chippewa	Marquette	Jackson	Jackson	Montcalm	Grand Rapids	Van Buren	Plainwell
Clare	Gaylord	Kalamazoo	Plainwell	Montmorency	Gaylord	Washtenaw	Jackson
Clinton	Shiawassee	Kalkaska	Cadillac	Muskegon	Grand Rapids	Wayne	SE Michigan
Crawford	Gaylord	Kent	Grand Rapids	Newaygo	Grand Rapids	Wexford	Cadillac
Delta	Marquette	Keweenaw	Marquette	Oakland	SE Michigan		
CITY	STD OFFICE	CITY	STD OFFICE	CITY	STD OFFICE		
Detroit	Detroit	Highland Park	Detroit	Hamtramck	Detroit		

<u>CADILLAC OFFICE</u> 120 W CHAPIN ST CADILLAC MI 49601-2158 616-775-3960 (PHONE) 616-775-1511 (FAX)	<u>DETROIT OFFICE</u> 300 RIVERPLACE, SUITE 3600 DETROIT MI 48207 313-392-6480 (PHONE) 313-392-6488 (FAX)	<u>PLAINWELL OFFICE</u> 1342 SR-89 WEST, SUITE B PLAINWELL MI 49080-1915 616-692-2120 (PHONE) 616-692-3050 (FAX)
<u>GAYLORD OFFICE</u> 1732 W M-32, PO BOX 667 GAYLORD MI 49735-0667 517-731-4920 (PHONE) 517-731-6181 (FAX)	<u>JACKSON OFFICE</u> 301 E LOUIS GLICK HIGHWAY JACKSON MI 49201-1556 517-780-7690 (PHONE) 517-780-7855 (FAX)	<u>SAGINAW-BAY OFFICE</u> 503 N EUCLID AVE SUITE 1 BAY CITY MI 48706-2965 517-686-8025 (PHONE) 517-684-9799 (FAX)
<u>GRAND RAPIDS OFFICE</u> 350 OTTAWA ST NW 6TH FLOOR GRAND RAPIDS MI 49503-2341 616-356-0500 (PHONE) 616-356-0202 (FAX)	<u>MARQUETTE OFFICE</u> 1990 US 41 SOUTH MARQUETTE MI 49855-9198 906-228-6561 (PHONE) 906-228-5245 (FAX)	<u>SHIAWASSEE OFFICE</u> 10650 BENNETT DR MORRICE MI 48857-9792 517-625-5515 (PHONE) 517-625-5000 (FAX)
<u>SE MICHIGAN OFFICE</u> 38980 SEVEN MILE RD LIVONIA MI 48152-1006 734-953-8905 (PHONE) 734-432-1295 (FAX)	<u>HEADQUARTERS</u> 333 S CAPITOL AVE PO BOX 30157 LANSING MI 48909-7657 517-373-8168 (PHONE) 517-335-2245 (FAX)	

1 LOCATION OF WELL				
County Oakland	Twp. Pontiac	Fraction SW 1/4 SE 1/4	Section No. 21	Town 3 N 1/4
Distance And Direction from Road Intersections 395I Joslyn Rd. 1000 yds South of I- 75			Range 10 E 1/4	
Street address & City of Well Location			3 OWNER OF WELL: E.E. Powell Co. Address 4479 Pontiac Lake Rd. Pontiac Mich. 4854	
2 FORMATION		THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	4 WELL DEPTH: (completed) Date of Completion 112 ft. Nov 13, 1969
Red clay		30	30	5 ☒ Cable tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Jetted ☐ Bored ☐
Blue clay		30	60	6 USE: ☐ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☒ Commercial ☐ Test Well ☐
Sand & clay		40	100	7 CASING: Threaded ☐ Welded ☒ Height: Above/ ~~44~~ Diam. 4 in. to 104 ft. Depth surface 1 ft. Weight 1 lbs/ft. Drive Shoe? Yes ☐ No ☒
Water sand		12	112	8 SCREEN: Johnson stainless steel Type: _____ Dia.: 4" Slot/Gauze 12 slot Length 8 feet Set between 104 ft. and 112 ft. Fittings: 3" pipe & K. packer
				9 STATIC WATER LEVEL 25 ft. below land surface
				10 PUMPING LEVEL below land surface 25 ft. after 3 hrs. pumping 50 g.p.m. _____ ft. after _____ hrs. pumping _____ g.p.m.
				11 WATER QUALITY in Parts Per Million: Iron (Fe) _____ Chlorides (Cl) _____ Hardness _____
				12 WELL HEAD COMPLETION: ☐ In Approved Pit ☒ Pitless Adapter ☒ 12" Above Grade
				13 GROUTING: Well Grouted? ☐ Yes ☒ No Material: ☐ Neat Cement ☐ _____ Depth: From _____ ft. to _____ ft.
				14 SANITARY: Nearest Source of possible contamination: None _____ feet _____ Direction _____ Type Well disinfected upon completion ☒ Yes ☐ No
				15 PUMP: Red Jacket Manufacturer's Name _____ Model Number 7-C.B. HP 1 Length of Drop Pipe 84 ft. capacity 25 G.P.M. Type: ☒ Submersible ☐ _____ ☐ Jet ☐ Reciprocating
16 Remarks, elevation, source of data, etc. CORRECTED BY:  *ADDITION BY:			17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. Roy Lalone 0817 REGISTERED BUSINESS NAME REGISTRATION NO. Address 615 Lakeside, Pontiac Mich. Signed  Date Nov. 15/69 AUTHORIZED REPRESENTATIVE	

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - STORAGE TANK DIVISION
CLOSURE REPORT (Continued)

Instructions - Utilize the following checklist to ensure that all required information is provided in the Closure Report. Include this checklist as the table of contents. The order in which the information is provided is at your discretion. Each page of the report (including the cover sheet, table of contents, appendices, figures, etc.) should be consecutively numbered. The location column should be completed with the appropriate page number for each item. You may reference previously submitted materials by specifying the location within that document. Maps, tables, figures, etc. should be combined as appropriate.

All information required by Part 213 to be included in the Closure Report must be provided, and all sections of the report must be completed. If any items are not applicable to the site, provide a justification regarding the absence of this information in the appropriate section of the report.

If an Initial Assessment Report (IAR) and/or a Final Assessment Report (FAR) have not been submitted for this release, provide all required information from the IAR and/or FAR not included below.

Section	Table of Contents	Page
1.0	<u>PROJECT CHRONOLOGY</u>	
	A. Provide the date and time the confirmed release(s) was/were discovered and reported.	9
	B. Provide the IAR submittal date.	9
	C. Provide the FAR submittal date.	9
	D. Provide dates for any other submittals.	9
2.0	<u>SUMMARY OF CORRECTIVE ACTION ACTIVITIES PERFORMED</u>	
2.1	IMMEDIATE RESPONSE ACTION IMPLEMENTATION	
	If an IAR has not been previously submitted, provide all information requested in Section 1.0 of the IAR	9
2.2	FREE PRODUCT DISCOVERY AND REMOVAL	
	If free product has not been discovered, then proceed to Section 2.3.	
	A. Describe initial response actions performed at this site to address the presence of free product as specified in Sections 21307(2)(c) and (f), and (3)(b) and (c), 21308a(1)(b)(xviii). Refer to the STD Operational Memorandum No. 7, <i>Identification, Reporting, and Recovery of Free Product at LUST Sites</i> .	9
	B. Attach a final STD Free Product Recovery Status Report (EQP 3850) if not previously submitted.	NA
2.3	SITE ASSESSMENT ACTIVITIES	
	A. If an IAR has not been previously submitted, provide all information requested in Section 3.0 of the IAR.	9
	B. If a FAR has not been previously submitted, provide all information requested in Section 2.0 of the FAR.	9

MAY 21 1971 WATER WELL RECORD ACT 234 PA 1965

MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL		Township Name		Fraction		Section Number		Town Number		Range Number	
County <u>Oakland</u>		Pontiac		SW, SW, SE 1/4		21		3 N/2		10 E/4	
Distance And Direction from Road Intersections <u>On Joslyn Rd. 400' N of Vinewood</u>						3 OWNER OF WELL: M. J. Hutchinson Address <u>1517 Virginia St.</u> <u>St. Louis, Mich</u>					
Street address & City of Well Location Locate with "X" in section below						4 WELL DEPTH: (completed) Date of Completion <u>53</u> ft. <u>4/5/71</u>					
Sketch Map:						5 ☐ Cable tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☒ Jetted ☐ Sored ☐					
						6 USE ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☐					
2 FORMATION						7 CASING: Threaded ☒ Welded ☐ Height: Above/Selow Surface <u>1</u> ft. <u>2</u> in. to <u>50</u> ft. Depth Weight <u> </u> lbs./ft. <u> </u> in. to <u> </u> ft. Depth Drive Shoe? Yes ☒ No ☐					
						8 SCREEN: Type: <u>slot</u> Dia.: <u>1 1/4</u> Slot/Gauze <u>10</u> Length <u>3</u> Set between <u>50</u> ft. and <u>53</u> ft. Fittings: <u>Breamer</u>					
East & clay						9 STATIC WATER LEVEL <u>15</u> ft. below land surface					
Sand & clay						10 PUMPING LEVEL below land surface <u>15</u> ft. after <u>1</u> hrs. pumping <u>12</u> g.p.m. <u> </u> ft. after <u> </u> hrs. pumping <u> </u> g.p.m.					
Blue clay						11 WATER QUALITY in Parts Per Million: Iron (Fe) <u> </u> Chlorides (Cl) <u> </u> Hardness <u> </u> Other <u> </u>					
Water sand						12 WELL HEAD COMPLETION: ☐ In Approved Pit ☒ Pitless Adapter ☐ 12" Above Grade					
						13 Well Grouted? ☐ Yes ☒ No ☐ Neat Cement ☐ Bentonite ☐ Depth: From <u> </u> ft. to <u> </u> ft.					
						14 Nearest Source of possible contamination <u>50</u> feet <u>N</u> Direction <u>Septic</u> Type Well disinfected upon completion ☒ Yes ☐ No					
						15 PUMP: ☐ Not installed Manufacturer's Name <u>Myers</u> Model Number <u>W0500</u> HP <u>1/2</u> Volts <u>110</u> Length of Drop Pipe <u>24</u> ft. capacity <u>42</u> G.P.M. Type: ☐ Submersible ☒ Jet ☐ Reciprocating					
16 Remarks, elevation, source of data, etc. ADDED INFO. BY DRILLER. ITEM NO. CORRECTED BY: ADDITION BY:						17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. <u>Raymond Wall Drilling</u> <u>0110</u> REGISTERED BUSINESS NAME REGISTRATION NO. Address <u>1055 Wyman - Pontiac</u> Signed <u>[Signature]</u> Date <u>4/5/71</u> AUTHORIZED REPRESENTATIVE					

D67d

100M (Rev. 12-68)

GEOLOGICAL SURVEY COPY

Section	Table of Contents	Page

2.4 SITE CLASSIFICATION

- A. Indicate the current Site Classification Level, in accordance with STD Operational Memorandum No. 5, *Leaking Underground Storage Tank (LUST) Site Classification System*. 12
- B. Provide a justification for this classification. Identify the current conditions that are the basis of the classification. 12
- C. Indicate whether the site classification has changed since the submission of the last report. 12

2.5 TIERED EVALUATIONS AND CLEANUP GOALS

- A. Indicate whether a site-specific Tier II or Tier III evaluation has been conducted for this site. 12
- B. If applicable, identify and justify where alternate assumptions or site-specific information were used in place of the default assumptions as defined in the STD Operational Memorandum No. 4, *Tier 1 Lookup Tables for Risk-Based Corrective Action at Leaking Underground Storage Tank (LUST) Sites*. NA

NOTE: If a Tier II evaluation was performed and described in the IAR or the FAR, explicitly indicate where different assumptions or site-specific information were used in this Tier II or Tier III evaluation and why the change was justified.

- C. Provide the calculations and reference citations supporting the development of the relevant Tier II or Tier III SSTLs. NA
- D. Provide a table which compares the maximum remaining contaminant concentrations for each required parameter for all media to the appropriate RBSLs (as provided in the STD Operational Memorandum No. 4), and/or the calculated SSTLs. Identify all applicable land use scenario(s). App B

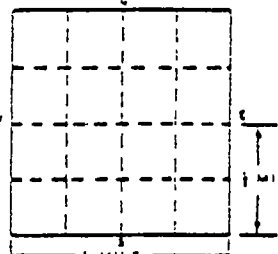
2.6 MODELING

Provide all modeling documentation. Refer to the STD Operational Memorandum No. 10 *Presentation of Tier 2 and 3 Groundwater Modeling Evaluations*. NA

2.7 NOTICES AND RESTRICTIONS

If the closure does not require the use of institutional controls to restrict land or resource use, then proceed to Section 2.8.

NOTE: Draft copies of all Restrictive Covenants and Notices of Corrective Action for off-site institutional controls must be submitted to the STD for approval prior to filing. Refer to Operational Memorandum No. 12, *Institutional Controls and Public Notice Requirements and Procedures*.

1. LOCATION OF WELL		Fraction		Section Number		Town Number		Range Number	
Country	Oakland	Township Name	Pontiac	1/4	1/4	21	3	N/8	10 E/W
Distance And Direction From Road Intersection									
Woodcrest Commons East Blvd. University Dr. Pontiac				3. OWNER OF WELL Marc Dutton Irrigation 260 Montcalm Pontiac, MI 48058					
Street Address & City of Well Location				Address Same As Well Location? ☐ Yes ☒ No					
Locate with "X" in Section Below				4. WELL DEPTH: (completed) 230 ft. Date of Completion 5/13/86					
Sketch Map				5. ☒ Cable tool ☐ Rotary ☐ Driven ☐ Auger ☐ Hollow rod ☐ Jetted ☐ Oug					
				6. USE: ☐ Domestic ☐ Type I Public ☐ Type III Public ☒ Irrigation ☐ Type IIa Public ☐ Heat pump ☐ Test Well ☐ Type IIb Public					
2. FORMATION DESCRIPTION				THICKNESS OF STRATUM		DEPTH TO BOTTOM OF STRATUM		7. CASING Diameter ☐ Steel ☒ Threaded ☐ Plastic ☐ Welded	
Clay				55'		55'		Height Above Surface 10" ft. Weight 1945 lbs./ft.	
Gravelly hardpan				32'		87'		8. SCREEN Johnson stainless ☐ Not installed	
Sand, gravel & clay				28'		115'		Type steel top 5' 1/8" Diameter 6" Length 10' Set between 218' 2" and 230' ft.	
Sand & gravel				5'		120'		Fittings ☐ K-Packer ☐ Lead Packer ☐ Bremer Check ☒ Blank above screen 15" ft. Other:	
Clay				4'		124'		9. STATIC WATER LEVEL 108 ft. below land surface ☐ Flow	
Hardpan				23'		147'		10. PUMPING LEVEL below land surface 115 ft. after 1 1/2 hrs. pumping at 60 G.P.M.	
Clay				18'		160'		11. WELL HEAD COMPLETION ☒ Pitless adapter ☐ 12" above grade ☐ Basement offset ☐ Approved pit	
Sandy clay				20'		180'		12. WELL GROUTED? ☒ No ☐ Yes From _____ to _____ ft.	
Sand & clay				7'		187'		☐ Neat cement ☐ Bentonite ☐ Other	
Hardpan				28'		215'		No. of bags of cement _____ Additives _____	
Fine sand				3'		218'		13. Nearest source of possible contamination unknown Type _____ Distance _____ ft. Direction _____	
Sand W/B				12'		230'		Well disinfected upon completion? ☒ Yes ☐ No	
RECEIVED Mich. Dept. of Public Health JUL 11 1986 Bureau of Environmental and Occupational Health - EWOS				14. PUMP: ☐ Not installed ☐ Pump Installation Only Manufacturer's name Red Jacket Model number 1006FI-8MB HP 10 Volts 230 Length of Drop Pipe 147 ft. capacity 110 G.P.M. TYPE: ☐ Submersible ☐ Jet PRESSURE TANK: Manufacturer's name _____ Model number _____ Capacity _____ Gallons					
15. Remarks, elevation, source of data, etc.				16. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. O.O. Corbett, Inc. 0025 REGISTERED BUSINESS NAME REGISTRATION NO. Address 15101 W. 11 Mile Oak Park, MI 48237 Signed <i>O.O. Corbett</i> 7/8/86 AUTHORIZED REPRESENTATIVE					

Section	Table of Contents	Page
A.	Submit copies of all notices or restrictions which have been filed, and provide proof of filing these notices or restrictions. If the person filing is not the property owner, attach a copy of the written permission for the filing from the property owner.	App F
B.	Identify the individuals or segments of the public which have been provided with notice of the proposed land use restrictions or limitations to be placed on resource use. Include the names and addresses of the affected parties (unless large segments of the public will be provided notice, e.g., users of a municipal water supply system). Include proof that notice was provided to the affected parties.	NA
C.	Provide a map depicting the location(s) of the individuals or segments of the noticed public.	NA
D.	Describe any alternate mechanism utilized to restrict exposure to regulated substances as defined in Section 324.21310a(3), and justify how this mechanism reliably restricts exposure to the regulated substances.	NA
2.8	PERMITS	
	List all discharge permits and/or permit exemptions that were required for the corrective action, and include the type of permit, permit number, application date, approval date and termination date.	NA
2.9	CORRECTIVE ACTION PLAN	
A.	Summarize the corrective action activities that resulted in release closure. Include the operating history of any active treatment systems.	8
B.	Summarize the types of monitoring activities performed, including the media and parameters monitored.	14
C.	Attach performance monitoring data.	Table 2
D.	Describe and justify changes to the previously submitted Corrective Action Plan.	10
E.	Provide the total volume of soil remediated, and include disposal location and proof of disposal (e.g., invoices, not load tickets) for all soils excavated subsequent to submittal of the last report, if appropriate.	NA
F.	Provide the total volume of groundwater actively remediated to date, and include disposal documentation, if appropriate.	NA
3.0	<u>CLOSURE VERIFICATION SAMPLING</u>	
3.1	SOIL CLOSURE VERIFICATION	
	NOTE: Verification sampling must be conducted whenever contaminated soils are identified but not remediated, including when contaminated soil is returned to an excavation after the removal of a UST.	

Pontiac Natural Gas & Oil Company Well

Location: City of Pontiac. At Tregent St. & P. O. N.
(G. T.) R. R. SE SW SE section 20, T 3N, R 10E

Elevation: 934 feet above sea level

Record by: C. E. Wright from samples and driller's log. G. S. Duncan, contractor

	Thickness (Feet)	Depth (Feet)
PLEISTOCENE:		
Drift	320	320
MISSISSIPPIAN:		
Coldwater:		
Blue shale	10	330
Shale, blue, argillaceous	10	340
Shale, light blue, sandy, calcareous, argillaceous, very fine grained	30	370
Shale, light blue, sandy, argillaceous	70	440
Shale, sandy, argillaceous	40	480
Shale, reddish, argillaceous	20	500
	(180)	
Sunbury:		
Shale, dark brown, argillaceous	35	535
Berea-Bedford:		
Sandstone, light drab, fine grained; salt water	20	555
Sandstone, light drab, fine grained	17	572
Sandstone, gray	236	808
	(273)	
MISSISSIPPIAN-DEVONIAN:		
Antrim:		
Black shale	157	965
DEVONIAN:		
Traverse-Dundee-Detroit River(?):		
Limestone, dark drab, coarse grained, argillaceous	25	990
Limestone, light drab, fine grained; 2 percent insoluble residue	10	1000
Limestone, light drab & grayish-white; 8 percent insoluble residue	7	1007
Limestone, light gray, 20 percent insoluble residue	8	1015
Limestone, sandy, dark drab; 20 percent insoluble residue	35	1050
Limestone, argillaceous, 10 percent insoluble clay residue	15	1065
Clay, light blue, calcareous; 90 percent insoluble residue	50	1115
Salt water; very strong brine at 1115 ft.		
No record	105	1220
Limestone, light gray, drab to dark drab (Show of gas at 1300)	130	1350
Limestone, sandy, light gray; 20 percent gray sand & some glassy grains	at	1350
Gas rock for 40 feet (?) (1110 ft. water in well)	at	1497
	(532+)	
TOTAL DEPTH		1497

Section	Table of Contents	Page
A.	Describe the soil verification sampling strategy applied at the site by providing the following:	
1.	A scaled site map which identifies the former extent of the soil contamination, and the soil verification sampling locations relative to existing site features. <i>(Multiple chemical contaminants and multiple sample depths should be addressed on the minimum number of site maps needed to convey the information with clarity and legibility.)</i>	Fig 3
2.	For a corrective action involving excavation, a scaled drawing(s) showing the floor and walls of the excavation and the associated sampling locations. The drawing should also depict the subsurface stratigraphy, soil types, fractures, discolored soil locations, adjoining conduits or potential migration pathways, and locations of former and existing UST system components, as appropriate.	NA
3.	A description of how the number and location of samples collected for soil verification purposes was established. If your sampling strategy differs from the MDEQ <i>Verification of Soil Remediation Guidance Document</i> and STD Operational Memorandum No. 9, <i>Groundwater and Soil Closure Verification Guidance</i> , provide justification.	NA
4.	A list of the analytical parameters used to verify the soil remediation.	Table 1
5.	A justification if all soil verification samples were not analyzed, preserved, and handled in accordance with the STD Operational Memorandum No. 14 <i>Analytical Parameters and Methods, Sample Handling, and Preservation for Petroleum Releases</i> .	NA
B.	Provide a table with laboratory data showing the results of all verification soil sampling performed to date for the required parameters. Refer to the STD Operational memorandum No. 14 <i>Analytical Parameters and Methods, Sample Handling, and Preservation for Petroleum Releases</i> . The table should include the following:	Table 1
1.	Sample ID	
2.	Sample depth	
3.	Date of collection	
4.	Dates of extraction and analysis	
5.	Method Detection Limits	
6.	Analytical method	
	(NOTE: The STD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information.)	
C.	Provide copies of all soil boring logs not previously submitted.	NA
3.2	GROUNDWATER CLOSURE VERIFICATION	
A.	Describe the groundwater verification sampling strategy applied at the site by providing the following:	
1.	A scaled site map which identifies the former extent of groundwater contamination, the groundwater verification sampling locations relative to existing site features, and the groundwater flow direction(s). <i>(Multiple chemical contaminants and multiple aquifer/sample depths should be addressed on the minimum number of site maps needed to convey the information with clarity and legibility.)</i>	NA

1 LOCATION OF WELL			Fraction		Section No.	Town	Range
County Oakland	Twp. Pontiac		NE 1/4 NE 1/4 NE 1/4		17	N	10 E
Distance And Direction from Road Intersections			OWNER No. _____		3 OWNER OF WELL: Mr. Schallf		
Street address & City of Well Location 56 Leigh Pontiac, Michigan			Address Michigan Dust Control		Date of Completion 9/28/67		
2 FORMATION	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	4 WELL DEPTH: (completed) 45 ft.				
Clay with fine gravel	20	40	5 ☐ Cable tool ☐ Rotary ☐ Driven ☐ dug ☒ Hollow rod ☐ Jetted ☐ Bored ☐				
			6 USE: ☐ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Air Conditioning ☒ Commercial ☐ Test Well ☐				
			7 CASING: Threaded ☒ Welded ☐ Diam. 2 in. to 4 1/2 ft. Depth 12' 42" Weight 3.75 lbs./ft. Drive Shoe? Yes ☐ No ☒				
			8 SCREEN: Type: 21-10 Dia.: 1 1/2 Slot/Gauze Gauze Length 36 Set between 42 ft. and 45 ft. Fittings: Breamer Check Valve				
			9 STATIC WATER LEVEL 40 ft. below land surface				
			10 PUMPING LEVEL below land surface 42 ft. after 3 hrs. pumping 9 a.m. _____ ft. after _____ hrs. pumping _____ a.m.				
Not Known			11 WATER QUALITY in Parts Per Million: Iron (Fe) _____ Chlorides (Cl) _____ Hardness _____				
			12 WELL HEAD COMPLETION: ☐ In Approved Pit ☐ Pitless Adapter ☒ 12" Above Grade				
			13 GROUTING: Well Grouted? ☐ Yes ☒ No Material: ☐ Neat Cement ☐ _____ Depth: From _____ ft. to _____ ft.				
			14 SANITARY: Nearest Source of possible contamination 30 feet N direction C41 Tank Type _____ Well disinfected upon completion ☒ Yes ☐ No				
			15 PUMP: Not Installed Manufacturer's Name _____ Model Number _____ HP Length of Drop Pipe _____ ft. capacity _____ G.P.M. Type: ☐ Submersible ☐ _____ ☐ Jet ☐ Recirculating				
16 Remarks, elevation, source of data, etc.			17 WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. Harry's Well Drilling REGISTERED BUSINESS NAME Address: 2936 Avalon Signed: Harry McElm Date: 10/1/67 AUTHORIZED REPRESENTATIVE				
ADDED INFO. BY DRILLER, ITEM NO. _____ CORRECTED BY: _____ DATE: _____							

Section	Table of Contents	Page

2. A description of how the sampling frequency and duration of sampling for groundwater verification purposes was established. If your sampling strategy differs from the STD Operational Memorandum No. 9.

NA
Table 2

3. A list of the analytical parameters used to verify groundwater closure

4. A justification if all groundwater verification samples were not analyzed, preserved, and handled in accordance with the STD Operational Memorandum No. 14 *Analytical Parameters and Methods, Sample Handling, and Preservation for Petroleum Releases.*

NA

- B. Provide a table with laboratory data showing the results of all verification groundwater sampling performed to date for the required parameters. Refer to the STD Operational Memorandum No. 14 *Analytical Parameters and Methods, Sample Handling, and Preservation for Petroleum Releases.* The table should include the following:

Table 2

1. Sample ID
2. Sampling depth or screened interval
3. Date of collection
4. Dates of extraction and analysis
5. Method Detection Limits
6. Analytical method

(NOTE: The STD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information.)

- C. Attach copies of the following:

1. Boring logs not previously submitted.
2. Well construction diagrams not previously submitted.
3. Potentiometric surface maps for each groundwater verification sampling event.
4. Elevation data (USGS datum preferred); including top-of-casing and grade elevations, and depth to groundwater for each groundwater verification sampling event.

NA

NA

Fig 4

NA

3.3 CLOSURE VERIFICATION FOR OTHER MEDIA

- A. Describe the verification sampling strategy for other media applied at the site.

NA

- B. Provide a scaled site map which identifies the verification sampling locations relative to existing site features and boundaries, if appropriate.

NA

- C. Provide a table with the laboratory data showing the results of all verification sampling performed to date in the other specified environmental media.

NA

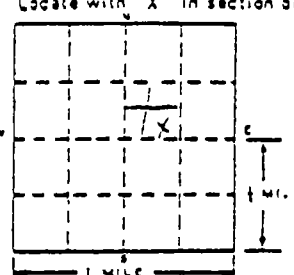
(NOTE: The STD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information.)

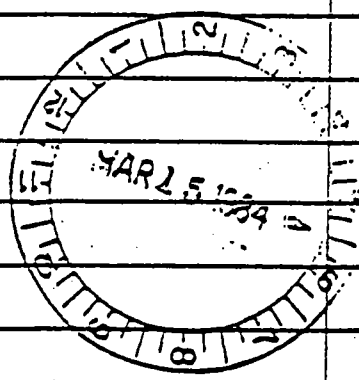
MAY 10 1964

WATER WELL RECORD

ACT 234 PA 1963

MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL		County		Township Name		Fraction		Section Number		Town Number		Range Number	
OAKLAND		PONTIAC		54-54-NE-1/4		17		3N		N/S.		104- E/W.	
Distance And Direction from Road Intersections						3 OWNER OF WELL:							
56 22" HIGH						MICH DUST CONTI							
Street address & City of Well Location						Address 5622 HIGH ST PONTIAC							
Locate with "X" in section below						4 WELL DEPTH: (completed) Date of Completion							
						99 ft. 6/26/83							
Sketch Map:						5 ☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug							
						☐ Hollow rod ☐ Jetted ☐ Bored ☐							
						6 USE: ☐ Domestic ☐ Public Supply ☐ Industry							
						☐ Irrigation ☐ Air Conditioning ☒ Commercial							
						☐ Test Well ☐							
						7 CASING: Threaded ☐ Welded ☒ Height: Above/Below							
						Diam. 5 in. to 9 1/2 ft. Depth 50 ft. Weight 50 lbs./ft.							
						Drive Shoe? Yes ☒ No ☐							
2 FORMATION		THICKNESS OF STRATUM		DEPTH TO BOTTOM OF STRATUM		8 SCREEN:							
GRAVEL & SAND		16		16		Type STAINLESS Dia.: 3"							
CLAY		71		87		Slot 15-12 Length 3'							
GRAVEL		12		99		Set between 71 ft. and 99 ft.							
						Fittings: H-PACKER - 2' BLANK							
						9 STATIC WATER LEVEL							
						43 ft. below land surface							
						10 PUMPING LEVEL below land surface							
						46 ft. after 2 hrs. pumping 80 g.p.m.							
						ft. after hrs. pumping g.p.m.							
						11 WATER QUALITY in Parts Per Million:							
						Iron (Fe) Chlorides (Cl)							
						Hardness Other							
						12 WELL HEAD COMPLETION: ☐ In Approved Pit							
						☒ Pitless Adapter ☐ 12" Above Grade							
						13 Well Grouted? ☒ Yes ☐ No							
						☐ Neat Cement ☒ Bentonite ☐							
						Depth: From TOP ft. to BOTTOM ft.							
						14 Nearest Source of possible contamination							
						55 feet N Direction SE WET Type							
						Well disinfected upon completion ☒ Yes ☐ No							
						15 PUMP:							
						☐ Not installed							
						Manufacturer's Name FTW							
						Model Number 555 HP 1/2 Volts 220							
						Length of Drop Pipe 60 ft. capacity 12 g.p.m.							
						Type: ☒ Submersible							
						☐ Jet ☐ Reciprocating							
16 Remarks, elevation, source of						Bureau of Environmental and Occupational Health - GWQ57							
ADDED INFO BY DRILLER, ITEM NO.						WATER WELL CONTRACTOR'S CERTIFICATION: 6140							
CORRECTED BY						This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.							
ADDITION BY						RAY LAQUE (WELL DRILLING)							
ELEVATION						REGISTERED BUSINESS NAME REGISTRATION NO.							
DEPTH TO ROCK:						Address 2155 OAK HILL - CLARKSTON							
						Signature Date 6/8/76							
						AUTHORIZED REPRESENTATIVE							



RECEIVED
Mich. Dept. of Public Health
MAR 26 1964

**CLOSURE REPORT
CPC - PONTIAC CAR WASH
985 JOSLYN ROAD
PONTIAC, MICHIGAN
SUPERIOR PROJECT NO. DT665**

INTRODUCTION

The corrective actions described herein were described previously in the Type C Closure Proposal prepared for the site by Atwell-Hicks, Inc., dated May 12, 1995. The MDNR granted the Type C Closure for the site based on a restriction of the use of the facility to industrial purposes and the performance of a semi-annual monitoring event for 30 years. Since the acceptance of this Type C Closure, revisions to Part 213 of P.A. 451 have provided a basis for a less restrictive closure at this facility. It is the intent of Superior that the following Closure Report and the closure recommendations contained herein, supercede the former Type C Closure.

HISTORY

In December 1990, two 20,000-gallon gasoline USTs were removed at the CPC- Pontiac Car Wash and replaced with one new 20,000-gallon gasoline UST (Figure 2). Upon removal of the USTs, seven confirmatory soil samples were collected from the sidewalls and floors of the excavation and analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX, polynuclear aromatic hydrocarbons (PNAs), methyl (tertiary) butyl ether (MTBE), and lead. The analytical results indicated that PNAs and MTBE are not present in the soils above detection levels. Lead was present at levels ranging from 3.8 to 10.0 parts per million (ppm), all of which are below the Statewide Default Background Criteria of 21 ppm.

Two of the soil samples indicated elevated levels of BTEX in the northwestern portion of the excavation. Sample No. 376 was collected from 13 feet below ground surface (bgs) on along a utility conduit and indicated a level of 245 ppb benzene, ppb toluene, and 38 ppb ethylbenzene. Sample No. 382 was collected from the fill material in the utility conduit along the northwestern perimeter of the excavation and indicated 5,900 ppb benzene and 18,000 ppb toluene.

Removal of these impacted soils was deemed impossible, as they support the utility conduit containing the electrical supply for two key General Motors plants.

Sheet piling was installed around the excavation to facilitate the installation of a new 20,000-gallon gasoline UST. The new UST was fitted with an EMCO Wheaton Automatic Tank Level Monitor and an EMCO Wheaton Leak Detection System with vapor sensor.

In May of 1991, Testing Engineers and Consultants, Inc. (TEC) performed four soil borings near the northwestern portion of the previous excavation to determine the horizontal and vertical extent of the contamination. These borings indicated the vertical extent to be defined at 20 feet bgs in B-1, less than 15 feet bgs in B-2, and less than 7.5 feet bgs in B-4. The soils in B-3 did not indicate any detectable levels of contamination.

Upon review of the reports submitted, the MDNR requested that soil borings be advanced around the former excavation and the pump island area. TEC conducted SB-1 through SB-4 around the former excavation and SB-5 through SB-8 around the pump island area. All of the samples collected contained no BTEX compounds above the detection limits, with the exception of SB-3 which was in the utility trench. Lead levels in these samples ranged from 2.9 parts per million (ppm) to 9.5 ppm. See Table No. 1 for a summary of BTEX results from the samples collected during the investigations.

In May of 1995, Atwell-Hicks, Inc. prepared and submitted a Type C Closure proposal for this site based on industrial land use exposure assumptions, the permanent restriction of property use for industrial purposes, and the performance of biannual groundwater monitoring for 30 years.

1 LOCATION OF WELL		3 OWNER OF WELL:	
County <u>DAK</u>	Township Name <u>AUBURN HILLS</u>	Fraction <u>N 1/4 NE 1/4</u>	Section Number <u>16</u> Town Number <u>3</u> Range Number <u>10</u> E.W.
Distance And Direction From Road Intersection <u>70 FT EAST OF FULLER</u> <u>SOUTH 120 FT FROM WILTON BLVD.</u>		Address <u>1420 FULLER</u> <u>BATIAE, MICH 48340</u>	
Street Address & City of Well Location		Address Same As Well Location? ☒ Yes ☐ No	
Locate with 'X' in Section Below		Sketch Map	
2 FORMATION DESCRIPTION		4 WELL DEPTH:	
	THICKNESS OF STRATUM	DEPTH TO BOTTOM OF STRATUM	Date Completed <u>7/7/92</u> ☒ New Well ☒ Replacement Well
<u>BROWN CLAY</u>	<u>20</u>	<u>20</u>	<u>88</u> ft.
<u>GRAY CLAY</u>	<u>60</u>	<u>80</u>	
<u>WATER SAND & GRAVEL</u>	<u>8</u>	<u>88</u>	
		5 ☒ Cable tool ☐ Rotary ☐ Driven ☐ Dug ☐ Hollow rod ☐ Auger ☐ Jetted ☐	
		6 USE ☒ Domestic ☐ Type I Public ☐ Type III Public ☐ Irrigation ☐ Type IIa Public ☐ Heat pump ☐ Test Well ☐ Type IIb Public ☐	
		7 CASING Diameter ☒ Steel ☐ Threaded ☐ Height: Above/Below Surface <u>1</u> ft. ☐ Plastic ☒ Welded Weight: <u>11.0</u> lbs./ft. <u>4</u> in. to <u>84</u> ft. depth <u>6</u> in. to <u>84</u> ft. depth <u>8</u> in. to <u>88</u> ft. depth Grouted Drill Hole Diameter <u>4</u> in. to <u>4</u> ft. depth Drive Shoe ☒ Yes ☐ No	
		8 SCREEN: ☐ Not Installed Type <u>PVC</u> Diameter <u>3"</u> Slot/Gauge <u>10</u> Length <u>6'</u> Set between <u>92</u> ft. and <u>88</u> ft. FITTINGS ☒ X-Packer ☐ Lead Packer ☐ Bremer Check ☐ Blank above screen <u>0</u> ft. Other <u>0</u>	
		9 STATIC WATER LEVEL: <u>50</u> ft. below land surface ☐ Flow	
		10 PUMPING LEVEL: below land surface <u>60</u> ft. after <u>2</u> hrs. pumping at <u>35</u> G.P.M. <u>0</u> ft. after <u>0</u> hrs. pumping at <u>0</u> G.P.M.	
		11 WELL HEAD COMPLETION: ☒ Wellhead adapter ☒ 12" above grade ☐ Basement offset ☐ Approved pit	
		12 WELL GROUTED? ☐ No ☒ Yes From <u>STRUCT</u> to <u>FINISH</u> . ☐ Neat cement ☒ Bentonite ☐ Other <u>0</u> No. of bags of cement <u>2</u> Additives <u>0</u>	
		13 Nearest source of possible contamination Type <u>SEPTIC</u> Distance <u>80</u> ft. Direction <u>S.W.</u> Well disinfected upon completion? ☒ Yes ☐ No Was old well plugged? ☒ Yes ☐ No	
		14 PUMP: ☐ Not Installed ☒ Pump Installation Only Manufacturer's name <u>WELDS</u> Model number <u>10EJAS</u> HP <u>1/2</u> Volts <u>230</u> Length of Drop Pipe <u>60</u> ft. capacity <u>10</u> G.P.M. TYPE: ☒ Submersible ☐ Jet PRESSURE TANK: <u>LITTON MARK</u> Manufacturer's name <u>LITTON MARK</u> Model number <u>LM8003</u> Capacity <u>12</u> Gallons	
RECEIVED Mich. Dept. of Public Health			
USE A 2ND SHEET IF NEEDED			
15. Remarks, elevation, source of data, etc. <u>JUN 12 1992</u>		16. WATER WELL CONTRACTOR'S CERTIFICATION:	
17. Rig Operator's Name: <u>BUREAU OF ENVIRONMENTAL AND OCCUPATIONAL HEALTH-GWWS</u>		This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief. <u>Jim Palmer W.D. 25-1936</u> REGISTERED BUSINESS NAME <u>61431 CUMMINGS RD</u> REGISTRATION NO. <u>1-7-92</u> Address <u>Ann Arbor</u> Signed <u>Jim Palmer</u> Date <u>1-7-92</u> AUTHORIZED REPRESENTATIVE	
		Authority: <u>Completion:</u> Penalty: <u>Required</u> Act 388 PA 1975 Conviction of a violation of any provision is a misdemeanor.	

D676 2/83

GEOLOGICAL SURVEY COPY

1.0 PROJECT CHRONOLOGY

Date and time confirmed release was discovered: December 14, 1990: 8:00 a.m.
Date and time confirmed release was reported: December 14, 1990: 12:55 p.m.
IAR submittal date: Not Applicable
FAR submittal date: Not Applicable
Dates for any other submittals: Not Applicable

2.0 SUMMARY OF CORRECTIVE ACTION ACTIVITIES PERFORMED

2.1 IMMEDIATE RESPONSE ACTION IMPLEMENTATION

Information requested in Section 1.0 of the IAR:

The following USTs are currently or were previously located at the facility:

Tank ID Number (As Registered)	Contents At the Time of Release/ Previous Contents	LUST? (Yes or No)	Tank Emptied? (Yes/Date or No)	Tank Removed? (Yes/Date or No)
CW-1	20,000 Gasoline	Yes	Yes, 12/90	Yes, 12/90
CW-2	20,000 Gasoline	Yes	Yes, 12/90	Yes, 12/90
CW-3	20,000 Gasoline	No	No	No

CW-3 is the new tank that was placed in this location upon removal of CW-1 & CW-2.

Initial response actions performed at the site included conducting vapor screening and a free product investigation. No explosive or hazardous vapors or free product was detected. The piping associated with the former UST system was removed from the site.

2.2 FREE PRODUCT DISCOVERY AND REMOVAL

No free product was noted at the site during the UST excavation and sampling activities.

2.3 SITE ASSESSMENT ACTIVITIES

Information requested in Section 3.0 of the IAR:

3.0 Site Characterization Information from IAR

3.1 Scaled Site Maps

See Appendix A for scaled site maps.

3.2 Scaled Cross Sectional Diagrams

See Appendix A for scaled cross sectional diagrams.

OAKLAND COUNTY HEALTH DEPT.
RECEIVED
MAY 20 1960
SOUTHERN OFFICE

3.3 Soil Conditions and Characteristics

- A. The site geology consists of silty clay to a depth of at least 27 feet bgs. The entire site area is paved with asphalt and/or concrete. Sandy fill material associated with the utility conduit was encountered along the northern perimeter of the UST area to a depth of 15 feet. The utility conduit contains a high voltage electricity duct providing electricity to two key General Motors facilities and a sewer line. The electric ductway is located directly adjacent to the north side of the sheet pile and is approximately five feet bgs. The sewer line is about nine feet north of the electric ductway and lies approximately 10 feet bgs.
- B. Soil contamination in the backfill materials surrounding the former USTs consisted of volatile organic compounds (VOCs) registering on the photoionization detector (PID). Soil contamination remaining in the floors and walls of the excavation consists of BTEX in the northwestern portion of the excavation. See Tables for further detail.
- C. An unknown quantity of soil was removed from the UST basin to facilitate the installation of a new UST. The removed soil was staged with soil from another UST excavation on General Motors property, making determination of volume impossible. The contaminated soil was then transported and disposed of at Wayne Disposal in Belleville, Michigan. Non-Hazardous Waste manifests were not available for this report.
- D. Scaled site diagrams are included in Appendix A.
- E. All soils indicated to be contaminated in excess of the applicable risk based screening levels (RBSLs) were removed from the site. Several subsurface investigations were conducted to delineate the horizontal and vertical extent of soils contamination, however, no contaminants are present in excess of the applicable generic residential RBSLs. Additionally, four years of conducting biannual groundwater monitoring have revealed no contamination leaching to the groundwater. Therefore, the RBSLs used for comparison are Residential Soil Direct Contact, Volatilization to Indoor Air, and Volatilization to Ambient Air.
- F. Access to off-site properties is unnecessary because the extent of contamination at the site is defined.
- G. The extent of contamination has been delineated. No soil contaminated above the applicable RBSLs remains on-site.
- H. A table presenting the soil analytical results is attached in Appendix B.
- I. A table comparing maximum remaining soil contamination to the applicable RBSLs for the site is attached in Appendix B.
- J. Soil boring logs for the soil borings conducted during previous investigations are attached in the previous reports on file at the MDEQ-STD office in Livonia, Michigan.
- K. No other identified sources of soil contamination exist at this portion of the GM complex.

3.4 Groundwater Conditions and Characteristics

A. Site Hydrogeology

Groundwater was not encountered during the UST removal activities at the site. The excavation was advanced to a maximum depth of 15 feet bgs. During the final phase of the Type C Closure investigation, three deep soil borings were advanced at the site to 27 feet bgs. Groundwater was encountered at approximately 21 feet bgs and monitoring wells were installed.

**APPENDIX C
WELL LOGS**

1. The depth to groundwater at the site ranges from 19.84 feet from top of casing (TOC) to 23.5 feet from TOC. These levels were determined using a water level indicator.
 2. The groundwater at the site is not potable as it is not available in sufficient quantity. The groundwater at the site is present in clay and during the sampling events, all three wells were bailed dry while evacuating less than five gallons of groundwater. Additionally, four years of groundwater monitoring has indicated that the contaminants in the soil have not leached to groundwater. Seven biannual groundwater monitoring events have indicated that groundwater has no detectable levels of BTEX contamination, after the one hit of xylene could not be confirmed.
 3. The groundwater aquifer at this site is not used as a source for drinking water and is not connected with any other formations used for drinking water in the region (see water well logs in Appendix *). The well logs indicate that a thick layer of clay (20 to 80 feet) is present across the region. Additionally, the nearest drinking water well is located over 5,000 feet away. The shallowest of the drinking water wells within a one-mile radius is screened at 42 feet bgs below 40 feet of clay. The nearest production well (used for process water) is located over 3,000 feet away on General Motors property and is set in a bedrock aquifer.
 4. According to Mr. Steve Presby of the Oakland County Environmental Health Department, groundwater in the vicinity of the site is not being used for consumption, irrigation, or any other purpose. Additionally, Mr. Presby indicated that he is not aware of any crock wells in the area.
 5. Water well logs for the region indicate that a deep aquifer may be present beneath the site. However, these well logs indicate a thick (20 to 80 feet) continuous clay layer across the region which would act as a confining layer between the two groundwater units.
 6. An aquifer performance analysis was performed on the water-bearing unit at the site during the final phase of the Type C Closure investigation to determine the groundwater flow rate and direction, hydraulic gradient, and hydraulic conductivity (see Hydrogeologic Investigation section of the Type C Closure Proposal prepared by Atwell Hicks, Inc., attached as Appendix D).
- B. See Type C Closure Proposal prepared by Atwell Hicks, Inc., dated May 12, 1995, for information regarding boring logs, monitoring well logs, and groundwater elevation data.
- C. See Appendix A for scaled site diagrams.
- D. See Appendix B for tables describing results for each sample and comparing maximum results with applicable RBSLs.

3.5 *Conditions and Characteristics in Other Environmental Media*

Closure verification sampling for other media is not applicable.

CLOSURE REPORT - TABLE NO. 4
TIER I RBSL/TIER II OR TIER III SSTL COMPARISON TABLE FOR GROUNDWATER
FACILITY NAME : CPC Pontiac - Car Wash
FACILITY ID NUMBER : 0-001623

☒ Residential ☐ Commercial III ☐ Commercial IV ☐ Industrial

Contaminant	Sample ID with Maximum Detected Concentration	Corresponding Sample Date	Maximum Detected Concentration (ug/kg)	Applicable Criterion with Exposure Codes (ug/kg)		Criterion Exceeded (Yes or No)	
				Tier I RBSL	Tier II/III SSTL	Tier I RBSL	Tier II/III SSTL
VOLATILES							
☒ Benzene			ND			No	
☒ Toluene			ND			No	
☒ Ethylbenzene			ND			No	
☒ Total Xylenes	MW-3	5/13/96	1.4	790		No	
☐ MTBE							
POLYNUCLEAR AROMATICS (PNAs)							
☐ Acenaphthene							
☐ Anthracene		NA					
☐ Benzo(a)anthracene		NA					
☐ Benzo(a) pyrene		NA					
☐ Benzo(b)fluoranthene		NA					
☐ Benzo(k)fluoranthene		NA					
☐ Chrysene		NA					
☐ Dibenzo(a,h)anthracene		NA					
☐ Fluoranthene		NA					
☐ Fluorene		NA					
☐ Indeno(1,2,3-cd)pyrene		NA					
☐ Naphthalene		NA					
☐ Pyrene		NA					

2.4 SITE CLASSIFICATION

A. The current site classification level is Class 4. The following factors were used as considerations for site classification:

- The levels of petroleum related compounds detected in shallow contaminated surface soils on-site are below applicable tier I criteria for direct contact with soil, volatilization to indoor and ambient air.
- There is no known related surface water, storm water or groundwater discharge within 500 feet of a sensitive habitat or surface water body or wetlands.
- There are no water wells located at the site or in the immediate vicinity.
- Explosive levels or concentrations of vapors have not been detected in a residence or other building or subsurface utility system.
- Free product has not been detected at the site.
- Ambient vapor/particulate concentrations have not been detected up to concentrations of concern from an acute exposure or safety viewpoint.
- This area is currently under asphalt within the GM Complex. General Motors does have plans for changing the entrance of the GM Powertrain building on the property. This change includes an entrance road to access this building with associated parking. The area of this investigation will become part of this entrance road/parking portion of the property, making any contact with this area improbable.

2.5 TIERED EVALUATIONS AND CLEANUP GOALS

A site specific Tier II evaluation was not completed for this site. Levels of contamination were not detected at levels above the applicable Tier I RBSLs.

To address the soil contaminant impact detected at this site, potential exposure pathways were evaluated. These pathways include inhalation, dermal toxicity, ecological concerns and consumption of contaminated groundwater.

Exposure due to Physical Contact with Soils

Direct contact with the soil does constitute a potential exposure pathway at this site. No levels of contamination were detected in any of the samples collected which exceeded the Residential Cleanup Criteria for Soil Direct Contact. Therefore, the site does not pose an unacceptable risk of direct contact.

Exposure due to Physical Contact with Groundwater

Contact with groundwater does constitute a potential exposure pathway at this site. However, groundwater is present at a depth which would not likely be contacted. Additionally, four years of biannual groundwater monitoring has revealed no detectable levels of contamination in the groundwater. Additionally, soil levels do not exceed the Groundwater Contact Protection Criteria. Therefore, this pathway does not pose an unacceptable risk for direct contact with groundwater.

Exposure due to Groundwater Consumption

Exposure due to groundwater consumption is a potential exposure pathway at the site. However, there are no receptors on the site or in the immediate vicinity of the site. The nearest drinking water well is over 5,000 feet away and is set in a deeper aquifer separated from the water bearing unit at the site by at least 20 feet of clay. Additionally, four years of biannual groundwater monitoring at the site has revealed no detectable levels of contamination in the groundwater at the site. Therefore, this pathway does not pose an unacceptable risk for groundwater consumption.

CLOSURE REPORT - TABLE NO.3
TIER I RBSL/TIER II OR TIER III SSTL COMPARISON TABLE FOR SOIL
FACILITY NAME : CPC - Pontiac Car Wash
FACILITY ID NUMBER : 0-001623

Contaminant	Sample ID with Maximum Detected Concentration	Corresponding Sample Date	Maximum Detected Concentration (ug/kg)	Applicable Criterion (ug/kg)		Criterion Exceeded (Yes or No)	
				Tier I RBSL	Specific Criterion	Tier I RBSL	Tier II/III SSTL
METALS							
☐ Cadmium							
☐ Chromium III							
☐ Chromium IV							
☒ Total Lead	376	12/3/90	10,000	400,000	D.C.	No	
HALOGENATED HYDROCARBONS							
☐ 1,1-Dichloroethane							
☐ 1,2,4-Trimethylbenzene							
☐ 1,3,5-Trimethylbenzene							
☐ n-Butylbenzene							
☐ sec-Butylbenzene							
☐ Isopropyl benzene							
☐ Trichloroethene							
☐ n-Propylbenzene							
☐ p-Isopropyl toluene *							
OTHER							
☐							
☐							
☐							
☐							

*Note: Isopropyl toluene does not have any cleanup criteria established by the MDEQ.
Used lowest applicable criteria for each constituent.

Exposure Due to Soil Contaminants Leaching to Groundwater Direct Contact

Exposure due to soil contaminants leaching to groundwater above direct contact levels is a potential exposure pathway at the site. However, none of the Groundwater Contact Protection Criteria were exceeded. Therefore, contaminants leaching from soil to groundwater above direct contact criteria do not pose an unacceptable risk.

Exposure Due to Soil Contaminants Leaching to Groundwater Consumption

Exposure due to soil contaminants leaching to groundwater above health based drinking water levels for consumption is a potential exposure pathway at the site. However, the useable aquifer in the area is separated from the water bearing unit at the site by at least 20 feet of clay. Additionally, four years of biannual groundwater monitoring at the site has revealed no detectable levels of contamination in the groundwater at the site. Therefore, this pathway does not pose an unacceptable risk of exposure.

Exposure due to Free Phase Product

Exposure due to contact with free phase product is not a potential exposure pathway at the site. Free phase product was not encountered at the site. Therefore, exposure to free phase product is not a viable exposure pathway.

Exposure Due to Volatilized Contaminants to Ambient Air

Exposure to volatile compounds is a viable exposure pathway at the site. However, none of the contaminants detected exceeded the criteria for Volatilization to Ambient Air. Therefore, this pathway does not pose an unacceptable risk of exposure.

Exposure due to Volatilized Contaminants to Indoor Air

Exposure due to inhalation of volatile compounds accumulating in an enclosed indoor space is a viable exposure pathway at the site. Two samples were detected above the residential indoor air inhalation standard of 1,600 ppb. However, Superior ran the 95% upper confidence level in the soil. Two sets of confidence levels were run. One which included all soil samples from the investigation had an upper confidence level of 669 ppb. Upon Conversations with MDEQ personnel, a second upper confidence level was run from the samples collected just around the area of contamination. This upper confidence level was 1,161 ppb. Both of these confidence levels were below the acceptable clean up criteria. Therefore, this pathway does not pose an unacceptable risk of exposure. Please refer to Appendix E for the 95% upper confidence limits calculations.

Based on the site information and a review of exposure pathways, there is not a potential for unacceptable risk associated with the contamination present at the site. Therefore, all land use scenarios are applicable to this site.

2.6 MODELING

Modeling was not conducted as part of this investigation

2.7 NOTICES AND RESTRICTIONS

See Appendix F for "Notice of Discharge of Land Use & Resource Use Restrictions".

2.8 PERMITS

No discharge permits and/or permit exemptions were required for the corrective action.

CLOSURE REPORT - TABLE NO.3
TIER I RBST/TIER II OR TIER III SSTL COMPARISON TABLE FOR SOIL
FACILITY NAME : CPC Pontiac - Car Wash
FACILITY ID NUMBER : 0-001623

☒ Residential

☐ Commercial IV

☐

☐ Industrial

Contaminant	Maximum Detected Concentration (ug/kg)	Applicable Criterion (ug/kg)		Criterion Exceeded (Yes or No)	
		Tier I RBST	Specific Criterion	Tier I RBST	Tier IV/III SSTL
VOLATILES					
☒ Benzene	B-1 1,161 (UCL)	1,600	Indoor Air	No	
☒ Toluene	SB-3 1,800	2.5 x 10+5	Indoor Air	No	
☒ Ethylbenzene	SB-3 8400	1.4 x 10+5	Indoor Air	No	
☒ Total Xylenes	SB-3 26,700	1.5 x 10+5	Indoor Air	No	
☒ MTHB	ND			No	
POLYNUCLEAR AROMATICS (PNAs)					
☒ Acenaphthene	ND			No	
☒ Anthracene	ND			No	
☒ Benz(a)anthracene	ND			No	
☒ Benz(a)pyrene	ND			No	
☒ Benz(b)fluoranthene	ND			No	
☒ Benz(k)fluoranthene	ND			No	
☒ Chrysene	ND			No	
☒ Dibenzo(a,h)anthracene	ND			No	
☒ Fluoranthene	ND			No	
☒ Fluorene	ND			No	
☒ Indeno(1,2,3-cd)pyrene	ND			No	
☒ Naphthalene	ND			No	
☒ Pyrene	ND			No	
☒ Phenanthrene	ND			No	
☒ 2-Methylnaphthalene	ND			No	

Used lowest applicable criteria for each constituent.

2.9 CORRECTIVE ACTION PLAN

No further corrective action is necessary at this time.

3.0 CLOSURE VERIFICATION SAMPLING

3.1 SOIL CLOSURE VERIFICATION

A site map describing the vertical and horizontal distribution of contaminants in soil can be found in Appendix A. A table showing laboratory data for all verification soil sampling performed to date is included in Appendix B.

The MDEQ guidance document "Verification of Soil Remediation Guidance Document" was utilized to prepare the soil verification sampling plan. The number of soil samples collected was determined based upon the objective to vertically and horizontally define the impact identified from the release. A total of 31 soil samples were obtained from the subsurface in the vicinity of the UST excavation and analyzed for BTEX. Selected samples were analyzed for lead, PNAs and MTBE. All soil samples collected were analyzed preserved and handled in accordance with the STD guidance document entitled Guidance for Parameters, Analytical Methods, Sample Handling, Quality Control and Cleanup Limits for Petroleum Hydrocarbon Releases as well as the methanol preservation protocols.

3.2 GROUNDWATER CLOSURE VERIFICATION

Biannual groundwater sampling was conducted from MW-1, MW-2, and MW-3 for a period of four years. None of the analytical results indicated detectable amounts of contamination in the groundwater with the exception of one hit of xylene that could not be reproduced.

3.3 CLOSURE VERIFICATION FOR OTHER MEDIA

Closure verification sampling for other media is not applicable.

Table No.2

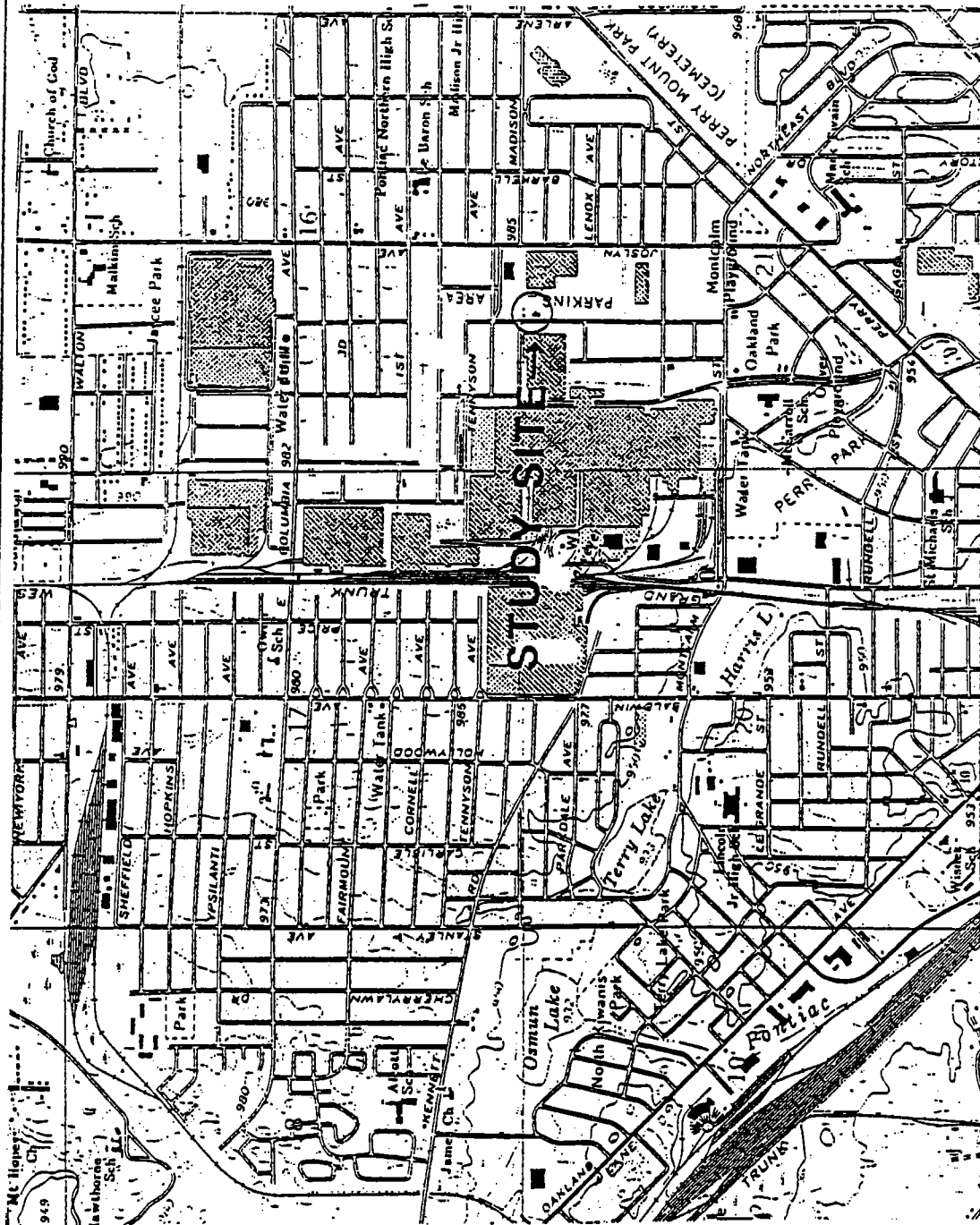
Time Series Results-Groundwater							
Facility Name: CPC Pontiac - Car Wash							
Facility ID Number: 0-001623							
Sample ID		Benzene	Toluene	Ethylbenzene	Xylenes		
MW-1							
4/30/99		ND	ND	ND	ND		
10/22/98		ND	ND	ND	ND		
4/9/98		ND	ND	ND	ND		
10/7/97		ND	ND	ND	ND		
4/7/97		ND	ND	ND	ND		
10/25/96		ND	ND	ND	ND		
6/9/96		ND	ND	ND	ND		
5/13/96		ND	ND	ND	ND		
10/17/95		ND	ND	ND	ND		
MW-2							
4/30/99		ND	ND	ND	ND		
10/22/98		ND	ND	ND	ND		
4/9/98		ND	ND	ND	ND		
10/7/97		ND	ND	ND	ND		
4/7/97		ND	ND	ND	ND		
10/25/96		ND	ND	ND	ND		
6/9/96		ND	ND	ND	ND		
5/13/96		ND	ND	ND	ND		
10/17/95		ND	ND	ND	ND		
MW-3							
4/30/99		ND	ND	ND	ND		
10/22/98		ND	ND	ND	ND		
4/9/98		ND	ND	ND	ND		
10/7/97		ND	ND	ND	ND		
4/7/97		ND	ND	ND	ND		
10/25/96		ND	ND	ND	ND		
6/9/96		ND	ND	ND	ND		
5/13/96		ND	ND	ND	1.40		
10/17/95		ND	ND	ND	ND		
Contaminant concentration in Parts per Billion (PPB)							

**APPENDIX A
FIGURES**

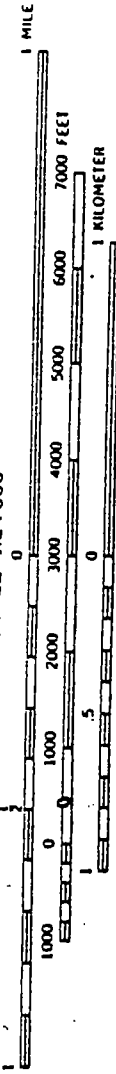
TABLE No. 1 (cont'd)
CPC PONTIAC - CAR WASH
SOIL ANALYTICAL RESULTS
Facility ID Number: 0-001623

Analytical Parameter	Analytical Method	Sample ID Sample Depth Collection Type Date Collected Date Analyzed	SB-6 5.0' GS		SB-7 10' GS 10/29/93 11/10/93		SB-8 5.0' GS		SB1 10.0' GS		SB1 15.0' GS 6/22/94 7/1/94		SB2 15.0' GS	
			Conc.	MDL	Conc.	MDL	Conc.	MDL	Conc.	MDL	Conc.	MDL	Conc.	MDL
Benzene	8020		<10	10	<10	10	<10	10	<10	10	<10	10	<10	10
Toluene	8020		<10	10	<10	10	<10	10	<10	10	<10	10	<10	10
Ethylbenzene	8020		<10	10	<10	10	<10	10	<10	10	<10	10	<10	10
Total xylenes	8020		<30	30	<30	30	<30	30	<30	30	<30	30	<30	30
Total lead	6010		6,800	1,000	6,700	1,000	6,700	1,000	884 (3,000) X NA	NA	NA	NA	NA	NA

Analytical Parameter	Analytical Method	Sample ID Sample Depth Collection Type Date Collected Date Analyzed	SB3 15.0' GS 6/22/94 7/1/94	
			Conc.	MDL
Benzene	8020		<10	10
Toluene	8020		<10	10
Ethylbenzene	8020		<10	10
Total xylenes	8020		<30	30
Total lead	6010		NA	NA



SCALE 1:24,000



PROJECT NO.: 41307
DATE: 09-01-94

FIGURE 1: LOCATION OF STUDY SITE
CPC PONTIAC - CAR WASH SITE
985 JOSLYN
PONTIAC, MICHIGAN

SOURCE: USGS 7.5 MINUTE QUADRANGLE
PONTIAC NORTH
(PHOTO REVISED 1983)

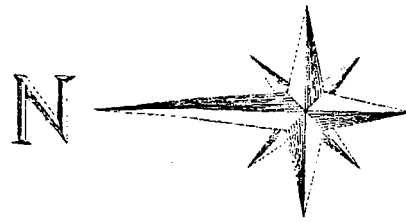
ATWELL-HICKS, INC.
CIVIL ENGINEERING SURVEYING PLANNING
ENVIRONMENTAL SERVICES
1241 S. MAPLE ROAD • P.O. BOX 2981 • ANN ARBOR, MI 48106
313/994-4000 • FAX 313/9

TABLE No. 1 (cont'd)

CPC PONTIAC - CAR WASH
SOIL ANALYTICAL RESULTS
Facility ID Number: 0-001623

Analytical Parameter	Analytical Method	Sample ID Sample Depth Collection Type Date Collected Date Extracted Date Analyzed	B-3		B-4		B-4		SB-1		SB-1		SB-2	
			7.5'	GS	5.0'	GS	7.5'	GS	7.0'	GS	13.0'	GS	7.0'	GS
benzene toluene ethylbenzene total xylenes total lead	8020 8020 8020 8020 6010		10/29/93 11/10/93 11/10/93											
			Conc.	MDL	Conc.	MDL	Conc.	MDL	Conc.	MDL	Conc.	MDL	Conc.	MDL
			<5	5	22	5	<5	5	<10	10	<10	10	<10	10
			<5	5	1,461	5	6	5	<10	10	<10	10	<10	10
			<5	5	2,500	5	<5	5	<10	10	<10	10	<10	10
			<15	15	14,294	15	<15	15	<30	30	<30	30	<30	30
			NA	NA	NA	NA	NA	NA	3,500	1,000	2,900	1,000	5,500	1,000

Analytical Parameter	Analytical Method	Sample ID Sample Depth Collection Type Date Collected Date Extracted Date Analyzed	SB-2		SB-3		SB-3		SB-4		SB-4		SB-5	
			13.0'	GS	7.0'	GS	13.0'	GS	7.0'	GS	13.0'	GS	5.0'	GS
benzene toluene ethylbenzene total xylenes total lead	8020 8020 8020 8020 6010		10/29/93 11/10/93 11/10/93											
			Conc.	MDL	Conc.	MDL	Conc.	MDL	Conc.	MDL	Conc.	MDL	Conc.	MDL
			<10	10	<1,000	1,000	<1,000	1,000	<10	10	<10	10	<10	10
			<10	10	1,800	1,000	<1,000	1,000	<10	10	<10	10	<10	10
			<10	10	8,400	1,000	6,000	1,000	<10	10	<10	10	<10	10
			<30	30	26,700	3,000	15,400	3,000	<30	30	<30	30	<30	30
			4,600	1,000	4,500	1,000	6,200	1,000	5,500	1,000	6,400	1,000	9,500	1,000



AR WASH BUILDING

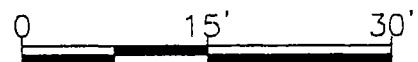
LEGEND



Man Hole



UST EXCAVATION LIMITS
AND SHEET PILE



SITE PLAN

CPC PONTIAC- CAR WASH

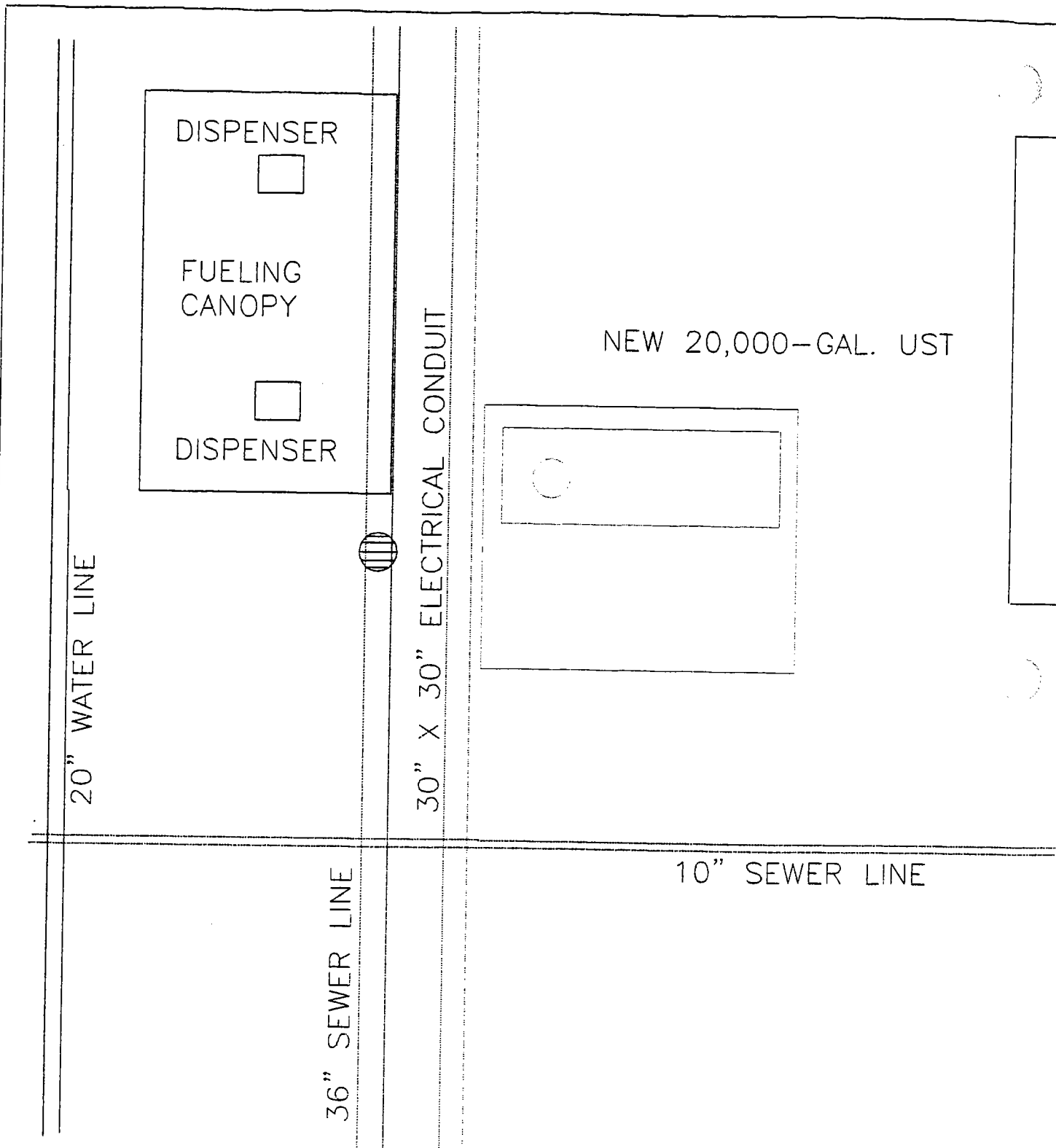
985 JOSLYN ROAD
PONTIAC, MICHIGAN

PRJ MGR	FGR	SCALE AS SHOWN
SUB BY	FGR	DRAWN BY RDD
<i>Superior</i>		DRAWN 7/6/99
		FIGURE 2
		PROJ. NO.: DT665

Facility ID Number: 0-001623

Analytical Parameter	Analytical Method	Sample ID Sample Depth Collection Type Data Collected Data Extracted Data Analyzed	12/3/90 12/12/90 12/12/90											
			376		377		378		379		380		381	
			13.0'		13.0'		13.0'		13.0'		13.0'			
			GS		GS		GS		GS		GS			
			Conc.	MDL	Conc.	MDL	Conc.	MDL	Conc.	MDL	Conc.	MDL	Conc.	MDL
Benzene	8020		245	10	<10	10	<10	10	<10	10	<10	10	<10	10
toluene	8020		15	10	<10	10	<10	10	<10	10	<10	10	<10	10
ethylbenzene	8020		36	10	<10	10	<10	10	<10	10	<10	10	<10	10
total xylenes	8020		<30	30	<30	30	<30	30	<30	30	<30	30	<30	30
MTBE	8020		<10 ¹	10	<10	10	<10	10	<10	10	<10	10	<10	10
PMA	8310		<330	330	<330	330	<330	330	<330	330	<330	330	<330	330
total lead	8010		10,000	1,000	3,900	1,000	4,700	1,000	4,500	1,000	4,100	1,000	5,200	1,000

[illegible]



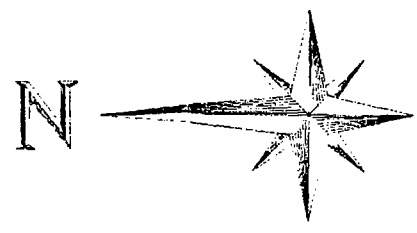
Adapted from SPSC field notes; not a legal survey.

**APPENDIX B
TABLES**

ST

SB-4

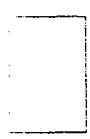
CAR WASH BUILDING



LEGEND



MANHOLE



UST EXCAVATION LIMITS
AND SHEET PILE



INITIAL ABATEMENT SAMPLE



SOIL BORING

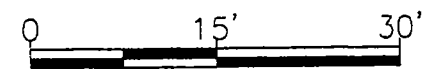


MONITORING WELL



ZONE OF BENZENE
GREATER THAN 200 PPB

⊕
MW-1/SB3

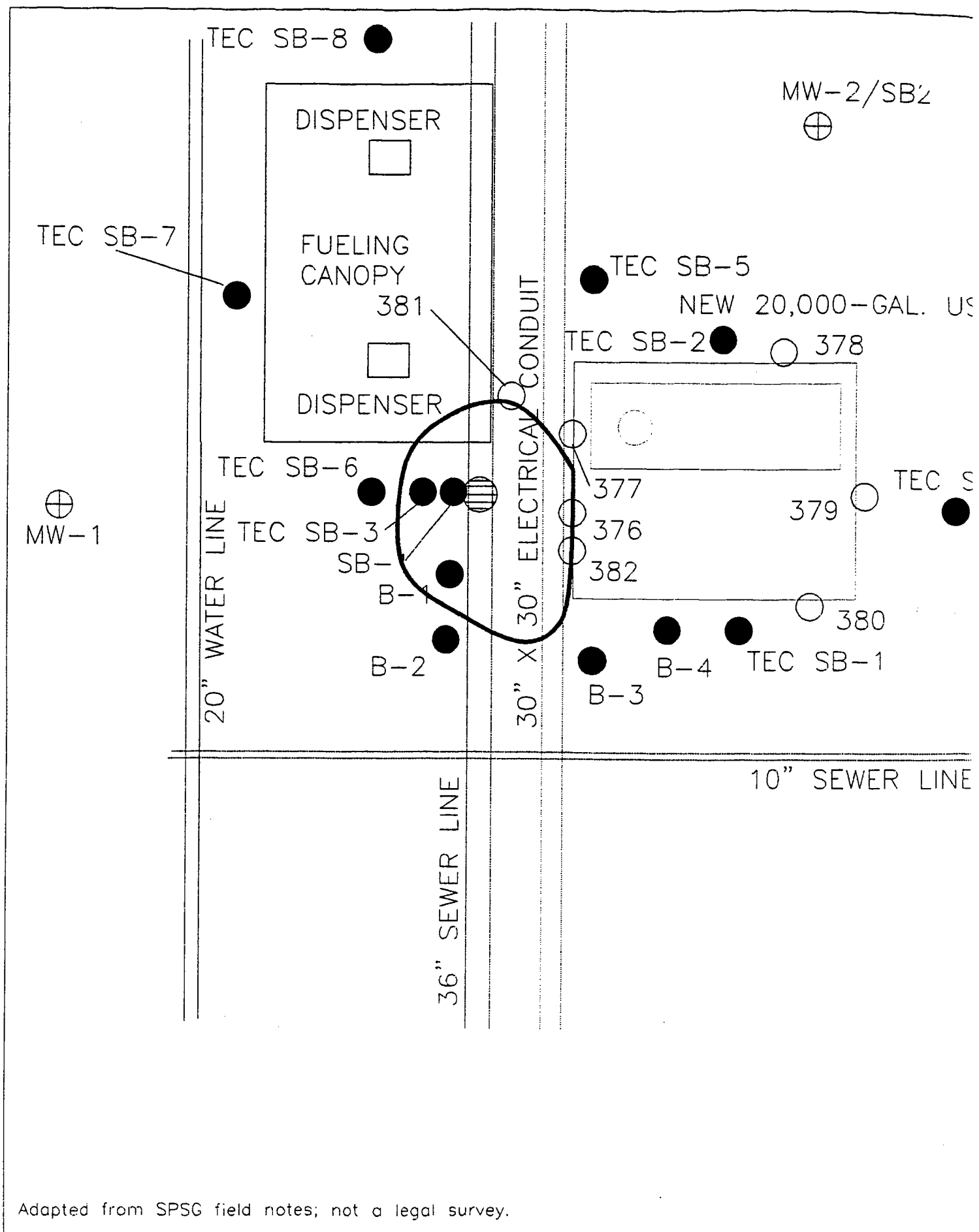


BENZENE ISOPLETH

CPC PONTIAC- CAR WASH

985 JOSLYN ROAD
PONTIAC, MICHIGAN

PRJ MGR	FGR	SCALE AS SHOWN
SUB BY	FGR	DRAWN BY RDD
<i>Superior</i>		DRAWN 7/6/99
		FIGURE 3
		PROJ. NO.: DT665



Adapted from SPSG field notes; not a legal survey.

Appendix Y

Appendix Y

- Y-1 Used Oil UST Closure (Remtech, 1996a)
- Y-2 Utility Line Investigation (Remtech, 1996b)

Y-1



SERVING INDUSTRY FOR A BETTER TOMORROW

**USED OIL UST CLOSURE
GM Powertrain Headquarters
895 Joslyn Road
Pontiac, Michigan**

33830 HARPER AVENUE

CLINTON TOWNSHIP, MI 48035

PHONE (810) 415-1222

FAX (810) 415-1210

**USED OIL UST CLOSURE
GM Powertrain Headquarters
895 Joslyn Road
Pontiac, Michigan**

**RemTech Project No. 451-PSG-96
November 27, 1996**



SERVING INDUSTRY FOR A BETTER TOMORROW

November 27, 1996

Mr. James Baumer
GM Powertrain Headquarters
895 Joslyn Road
Pontiac, MI 48340

Re: Used Oil UST Closure
895 Joslyn Road
Pontiac, Michigan
RemTech Project No. 451-PSG-96

Dear Mr. Baumer:

RemTech Environmental Services, Inc. - Property Services Group (RemTech) has completed the UST removal and the QC has completed the residential closure for the above referenced used oil UST.

A copy of the enclosed report has been delivered to the MDEQ Southeast Michigan offices.

We appreciate this opportunity to serve you. If there are any questions regarding this report, or should you require additional services, please do not hesitate to contact us.

Sincerely,

RemTech Environmental Services, Inc.

Frederick G. Roeser, CPG
Director
Property Services Group

FGR/



LEAKING UNDERGROUND STORAGE TANK
CLOSURE REPORT

INSTRUCTIONS: COMPLETION OF THIS REPORT WITH ALL APPLICABLE INFORMATION IS MANDATORY. The Certified Underground Storage Tank Professional (CP) MUST sign below. Failure to submit this report within the stated time period may result in Administrative Penalties as provided for in Part 213, Section 21321, of Act 451, P.A. 1994, as amended.

FACILITY NAME: GM Powertrain	FACILITY ID NUMBER: Just registered
ADDRESS: 895 Joslyn Road, Pontiac, MI COUNTY: Oakland	MERA SITE ID NUMBER:
DATE(S) RELEASE DISCOVERED: October 28, 1996	CONFIRMED RELEASE NUMBER(S): C-167-96
O/O NAME: GM Powertrain Headquarters	MUSTFA CLAIM NUMBER: NA
O/O ADDRESS: 895 Joslyn Road, Pontiac, MI 48340	
CONTACT PERSON: James Baumer	PHONE NUMBER: (810) 857-0197

ANSWER ALL QUESTIONS, (DO NOT LEAVE BLANKS):

- Has the UST been emptied? ☒ Yes ☐ No (If no, explain why):
- Free product present: a. Currently? ☐ YES ☒ NO If YES, total gallons recovered since last report:
b. Previously? ☐ YES ☒ NO If YES, total gallons recovered to date:
- Have vapors been identified in any confined spaces (basement, sewers)? ☐ YES ☒ NO
- State the number of homes where drinking water is or was affected as a result of a release from this facility: None
- Estimated distance and direction from point of release to nearest:
a. Private well: > ½ Mile b. Municipal well: > ½ Mile c. Surface water/wetland: Approximately ½ Mile
- Since last report: a. cubic yards of soil remediated: 80 Cubic Yards b. gallons of groundwater remediated: 0
- Totals to date: a. cubic yards of soil remediated: 80 Cubic Yards b. gallons of groundwater remediated: 0
- Michigan RBCA Site Classification (1-4): 4

CERTIFICATION OF REPORT COMPLETION

I, the undersigned CP, hereby attest to the best of my knowledge and belief that the statements in this document and all attachments are true, accurate and complete. I certify that it was submitted to the USTD on November 27, 1996.
(date submitted - Required)

Kevin K Wolka 11-27-96
CP Original Signature - Required Date

Kevin K. Wolka
PRINT QC Project Manager's Name

Kevin K. Wolka
PRINT CP's Name

KJ Wolka & Associates
CONSULTANT

53460 Mound Road, Shelby Township, MI 48316
ADDRESS

(810) 781-4455
TELEPHONE NO.

(810) 781-3074
FAX NO.

CERTIFICATION OF CLOSURE

- Type of RBCA Evaluation: ☒ Tier 1 ☐ Tier 2 ☐ Tier 3
- Closure report based on which type of land use?: ☒ Residential ☐ Commercial III ☐ Commercial IV ☐ Industrial
- Institutional Controls: ☒ None ☐ Notice of Corrective Action ☐ Restrictive Covenant

I certify under penalty of law that corrective actions associated with the above referenced release at this facility were completed in accordance with Part 213, Act 451, P.A. 1994, as amended, and current departmental guidance and procedures available at this time.

I further certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Kevin K Wolka
Signature - Required

11-27-96
Date

PLEASE RETURN THIS COMPLETED REPORT AND ASSOCIATED ATTACHMENTS TO THE APPROPRIATE USTD DISTRICT OFFICE LISTED ON THE BACK OF THIS PAGE.



UNDERGROUND STORAGE TANK DIVISION OFFICES AND LOCATIONS

Determine in which county the UST release occurred. Return all completed forms and associated reports to the USTD office listed next to that county in the following table. Addresses for the USTD offices are listed below.

COUNTY	USTD OFFICE	COUNTY	USTD OFFICE	COUNTY	USTD OFFICE	COUNTY	USTD OFFICE
Alcona	Grayling	Dickinson	Marquette	Lake	Grayling	Oceana	Grand Rapids
Alger	Marquette	Eaton	Shiawassee	Lapeer	Shiawassee	Ogemaw	Grayling
Allegan	Plainwell	Emmet	Grayling	Leelanau	Grayling	Ontonagon	Marquette
Alpena	Grayling	Genesee	Shiawassee	Lenawee	Jackson	Osceola	Grayling
Antrim	Grayling	Gladwin	Grayling	Livingston	Shiawassee	Oscoda	Grayling
Arenac	Grayling	Gogebic	Marquette	Luce	Marquette	Otsego	Grayling
Baraga	Marquette	Grand Traverse	Grayling	Mackinac	Marquette	Ottawa	Grand Rapids
Barry	Plainwell	Gratiot	Shiawassee	Macomb	SE Michigan	Presque Isle	Grayling
Bay	Saginaw-Bay	Hillsdale	Jackson	Manistee	Grayling	Roscommon	Grayling
Benzie	Grayling	Houghton	Marquette	Marquette	Marquette	Saginaw	Saginaw-Bay
Berrien	Plainwell	Huron	Saginaw-Bay	Mason	Grayling	Sanilac	Saginaw-Bay
Branch	Jackson	Ingham	Shiawassee	Mecosta	Grand Rapids	Schoolcraft	Marquette
Calhoun	Jackson	Ionia	Grand Rapids	Menominee	Marquette	Shiawassee	Shiawassee
Cass	Plainwell	Iosco	Grayling	Midland	Saginaw-Bay	St Clair	SE Michigan
Charlevoix	Grayling	Iron	Marquette	Missaukee	Grayling	St Joseph	Plainwell
Cheboygan	Grayling	Isabella	Saginaw-Bay	Monroe	SE Michigan	Tuscola	Saginaw-Bay
Chippewa	Marquette	Jackson	Jackson	Montcalm	Grand Rapids	Van Buren	Plainwell
Clare	Grayling	Kalamazoo	Plainwell	Montmorency	Grayling	Washtenaw	Jackson
Clinton	Shiawassee	Kalkaska	Grayling	Muskegon	Grand Rapids	Wayne	SE Michigan
Crawford	Grayling	Kent	Grand Rapids	Newaygo	Grand Rapids	Wexford	Grayling
Delta	Marquette	Keweenaw	Marquette	Oakland	SE Michigan		

<u>CADILLAC OFFICE</u> ROUTE #1, 8015 MACKINAW TRAIL CADILLAC, MI 49601 616-775-9727 (PHONE) 616-775-9671 (FAX)	<u>JACKSON OFFICE</u> 301 EAST LOUIS GLICK HIGHWAY JACKSON, MI 49201 517-780-7900 (PHONE) 517-780-7855 (FAX)	<u>SAGINAW BAY OFFICE</u> 503 NORTH EUCLID AVE., SUITE 9 BAY CITY, MI 48706 517-684-9141 (PHONE) 517-684-9799 (FAX)
<u>GAYLORD OFFICE</u> P.O. BOX 667 GAYLORD, MI 49735 517-732-3541 (PHONE) 517-732-0794 (FAX)	<u>MARQUETTE OFFICE</u> 1990 U.S. 41 SOUTH MARQUETTE, MI 49855 906-228-6561 (PHONE) 906-228-5245 (FAX)	<u>SHIAWASSEE OFFICE</u> 10650 BENNETT DRIVE MORRICE, MI 48857-9792 517-625-4600 (PHONE) 517-625-5000 (FAX)
<u>GRAND RAPIDS OFFICE</u> 350 OTTAWA STREET, NW GRAND RAPIDS, MI 49503 616-456-5071 (PHONE) 616-456-1239 (FAX)	<u>PLAINWELL OFFICE</u> 1342 SR-89, SUITE B PLAINWELL, MI 49080-1915 616-692-2120 (PHONE) 616-692-3050 (FAX)	<u>SE MICHIGAN OFFICE</u> 38980 SEVEN MILE ROAD LIVONIA, MI 48152 313-953-0241 (PHONE) 313-953-0243 (FAX)
<u>GRAYLING OFFICE</u> 1955 NORTH I-75 BL GRAYLING, MI 49738 517-348-6371 (PHONE) 517-348-8825 (FAX)		

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
	COVER SHEET	
	FACILITY AND OWNER OR OPERATOR INFORMATION	
	SITE QUESTIONS	
	REPORT CERTIFICATION	
	MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - USTD DISTRICT OFFICES AND CONTACTS	2
	TABLE OF CONTENTS	3
	LIST OF ATTACHMENTS	4
1.0	PROJECT CHRONOLOGY	5
2.0	DE MINIMIS CLASSIFICATION	5
3.0	SUMMARY OF CORRECTIVE ACTION ACTIVITIES PERFORMED	5
3.1	RELEASE REPORTING	6
3.2	IMMEDIATE RESPONSE ACTION IMPLEMENTATION	6
3.3	FREE PRODUCT DISCOVERY AND REMOVAL	6
3.4	SITE ASSESSMENT ACTIVITIES	7
3.5	SITE CLASSIFICATION	8
3.6	TIERED EVALUATIONS AND CLEANUP GOALS	8
3.7	PUBLIC NOTICE	9
3.8	NOTICE OF CORRECTIVE ACTION, DECLARATION OF RESTRICTIVE COVENANT, AND OTHER RESTRICTIVE MECHANISMS	10
3.9	PERMITS	13
3.10	CORRECTIVE ACTIONS	13
3.11	PERFORMANCE MONITORING	14
4.0	CLOSURE VERIFICATION SAMPLING	14
4.1	VERIFICATION OF SOIL REMEDIATION	14
4.2	VERIFICATION OF GROUNDWATER REMEDIATION	15
4.3	VERIFICATION OF REMEDIATION FOR OTHER MEDIA	17

LIST OF ATTACHMENTS

(Include as Required and Check Box if Attached)

Attachments 1 - 6, 9 and 12 are to be submitted if applicable.

Attachments 7, 8, 10, 11, 13 and 14 are found in the back of this document and should be completed and submitted when necessary to certify closure.

ATTACHMENT NUMBER	DESCRIPTION

1. NA	Schematic Drawing of the Remedial System
2. NA	Public Notification Document(s)
3. NA	Permission of Property Owner to File a Notice of Corrective Action
4. NA	Permission of Property Owner to File a Notice of Restrictive Covenant
5. X	Site Map Showing the Extent of the Former Soil Contamination and the Soil Verification Sampling Locations
6. X	Excavation Drawing Showing Soil Verification Sampling Locations
7. X	Data Table Showing All Soil Verification Sampling Results (Laboratory)
8. X	Comparison Table for Soil Verification
9. NA	Site Map Showing the Extent of the Former Groundwater Contamination and the Groundwater Verification Sampling Locations
10. NA	Data Table Showing All Groundwater Verification Sampling Results (Laboratory)
11. NA	Comparison Table for Groundwater Verification
12. NA	Site Map Showing the Extent of the Former Other Media Contamination and the Other Media Verification Sampling Locations
13. NA	Data Table Showing All Other Media Verification Sampling Results (Laboratory)
14. NA	Comparison Table for Other Media Verification

1.0 PROJECT CHRONOLOGY

- A. Date Confirmed Release Discovered: **October 28, 1996**
- B. Date Confirmed Release Report Submitted: **October 28, 1996**
- C. Date Initial Assessment Report Submitted: **This Report**
- D. Other Milestone Date (*Soil excavation*): **October 30, 1996**
- E. Other Milestone Date (*Install Groundwater Remediation System*): **NA**
- F. Date Final Assessment Report Submitted: **This Report**
- G. Other Milestone Date (*Specify: _____*): **____/____/____**
- H. Date Closure Report Submitted: **November 27, 1996**

2.0 DE MINIMIS CLASSIFICATION

- A. Was this a *de minimis* spill as defined in Section 324.21302(e)? ☐ Yes ☒ No

NOTE: If "Yes", complete questions "B" and "C" below and only the following remaining sections of this Closure Report: 3.1, 3.2, 3.6, 4.1, and the Cover Sheet Certification.

- B. Volume of soil remediated or disposed to date:
- C. Disposal facility name(s) and location(s):

3.0 SUMMARY OF CORRECTIVE ACTION ACTIVITIES PERFORMED

On October 25, 1996, the UST was discovered during some renovation activities. GM personnel did some research and the tank was believed to be a used oil UST for the dynamometer laboratories. A sample was collected adjacent to the UST and rush analytical was performed to determine if a release had occurred. The tank was also emergency registered with the State. Upon receipt of the analytical results, a confirmed release was submitted to the MDEQ-UST Division on October 28, 1996. On October 30, 1996, the contents of the UST were emptied by Inland Waters and transported to GM's on-site waste treatment facility for disposal. The UST was removed from the ground, rendered unusable and disposed of. An on-site geologist directed the excavation of 80 cubic yards of contaminated soil using a PID. The contaminated soil was placed in 20 yard roll-off boxes supplied by Laidlaw Waste Systems, as they have a long term contract with GM to handle their solid waste. Confirmation samples

3.0 SUMMARY OF CORRECTIVE ACTION ACTIVITIES PERFORMED (Cont'd)

were collected according to the MDEQ VSR guidance document and analyzed for BTEX, HVOs, PNAs, PCBs, and Pb, Cd, Cr. No groundwater or free product was observed in the excavation. The native soils consisted of a dense brown to gray clay. The UST fill material consisted of a medium grained sand. Analytical results from the confirmation sampling did not indicate any parameters above Tier 1 Residential Criteria. This UST is considered to be closed and no further remediation is recommended.

Summarize the overall program and the primary components of the corrective action performed at the facility by addressing each project phase identified below that was relevant to this site and its remediation. Include a schematic drawing of the remedial system (Attachment No. 1). Attach additional sheets, if necessary.

3.1 RELEASE REPORTING

A. List the source(s) of the release and the location(s) where contamination was first discovered:

The release was determined to come from the pipe joint that led into the UST, based upon the fact that there were no visible holes in the UST itself.

3.2 IMMEDIATE RESPONSE ACTION IMPLEMENTATION

A. Date Began: October 25, 1996

B. Date Completed: October 30, 1996

C. List the initial response actions performed (*excluding free product removal*):

The UST contents were removed, the tank was removed from the ground and the contaminated soil was excavated and disposed of.

3.3 FREE PRODUCT DISCOVERY AND REMOVAL

A. Was free product discovered? ____ Yes X No

If "No", skip to Section 3.4; if "Yes", complete questions "B" through "G"

B. Date Free Product Discovered:

3.3 FREE PRODUCT DISCOVERY AND REMOVAL (Cont'd)

- C. Date Free Product Reported to USTD:
- D. Date Free Product Removal Began:
- E. Date Free Product Removal Completed:
- F. Briefly describe the approach used to remove or recover the free product:
- G. Total Quantity of Free Product Recovered:

3.4 SITE ASSESSMENT ACTIVITIES

- A. Date Initial Assessment Began: **October 25, 1996**
- B. Date Initial Assessment Completed: **October 30, 1996**
- C. Check the environmental media sampled and analyzed during this phase of investigation:
(Check all that apply)
- | | | | |
|--|--|------------------------------------|---|
| ☒ Soil | ☐ Air | ☐ Sediments | ☐ Other: Soil Gas Survey |
| ☐ Groundwater | ☐ Surface Water | ☐ Biota | |
- D. Briefly describe the sampling and analysis performed during the initial assessment phase for each medium checked above:

A sample was collected to determine if a confirmed release had occurred, and confirmation samples were collected at the completion of excavation activities. Sample parameters were collected for used oil constituents.

- E. Date Final Assessment Began: **October 25, 1996**
- F. Date Final Assessment Completed: **This Report**
- G. Check the environmental media sampled and analyzed during this phase of investigation:
(Check all that apply)

☒ Soil	☐ Air	☐ Sediments	☐ Other (Specify): _____
☐ Groundwater	☐ Surface Water	☐ Biota	

3.4 SITE ASSESSMENT ACTIVITIES (Cont'd)

- H. Briefly describe the additional sampling and analysis performed during the final assessment phase for each medium checked above:

All sampling was performed during the UST removal activities.

- I. Briefly describe and explain any differences between the Work Plan submitted with the Initial Assessment Report and the site characterization work performed:

No Work Plan was submitted.

3.5 SITE CLASSIFICATION

- A. Date of Initial Classification: **October 28, 1996**

- B. Initial Classification Level:

Class 1 Class 2 Class 3 **X** Class 4

- C. Date of Most Recent Reclassification (*if any*): **None**

- D. Most Recent Reclassification Level:

Class 1 Class 2 Class 3 Class 4

- E. Briefly describe the justification for any reclassifications:

3.6 TIERED EVALUATIONS AND CLEANUP GOALS

- A. What levels of evaluation were performed for this site?
(*Check all that apply*)

X Tier I Tier II Tier III

- B. If a Tier II or Tier III evaluation was performed, describe the most significant alternate assumptions, models, or site-specific information used in place of the default assumptions, models, or model parameters:

Not Applicable

3.6 TIERED EVALUATIONS AND CLEANUP GOALS (Cont'd)

- C. What was the ultimate basis for the cleanup goals established for this facility?
(Check only those that apply)

	ON-SITE			OFF-SITE		
	Soil	Groundwater	Other Media	Soil	Groundwater	Other Media
RESIDENTIAL	Tier I ☒ Tier II Tier III	Tier I ☐ Tier II Tier III	Tier II Tier III	Tier I ☐ Tier II Tier III	Tier I ☐ Tier II Tier III	Tier II Tier III
COMMERCIAL III	Tier I Tier II Tier III	Tier I Tier II Tier III	Tier II Tier III	Tier I Tier II Tier III	Tier I Tier II Tier III	Tier II Tier III
COMMERCIAL IV	Tier I Tier II Tier III	Tier I Tier II Tier III	Tier II Tier III	Tier I Tier II Tier III	Tier I Tier II Tier III	Tier II Tier III
INDUSTRIAL	Tier I Tier II Tier III	Tier I Tier II Tier III	Tier II Tier III	Tier I Tier II Tier III	Tier I Tier II Tier III	Tier II Tier III

NOTE: If the site meets the Tier I criteria without any corrective action and the release was *de minimus*, complete Sections 4.1, 4.2 and the Cover Sheet Certification.

3.7 PUBLIC NOTICE

If implementation of the corrective action plan will result in anything other than unrestricted land use or unlimited resource use, notice must be provided to the public directly impacted by the release and the planned corrective action.

- A. Will implementation of the corrective action plan result in any restrictions to land use or limitations on resource use? ☐ Yes ☒ No

If "No", skip to Section 3.9; if "Yes", continue with question "B" below.

- B. Describe all land use or resource use limitations associated with the implemented corrective action:
- C. Was USTD guidance used to establish the form and content of the Public Notice? (See Attachment No. 20 to the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks".) ☐ Yes ☐ No
- D. If "No", provide an explanation:

3.7 PUBLIC NOTICE (Cont'd)

- E. Attach a copy of the public notification document(s) used to provide the required public notice.
(Include as Attachment No. 2)
- F. Identify the individuals or segments of the public that were provided notice of the proposed land use restrictions or limitations to be placed on resource use:
- G. Describe the mechanism(s) by which the directly impacted public was notified:

3.8 NOTICE OF CORRECTIVE ACTION, DECLARATION OF RESTRICTIVE COVENANT, AND OTHER RESTRICTIVE MECHANISMS

If the corrective action depends on the use of institutional controls or other land use restrictions, a Notice of Corrective Action (for corrective actions based on Tier I cleanup criteria with institutional controls or land use restrictions) or a Declaration of Restrictive Covenant (for corrective actions based on Tier II or III cleanup criteria with institutional controls or land use restrictions) must be recorded with the Register of Deeds for the County in which the site is located.

- A. Does the corrective action depend on the use of institutional controls or other land use or resource use restrictions?
_____ Yes _____ No

If "No", skip to Section 3.9; if "Yes", continue with question "B" below.

- B. Was a Notice of Corrective Action as defined in Section 324.21310a(1) required as part of the corrective action?
_____ Yes _____ No

If "No", skip to question "P"; if "Yes", continue with question "C" below.

- C. Was USTD guidance used to establish the form and content of the notice? (See Attachment No. 20 to the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks").
_____ Yes _____ No

- D. If "No", provide an explanation:

- E. Date the Notice of Corrective Action was submitted to the USTD for approval:

_____/_____/_____

- F. Date of USTD approval of the Notice of Corrective Action:

_____/_____/_____

- G. Was the Notice of Corrective Action recorded with the Register of Deeds for the County in which the site is located?
_____ Yes _____ No

3.8 NOTICE OF CORRECTIVE ACTION, DECLARATION OF RESTRICTIVE COVENANT, AND OTHER RESTRICTIVE MECHANISMS (Cont'd)

H. If "No", provide an explanation; then skip to question "P":

If "Yes", provide the following:

I. Date Recorded: _____/_____/_____

J. County Where Site is Located: _____

K. Register of Deeds Contact Name: _____

L. Register of Deeds Telephone No.: _____

M. Person Filing: _____

N. Is the person filing the property owner? _____ Yes _____ No

O. If "No", attach a copy of the written permission for the filing from the property owner.
(Include as Attachment No. 3)

P. Was a Restrictive Covenant as defined in Section 324.21310a(2) required as part of the
Corrective Action? _____ Yes _____ No

If "No", skip to question "II"; if "Yes", continue with question "Q" below.

Q. Was USTD guidance used to establish the form and content of the Declaration of Restrictive
Covenant? (See Attachment No. 20 to the "Guidance Document for Risk-Based Corrective
Action at Leaking Underground Storage Tanks".) _____ Yes _____ No

R. If "No", provide an explanation: _____

S. Date the Declaration of Restrictive Covenant was submitted
to the USTD: _____/_____/_____

T. Date of USTD approval of the Declaration of Restrictive
Covenant: _____/_____/_____

U. Was the Declaration of Restrictive Covenant recorded with the Register of Deeds for the County
in which the site is located? _____ Yes _____ No

3.8 NOTICE OF CORRECTIVE ACTION, DECLARATION OF RESTRICTIVE COVENANT, AND OTHER RESTRICTIVE MECHANISMS (Cont'd)

V. If "No", provide an explanation:

If "Yes", provide the following:

W. Date Recorded: _____/_____/_____

X. County Where Site is Located: _____

Y. Register of Deeds Contact Name: _____

Z. Register of Deeds Telephone Number: _____

AA. Person Filing: _____

BB. Is the person filing the property owner? _____ Yes _____ No

CC. If "No", attach a copy of the written permission for the filing from the property owner.
(Include as Attachment No. 4)

Does the restrictive covenant include:

DD. Provisions that the restrictions run with the land? _____ Yes _____ No

EE. Provisions that restrictions are binding on the owner's successors, assigns, and lessees?
_____ Yes _____ No

FF. Provisions that restrictions are binding until the USTD determines that the regulated substances
no longer present an unacceptable risk? _____ Yes _____ No

GG. A survey and description of the property addressed by the corrective action plan?
_____ Yes _____ No

HH. The scope of any land use or resource use restrictions? _____ Yes _____ No

II. Was an alternate mechanism to restrict exposure to regulated substances as defined in Section
324.21310a(3) associated with the Corrective Action? _____ Yes _____ No

If "No", skip to Section 3.9; if "Yes", continue with question "JJ" below.

3.8 **NOTICE OF CORRECTIVE ACTION, DECLARATION OF RESTRICTIVE COVENANT, AND OTHER RESTRICTIVE MECHANISMS (Cont'd)**

JJ. Describe the alternate restrictive mechanism(s) associated with the corrective action.
(Check all that apply):

_____ Ordinance prohibiting certain activities to control exposures to regulated substances.
(Specify the prohibited activity):

_____ Other mechanism. (Describe):

KK. Date other restrictive mechanism(s) was submitted to USTD
for approval: _____/_____/_____

LL. Date of USTD approval of the alternative restrictive mechanism: _____/_____/_____

3.9 **PERMITS**

A. List all discharge permits required for the corrective action:

Type of Permit	Permit No.	Application Date	Approval Date
None			

3.10 **CORRECTIVE ACTIONS**

A. Description of activities performed:

Excavation and transportation of approximately 80 cubic yards of soil to a Type II landfill.

B. Was the corrective action implemented as outlined in the Corrective Action Plan section of the
Final Assessment Report? _____ Yes X No

C. If "No", summarize the changes and provide justification for why these changes were necessary.
(Attach additional sheets, if necessary):

All work was performed under initial abatement.

3.11 PERFORMANCE MONITORING

- A. Date Performance Monitoring Began: **October 30, 1996**
- B. Date Performance Monitoring Completed: **October 30, 1996**
- C. Describe the types of monitoring activities performed, and the media and parameters monitored:

Performance monitoring was performed utilizing a PID to screen soil samples, as well as to screen worker activity air zones.

4.0 CLOSURE VERIFICATION SAMPLING

- A. Date Corrective Action Plan Implemented: **October 30, 1996**
- B. Date Corrective Actions Completed: **October 30, 1996**

4.1 VERIFICATION OF SOIL REMEDIATION

- A. Was the MDEQ guidance document "Verification of Soil Remediation Guidance Document" (Attachment No. 25 of the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks") used to prepare the soil verification sampling plan?
X Yes **___** No
- B. If "No", provide an explanation:
- C. If "Yes", under what category did the site fall?
X "Small Site" "Medium or Large Site"
- D. Describe the soil verification sampling strategy applied at the site by providing the following. (Attach additional sheets, as necessary):
- Scaled site map (Attachment No. 5) which identifies the former extent of the soil contamination and the soil verification sampling locations relative to existing site features. (Multiple chemical contaminants and multiple sample depths should be addressed on the minimum number of site maps needed to convey the information with clarity and legibility).
 - For a corrective action involving excavation, a scaled drawing(s) (Attachment No. 6) showing the floor and walls of the excavation and the associated sampling locations. The drawing should also depict the subsurface stratigraphy, soil types, fractures, discolored soil locations, and adjoining conduits or potential migration pathways, as appropriate.

4.1 VERIFICATION OF SOIL REMEDIATION (Cont'd)

E. Describe how the number of samples collected for soil verification purposes was established:

Based upon the size of the resultant excavation after the UST and 80 cubic yards of contaminated soil was excavated, the excavation pit measured 10 ft. x 12 ft. and had a total depth of 10 ft. below ground surface. This gave a resultant floor area of 120 sq. ft., which requires two floor samples. One sample was collected off each wall. Each wall was less than 25 linear feet, which the VSR document indicates one sample per 25 linear feet.

F. List the analytical parameters used to verify the soil remediation:

BTEX, MTBE, HVOs, PNAs, PCBs, Cadmium, Chromium, and Lead.

G. Were all soil verification samples analyzed, preserved, and handled in accordance with the USTD guidance document entitled "Guidance for Parameters, Analytical Methods, Sample Handling, Quality Control, and Cleanup Limits for Petroleum Hydrocarbon Releases" (Attachment No. 12 of the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks")? ☒ Yes ☐ No

H. If "No", provide an explanation for any differences:

I. Attach data tables presenting the analytical results of all on-site and off-site soil verification sampling performed in the attached Laboratory Results table format (Attachment No. 7). Include all pertinent sample results submitted previously with the Initial Assessment Report or Final Assessment Report. (NOTE: The USTD may request copies of the laboratory data sheets, chain of custody forms, and all available QA/QC information relating to these verification samples.)

J. Attach a Comparison Table for Soil Verification (Attachment No. 8) to demonstrate that the established target cleanup levels have been attained in accordance with the applicable MDEQ/USTD closure guidance.

K. Total volume of soil remediated or disposed to date: **80 Cubic Yards**

L. Disposal facility name(s) and location(s): **Laidlaw Waste Systems, Inc.**

4.2 VERIFICATION OF GROUNDWATER REMEDIATION

A. Was the USTD "Groundwater and Soil Closure Guidance" (Attachment No. 26 of the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks") used to prepare the groundwater verification sampling plan? ☐ Yes ☒ No

4.2 VERIFICATION OF GROUNDWATER REMEDIATION (Cont'd)

B. If "No", provide an explanation:

No water was encountered.

Describe the groundwater verification sampling strategy applied at the site by answering questions "C" through "G". *(Attach additional sheets, as necessary):*

- C. Attach a scaled site map (Attachment No. 9) that identifies the former extent of the groundwater contamination and the groundwater verification sampling locations relative to existing site features. *(Multiple chemical contaminants and multiple aquifer/sample depths should be addressed on the minimum number of site maps needed to convey the information with clarity and legibility.)*
- D. Describe how the sampling frequency and duration of sampling used for groundwater verification purposes was established:
- E. List the analytical parameters used to verify the groundwater remediation and the justification for their selection:
- F. Were all groundwater verification samples analyzed, preserved, and handled in accordance with the USTD guidance document entitled "Guidance for Parameters, Analytical Methods, Sample Handling, Quality Control, and Cleanup Limits for Petroleum Hydrocarbon Releases" (Attachment No. 12 of the "Guidance Document for Risk-based Corrective Action at Leaking Underground Storage Tanks")? _X_ Yes ____ No
- G. If "No", provide an explanation for any differences:
- H. Attach data tables presenting the analytical results of all on-site and off-site groundwater verification sampling performed in the attached Laboratory Results table format (Attachment No. 10). Include applicable sample results submitted previously with the Initial Assessment Report or Final Assessment Report. *(NOTE: The USTD may request copies of laboratory data sheets, chain of custody forms, and all available QA/QC information relating to these verification samples.)*
- I. Attach a Comparison Table for Groundwater Verification (Attachment No. 11) to demonstrate that the established target cleanup levels have been attained in accordance with the applicable MDEQ/USTD closure guidance.

For corrective actions involving the operation of a groundwater treatment system, answer questions "J" through "N". Otherwise, skip to question "O".

4.2 VERIFICATION OF GROUNDWATER REMEDIATION (Cont'd)

J. Were the target cleanup levels met for six consecutive months (*minimum of two quarterly samplings*) with the treatment system operating? ☐ Yes ☐ No

K. If "No", provide an explanation:

L. Were the sample results from all wells used for verification at or below the target cleanup levels for a full year (*minimum of four quarterly samplings*) after the remedial system was turned off? ☐ Yes ☐ No

M. If "No", provide an explanation:

For corrective actions where no groundwater remediation was required, answer questions "O" through "P". Otherwise, skip to Section 4.3.

N. Total volume of groundwater remediated to date:

O. Were the target cleanup levels met for at least one sampling event? ☐ Yes ☐ No

P. If "No", provide an explanation:

4.3 VERIFICATION OF REMEDIATION FOR OTHER MEDIA

A. Was the corrective action for this site implemented for any media other than soil or groundwater? ☐ Yes ☒ No

If "Yes", continue with questions "B" through "J", answering each question in the series for each of the other environmental media remediated. If "No", complete the Cover Sheet Certification and quit.

B. What other environmental media were remediated as part of this corrective action?
(Check all that apply):

Air

Sediments

Other (Specify):

Surface Water

Biota

Describe the verification sampling strategy applied at the site by providing the following information pertaining to each of the other media remediated. (Attach additional sheets, as necessary.)

4.3 VERIFICATION OF REMEDIATION FOR OTHER MEDIA (Cont'd)

- C. Provide a scaled site or area map (Attachment No. 12) which identifies the former extent of the contamination in each of these other media and the verification sampling locations relative to existing site features and boundaries. *(Multiple chemical contaminants should be addressed on the minimum number of site or area maps needed to convey the information with clarity and legibility.)*
- D. Describe how the sampling frequency and duration of sampling used for verification purposes in each of these other media was established:
- E. List the analytical parameters used to verify the specified remediation in each of these other media and the justification for their selection:
- F. Were all verification samples associated with each of these other media analyzed, preserved, and handled in accordance with the USTD guidance document entitled "Guidance for Parameters, Analytical Methods, Sample Handling, Quality Control, and Cleanup Limits for Petroleum Hydrocarbon Releases" (Attachment No. 12 of the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks") to the maximum extent possible?
_____ Yes _____ No
- G. If "No", provide an explanation for any differences:
- H. Attach data tables presenting the results of all on-site and off-site verification sampling performed for each of these other media in the attached Laboratory Results table format (Attachment No. 13). Include applicable sample results submitted previously with the Initial Assessment Report or Final Assessment Report. *(NOTE: The USTD may request copies of laboratory data sheets, chain of custody forms, and all available QA/QC information relating to these verification samples.)*
- I. Attach a Verification Comparison Table for each of the other remediated media (Attachment No. 14) to demonstrate that the established target cleanup levels have been attained in accordance with the applicable MDEQ/USTD closure guidance.
- J. Estimated volume of each of the other specified media remediated, or treated or disposed to date *(specify units)*: _____

ATTACHMENT 5

SITE MAP SHOWING THE EXTENT OF
THE FORMER SOIL CONTAMINATION AND
THE SOIL VERIFICATION SAMPLING LOCATIONS

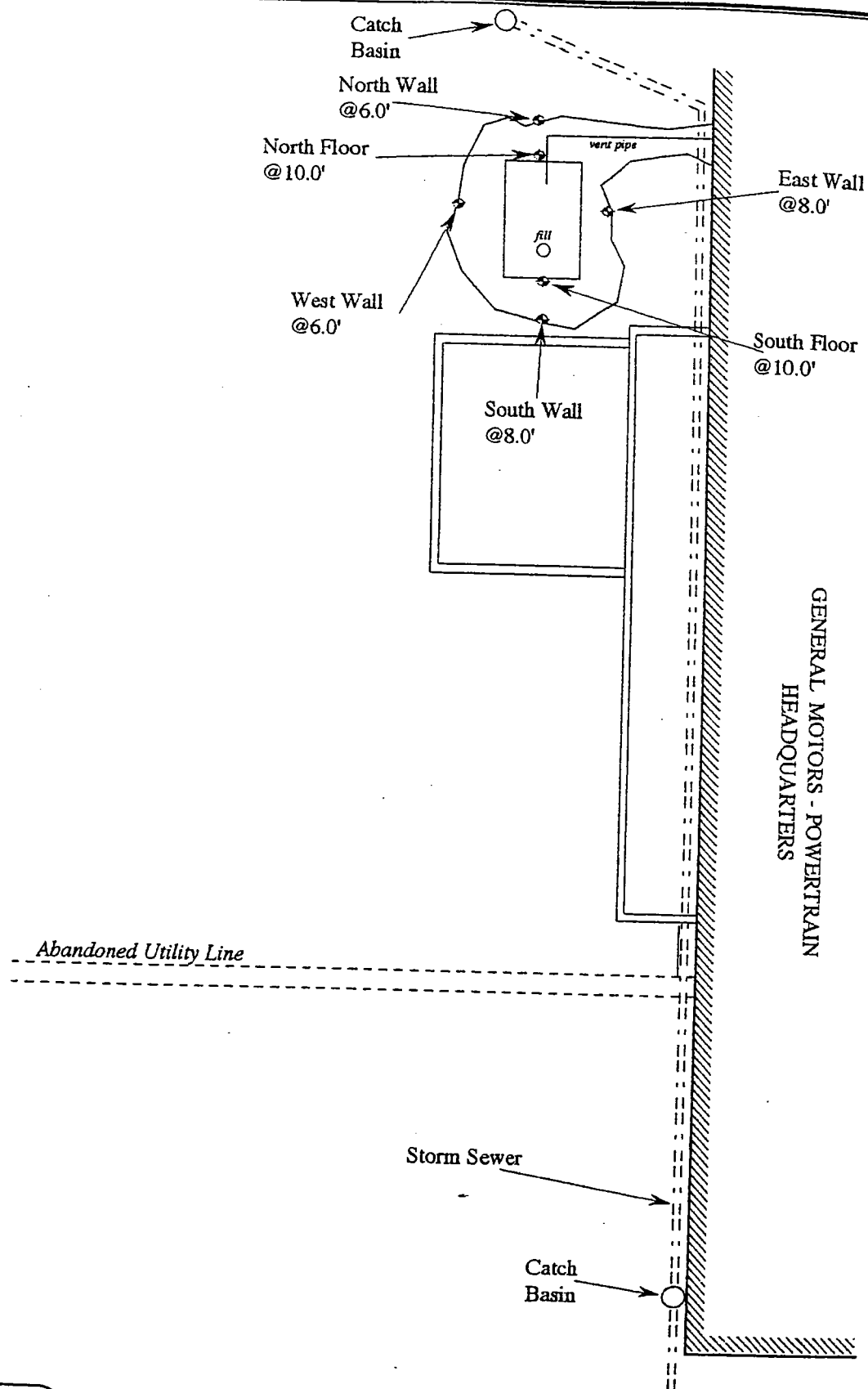


Figure 2

Site Layout and Sample Location Map
 General Motors-Powertrain Headquarters
 Used Oil Underground Storage Tank
 Investigation
 Pontiac, Michigan

Derived from observations made
 during field activities.

ATTACHMENT 6

EXCAVATION DRAWING SHOWING
SOIL VERIFICATION SAMPLING LOCATIONS

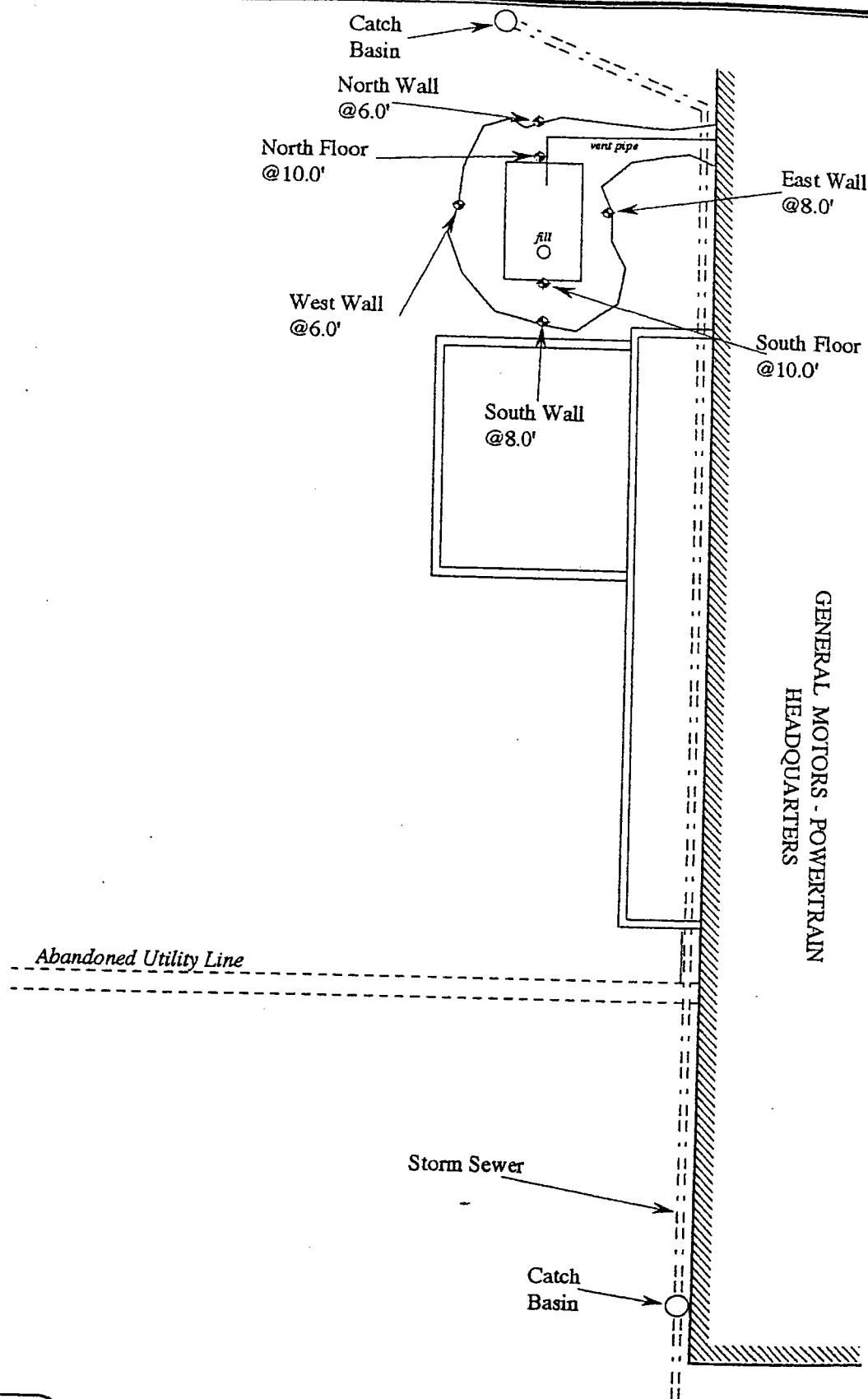
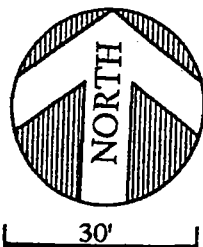


Figure 2

Layout and Sample Location Map
 General Motors-Powertrain Headquarters
 Used Oil Underground Storage Tank
 Investigation
 Pontiac, Michigan



Derived from observations made
 during field activities.

Legend

◆ Soil Sample Location

)

)

)

ATTACHMENT 7

DATA TABLE SHOWING ALL SOIL
VERIFICATION SAMPLING RESULTS (LABORATORY)

ATTACHMENT NO. 7 PAGE 1 OF 5
 LABORATORY RESULTS - SOIL
 FACILITY NAME GM Powertrain
 FACILITY NUMBER

VOLATILES		North Floor		South Floor		South Wall		East Wall		West Wall		North Wall	
Sample ID		10.0		10.0		8.0		8.0		6.0		6.0	
Sample Depth (feet BGS)		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96	
Date Collected		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96	
Date Analyzed		10/31/96		10/31/96		10/31/96		10/31/96		10/31/96		10/31/96	
Analytical Method No.		8020/5030		8020/5030		8020/5030		8020/5030		8020/5030		8020/5030	
Collection Method*		GS		GS		GS		GS		GS		GS	
CONSTITUENT (ug/kg)		Conc		Conc		Conc		Conc		Conc		Conc	
Benzene		MDL		MDL		MDL		MDL		MDL		MDL	
Toluene		<10		<10		<10		<10		<10		<10	
Ethylbenzene		ND		ND		ND		ND		ND		ND	
Total Xylenes		<10		<10		<10		<10		<10		<10	
MTBE		<30		<30		<30		<30		<30		<30	
POLYNUCLEAR AROMATICS (PNAs)		<100		<100		<100		<100		<100		<100	
POLYNUCLEAR AROMATICS (PNAs)		North Floor		South Floor		South Wall		East Wall		West Wall		North Wall	
Sample ID		10.0		10.0		8.0		8.0		6.0		6.0	
Sample Depth (feet BGS)		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96	
Date Collected		11/04/96		11/04/96		11/04/96		11/04/96		11/04/96		11/04/96	
Date Analyzed		11/05/96		11/05/96		11/05/96		11/05/96		11/05/96		11/05/96	
Analytical Method No.		8310		8310		8310		8310		8310		8310	
Collection Method*		GS		GS		GS		GS		GS		GS	
CONSTITUENT (ug/kg)		Conc		Conc		Conc		Conc		Conc		Conc	
Acenaphthene		MDL		MDL		MDL		MDL		MDL		MDL	
Acenaphthylene		<330		<330		<330		<330		<330		<330	
Anthracene		ND		ND		ND		ND		ND		ND	
Benzo(a)anthracene		<330		<330		<330		<330		<330		<330	

BGS = Below Ground Surface

*Collection Method Codes (List all that apply): Grab Sample (GS), Split Spoon (SS), Hand Auger (HA), Geoprobe (GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch (HP)

If Other (OT), specify here:

MDL = Method Detection Limit

ND = Non-Detect

NA = Not Applicable

ATTACHMENT NO. 7 PAGE 2 OF 5
LABORATORY RESULTS - SOIL
FACILITY NAME GM Powertrain
FACILITY NUMBER

POLYNUCLEAR AROMATICS (PNAs)		North Floor		South Floor		South Wall		East Wall		West Wall		North Wall	
Sample ID		10.0		10.0		8.0		8.0		6.0		6.0	
Sample Depth (feet BGS)		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96	
Date Collected		11/04/96		11/04/96		11/04/96		11/04/96		11/04/96		11/04/96	
Date Extracted		11/05/96		11/05/96		11/05/96		11/05/96		11/05/96		11/05/96	
Date Analyzed		8310		8310		8310		8310		8310		8310	
Analytical Method No.		GS		GS		GS		GS		GS		GS	
Collection Method*		Conc		MDL		Conc		MDL		Conc		MDL	
CONSTITUENT (ug/kg)		ND		<330		ND		<330		ND		<330	
f Benzo(a)pyrene		ND		<330		ND		<330		ND		<330	
f Benzo(b)fluoranthene		ND		<330		ND		<330		ND		<330	
f Benzo(g,h,i)perylene		ND		<330		ND		<330		ND		<330	
f Benzo(k)fluoranthene		ND		<330		ND		<330		ND		<330	
f Chrysene		ND		<330		ND		<330		ND		<330	
f Dibenzo(a,h)anthracene		ND		<330		ND		<330		ND		<330	
f Fluoranthene		ND		<330		ND		<330		ND		<330	
f Fluorene		ND		<330		ND		<330		ND		<330	
f Indeno(1,2,3-cd)pyrene		ND		<330		ND		<330		ND		<330	
f 2-Methylnaphthalene		ND		<330		ND		<330		ND		<330	
f Naphthalene		ND		<330		ND		<330		ND		<330	
f Phenanthrene		ND		<330		ND		<330		ND		<330	
f Pyrene		ND		<330		ND		<330		ND		<330	

BGS = Below Ground Surface

*Collection Method Codes (List all that apply): Grab Sample (GS), Split Spoon (SS), Hand Auger (HA), Geoprobe (GP), Continuous Corer (CC),
Soil Gas (SG), Cone Penetrometer (CP), Hydropunch (HP)

If Other (OT), specify here:

MDL = Method Detection Limit

ND = Non-Detect

NA = Not Applicable

ATTACHMENT NO. 7 PAGE 3 OF 5
LABORATORY RESULTS - SOIL
FACILITY NAME GM Powertrain
FACILITY NUMBER

METALS		North Floor		South Floor		South Wall		East Wall		West Wall		North Wall	
Sample ID		10.0		10.0		8.0		8.0		6.0		6.0	
Sample Depth (feet BGS)		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96	
Date Collected		11/01/96		11/01/96		11/01/96		11/01/96		11/01/96		11/01/96	
Date Analyzed		6000/7000		6000/7000		6000/7000		6000/7000		6000/7000		6000/7000	
Analytical Method No.		GS		GS		GS		GS		GS		GS	
Collection Method*		Conc		Conc		Conc		Conc		Conc		Conc	
CONSTITUENT (ug/kg)		MDL		MDL		MDL		MDL		MDL		MDL	
f Cadmium		3,800		4,000		3,800		3,800		4,500		5,400	
f Chromium III		50		50		50		50		50		50	
f Chromium VI		2,500		2,500		2,500		2,500		2,500		2,500	
f Total Lead		200		200		200		200		200		200	
f PCBs		1,000		1,000		1,000		1,000		1,000		1,000	
Sample ID		North Floor		South Floor		South Wall		East Wall		West Wall		North Wall	
Sample Depth (feet BGS)		10.0		10.0		8.0		8.0		6.0		6.0	
Date Collected		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96	
Date Analyzed		11/01/96		11/01/96		11/01/96		11/01/96		11/01/96		11/01/96	
Analytical Method No.		8080		8080		8080		8080		8080		8080	
Collection Method*		GS		GS		GS		GS		GS		GS	
CONSTITUENT (ug/kg)		Conc		Conc		Conc		Conc		Conc		Conc	
f Aroclor 1016		MDL		MDL		MDL		MDL		MDL		MDL	
f Aroclor 1221		<330		<330		<330		<330		<330		<330	
f Aroclor 1232		ND		ND		ND		ND		ND		ND	
f Aroclor 1242		ND		ND		ND		ND		ND		ND	
f Aroclor 1248		ND		ND		ND		ND		ND		ND	
f Aroclor 1254		ND		ND		ND		ND		ND		ND	
f Aroclor 1260		ND		ND		ND		ND		ND		ND	

BGS = Below Ground Surface

*Collection Method Codes (List all that apply): Grab Sample (GS), Split Spoon (SS), Hand Auger (HA), Geoprobe (GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch (HP)

If Other (OT), specify here:

MDL = Method Detection Limit

ND = Non-Detect

NA = Not Applicable

ATTACHMENT NO. 7 PAGE 4 OF 5
LABORATORY RESULTS - SOIL
FACILITY NAME GM Powertrain
FACILITY NUMBER

HALOGENATED HYDROCARBONS		North Floor		South Floor		South Wall		East Wall		West Wall		North Wall	
Sample ID		10.0		10.0		8.0		8.0		6.0		6.0	
Sample Depth (feet BGS)		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96	
Date Collected		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96	
Date Extracted		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96	
Date Analyzed		10/31/96		10/31/96		10/31/96		10/31/96		10/31/96		10/31/96	
Analytical Method No.		8010		8010		8010		8010		8010		8010	
Collection Method*		GS		GS		GS		GS		GS		GS	
CONSTITUENT (ug/kg)		Conc		MDL		Conc		MDL		Conc		MDL	
f Bromodichloromethane		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f Bromoform		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f Bromomethane		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f Carbon Tetrachloride		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f Chlorobenzene		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f Chloroethane		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f 2-Chloroethyl Vinyl Ether		ND	100	ND	100	ND	100	ND	100	ND	100	ND	100
f Chloroform		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f Chloromethane		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f Dibromochloromethane		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f 1,2-Dichlorobenzene		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f 1,3-Dichlorobenzene		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f 1,4-Dichlorobenzene		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f Dichlorodifluoromethane		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f 1,1-Dichloroethane		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f 1,2-Dichloroethane		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f 1,1,1-Dichloroethene		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f Trans-1,2-DCE		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f Methylene Chloride		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10
f 1,2-Dichloropropane		ND	10	ND	10	ND	10	ND	10	ND	10	ND	10

BGS = Below Ground Surface

*Collection Method Codes (List all that apply): Grab Sample (GS), Split Spoon (SS), Hand Auger (HA), Geoprobe (GP), Continuous Corer (CC),
Soil Gas (SG), Cone Penetrometer (CP), Hydropunch (HP)

If Other (OT), specify here:

MDL = Method Detection Limit

ND = Non-Detect

NA = Not Applicable

DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION CLO' E REPORT

ATTACHMENT NO. 7 PAGE 5 OF 5
LABORATORY RESULTS - SOIL
FACILITY NAME GM Powertrain
FACILITY NUMBER

HALOGENATED HYDROCARBONS		North Floor		South Floor		South Wall		East Wall		West Wall		North Wall	
Sample ID		10.0		10.0		8.0		8.0		6.0		6.0	
Sample Depth (feet BGS)		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96	
Date Collected		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96	
Date Extracted		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96		10/30/96	
Date Analyzed		10/31/96		10/31/96		10/31/96		10/31/96		10/31/96		10/31/96	
Analytical Method No.		8010		8010		8010		8010		8010		8010	
Collection Method*		GS		GS		GS		GS		GS		GS	
CONSTITUENT (ug/kg)		Conc		MDL		Conc		MDL		Conc		MDL	
f Cis-1,3-Dichloropropene		ND		10		ND		10		ND		10	
f Trans-1,3-Dichloropropene		ND		10		ND		10		ND		10	
f 1,1,2,2-Tetrachloroethane		ND		10		ND		10		ND		10	
f 1,1,1,2-Tetrachloroethane		ND		10		ND		10		ND		10	
f Tetrachloroethylene		ND		10		ND		10		ND		10	
f 1,1,1-Trichloroethane		ND		10		ND		10		ND		10	
f 1,1,2-Trichloroethane		ND		10		ND		10		ND		10	
f Trichloroethylene		ND		10		ND		10		ND		10	
f Vinyl Chloride		ND		10		ND		10		ND		10	
f Trichlorofluoromethane		ND		10		ND		10		ND		10	
f Dibromomethane		ND		10		ND		10		ND		10	
f 1,2,3-Trichloropropane		ND		10		ND		10		ND		10	
f Bromobenzene		ND		10		ND		10		ND		10	

BGS = Below Ground Surface

*Collection Method Codes (List all that apply): Grab Sample (GS), Split Spoon (SS), Hand Auger (HA), Geoprobe (GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch (HP)

If Other (OT), specify here:

MDL = Method Detection Limit

ND = Non-Detect

NA = Not Applicable

ATTACHMENT 8
COMPARISON TABLE FOR SOIL VERIFICATION

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
CLOSURE REPORT

ATTACHMENT NO. 8 PAGE 1 OF 5
COMPARISON TABLE FOR SOIL VERIFICATION
FACILITY NAME GM Powertrain
FACILITY NUMBER

Contaminant	Number of Samples Taken	Range of Detected Concentrations [Min - Max] (ug/kg)	Maximum Detected (ug/kg)	Applicable RBSL or SSTL Criterion /Specify Tier Level in ()/ (ug/kg)		
				Residential	f Commercial III f Commercial IV	Industrial
VOLATILES						
f Benzene	6	<10--10	10	100 (I)	()	()
f Toluene	6	<10--17	17	16,000 (I)	()	()
f Ethylbenzene	6	<10--<10	<10	1,500 (I)	()	()
f Total Xylenes	6	<30--<30	<30	5,600 (I)	()	()
f MTBE	6	<100--<100	<100	4,800 (I)	()	()
POLYNUCLEAR AROMATICS (PNAs)						
f Acenaphthene	6	<330--<330	<330	300,000 (I)	()	()
f Acenaphthylene	6	<330--<330	<330	520 (I)	()	()
f Anthracene	6	<330--<330	<330	6,900,000 (I)	()	()
f Benzo(a)anthracene	6	<330--<330	<330	14,000 (I)	()	()
f Benzo(a)pyrene	6	<330--<330	<330	1,400 (I)	()	()
f Benzo(b)fluoranthene	6	<330--<330	<330	14,000 (I)	()	()
f Benzo(g,h,i)perylene	6	<330--<330	<330	1,500,000 (I)	()	()
f Benzo(k)fluoranthene	6	<330--<330	<330	140,000 (I)	()	()
f Chrysene	6	<330--<330	<330	1,400,000 (I)	()	()
f Dibenzo(a,h)anthracene	6	<330--<330	<330	1,400 (I)	()	()

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
CLOSURE REPORT

ATTACHMENT NO. 8 PAGE 3 OF 5
COMPARISON TABLE FOR SOIL VERIFICATION
FACILITY NAME GM Powertrain
FACILITY NUMBER

FACILITY NUMBER						
Contaminant	Number of Samples Taken	Range of Detected Concentrations [Min - Max] (ug/kg)	Maximum Detected (ug/kg)	Applicable RBSL or SSTL Criterion [Specify Tier Level in ()]		
				Residential	f Commercial III f Commercial IV	Industrial
PCBs						
f Aroclor 1242	6	<330--<330	<330	1,100 (I)	()	()
f Aroclor 1248	6	<330--<330	<330	1,100 (I)	()	()
f Aroclor 1254	6	<330--<330	<330	1,100 (I)	()	()
f Aroclor 1260	6	<330--<330	<330	1,100 (I)	()	()
HALOGENATED HYDROCARBONS (HVOs)						
f Bromodichloromethane	6	<10--<10	<10	2,000 (I)	()	()
f Bromoform	6	<10--<10	<10	2,000 (I)	()	()
f Bromomethane	6	<10--<10	<10	200 (I)	()	()
f Carbonyl Tetrachloride	6	<10--<10	<10	100 (I)	()	()
f Chlorobenzene	6	<10--<10	<10	2,000 (I)	()	()
f Chloroethane	6	<10--<10	<10	4,400 (I)	()	()
f 2-Chloroethyl Vinyl Ether	6	<100--<100	<100	ID	()	()
f Chloroform	6	<10--<10	<10	2,000 (I)	()	()
f Chloromethane	6	<10--<10	<10	1,300 (I)	()	()
f Dibromochloromethane	6	<10--<10	<10	2,000 (I)	()	()
f 1,2-Dichlorobenzene	6	<10--<10	<10	13,000 (I)	()	()

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
CLOSURE REPORT

ATTACHMENT NO. 8 PAGE 4 OF 5
COMPARISON TABLE FOR SOIL VERIFICATION
FACILITY NAME GM Powertrain
FACILITY NUMBER _____

FACILITY NUMBER			Applicable RBSL or SSTL Criterion [Specify Tier Level in ()]			
Contaminant	Number of Samples Taken	Range of Detected Concentrations [Min - Max] (ug/kg)	Maximum Detected (ug/kg)	Residential	f Commercial III f Commercial IV	Industrial
HALOGENATED HYDROCARBONS (HVOs)						
f 1,3-Dichlorobenzene	6	<10--<10	<10	12,000 (I)	()	()
f 1,4-Dichlorobenzene	6	<10--<10	<10	1,500 (I)	()	()
f Dichlorodifluoromethane	6	<10--<10	<10	180,000 (I)	()	()
f 1,1-Dichloroethane	6	<10--88	88	18,000 (I)	()	()
f 1,2-Dichloroethane	6	<10--<10	<10	100 (I)	()	()
f 1,1-Dichloroethene	6	<10--<10	<10	140 (I)	()	()
f Trans-1,2-DCE	6	<10--<10	<10	2,000 (I)	()	()
f Methylene Chloride	6	<10--<10	<10	100 (I)	()	()
f 1,2-Dichloropropane	6	<10--<10	<10	100 (I)	()	()
f Cis-1,3-Dichloropropene	6	<10--<10	<10	100 (I)	()	()
f Trans-1,3-Dichloropropene	6	<10--<10	<10	96 (I)	()	()
f 1,1,2,2-Tetrachloroethane	6	<10--<10	<10	96 (I)	()	()
f 1,1,1,2-Tetrachloroethane	6	<10--<10	<10	86 (I)	()	()
f Tetrachloroethyleneane	6	<10--<10	<10	660 (I)	()	()
f 1,1,1-Trichloroethane	6	<10--<10	<10	100 (I)	()	()
f 1,1,2-Trichloroethane	6	<10--<10	<10	4,000 (I)	()	()
			<10	100 (I)	()	()

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
CLOSURE REPORT

ATTACHMENT NO. 8 PAGE 5 OF 5
COMPARISON TABLE FOR SOIL VERIFICATION
FACILITY NAME GM Powertrain
FACILITY NUMBER

Contaminant	Number of Samples Taken	Range of Detected Concentrations [Min - Max] (ug/kg)	Maximum Detected (ug/kg)	Applicable RBSL or SSTL Criterion /Specify Tier Level in (/)		
				Residential	f Commercial III f Commercial IV	Industrial
HALOGENATED HYDROCARBONS (HVOs)						
f Trichloroethylene	6	<10--<10	<10	100 (I)	()	()
f Vinyl Chloride	6	<10--<10	<10	40 (I)	()	()
f Trichlorofluoromethane	6	<10--<10	<10	52,000 (I)	()	()
f Dibromomethane	6	<10--<10	<10	1,600 (I)	()	()
f 1,2,3-Trichloropropane	6	<10--<10	<10	840 (I)	()	()
f Bromobenzene	6	<10--<10	<10	ID	()	()
OTHER*						
		--		()	()	()
		--		()	()	()
		--		()	()	()
		--		()	()	()
		--		()	()	()
		--		()	()	()
		--		()	()	()

*List additional contaminants as appropriate
ID = Insufficient Data

Y-2



SERVING INDUSTRY FOR A BETTER TOMORROW

**UTILITY LINE INVESTIGATION
GM Powertrain Headquarters
895 Joslyn Avenue
Pontiac, Michigan**

33830 HARPER AVENUE

CLINTON TOWNSHIP, MI 48035

PHONE (810) 415-1222

FAX (810) 415-1210

Prepared for:

GM Powertrain
895 Joslyn Avenue
Pontiac, MI 48340

UTILITY LINE INVESTIGATION

**GM Powertrain Headquarters
895 Joslyn Avenue
Pontiac, Michigan**

RemTech Project No. 452-PSG-96
December 10, 1996

REMTech
ENVIRONMENTAL SERVICES, INC.

SERVING INDUSTRY FOR A BETTER TOMORROW

December 10, 1996

Mr. James Baumer
GM Powertrain Headquarters
895 Joslyn Avenue
Pontiac, MI 48340

Re: Utility Line Investigation
GM Powertrain Headquarters
895 Joslyn Avenue
Pontiac, Michigan
RemTech Project No. 452-PSG-96

Dear Mr. Baumer:

RemTech Environmental Services, Inc. - Property Services Group (RemTech) has completed the investigation for the above referenced property. The enclosed report represents the results of RemTech's investigation with respect to the potential for the presence of environmental concerns at the Site.

We recognize that this report is to be used by GM Powertrain and is a report upon which you can rely. The scope of work for this investigation included a field investigation, sample analysis, and the preparation of the enclosed report. The findings and conclusions of this report are subject to the specified limitations outlined therein.

We appreciate the opportunity to serve you. If there are any questions regarding this report, or should you require additional services, please do not hesitate to contact us.

Sincerely,

RemTech Environmental Services, Inc.



Frederick G. Roeser, CPG
Director
Property Services Group

FGR/dz

33830 HARPER AVENUE
CLINTON TOWNSHIP, MI 48035
PHONE (810) 415-1222
FAX (810) 415-1210



UTILITY LINE INVESTIGATION
GM Powertrain Headquarters
895 Joslyn Avenue
Pontiac, Michigan

TABLE OF CONTENTS

	<u>Page No.</u>
1.1 SUMMARY	1
2.1 INTRODUCTION	2
2.1.1 Purpose	2
2.1.2 Special Terms and Conditions	2
2.1.3 Limitations and Exceptions of Assessment	2
3.1 INVESTIGATION ACTIVITIES	3
3.1.1 Field Explorations	3
3.1.1.1 Utility Line Excavation	3
3.1.2 Sampling and Chemical Analyses	3
3.1.2.1 Soil	3
4.1 EVALUATION AND PRESENTATION OF RESULTS	5
4.1.1 Subsurface Conditions	5
4.1.1.1 Geologic Setting	5
4.1.1.2 Hydrogeologic Conditions	5
4.1.2 Analytical Data	5
4.1.2.1 Soil	5
5.1 DISCUSSION OF FINDINGS AND CONCLUSIONS	6
5.1.1 Recognized Environmental Conditions	6
6.1 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS	7
7.1 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS PARTICIPATING IN THE INVESTIGATION	8

TABLE OF CONTENTS (CONT'D)

LIST OF TABLES

TABLE 1	Sampling Summary

LIST OF FIGURES

FIGURE 1	Site Plan/Exploration Location Map

APPENDICES

APPENDIX A	Figures
APPENDIX B	Analytical Results

1.1 SUMMARY

A Utility Line Investigation was completed for the GM Powertrain Headquarters property located at 895 Joslyn Avenue, Pontiac, Oakland County, Michigan. The investigation was conducted from October 20, 1996 through December 10, 1996. The study consisted of characterizing an area of an excavated utility line which was part of the renovation of the property. Upon visual inspection, the surrounding fill material of the utility line was determined to be discolored. This area of the property is used as a dynamometer laboratory, so the constituents of concern were determined to be Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX), Halogenated Volatile Organic (HVO), and Polynuclear Aromatic Hydrocarbon (PNA) compounds. A sample of the discolored material was collected and analyzed at an independent laboratory. Laboratory results were non-detect for the indicator parameters analyzed.

The evidence discovered during the course of this investigation indicates that the area is not believed to contain hazardous materials situated in such a manner as to present the possible release or threat of a release to the environment, and as such, is not considered a possible "facility" as defined in Section 20101(1)(l) of Part 201 of the Michigan Natural Resources Environmental Protection Act (MNREPA).

2.1 INTRODUCTION

2.1.1 Purpose

The purpose of this investigation is to make an initial determination as to whether the subject property is a "facility" as defined in Part 201 of the MNREPA.

A "facility" is defined as any area, place, or property where a hazardous substance in excess of the concentrations which satisfy the requirements of Section 20120a(1)(a) or (17) [*generally the Residential Cleanup Criteria in Operational Memorandum #8, Revision 4*] has been released, deposited, disposed of, or otherwise comes to be located.

2.1.2 Special Terms and Conditions

In preparing this report, RemTech has made no attempt to independently verify the accuracy or completeness of information received from any sources.

2.1.3 Limitations and Exceptions of Assessment

No environmental investigation can wholly eliminate uncertainty regarding the potential for *Recognized Environmental Conditions* in connection with the subject property. Appropriate inquiry does not mean an exhaustive assessment of a clean property. The findings of this report must not be considered as scientific certainties, but rather as our professional opinion concerning the significance of the limited data gathered during the course of the investigation. No other warranty, expressed or implied, is made. Specifically, RemTech does not and cannot represent that the Site contains no hazardous material, oil or other latent condition beyond that observed by RemTech during the investigation.

3.1 INVESTIGATION ACTIVITIES

RemTech proposed the following scope of work to investigate an uncovered utility line at the above mentioned Site:

- o Characterize the conditions of the excavation.
- o Determine sampling parameters for indicator compounds based upon Site usage.
- o Field screen samples utilizing a photoionization detector (PID).
- o Collect one sample from the discolored soil adjacent to the utility line and analyze the sample for BTEX, HVOs, and PNAs.

3.1.1 Field Explorations

On October 20, 1996, RemTech conducted the field tasks associated with this investigation.

3.1.1.1 Utility Line Excavation

Upon arrival at the Site, the utility line excavation was open. The bottom of the utility line contained some dark, medium grained sand which was determined to be the suspect contaminated material. A sample was collected from the discolored zone at a depth of five feet below ground surface.

3.1.2 Sampling and Chemical Analyses

The sampling location and depth were selected to determine the environmental condition of the soil in the area where contamination would most likely be present. Chemical parameters were selected for those contaminants which would be expected from the area. The soil sample was collected and placed into a laboratory supplied container which was stored at approximately 4° Celsius. The sample was then delivered to Environmental Quality Laboratories, Inc. (EQL) following strict chain-of-custody procedures. Proper sampling protocol was utilized to avoid the introduction of contaminants from the sampling equipment, sampling containers, or the analytical laboratory into the sample and to avoid the spread of contaminants in the environment.

3.1.2.1 Soil

Table No. 1 contains a Sampling Summary.

Table 1
Sampling Summary

Sample I.D.	Sample Location/Matrix	Sample Depth	Analytical Parameters	Recognized Environmental Condition
Utility Line	Adjacent to utility line/Soil	5.0'	BTEX, HVOs, PNAs	Discolored soil around utility line

See Figure 1 for a Site Plan and Exploration Location Map, depicting the locations of the sampling points.

4.1 EVALUATION AND PRESENTATION OF RESULTS

4.1.1 Subsurface Conditions

4.1.1.1 Geologic Setting

The geology of the Site was characterized by the visual classification of the exposed utility trench. Subsurface deposits are characterized by approximately one foot of surficial concrete and gravel, underlain by at least six feet of very stiff, silty clay, which may also included some gravel. The fill material located in the trench consisted of a medium grained sand.

4.1.1.2 Hydrogeologic Conditions

No groundwater was encountered in the excavation.

4.1.2 Analytical Data

The analytical report prepared by EQL is attached as Appendix B.

4.1.2.1 Soil

None of the indicator parameters were detected in the soil sample collected. The discoloration of the soils could be due to an inorganic response such as a redox reaction between the utility line and the native material. The discoloration could also be a biologic reaction associated with sanitary waste.

5.1 DISCUSSION OF FINDINGS AND CONCLUSIONS

5.1.1 Recognized Environmental Conditions

This investigation was conducted in order to determine if discolored soils found at an excavated utility line contained regulated compounds that would require remediation under Part 201 guidelines.

The sampling and analysis of the Site soils failed to detect levels of contaminants in excess of the cleanup criteria prescribed by the Michigan Department of Environmental Quality (MDEQ) in their Operational Memoranda.

The discoloration of the soils could be due to an inorganic response such as a redox reaction between the utility line and the native material. The discoloration could also be a biologic reaction associated with sanitary waste.

It is the opinion of RemTech that the discolored soils in the utility line excavation have not manifested themselves in such a manner as to have impacted the on-site environmental media.

6.1 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS



Frederick G. Roeser, CPG
Director
Property Services Group



Wade J. Spurlin, Esq., REPA
Manager, Environmental Assessment Division
Property Services Group

7.1 QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS PARTICIPATING IN THE INVESTIGATION

Wade J. Spurlin B.S., 1984, Geology, Michigan Technological University
J.D. 1996, Detroit College of Law at Michigan State University

Registered Environmental Property Assessor, 1992,
National Registry of Environmental Professionals
(Registration No. REPA 2126)

Experience:

Employed in the environmental consulting field in
southeast Michigan since May 1990.

Conducted or managed over 300 Phase I Environmental
Site Assessments in Michigan, Ohio, Tennessee, Florida,
Indiana, California, Kentucky and Canada.

Frederick G. Roeser B.S., 1987, Geology, Michigan State University
M.B.A., 1992, Oakland University

Certified Professional Geologist, AIPG

Experience:

Employed in the environmental consulting field in
southeast Michigan since March 1988.

Conducted or managed over 300 Phase I & Phase II
Environmental Site Assessments in Michigan, Ohio,
Louisiana, Florida, and South Carolina.

APPENDIX A

FIGURES

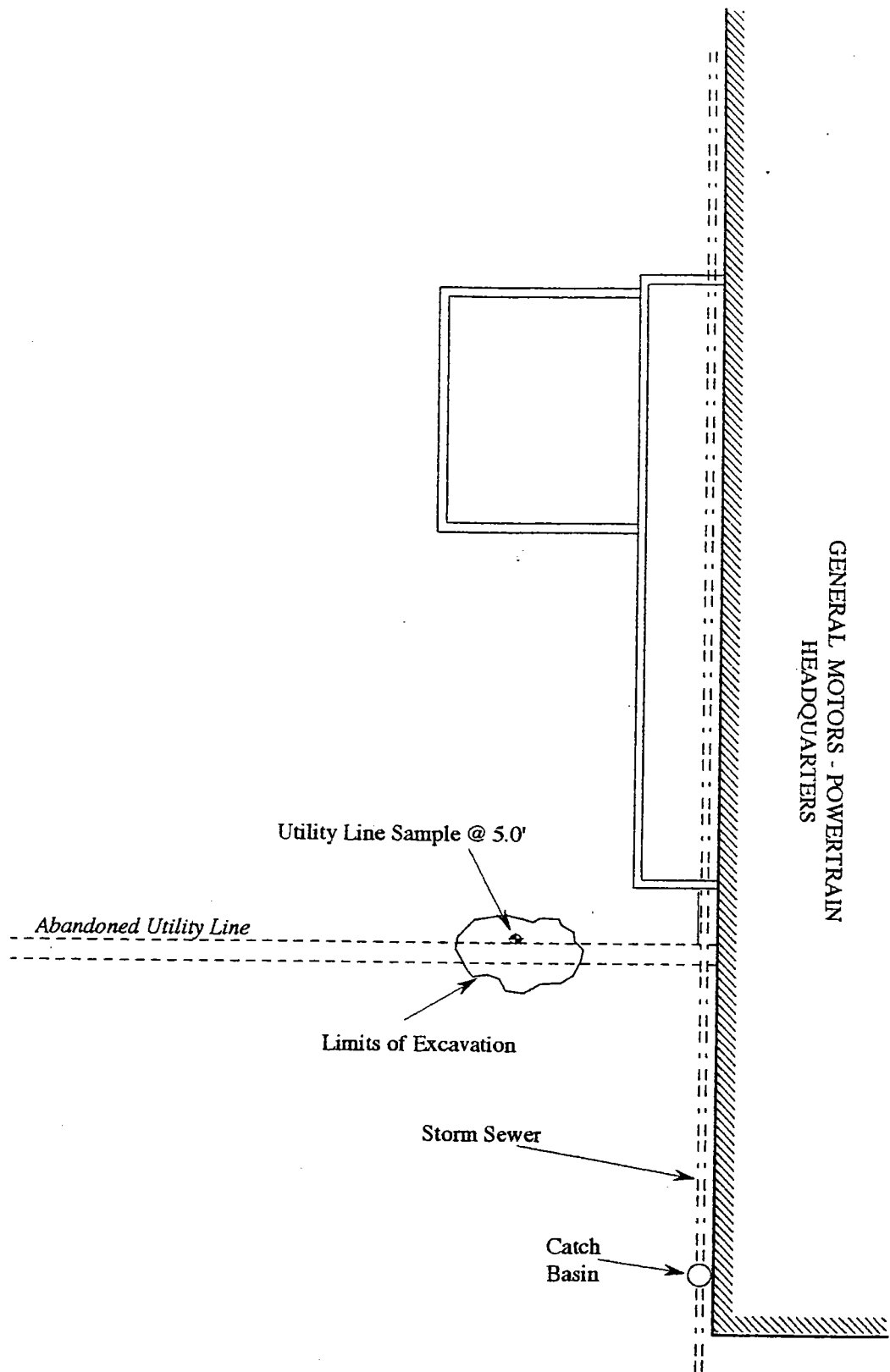


Figure 2

Site Layout and Sample Location Map
General Motors-Powertrain Headquarters
Utility Line Investigation
Pontiac, Michigan

APPENDIX B

ANALYTICAL RESULTS



44075 Phoenix Drive
Sterling Heights, Michigan 48314-1420
810-731-1818
Outside Michigan Dial 1-800- 368-5227
Fax Line 810-731-2590
Federal I.D. # 38-2291504

CLIENT: REMTECH
33830 HARPER AVE.
CLINTON TWP., MI 48035

SAMPLE NO. 4200

SAMPLE DESCRIPTION: GM POWERTRAIN PONTIAC
SOIL SAMPLE SEWER LINE

DATE REPORTED: 10/29/96
DATE RECEIVED: 10/25/96
DATE EXTRACTED: 10/28/96
DATE ANALYZED: 10/28/96
ANALYZED BY: RD

ORGANICS ANALYSIS DATA SHEET
8020 SCAN

COMPOUND NAME	REFERENCE METHOD	CONCENTRATION DRY WEIGHT CORRECTED
BENZENE	8020/5030	*LESS THAN 10 ppBillion
TOLUENE	8020/5030	LESS THAN 10 ppBillion
ETHYL BENZENE	8020/5030	LESS THAN 10 ppBillion
XYLENES	8020/5030	LESS THAN 30 ppBillion

*NOTE: TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE
REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.

THOMAS S. MEGNA, PRESIDENT

ALA GAJDA, LAB SUPERVISOR

REFERENCES: 40 CFR PART 136. CURRENT EDITION

las



440/5 Phoenix Drive
Sterling Heights, Michigan 48314-1420
810-731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 810-731-2590
Federal I.D. # 38-2291504

CLIENT: REMTECH
33830 HARPER AVE.
CLINTON TWP., MI 48035

SAMPLE NO. 4200

SAMPLE DESCRIPTION: GM POWERTRAIN PONTIAC
SOIL SAMPLE SEWER LINE

DATE REPORTED: 10/29/96
DATE RECEIVED: 10/25/96
DATE EXTRACTED: 10/28/96
DATE ANALYZED: 10/28/96
ANALYZED BY: RD

ORGANICS ANALYSIS DATA SHEET
8010 SCAN

COMPOUND NAME	METHOD	CONCENTRATION	
		DRY WEIGHT CORRECTED	
BROMODICHLOROMETHANE	8010	LESS THAN	10 ppBILLION
BROMOFORM	8010	LESS THAN	10 ppBILLION
BROMOMETHANE	8010	LESS THAN	10 ppBILLION
CARBON TETRACHLORIDE	8010	LESS THAN	10 ppBILLION
CHLOROBENZENE	8010	LESS THAN	10 ppBILLION
CHLOROETHANE	8010	LESS THAN	10 ppBILLION
2-CHLOROETHYL VINYL ETHER	8010	LESS THAN	100 ppBILLION
CHLOROFORM	8010	LESS THAN	10 ppBILLION
CHLOROMETHANE	8010	LESS THAN	10 ppBILLION
DIBROMOCHLOROMETHANE	8010	LESS THAN	10 ppBILLION
1,2-DICHLOROBENZENE	8010	LESS THAN	10 ppBILLION
1,3-DICHLOROBENZENE	8010	LESS THAN	10 ppBILLION
1,4-DICHLOROBENZENE	8010	LESS THAN	10 ppBILLION
DICHLORODIFLUOROMETHANE	8010	LESS THAN	10 ppBILLION
1,1-DICHLOROETHANE	8010	LESS THAN	10 ppBILLION
1,2-DICHLOROETHANE	8010	LESS THAN	10 ppBILLION
1,1-DICHLOROETHENE	8010	LESS THAN	10 ppBILLION
TRANS-1,2-DCE	8010	LESS THAN	10 ppBILLION
METHYLENE CHLORIDE	8010	LESS THAN	10 ppBILLION
1,2-DICHLOROPROPANE	8010	LESS THAN	10 ppBILLION
CIS-1,3-DICHLOROPROPENE	8010	LESS THAN	10 ppBILLION
TRANS-1,3-DICHLOROPROPENE	8010	LESS THAN	10 ppBILLION
1,1,2,2-TETRACHLOROETHANE	8010	LESS THAN	10 ppBILLION
1,1,1,2-TETRACHLOROETHANE	8010	LESS THAN	10 ppBILLION
TETRACHLOROETHYLENE	8010	LESS THAN	10 ppBILLION
1,1,1-TRICHLOROETHANE	8010	LESS THAN	10 ppBILLION
1,1,2-TRICHLOROETHANE	8010	LESS THAN	10 ppBILLION
TRICHLOROETHYLENE	8010	LESS THAN	10 ppBILLION
VINYL CHLORIDE	8010	LESS THAN	10 ppBILLION
TRICHLOROFLUOROMETHANE	8010	LESS THAN	10 ppBILLION
DIBROMOMETHANE	8010	LESS THAN	10 ppBILLION
1,2,3-TRICHLOROPROPANE	8010	LESS THAN	10 ppBILLION
BROMOBENZENE	8010	LESS THAN	10 ppBILLION

*NOTE: TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE
REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.

THOMAS S. MEGNA, PRESIDENT
ALA GAJDA, LAB SUPERVISOR

Thomas S. Megna
ALA Gajda



44075 Phoenix Drive
Sterling Heights, Michigan 48314-1420
810-731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 810-731-2590
Federal I.D. # 38-2291504

CLIENT: REMTECH
33830 HARPER AVE.
CLINTON TWP., MI 48035

SAMPLE NO. 4200

SAMPLE DESCRIPTION: GM POWERTRAIN PONTIAC
SOIL SAMPLE SEWER LINE

DATE REPORTED: 10/29/96
DATE RECEIVED: 10/25/96
DATE EXTRACTED: 10/25/96
DATE ANALYZED: 10/25/96
ANALYZED BY: LD

ORGANICS ANALYSIS DATA SHEET
8310 SCAN

LAB NO.	COMPOUND NAME	REFERENCE METHOD	CONCENTRATION DRY WEIGHT CORRECTED
	Naphthalene	8310/3550	*LESS THAN 330 ppBILLION
	Acenaphthylene	8310/3550	LESS THAN 330 ppBILLION
	Acenaphthene	8310/3550	LESS THAN 330 ppBILLION
	Fluorene	8310/3550	LESS THAN 330 ppBILLION
	Phenanthrene	8310/3550	LESS THAN 330 ppBILLION
	Anthracene	8310/3550	LESS THAN 330 ppBILLION
	Fluoranthene	8310/3550	LESS THAN 330 ppBILLION
	Pyrene	8310/3550	LESS THAN 330 ppBILLION
	Benzo(a)anthracene	8310/3550	LESS THAN 330 ppBILLION
	Chrysene	8310/3550	LESS THAN 330 ppBILLION
	Benzo(b)fluoranthene	8310/3550	LESS THAN 330 ppBILLION
	Benzo(k)fluoranthene	8310/3550	LESS THAN 330 ppBILLION
	Benzo(a)pyrene	8310/3550	LESS THAN 330 ppBILLION
	Dibenzo(ah)anthracene	8310/3550	LESS THAN 330 ppBILLION
	Benzo(ghi)perylene	8310/3550	LESS THAN 330 ppBILLION
	Indeno(123-cd)pyrene	8310/3550	LESS THAN 330 ppBILLION
	2-Methylnaphthalene	8310/3550	LESS THAN 330 ppBILLION

*NOTE: TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.

THOMAS S. MEGNA, PRESIDENT

TMIC

ALA GAJDA, LAB SUPERVISOR

Ala Gajda

REFERENCES: 40 CFR PART 136. CURRENT EDITION.

las



ENVIRONMENTAL QUALITY LABORATORIES, INC.
45 Phoenix Drive
Sterling Heights, Michigan 48314-1420
810-731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 810-731-2590
Federal I.D. # 38-2291504

ENT: REMTECH

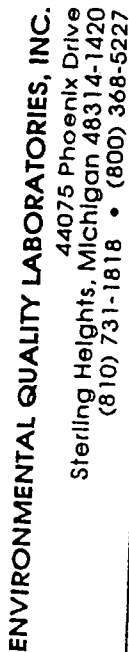
OBJECT NAME AND NUMBER: GM POWERTRAIN PONTIAC

DATE RECEIVED: 10/25/96
LAB NO.'S IN BATCH: 4200
MATRIX: SOIL

THOD 8240/8260/8010		UNITS = ppB									
	CONC. OF SPIKE	MATRIX SPIKE	MATRIX SPIKE DUP	% RECOV	% RPD	SAMPLE RECEIVING SPIKE	DATE ANALYZED	TRIP/ METHOD BLANK	ANALYSTS INITIALS	% RECOV CONTROL LIMITS	
1,1-DIC-ETHENE	20	21	N/A	105	N/A	4200	10/28/96	< RDL	RD	55-126	
TRICHLOROETHENE	20	21	N/A	105	N/A	4200	10/28/96	< RDL	RD	74-123	
CHLOROBENZENE	20	24	N/A	120	N/A	4200	10/28/96	< RDL	RD	79-121	
BENZENE	20	20	N/A	100	N/A	4200	10/28/96	< RDL	RD	63-126	
TOLUENE	20	20	N/A	100	N/A	4200	10/28/96	< RDL	RD	72-125	

MAS S. MEGNA, PRESIDENT

GAJDA, LAB SUPERVISOR



14727

Chain of Custody

Analysis Request

[illegible]

Appendix Z

Appendix Z

- Z-1 Request for Closure Report of an UST System Release (Atwell Hicks, 1995)
- Z-2 Letter to GM, re: Closure Report dated September 8, 1995. (MDEQ, 1995c)

10000 Gratiot Avenue • Livonia, MI 48150
 FAX (313) 421-5342
 RTI Lab # 15-6600H
 (LAB ONLY)
 Submitted By: Atwell Hicks Report To: OTICA Bill To: _____
 Phone 731-9030 Fax 731-9067
 Project Name: GM Powertrain
 Project # 14101083
 Special Instructions/Comments: _____
 Phone _____ Fax _____
 Phone _____ Fax _____

Sample I.D.	Date	Time	Grab	Composite	No. of Containers	Sample Type (Water, soil, air, sludge, etc.)	Observation Y N	Analysis Desired	Comments on Sample (Include Major Contaminants)
1 North Wall 5.0'	8-25-85	12:00h			2				
2 East Wall 5.0'					2				
3 West Wall 5.0'					2				
4 South Wall 5.0'					2				
5 North Floor 10.0'					2				
6 South Floor 6.0'					2				

Collected by: <u>[Signature]</u>	Date <u>8-25-85</u>	Time <u>12:00p</u>
Relinquished by: <u>[Signature]</u>	Date <u>8-28-85</u>	Time <u>11:00pm</u>
Received by: <u>[Signature]</u>	Date <u>8-28-85</u>	Time <u>11:00pm</u>
Relinquished by:	Date	Time
Received by:	Date	Time
Relinquished by:	Date	Time
Received by:	Date	Time
Relinquished by:	Date	Time
Received by:	Date	Time

Goals met Upon Receipt	☐ Yes	☐ No	IN/A
Broken Containers	☐ Yes	☐ No	
All Containers Labeled	☒ Yes	☐ No	

Date Results Needed By: by 9/1 FR DAY
 Outline ☐ Priority

CONFIDENTIAL REPORT OF EVALUATION

Submitted by: Bill Henderson
Client: Atwell-Hicks
Object: Analysis: 8010 SCAN & BTEX

Page : 8

Report Date: 08/30/95
Lab. No. : 95-2600A

QA/QC DATA

1. SURROGATE % RECOVERY

VOLATILE COMPOUNDS (Method EPA 8010/8020)

	Results(%)						
	1	2	3	4	5	6	Limits(%)
1,2 Dichloroethane-d4--	35*	35*	37*	38*	39*	37*	47 - 118
Toluene-d8-----	57*	62*	65*	62*	80	69*	74 - 135
4-Bromofluorobenzene---	63	66	69	68	88	80	61 - 173

2. METHOD BLANKS (ORGANICS):

FILE ID	FRACTION	COMPOUND	RESULT
HPB8838	VOA	All Compounds	ND

FILE PROCESSING DATA

VOLATILE
COMPOUNDS

Date Extracted/Digested:-
Extracted/Digested by:---
Date Analyzed:-----
Analyzed by:-----
File ID:-----
Batch #:-----

NA
NA
08/29/95
CY
HPB8845-50
082995

* = QA/QC criteria not met. Recovery internally qualified.
LOD-S = Limit of Detection for Samples.
MDL = Method Detection Limit or Contract Required Detection Limit.
NA = Not Applicable or Not Analyzed.
ND = Not Detected or less than MDL.
Results are reported in ppb unless otherwise specified.
Trip/Field Blank Submitted: No
Test Parameters Subcontracted: None

Z-1

CONFIDENTIAL REPORT OF EVALUATION

Page : 7

Submitted by: Bill Henderson
Client: Atwell-Hicks
Object: Analysis: 8010 SCAN & BTEX

Report Date: 08/30/95
Lab. No. : 95-2600A

Sample ID: GM Powertrain - South Wall 6' 8/25/95

PARAMETER	MDL (ppb)	LOD-S (ppb)	Results (ppb)
=====	=====	=====	=====
VOLATILE ORGANIC COMPOUNDS (Method EPA 8010)			
Bromodichloromethane	10	10	ND
Bromoform	10	10	ND
Bromomethane	10	10	ND
Carbon tetrachloride	10	10	ND
Chlorobenzene	10	10	ND
Chloroethane	10	10	ND
2-Chloroethylvinyl ether	50	50	ND
Chloroform	10	10	ND
Chloromethane	10	10	ND
Dibromochloromethane	10	10	ND
Dichlorodifluoromethane	10	10	ND
1,1-Dichloroethane	10	10	ND
1,2-Dichloroethane	10	10	ND
1,1-Dichloroethene	10	10	ND
trans-1,2-Dichloroethene	10	10	ND
1,2-Dichloropropane	10	10	ND
cis-1,3-Dichloropropene	10	10	ND
trans-1,3-Dichloropropene	10	10	ND
Methylene chloride	10	10	ND
1,1,2,2,-Tetrachloroethane	10	10	ND
Tetrachloroethene	10	10	ND
1,1,1-Trichloroethane	10	10	ND
1,1,2-Trichloroethane	10	10	ND
Trichloroethene	10	10	ND
Trichlorofluoromethane	10	10	ND
Vinyl chloride	10	10	ND

VOLATILE ORGANIC COMPOUNDS (Method EPA 8020)			
Benzene	10	10	ND
Toluene	10	10	ND
Ethylbenzene	10	10	15
Xylenes	30	30	ND

CONFIDENTIAL REPORT OF EVALUATION

Page : 6

Submitted by: Bill Henderson
Client: Atwell-Hicks
Object: Analysis: 8010 SCAN & BTEX

Report Date: 08/30/95
Lab. No. : 95-2600A

Sample ID: GM Powertrain - North Floor 10' 8/25/95

PARAMETER	MDL (ppb)	LOD-S (ppb)	Results (ppb)
=====	=====	=====	=====
VOLATILE ORGANIC COMPOUNDS (Method EPA 8010)			
Bromodichloromethane	10	10	ND
Bromoform	10	10	ND
Bromomethane	10	10	ND
Carbon tetrachloride	10	10	ND
Chlorobenzene	10	10	ND
Chloroethane	10	10	ND
2-Chloroethylvinyl ether	50	50	ND
Chloroform	10	10	ND
Chloromethane	10	10	ND
Dibromochloromethane	10	10	ND
Dichlorodifluoromethane	10	10	ND
1,1-Dichloroethane	10	10	ND
1,2-Dichloroethane	10	10	ND
1,1-Dichloroethene	10	10	ND
trans-1,2-Dichloroethene	10	10	ND
1,2-Dichloropropane	10	10	ND
cis-1,3-Dichloropropene	10	10	ND
trans-1,3-Dichloropropene	10	10	ND
Methylene chloride	10	10	ND
1,1,2,2,-Tetrachloroethane	10	10	ND
Tetrachloroethene	10	10	ND
1,1,1-Trichloroethane	10	10	ND
1,1,2-Trichloroethane	10	10	ND
Trichloroethene	10	10	ND
Trichlorofluoromethane	10	10	ND
Vinyl chloride	10	10	ND
VOLATILE ORGANIC COMPOUNDS (Method EPA 8020)			
Benzene	10	10	ND
Toluene	10	10	ND
Ethylbenzene	10	10	ND
Xylenes	30	30	ND

STATE OF MICHIGAN



JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

RUSSELL J. HARDING, Director

REPLY TO:

UNDERGROUND STORAGE TANK DIVISION
TOWN CENTER
PO BOX 30157
LANSING MI 48909-7857

October 9, 1995

Mr. Jim Baumer
GM Powertrain Headquarters
895 Joslyn Road
Pontiac, Michigan 48340

Dear Mr. Baumer:

SUBJECT: Closure Report Date: September 8, 1995
Confirmed Release Date: August 21, 1995
Location of Tank(s): GM Powertrain Headquarters, 895 Joslyn Road
Pontiac, Oakland County, Michigan
MERA Site ID #: 630337
Facility ID #: 0-38781

This is to acknowledge receipt of your Release Closure Report submitted for the subject site by Atwell-Hicks, Inc., Qualified Consultant (QC), in accordance with Section 21312a(1), Part 213 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451).

Under Section 21315 of Act 451, the Underground Storage Tank Division (USTD) may audit the results of the investigation and corrective actions undertaken to confirm the results and conclusions indicated by Atwell-Hicks, Inc. If the audit does not confirm that corrective action is complete, additional information and/or corrective action may be required as set forth in Section 21315(3). The USTD may audit a closure report within six months after receipt of the closure report.

If you have any questions, please contact Mr. Paul Owens, Project Manager, at the Southeast Michigan District Office, Michigan Department of Environmental Quality, Underground Storage Tank Division, 38980 Seven Mile, Livonia, MI 48152, or telephone number 313-953-1534.

Sincerely,

Mohammad Yusaf, P.E., Chief
Field Operations Section
Underground Storage Tank Division
517-373-3135

cc: Mr. William Henderson, Atwell-Hicks, Inc.
Sedgwick James of Michigan, Inc.
Mr. Tom Kohl, MDEQ
Mr. Paul Owens, MDEQ

CONFIDENTIAL REPORT OF EVALUATION

Page : 5

Submitted by: Bill Henderson
Client: Atwell-Hicks
Object: Analysis: 8010 SCAN & BTEX

Report Date: 08/30/95
Lab. No. : 95-2600A

Sample ID: GM Powertrain - South Wall 5' 8/25/95

PARAMETER	MDL (ppb)	LOD-S Results (ppb)	Results (ppb)
=====	=====	=====	=====
VOLATILE ORGANIC COMPOUNDS (Method EPA 8010)			
Bromodichloromethane	10	10	ND
Bromoform	10	10	ND
Bromomethane	10	10	ND
Carbon tetrachloride	10	10	ND
Chlorobenzene	10	10	ND
Chloroethane	10	10	ND
2-Chloroethylvinyl ether	50	50	ND
Chloroform	10	10	ND
Chloromethane	10	10	ND
Dibromochloromethane	10	10	ND
Dichlorodifluoromethane	10	10	ND
1,1-Dichloroethane	10	10	ND
1,2-Dichloroethane	10	10	ND
1,1-Dichloroethene	10	10	ND
trans-1,2-Dichloroethene	10	10	ND
1,2-Dichloropropane	10	10	ND
cis-1,3-Dichloropropene	10	10	ND
trans-1,3-Dichloropropene	10	10	ND
Methylene chloride	10	10	ND
1,1,2,2,-Tetrachloroethane	10	10	ND
Tetrachloroethene	10	10	ND
1,1,1-Trichloroethane	10	10	ND
1,1,2-Trichloroethane	10	10	ND
Trichloroethene	10	10	ND
Trichlorofluoromethane	10	10	ND
Vinyl chloride	10	10	ND

VOLATILE ORGANIC COMPOUNDS (Method EPA 8020)			
Benzene	10	10	ND
Toluene	10	10	ND
Ethylbenzene	10	10	ND
Xylenes	30	30	ND

CONFIDENTIAL REPORT OF EVALUATION

Page : 4

Submitted by: Bill Henderson
Client: Atwell-Hicks
Object: Analysis: 8010 SCAN & BTEX

Report Date: 08/30/95
Lab. No. : 95-2600A

Sample ID: GM Powertrain - West Wall 5' 8/25/95

PARAMETER	MDL (ppb)	LOD-S (ppb)	Results (ppb)
=====	=====	=====	=====
VOLATILE ORGANIC COMPOUNDS (Method EPA 8010)			
Bromodichloromethane	10	10	ND
Bromoform	10	10	ND
Bromomethane	10	10	ND
Carbon tetrachloride	10	10	ND
Chlorobenzene	10	10	ND
Chloroethane	10	10	ND
2-Chloroethylvinyl ether	50	50	ND
Chloroform	10	10	ND
Chloromethane	10	10	ND
Dibromochloromethane	10	10	ND
Dichlorodifluoromethane	10	10	ND
1,1-Dichloroethane	10	10	ND
1,2-Dichloroethane	10	10	ND
1,1-Dichloroethene	10	10	ND
trans-1,2-Dichloroethene	10	10	ND
1,2-Dichloropropane	10	10	ND
cis-1,3-Dichloropropene	10	10	ND
trans-1,3-Dichloropropene	10	10	ND
Methylene chloride	10	10	ND
1,1,2,2,-Tetrachloroethane	10	10	ND
Tetrachloroethene	10	10	ND
1,1,1-Trichloroethane	10	10	ND
1,1,2-Trichloroethane	10	10	ND
Trichloroethene	10	10	ND
Trichlorofluoromethane	10	10	ND
Vinyl chloride	10	10	ND

VOLATILE ORGANIC COMPOUNDS (Method EPA 8020)			
Benzene	10	10	ND
Toluene	10	10	ND
Ethylbenzene	10	10	ND
Xylenes	30	30	ND

Z-2

CONFIDENTIAL REPORT OF EVALUATION

Page : 3

Submitted by: Bill Henderson
Client: Atwell-Hicks
Object: Analysis: 8010 SCAN & BTEX

Report Date: 08/30/95
Lab. No. : 95-2600A

Sample ID: GM Powertrain - East Wall 5' 8/25/95

PARAMETER	MDL (ppb)	LOD-S (ppb)	Results (ppb)
=====	=====	=====	=====
VOLATILE ORGANIC COMPOUNDS (Method EPA 8010)			
Bromodichloromethane	10	10	ND
Bromoform	10	10	ND
Bromomethane	10	10	ND
Carbon tetrachloride	10	10	ND
Chlorobenzene	10	10	ND
Chloroethane	10	10	ND
2-Chloroethylvinyl ether	50	50	ND
Chloroform	10	10	ND
Chloromethane	10	10	ND
Dibromochloromethane	10	10	ND
Dichlorodifluoromethane	10	10	ND
1,1-Dichloroethane	10	10	ND
1,2-Dichloroethane	10	10	ND
1,1-Dichloroethene	10	10	ND
trans-1,2-Dichloroethene	10	10	ND
1,2-Dichloropropane	10	10	ND
cis-1,3-Dichloropropene	10	10	ND
trans-1,3-Dichloropropene	10	10	ND
Methylene chloride	10	10	ND
1,1,2,2,-Tetrachloroethane	10	10	ND
Tetrachloroethene	10	10	ND
1,1,1-Trichloroethane	10	10	ND
1,1,2-Trichloroethane	10	10	ND
Trichloroethene	10	10	ND
Trichlorofluoromethane	10	10	ND
Vinyl chloride	10	10	ND

VOLATILE ORGANIC COMPOUNDS (Method EPA 8020)			
Benzene	10	10	ND
Toluene	10	10	ND
Ethylbenzene	10	10	124
Xylenes	30	30	89

CONFIDENTIAL REPORT OF EVALUATION

Page : 2

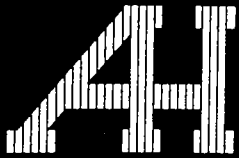
Submitted by: Bill Henderson
Client: Atwell-Hicks
Object: Analysis: 8010 SCAN & BTEX

Report Date: 08/30/95
Lab. No. : 95-2600A

Sample ID: GM Powertrain - North Wall 5' 8/25/95

PARAMETER	MDL (ppb)	LOD-S (ppb)	Results (ppb)
=====	=====	=====	=====
VOLATILE ORGANIC COMPOUNDS (Method EPA 8010)			
Bromodichloromethane	10	10	ND
Bromoform	10	10	ND
Bromomethane	10	10	ND
Carbon tetrachloride	10	10	ND
Chlorobenzene	10	10	ND
Chloroethane	10	10	ND
2-Chloroethylvinyl ether	50	50	ND
Chloroform	10	10	ND
Chloromethane	10	10	ND
Dibromochloromethane	10	10	ND
Dichlorodifluoromethane	10	10	ND
1,1-Dichloroethane	10	10	ND
1,2-Dichloroethane	10	10	ND
1,1-Dichloroethene	10	10	ND
trans-1,2-Dichloroethene	10	10	ND
1,2-Dichloropropane	10	10	ND
cis-1,3-Dichloropropene	10	10	ND
trans-1,3-Dichloropropene	10	10	ND
Methylene chloride	10	10	ND
1,1,2,2,-Tetrachloroethane	10	10	ND
Tetrachloroethene	10	10	ND
1,1,1-Trichloroethane	10	10	ND
1,1,2-Trichloroethane	10	10	ND
Trichloroethene	10	10	ND
Trichlorofluoromethane	10	10	ND
Vinyl chloride	10	10	ND

VOLATILE ORGANIC COMPOUNDS (Method EPA 8020)			
Benzene	10	10	ND
Toluene	10	10	ND
Ethylbenzene	10	10	ND
Xylenes	30	30	ND



ATWELL-HICKS, INC.

Civil Engineering/
Surveying/
Planning/
Environmental
Services

**REQUEST FOR CLOSURE REPORT
OF AN
UNDERGROUND STORAGE TANK SYSTEM RELEASE**

AT

**GM POWERTRAIN HEADQUARTERS
895 JOSLYN ROAD
PONTIAC, MICHIGAN**

PREPARED FOR

**MR. JIM BAUMER
GM POWERTRAIN HEADQUARTERS
895 JOSLYN ROAD
PONTIAC, MICHIGAN 48340
MAIL CODE B-AB41D**

49616 Van Dyke
Utica, Michigan
48317
FAX: 810 731 9067
810 731 9030

ATWELL-HICKS, INC. PROJECT NO. MA01083

SEPTEMBER 8, 1995



CONFIDENTIAL REPORT OF EVALUATION

Submitted by : Bill Henderson

Lab. No. : 95-2600A

Client : Atwell-Hicks
Utica, MI

Report Date : 08/30/95

Sample ID :

GM Powertrain - Project #MA01083
6 Soil Samples

Object :

Analysis: 8010 SCAN & BTEX

Results and Discussion :

SAMPLE IDENTIFICATION

SAMPLE MATRIX

=====

1 - North Wall 5' 8/25/95
2 - East Wall 5' 8/25/95
3 - West Wall 5' 8/25/95
4 - South Wall 5' 8/25/95
5 - North Floor 10' 8/25/95
6 - South Floor 6' 8/25/95

=====

Soil
Soil
Soil
Soil
Soil
Soil



Michigan Department of Natural Resources
Underground Storage Tank Division

LEAKING UNDERGROUND STORAGE TANK
REPORT COVER SHEET

Required under the authority of 1994 PA 451, as amended

INSTRUCTIONS: Complete this form with all applicable information and submit with each report listed below. The Certified Underground Storage Tank Professional (CP) MUST sign below. Failure to submit a report within the stated time period may result in Administrative Penalties as provided for in Part 213, Section 21321 of Act 451. USE OF THIS FORM IS MANDATORY. Return all completed forms and associated reports to the appropriate USTD District Office listed on the back of this form.

FACILITY NAME: GM POWERTRAIN HEADQUARTERS		FACILITY ID NUMBER: 0038-781	
ADDRESS: 895 JOSLYN ROAD PONTIAC, MI 48340 COUNTY: OAKLAND		MERA SITE ID NUMBER:	
DATE(S) RELEASE DISCOVERED: 8/21/95		MUSTFA CLAIM NUMBER:	
C/O NAME: GM POWERTRAIN HEADQUARTERS			
C/O ADDRESS: 895 JOSLYN ROAD, PONTIAC, MI 48340			
CONTACT PERSON: JIM BAUMER		PHONE NUMBER: 810-857-0197	
REPORT SUBMITTED: (CHECK THE APPLICABLE REPORT NAME)			
☐ 1. Initial Assessment Report (90 day report)		☒ 3. Closure Report	
☐ 2. Final Assessment Report (365 day report)		☐ 4. Other: _____	

COMPLETE FOR ALL REPORTS (ANSWER ALL QUESTIONS. DO NOT LEAVE BLANKS):

1. Has the UST been emptied? ☒ Yes ☐ No (If no, explain why):
2. Free product present: a. Currently? ☐ YES ☒ NO If YES, total gallons recovered since last report:
b. Previously? ☐ YES ☒ NO If YES, total gallons recovered to date:
3. Have vapors been identified in any confined spaces (basement, sewers)? ☐ YES ☒ NO
4. State the number of homes where drinking water is or was affected as a result of a release from this facility: 0
5. Estimated distance and direction from point of release to nearest:
a. Private well: ☒ b. Municipal well: ☒ c. Surface water/wetland: ☐
➤ 1 MILE SOUTHWEST
6. Since last report: a. cubic yards of soil remediated: b. gallons of groundwater remediated:
7. Totals to date: a. cubic yards of soil remediated: b. gallons of groundwater remediated:

CERTIFICATION OF REPORT

I, FREDERICK G. ROESER, hereby attest to the best of my knowledge and belief that the statements in this
(PRINT OF NAME)

document and all attachments are true, accurate and complete. I certify that it was submitted to the MDNR on

7-8-95 (date submitted - Required).

[Signature] 7-8-95 FREDERICK G. ROESER
CP Original Signature - Required Date PRINT QC Project Manager's Name

CONSULTANT: ATWELL-HICKS, INC. PHONE#: 810-731-9030

ADDRESS: 49616 VAN DYKE, UTICA, MI 48317 FAX#: 810-731-9067

CERTIFICATION OF CLOSURE REPORT

I certify under penalty of law that soil and/or groundwater impact attributable to the above-referenced release at this facility was remediated in accordance with Part 213, Act 451, as amended, and current departmental guidance and procedures available at this time. Closure verification sampling and analysis was conducted as required in Part 213, utilizing methodology and method detection limits acceptable to the USTD. The analytical results demonstrate that contamination remaining, caused by the subject release, does not exceed the maximum concentration levels established by or acceptable to the USTD.

I further certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

[Signature] 7-8-95
CP Signature Date



REPORT OF ANALYTICAL SERVICES

TO: Atwell-Hicks
49616 Van Dyke
Utica, MI 48317

Report Date: 08/30/95

Lab Number: 95-2600A

Attn: Bill Henderson

Customer P.O. #:

Customer #:

RTI Quote #:

PART / SAMPLE IDENTIFICATION:

GM Powertrain - Project #MA01083
6 Soil Samples

Received: 08/28/95

Tests Completed: 08/30/95

Reported: 08/30/95

WORK REQUESTED / PERFORMED:

Analysis: 8010 SCAN & BTEX

THE RESULTS OF ALL TESTS and/or ANALYSES REQUESTED ARE REPORTED ON THE PAGES WHICH FOLLOW.

Number of pages including this page 9

APPROVED BY:

REPORTED BY:

The data and information presented herein, while not guaranteed, are to the best of our knowledge accurate and true. No warranty or guarantee implied or expressed is made regarding these analytical results, since securing and properly preserving representative samples and since the custody chains are beyond RTI control. The results provided by RTI are neither intended to suggest product merchantability, nor for use in support of any existing patent. RTI will not assume any liability or responsibility for any such infringement, Alteration, or reproduction other than in its entirety is not authorized by RTI Laboratories, Inc.

CONTENTS

<u>Section</u>	<u>Page</u>
EXECUTIVE SUMMARY	ii
1.0 INTRODUCTION	1
2.0 SITE LOCATION AND DESCRIPTION	1
3.0 TANK REMOVAL OPERATIONS	1
3.1 Soil Stratigraphy	2
3.2 Groundwater	2
4.0 LABORATORY ANALYSIS	2
5.0 CONCLUSIONS	3

List of Figures

Figure 1. Topographic Extract
Figure 2. Site Plan View
Figure 3. Excavation Pit Detail

Appendix

Appendix A: Soil Waste Manifests
Appendix B: Liquid Waste Manifests
Appendix C: Laboratory Analytical Report

APPENDIX C

LABORATORY ANALYTICAL REPORT

EXECUTIVE SUMMARY

GM Powertrain Headquarters retained Atwell-Hicks, Inc. (AHI) to provide environmental consulting services related to an investigation of an underground storage tank (UST) system. The subject UST system is located at 895 Joslyn Road, Pontiac, Michigan. The system consists of one UST, which contained stoddard solvent.

The purpose of this project was to provide release reporting services and prepare a closure report. This investigation was completed as required under current Michigan Department of Natural Resources (MDNR) reporting guidelines.

On August 14, 1995, AHI was on-site to collect samples in the vicinity of the subject UST system. Through visual and olfactory evidence, AHI could not confirm a release of petroleum product. Therefore, AHI collected samples for laboratory analysis to determine if a release had occurred. Based on the receipt of laboratory results, AHI reported the confirmed release to the Michigan Department of Natural Resources Underground Storage Tank Division (MDNR USTD) on August 21, 1995, within 24 hours of the discovery of the release.

On August 25, 1995, AHI was on site to observe the excavation and removal of the UST and the excavation of soil. The general condition of the tanks was poor. AHI staff observed holes and severe pitting in the UST. AHI made a field decision to remove the contaminated soil. AHI field personnel observed that the contamination was limited to the sand backfill of the tank pit. The soil surrounding the tank pit area was a tight gray and brown clay. After the excavation of the contaminated soils was complete, AHI staff collected six confirmatory soil samples in accordance to MERA Operational Memo guidelines.

AHI retained an independent laboratory, RTI of Livonia, Michigan, to provide site related laboratory analysis. AHI instructed RTI to analyze the confirmatory soil samples for the presence of benzene toluene ethylbenzene and xylene (BTEX) and halogenated volatile organic compounds (HVOs) based upon a conversation with Mr. Paul Owens of the MDNR. These compounds were analyzed due to their association with stoddard solvent.

Laboratory results indicate that BTEX and HVO levels have been remediated to levels below MDNR Tier 1 Criteria.

Based on the confirmatory sampling, analytical data results indicate that all levels of BTEX and HVOs have been remediated to levels below MDNR Criteria. Based on this data, AHI requests that this site be removed from the list of leaking UST sites.



North American Operations
GM Metal Fabricating Division
Environmental Engineering Department
One Pontiac Plaza
Pontiac, Michigan 48340-2952
Mail Code 483-049-201

August 15, 1995

Dallas Geisler
One Pontiac Plaza
Pontiac, Michigan 48340-2952
Mail Code 483-049-201

Subject: Residual Product Liquid and Perched Water

Dear Mr. Geisler:

Per your request, the Industrial Waste Water Treatment Plant at the GM Pontiac facility has evaluated your request to discharge approximately 75 gallons on Residual Product Liquid and Perched Water from the excavation of a Product Engineering stoddard solvent tank. This material is compatible with the treatment operation and will not adversely affect the discharge. Therefore, your waste stream has been accepted for discharge.

Please notify the WWTP Operator in advance as to the day and time of the discharge.

If you have any questions, or need additional information, please contact me at (810) 857-0421.

Sincerely,

David E. Rugg
Sr. Environmental Engineer
GM-NAO-Pontiac Site Operations

c: Gary Monsere, WWTP Supervisor

1.0 INTRODUCTION

GM Powertrain Headquarters retained AHI to provide environmental consulting services related to an investigation of a UST system. The subject UST system is located at 895 Joslyn Road, Pontiac, Michigan. The UST system consisted of one 550-gallon bare steel tank. Information of previous site activities indicates that the tank held stoddard solvent.

The scope of work for this project included (1) an initial UST system assessment; (2) report of a confirmed release to the MDNR UST within 24 hours of discovery; (3) overseeing the excavation and removal of the USTs and the collection of confirmatory soil samples; and (4) this Request for Closure Report to comply with applicable MDNR reporting guidelines.

2.0 SITE LOCATION AND DESCRIPTION

The subject site is described as being located in the Northeast one-quarter of the Northwest one-quarter of Section 21, Township 3 North, Range 10 East, Pontiac, Oakland County, Michigan. The site street address is 895 Joslyn Road, Pontiac, Michigan. The site location is presented in Figure 1. The site plan view is presented in Figure 2.

The subject site consists of a brick building with paved parking areas. The facility is currently being used as an office and laboratory.

The site is bounded by many different land uses. To the north and west of the site there is industrial use. To the south of the site is office and laboratory uses. To the east is Joslyn Road and across the highway is residential land use.

The local municipality supplies the site with water and sanitary sewer utilities.

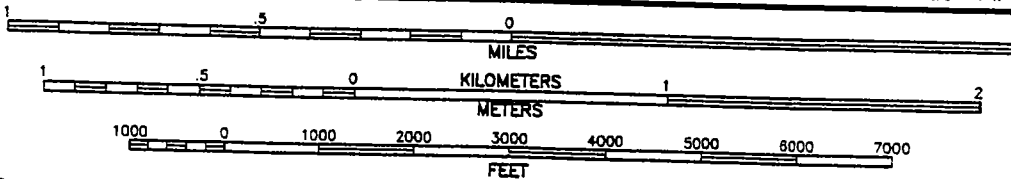
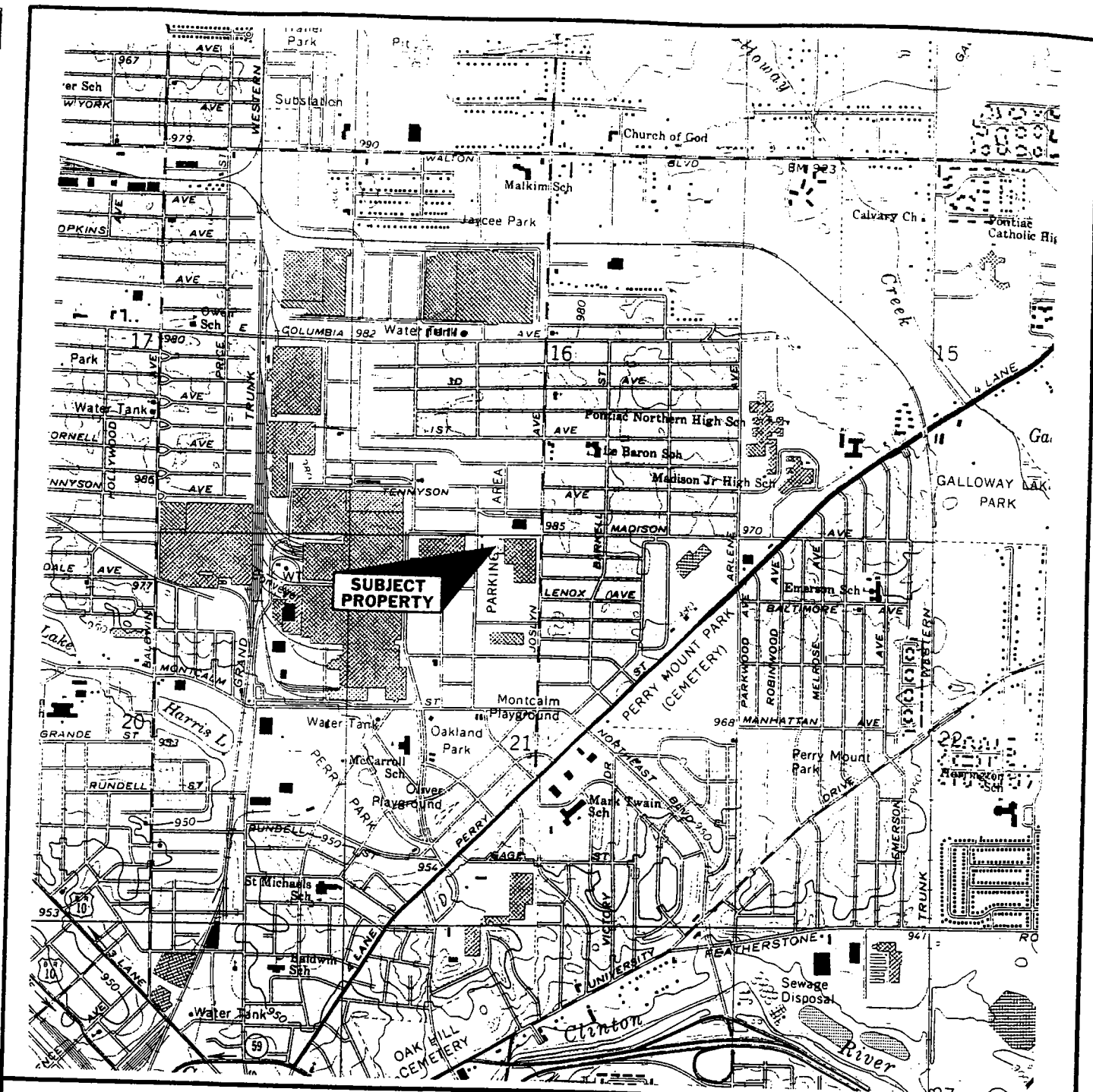
3.0 TANK REMOVAL OPERATIONS

Carlo Environmental Technologies, Inc. (CET) was retained by GM Powertrain to perform site related tank removal operations. CET began tank removal operations on August 25, 1995. AHI was mobilized on the same date to observe the tank removal operations. Tank removal operations began on August 25, 1995 and were completed that same day.

The general condition of the UST was poor. AHI staff observed severe pitting and rust through holes in the subject UST, all of which contributed to the release of petroleum product at the site.

Contaminated soil associated with the UST was excavated and removed from the site. Residual product liquid and perched water in the pit backfill, located in the excavation pit and in the UST, was pumped into a tank truck and treated at the on-site waste treatment plant. Figure 2 presents a detailed view of the UST and soil excavation pit. Copies of the soil waste manifests are

APPENDIX B
LIQUID WASTE MANIFESTS



REFERENCE

USGS 7.5 MIN TOPOGRAPHIC QUADRANGLE
PONTIAC NORTH QUADRANGLE
DATED: 1968, PHOTOREVISED: 1981
SCALE 1:24000

FIGURE 1: SITE LOCATION MAP
GM POWERTRAIN HEADQUARTERS
895 JOSLYN
PONTIAC, MICHIGAN
PREPARED FOR:
GM POWERTRAIN HEADQUARTERS
PONTIAC, MICHIGAN

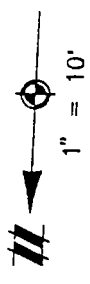
PROJECT: MA01083
DATE: 9-6-95
DRAWN: TJC
CHECKED: FGR
CAD FILE: I:M1083EV2



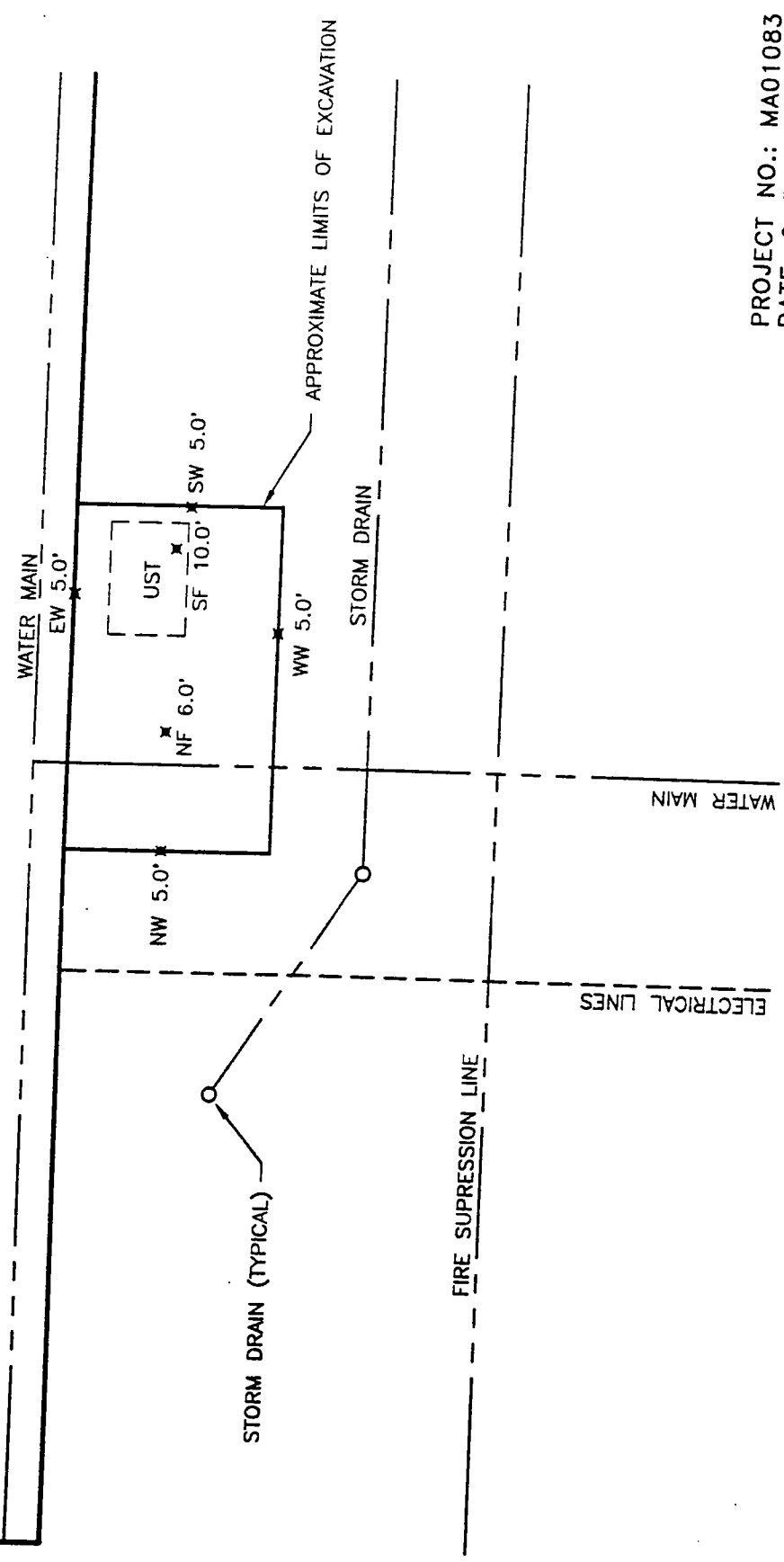
ATWELL-HICKS, INC.

CIVIL ENGINEERING SURVEYING PLANNING
ENVIRONMENTAL SERVICES

540 AVIS DRIVE • P.O. BOX 2981 • ANN ARBOR, MI 48108
313/994-4000 • FAX 313/994-1599



BUILDING



PROJECT NO.: MA01083
DATE: 9-5-95

ATWELL-HICKS, INC.
CIVIL ENGINEERING SURVEYING PLANNING
ENVIRONMENTAL SERVICES
48818 VAN DYKE • UTICA, MICHIGAN 48317
810/731-9030 • FAX 810/731-9087

DR: TAC
CAD FILE: IM1083.DVI

FIGURE 2: SITE PLAN VIEW

Shipping Bill of Lading

1. Generator's US EPA ID No. (If any) **MI D 0 0 5 3 5 6 8 8 6** 2. Gen. BOL No. **0 0 3 4 1**

3. Generator's Name and Mailing Address

**NAO PROPERTY MANAGEMENT OF GM
ONE PONTIAC PLAZA
PONTIAC, MI 48340-2952**

Generator's Phone (

810 857-0938

4. Transporter 1 Company Name

USPCI, ID#TXD988052494, (800) 877-0235

5. Transporter 2 Company Name

CONRAIL, ID#PAD030198400, (215) 977-1832

6. Transporter 3 Company Name

SOO LINE, ID#MND006962641, (800) 766-4357

7. Transporter 4 Company Name

USPCI, ID#TXD988052494, (800) 877-0235

8. Designated Facility Name and Site Address

Municipal Services Corporation - Echo Mountain Facility

1 mile west of Ward County Hwy. 23 on County Road 20, Sawyer, North Dakota 58781, Phone (701) 624-5622

9. U.S. DOT Description (including Proper Shipping Name)

a. **NON-REGULATED PER EPA AND DOT**

10. Containers
No. Type

11. Total Quantity

12. Unit
Wt/Vol

13. Waste Profile
Sheet #

0 0 1 C M

3 1 8 2 0

P

303829

14. Additional Descriptions for Materials Listed Above

**KEROSENE CONTAMINATED SOIL FROM UNDERGROUND STORAGE TANK REMEDIATION.
APPROVAL NUMBER EM95-0173GM.**

15. Special Handling Instructions and Additional Information

PREVENT FLOW TO SEWER.

ICAD # 60051 WALK 411116

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

"ON BEHALF OF GENERAL MOTORS CORPORATION"

Printed/Typed Name

DALLAS F. GEISLER

Signature

Month Day Year
09/18/95

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

DENNIS L. RATTLE

Signature

Month Day Year
09/18/95

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Transporter 3 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

20. Transporter 4 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

21. Discrepancy Indication Space

22. Facility Owner or Operator: Certification of Receipt of non-hazardous materials covered by this Bill of Lading except as noted in item 21.

Printed/Typed Name

Signature

Month Day Year

presented in Appendix A. Copies of the liquid waste manifests are presented in Appendix B.

3.1 Soil Stratigraphy

The contaminated soil that was removed during the process of the tank removal consisted primarily of a medium grained gray to brown sand. AHI has determined that this sand was used as fill around the UST. The excavation pit sidewalls are composed of gray to brown clay. AHI has determined that the clay walls of the excavation are the native soil. The excavation pit reached a depth of approximately 10 feet below the ground surface. It was during the initial stages of the tank removal operations that AHI determined that the limits of the contamination were limited to the sand fill around the tanks. It was at this time that AHI staff determined it to be most cost effective to direct CET to remove the contaminated soil, which effectively remediated the site.

3.2 Groundwater

There was no groundwater identified within 10.5 feet below the ground surface at the site. There was some water trapped in the sand fill area. This water was confined to this area due to the tightly packed native clay that surrounded the area. This confined water was pumped from the excavation pit along with residual product in the USTs and taken to the on-site treatment plant for disposal.

4.0 LABORATORY ANALYSIS

AHI retained RTI Laboratories of Livonia, Michigan to perform site related analytical work. After the removal of the USTs and the associated contaminated soil, AHI staff collected six confirmatory soil samples. These soil samples were collected in accordance to the MDNR Guidance Documents and a conversation with Mr. Paul Owens.

The samples were collected in pre-cleaned glass jars and stored at a temperature of approximately 4 degrees until they could be analyzed. The confirmatory soil samples also followed strict chain-of-custody protocols to preserve the sample integrity.

Laboratory results of the six soil samples indicate:

- All confirmatory soil samples exhibited less than Tier 1 levels of BTEX and HVOs.

Copies of the analytical reports for the confirmatory soil samples are presented in Appendix C. For more detailed laboratory results, refer to Table 1.

NOTIFICATION OF WASTE ACCEPTANCE
ECHO MOUNTAIN FACILITY

09/08/95

CUSTOMER INFORMATION

EPA ID#: MID005356886
GM CLCD CLCD PONTIAC
1 PONTIAC PLAZA
PONTIAC, MI 48053
CONTACT: DALLAS F. GEISLER
PHONE: (810) 857-2287

INVOICE INFORMATION

REF #: MID005356886
GM CLCD CLCD PONTIAC
1 PONTIAC PLAZA
PONTIAC, MI 48053
CONTACT: DALLAS F. GEISLER
PHONE: (810) 857-2287

PROFILE SHEET #: 303829

RECEIVED: 08/23/95

Last Change Date: 09/08/95

SAMPLE #: WP95-00173

RECEIVED: 08/23/95 WASTE STREAM #: EM95-0173GM
KEROSENE CONTAMINATED SOIL

Thank you for selecting USPCI for your waste management requirements. Your waste stream has been reviewed and is acceptable for management at our facility based on the information provided on the profile sheet number listed above and conditions listed below. Our facility has the necessary permits to allow the storage, treatment, or disposal of this waste. The above referenced acceptance number should be listed on all shipping documents and correspondence. Please retain these documents for your records and future reference.

Please contact Customer Service at (701) 624-5622 should you have any questions. to schedule a shipment, contact USPCI customer service at 1-800-877-2422.

ACCEPTANCE INFORMATION

The waste stream identified by the reference number above is
Acceptable for disposal.

This waste is acceptable for delivery beginning on 09/08/95 thru 09/07/96, at which time an update review may be required for continued acceptability.

Shipping Requirements:

NON-HAZARDOUS certificate required per 40 CFR 261.4. and/or Part 261 where said waste is not classified a hazardous waste in Subpart C.

Type of Container: SOLID (BULK)

5.0 CONCLUSIONS

GM Powertrain Headquarters retained AHI to provide environmental consulting services related to an investigation of an underground storage tank (UST) system. The subject UST system is located at 895 Joslyn Road, Pontiac, Michigan. The subject UST system consists of one UST, which contained stoddard solvent.

The purpose of this project was to provide release reporting services and prepare a closure report. All of this information was completed as required under MDNR reporting guidelines.

On August 21, 1995, AHI confirmed a release of an unknown quantity of petroleum product. AHI reported the confirmed release to the Michigan Department of Natural Resources Underground Storage Tank Division (MDNR USTD) on August 21, 1995, within 24 hours of the discovery of the release.

On August 25, 1995, AHI was on site to observe the excavation and removal of the UST and excavation of soil. The general condition of the tanks was poor. AHI staff observed holes and severe pitting in the UST. AHI made a field decision to remove the contaminated soil. AHI field personnel observed that the contamination was limited to the sand backfill of the tank pit. The soil surrounding the tank pit area was a tight gray and brown clay. After the excavation of the contaminated soils was complete, AHI staff collected six confirmatory soil samples in accordance to MERA Operational Memo guidelines.

AHI observed that there was no free product, and that there is no explosion hazard associated with the current conditions of the site soil. Vapors have not been identified in the buildings at the site, or in the surrounding buildings. There is no groundwater considered to be in an aquifer within 10.5 feet below ground surface.

Laboratory results indicate that BTEX and HVO levels have been remediated to levels below MDNR Criteria.

Based on the confirmatory sampling analytical data, results indicate that all levels of BTEX and HVO have been remediated to levels below MDNR Criteria. Based on this data, AHI requests that this site be removed from the list of leaking UST sites.

Atwell-Hicks, Inc. Project No. MA01083

This report submitted by:


Frederick G. Roeser
Senior Hydrogeologist

APPENDIX A
SOIL WASTE MANIFESTS

Appendix AA

LEAKING UNDERGROUND STORAGE TANK
CLOSURE REPORT

INSTRUCTIONS: COMPLETION OF THIS REPORT WITH ALL APPLICABLE INFORMATION IS MANDATORY. The Certified Underground Storage Tank Professional (CP) MUST sign below. Failure to submit this report within the stated time period may result in administrative penalties as provided for in Part 213, Section 21313a of Act 451, P.A. 1994 as amended.

FACILITY NAME: Vacant Lot - GM Lenox FACILITY ID NUMBER: 5-001946
ADDRESS: Northeast Corner of Joslyn and Lenox
CITY: Pontiac ZIP: 48340 COUNTY: Oakland
DATE(S) RELEASE DISCOVERED: November 1, 1996 CONFIRMED RELEASE NUMBER(S): C-889-96
O/O NAME: General Motors Corporation
O/O ADDRESS: 485 W. Milwaukee, Mail Code: 482-310-004, Detroit STATE: Michigan ZIP: 48202-3220
CONTACT PERSON: Dr. Ken Richards PHONE NUMBER: (313) 556-3196

ANSWER ALL QUESTIONS (DO NOT LEAVE BLANKS):

1. a. Has the UST been emptied? ☒ Yes ☐ No (If no, explain why):
b. Has the UST system been properly closed? ☒ Yes ☐ No (If no, explain why):
2. Free product present: a. Currently? ☐ YES ☒ NO If YES, total gallons recovered since last report:
b. Previously? ☐ YES ☒ NO If YES, total gallons recovered to date:
3. Have vapors been identified in any confined spaces (basement, sewers, etc.)? ☐ YES ☒ NO
4. State the number of homes where drinking water is or was affected as a result of a release from this facility: None
5. Estimated distance and direction from point of release to nearest:
a. Private well: >1 mile south b. Municipal well: >1 mile south c. Surface water/wetland: 5,000 feet WSW
6. Since last report: a. cubic yards of soil remediated: 0 b. gallons of groundwater remediated: 0
7. Totals to date: a. cubic yards of soil remediated: 0 b. gallons of groundwater remediated: 0
8. Michigan RBCA Site Classification (1-4): 4 Previous RBCA Site Classification (1-4):
9. Has contamination migrated off-site above Tier 1 Residential RBSLs ☐ YES ☒ NO
If YES, have off-site impacted parties been notified ☐ YES ☐ NO (per Section 21309a(3) of Part 213)
10. Is an institutional control required for contamination that has migrated or will migrate off-site? ☐ Yes ☒ No

CERTIFICATION OF REPORT COMPLETION

I, undersigned CP, hereby attest to the best of my knowledge and belief that the statements in this document and all attachments are true, accurate and complete. I certify that it was submitted to the Storage Tank Division (STD) on October 30, 1998
Date Submitted (REQUIRED)

CP Original Signature - (REQUIRED)

Date

Glenn Turchan, P. Eng.

PRINT QC Project Manager's Name

Michael Tomka, CPN 900

PRINT CP's Name

11100 Metro Airport Center Drive, Suite 160

Romulus, Michigan 48174

ADDRESS

Conestoga-Rovers & Associates, Inc. Z0261

CONSULTANT

(734) 942-0909

TELEPHONE NO.

(734) 942-1858

FAX NO.

CERTIFICATION OF CLOSURE

1. Type of RBCA Evaluation: ☒ Tier 1 ☐ Tier 2 ☐ Tier 3
2. Closure report based on which type of land use?: ☒ Residential ☐ Commercial III ☐ Commercial IV ☐ Industrial
3. Institutional Controls: ☒ None ☐ Notice of Corrective Action ☐ Restrictive Covenant ☐ Other

I certify under penalty of law that corrective actions associated with the above referenced release at this facility were completed in accordance with Part 213, Act 451, P.A. 1994 as amended, and current departmental guidance and procedures available at the time the work was completed.

I further certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

CP Signature - (REQUIRED)

Date

RETURN THIS COMPLETED REPORT AND ASSOCIATED ATTACHMENTS TO THE APPROPRIATE STD DISTRICT OFFICE, LISTED ON THE BACK OF THIS PAGE.

STORAGE TANK DIVISION OFFICES AND LOCATIONS

Determine in which county/city the UST is located. Return all completed forms and associated reports to the STD office listed next to that county/city in the following table. Addresses for the STD offices are listed below.

COUNTY	STD OFFICE	COUNTY	STD OFFICE	COUNTY	STD OFFICE	COUNTY	STD OFFICE
Alcona	Gaylord	Dickinson	Marquette	Lake	Cadillac	Oceana	Grand Rapids
Alger	Marquette	Eaton	Shiawassee	Lapeer	Shiawassee	Ogemaw	Gaylord
Allegan	Plainwell	Emmet	Gaylord	Leelanau	Cadillac	Ontonagon	Marquette
Alpena	Gaylord	Genesee	Shiawassee	Lenawee	Jackson	Osceola	Cadillac
Antrim	Gaylord	Gladwin	Gaylord	Livingston	Shiawassee	Oscoda	Gaylord
Arenac	Gaylord	Gogebic	Marquette	Luce	Marquette	Otsego	Gaylord
Baraga	Marquette	Grand Traverse	Cadillac	Mackinac	Marquette	Ottawa	Grand Rapids
Barry	Plainwell	Gratiot	Shiawassee	Macomb	SE Michigan	Presque Isle	Gaylord
Bay	Saginaw-Bay	Hillsdale	Jackson	Manistee	Cadillac	Roscommon	Gaylord
Benzie	Cadillac	Houghton	Marquette	Marquette	Marquette	Saginaw	Saginaw-Bay
Berrien	Plainwell	Huron	Saginaw-Bay	Mason	Cadillac	Sanilac	Saginaw-Bay
Branch	Jackson	Ingham	Shiawassee	Mecosta	Grand Rapids	Schoolcraft	Marquette
Calhoun	Jackson	Ionia	Grand Rapids	Menominee	Marquette	Shiawassee	Shiawassee
Cass	Plainwell	Iosco	Gaylord	Midland	Saginaw-Bay	St Clair	SE Michigan
Charlevoix	Gaylord	Iron	Marquette	Missaukee	Cadillac	St Joseph	Plainwell
Cheboygan	Gaylord	Isabella	Saginaw-Bay	Monroe	SE Michigan	Tuscola	Saginaw-Bay
Chippewa	Marquette	Jackson	Jackson	Montcalm	Grand Rapids	Van Buren	Plainwell
Clare	Gaylord	Kalamazoo	Plainwell	Montmorency	Gaylord	Washtenaw	Jackson
Clinton	Shiawassee	Kalkaska	Cadillac	Muskegon	Grand Rapids	Wayne	SE Michigan
Crawford	Gaylord	Kent	Grand Rapids	Newaygo	Grand Rapids	Wexford	Cadillac
Delta	Marquette	Keweenaw	Marquette	Oakland	SE Michigan		
CITY	STD OFFICE	CITY	STD OFFICE	CITY	STD OFFICE		
Boit	Detroit	Highland Park	Detroit	Hamtramck	Detroit		

<u>CADILLAC OFFICE</u> 120 W CHAPIN ST CADILLAC MI 49601-2158 616-775-3960 (PHONE) 616-775-1511 (FAX)	<u>DETROIT OFFICE</u> 300 RIVERPLACE, SUITE 3600 DETROIT MI 48207 313-392-6480 (PHONE) 313-392-6488 (FAX)	<u>PLAINWELL OFFICE</u> 1342 SR-89 WEST, SUITE B PLAINWELL MI 49080-1915 616-692-2120 (PHONE) 616-692-3050 (FAX)
<u>GAYLORD OFFICE</u> 1732 W M-32, PO BOX 667 GAYLORD MI 49735-0667 517-731-4920 (PHONE) 517-731-6181 (FAX)	<u>JACKSON OFFICE</u> 301 E LOUIS GLICK HIGHWAY JACKSON MI 49201-1556 517-780-7690 (PHONE) 517-780-7855 (FAX)	<u>SAGINAW-BAY OFFICE</u> 503 N EUCLID AVE SUITE 1 BAY CITY MI 48706-2965 517-686-8025 (PHONE) 517-684-9799 (FAX)
<u>GRAND RAPIDS OFFICE</u> 350 OTTAWA ST NW 6TH FLOOR GRAND RAPIDS MI 49503-2341 616-456-5071 (PHONE) 616-456-1239 (FAX)	<u>MARQUETTE OFFICE</u> 1990 US 41 SOUTH MARQUETTE MI 49855-9198 906-228-6561 (PHONE) 906-228-5245 (FAX)	<u>SHIAWASSEE OFFICE</u> 10650 BENNETT DR MORRICE MI 48857-9792 517-625-5515 (PHONE) 517-625-5000 (FAX)
<u>SE MICHIGAN OFFICE</u> 38980 SEVEN MILE RD LIVONIA MI 48152-1006 734-953-8905 (PHONE) 734-432-1295 (FAX)	<u>HEADQUARTERS</u> 333 S CAPITOL AVE PO BOX 30157 LANSING MI 48909-7657 517-373-8168 (PHONE) 517-335-2245 (FAX)	

Instructions - Utilize the following checklist to ensure that all required information is provided in the Closure Report. Include this checklist as the table of contents. The order in which the information is provided is at your discretion. Each page of the report (including cover sheet, table of contents, appendices, figures, etc.) should be consecutively numbered. The location column should be completed with the appropriate page number for each item. You may reference previously submitted materials by specifying the location within that document. Maps, tables, figures, etc. should be combined as appropriate.

All information required by Part 213 to be included in the Closure Report **must** be provided, and all sections of the report must be completed. If any items are not applicable to the site, provide a justification regarding the absence of this information in the appropriate section of the report.

If an Initial Assessment Report (IAR) and/or a Final Assessment Report (FAR) have not been submitted for this release, provide all required information from the IAR and/or FAR not included below.

Section	Table of Contents	Page

1.0 PROJECT CHRONOLOGY

A. Provide the date and time the confirmed release(s) was/were discovered and reported.	1
B. Provide the IAR submittal date.	1
C. Provide the FAR submittal date.	1
D. Provide dates for any other submittals.	1

2.0 SUMMARY OF CORRECTIVE ACTION ACTIVITIES PERFORMED

2.1 IMMEDIATE RESPONSE ACTION IMPLEMENTATION

If an IAR has not been previously submitted, provide all information requested in Section 1.0 of the IAR

1

2.2 FREE PRODUCT DISCOVERY AND REMOVAL

If free product has not been discovered, then proceed to Section 2.3.

A. Describe initial response actions performed at this site to address the presence of free product as specified in Sections 21307(2)(c) and (f), and (3)(b) and (c), 21308a(1)(b)(xviii). Refer to the STD Operational Memorandum No. 7, <i>Identification, Reporting, and Recovery of Free Product at LUST Sites</i> .	2

2

B. Attach a final STD Free Product Recovery Status Report (EQP 3850) if not previously submitted.	2

2

2.3 SITE ASSESSMENT ACTIVITIES

A. If an IAR has not been previously submitted, provide all information requested in Section 3.0 of the IAR.	2

2

B. If a FAR has not been previously submitted, provide all information requested in Section 2.0 of the FAR.	2

2

Section	Table of Contents	Page

2.4 SITE CLASSIFICATION

- A. Indicate the current Site Classification Level, in accordance with STD Operational Memorandum No. 5, *Leaking Underground Storage Tank (LUST) Site Classification System*. 7
- B. Provide a justification for this classification. Identify the current conditions that are the basis of the classification. 7
- C. Indicate whether the site classification has changed since the submission of the last report. 7

2.5 TIERED EVALUATIONS AND CLEANUP GOALS

- A. Indicate whether a site-specific Tier II or Tier III evaluation has been conducted for this site. 7
- B. If applicable, identify and justify where alternate assumptions or site-specific information were used in place of the default assumptions as defined in the STD Operational Memorandum No. 4, *Tier 1 Lookup Tables for Risk-Based Corrective Action at Leaking Underground Storage Tank (LUST) Sites*. 7

NOTE: If a Tier II evaluation was performed and described in the IAR or the FAR, explicitly indicate where different assumptions or site-specific information were used in this Tier II or Tier III evaluation and why the change was justified.

- C. Provide the calculations and reference citations supporting the development of the relevant Tier II or Tier III SSTLs. 7
- D. Provide a table which compares the maximum remaining contaminant concentrations for each required parameter for all media to the appropriate RBSLs (as provided in the STD Operational Memorandum No. 4), and/or the calculated SSTLs. Identify all applicable land use scenario(s). 7

2.6 MODELING

Provide all modeling documentation. Refer to the STD Operational Memorandum No. 10 *Presentation of Tier 2 and 3 Groundwater Modeling Evaluations*. 8

2.7 NOTICES AND RESTRICTIONS

If the closure does not require the use of institutional controls to restrict land or resource use, then proceed to Section 2.8.

NOTE: Draft copies of all Restrictive Covenants and Notices of Corrective Action for off-site institutional controls must be submitted to the STD for approval prior to filing. Refer to Operational Memorandum No. 12, *Institutional Controls and Public Notice Requirements and Procedures*.

Section	Table of Contents	Page

A. Submit copies of all notices or restrictions which have been filed, and provide proof of filing these notices or restrictions. If the person filing is not the property owner, attach a copy of the written permission for the filing from the property owner.	8
B. Identify the individuals or segments of the public which have been provided with notice of the proposed land use restrictions or limitations to be placed on resource use. Include the names and addresses of the affected parties (unless large segments of the public will be provided notice, e.g., users of a municipal water supply system). Include proof that notice was provided to the affected parties.	8
C. Provide a map depicting the location(s) of the individuals or segments of the noticed public.	8
D. Describe any alternate mechanism utilized to restrict exposure to regulated substances as defined in Section 324.21310a(3), and justify how this mechanism reliably restricts exposure to the regulated substances.	8

2.8 PERMITS

List all discharge permits and/or permit exemptions that were required for the corrective action, and include the type of permit, permit number, application date, approval date and termination date.

9

2.9 CORRECTIVE ACTION PLAN

A. Summarize the corrective action activities that resulted in release closure. Include the operating history of any active treatment systems.	9
B. Summarize the types of monitoring activities performed, including the media and parameters monitored.	9
C. Attach performance monitoring data.	9
D. Describe and justify changes to the previously submitted Corrective Action Plan.	9
E. Provide the total volume of soil remediated, and include disposal location and proof of disposal (e.g., invoices, not load tickets) for all soils excavated subsequent to submittal of the last report, if appropriate.	9
F. Provide the total volume of groundwater actively remediated to date, and include disposal documentation, if appropriate.	9

3.0 CLOSURE VERIFICATION SAMPLING

3.1 SOIL CLOSURE VERIFICATION

NOTE: Verification sampling must be conducted whenever contaminated soils are identified but not remediated, including when contaminated soil is returned to an excavation after the removal of a UST.

A. Describe the soil verification sampling strategy applied at the site by providing the

Section	Table of Contents	Page
	following:	
1.	A scaled site map which identifies the former extent of the soil contamination, and the soil verification sampling locations relative to existing site features. <i>(Multiple chemical contaminants and multiple sample depths should be addressed on the minimum number of site maps needed to convey the information with clarity and legibility.)</i>	9
2.	For a corrective action involving excavation, a scaled drawing(s) showing the floor and walls of the excavation and the associated sampling locations. The drawing should also depict the subsurface stratigraphy, soil types, fractures, discolored soil locations, adjoining conduits or potential migration pathways, and locations of former and existing UST system components, as appropriate.	9
3.	A description of how the number and location of samples collected for soil verification purposes was established. If your sampling strategy differs from the MDEQ <i>Verification of Soil Remediation Guidance Document</i> and STD Operational Memorandum No. 9, <i>Groundwater and Soil Closure Verification Guidance</i> , provide justification.	9
4.	A list of the analytical parameters used to verify the soil remediation.	10
5.	A justification if all soil verification samples were not analyzed, preserved, and handled in accordance with the STD Operational Memorandum No. 14 <i>Analytical Parameters and Methods, Sample Handling, and Preservation for Petroleum Releases</i> .	10
B.	Provide a table with laboratory data showing the results of all verification soil sampling performed to date for the required parameters. Refer to the STD Operational memorandum No. 14 <i>Analytical Parameters and Methods, Sample Handling, and Preservation for Petroleum Releases</i> . The table should include the following:	10
	1. Sample ID	
	2. Sample depth	
	3. Date of collection	
	4. Dates of extraction and analysis	
	5. Method Detection Limits	
	6. Analytical method	
	(NOTE: The STD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information.)	
C.	Provide copies of all soil boring logs not previously submitted.	10
3.2	GROUNDWATER CLOSURE VERIFICATION	
A.	Describe the groundwater verification sampling strategy applied at the site by providing the following:	
1.	A scaled site map which identifies the former extent of groundwater contamination, the groundwater verification sampling locations relative to existing site features, and the groundwater flow direction(s). <i>(Multiple chemical contaminants and multiple aquifer/sample depths should be addressed on the minimum number of site maps needed to convey the information with clarity and legibility.)</i>	10
2.	A description of how the sampling frequency and duration of sampling for groundwater verification purposes was established. If your sampling strategy differs from the STD Operational Memorandum No. 9.	

Section	Table of Contents	Page
3.	A list of the analytical parameters used to verify groundwater closure	10
4.	A justification if all groundwater verification samples were not analyzed, preserved, and handled in accordance with the STD Operational Memorandum No. 14 <i>Analytical Parameters and Methods, Sample Handling, and Preservation for Petroleum Releases.</i>	10
B.	Provide a table with laboratory data showing the results of all verification groundwater sampling performed to date for the required parameters. Refer to the STD Operational Memorandum No. 14 <i>Analytical Parameters and Methods, Sample Handling, and Preservation for Petroleum Releases.</i> The table should include the following:	11
1.	Sample ID	
2.	Sampling depth or screened interval	
3.	Date of collection	
4.	Dates of extraction and analysis	
5.	Method Detection Limits	
6.	Analytical method	
(NOTE: The STD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information.)		
C.	Attach copies of the following:	
1.	Boring logs not previously submitted.	11
2.	Well construction diagrams not previously submitted.	11
3.	Potentiometric surface maps for each groundwater verification sampling event.	11
4.	Elevation data (USGS datum preferred), including top-of-casing and grade elevations, and depth to groundwater for each groundwater verification sampling event.	11
3.3 CLOSURE VERIFICATION FOR OTHER MEDIA		
A.	Describe the verification sampling strategy for other media applied at the site.	11
B.	Provide a scaled site map which identifies the verification sampling locations relative to existing site features and boundaries, if appropriate.	11
C.	Provide a table with the laboratory data showing the results of all verification sampling performed to date in the other specified environmental media.	11
(NOTE: The STD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information.)		

Section	List of Attachments	Page

FIGURES

Figure 1	Site Location
Figure 2	Site Plan
Figure 3	Sample and Cross-Section Locations
Figure 4	Cross-Section A-A'
Figure 5	Cross-Section B-B'

TABLES

Table 1	Comparison Table for Soil Verification
Table 2	Summary of Groundwater Sampling
Table 3	Comparison Table for Groundwater Verification

APPENDICES

Appendix A	Stratigraphic Logs
Appendix B	Summary of Additional Groundwater Investigations

1.0 PROJECT CHRONOLOGY

- A. Provide the date and time the confirmed release(s) was/were discovered and reported. During Site investigation activities, which included soil sampling, a release was discovered on November 1, 1996. A release was reported on November 1, 1996 at 5:45 PM.
- B. Provide the IAR submittal date. The IAR was submitted on January 30, 1997, by Parsons Engineering Science, Inc. (Parsons).
- C. Provide the FAR submittal date. An incomplete FAR was submitted on October 29, 1997, by Parsons.
- D. Provide dates for any other submittals. Additional Site assessment activities were conducted by Conestoga-Rovers & Associates, Inc. (CRA) subsequent to the submission of the FAR submitted by Parsons in October 1997 (Parsons FAR). Appendix B provides the results of the additional activities.

2.0 SUMMARY OF CORRECTIVE ACTION ACTIVITIES PERFORMED

2.1 IMMEDIATE RESPONSE ACTION IMPLEMENTATION

If an IAR has not been previously submitted, provide all information requested in Section 1.0 of the IAR, as follows:

Not Applicable.

- A. Provide the date and time the release(s) was/were discovered and reported.
- B. Indicate what portion of the underground storage tank (UST) system is, or is believed to be, the source of the release.
- C. Describe how the release was discovered.
- D. Describe any tank tightness testing performed in response to this release and provide the following:
 - 1. Date of the testing;
 - 2. Method of testing; and
 - 3. Results of the testing.
- E. List all former and existing USTs at this facility including the following information for each of these tanks:
 - 1. Tank ID Number (as registered);
 - 2. Contents (past/present, if gasoline specify grade and whether leaded or unleaded);
 - 3. Size of the UST;

4. Whether the tank was identified as a leaking underground storage tank (LUST); and
 5. Whether the tank has been emptied and/or removed. If a LUST, provide an explanation if not emptied or removed.
- F. Describe the initial response actions which were performed at this site, as specified in Sections 21307(2)(a) through (c), and (3)(a) and (b).

2.2 FREE PRODUCT DISCOVERY AND REMOVAL

If free product has not been discovered, then proceed to Section 2.3.

No free product was observed.

- A. Describe initial response actions performed at this site to address the presence of free product as specified in Sections 21307(2)(c) and (f), and (3)(b) and (c), 21308a(1)(b)(xviii). Refer to the STD Operational Memorandum No. 7, *Identification, Reporting, and Recovery of Free Product at LUST Sites*.
- B. Attach a final STD Free Product Recovery Status Report (EQP 3850) if not previously submitted.

2.3 SITE ASSESSMENT ACTIVITIES

- A. If an IAR has not been previously submitted, provide all information requested in Section 3.0 of the IAR. **Not applicable.**
- B. If a FAR has not been previously submitted, provide all information requested in Section 2.0 of the FAR. See below for revised Section 2.0 of the FAR.

2.3.1 SCALED SITE MAPS

- A. Provide a scaled area map (or maps) which includes the following:
 1. Site boundaries in relation to the surrounding area and the nearest major roads; **See Figure 1.**
 2. Location and depth of nearby underground sewers and utility lines; **See Figure 2.**
 3. Location of nearby surface waters or wetlands; **See Figure 1.**
 4. Location and screened depth of all off-site wells (municipal, residential, production, irrigation, etc.) within two years groundwater travel time of the property line, which may be dependent on the pumping rates of the identified well(s); and **No wells are located within two years groundwater travel time (within 6 feet of the Site boundary).**
 5. Location of all nearby delineated well-head protection areas. **No well-head protection areas are located in Pontiac, Michigan.**

B. Provide a scaled site map (or maps) which includes the following:

1. Location of fill ports, piping, dispensers, and other pertinent system components for all UST systems currently or formerly at the facility (*prior to excavation if tanks have been removed*; **Former UST location is unknown.**
2. Location of the release and the component of the LUST system from which the release occurred; **Release location is unknown.**
3. Location of adjacent buildings, roadways, paved areas, or other structures; **See Figures 1 and 2.**
4. Location of all on-site wells and screened intervals; **See Figure 3 and Appendix A.**
5. Location of soil, groundwater, surface water, sediment, or air samples, as applicable; and **See Figure 3.**
6. Excavation dimensions and sample locations if applicable. **Not applicable.**

2.3.2 SCALED CROSS-SECTIONAL DIAGRAMS

- A. Provide scaled cross-sectional diagrams of buried utility corridors, including the pipe diameter, the type of backfill, and the trench depth. **No utilities are located on the Site.**
- B. Provide scaled cross-sectional diagrams depicting the soil lithology and the contaminant distribution, including sampling intervals and boring depths. **See Figures 4 and 5.**
- C. Provide scaled cross-sectional diagrams depicting the site hydrogeology, including the groundwater potentiometric surface, the monitoring well screened intervals, and sampling intervals. **See Figures 4 and 5.**

2.3.3 DELINEATION OF THE EXTENT OF CONTAMINATION

- A. Indicate whether additional site assessment activities were conducted subsequent to the submission of the IAR. If so, describe which environmental media were investigated (e.g., soil, groundwater, surface water, air). **Additional Site assessment activities were conducted by CRA subsequent to the submission of the Parsons FAR. Appendix B provides the results of the additional activities.**
- B. Describe the assessment activities conducted. Indicate whether the Work Plan was implemented as outlined in the IAR. If not, describe any changes made, and provide a justification. **Additional Site assessment activities were conducted by CRA subsequent to the submission of the Parsons FAR. Appendix B provides the results of the additional activities.**

2.3.4 SOIL CONDITIONS AND CHARACTERISTICS

- A. Describe the soils encountered in the vadose zone. Shallow soils at the Site consist of sand and clay. See Figures 4 and 5.
- B. Describe any soil contamination which has been detected. Soil contamination was incorrectly identified in the Parsons FAR. Using information contained in Attachment No. 4 of the Parsons FAR, no soil concentrations are identified above Tier I Residential Direct Contact Values. ✕
- C. Describe any soil remediation or disposal activities performed subsequent to submittal of the last report, including the volume of soil remediated or disposed to date. Indicate the disposal location, and provide proof of disposal (e.g., invoices, not load tickets). No soil remediation or disposal activities were performed.
- D. Provide a site diagram which depicts the horizontal and vertical extent of on-site and off-site soil contamination. Include the maximum concentrations and sample depths. See Attachment No. 6 of the Parsons FAR. CRA has not conducted any subsequent soil sampling.
- E. Provide the volume of impacted soil remaining in the vadose zone. Soil contamination was incorrectly identified in the Parsons FAR. Using information contained in Attachment No. 4 of the Parsons FAR, no soil concentrations are identified above Tier I Residential Direct Contact Values.
- F. Provide a table with field screening and laboratory data showing the results of all soil sampling performed to date for the required parameters. Refer to the STD Operational Memorandum No. 14, *Analytical Parameters and Methods, Sampling Handling, and Preservation for Petroleum Releases*. The table should include the following: See Attachment No. 4 of the Parsons FAR.
1. Sample ID;
 2. Sample Depth;
 3. Date of collection;
 4. Dates of extraction and analysis;
 5. Method Detection Limits; and
 6. Analytical method or field screening instrument.
- G. Provide a table which compares the maximum remaining soil contaminant concentrations for each required parameter to the appropriate RBSLs as provided in STD Operational Memorandum No. 4, *Tier I Lookup Tables for Risk-Based Corrective Action at Leaking Underground Storage Tank Sites*. If residential leaching to groundwater RBSLs are not utilized for comparison, provide an explanation. See Table 1. It should be noted that Attachment No. 5 of the Parsons FAR contained incorrect values. Residential leaching to groundwater RBSLs are not utilized for comparison because the potable groundwater pathway has been eliminated (see Appendix B).
- H. Provide soil boring logs not previously submitted. See Appendix A.

- I. Identify any known soil contamination not related to the release, and the source if known. **Not applicable.**

2.3.5 GROUNDWATER CONDITIONS AND CHARACTERISTICS

- A. Describe the site hydrogeology, and include the following:
 1. Depth to groundwater and method of determination; **Depth to groundwater is approximately 12 feet, based on static water levels of on-Site monitoring wells.**
 2. Whether the groundwater is potable and/or not in an aquifer. Provide the basis for this determination. Refer to STD Operational Memorandum No. 11 *Criteria to Eliminate the Potable Groundwater Pathway*; **The groundwater is not potable and is not in an aquifer (see Appendix B).**
 3. Whether the groundwater is currently used as a source of drinking water, either residential or municipal; **The groundwater is not used as a source of drinking water.**
 4. Whether groundwater is being used for a purpose other than drinking water; **The groundwater is not being used for any other purpose.**
 5. Whether more than one groundwater unit is present beneath the site; **Unknown.**
 6. Depth to bottom of water-bearing layer; **The bottom of the sand seam is approximately 15 feet below ground surface (bgs).**
 7. Predominant soil type in water-bearing stratum (*e.g., sand, silt*); **A sand seam is confined between two clay layers.**
 8. Effective porosity of water-bearing stratum (in $\text{cm}^3_{\text{void}}/\text{cm}^3_{\text{matrix}}$), and describe how it was determined; **Effective porosity is estimated to be approximately 0.30.**
 9. Hydraulic conductivity, and describe how it was determined; **Hydraulic conductivity was calculated during aquifer pumping tests to be 4.56 E-05 ft/min .**
 10. Groundwater flow rate and direction; **Groundwater flow is towards the southeast, at approximately 6.08 E-06 ft/min .**
 11. Lateral component of the hydraulic gradient; **The lateral component is approximately 0.04.**
 12. Hydrogeologic conditions that could influence flow direction; **Not Applicable.**
 13. Magnitude and direction of the vertical component of the hydraulic gradient. **Not Applicable.**
- B. Attach copies to the following:
 1. Boring logs not previously submitted; **See Appendix A.**
 2. Well construction diagrams not previously submitted; **See Appendix A.**
 3. Potentiometric surface map; and **See Figures 4 and 5.**
 4. Elevation data (USGS datum preferred), including top-of-casing and grade elevations, and depth to groundwater. **See Appendix A.**
- C. Provide scaled maps and cross-sectional diagrams, showing the screened and/or sampling interval, which depict the extent of impact and the maximum concentrations. **See Figures 4 and 5.**

- D. Indicate whether more than one groundwater unit has been impacted. It is unknown whether more than one groundwater unit is present. However, a clay confining layer extends throughout the Site.
- E. Describe any groundwater remediation activities performed subsequent to submittal of the IAR, including the total volume of groundwater remediated and the disposition of this groundwater. No groundwater remediation activities were performed.
- F. Indicate whether the plume currently extends off-site or is expected to migrate off-site. Groundwater is not impacted above the applicable Tier I RBSLs.
- G. Provide a table with field screening and laboratory data showing the results of all groundwater sampling performed to date for the required parameters. Refer to the STD Operational Memorandum No. 14, *Analytical Parameters and Methods, Sample Handling, and Preservation for Petroleum Releases*. The table should include the following: See Table 2.
1. Sample ID;
 2. Sample depth and/or screened interval;
 3. Date of collection;
 4. Dates of extraction and analysis;
 5. Method Detection Limits; and
 6. Analytical method or field screening instrument.
- H. Provide a table which compares the maximum remaining groundwater contaminant concentrations for each required parameter to the appropriate RBSLs as provided in STD Operational Memorandum No. 4. If residential health-based/aesthetic drinking water criteria are not utilized for comparison, provide an explanation. See Table 3. Residential health-based/aesthetic drinking water criteria are not utilized for comparison because the potable groundwater pathway has been eliminated (see Appendix B).
- I. Provide a chronological summary of the results for each sampling location. See Table 2.
- J. Identify any known groundwater contamination not related to the release, and the source if known. Not applicable.

2.3.6 CONDITIONS AND CHARACTERISTICS IN OTHER ENVIRONMENTAL MEDIA

Other environmental media not impacted.

- A. Describe the evaluations conducted to determine if other environmental media have been impacted.

- B. Describe the extent and distribution of any contamination present in any environmental media other than soil or groundwater.
- C. Describe any actions taken in response to contamination in other environmental media.
- D. Provide a table with the field screening and laboratory data showing the results of all sampling performed to date in the other specified environmental media.
- E. Identify any known contamination in the other specified media not related to the release, and the source if known.

2.4 SITE CLASSIFICATION

- A. Indicate the current Site Classification Level, in accordance with STD Operational Memorandum No. 5, *Leaking Underground Storage Tank (LUST) Site Classification System*. **Class 4.**
- B. Provide a justification for this classification. Identify the current conditions that are the basis of the classification. **There is no demonstratable long-term threat to human health, safety, or sensitive environmental receptors.**
- C. Indicate whether the site classification has changed since the submission of the last report. **No change.**

2.5 TIERED EVALUATIONS AND CLEANUP GOALS

- A. Indicate whether a site-specific Tier II or Tier III evaluation has been conducted for this site. **Tier II or Tier III evaluations were not conducted.**
- B. If applicable, identify and justify where alternate assumptions or site-specific information were used in place of the default assumptions as defined in the STD Operational Memorandum No. 4, *Tier 1 Lookup Tables for Risk-Based Corrective Action at Leaking Underground Storage Tank (LUST) Sites*. **Not applicable.**

NOTE: If a Tier II evaluation was performed and described in the IAR or the FAR, explicitly indicate where different assumptions or site-specific information were used in this Tier II or Tier III evaluation and why the change was justified.

- C. Provide the calculations and reference citations supporting the development of the relevant Tier II or Tier III SSTLs. **Not applicable.**
- D. Provide a table which compares the maximum remaining contaminant concentrations for each required parameter for all media to the appropriate RBSLs (as provided in the STD Operational Memorandum No. 4), and/or the calculated SSTLs. Identify all applicable land use scenario(s). **See Tables 1 and 3.**

2.6 MODELING

Provide all modeling documentation. Refer to the STD Operational Memorandum No. 10, *Presentation of Tier 2 and 3 Groundwater Modeling Evaluations*. **Not applicable.**

2.7 NOTICES AND RESTRICTIONS

If the closure does not require the use of institutional controls to restrict land or resource use, then proceed to Section 2.8.

No institutional controls to restrict land or resource use required.

NOTE: Draft copies of all Restrictive Covenants and Notices of Corrective Action for off-site institutional controls must be submitted to the STD for approval prior to filing. Refer to Operational Memorandum No. 12, *Institutional Controls and Public Notice Requirements and Procedures*.

- A. Submit copies of all notices or restrictions which have been filed, and provide proof of filing these notices or restrictions. If the person filing is not the property owner, attach a copy of the written permission for the filing from the property owner.
- B. Identify the individuals or segments of the public which have been provided with notice of the proposed land use restrictions or limitations to be placed on resource use. Include the names and addresses of the affected parties (unless large segments of the public will be provided notice, e.g., users of a municipal water supply system). Include proof that notice was provided to the affected parties.
- C. Provide a map depicting the location(s) of the individuals or segments of the noticed public.
- D. Describe any alternate mechanism utilized to restrict exposure to regulated substances as defined in Section 324.21310a(3), and justify how this mechanism reliably restricts exposure to the regulated substances.

2.8 PERMITS

List all discharge permits and/or permit exemptions that were required for the corrective action, and include the type of permit, permit number, application date, approval date and termination date. **No permits required.**

2.9 CORRECTIVE ACTION PLAN

- A. Summarize the corrective action activities that resulted in release closure. Include the operating history of any active treatment systems. **No corrective action activities required.**
- B. Summarize the types of monitoring activities performed, including the media and parameters monitored. **See Appendix B.**
- C. Attach performance monitoring data. **Not applicable.**
- D. Describe and justify changes to the previously submitted Corrective Action Plan. **Not applicable.**
- E. Provide the total volume of soil remediated, and include disposal location and proof of disposal (e.g., invoices, not load tickets) for all soils excavated subsequent to submittal of the last report, if applicable. **No soil was remediated or disposed of.**
- F. Provide the total volume of groundwater actively remediated to date, and include disposal documentation, if appropriate. **No groundwater was actively remediated.**

3.0 CLOSURE VERIFICATION SAMPLING

3.1 SOIL CLOSURE VERIFICATION

NOTE: Verification sampling must be conducted whenever contaminated soils are identified but not remediated, including when contaminated soil is returned to an excavation after the removal of a UST.

- A. Describe the soil verification sampling strategy applied at the site by providing the following: **See the Parsons FAR. CRA has not conducted any subsequent soil sampling.**
 - 1. A scaled site map which identifies the former extent of the soil contamination, and the soil verification sampling locations relative to existing site features. *(Multiple chemical contaminants and multiple sample depths should be addressed on the minimum number of site maps needed to convey the information with clarity and legibility);*
 - 2. For a corrective action involving excavation, a scaled drawing(s) showing the floor and walls of the excavation and the associated sampling locations. The drawing should also depict the subsurface stratigraphy, soil types, fractures, discolored soil

- locations, adjoining conduits or potential migration pathways, and locations of former and existing UST system components as appropriate;
3. A description of how the number and location of samples collected for soil verification purposes was established. If your sampling strategy differs from the MDEQ *Verification of Soil Remediation Guidance Document* and STD Operational Memorandum No. 9, *Groundwater and Soil Closure Verification Guidance*, provide justification;
 4. A list of the analytical parameters used to verify the soil remediation; and
 5. A justification if all soil verification samples were not analyzed, preserved, and handled in accordance with the STD Operational Memorandum No. 14, *Analytical Parameters and Methods, Sample Handling, and Preservation for Petroleum Releases*.
- B. Provide a table with laboratory data showing the results of all verification soil sampling performed to date for the required parameters. Refer to the STD Operational Memorandum No. 14, *Analytical Parameters and Methods, Sample Handling, and Preservation for Petroleum Releases*. The table should include the following: **See Table 1.**
1. Sample ID;
 2. Sample depth;
 3. Date of collection;
 4. Dates of extraction and analysis;
 5. Method Detection Limits; and
 6. Analytical method.
- C. Provide copies of all soil boring logs not previously submitted. **See Appendix A.**

3.2 GROUNDWATER CLOSURE VERIFICATION

- A. Describe the groundwater verification sampling strategy applied at the site by providing the following:
1. A scaled site map which identifies the former extent of groundwater contamination, the groundwater verification sampling locations relative to existing site features, and the groundwater flow direction(s). (*Multiple chemical contaminants and multiple aquifer/sample depths should be addressed on the minimum number of site maps needed to convey the information with clarity and legibility*); **See Figure 3.**
 2. A description of how the sampling frequency and duration of sampling for groundwater verification purposes was established. If your sampling strategy differs from the STD Operational Memorandum No. 9, *Groundwater Soil Closure Verification Guidance*, provide justification; **Groundwater sampling indicated no concentrations above the applicable Tire I Residential RBSLs.**
 3. A list of the analytical parameters used to verify groundwater closure; and **See Appendix B.**
 4. A justification if all groundwater verification samples were not analyzed, preserved, and handled in accordance with the STD Operational Memorandum No. 14, *Analytical Parameters and Methods, Sample Handling, and Preservation for*

Petroleum Releases. Groundwater verification samples were analyzed, preserved, and handled in accordance with STD Operational Memorandum No. 14.

B. Provide a table with laboratory data showing the results of all verification groundwater sampling performed to date for the required parameters. Refer to the STD Operational Memorandum No. 14, *Analytical Parameters and Methods, Sample Handling, and Preservation for Petroleum Releases*. The table should include the following: See Table 2.

1. Sample ID;
2. Sampling depth or screened interval;
3. Date of collection;
4. Dates of extraction and analysis;
5. Method Detection Limits; and
6. Analytical method.

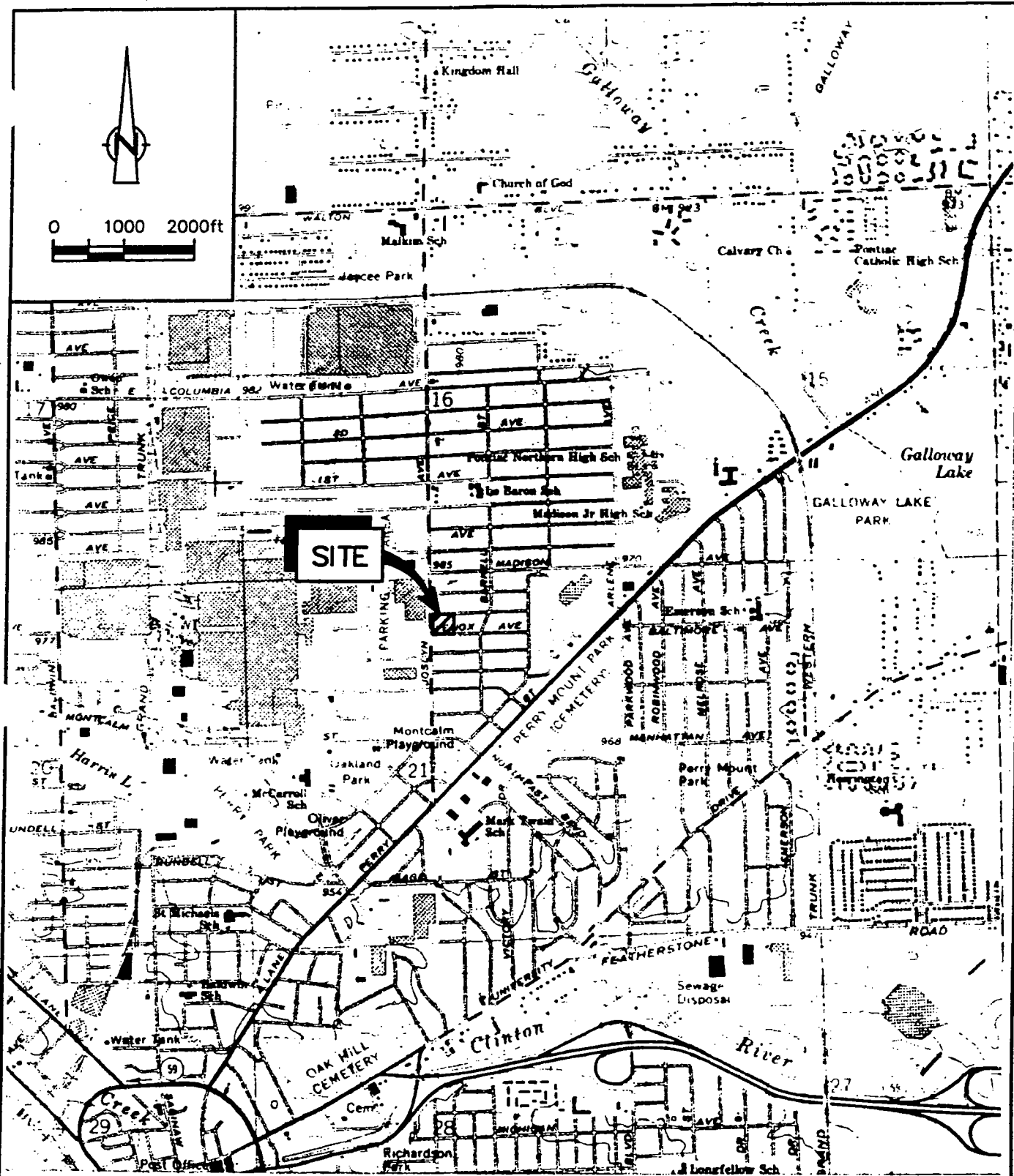
C. Attach copies of the following:

1. Boring logs not previously submitted; See Appendix A.
2. Well construction diagrams not previously submitted; See Appendix A.
3. Potentiometric surface maps for each groundwater verification sampling event; and See Figures 4 and 5.
4. Elevation data (USGS datum preferred), including top-of-casing and grade elevations, and depth to groundwater for each groundwater verification sampling event. See Appendix A.

3.3 CLOSURE VERIFICATION FOR OTHER MEDIA

Not applicable.

- A. Describe the verification sampling strategy for other media applied at the site.
- B. Provide a scaled site map which identifies the verification sampling locations relative to existing site features and boundaries, if appropriate.
- C. Provide a table with the laboratory data showing the results of all verification sampling performed to date in the other specified environmental media.



SOURCE: USGS QUADRANGLE MAP;
PONTIAC NORTH, MICHIGAN



figure 1
SITE LOCATION
VACANT LOT – GM LENOX
Pontiac, Michigan

CRA

Y AREA 2
INC

W

PLANT 5 & 23
GDA

PLANT 56
(OLD PLT 2)
BDA

PLANT 14

PLANT 11

PLANT 49

ELPO BLDG

GATE

STUDY AREA 4
POWER TRAIN

STORAGE

POWER
TRAIN
HQ
BLDG

AD BLDG

PONTIAC PLAZA

KENNETT AVENUE

RASKOB AVENUE

MARKLE AVENUE

LENOX AVENUE

WESTBROOK AVENUE

LABARON AVENUE

MADISON AVENUE

MANSFIELD AVENUE

TENNYSON AVENUE

BEVERLY AVENUE

FIRST AVENUE

JOSLYN

1000'

1500'

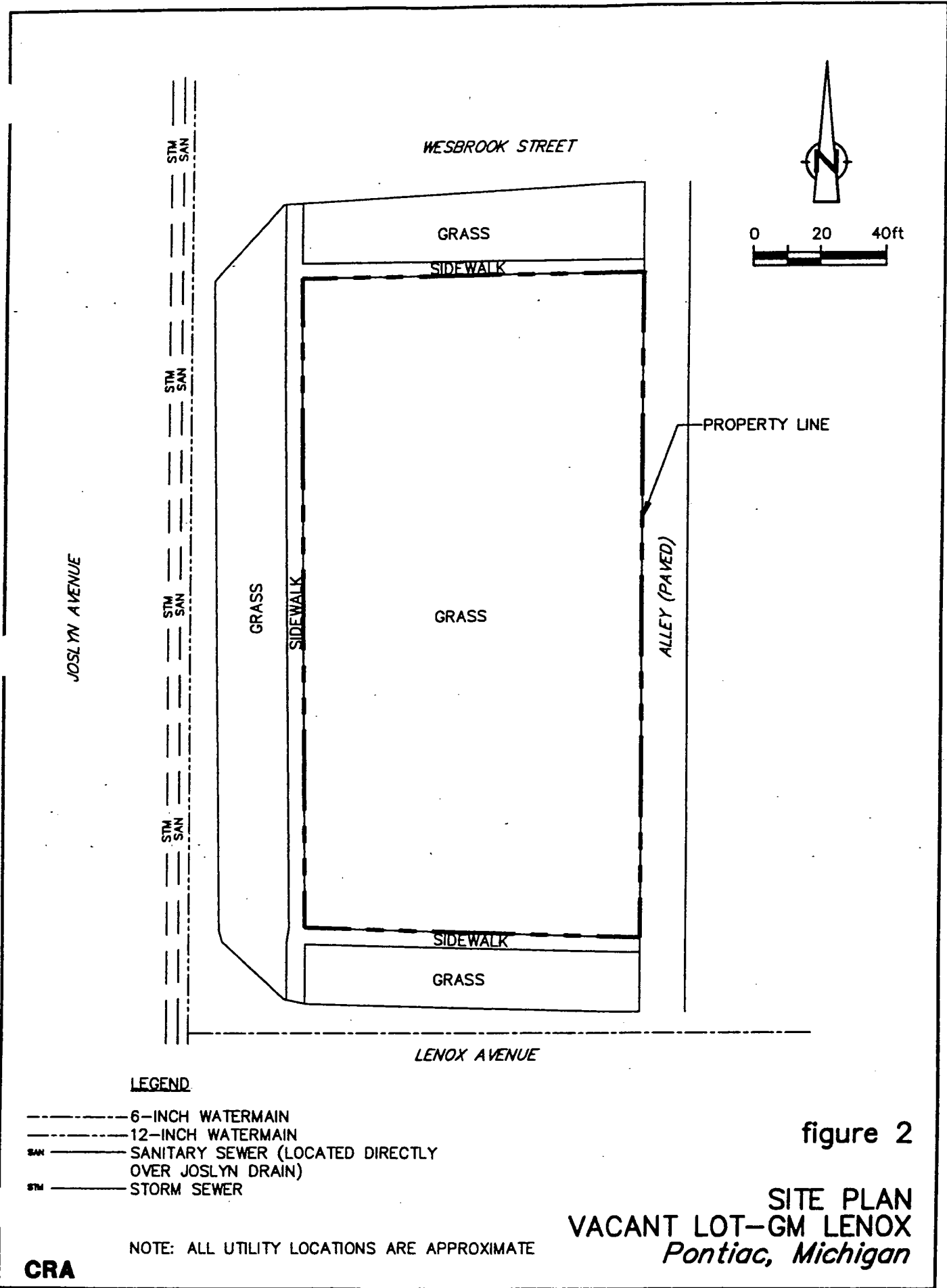
2000'

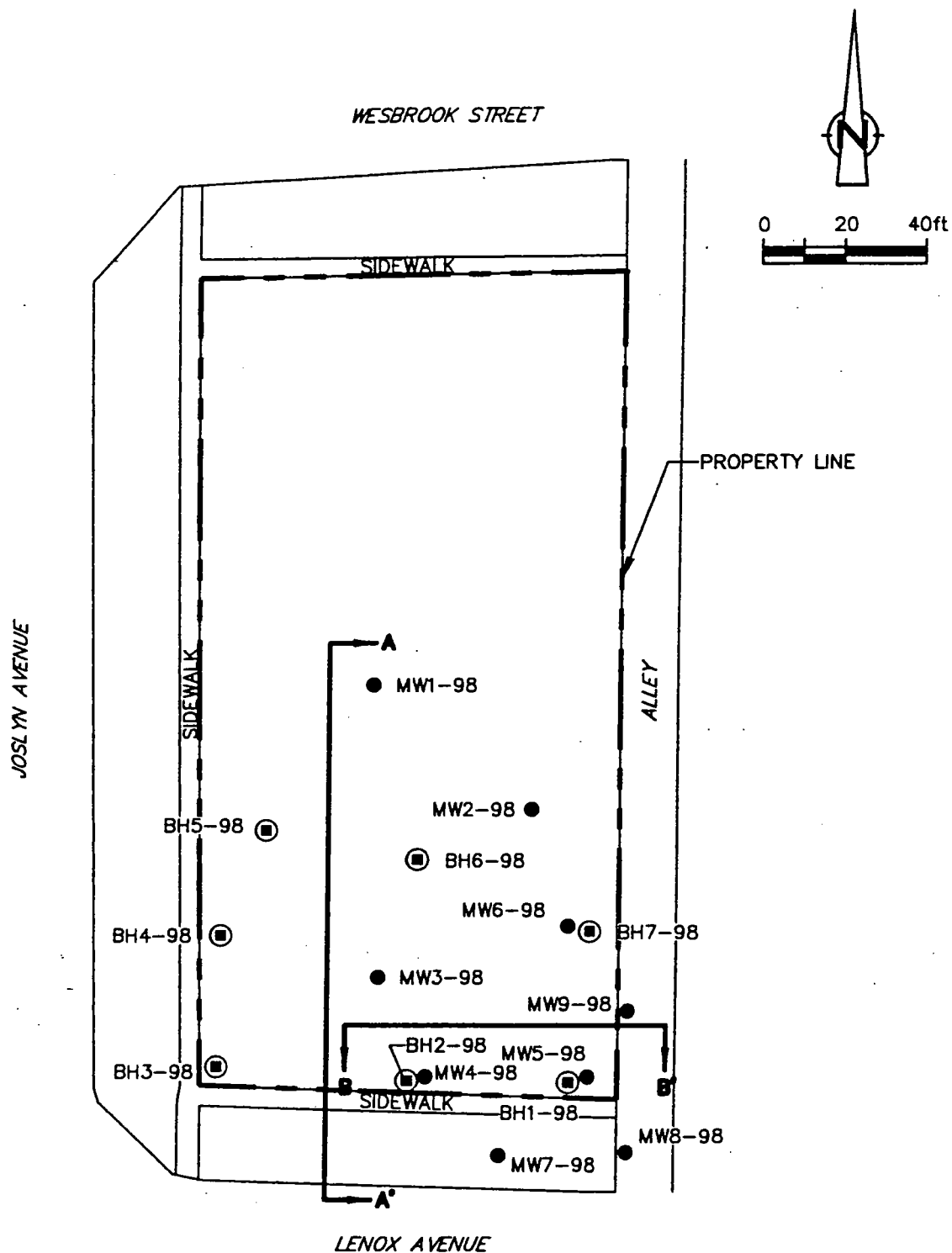
2500'

3000'

3500'

4000'





LEGEND

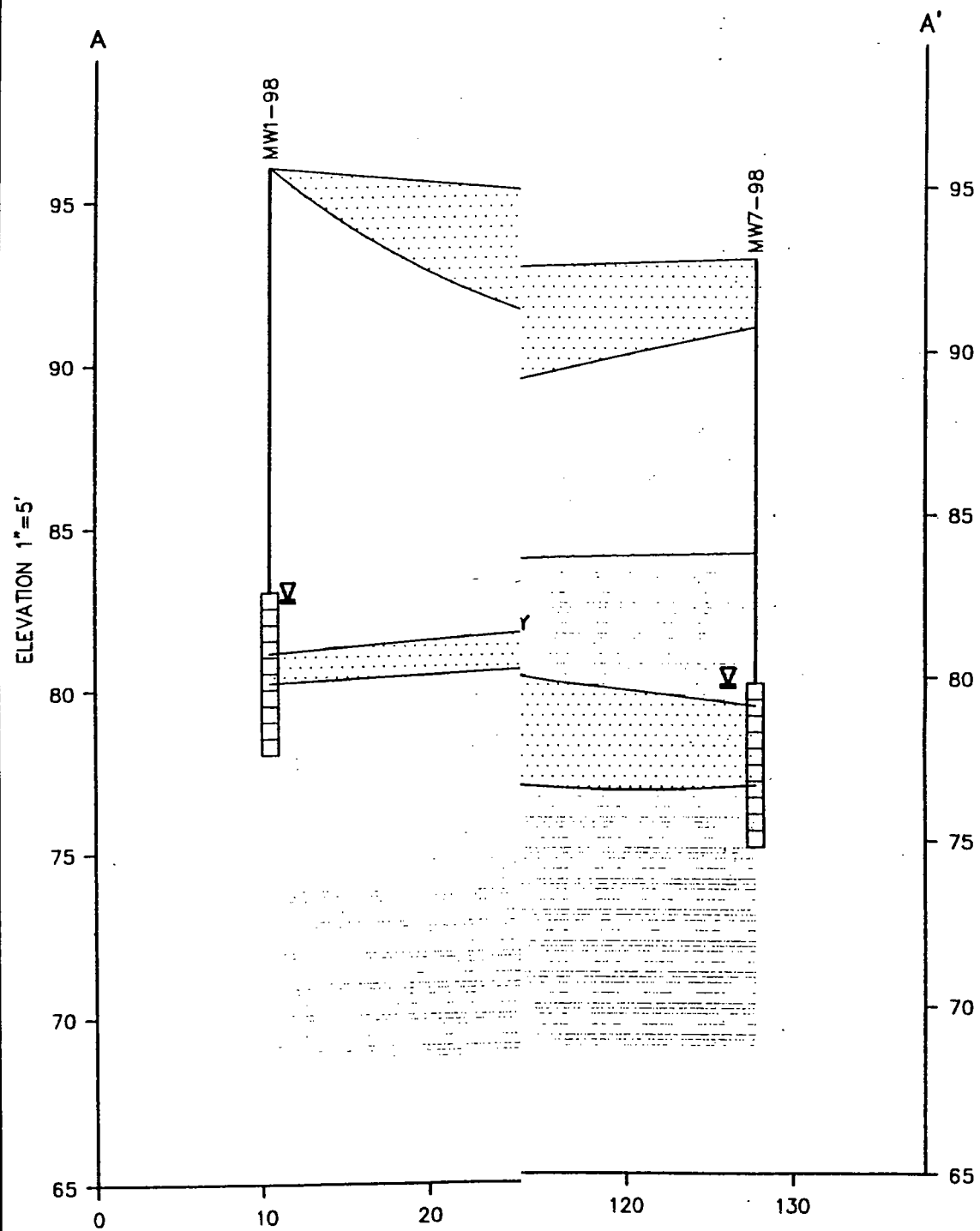
● MW1-98 EXISTING MONITORING WELL LOCATION

◻ BH1-98 APPROXIMATE BOREHOLE LOCATION

↕ CROSS SECTION LOCATIONS

CRA

figure 3
 SAMPLE AND CROSS SECTION
 LOCATIONS
 VACANT LOT-GM LENOX
 Pontiac, Michigan

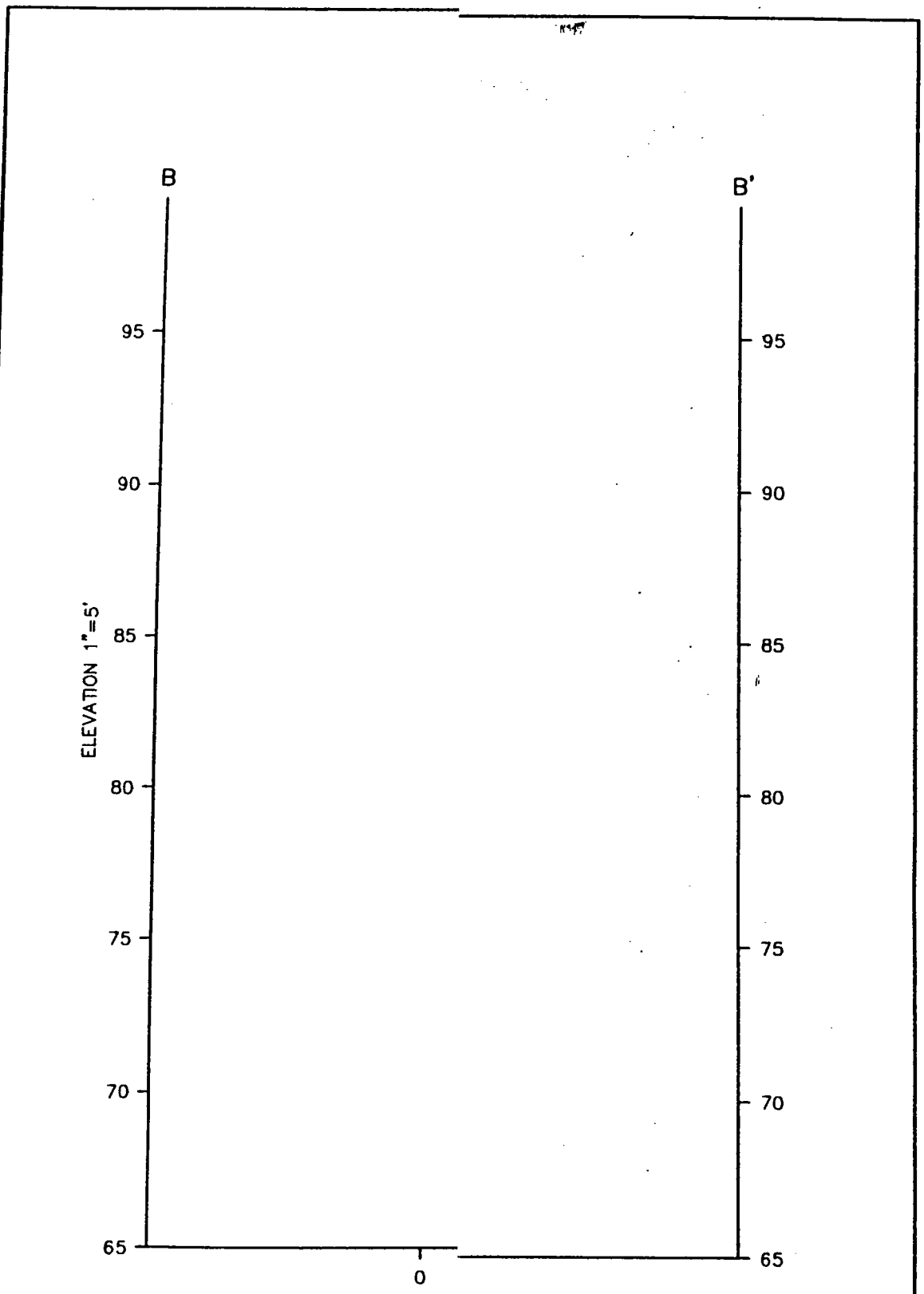


LEGEND

▽ STATIC WATER LEVEL

figure 4
CROSS SECTION A-A'
VACANT LOT-GM LENOX
Pontiac, Michigan

CRA



LEGEND

▽ STATIC WATER LEVEL

figure 5
CROSS SECTION B-B'
VACANT LOT-GM LENOX
Pontiac, Michigan

CRA

TABLES

TABLE 1

COMPARISON TABLE FOR SOIL VERIFICATION
VACANT LOT - GM LENOX
PONTIAC, MICHIGAN
FACILITY ID NO. 5-001946

Parameters	Method Detection Limit	Maximum Concentrations	Tier I Residential Direct Contact Criteria
<u>BTEX</u>			
Benzene	6	2,100	88,000
Toluene	6	1,000	250,000
Ethylbenzene	6	3,600	140,000
Total xylenes	25	11,092	150,000
<u>PNAs</u>			
Acenaphthene	1,100	1,600	76,000,000
Acenaphthylene	1,100	ND	1,500,000
Anthracene	1,100	ND	420,000,000
Benzo(a)anthracene	1,100	ND	14,000
Benzo(a)pyrene	1,100	ND	1,400
Benzo(b)fluoranthene	1,100	ND	14,000
Benzo(g,h,i)perylene	1,100	ND	1,500,000
Benzo(k)fluoranthene	1,100	ND	140,000
Chrysene	1,100	ND	1,400,000
Dibenzo(a,h)anthracene	1,100	ND	1,400
Fluoranthene	1,100	ND	51,000,000
Fluorene	1,100	ND	51,000,000
Indeno(1,2,3-c,d)pyrene	1,100	ND	14,000
Naphthalene	1,100	1,700	15,000,000
Phenanthrene	1,100	ND	1,500,000
Pyrene	1,100	ND	32,000,000
<u>Inorganics</u>			
Total Lead	110	9,420	400,000
<u>Others</u>			
1-Methylnaphthalene	1,200	2,800	--
2-Methylnaphthalene	1,200	13,000	15,000,000

Notes:

ND - Not detected above method detection limit.

All concentrations are µg/kg.

GROUNDWATER SUMMARY OF ANALYTICAL RESULTS
VACANT LOT - GM LENOX
PONTIAC, MICHIGAN
FACILITY ID NO. 5-001946

Sample ID	Sample Location	Screened Interval (feet below ground surface)	Date Sampled	Date Analyzed	Analytical Method	Units
	GW-11752-021298-SM-001	MW-2-98	10 - 15	2/12/98	2/17/98 - 2/19/98	See Notes µg/L
	GW-11752-021298-SM-002	MW-1-98	13 - 18	2/12/98	2/17/98 - 2/19/98	See Notes µg/L
	GW-11752-021298-SM-003	MW-3-98	10 - 15	2/12/98	2/17/98 - 2/19/98	See Notes µg/L
	GW-11752-031998-TJ-001	BH1-98	-	3/19/98	3/23/98	8260 µg/L
Parameter						
BTEX						
benzene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (500)
toluene	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	110
ethylbenzene	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	1,900
total xylenes	ND (3)	ND (3)	ND (3)	ND (3)	ND (3)	8,600
MTBE	NA	NA	NA	NA	NA	ND (5,000)
PAHs						
acenaphthene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	NA
acenaphthylene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	NA
anthracene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	NA
benzo(a)anthracene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	NA
benzo(a)pyrene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	NA
benzo(b)fluoranthene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	NA
benzo(g,h,i)perylene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	NA
benzo(k)fluoranthene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	NA
chrysene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	NA
dibenzo(a,h)anthracene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	NA
fluoranthene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	NA
fluorene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	NA
indeno(1,2,3-c,d)pyrene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	NA
naphthalene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	NA
phenanthrene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	NA
pyrene	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	NA

GROUNDWATER SUMMARY OF ANALYTICAL RESULTS

VACANT LOT - GM LENOX
PONTIAC, MICHIGAN
FACILITY ID NO. 5-001946

<i>Sample ID</i>	<i>Sample Location</i>	<i>Screened Interval (feet below ground surface)</i>	<i>Date Sampled</i>	<i>Date Analyzed</i>	<i>Analytical Method</i>	<i>Units</i>
GW-11752-021298-SM-001	MW-2-98	10 - 15	2/12/98	2/17/98 - 2/19/98	See Notes	µg/L
GW-11752-021298-SM-002	MW-1-98	13 - 18	2/12/98	2/17/98 - 2/19/98	See Notes	µg/L
GW-11752-031998-SM-003	MW-3-98	10 - 15	2/12/98	2/17/98 - 2/19/98	See Notes	µg/L
BH1-98	-	-	-	3/19/98	-	µg/L
GW-11752-031998-TJ1-001	-	-	-	3/23/98	-	µg/L
8260	-	-	-	-	-	µg/L
PCBs						
PCB - 1016	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	NA	NA
PCB - 1221	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	NA	NA
PCB - 1232	ND (0.40)	ND (0.40)	ND (0.40)	ND (0.40)	NA	NA
PCB - 1242	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	NA	NA
PCB - 1248	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	NA	NA
PCB - 1254	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	NA	NA
PCB - 1260	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	NA	NA
Inorganics						
cadmium	ND (0.50)	1.5	ND (0.50)	ND (0.50)	NA	NA
chromium	ND (50)	ND (50)	ND (50)	ND (50)	NA	NA
lead	ND (3.0)	ND (3.0)	ND (3.0)	ND (3.0)	NA	NA

Notes:

ND () - Not detected above concentration in parentheses.

NA - Not analyzed.

Analytical Methods: BTEX/MTBE 8260, PAHs 8270,

PCBs 8080, cadmium 6020, chromium 6010, lead 6020.

GROUNDWATER SUMMARY OF ANALYTICAL RESULTS
VACANT LOT - GM LENOX
PONTIAC, MICHIGAN
FACILITY ID NO. 5-001946

Sample ID	Sample Location	GW-11752-031998-TJ-002	GW-11752-031998-TJ-003	GW-11752-031998-TJ-004	GW-11752-031998-TJ-005
Screened Interval (feet below ground surface)		BH2-98	BH3-98	BH4-98	BH5-98
Date Sampled		3/19/98	3/19/98	3/19/98	3/19/98
Date Analyzed		3/24/98	3/23/98	3/23/98	3/23/98
Analytical Method		8260	8260	8260	8260
Units		µg/L	µg/L	µg/L	µg/L
Parameter					
<u>BTEX</u>					
benzene		190	ND (5.0)	ND (5.0)	ND (5.0)
toluene		ND (10)	ND (1.0)	ND (1.0)	ND (1.0)
ethylbenzene		72	ND (1.0)	ND (1.0)	ND (1.0)
total xylenes		50	ND (3.0)	ND (3.0)	ND (3.0)
MTBE		ND (500)	ND (50)	ND (50)	ND (50)
<u>PAHs</u>					
acenaphthene		NA	NA	NA	NA
acenaphthylene		NA	NA	NA	NA
anthracene		NA	NA	NA	NA
benzo(a)anthracene		NA	NA	NA	NA
benzo(a)pyrene		NA	NA	NA	NA
benzo(b)fluoranthene		NA	NA	NA	NA
benzo(g,h,i)perylene		NA	NA	NA	NA
benzo(k)fluoranthene		NA	NA	NA	NA
chrysene		NA	NA	NA	NA
dibenzo(a,h)anthracene		NA	NA	NA	NA
fluoranthene		NA	NA	NA	NA
fluorene		NA	NA	NA	NA
indeno(1,2,3-c,d)pyrene		NA	NA	NA	NA
naphthalene		NA	NA	NA	NA
phenanthrene		NA	NA	NA	NA
pyrene		NA	NA	NA	NA

LE 2

GROUNDWATER SUMMARY OF ANALYTICAL RESULTS
VACANT LOT - GM LENOX
PONTIAC, MICHIGAN
FACILITY ID NO. 5-001946

Sample ID	Sample Location	Screened Interval (feet below ground surface)	Date Sampled	Date Analyzed	Analytical Method	Units	GW-11752-031998-TJ-002	GW-11752-031998-TJ-003	GW-11752-031998-TJ-004	GW-11752-031998-TJ-005
							BH2-98	BH3-98	BH4-98	BH5-98
			3/19/98	3/19/98			3/19/98	3/19/98	3/19/98	3/19/98
			3/24/98	3/23/98			3/23/98	3/23/98	3/23/98	3/23/98
			8260	8260			8260	8260	8260	8260
			µg/L	µg/L			µg/L	µg/L	µg/L	µg/L
<u>Parameter</u>										
<u>PCBs</u>										
PCB - 1016			NA	NA			NA	NA	NA	NA
PCB - 1221			NA	NA			NA	NA	NA	NA
PCB - 1232			NA	NA			NA	NA	NA	NA
PCB - 1242			NA	NA			NA	NA	NA	NA
PCB - 1248			NA	NA			NA	NA	NA	NA
PCB - 1254			NA	NA			NA	NA	NA	NA
PCB - 1260			NA	NA			NA	NA	NA	NA
<u>Inorganics</u>										
cadmium			NA	NA			NA	NA	NA	NA
chromium			NA	NA			NA	NA	NA	NA
lead			NA	NA			NA	NA	NA	NA

Notes:

ND () - Not detected above concentration in parentheses
NA - Not analyzed.
Analytical Methods: BTEX/MTBE 8260, PAHs 8270,
PCBs 8080, cadmium 6020, chromium 6010, lead 6020.

GROUNDWATER SUMMARY OF ANALYTICAL RESULTS
VACANT LOT - GM LENOX
PONTIAC, MICHIGAN
FACILITY ID NO. 5-001946

Sample ID	Sample Location	Screened Interval (feet below ground surface)	Date Sampled	Date Analyzed	Analytical Method	Units	GW-11752-031998-TJ-006 BH6-98	GW-11752-031998-TJ-007 BH7-98	GW-11752-081898-EMF-008/009 MW6-98 (Duplicate)	GW-11752-081898-EMF-010 MW9-98
							--	--	11 - 16	12 - 17
			3/19/98	3/19/98			3/19/98	3/19/98	8/18/98	8/18/98
			3/23/98	3/23/98			3/23/98	3/23/98	8/19/98 - 8/20/98	8/19/98
			8260	8260			8260	8260	8260	8260
			µg/L	µg/L			µg/L	µg/L	µg/L	µg/L
<u>Parameter</u>										
<u>BTEX</u>										
benzene			ND (5.0)	ND (500)				ND (62)/ND (62)		ND (62)
toluene			ND (1.0)	ND (100)				ND (12)/13		ND (12)
ethylbenzene			ND (1.0)	1,700				570/310		330
total xylenes			ND (3.0)	2,800				750/210		280
MTBE			ND (50)	ND (5,000)				ND (620)/ND (620)		ND (620)
<u>PAHs</u>										
acenaphthene			NA	NA			NA	NA	NA	NA
acenaphthylene			NA	NA			NA	NA	NA	NA
anthracene			NA	NA			NA	NA	NA	NA
benzo(a)anthracene			NA	NA			NA	NA	NA	NA
benzo(a)pyrene			NA	NA			NA	NA	NA	NA
benzo(b)fluoranthene			NA	NA			NA	NA	NA	NA
benzo(g,h,i)perylene			NA	NA			NA	NA	NA	NA
benzo(k)fluoranthene			NA	NA			NA	NA	NA	NA
chrysene			NA	NA			NA	NA	NA	NA
dibenzo(a,h)anthracene			NA	NA			NA	NA	NA	NA
fluoranthene			NA	NA			NA	NA	NA	NA
fluorene			NA	NA			NA	NA	NA	NA
indeno(1,2,3-c,d)pyrene			NA	NA			NA	NA	NA	NA
naphthalene			NA	NA			NA	NA	NA	NA
phenanthrene			NA	NA			NA	NA	NA	NA
pyrene			NA	NA			NA	NA	NA	NA

GROUNDWATER SUMMARY OF ANALYTICAL RESULTS
VACANT LOT - GM LENOX
PONTIAC, MICHIGAN
FACILITY ID NO. 5-001946

Sample ID	Sample Location	Screened Interval (feet below ground surface)	Date Sampled	Date Analyzed	Analytical Method	Units	GW-11752-031998-TJ-006	GW-11752-031998-TJ-007	GW-11752-081898-EMF-008/009	GW-11752-081898-EMF-010
							BH6-98	BH7-98	MW6-98 (Duplicate)	MW9-98
							--	--	11 - 16	12 - 17
			3/19/98	3/19/98			3/19/98	3/19/98	8/18/98	8/18/98
			3/23/98	3/23/98			3/23/98	3/23/98	8/19/98 - 8/20/98	8/19/98
			8260	8260			8260	8260	8260	8260
			µg/L	µg/L			µg/L	µg/L	µg/L	µg/L
<u>Parameter</u>										
<u>PCBs</u>										
PCB - 1016			NA	NA			NA	NA	NA	NA
PCB - 1221			NA	NA			NA	NA	NA	NA
PCB - 1232			NA	NA			NA	NA	NA	NA
PCB - 1242			NA	NA			NA	NA	NA	NA
PCB - 1248			NA	NA			NA	NA	NA	NA
PCB - 1254			NA	NA			NA	NA	NA	NA
PCB - 1260			NA	NA			NA	NA	NA	NA
<u>Inorganics</u>										
cadmium			NA	NA			NA	NA	NA	NA
chromium			NA	NA			NA	NA	NA	NA
lead			NA	NA			NA	NA	NA	NA

Notes:

ND () - Not detected above concentration in parentheses

NA - Not analyzed.

Analytical Methods: BTEX/MTBE 8260, PAHs 8270,
PCBs 8080, cadmium 6020, chromium 6010, lead 6020.

LE 2

GROUNDWATER SUMMARY OF ANALYTICAL RESULTS
VACANT LOT - GM LENOX
PONTIAC, MICHIGAN
FACILITY ID NO. 5-001946

Sample ID	Sample Location	Screened Interval (feet below ground surface)	Date Sampled	Date Analyzed	Analytical Method	Units	GW-11752-081898-EMF-011	GW-11752-081898-EMF-012	GW-11752-081898-EMF-013
							MW8-98	MW7-98	MW5-98
			11 - 16	12 - 17			11 - 16	11 - 16	11 - 16
			8/18/98	8/18/98			8/18/98	8/18/98	8/18/98
			8/19/98	8/19/98			8/19/98	8/19/98	8/19/98
			8260	8260			8260	8260	8260
			µg/L	µg/L			µg/L	µg/L	µg/L
Parameter									
BTEX									
benzene			ND (5)	ND (5)			ND (5)	ND (500)	
toluene			ND (1.0)	ND (1.0)			ND (1.0)	ND (100)	
ethylbenzene			ND (1.0)	1.1			1.1	1,300	
total xylenes			ND (3.0)	ND (3.0)			ND (3.0)	4,900	
MTBE									
MTBE			ND (50)	ND (50)			ND (50)	ND (5,000)	
PAHs									
acenaphthene			NA	NA			NA	NA	NA
acenaphthylene			NA	NA			NA	NA	NA
anthracene			NA	NA			NA	NA	NA
benzo(a)anthracene			NA	NA			NA	NA	NA
benzo(a)pyrene			NA	NA			NA	NA	NA
benzo(b)fluoranthene			NA	NA			NA	NA	NA
benzo(g,h,i)perylene			NA	NA			NA	NA	NA
benzo(k)fluoranthene			NA	NA			NA	NA	NA
chrysene			NA	NA			NA	NA	NA
dibenzo(a,h)anthracene			NA	NA			NA	NA	NA
fluoranthene			NA	NA			NA	NA	NA
fluorene			NA	NA			NA	NA	NA
indeno(1,2,3-c,d)pyrene			NA	NA			NA	NA	NA
naphthalene			NA	NA			NA	NA	NA
phenanthrene			NA	NA			NA	NA	NA
pyrene			NA	NA			NA	NA	NA

GROUNDWATER SUMMARY OF ANALYTICAL RESULTS
VACANT LOT - GM LENOX
PONTIAC, MICHIGAN
FACILITY ID NO. 5-001946

Sample ID	Sample Location	Screened Interval (feet below ground surface)	Date Sampled	Date Analyzed	Analytical Method	Units	GW-11752-081898-EMF-011	GW-11752-081898-EMF-012	GW-11752-081898-EMF-013
							MW8-98	MW7-98	MW5-98
							11 - 16	12 - 17	11 - 16
							8/18/98	8/18/98	8/18/98
							8/19/98	8/19/98	8/19/98
							8260	8260	8260
							µg/L	µg/L	µg/L
Parameter									
PCBs									
PCB - 1016							NA	NA	NA
PCB - 1221							NA	NA	NA
PCB - 1232							NA	NA	NA
PCB - 1242							NA	NA	NA
PCB - 1248							NA	NA	NA
PCB - 1254							NA	NA	NA
PCB - 1260							NA	NA	NA
Inorganics									
cadmium							NA	NA	NA
chromium							NA	NA	NA
lead							NA	NA	NA

Notes:

ND () - Not detected above concentration in parentheses
NA - Not analyzed.

Analytical Methods: BTEX/MTBE 8260, PAHs 8270,
PCBs 8080, cadmium 6020, chromium 6010, lead 6020.

TABLE 3

COMPARISON TABLE FOR GROUNDWATER VERIFICATION
VACANT LOT - GM LENOX
PONTIAC, MICHIGAN
FACILITY ID NO. 5-001946

<i>Parameters</i>	<i>Method Detection Limit</i>	<i>Maximum Concentrations</i>	<i>Tier I Residential Groundwater Contact Criteria</i>
<u>BTEX</u>			
Benzene	5	2,500	9,200
Toluene	1	330	530,000
Ethylbenzene	1	1,900	170,000
Total xylenes	3	8,600	190,000
MTBE	5,000	ND	580,000
<u>PNAs</u>			
Acenaphthene	5	ND	4,200
Acenaphthylene	5	ND	ID
Anthracene	5	ND	43
Benzo(a)anthracene	5	ND	5
Benzo(a)pyrene	5	ND	5
Benzo(b)fluoranthene	5	ND	5
Benzo(g,h,i)perylene	5	ND	ID
Benzo(k)fluoranthene	5	ND	20
Chrysene	5	ND	5
Dibenzo(a,h)anthracene	5	ND	5
Fluoranthene	5	ND	210
Fluorene	5	ND	2,000
Indeno(1,2,3-cd)pyrene	5	ND	5
Naphthalene	5	120	31,000
Phenanthrene	5	ND	1,000
Pyrene	5	ND	140
<u>PCBs</u>			
PCB-1016	0.20	ND	2.4 (1)
PCB-1221	0.20	ND	2.4 (1)
PCB-1232	0.40	ND	2.4 (1)
PCB-1242	0.20	ND	2.4 (1)
PCB-1248	0.20	ND	2.4 (1)
PCB-1254	0.20	ND	2.4 (1)
PCB-1260	0.20	ND	2.4 (1)
<u>Inorganics</u>			
Cadmium	0.50	1.5	110,000
Chromium	50	ND	1,000,000
Lead	3.0	ND	ID

Notes:

(1) - Value is for total PCBs.

ND - Not detected above method detection limit.

ID - Insufficient data.

All concentrations are µg/L.

APPENDIX A
STRATIGRAPHIC LOGS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-02)
Page 1 of 1

PROJECT NAME: GM PONTIAC LENOX SITE

PROJECT NUMBER: 11752

CLIENT: GM

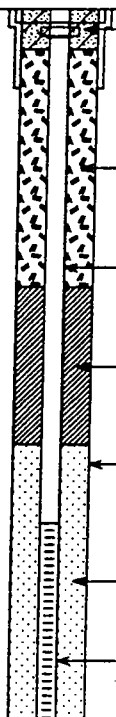
LOCATION: PONTIAC, MICHIGAN

HOLE DESIGNATION: MW1A-98

DATE COMPLETED: FEBRUARY 9, 1998

DRILLING METHOD: 4 1/2" HSA

CRA SUPERVISOR: T. JOHNSON

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE REFERENCE POINT (Top of Riser)	95.9 95.64					
-2.5	CL-CLAY, some sand and silt, trace subrounded gravel, fine to medium grained, low plasticity, poorly graded, orange-brown, moist		 CONCRETE SOIL CUTTINGS 2"Ø PVC CASING BENTONITE CHIPS 8"Ø BOREHOLE SANDPACK 2"Ø PVC SCREEN				
-5.0							
-7.5							
-10.0							
-12.5	CL-CLAY, little silt, trace fine grained sand and subrounded gravel, very stiff, low plasticity, poorly graded, gray-brown, moist, slightly mottled and oxidized	85.9		1SS	X	20	--
-15.0	SW-SAND (TILL), little silt, trace subrounded gravel, medium dense, medium to coarse grained, well graded, olive, wet	81.9		2SS	X	19	--
-17.5	CL-CLAY (NATIVE), little silt, trace subrounded gravel, stiff, medium plasticity, poorly graded, gray, moist, slight petroleum like odor	80.3		3SS	X	16	--
-20.0	END OF HOLE @ 18.0ft BGS	77.9		4SS	X	10	--
-22.5							
-25.0							
-27.5							
-30.0							
2.5							

SCREEN DETAILS
 Screened interval:
 13.0 to 18.0ft BGS
 Length: 5.0ft
 Diameter: 2"
 Slot Size: #10
 Material: PVC
 Sand Pack:
 11.0 to 18.0ft BGS
 Material: Sand

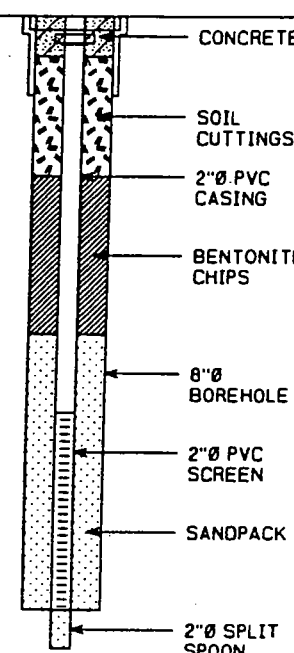
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
 WATER FOUND ☒ STATIC WATER LEVEL ☒

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-03)
Page 1 of 1

PROJECT NAME: GM PONTIAC LENOX SITE
PROJECT NUMBER: 11752
CLIENT: GM
LOCATION: PONTIAC, MICHIGAN

HOLE DESIGNATION: MW2-98
DATE COMPLETED: FEBRUARY 9, 1998
DRILLING METHOD: 4" HSA
CRA SUPERVISOR: T. JOHNSON

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	N' VALUE	PID (ppm)
	GROUND SURFACE REFERENCE POINT (Top of Riser)	94.5 94.27					
-2.5	PL-SAND AND VEGETATIVE MATERIAL, trace silt, medium dense, medium grained, poorly graded, dark brown, moist to wet, sod	94.2		1SS	X	13	--
	SC-SAND (FILL), some clay, trace silt and subrounded gravel, loose, medium grained, poorly graded, orange-brown, moist			2SS	X	9	--
-5.0	CL-CLAY, little silt, trace medium grained sand and subrounded gravel, very stiff, low plasticity, poorly graded, brown-gray, moist, slightly mottled	90.5		3SS	X	27	--
-7.5				4SS	X	19	--
-10.0	- hard			5SS	X	28	--
				6SS	X	37	--
-12.5	SW-SAND (TILL), little silt, trace subrounded gravel, medium dense, fine to coarse grained, well graded, gray, wet	82.5		7SS	X	18	--
-15.0	CL-CLAY (NATIVE), little silt, trace subrounded gravel, stiff, medium plasticity, poorly graded, gray, moist	80.9		8SS	X	11	--
-17.5	END OF HOLE @ 16.0ft BGS	78.5					
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

SCREEN DETAILS
Screened interval:
10.0 to 15.0ft BGS
Length: 5.0ft
Diameter: 2"
Slot Size: #10
Material: PVC
Sand Pack:
8.0 to 16.0ft BGS
Material: Sand

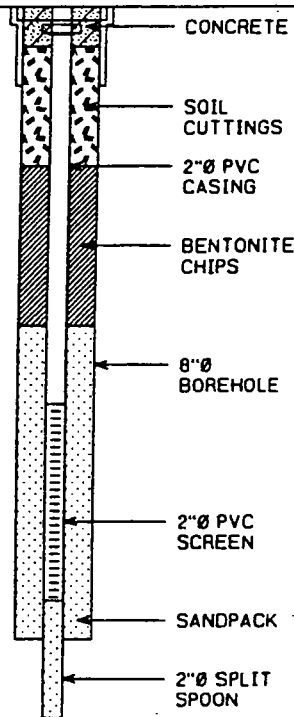
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ? STATIC WATER LEVEL ? ()

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-04)
Page 1 of 1

PROJECT NAME: GM PONTIAC LENOX SITE
PROJECT NUMBER: 11752
CLIENT: GM
LOCATION: PONTIAC, MICHIGAN

HOLE DESIGNATION: MW3-98
DATE COMPLETED: FEBRUARY 9, 1998
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: T. JOHNSON

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE REFERENCE POINT (Top of Riser)	95.3 95.07					
	PI-SAND AND VEGETATIVE MATERIAL, trace silt, medium dense, medium grained, poorly graded, dark brown, moist to wet, sod	94.9		1SS	X	12	--
-2.5	SC-SAND (FILL), some clay, trace silt and subrounded gravel, medium dense, medium grained, poorly graded, orange-brown, moist	93.3		2SS	X	12	--
-5.0	CL-CLAY (FILL), little silt and medium grained sand, trace subrounded gravel, stiff, low plasticity, poorly graded, light brown, moist			3SS	X	20	--
-7.5	CL-CLAY, little silt, trace fine grained sand and subrounded gravel, very stiff, low plasticity, gray-brown, moist, slightly mottled	89.3		4SS	X	25	--
-10.0	- stiff, slight petroleum-like odor			5SS	X	27	--
				6SS	X	14	--
-12.5	SW-SAND (TILL), little silt, trace subrounded gravel, loose, fine to coarse grained, well graded, dark gray, wet, moderate petroleum like odor	83.7 81.7		7SS	X	7	--
-15.0	CL-CLAY (NATIVE), little silt, trace subrounded gravel, stiff, medium plasticity, poorly graded, gray, moist, faint petroleum like odor			8SS	X	14	--
-17.5				9SS	X	13	--
	END OF HOLE @ 18.0ft BGS	77.3					
-20.0			SCREEN DETAILS Screened interval: 10.0 to 15.0ft BGS Length: 5.0ft Diameter: 2" Slot Size: #10 Material: PVC Sand Pack: 8.0 to 18.0ft BGS Material: Sand				
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

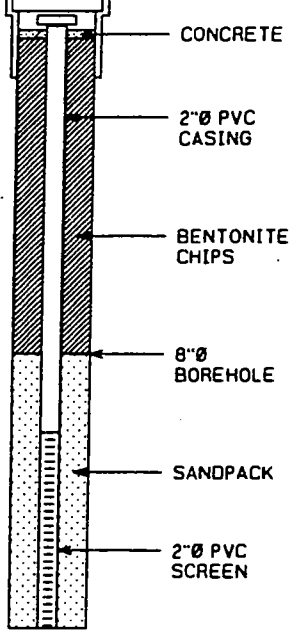
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ? STATIC WATER LEVEL ? ()

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-05)
Page 1 of 1

PROJECT NAME: GM PONTIAC LENOX SITE
PROJECT NUMBER: 11752
CLIENT: GM
LOCATION: PONTIAC, MICHIGAN

HOLE DESIGNATION: MW4-98
DATE COMPLETED: AUGUST 14, 1998
DRILLING METHOD: 4X" HSA/DIRECT PUSH
CRA SUPERVISOR: S. McVAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	GRASS, HAIR-LIKE ROOTS	-2					
-2.5	SW-SAND, trace clay and gravel, fine to medium grained, well graded, yellowish-brown, moist - some clay		 CONCRETE 2"Ø PVC CASING BENTONITE CHIPS 8"Ø BOREHOLE SANDPACK 2"Ø PVC SCREEN	1SS			0.3
-5.0				2SS			3.2
-7.5				3SS			4.4
-10.0	CL-CLAY, trace gravel, stiff, low plasticity, yellowish-orange, moist - little silt, very stiff, dark gray	-6.3		4SS			3.2
-12.5	SW-SAND, little silt and clay, trace gravel, fine to medium grained, yellowish-orange, moist	-11.2		5SS			2.3
-15.0	CL-CLAY, little sand, trace gravel, medium plasticity, dark gray, moist to wet	-12.3		6SS			3.4
-17.5				7SS			4.2
-20.0				8SS			3.0
-22.5	END OF HOLE @ 16.0ft BGS	-16.0					
-25.0							
-27.5							
-30.0							
-32.5							

SCREEN DETAILS
Screened interval:
11.0 to 16.0ft BGS
Length: 5.0ft
Diameter: 2"
Slot Size: #10
Material: PVC
Sand Pack:
8.0 to 16.0ft BGS
Material: Sand

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ? STATIC WATER LEVEL ?

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-07)
Page 1 of 1

PROJECT NAME: GM PONTIAC LENOX SITE
PROJECT NUMBER: 11752
CLIENT: GM
LOCATION: PONTIAC, MICHIGAN

HOLE DESIGNATION: MW5-98
DATE COMPLETED: AUGUST 14, 1998
DRILLING METHOD: 4X" HSA/DIRECT PUSH
CRA SUPERVISOR: S. McVAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE REFERENCE POINT (Top of Riser)	92.8 92.32					
	GRASS, HAIR-LIKE ROOTS	92.4					
-2.5	SW-SAND, little clay, trace gravel, fine to medium grained, well graded, light brown to dark brown, moist - some clay, light gray to yellowish-orange		CONCRETE	1SS			0.0
-5.0			2"Ø PVC CASING	2SS			0.1
-7.5	CL-CLAY, some sand, trace gravel and silt, medium plasticity, yellowish-orange with light gray seams, moist - trace sand, dense, low plasticity, brown with orange streaks	87.4	BENTONITE CHIPS	3SS			3.7
-10.0	- encounter concrete 2" recovery		8"Ø BOREHOLE	4SS			1.5
-12.5				5SS			4.2
-15.0	SW-SAND, little gravel, trace silt, fine to coarse grained, well graded, light gray, wet - black, strong gasoline-like odor	79.1	SANDPACK	6SS			--
-17.5	CL-CLAY, some silt, trace sand and gravel, low plasticity, stiff, light gray to dark gray, wet to moist	77.3	2"Ø PVC SCREEN	7SS			15.8
-20.0	END OF HOLE @ 17.0ft BGS	75.6	2"Ø SPLIT SPOON	8SS			>1000
-22.5							0.3
-25.0							
-27.5							
-30.0							
-32.5							

SCREEN DETAILS
Screened interval:
11.0 to 16.0ft BGS
Length: 5.0ft
Diameter: 2"
Slot Size: #10
Material: PVC
Sand Pack:
9.0 to 17.0ft BGS
Material: Sand

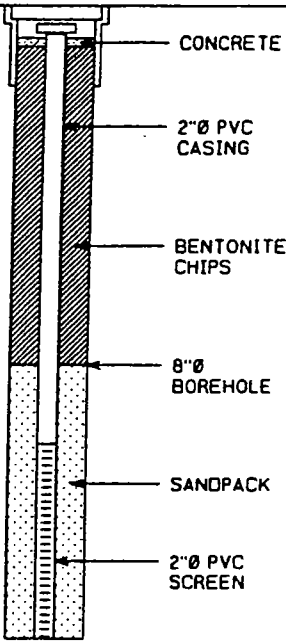
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ? STATIC WATER LEVEL ?

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-08)
Page 1 of 1

PROJECT NAME: GM PONTIAC LENOX SITE
PROJECT NUMBER: 11752
CLIENT: GM
LOCATION: PONTIAC, MICHIGAN

HOLE DESIGNATION: MW6-98
DATE COMPLETED: AUGUST 13, 1998
DRILLING METHOD: 4" HSA
CRA SUPERVISOR: M. DOWNING

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE REFERENCE POINT (Top of Riser)	94.0 93.73					
	TOPSOIL & VEGETATIVE-LIKE MATERIAL	93.5		1SS	X	13	0.0
-2.5	SM-SAND (FILL), trace gravel and silt, medium dense, fine grained, poorly graded, yellowish-orange, moist			2SS	X	14	0.0
-5.0	SC-SAND (NATIVE), some silt, little clay, trace gravel, medium dense, very fine grained, poorly graded, yellowish-orange, moist	90.0		3SS	X	24	0.0
-7.5				4SS	X	19	0.0
-10.0	CL-CLAY (NATIVE) some silt, trace silt and sub rounded gravel, very stiff, low plasticity, light brown, moist	86.0		5SS	X	22	0.0
-12.5				6SS	X	30	0.0
-15.0	SP-SAND (NATIVE), little gravel, trace silt, medium dense, fine grained, olive gray, wet	80.5 80.0		7SS	X	16	64.8
-17.5	CL-CLAY (NATIVE), little sand and silt, trace gravel, stiff, low plasticity, light gray, moist	78.0		8SS	X	12	0.0
-20.0	END OF HOLE @ 16.0ft BGS						
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

SCREEN DETAILS
Screened interval:
11.0 to 16.0ft BGS
Length: 5.0ft
Diameter: 2"
Slot Size: #10
Material: PVC
Sand Pack:
9.0 to 16.0ft BGS
Material: Sand

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☐ ()

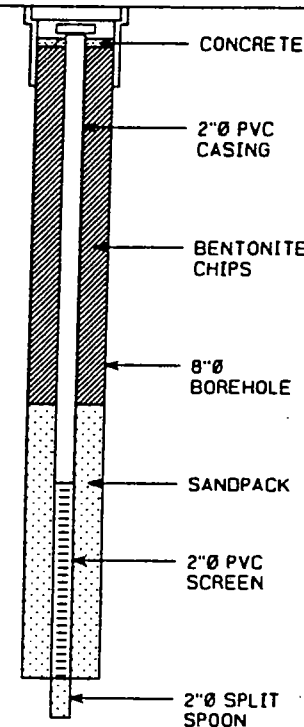
STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-09)
Page 1 of 1

PROJECT NAME: GM PONTIAC LENOX SITE
PROJECT NUMBER: 11752
CLIENT: GM
LOCATION: PONTIAC, MICHIGAN

HOLE DESIGNATION: MW7-98
DATE COMPLETED: AUGUST 13, 1998
DRILLING METHOD: 4X" HSA/DIRECT PUSH
CRA SUPERVISOR: M. DOWNING

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE REFERENCE POINT (Top of Riser)	92.9 92.63					
	TOPSOIL & VEGETATIVE-LIKE MATERIAL	92.4					
-2.5	SM-SAND (FILL), some silt, trace gravel, medium dense, fine grained, poorly graded, yellowish-orange, moist	90.9					
-5.0	ML-SILT (NATIVE), some clay, little fine grained sand, trace subrounded gravel, medium dense, light brown, moist						
-7.5							
-10.0	CL-CLAY (NATIVE), trace sand and subrounded gravel, very stiff, low plasticity, olive-gray, moist - little silt	83.9					
-12.5							
-15.0	SW-SAND (NATIVE), trace gravel and silt, fine grained, well graded, light brown, moist - wet	79.4					
-17.5	CL-CLAY (NATIVE), some silt trace sand and gravel, low plasticity, dark gray, moist	76.9					
-20.0	END OF HOLE @ 18.0ft BGS	74.9					
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							



SCREEN DETAILS
Screened interval:
12.0 to 17.0ft BGS
Length: 5.0ft
Diameter: 2"
Slot Size: #10
Material: PVC
Sand Pack:
10.0 to 18.0ft BGS
Material: Sand

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇ STATIC WATER LEVEL ∇ ()

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-10)
Page 1 of 1

PROJECT NAME: GM PONTIAC LENOX SITE
PROJECT NUMBER: 11752
CLIENT: GM
LOCATION: PONTIAC, MICHIGAN

HOLE DESIGNATION: MW8-98
DATE COMPLETED: AUGUST 13, 1998
DRILLING METHOD: 4X" HSA/DIRECT PUSH
CRA SUPERVISOR: M. DOWNING

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	N' VALUE	PID (ppm)
	GROUND SURFACE REFERENCE POINT (Top of Riser)	91.7 91.49					
	CONCRETE		CONCRETE				
-2.5	ML/CL-SILT AND CLAY (NATIVE), little sand, trace gravel, light brown and gray mix, moist	89.7	2"Ø PVC CASING	1SS			113.1
-5.0				2SS			91.2
-7.5	ML-SILT (NATIVE), little clay, trace subrounded gravel, light brown and dark gray mix, moist	85.7	BENTONITE CHIPS	3SS			4.2
-10.0	SP-SAND (NATIVE), poorly graded, fine grained, black, gold, brown grains, moist, 1-2" seams	83.2	8"Ø BOREHOLE	4SS			0.0
	CL-CLAY (NATIVE), some silt, trace sand and subrounded gravel, low plasticity, dark gray, moist	81.7		5SS			0.0
-12.5			SANDPACK	6SS			5.2
-15.0	SP-SAND (NATIVE), trace silt and gravel, fine grained, poorly graded, light brown, wet	78.7	2"Ø PVC SCREEN	7SS			4.9
-17.5			NATURAL CAVE IN	8SS			0.0
-20.0	CL-CLAY (NATIVE), some silt, little sand, trace gravel, low plasticity, dark gray, moist	73.7	2"Ø SPLIT SPOON	9SS			0.0
	END OF HOLE @ 20.0ft BGS	71.7					
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

SCREEN DETAILS
Screened interval:
11.0 to 16.0ft BGS
Length: 5.0ft
Diameter: 2"
Slot Size: #10
Material: PVC
Sand Pack:
9.0 to 16.0ft BGS
Material: Sand

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇ STATIC WATER LEVEL ∇ ()

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-11)
Page 1 of 1

PROJECT NAME: GM PONTIAC LENOX SITE
PROJECT NUMBER: 11752
CLIENT: GM
LOCATION: PONTIAC, MICHIGAN

HOLE DESIGNATION: MW9-98
DATE COMPLETED: AUGUST 13, 1998
DRILLING METHOD: 4 1/2" HSA/DIRECT PUSH
CRA SUPERVISOR: M. DOWNING

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE REFERENCE POINT (Top of Riser)	92.2 91.96					
	ASPHALT	92.0					
-2.5	SP-SAND (FILL), trace silt and gravel, fine grained, poorly graded, yellowish-orange, moist		CONCRETE	1SS	X		0.0
			2"Ø PVC CASING	2SS	X		0.0
-5.0	ML-SILT (NATIVE), little sand and clay, trace gravel, light brown, moist	88.4		3SS	X		4.8
		86.7	BENTONITE CHIPS	4SS	X		6.8
-7.5	CL-CLAY (NATIVE), some silt, trace sand and gravel, low plasticity, light brown, moist - peat seam	84.7		5SS	X		1.1
		82.7	8"Ø BOREHOLE	6SS	X		0.9
-10.0	CL-CLAY (NATIVE), some silt, trace sand and gravel, low plasticity, light brown and dark gray mix, moist - dark gray		SANDPACK	7SS	X		9.5
-12.5			2"Ø PVC SCREEN	8SS	X		2.1
-15.0	SW-SAND (NATIVE), trace silt and gravel, fine grained, well graded, olive-gray, wet	78.2		9SS	X		NA
-17.5		74.2	2"Ø SPLIT SPOON	10SS	X		0.0
-20.0	CL-CLAY (NATIVE), some silt, trace sand and gravel, low plasticity, dark gray, moist						
	END OF HOLE @ 20.0ft BGS	72.2					
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

SCREEN DETAILS
Screened interval:
12.0 to 17.0ft BGS
Length: 5.0ft
Diameter: 2"
Slot Size: #10
Material: PVC
Sand Pack:
10.0 to 20.0ft BGS
Material: Sand

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☐ ()

APPENDIX B

SUMMARY OF ADDITIONAL GROUNDWATER INVESTIGATIONS

SUMMARY OF ADDITIONAL GROUNDWATER INVESTIGATIONS

CRA has completed additional groundwater investigative activities at the Site subsequent to the submittal of the Parsons FAR. The additional activities are discussed below.

A. FEBRUARY 1998 WELL INSTALLATION ACTIVITIES

In February 1998, three monitoring wells (MW1-98, MW2-98, and MW3-98) were installed at the Site, under the direction of CRA. The monitoring wells were developed/purged and sampled. Groundwater samples were collected from each of the wells and analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX); polyaromatic hydrocarbons (PAHs); polychlorinated biphenyls (PCBs); and cadmium, chromium, and lead. The results were reported to MDEQ-STD on February 25, 1998, and are also included in Table 2 of the Closure Report.

B. MARCH 1998 SAMPLING ACTIVITIES

In March 1998, seven soil borings (BH1-98 through BH7-98) were installed at the Site, under the direction of CRA, using the direct-push method (i.e. Geoprobe ®). Temporary monitoring wells were then installed in each of the borehole locations. Groundwater samples were collected from each of the temporary wells and analyzed for BTEX and methyl-tert-butyl ether (MTBE), which were identified in the previous sampling round as the parameters of concern. The results were reported to MDEQ-STD on March 31, 1998, and are also included in Table 2 of the Closure Report.

C. AUGUST 1998 ACTIVITIES

C.1 MONITORING WELL INSTALLATION

In August 1998, six additional monitoring wells (MW4-98 through MW9-98) were installed at the Site, under the direction of CRA. The monitoring wells were developed/purged and sampled. Groundwater samples were collected from each of the additional wells (except MW4-98, where no water was present) and analyzed for BTEX and MTBE. The results are included in Table 2 of the Closure Report.

C.2 PUMPING TESTS

CRA also conducted bail-down and pumping tests in August 1998 to re-evaluate the hydrogeologic conditions of the Site (e.g., yield and hydraulic conductivity). These tests were conducted on the existing and newly installed monitoring wells. The results of the tests indicate that the potable groundwater pathway may be eliminated. Documentation to support this determination is provided below:

- The average saturated thickness measured in Site monitoring wells is 2.3 feet. Also, the well yield in Site monitoring wells based on aquifer pump tests is considerably less than 0.1 gallons/minute (0.05 – 0.07 gallons/minute);
- A continuous confining layer exists across the entire Site, and the saturated zone is not in lateral or vertical communications with a lower adjacent aquifer (see Appendix A and Figures 4 and 5);
- Water well records obtained from the local health department confirmed that no “crock wells” for private potable water supplies exist within 500 feet of the Site;
- MDEQ – Drinking Water and Radiological Protection Division confirmed that the Site is not located in an approved local wellhead protection area;
- No surface water bodies are located within the vicinity of the Site;
- Local geology supports the determination of “groundwater not in an aquifer”;
- Figure 2 presents a map of paved areas near the Site;
- Figure 2 presents a map of all buried utility corridors;
- Groundwater elevations at the Site can be reasonably predicted, and support a groundwater flow direction to the southeast;
- Figures 4 and 5 present the thickness of the saturated zone across the Site;
- No other subsurface drainage structures or unusual characteristics exist; and
- Monitoring wells were properly constructed and developed in accordance with standard operating practices.

Appendix AB

Summary Report

Underground Storage Tank Removal

General Motors
Service Parts Operations
Pontiac, Michigan

General Motors
Service Parts Operations
6060 W Bristol Rd
Flint, Michigan

February 1991



O'BRIEN & GERE

SUMMARY REPORT

**UNDERGROUND STORAGE TANK REMOVAL
PONTIAC, MICHIGAN**

**General Motors Service Parts Operations
Flint, Michigan**

February, 1991

Prepared by:

**O'Brien & Gere Engineers, Inc.
39500 Orchard Hill Place, Suite 300
Novi, Michigan 48375**

TABLE OF CONTENTS

	<u>Page</u>
SECTION 1 - INTRODUCTION	1
1.01 Underground Storage Tank Removal	1
1.02 Tank Removal Specifications	1
SECTION 2 - SUMMARY OF TANK REMOVAL	2
2.01 General	2
2.02 Removal Procedure	2
2.03 Environmental Monitoring	3
SECTION 3 - SUMMARY	4
3.01 General	4
TABLES	
1 Analytical Results	
FIGURES	
1 Site Location Map	
2 Site Plan	
3 Sample Locations	
APPENDICES	
A Tank Removal Specifications	
B Tank Contents Disposal Documentation	
C Tank Disposal Documentation	
D Soil Disposal Documentation	
E Analytical Results	
F Photographic Log	

SECTION 1 - INTRODUCTION

1.01 Underground Storage Tank Removal

General Motors Service Parts Operations (GMSPO) retained OBG Technical Services, Inc. (OBG Tech) and O'Brien & Gere Engineers, Inc. (O'Brien & Gere) in October, 1989 to provide turn-key services relative to the removal of underground storage tanks (USTs) at ten GM SPO facilities.

On August 21, 1990, a 10,000 gallon gasoline tank and associated piping were removed at the Pontiac, Michigan facility located at 1251 Joslyn Road, Pontiac, Oakland County, Michigan (see Figure 1).

The removal work was conducted in accordance with United States Environmental Protection Agency (USEPA) and Michigan Department of Natural Resources (MDNR) environmental regulations and applicable state and local fire codes for underground systems.

1.02 Tank Removal Specifications

To remove the tanks in a cost effective and environmentally sound manner, specifications were prepared by O'Brien & Gere in accordance with National Fire Protection Association (NFPA), federal, state, and local UST regulations. A copy of these specifications is included in Appendix A.

SECTION 2 - SUMMARY OF TANK REMOVAL

2.01 General

Removal of the 10,000 gallon UST was performed by OBG Tech with subcontracting services provided by Great Lakes Environmental Services (GLE) of Warren, Michigan. The tank removed was installed in 1966 and used for the storage of unleaded gasoline.

Mr. Rick Adomat of GM SPO was the facility representative coordinating the UST removals at the GM SPO Pontiac facility (see Figure 2).

For the purposes of this report, the term "impacted" shall describe soil or water which appeared stained, exhibited a petroleum odor or sheen, or produced a reading above background on a photoionization detector (PID).

2.02 Removal Procedure

Prior to initiating removal activities, approximately 10,000 gallons of water was removed from the tank. Prior to removal, the inside of the tank was power washed with a solution of water and "Citrikleen" detergent. The solution was pumped out of the tank and the tank was swabbed with cloth wipes. The water and the cleaning solution were disposed of at Environmental Waste Control in Inkster, Michigan (see Appendix B).

Soil was removed from above and beside the tank. The soil beside the tank exhibited evidence of impact. There was stained and odorous soil observed near the transfer and fill piping associated with the tank. The amount of product released is unknown. The tank was removed from the excavation and inspected by O'Brien & Gere for evidence of leakage. The tank was slightly corroded, but no holes or cracks were discovered.

The contractor thoroughly cleaned the inside of the tank, purged vapors, and cut a hole in the end of it to render it unusable. It was then loaded on a truck and hauled to Sam Allen & Sons, Inc. of Pontiac, Michigan to be disposed of as scrap metal. See Appendix C for disposal documentation.

A total of 40 cubic yards of impacted soil was removed, stockpiled on and covered with plastic sheeting pending disposal. The soil was characterized at an analytical laboratory as contaminated but non-hazardous and was disposed of as a non-hazardous special waste at the BFI Lyon Development landfill in New Hudson, Michigan on October 31, 1990 (see Appendix D). Field

screening by sensory and photoionization methods did not indicate the presence of impacted soil to be remaining in the excavation.

2.03 Environmental Monitoring

O'Brien & Gere collected two soil samples from the gasoline UST excavation (see Figure 3). The samples were collected using nitrile gloves, placed in appropriate glass containers, capped with teflon lined lids, placed on ice, and hand delivered to Environmental Quality Laboratories, Inc. (EQL) of Sterling Heights, Michigan. EQL analyzed the samples for the presence of benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8020. The results of these analyses, which indicate that adsorbed concentrations of xylenes are still present in the soil at the site, have been summarized in Table 1. The laboratory reports can be referenced in Appendix E.

SECTION 3 - SUMMARY

3.01 General

A 10,000 gallon gasoline UST was removed from the GM SPO facility in Pontiac, Michigan on August 21, 1990 by OBG Technical Services in accordance with technical specifications prepared by O'Brien & Gere Engineers.

During removal activities a UST release was confirmed by the presence of stained and odorous soil. The impacted soil was excavated until field screening with a photoionization detector produced negative results. Environmental monitoring samples were obtained and analyzed. The analyses indicate that xylene remains in the subsurface soil. Based on these results, it is required by the MDNR that a site investigation be performed to assess the vertical and horizontal extent of impacted soil and potential impact to ground water.

Tables



O'BRIEN & GERE

TABLE 1
GENERAL MOTORS SERVICE PARTS OPERATIONS
PONTIAC, MICHIGAN
Analytical Results

Parameter	1 (west)	2 (east)
Benzene	< 10	< 10
Ethylbenzene	< 10	< 10
Toluene	< 10	< 10
Xylenes	50	95

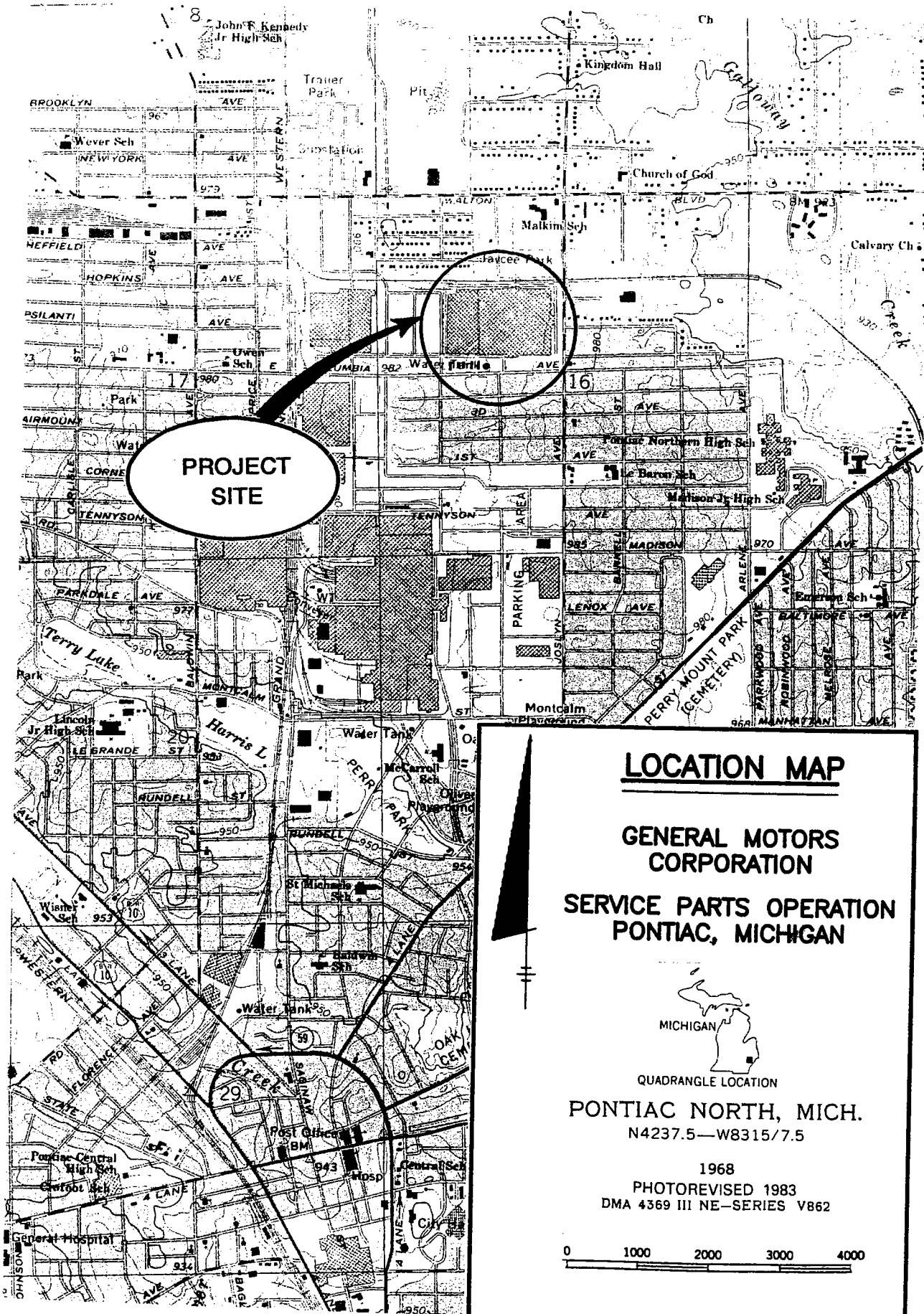
Notes:

- 1) Samples were collected August 12, 1990.
- 2) Samples were analyzed using EPA Method 8020.
- 3) Concentrations shown are parts per billion (ppb).
- 4) "<" denotes less than the detection limit of the test.
- 5) Laboratory reports can be referenced in appendix E.

Figures



O'BRIEN & GERE



LOCATION MAP

GENERAL MOTORS
CORPORATION

SERVICE PARTS OPERATION
PONTIAC, MICHIGAN

MICHIGAN

QUADRANGLE LOCATION

PONTIAC NORTH, MICH.

N4237.5—W8315/7.5

1968

PHOTOREVISED 1983

DMA 4369 III NE—SERIES V862

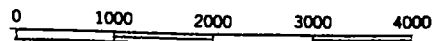
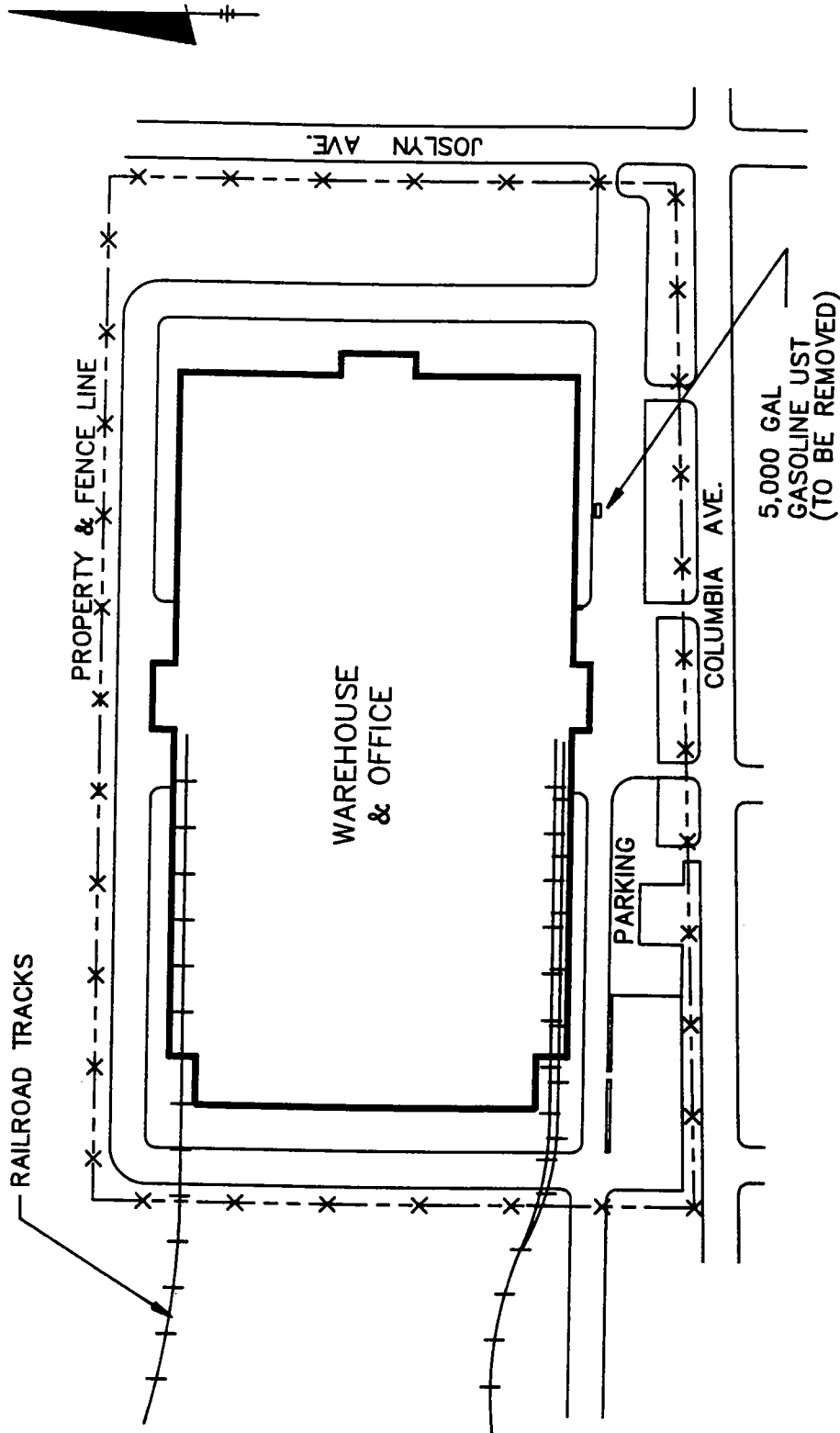


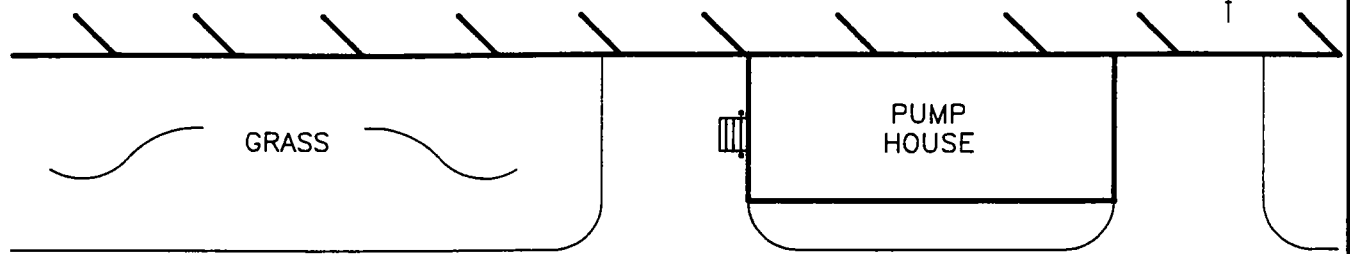
FIGURE 2

063397

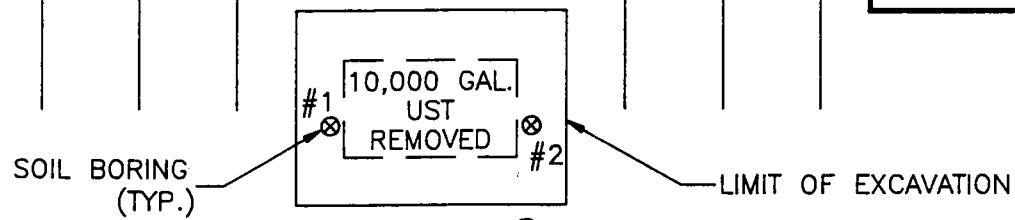
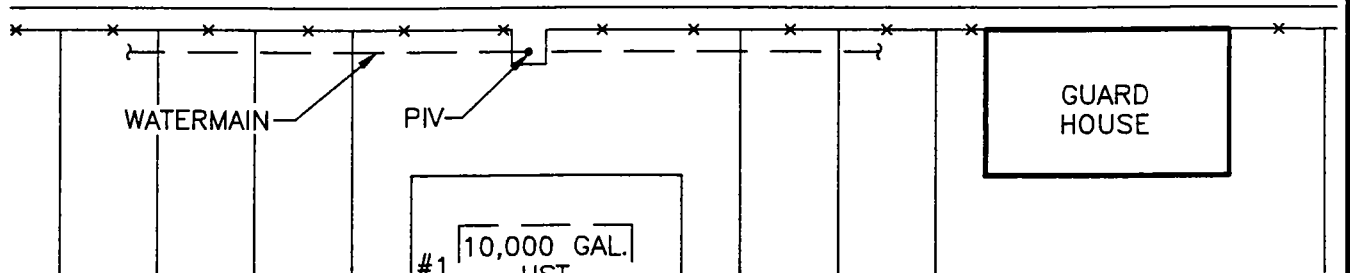


**GENERAL MOTORS
SERVICE PARTS OPERATIONS**
PONTIAC, MICHIGAN #75
(NO SCALE)

WAREHOUSE & OFFICES



CONCRETE DRIVE



BITUMINOUS
PARKING
LOT

SAMPLE LOCATION PLAN
GM SPO PONTIAC
PONTIAC, MICHIGAN
(SCALE: 1"=20')

Appendices



O'BRIEN & GERE

APPENDIX A
Tank Removal Specifications

SECTION 02005
TANK REMOVAL AND DISPOSAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. All labor, materials, services, and equipment necessary for the removal and disposal of those tanks and appurtenances (described below) in accordance with the specification outlined herein.

B. Related Work Specified Elsewhere

1. Removal and Disposal of Potentially Contaminated Subsurface Soils - Section 02006
2. Restoration of Surfaces - Section 02008

1.02 QUALITY ASSURANCE

A. Applicable codes, Standards, and Specifications:

1. National Fire Prevention Association (NFPA), Volume 30, "Flammable and Combustible Liquids Code"
2. National Fire Protection Association, Volume 327; "Cleaning or Safeguarding Small Tanks and Containers"
3. American Petroleum Institute (API), API-2015, "Cleaning Petroleum Storage Tanks"
4. American Petroleum Institute, API-2015A, "A Guide for Controlling the Lead Hazard Associated with Tank Entry and Cleaning"

5. American National Standards Institute (ANSI), ANSI-Z28.2 "Standard Practices for Respiratory Protection"
6. National Institute for Occupational Safety and Health (NIOSH), "Working in Confined Space," (DHEW 80-106)
7. Michigan Flammable Liquids Regulations.
8. Michigan Solid Waste Management Regulations.
9. Local Fire Marshal Regulations.

1.03 SUBMITTALS

- A. Proposed disposal method for liquids and sludges found in tank.
- B. Copies of all necessary permits and certifications of waste haulers and disposal facilities, as well as all proposed disposal methods, must be submitted to the Engineer and reviewed and approved by the Owner before commencing work.
- C. Written certification of proper transport and final disposal of tank, any liquids or sludges found in tank shall be submitted to the Engineer within ten working days after receipt by the Contractor.

1.04 SPECIAL PROVISIONS

- A. The Contractor shall be responsible for maintaining the structural stability of the excavation, through sheeting or shoring, to ensure the safety of the workers and the integrity of the surrounding structures.

PART 2 - EXECUTION

2.01 TANK REMOVAL

- A. Prior to removal of the tank, the Contractor shall remove free liquid product, residual liquids and any sludges or solids from the tank. All liquids and sludges shall be disposed of in a manner consistent with all applicable state and local waste disposal

regulations. It shall be the responsibility of the Contractor to perform any sampling and analyses required to characterize any free liquids or solids as hazardous or non-hazardous in conformance with all applicable state and local waste disposal regulations prior to disposal. Copies of sampling data must be submitted to the Owner.

- B. The Contractor shall excavate the tank, removing soil as necessary for removal of the tank. This soil shall be stockpiled for use as general backfill unless determined to be potentially contaminated or uncontaminated and unsuitable for backfill by the Engineer. If determined to be potentially contaminated, the soil shall be handled as specified in Removal and Disposal of Contaminated Subsurface Soils - Section 02006. If determined to be uncontaminated and unsuitable for backfill the spoil shall be removed and disposed of. Disposal location shall be reviewed and approved by the Owner prior to beginning excavation (refer to 1.03B).
- C. The Contractor shall furnish, place, and maintain such sheeting, bracing, and shoring as may be required to support the sides and ends of excavations in such manner as to prevent any movement which could, in any way, effect the limits of the site, or other work, diminish the width necessary for construction, or otherwise damage or delay the work of the Contract.

The Contractor shall be solely responsible for the adequacy of all sheeting and bracing.

- E. The Contractor shall disconnect piping at all tank openings. All pipes and tank appurtenances shall be removed unless otherwise specified by the Engineer.
- F. After removal from the excavation, the tank shall be gas freed and then tested for flammable vapors by the Contractor in accordance with NFPA Volume 327, the approved Health and Safety Plan, and all other applicable regulations, codes and standards of practice.

2.02 REMOVAL OF WATER

- A. The Contractor shall, at all times during construction, provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations, and shall remove all such water as fast as it may collect, in such manner as shall not interfere with the progression of the work.

- B. Unless otherwise specified, all excavations which extend down to or below the static groundwater elevation shall be dewatered by lowering and maintaining the groundwater beneath such excavations at all times when work thereon is in progress.
- C. The Contractor shall test the water in accordance with all applicable state and local regulations to determine proper disposal.
- D. The Contractor shall submit the test results and the proposed disposal method to the Engineer for review. Disposal location shall be reviewed and approved by the Owner prior to beginning excavation.
- E. Water pumped or drained from excavations or water courses encountered in the work, shall be discharged in a manner acceptable to the Owner and the Engineer. All proposed methods for disposal of ground water encountered during the work shall be submitted in writing to the Owner and the Engineer. Disposal of ground water encountered during the work will not commence until the Contractor receives approval from the Owner and the Engineer for the proposed disposal method. All proposed disposal methods must be in compliance with pertinent federal, state, and local environmental regulations.
- F. Any damage caused by or resulting from dewatering operations shall be the sole responsibility of the Contractor.

2.03 EXCAVATION BACKFILL

- A. Prior to backfill of the excavation, the Engineer shall inspect the excavation for potential contamination in areas where it would most likely be present. Should contamination be present, as determined by the Engineer, the contractor shall remove and dispose of the contaminated subsurface soil as specified in Removal and Disposal of Potentially Contaminated Subsurface Soils - Section 02006.
- B. Upon completion of removal of potentially contaminated material or if no contamination is present, as determined by the Engineer, the Contractor shall backfill the excavation and restore the surface as specified in Restoration of Surfaces - Section 02008.
- C. Backfill material shall consist of stockpiled excavated materials which have been

determined, by the Engineer, to be non-contaminated. Additional backfill material as required shall consist of suitable, compacted embankment material. Embankment material shall be free of clay, rock or gravel larger than 2" in any dimension, debris, vegetable matter, waste and frozen materials.

- D. Excavations will be backfilled as promptly as work permits.
- E. Ground Surface will be prepared to receive fill by removing vegetation, debris, unsatisfactory soil materials and obstructions. Surface will be scarified as required so that fill material will bond with existing surface.
- F. Backfill and fill materials will be placed in layers not more than 8" in loose depth, compacting each layer to required maximum density. Materials will not be placed on surfaces that are muddy, frozen, or contain ice or frost.
- G. Each layer of backfill and fill soil materials and the top 12" of subgrade for structures, slabs, and pavements shall be compacted to 95 percent maximum density. At lawn or unpaved areas, maximum density shall be 90 percent.
- H. Water shall be sprinkled on surface of subgrade or layers of soil material where soil is too dry to permit compaction to required density.
- I. Areas including adjacent transition areas, will be graded with uniform levels or slopes between finish elevations. Surface will be shaped to within 0.10' above or below required subgrade elevation, compacted as required.
- J. Grades in settled, eroded, rutted, or otherwise damaged areas will be repaired and re-established. In damaged compacted areas, surface will be scarified, re-shaped, and compacted to required density prior to further construction.
- K. All excess excavated material, trash, debris, and waste material will be removed from site and disposed of by the contractor.
- L. Any settlement occurring in backfilled excavations within one year of the completion of work shall be refilled and compacted as directed by the Engineer.

- A. After being rendered gas free, the tank shall be rendered unfit for further use by the Contractor. This shall be done by making a sufficient number (as determined by the Engineer) of holes or openings in the tank or by other acceptable methods as approved by the Engineer.
- B. The Contractor shall then dispose of the tank following approval by the Engineer at a disposal facility that has been reviewed and approved by the Owner prior to beginning excavation and is permitted to receive wastes of this type.

PART 3 - EXECUTION

3.01 SCHEDULE OF TANK REMOVAL

- A. The schedule of work is shown solely for the convenience of the Contractor and does not necessarily include all items of work which are specified and which are required.

The following tank is scheduled to be removed and disposed of:

<u>Tank ID</u>	<u>Capacity (Gallons)</u>	<u>Material of Construction</u>	<u>Material Stored</u>
1	8,000	Steel	Gasoline

- END OF SECTION -

SECTION 02006

REMOVAL AND DISPOSAL OF POTENTIALLY CONTAMINATED SUBSURFACE SOILS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. Excavation including the loosening, removing, refilling, transporting, storage and disposal of all materials classified by the Engineer as potentially contaminated surface/subsurface soils.

B. Related Work Specified elsewhere

1. Restoration of Surfaces - Section 02008

1.02 QUALITY ASSURANCE

A. Applicable codes, standards and specifications:

1. Michigan Solid Waste Management Regulations

1.03 SUBMITTALS

- A. Copies of all necessary permits and certifications of waste haulers and disposal facilities must be submitted to the Engineer and reviewed and approved by the Owner before commencing work.
- B. Written certification of proper transport and final disposal of potentially contaminated soils shall be submitted to the Engineer within ten working days after receipt by the Contractor.

1.04 SPECIAL PROVISIONS

- A. The Engineer shall identify the extent of potential soil contamination and the amount of excavation necessary after removal of the tank.
- B. The Contractor shall be responsible for maintaining the structural stability of the excavation, through sheeting of shoring, to ensure the safety of the workers and the integrity of the surrounding structures.

PART 2 - EXECUTION

2.01 GENERAL

A. General Provisions

- 1. All provisions for excavation and backfilling shall apply to this specification for the removal and disposal of potentially contaminated subsurface soils together with the provisions specified herein.

B. Limits of Excavation

- 1. Excavations shall be made to the limits, elevation or subgrades determined by the on-site Engineer to be potentially contaminated, but not beyond the limit agreed to by the Owner and Engineer prior to beginning excavations and not without the written approval of the Owner.

2.02 SOILS REMOVAL

- A. The Contractor shall excavate the tank, in accordance with Tank Removal and Disposal - Section 02005, removing soil as necessary for removal of the tanks. This soil shall be stockpiled for use as backfill unless determined by visual methods and through the use of a photoionization detector (HNU meter) to be potentially contaminated or unsuitable for backfill. If determined to be potentially contaminated, the soil shall be stockpiled and contained over, under and around polyethylene sheeting, or in another environmentally sound manner prior to removal to a solid waste management facility permitted to receive wastes of this type. Transport of such materials shall be completed by a permitted solid waste transporter.

- B. Prior to backfill of the excavation, the Engineer shall inspect the excavation for contamination. Should contamination be present, as determined by the visual and photoionization methods, the Contractor shall remove the contaminated subsurface soil and stockpile it in an environmentally sound manner as determined by the Engineer. This shall continue until all contaminated material has been removed, or as otherwise ordered by the Engineer and with written approval by the Owner.
- C. Prior to backfill of the excavation, the Engineer shall obtain soil samples of the visually clean soil at the bottom of the pit. The engineer will prepare a sketch of the site showing sample locations. The excavation shall then be backfilled by the Contractor unless directed, by the Engineer, that the excavation remain open. If the excavation is to remain open, the Contractor shall be responsible for maintaining the structural stability of the excavation to ensure the integrity of the surrounding structures. The Contractor shall be responsible for securing the excavation to prevent injury to facility personnel.

2.03 DISPOSAL OF MATERIALS

- A. The Contractor shall dispose of the potentially contaminated soil at a solid waste management facility permitted to receive wastes of this type. Any sampling and analyses required to characterize contaminated soil for the purpose of disposal shall be the responsibility of the Contractor. Copies of sampling data shall be provided to the Engineer and Owner. Transport shall be by a permitted solid waste transporter. The disposal location and waste hauler shall be reviewed and approved by the Owner prior to excavation.

2.04 BACKFILLING AND COMPACTION

- A. Refer to Section 02005 2.03 A-L.

- END OF SECTION -

SECTION 02008
RESTORATION OF SURFACES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Specified

1. All types of surfaces, pavements, sidewalks, curbs, gutters, culverts and other features disturbed, damaged or destroyed during the performance of the work under or as a result of the operations of the Contract, shall be restored and maintained, as specified herein or as modified or described in the Contract Documents.
2. The quality of materials and the performance of work used in the restoration shall produce a surface or feature equal to the condition of each before the work began.

1.02 SCHEDULE OF RESTORATION

A. A schedule of restoration operations shall be submitted by the Contractor to the Engineer for review.

1. After an accepted schedule has been agreed upon it shall be adhered to unless otherwise revised with the approval of the Engineer.

B. In general, permanent restoration of surfaces will not be permitted until one month's time has elapsed after excavations have been completely backfilled as specified, unless otherwise specified by Owner. A greater length of time, but not more than nine months may be allowed to elapse before permanent restoration of street surfaces is undertaken, if additional time is required for shrinkage and settlement of the backfill.

- C. The replacement of surfaces at anytime, as scheduled or as directed, shall not relieve the contractor of responsibility to repair damages by settlement or other failures.

PART 2 - EXECUTION

2.01 TEMPORARY PAVEMENT

- A. Immediately upon completion of refilling of the trench or excavation, the Contractor shall place a temporary pavement over all disturbed areas of streets, driveways, sidewalks, and other traveled places where the original surface has been disturbed as a result of his operations.
- B. Unless otherwise specified or directed, the temporary pavement shall consist of Cold Mix Bituminous Pavement, in conformance with State Standards to such a depth as required to withstand the traffic to which it will be subjected.
- C. For dust prevention, the Contractor shall treat all surfaces, not covered with cold patch, as frequently as may be required.
- D. The temporary pavement shall be maintained by the Contractor in a safe and satisfactory condition until such time as the permanent paving is completed. The Contractor shall immediately remove and restore all pavements as they become unsatisfactory.

2.02 PERMANENT PAVEMENT REPLACEMENT

- A. The permanent and final repaving of all streets, driveways and similar surfaces where pavement has been removed, disturbed, settled or damaged by or as a result of performance of the Contract shall be repaired and replaced by the Contractor, by a new and similar pavement.
 - 1. The top surface shall conform with the grade of existing adjacent pavement and the entire replacement shall meet the State DOT Standard Specifications for the particular types of pavement.

2.03 PREPARATION FOR PERMANENT PAVEMENT

- A. When scheduled and within the time specified, the temporary pavement shall be removed and a base prepared, at the depth required by the State DOT, to receive the permanent pavement.
 - 1. The base shall be brought to the required grade and cross-section and thoroughly compacted before placing the permanent pavement.
 - 2. Any base material which has become unstable for any reason shall be removed and replaced with compacted base materials.
- B. Prior to placing the permanent pavement all service boxes, manhole frames and covers and similar structures within the area shall be adjusted to the established grade and cross-section.
- C. The edges of existing asphalt pavement shall be cut a minimum of one foot beyond the excavation or disturbed base whichever is greater.

2.04 ASPHALT PAVEMENT

- A. The permanent asphalt pavement replacement for streets, driveways and parking area surfaces shall be replaced with bituminous materials of the same depth and kind as the existing unless otherwise specified.
- B. Prior to placing of any bituminous pavement a sealer shall be applied to the edges of the existing pavement and other features.
- C. The furnishing, handling and compaction of all bituminous materials shall be in accordance with the State Department of Transportation Standards.

2.05 CONCRETE PAVEMENT AND PAVEMENT BASE

- A. Concrete pavements and concrete bases for asphalt, brick or other pavement surfaces shall be replaced with 3500 psi minimum 28 day strength concrete, air-entrained.
- B. Paving slabs or concrete bases shall be constructed to extend one foot beyond each

side of the trench and be supported on undisturbed soil. Where such extension of the pavement will leave less than two feet of original pavement slab or base, the repair of the pavement slab or base shall be extended to replace the slab to the original edge of the pavement or base unless otherwise indicated.

- C. Where the edge of the pavement slab or concrete base slab falls within the excavation, the excavation shall be backfilled with Special Backfill (Select Fill) compacted to 95 percent maximum dry density as determined by ASTM D698 up to the base of the concrete.
- D. The new concrete shall be of the same thickness as the slab being replaced and shall contain reinforcement equal to the old pavement.
 - 1. New concrete shall be placed and cured in accordance with the applicable provisions of the State Department of Transportation Standards.

2.06 STONE OR GRAVEL PAVEMENT

- A. All pavement and other areas surfaced with stone or gravel shall be replaced with material to match the existing surface unless otherwise specified.
 - 1. The depth of the stone or gravel shall be at least equal to the existing.
 - 2. After compaction the surface shall conform to the slope and grade of the area being replaced.

2.07 CONCRETE WALKS, CURBS AND GUTTER REPLACEMENT

- A. Concrete walks, curbs and gutters removed or damaged in connection with or as a result of the construction operations shall be replaced with new construction.
 - 1. The minimum replacement will be a flag or block of sidewalk and five feet of curb or gutter.

- B. Walks shall be constructed of 3500 psi minimum 28 day strength concrete, air-entrained with an approved stone aggregate on a 4-inch base of compacted gravel or stone.
 - 1. The walk shall not be less than 4 inches in thickness or the thickness of the replaced walk where greater than 4 inches, shall have construction joints spaced not more than 25 feet apart and shall be sloped at right angles to the longitudinal centerline approximately 1/8 inch per foot of width.
- C. One-half inch expansion joint material shall be placed around all objects within the sidewalk area as well as objects to which the new concrete will abut, such as valve boxes, manhole frames, curbs, buildings and others.
- D. Walks shall be hand-floated and broom-finished, edged and grooved at construction joints and at intermediate intervals matching those intervals of the walk being replaced.
 - 1. The intermediate grooves shall be scored a minimum of 1/4 of the depth of the walk.
 - 2. The lengths of blocks formed by the grooving tool, and distances between construction and expansion joints shall be uniform throughout the length of the walk in any one location.
- E. The minimum length of curb or gutter to be left in place or replaced shall be 5 feet. Where a full section is not being replaced, the existing curb or gutter shall be saw cut to provide a true edge.
 - 1. The restored curb or gutter shall be the same shape, thickness and finish as being replaced and shall be built of the same concrete and have construction and expansion joints as stated above for sidewalks.

2.08 LAWNS AND IMPROVED AREAS

- A. The area to receive topsoil shall be graded to a depth of not less than 4 inches or as specified below the proposed finished surface.

1. If the depth of existing topsoil prior to construction was greater than 4 inches, topsoil shall be replaced to that depth.
- B. When required to obtain germination, the seeding areas shall be watered in such a manner as to prevent washing out of the seed.
- C. Any washout or damage which occurs shall be regraded and reseeded until a good sod is established.
- D. The Contractor shall maintain the newly seeded areas, including regrading, reseeding, watering and mowing, in good condition.

2.10 OTHER TYPES OF RESTORATION

- A. Trees, shrubs and landscape items damaged or destroyed as a result of construction operations shall be replaced in like species and size.
 1. All planting and care thereof shall meet the standards of the American Association of Nurserymen.
- B. Water courses shall be reshaped to the original grade and cross-section and all debris removed. Where required to prevent erosion, the bottom and sides of the water course shall be protected.
- C. Culverts destroyed or removed as a result of the construction operations shall be replaced in like size and material and shall be replaced at the original location and grade. When there is minor damage to a culvert and with the consent of the Engineer, a repair may be undertaken, if satisfactory results can be obtained.
- D. Should brick pavements be encountered in the work, the restoration shall be as directed by the Engineer.

2.11 MAINTENANCE

- A. The finished products of restoration shall be maintained in an acceptable condition for and during a period of one year following the date of Substantial Completion or other such date as set forth elsewhere in the Contract Documents.

- END OF SECTION -

APPENDIX B
Tank Contents Disposal Documentation

RECEIVED AUG 21

RECEIVED

DEC 03 1990

July 30, 1990

OBG
OIL TECHNICAL SERVICES, INC
NOVI, MI 48375

313 - 758 - 0400

File #90-528

Bierlein Environmental Services
2903 S. Graham Road
Saginaw, Michigan 48603

BOB
BOEST

CRAIG
BELL

Attn: Mr. Ron Pomranky

Re: Flash Point Analysis

The following is a report on our examination of one liquid sample collected from OBG Technical Services by your personnel on 7/26/90 and brought to our facilities for the following:

FLASH POINT ANALYSIS:

SAMPLE

OBG-01 ----- >140°F

Respectfully submitted,

Bradford Johnson

Bradford Johnson
Mgr./Analytical Services
SAMTEST, INC.

BJ/ss

936675

DNR

MICHIGAN DEPARTMENT
OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE

ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐1989.
Failure to file is punishable under
section 299.548 MCL or Section 10 of
Act 136, P.A. 1989.

Please print or type:

Form Approved: OMB No. 2050-0039 Expires 9-30-91

UNIFORM HAZARDOUS
WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest
Document No.2. Page 1
of 1Information in the shaded areas
is not required by Federa
law.

3. Generator's Name and Mailing Address

A. State Manifest Document Number

MI 2132792

B. State Generator's ID

C. State Transporter's ID

D. Transporter's Phone

E. State Transporter's ID 313-758-0400

F. Transporter's Phone

G. State Facility's ID

H. Facility's Phone

GMC Parts & Service

1251 Jocelyn Rd.

Pontiac, MI

4. Generator's Phone

5. Transporter 1 Company Name

Great Lakes Environmental Services

7. Transporter 2 Company Name

9. Designated Facility Name and Site Address

Environmental Waste Control

27140 Princeton

Inkster, MI 48141

11. US DOT Description (including Proper Shipping Name, Hazard Class, and
ID NUMBER).

12. Containers

13. Total
Quantity14. Unit
Wt/Vol15. Waste
No.

N/H

Waste Gasoline Contaminated water
McN hazardous

No.

Type

Total
QuantityUnit
Wt/VolWaste
No.

N/H

Additional Descriptions for Materials Listed Above

Handling Codes for Wastes
Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by
proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway
according to applicable international and national government regulations.If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined
to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the
present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste
generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

Signature

Date

Month Day Year

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date

Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in
Item 19:

Printed/Typed Name

Signature

Date

Month Day Year

DNR **MICHIGAN DEPARTMENT** **OF NATURAL RESOURCES**

DO NOT WRITE IN THIS SPACE

ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

1989.
 Failure to file is punishable under
 section 299.548 MCL or Section 10 of
 Act 136, P.A. 1989.

Form Approved OMB No. 2050-0038 Expires 9-30-91

UNIFORM HAZARDOUS **WASTE MANIFEST**

Generator's US EPA ID No.

Manifest Document No.

2. Page

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address

GMC Parts & Services
1251 Jonkyn Rd.
Pontiac, MI
 Generator's Phone ()

A. State Manifest Document Number

MI 2132793

B. State Generator's ID

5. Transporter 1 Company Name

Great Lakes Environmental Services

6. US EPA ID Number

MI D 0 1 7 1 7 8 5 7

C. State Transporter's ID

7. Transporter 2 Company Name

8. US EPA ID Number

D. Transporter's Phone

313-758-0480

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address

Environmental Waste Control
27140 Princeton
Inkster, MI 48141

10. US EPA ID Number

MI D 0 5 7 0 0 2 6 0 2

G. State Facility's ID

H. Facility's Phone

313-561-1400

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER)

Waste Gasoline Contaminated Water
Non Hazardous

12. Containers

No. Type

13. Total Quantity

14. Unit

Wt/Vol

15. Waste No.

N/H

0 2 9 L N

16. Additional Descriptions for Materials Listed Above

17. Handling Codes for Wastes Listed Above

18. Special Handling Instructions and Additional Information

GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

Richard A. Allen

Signature

Richard A. Allen

Date

01/21/90

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Henry Wickert

Signature

Henry Wickert

Date

01/21/90

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

William J. Juroz Jr

Signature

William J. Juroz Jr

Date

01/21/90

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19

Printed/Typed Name

William J. Juroz Jr

Signature

William J. Juroz Jr

Date

01/21/90

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN ACCORDANCE WITH MICHIGAN AT 1-800-282-4706 OR OUT OF STATE AT 517-373-7860 AND THE NATIONAL RESPONSE CENT 1-800-424-6802 24 HOURS PER DAY.

APPENDIX C
Tank Disposal Documentation



December 6, 1990

Ms. Rowena K. Abdallah
O'BRIEN & GERE ENGINEERS, INC.
39500 Orchard Hill Place
Suite 300
Novi, MI 48375

Re: General Motors Service Parts Operation
Pontiac, Michigan

Subj: Removal of Tank

File: C332-58

Dear Ms. Abdallah:

This letter certifies that one (1) 10,000 gallon tank was removed from the General Motors facility located at 1251 Joslyn Road, Pontiac, Michigan. This tank was cleaned and disposed of on August 22, 1990 at Sam Allen & Sons, Inc., 500 Collier Road, Pontiac, Michigan (see attached weight ticket) per A.P.I. bulletin #1604, and all State and Federal regulations.

If you should have any questions, please do not hesitate to contact me.

Very truly yours,

OBG TECHNICAL SERVICES, INC.

A handwritten signature in black ink, appearing to read 'Chris F. Winkeljohn', with a long horizontal line extending to the right.

Christopher F. Winkeljohn
Project Supervisor

CFW/jlg:OBG04
Attachment

cc: Mr. Robert C. Cheesman - OBG Technical Services, Syracuse, NY

Shipper's No. 35-83

Carrier's No. 001

Date 8-22-90

CARRIER: Great Lakes Env Ser.

SCAC

TO: Consignee Sam & Allen & Son

FROM: Shipper G. M. F. Waverly Box

Street 500 Collier Rd

Street Columbia Ave

Destination Pontiac MT Zip 48056

Origin Pontiac MT Zip 48056

Route:

Vehicle Number

Number of Shipping Units

HM

Kind of Packaging, Description of Articles, Special Marks and Exceptions

WEIGHT (subject to correction)

RATE

CHARGES (For Carrier use only)

1- 10,000 GAL. SCRAP
Steel TANK

*Sam Allen & Son Inc
J Hudson 8-22-90*

Remit C.O.D. to:

Address:

City:

State:

Zip:

COD

Amt:

\$

C.O.D. FEE:

Prepaid ☐ \$

Collect ☐

TOTAL CHARGES:

\$

FREIGHT CHARGES

FREIGHT PREPAID

Except when box of right is checked

CHECK BOX if charges are to be collect

NOTE - Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding \$ Per

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.
(Signature of Consignor)

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of the date of shipment. Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Per

SHIPPER: J Hudson

PER: J Hudson DATE: 8/22/90

EMERGENCY RESPONSE ()
TELEPHONE NUMBER

CARRIER: G L E S

PER: J P. Allen

DATE

Manned 24 hours/day by a person with knowledge of the hazards of the material and emergency response information or who has access to a person with that knowledge.

APPENDIX D
Soil Disposal Documentation



Analytic & Biological
Laboratories, Inc.

1439 INDOPLEX CIRCLE
FARMINGTON HILLS, MICHIGAN 48334

TEL: 477-7600
FAX: 313 477-4604

GREAT LAKES ENVIRONMENTAL
22077 MOUND RD.
PO BOX 1208
WARREN, MI 48091-1208
SUE O MARA. TECH. SUPPORT

SAMPLE NO: 45203

SAMPLE DESCRIPTION: BB10623 CONTAMINATED SOIL

RECEIVED: 09-06-90

RELEASED: 10-12-90

GENERATED BY GM SERVICE PARTS OPERATIONS

TCLP

Metals

Arsenic

<0.053

ppm

Barium

0.085

ppm

Cadmium

<0.003

ppm

Chromium

<0.007

ppm

Copper

0.010

ppm

Lead

<0.042

ppm

Mercury

<0.025

ppm

Selenium

<0.075

ppm

Silver

<0.050

ppm

Zinc

0.428

ppm

ANALYTIC & BIOLOGICAL LABORATORIES, INC.

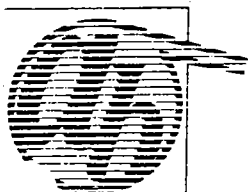
Francis B. McLaughlin, FAIC
Director of Laboratories

CERTIFICATIONS

NATIONAL SANITATION FOUNDATION
EPA QUALITY ASSURANCE PROGRAM
UNITED STATES DEPARTMENT OF AGRICULTURE
UNITED STATES DRUG ENFORCEMENT ADMINISTRATION
UNITED STATES FOOD AND DRUG ADMINISTRATION
UNITED STATES NUCLEAR REGULATORY COMMISSION
LICENSED - MICHIGAN BOARD OF PHARMACY
CLEAN WATER ACT - STATE OF MICHIGAN
RESEARCH FACILITY U.S. DEPARTMENT OF AGRICULTURE

CREDENTIALS

FELLOW - AMERICAN INSTITUTE OF CHEMISTS
FELLOW - AMERICAN BOARD OF BIOANALYSIS
FELLOW - AMERICAN CHEMICAL SOCIETY
FELLOW - AMERICAN SOCIETY FOR MICROBIOLOGY
FELLOW - AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
ASSOCIATION OF OFFICIAL ANALYTICAL CHEMISTS
INSTITUTE OF FOOD TECHNOLOGISTS
INTERNATIONAL LABS LABORATORIES INCORPORATED



Analytic & Biological
Laboratories, Inc.

24350 INDOPLEX CIRCLE
FARMINGTON HILLS, MICHIGAN 48335

(313) 477-6666
FAX (313) 477-4604

Page 2

GREAT LAKES ENVIRONMENTAL
22077 MOUND RD.
PO BOX 1208
WARREN, MI 48091-1208
SUE O MARA, TECH. SUPPORT

SAMPLE NO: 45203

SAMPLE DESCRIPTION: BB10623 CONTAMINATED SOIL

RECEIVED: 09-06-90

RELEASED: 10-12-90

GENERATED BY GM SERVICE PARTS OPERATIONS

pH	8.54	units
METALS		
Arsenic	<0.053	ppm
Barium	0.115	ppm
Cadmium	<0.003	ppm
Copper	0.008	ppm
Chromium	<0.007	ppm
Cyanide	<0.02	ppm
Lead	<0.042	ppm
Mercury	<0.025	ppm
Selenium	<0.075	ppm
Silver	<0.050	ppm

CERTIFICATIONS

NATIONAL SANITATION FOUNDATION
EPA QUALITY ASSURANCE PROGRAM
UNITED STATES DEPARTMENT OF AGRICULTURE
UNITED STATES DRUG ENFORCEMENT ADMINISTRATION
UNITED STATES FOOD AND DRUG ADMINISTRATION
UNITED STATES NUCLEAR REGULATORY COMMISSION
LICENSED - MICHIGAN BOARD OF PHARMACY
CLEAN WATER ACT - STATE OF MICHIGAN
RESEARCH FACILITY U.S. DEPARTMENT OF AGRICULTURE

CREDENTIALS

FELLOW - AMERICAN INSTITUTE OF CHEMISTS
DIPLOMAT - AMERICAN BOARD OF BIOANALYSIS
AMERICAN CHEMICAL SOCIETY
AN - SOCIETY FOR MICROBIOLOGY
AN - ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
ASSOCIATION OF OFFICIAL ANALYTICAL CHEMISTS
INSTITUTE OF FOOD TECHNOLOGISTS
MISE INTERNATIONAL des LABORATOIRES INDEPENDANTS

ANALYTIC & BIOLOGICAL LABORATORIES, INC.


Francis B. McLaughlin, FAIC
Director of Laboratories



Analytic & Biological
Laboratories, Inc.

1450 INDOPLEX CIRCLE
FARMINGTON HILLS, MICHIGAN 48335

(313) 477-6666
FAX (313) 477-6004

Page 3

GREAT LAKES ENVIRONMENTAL
22077 MOUND RD.
PO BOX 1208
WARREN, MI 48091-1208
SUE O MARA. TECH. SUPPORT

SAMPLE NO: 45203

SAMPLE DESCRIPTION: BB10623 CONTAMINATED SOIL

RECEIVED: 09-06-90

RELEASED: 10-12-90

GENERATED BY GM SERVICE PARTS OPERATIONS

Zinc	
0.398	ppm
Ignitability	
No Flash up to 200 deg.	F
Reactivity	
No	
Total Cyanide	
<10	ppm
Total Sulfide	
12	ppm

CERTIFICATIONS

NATIONAL SANITATION FOUNDATION
EPA QUALITY ASSURANCE PROGRAM
UNITED STATES DEPARTMENT OF AGRICULTURE
UNITED STATES DRUG ENFORCEMENT ADMINISTRATION
UNITED STATES FOOD AND DRUG ADMINISTRATION
UNITED STATES NUCLEAR REGULATORY COMMISSION
LICENSED - MICHIGAN BOARD OF PHARMACY
CLEAN WATER ACT - STATE OF MICHIGAN
RESEARCH FACILITY U.S. DEPARTMENT OF AGRICULTURE

CREDENTIALS

FELLOW - AMERICAN INSTITUTE OF CHEMISTS
DIPLOMAT - AMERICAN BOARD OF BIOANALYSIS
MEMBER - AMERICAN CHEMICAL SOCIETY
MEMBER - AMERICAN SOCIETY FOR MICROBIOLOGY
MEMBER - AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
ASSOCIATION OF OFFICIAL ANALYTICAL CHEMISTS
INSTITUTE OF FOOD TECHNOLOGISTS
MICH INTERNATIONAL DES LABORATOIRES INDEPENDANTS

ANALYTIC & BIOLOGICAL LABORATORIES, INC.


Francis B. McLaughlin, FAIC
Director of Laboratories



Analytic & Biological
Laboratories, Inc.

14350 INDOPLEX CIRCLE
FARMINGTON HILLS, MICHIGAN 48335

(313) 477-6666
FAX (313) 477-4604

METHOD DETECTION LIMITS FOR TCLP COMPOUNDS (REVISED)

This method covers the detection limits for the TCLP volatile and semi-volatile compounds. The volatile fraction is based on the ZHS extract and the semi-volatile fraction is based on the extraction fluid extracted with methylene chloride. All units are in ppm (mg/kg or mg/l).

Volatile Fraction (ZHS)

COMPOUND	LOD mg/l	REGULATORY LIMITS mg/l
Benzene	0.1	0.5
Carbon Tetrachloride	0.1	0.5
Chlorobenzene	0.1	100.0
Chloroform	0.1	5.0
1,4-Dichlorobenzene	0.1	7.5
1,2-Dichloroethane	0.1	0.5
1,1-Dichloroethene	0.1	0.7
2-Butanone (MEK)	0.1	200.0
Pyridine	0.1	5.0
Tetrachloroethene	0.1	0.7
Trichloroethylene	0.1	0.5
Vinyl Chloride	0.1	0.2

CERTIFICATIONS

NATIONAL SANITATION FOUNDATION
EPA QUALITY ASSURANCE PROGRAM
UNITED STATES DEPARTMENT OF AGRICULTURE
UNITED STATES DRUG ENFORCEMENT ADMINISTRATION
UNITED STATES FOOD AND DRUG ADMINISTRATION
UNITED STATES NUCLEAR REGULATORY COMMISSION
LICENSED - MICHIGAN BOARD OF PHARMACY
CLEAN WATER ACT - STATE OF MICHIGAN
RESEARCH FACILITY U.S. DEPARTMENT OF AGRICULTURE

CREDENTIALS

FELLOW - AMERICAN INSTITUTE OF CHEMISTS
DIPLOMAT - AMERICAN BOARD OF SIGNALYSIS
AMERICAN CHEMICAL SOCIETY
AMERICAN SOCIETY FOR MICROBIOLOGY
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
ASSOCIATION OF OFFICIAL ANALYTICAL CHEMISTS
INSTITUTE OF FOOD TECHNOLOGISTS
UNION INTERNATIONALE des LABORATOIRES INDEPENDANTS



Analytic & Biological
Laboratories, Inc.

1450 INDOPLEX CIRCLE
FARMINGTON HILLS, MICHIGAN 48335

TEL 313 477-6666
FAX 313 477-4604

Semi-Volatile Fraction
Acidic Extract

COMPOUND	LOD mg/l	REGULATORY LIMITS mg/l
Cresol		200.0
2-Methylphenol (o-Cresol)	1.0	200.0
3-Methylphenol (m-Cresol)	1.0	200.0
4-Methylphenol (p-Cresol)	1.0	200.0
Pentachlorophenol	1.0	100.0
2,4,5-Trichlorophenol	1.0	400.0
2,4,6-Trichlorophenol	1.0	2.0

Base/Neutral Extract

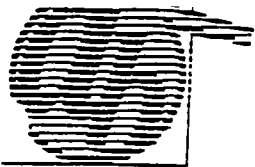
COMPOUND	LOD mg/l	REGULATORY LIMITS mg/l
2,4-Dinitrotoluene	0.1	0.13
Hexachlorobenzene	0.008	0.008
Hexachlorobutadiene	0.1	0.5
Hexachlorocethane	0.1	3.0
Nitrobenzene	0.1	2.0

CERTIFICATIONS

NATIONAL SANITATION FOUNDATION
EPA QUALITY ASSURANCE PROGRAM
UNITED STATES DEPARTMENT OF AGRICULTURE
UNITED STATES DRUG ENFORCEMENT ADMINISTRATION
UNITED STATES FOOD AND DRUG ADMINISTRATION
UNITED STATES NUCLEAR REGULATORY COMMISSION
LICENSED - MICHIGAN BOARD OF PHARMACY
CLEAN WATER ACT - STATE OF MICHIGAN
RESEARCH FACILITY U.S. DEPARTMENT OF AGRICULTURE

CREDENTIALS

FELLOW - AMERICAN INSTITUTE OF CHEMISTS
CMAT - AMERICAN BOARD OF BIOANALYSIS
AMERICAN CHEMICAL SOCIETY
AMERICAN SOCIETY FOR MICROBIOLOGY
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
ASSOCIATION OF OFFICIAL ANALYTICAL CHEMISTS
INSTITUTE OF FOOD TECHNOLOGISTS
UNION INTERNATIONALE DES LABORATOIRES INDEPENDANTS



*Analytic & Biological
Laboratories, Inc.*

14150 INDOPEX CIRCLE
FARMINGTON HILLS, MICHIGAN 48335

(313) 477-6666
FAX (313) 477-4604

Metals

COMPOUNDS	REGULATORY LIMITS mg/l
Arsenic	5.0
Barium	100.0
Cadmium	1.0
Chromium	5.0
Lead	5.0
Mercury	0.2
Selenium	1.0
Silver	5.0

Herbicides & Pesticides

COMPOUNDS	LCD mg/l	REGULATORY LIMITS mg/l
Chlordane	0.01	0.03
Endrin	0.01	0.02
2,4.D	0.01	10.0
Lindane	0.01	0.4
Methoxychlor	0.01	10.0
Heptachlor	0.008	0.008
Toxaphene	0.01	0.5
2,4,5 - TP (Silvex)	0.01	1.0

CERTIFICATIONS

NATIONAL SANITATION FOUNDATION
EPA QUALITY ASSURANCE PROGRAM
UNITED STATES DEPARTMENT OF AGRICULTURE
UNITED STATES DRUG ENFORCEMENT ADMINISTRATION
UNITED STATES FOOD AND DRUG ADMINISTRATION
UNITED STATES NUCLEAR REGULATORY COMMISSION
LICENSED - MICHIGAN BOARD OF PHARMACY
CLEAN WATER ACT - STATE OF MICHIGAN
RESEARCH FACILITY U.S. DEPARTMENT OF AGRICULTURE

CREDENTIALS

FELLOW - AMERICAN INSTITUTE OF CHEMISTS
MEMBER - AMERICAN BOARD OF BIOANALYSIS
MEMBER - AMERICAN CHEMICAL SOCIETY
MEMBER - SOCIETY FOR MICROBIOLOGY
MEMBER - ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
ASSOCIATION OF OFFICIAL ANALYTICAL CHEMISTS
INSTITUTE OF FOOD TECHNOLOGISTS
UNION INTERNATIONALE DES LABORATOIRES INDÉPENDANTS

NON-HAZARDOUS SPECIAL WASTE MANIFEST

GENERATOR

Generator Name GM SERVICE PARTS OPERATIONS Generating Location SAME
Address 1251 JOSLYN AVE. Address THURS
PONTIAC MI 48053
Phone No. 313-8573500 Phone No. -
BFI Waste Code MI 576 901 077 633 24

Description of waste	Quantity			Units	No.	Type		
CONTAMINATED SOIL - NON HAZARDOUS UST Removal			20	Y		1	T	D - Drum
								C - Cartons
								B - Bag
								T - Truck
								P - Pounds
								Y - Yards
								O - Other

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Generator Authorized Agent Name JEFFREY M. DOLL Signature [Signature] on behalf of GM Shipment Date 10/31/90

TRANSPORTER

Truck No. 33 + 27 R. Phone No. (313) 758-0400
Transporter Name Great Lakes Env. Ser. Driver Name (Print) Bob Oliver
Address 22077 Mound Rd. Vehicle License No./State RB 2112
Warren, MI 48091 Vehicle Certification

I hereby certify that the above named material was picked up at the generator site listed above.

Driver Signature [Signature] Shipment Date 10/31/90 Driver Signature [Signature] Delivery Date 10/31/90

DESTINATION

Site Name LYON Development BFE Phone No. 313-4374185
Address 5381 South Milford Rd. New Hudson, MI 48165

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Name of Authorized Agent [Signature] Signature [Signature] Receipt Date 11-1-90

PASS CODE A22384

NON-HAZARDOUS SPECIAL WASTE MANIFEST

GENERATOR

Generator Name GM SERVICE PARTS OPERATIONS

Generating Location SAME

Address 1251 JOSLYN AVE.

Address

ONTIAC, MI 48053

Phone No. 313-857-3500

Phone No.

BFI Waste Code MI 574 901017 G3324

Description of Waste

NON-HAZ Solids / Sol
UST Removal

Containers		Type
Quantity	Units	No. Type
<u>20</u>	<u>Y</u>	<u>17</u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>

D - Drum
C - Carton
B - Bag
T - Truck
P - Pallet
Y - Yards
O - Other

I hereby certify that the above named material does not contain free liquid as defined by 40 CFR Part 260.10 or any applicable state law, is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Jeffrey M. Doll

Generator Authorized Agent Name

Signature

103190

Shipment Date

TRANSPORTER

Truck No. 3307

Phone No. 758-0400

Transporter Name Great Lakes Env. Serv.

Driver Name (Print) Bob Oliver

Address 22077 Mound Rd.

Vehicle License No./State 213 2112

Warren, MI 48091

Vehicle Certification

I hereby certify that the above named material was picked up at the generator site listed above.

I hereby certify that the above named material was delivered without incident to the destination listed below.

Bob Oliver

103190

Shipment Date

Bob Oliver

Driver Signature

103190

Delivery Date

DESTINATION

Site Name Lyon Development BFI

Phone No. 313-437-4185

Address 5501 South Milford Rd. New Hudson, MI 48165

I hereby certify that the above named material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Authorized Agent

Signature

103190

Receipt Date

PASS CODE

A22289

APPENDIX E
Analytical Results



ENVIRONMENTAL QUALITY LABORATORIES, INC.

6540 Diplomat Drive
Sterling Heights, Michigan 48314-1420
(313) 731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 313-731-2590

RECEIVED

AUG 28 1990

O'BRIEN & GERE ENGINEERS, INC.
NOVI, MI 48050

CLIENT NAME: O'BRIEN & GERE
39500 ORCHARD HILL PL DR
NOVI, MI 48050

SAMPLE NO. 6337

SAMPLE DESCRIPTION: GMSPO PONTIAC 2488.238
1 (WEST) SOIL

DATE REPORTED: 08/23/90

DATE RECEIVED: 08/21/90

ORGANICS ANALYSIS DATA SHEET

8020 SCAN

CASE NO.	COMPOUND NAME	REFERENCE METHOD	CONCENTRATION
1. 71-43-2	BENZENE	8020	* LESS THAN 10 ppB
2. 100-41-4	ETHYL BENZENE	8020	LESS THAN 10 ppB
3. 108-88-3	TOLUENE	8020	LESS THAN 10 ppB
4.	XYLENES	8020	50 ppB

*NOTE: TERM LESS THAN DENOTES DETECTION LIMIT OF TEST.

THOMAS S. MEGNA, M.S. LABORATORY DIRECTOR

Thomas S. Megna

JAMES TOMALIA, LABORATORY SUPERVISOR

JM

REFERENCES: 40 CFR PART 136. CURRENT EDITION.

ck



ENVIRONMENTAL QUALITY LABORATORIES, INC.

6540 Diplomat Drive
Sterling Heights, Michigan 48314-1420
(313) 731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 313-731-2590

CLIENT NAME: O'BRIEN & GERE
39500 ORCHARD HILL PL DR
NOVI, MI 48050

SAMPLE NO. 6338

SAMPLE DESCRIPTION: GMSPO PONTIAC 2488.238
2 (EAST) SOIL

DATE REPORTED: 08/23/90

DATE RECEIVED: 08/21/90

ORGANICS ANALYSIS DATA SHEET

8020 SCAN

CASE NO.	COMPOUND NAME	REFERENCE METHOD	CONCENTRATION
1. 71-43-2	BENZENE	8020	* LESS THAN 10 ppB
2. 100-41-4	ETHYL BENZENE	8020	LESS THAN 10 ppB
3. 108-88-3	TOLUENE	8020	LESS THAN 10 ppB
4.	XYLENES	8020	95 ppB

*NOTE: TERM LESS THAN DENOTES DETECTION LIMIT OF TEST.

THOMAS S. MEGNA, M.S. LABORATORY DIRECTOR

JAMES TOMALIA, LABORATORY SUPERVISOR

REFERENCES: 40 CFR PART 136. CURRENT EDITION.

ck

DATE: 8/11/90

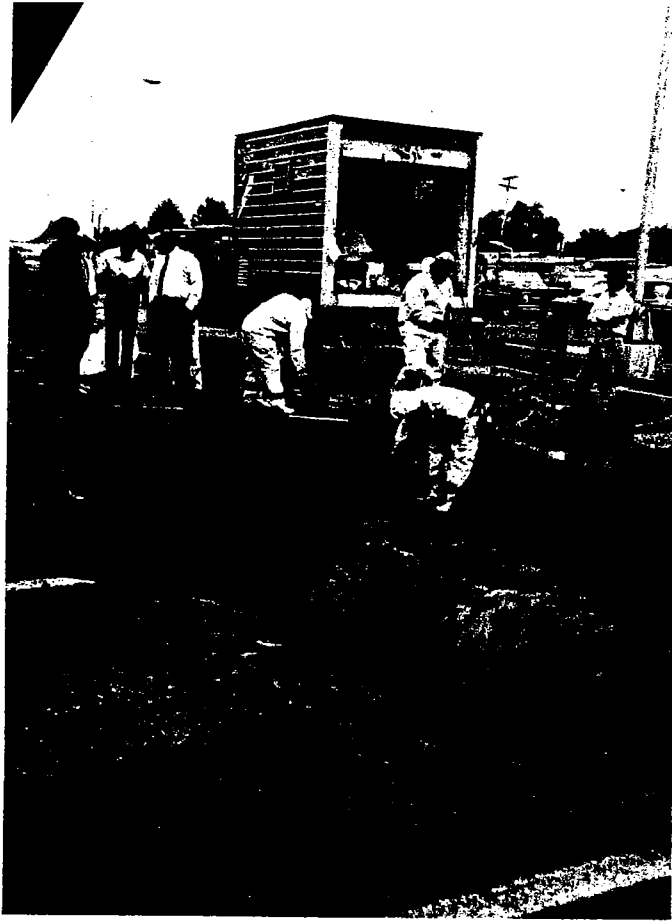


ENVIRONMENTAL QUALITY LABS, INC.
6540 Diplomat Drive
Sterling Heights, Michigan 48078-7258
(313) 731-1818 • (800) 368-5227

No. 1523

[illegible]

APPENDIX F
Photographic Log



PROJECT: GM SPO Pontiac, MI
UST Removal

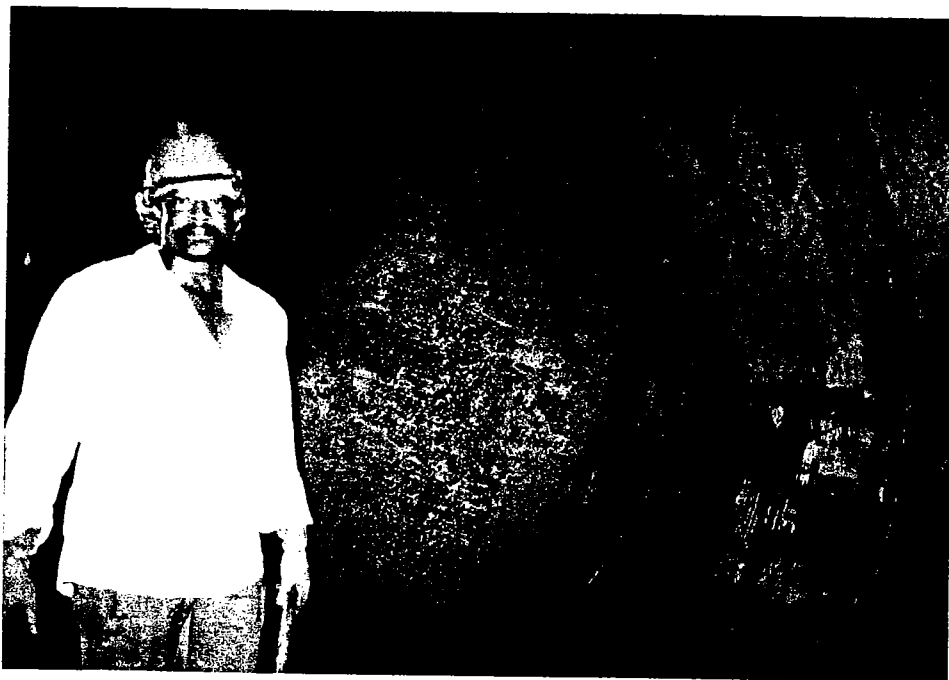
DATE: 8/21/90

BY: RK Abdallah



DESCRIPTION:

Top Left: Tank Cleaning
Bottom Left: UST Removal
Above: UST Excavation



PROJECT: GM SPO Pontiac, MI
UST Removal

DATE: 8/21/90

BY: RK Abdallah

DESCRIPTION:

Top: Interior of UST
Bottom: Fill Pipe

Appendix AC

45-Day Report

Free Product Removal Report Site Characterization Report, and Proposed Work Plan

**General Motors
Service Parts Operations
Pontiac, Michigan**

**General Motors
Service Parts Operations
6060 West Bristol Road
Flint, Michigan**

March 1992



O'BRIEN & GERE

**SITE CHARACTERIZATION REPORT,
FREE PRODUCT REMOVAL REPORT,
AND PROPOSED WORK PLAN**

**GENERAL MOTORS SERVICE PARTS OPERATIONS
1251 JOSLYN ROAD
PONTIAC, MICHIGAN**

**GENERAL MOTORS SERVICE PARTS OPERATIONS
6060 WEST BRISTOL ROAD
FLINT, MICHIGAN 48554**

March 1992

Prepared by:

**O'Brien & Gere Engineers, Inc.
39500 Orchard Hill Place, Suite 300
Novi, Michigan, 48375
(313) 347-4350**

TABLE OF CONTENTS

	<u>Page</u>
SECTION 1 - INTRODUCTION	1
1.1 General	1
1.2 Background	1
SECTION 2 - INITIAL ABATEMENT PROCEDURES, SITE CHARACTERIZATION AND FREE PRODUCT REMOVAL	2
2.1 Initial Abatement Procedures	2
2.2 Site Characterization	3
2.3 Free Product Removal Report	5
SECTION 3 - WORK PLAN	6
3.1 General	6
3.2 Task Descriptions	6
TABLES	
1 Soil Analytical Results	
FIGURES	
1 Location Map	
2 Site Plan	
3 Location Plan and Utilities	
APPENDICES	
A Liquid Disposal Documents	
B Tank Disposal Documents	
C Environmental Monitoring Analytical Results	
D Water Well Records	

SECTION 1 - INTRODUCTION

1.1 General

This report is a Site Characterization Report, Free Product Removal Report and Proposed Work Plan (45 Day report) for the following site (see Figure 1):

General Motors Service Parts Operations
1251 Joslyn Road
Pontiac, Michigan

General Motors Service Parts Operations (GMSPO) retained O'Brien & Gere Engineers, Inc. (O'Brien & Gere) to perform environmental monitoring and reporting services relative to the removal of one 4,000 gallon fiberglass diesel fuel underground storage tank (UST) at the above referenced location. Subsequent to and based on the findings during these activities, GMSPO retained O'Brien & Gere to prepare this report.

1.2 Background

As described in the Initial Abatement Report dated February 15, 1992, excavation for the removal of the UST at this site on January 28, 1992 exposed petroleum impacted soil. Approximately 30 cubic yards (cy) of impacted soil was removed from the excavation and stockpiled in roll-off boxes on site.

At the completion of soil removal activities, O'Brien & Gere collected five soil and one water environmental monitoring samples from the excavation. These samples were delivered to and analyzed by Environmental Quality Laboratories, Inc. (EQL) of Sterling Heights, Michigan. The samples were analyzed for the presence of benzene, toluene, ethyl benzene, and xylenes and polynuclear aromatic compounds (PNAs) using EPA Methods 8020 and 8310. The analytical results summarized in Table 1 indicate that petroleum impacted ground water was present in the excavation. Laboratory reports and chain of custody documentation are included in Appendix A.

In response to the presence of impacted ground water at the site, GMSPO will perform a hydrogeologic investigation to assess the horizontal and vertical extent of soil and ground water affected by petroleum products in the immediate area of the removed UST.

SECTION 2 - INITIAL ABATEMENT PROCEDURES,
SITE CHARACTERIZATION AND FREE PRODUCT REMOVAL

2.1 Initial Abatement Procedures

The removal of one 4,000 gallon fiberglass UST was performed by Prewitt Enterprises of Toledo, Ohio as subcontracted by OBG Technical Services of Novi, Michigan. O'Brien & Gere provided environmental monitoring and reporting services.

On January 28, 1992, Prewitt removed the concrete sidewalk above the UST exposing stained and odorous soil. The level of impact appeared to be greatest near the UST fill tube. Prewitt then excavated the impacted soil to expose the tank top. The level of impact was observed to decrease with depth to a level slightly below the top of the UST. No impact was observed below the breakpoint of the tank side (approximately 6 feet below grade). The UST was emptied and cleaned by K & D Industrial Services using a detergent wash and pump truck. The UST was removed from the excavation at which time water was observed covering a portion of the excavation base to a depth of approximately four inches. There was no observable evidence of impacted soil in the excavation at this time, nor was any sheen visible in the water.

Following removal, O'Brien & Gere inspected the UST for evidence of leakage. The UST appeared to be in good condition with no evidence of cracks, holes, or leakage. It appears that the release (unknown volume), occurred over time through overfilling and/or surface spillage. The UST was sawed into pieces and placed into the roll-off-boxes with the impacted soil (Appendix B). A total of approximately 30 cubic yards of petroleum impacted soil was removed from the excavation and stockpiled pending disposal. Disposal documentation will be provided upon receipt.

Following termination of the removal activities, O'Brien & Gere collected environmental monitoring samples from the excavation as follows:

- Sample No. 1: water sample collected from the floor of the excavation at a depth of approximately ten feet below grade;
- Sample No. 2: soil sample collected from the east end of the floor of the excavation at a depth of approximately ten feet below grade;
- Sample No. 3: soil sample collected from the south wall of the excavation

at a depth of approximately five feet below grade;

- Sample No. 4: soil sample collected from the north wall of the excavation at a depth of approximately five feet below grade;
- Sample No. 5: soil sample collected from the west wall of the excavation at a depth of approximately five feet below grade; and
- Sample No. 6: soil sample collected from the east wall of the excavation at a depth of approximately five feet below grade.

The samples were collected in glass containers with teflon lined lids, placed on ice, and delivered to Environmental Quality Laboratories (EQL) of Sterling Heights, MI. Sampling equipment was decontaminated before collection of each sample using a detergent wash and distilled water rinse. The samples were analyzed for the presence of benzene, toluene, ethyl benzene, and xylenes (BTEX) and polynuclear aromatic (PNA) compounds using EPA Methods 8020 and 8310. Chain of custody documentation was maintained and is included with the laboratory results in Appendix C.

There were no catch basins, sumps, or other accessible underground structures within close proximity to the UST excavation requiring monitoring for the presence of free phase hydrocarbons or hydrocarbon vapors.

2.2 Site Characterization

The GM SPO facility is located at the northwest corner of the intersection of Joslyn and Columbia Avenues in Pontiac, Michigan as shown in Figure 2. The former UST was located on the east side of the facility near the office area. There are no other USTs remaining at the site. Land use in the local area of the facility consists of mixed commercial and residential to the north, south and east and industrial to the west.

The City of Pontiac, Michigan is located geomorphically in a ground moraine - end moraine complex. Pontiac is situated west of the Defiance Moraine, end moraine system which trends across Oakland County in a northeast - southwest direction. The City and surrounding areas northwest of the Defiance Moraine system are comprised of both glacial outwash sand and gravel and post

glacial alluvium as well as medium textured ground moraine till. The GM SPO facility is located on medium textured glacial till of ground moraine depositional origin. These deposits are characterized by non-sorted glacial debris of dominantly loam and silt loam texture with variable amounts of cobbles and boulders and may include intercalated sand and clay. (MDNR Geological Survey, 1984). The glacial overburden ranges in thickness of 300 to 350 feet and is underlain by shale bedrock of the Coldwater Formation which is Early Mississippian in age (Mozola, 1969).

At an approximate distance of one mile to the east-northeast, Galloway Creek is the nearest surface water to the site. Due to the complexities of the surficial geology of the site the flow direction within a shallow water table aquifer at the site will not be known until completion of the proposed field investigation.

A review of available water well records at the MDNR Geological Survey and the Oakland County Health Department indicates that two domestic wells are within a one mile radius of the site (see Appendix D). Both wells are located to the northeast of the site at an approximate distance of one mile near the intersections of Walton Blvd. and Sterling Road (Figure 1). The drillers' logs included in Appendix D indicate that clay was encountered from ground surface to depths of 21 and 41 feet and underlain by sandy clay to depths of 51 and 101 feet. The wells are screened within a coarse sand unit at depths of 56 and 100 feet below ground surface. The static water levels recorded on the logs indicate that the water bearing unit of the wells is under confined conditions. It is unlikely that either well is threatened by the release at the subject site.

A review of the Michigan Sites of Environmental Contamination Priority Lists, Act 307, indicates that three sites of environmental contamination are known to exist within a one mile radius of the subject site. The three sites are:

- Anchor Motor Freight (63-03N-10E-16BA)
This site is located northwest of the GM SPO site within one quarter mile. Surface discharges of oil, solvents and diesel fuel are undergoing interim response and evaluation. This site has received a score of 783.
- Collier Road Landfill Pontiac (63-03N-10E-09B)
This site is located approximately one mile northwest of the subject site. Discharges of vinyl chloride, dichloroethane and trichloroethane to ground water from the landfill are undergoing interim response and evaluation.

- Michigan Dust Control (63-03N-10E-17AB)

This site is located approximately one mile west, northwest of the subject site.
Evaluation of surface discharges of oil is pending.

2.3 Free Product Removal

No free product was observed at the site during work for the removal of the gasoline UST.
Therefore, no free product was removed during UST removal work at this site.

SECTION 3 - WORK PLAN

3.1 General

GM SPO will perform a hydrogeologic investigation to assess the extent of soil and ground water impact at the site associated with this release. It is proposed that the field work for this project begin 30 days following receipt of an approval of this work plan from MDNR. The field work will be completed approximately six weeks from that time. The report will be issued approximately six weeks following the receipt of all analytical results.

3.2 Task Descriptions

Further investigation will consist of up to five tasks: soil boring installation, monitoring well installation, site survey, ground water sampling, and report preparation. This investigation will be undertaken to assess the hydrogeologic characteristics of the site, the extent of potential soil and ground water impact, and the need for remedial activities.

Task 1 - Soil Boring Installation and Sample Analysis

It is anticipated that three soil borings will be installed at the locations shown in Figure 3. The locations of these borings were chosen to best estimate the horizontal and vertical extent of potential petroleum impact to soil. The three borings (SB-1, SB-2, SB-3) will be installed ten feet from the accessible sides of the backfilled diesel UST excavation to assess potential subsurface impact in the area of the release. If these borings do not reveal information sufficient to estimate the horizontal extent of potentially impacted soil, additional borings will be installed radially outward until the extent has been estimated.

The borings will be advanced using hollow stem augers. Split-spoon samples will be collected continuously in general accordance with ASTM D-1586 and field screened using sensory and photoionization detection (PID) methods. The borings will be advanced until the water table is encountered and shall be continued in two foot intervals into the saturated zone until field screening no longer indicates petroleum contaminants. If field screening does not indicate the presence of petroleum contaminants before the boring has been advanced beyond five feet into the saturated zone, it will be assumed that soil has not been impacted at that location and the boring will be ended. If a saturated zone of sufficient

thickness to allow collection of meaningful data is not encountered before a depth of 25 feet below grade, the soil boring will be ended. Cuttings from the borings will be containerized and disposed of in an appropriate manner. All equipment will be decontaminated between borings by steam-cleaning, and split-spoons will be decontaminated by detergent wash and distilled water rinse before each use.

Up to three discrete soil samples will be collected from each boring for analysis. The samples for analysis will be selected by the following criteria:

- One discrete sample from the sampling interval in which the boring is ended;
- One discrete sample from the sampling interval which demonstrates the highest level of impact during field screening, or if field screening does not indicate the presence of impacted soil, from the interval in which the water table is encountered; and/or
- One discrete sample from a sampling interval to be determined in the field at the time of collection to further characterize the impact, as necessary (no impact, no water table).

The samples will be placed in glass containers with teflon lined lids, placed on ice, and transported to an appropriate analytical laboratory for analysis. Appropriate chain of custody documentation will be maintained. Because the former UST stored diesel fuel, the samples will be analyzed for the presence of BTEX using EPA Method 8020 and for PNA compounds using EPA Method 8310. One grab sample representative of each sampling interval will be collected and retained for future reference.

In the event that a saturated zone of sufficient thickness to allow collection of meaningful data is encountered, the soil borings will be completed as ground water monitoring wells. Soil borings not completed as monitoring wells will be completely filled with cement/bentonite grout to prevent surface infiltration.

Task 2 - Monitoring Well Installation

The three soil borings will be completed as monitoring wells at the locations shown in Figure 3 should a saturated zone be encountered as discussed in Task 1. These wells will be used to estimate the extent of the potential ground water impact. The placement of the wells will also allow evaluation of the ground water flow conditions in the water table aquifer at the site (if present).

The wells will be constructed of two-inch diameter Schedule 40 PVC well casing and a maximum of 5 feet of 0.01 inch slot well screen. The screened interval of each well will be placed straddling the sampling interval which exhibits the highest level of impact during field screening. If no impact is observed, the screen will be located straddling the water table.

The borehole annular space surrounding the well will be filled with a uniform silica sand filter-pack to two feet above the top of the screened interval. A two foot granular bentonite seal will then be placed above the filter-pack to prevent surface infiltration. The remaining annular space will be filled with a cement/bentonite grout. The wells will be finished flush with the surface and provided with bolt-down lids and water-tight locking caps. The wells will be developed by surge block and high-yield pumping or other appropriate method until the water removed is free of visible sediments. Liquids produced during well development will be containerized and disposed of in an appropriate manner.

Should these monitoring wells provide data insufficient in estimating the horizontal and vertical extent of ground water impact, additional wells will be installed radially outward from the source of impact until the extent can be estimated. Any additional monitoring wells would be installed only in borings which field screening indicates to be beyond the impacted zone.

Task 3 - Site Survey

Following the completion of soil boring and monitoring well (if necessary) installation, a field instrument survey will be conducted to establish horizontal locations and vertical reference elevations for the wells. Depth to static water levels in the monitoring wells will be recorded using an electronic interface probe which will also allow assessment of free

phase hydrocarbon thicknesses, if encountered. Additionally, an in-situ hydraulic conductivity test (baildown/recovery) will be performed on one monitoring well to estimate the permeability of the site's saturated subsurface material (if present). Data collected during this task will allow the estimate of ground water flow conditions in the water table aquifer at the site. Water removed from the wells during completion of this task will be containerized and disposed of in an appropriate manner. Prior to use, equipment used in the completion of this task will be decontaminated with a detergent wash and distilled water rinse.

Task 4 - Ground Water Sampling and Analysis

Following monitoring well installation (if performed), ground water samples will be collected from the wells and submitted to an appropriate analytical laboratory for analysis. One round of sampling will be performed following appropriate procedures to collect samples from each well for analyses by EPA Methods 8020 and 8310 for the presence of BTEX and PNA compounds, respectively. The samples will be collected using a stainless steel, bottom filling bailer, transferred to glass containers with teflon lined lids and appropriate preservative, placed on ice and transported to the laboratory. Chain of custody documentation will be maintained. Prior to sample collection, the bailer will be decontaminated with a detergent wash and distilled water rinse and equipped with a new segment of polypropylene cord for each well sampled.

Task 5 - Report Preparation

A site investigation report will be prepared following the completion of the field investigation. This report will include a description of field procedures, site hydrogeologic conditions, an assessment of petroleum hydrocarbons within the site's subsurface, including potential impact on ground water quality. The report will be issued approximately six weeks after receipt of all analytical results.

REFERENCES

Map of Quaternary Geology of Southern Michigan with Surface Water Drainage Divides, State of Michigan Department of Natural Resources, Geological Survey, 1984.

Mozola, A. J., A Survey of the Ground Water Resources in Oakland County, Michigan, State of Michigan Department of Natural Resources, Geological Survey, 1953.

75.06

Tables



O'BRIEN & GERE

Table 1

General Motors Service Parts Operation
Pontiac, Michigan

Analytical Results

Analytical Parameter	No. 1 Water (ppb)	No. 2 East Base	No. 3 South Wall	No. 4 North Wall	No. 5 West Wall	No. 6 East Wall
Benzene	< 1.0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethyl Benzene	< 1.0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	< 1.0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Xylenes	7.0	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Naphthalene	< 5.0	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Acenaphthylene	< 5.0	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Acenaphthene	43.9	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Fluorene	< 5.0	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Phenanthrene	7.5	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Anthracene	< 5.0	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Fluoranthene	26.1	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Pyrene	30.6	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Benzo(a)anthracene	5.0	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Chrysene	< 5.0	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Benzo(b)fluoranthene	< 5.0	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Benzo(k)fluoranthene	< 5.0	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Benzo(a)pyrene	< 5.0	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Dibenzo(a,h)anthracene	< 5.0	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Benzo(g,h,i)perylene	< 5.0	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Indeno(1,2,3-cd)pyrene	< 5.0	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Notes:

- 1) "<" indicates that concentration is less than the detection limit of the test.
- 2) Concentrations are shown with units of parts per million (ppm) unless otherwise specified.
- 3) Samples were collected January 28, 1991.

pjht/pontiac.t1

Figures



O'BRIEN & GERE

FIGURE 1

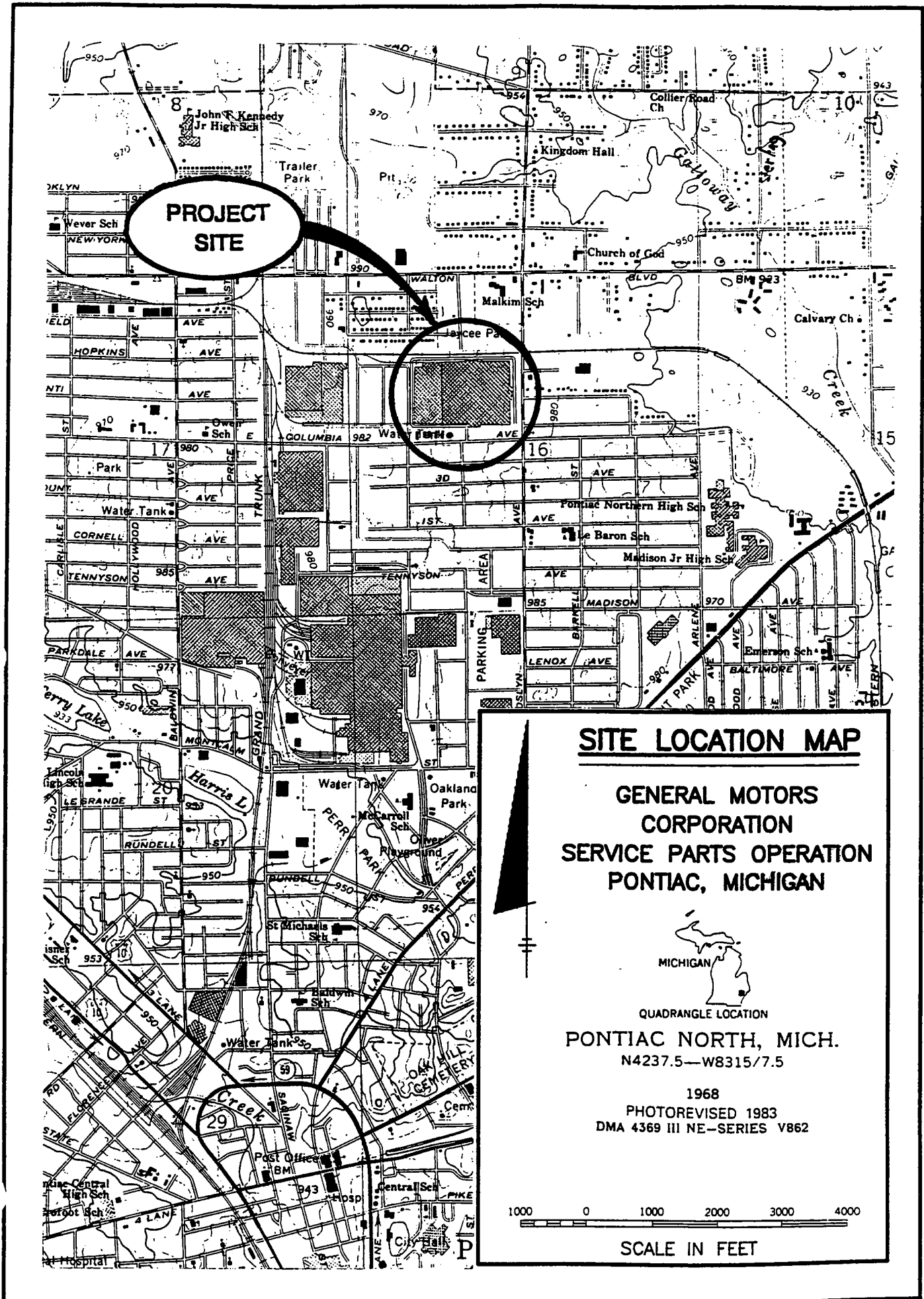
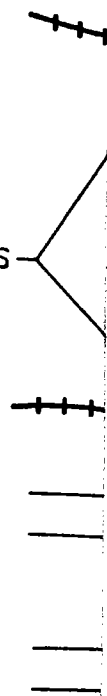


FIGURE 2



RAILROAD TRACKS



GENERAL MOTORS
CORPORATION
SERVICE PARTS
OPERATIONS #75
PONTIAC, MICHIGAN

SITE PLAN

NO SCALE

FILE NO. 2488-238-019

LEGEND

- ③ SAMPLE LOCATION
- UNDERGROUND LINES
- ⊕ PROPOSED SOIL BORING/
MONITORING WELL LOCATION



WAREHOUSE &
OFFICE

VENT

4000 GALLON
DIESEL UST

FILL

APPROXIMATE AREA
OF EXCAVATION

SUPPLY/
RETURN

PRODUCT ISOLATION
VALVE (TYP OF 4)

GENERAL MOTORS CORPORATION
SERVICE PARTS OPERATION #75
SAMPLE LOCATION MAP
PONTIAC, MICHIGAN



(SCALE IN FEET)

Appendices



O'BRIEN & GERE

APPENDIX A
Liquid Disposal Documents

DNR

MICHIGAN DEPARTMENT
OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE

ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐1979, as amended and Act 136, P.A.
1969.Failure to file is punishable under
section 299.548 MCL or Section 10 of
Act 136, P.A. 1969

Form Approved OMB No. 2050-0039 Expires 9-30-91

Please print or type

UNIFORM HAZARDOUS
WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest
Document No.2. Page 1
ofInformation in the shaded areas
is not required by Federal
law.

M I D O 7 6 3 3 1 2 8 9

3. Generator's Name and Mailing Address

G. M. SERVICE PARTS OPERATIONS
1251 JOSLYN AVENUE

PONTIAC, MICHIGAN 48340-2064

4. Generator's Phone (313) 857-3679

A. State Manifest Document Number

MI 2188644

B. State Generator's ID

5. Transporter 1 Company Name

K+D INDUSTRIAL SERVICES, INC.

6. US EPA ID Number

M I D O 7 2 7 9 0 7 1 0

C. State Transporter's ID

D. Transporter's Phone 313-724-3300

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address

GENERAL DIE COMPANY
12680 BEECH DAILY RD.

10. US EPA ID Number

G. State Facility's ID

REDFORD, MICHIGAN 48237

M I D O 4 7 1 8 9 5 8 8

H. Facility's Phone

313-555-2530

11. US DOT Description (including Proper Shipping Name, Hazard Class, and
HM ID NUMBER).

12. Containers

13. Total

14. Unit

I. Waste

N/H

a. OTHER WASTE - WASTE #2
DIESEL FUEL

No. Type

Quantity

W/Vol

No.

001 TT 031686

029L N

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes
Listed Above

a/ /

b/ /

c/ /

d/ /

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by
proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway
according to applicable international and national government regulations.If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined
to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the
present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste
generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

RUSSETT, TANCERAK

Signature

RUSSETT, TANCERAK

Date

Month Day Year
01/1/92

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

BELL, W. GORDON

Signature

BELL, W. GORDON

Date

Month Day Year
01/1/92

18. Transporter 2 Acknowledgement or Receipt of Materials

Printed/Typed Name

Signature

Date

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in
item 19.

Printed/Typed Name

DANCE, A. CORNELIUS

Signature

DANCE, A. CORNELIUS

Date

Month Day Year
01/1/92

APPENDIX B
Tank Disposal Documents



TECHNICAL SERVICES

March 10, 1992

Mr. Peter J.H. Thomson
O'BRIEN & GERE ENGINEERS, INC.
39500 Orchard Hill Place
Suite 300
Novi, MI 48375

Re: UST Removal Project -
General Motors Service Parts Operations
Pontiac, Michigan

Subj: Tank Disposal Documentation

File: 28201

Dear Mr. Thomson:

This letter certifies that one (1) 4,000 gallon Underground Storage Tank (UST) of fiberglass construction was removed from the General Motors facility located at 1251 Joslyn Road, Pontiac, Michigan. This UST was cleaned, cut and placed into a roll-off container along with the contaminated soils excavated during this project. The destroyed tank carcass and soils will be transported and disposed of at BFI Waste Systems located in South Lyon, MI, upon our receipt of disposal approvals. UST cleaning and disposal activities will be in accordance with applicable A.P.I., Federal and State requirements.

If you should have any questions, please do not hesitate to contact me.

Very truly yours,

OBG TECHNICAL SERVICES, INC.

Christopher F. Winkeljohn
Project Supervisor

CFW/ask:2.16

Attachment

cc: Mr. Robert C. Cheesman - OBG Technical Services, Syracuse, NY

OBG TECHNICAL SERVICES, INC. AN O'BRIEN & GERE LIMITED COMPANY

Box 5240/5000 Brittonfield Parkway, Suite 200/Syracuse, New York 13220/(315) 437-6400 FAX (315) 437-9800

5221 Militia Hill Road/Plymouth Meeting, Pennsylvania 19462/(215) 940-1160 FAX (215) 825-5623

■ 39500 Orchard Hill Place, Suite 305/Novi, Michigan 48375/(313) 348-2510 FAX (313) 347-4357

Corporate Square West, Suite 103/5610 Crawfordsville Road/Indianapolis, Indiana 46224/(317) 244-0489 FAX (317) 244-1779

Box 35/161 Woodford Avenue/Plainville, Connecticut 06062/(203) 747-2930 FAX (203) 747-2930

APPENDIX C
Environmental Monitoring Soil Analytical Results



ENVIRONMENTAL QUALITY LABORATORIES, INC.

6540 Diplomat Drive
Sterling Heights, Michigan 48314-1420
(313) 731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 313-731-2590

CLIENT NAME: O'BRIEN & GERE
39500 ORCHARD HILL PLACE DR.
SUITE 300
NOVI, MI 48050

SAMPLE NO. 449

SAMPLE DESCRIPTION: GMSPO - PONTIAC
EAST BOTTOM OF TANK - SOIL

DATE REPORTED: 02/03/92

DATE RECEIVED: 01/29/92

ORGANICS ANALYSIS DATA SHEET 8020 SCAN

COMPOUND NAME	REFERENCE METHOD	CONCENTRATION
BENZENE	8020/5030	*LESS THAN 10 ppBillion
ETHYL BENZENE	8020/5030	LESS THAN 10 ppBillion
TOLUENE	8020/5030	LESS THAN 10 ppBillion
XYLENES	8020/5030	LESS THAN 10 ppBillion

*NOTE: TERM LESS THAN DENOTES DETECTION LIMIT OF TEST.

JAMES TOMALIA, LABORATORY SUPERVISOR

C. BLOOM, ASSISTANT LABORATORY SUPERVISOR

REFERENCES: 40 CFR PART 136. CURRENT EDITION.



ENVIRONMENTAL QUALITY LABORATORIES, INC.

6540 Diplomat Drive
Sterling Heights, Michigan 48314-1420
(313) 731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 313-731-2590

CLIENT: O'BRIEN & GERE
39500 ORCHARD HILL PLACE DR.
SUITE 300
NOVI, MI 48050

SAMPLE DESCRIPTION: GMSPO - PONTIAC
EAST BOTTOM OF TANK - SOIL

DATE REPORTED: 02/03/92

DATE RECEIVED: 01/29/92

LAB NO. 449

ORGANICS ANALYSIS DATA SHEET

8310 SCAN

LAB NO.	COMPOUND NAME	REFERENCE METHOD	CONCENTRATION
	Napthalene	8310/3550	*Less Than 0.3 ppMillion
	Acenaphthylene	8310/3550	Less Than 0.3 ppMillion
	Acenaphthene	8310/3550	Less Than 0.3 ppMillion
	Fluorene	8310/3550	Less Than 0.3 ppMillion
	Phenanthrene	8310/3550	Less Than 0.3 ppMillion
	Anthracene	8310/3550	Less Than 0.3 ppMillion
	Fluoranthene	8310/3550	Less Than 0.3 ppMillion
	Pyrene	8310/3550	Less Than 0.3 ppMillion
	Benzo(a)anthracene	8310/3550	Less Than 0.3 ppMillion
	Chrysene	8310/3550	Less Than 0.3 ppMillion
	Benzo(b)fluoranthene	8310/3550	Less Than 0.3 ppMillion
	Benzo(k)fluoranthene	8310/3550	Less Than 0.3 ppMillion
	Benzo(a)pyrene	8310/3550	Less Than 0.3 ppMillion
	Dibenzo(ah)anthracene	8310/3550	Less Than 0.3 ppMillion
	Benzo(ghi)perylene	8310/3550	Less Than 0.3 ppMillion
	Indeno(123-cd)pyrene	8310/3550	Less Than 0.3 ppMillion

*NOTE: TERM LESS THAN DENOTES DETECTION LIMIT OF TEST.

James Tomalia, Laboratory Supervisor

Chris Bloom, Assistant Laboratory Supervisor

REFERENCES: 40 CFR PART 136. CURRENT EDITION.



ENVIRONMENTAL QUALITY LABORATORIES, INC.

6540 Diplomat Drive
Sterling Heights, Michigan 48314-1420
(313) 731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 313-731-2590

CLIENT NAME: O'BRIEN & GERE
39500 ORCHARD HILL PLACE DR.
SUITE 300
NOVI, MI 48050

SAMPLE NO. 450

SAMPLE DESCRIPTION: GMSPO - PONTIAC
SOUTH SIDE WALL - SOIL

DATE REPORTED: 02/03/92

DATE RECEIVED: 01/29/92

ORGANICS ANALYSIS DATA SHEET 8020 SCAN

COMPOUND NAME	REFERENCE METHOD	CONCENTRATION
BENZENE	8020/5030	*LESS THAN 10 ppBillion
ETHYL BENZENE	8020/5030	LESS THAN 10 ppBillion
TOLUENE	8020/5030	LESS THAN 10 ppBillion
XYLENES	8020/5030	LESS THAN 10 ppBillion

*NOTE: TERM LESS THAN DENOTES DETECTION LIMIT OF TEST.

JAMES TOMALIA, LABORATORY SUPERVISOR

C. BLOOM, ASSISTANT LABORATORY SUPERVISOR

REFERENCES: 40 CFR PART 136. CURRENT EDITION.



ENVIRONMENTAL QUALITY LABORATORIES, INC.

6540 Diplomat Drive
Sterling Heights, Michigan 48314-1420
(313) 731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 313-731-2590

CLIENT: O'BRIEN & GERE
39500 ORCHARD HILL PLACE DR.
SUITE 300
NOVI, MI 48050

SAMPLE DESCRIPTION: GMSPO - PONTIAC
SOUTH SIDE WALL - SOIL

DATE REPORTED: 02/03/92

DATE RECEIVED: 01/29/92

LAB NO. 450

ORGANICS ANALYSIS DATA SHEET

8310 SCAN

LAB NO.	COMPOUND NAME	REFERENCE METHOD	CONCENTRATION
	Napthalene	8310/3550	*Less Than 0.3 ppMillion
	Acenaphthylene	8310/3550	Less Than 0.3 ppMillion
	Acenaphthene	8310/3550	Less Than 0.3 ppMillion
	Fluorene	8310/3550	Less Than 0.3 ppMillion
	Phenanthrene	8310/3550	Less Than 0.3 ppMillion
	Anthracene	8310/3550	Less Than 0.3 ppMillion
	Fluoranthene	8310/3550	Less Than 0.3 ppMillion
	Pyrene	8310/3550	Less Than 0.3 ppMillion
	Benzo(a)anthracene	8310/3550	Less Than 0.3 ppMillion
	Chrysene	8310/3550	Less Than 0.3 ppMillion
	Benzo(b)fluoranthene	8310/3550	Less Than 0.3 ppMillion
	Benzo(k)fluoranthene	8310/3550	Less Than 0.3 ppMillion
	Benzo(a)pyrene	8310/3550	Less Than 0.3 ppMillion
	Dibenzo(ah)anthracene	8310/3550	Less Than 0.3 ppMillion
	Benzo(ghi)perylene	8310/3550	Less Than 0.3 ppMillion
	Indeno(123-cd)pyrene	8310/3550	Less Than 0.3 ppMillion

*NOTE: TERM LESS THAN DENOTES DETECTION LIMIT OF TEST.

James Tomalia, Laboratory Supervisor

Chris Bloom, Assistant Laboratory Supervisor

REFERENCES: 40 CFR PART 136. CURRENT EDITION.



ENVIRONMENTAL QUALITY LABORATORIES, INC.

6540 Diplomat Drive
Sterling Heights, Michigan 48314-1420
(313) 731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 313-731-2590

CLIENT NAME: O'BRIEN & GERE
39500 ORCHARD HILL PLACE DR.
SUITE 300
NOVI, MI 48050

SAMPLE NO. 451

SAMPLE DESCRIPTION: GMSPO - PONTIAC
NORTH SIDE WALL - SOIL

DATE REPORTED: 02/03/92

DATE RECEIVED: 01/29/92

ORGANICS ANALYSIS DATA SHEET 8020 SCAN

COMPOUND NAME	REFERENCE METHOD	CONCENTRATION
BENZENE	8020/5030	*LESS THAN 10 ppBillion
ETHYL BENZENE	8020/5030	LESS THAN 10 ppBillion
TOLUENE	8020/5030	LESS THAN 10 ppBillion
XYLENES	8020/5030	LESS THAN 10 ppBillion

*NOTE: TERM LESS THAN DENOTES DETECTION LIMIT OF TEST.

JAMES TOMALIA, LABORATORY SUPERVISOR

C. BLOOM, ASSISTANT LABORATORY SUPERVISOR

REFERENCES: 40 CFR PART 136. CURRENT EDITION.



ENVIRONMENTAL QUALITY LABORATORIES, INC.

6540 Diplomat Drive
Sterling Heights, Michigan 48314-1420
(313) 731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 313-731-2590

CLIENT: O'BRIEN & GERE
39500 ORCHARD HILL PLACE DR.
SUITE 300
NOVI, MI 48050

SAMPLE DESCRIPTION: GMSPO - PONTIAC
NORTH SIDE WALL - SOIL

DATE REPORTED: 02/03/92

DATE RECEIVED: 01/29/92

LAB NO. 451

ORGANICS ANALYSIS DATA SHEET

8310 SCAN

LAB NO.	COMPOUND NAME	REFERENCE METHOD	CONCENTRATION
	Napthalene	8310/3550	*Less Than 0.3 ppMillion
	Acenaphthylene	8310/3550	Less Than 0.3 ppMillion
	Acenaphthene	8310/3550	Less Than 0.3 ppMillion
	Fluorene	8310/3550	Less Than 0.3 ppMillion
	Phenanthrene	8310/3550	Less Than 0.3 ppMillion
	Anthracene	8310/3550	Less Than 0.3 ppMillion
	Fluoranthene	8310/3550	Less Than 0.3 ppMillion
	Pyrene	8310/3550	Less Than 0.3 ppMillion
	Benzo(a)anthracene	8310/3550	Less Than 0.3 ppMillion
	Chrysene	8310/3550	Less Than 0.3 ppMillion
	Benzo(b)fluoranthene	8310/3550	Less Than 0.3 ppMillion
	Benzo(k)fluoranthene	8310/3550	Less Than 0.3 ppMillion
	Benzo(a)pyrene	8310/3550	Less Than 0.3 ppMillion
	Dibenzo(ah)anthracene	8310/3550	Less Than 0.3 ppMillion
	Benzo(ghi)perylene	8310/3550	Less Than 0.3 ppMillion
	Indeno(123-cd)pyrene	8310/3550	Less Than 0.3 ppMillion

*NOTE: TERM LESS THAN DENOTES DETECTION LIMIT OF TEST.

James Tomalia, Laboratory Supervisor

Chris Bloom, Assistant Laboratory Supervisor

REFERENCES: 40 CFR PART 136. CURRENT EDITION.



ENVIRONMENTAL QUALITY LABORATORIES, INC.

6540 Diplomat Drive
Sterling Heights, Michigan 48314-1420
(313) 731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 313-731-2590

CLIENT NAME: O'BRIEN & GERE
39500 ORCHARD HILL PLACE DR.
SUITE 300
NOVI, MI 48050

SAMPLE NO. 452

SAMPLE DESCRIPTION: GMSPO - PONTIAC
WEST SIDE WALL - SOIL

DATE REPORTED: 02/03/92

DATE RECEIVED: 01/29/92

ORGANICS ANALYSIS DATA SHEET 8020 SCAN

COMPOUND NAME	REFERENCE METHOD	CONCENTRATION
BENZENE	8020/5030	*LESS THAN 10 ppBillion
ETHYL BENZENE	8020/5030	LESS THAN 10 ppBillion
TOLUENE	8020/5030	LESS THAN 10 ppBillion
XYLENES	8020/5030	LESS THAN 10 ppBillion

*NOTE: TERM LESS THAN DENOTES DETECTION LIMIT OF TEST.

JAMES TOMALIA, LABORATORY SUPERVISOR

C. BLOOM, ASSISTANT LABORATORY SUPERVISOR

REFERENCES: 40 CFR PART 136. CURRENT EDITION.



ENVIRONMENTAL QUALITY LABORATORIES, INC.

6540 Diplomat Drive
Sterling Heights, Michigan 48314-1420
(313) 731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 313-731-2590

CLIENT: O'BRIEN & GERE
39500 ORCHARD HILL PLACE DR.
SUITE 300
NOVI, MI 48050
SAMPLE DESCRIPTION: GMSPO - PONTIAC
WEST SIDE WALL - SOIL
DATE REPORTED: 02/03/92
DATE RECEIVED: 01/29/92
LAB NO. 452

ORGANICS ANALYSIS DATA SHEET

8310 SCAN

LAB NO.	COMPOUND NAME	REFERENCE METHOD	CONCENTRATION
	Napthalene	8310/3550	*Less Than 0.3 ppMillion
	Acenaphthylene	8310/3550	Less Than 0.3 ppMillion
	Acenaphthene	8310/3550	Less Than 0.3 ppMillion
	Fluorene	8310/3550	Less Than 0.3 ppMillion
	Phenanthrene	8310/3550	Less Than 0.3 ppMillion
	Anthracene	8310/3550	Less Than 0.3 ppMillion
	Fluoranthene	8310/3550	Less Than 0.3 ppMillion
	Pyrene	8310/3550	Less Than 0.3 ppMillion
	Benzo(a)anthracene	8310/3550	Less Than 0.3 ppMillion
	Chrysene	8310/3550	Less Than 0.3 ppMillion
	Benzo(b)fluoranthene	8310/3550	Less Than 0.3 ppMillion
	Benzo(k)fluoranthene	8310/3550	Less Than 0.3 ppMillion
	Benzo(a)pyrene	8310/3550	Less Than 0.3 ppMillion
	Dibenzo(ah)anthracene	8310/3550	Less Than 0.3 ppMillion
	Benzo(ghi)perylene	8310/3550	Less Than 0.3 ppMillion
	Indeno(123-cd)pyrene	8310/3550	Less Than 0.3 ppMillion

*NOTE: TERM LESS THAN DENOTES DETECTION LIMIT OF TEST.

James Tomalia, Laboratory Supervisor

Chris Bloom, Assistant Laboratory Supervisor
REFERENCES: 40 CFR PART 136. CURRENT EDITION.



ENVIRONMENTAL QUALITY LABORATORIES, INC.

6540 Diplomat Drive
Sterling Heights, Michigan 48314-1420
(313) 731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 313-731-2590

CLIENT NAME: O'BRIEN & GERE
39500 ORCHARD HILL PLACE DR.
SUITE 300
NOVI, MI 48050

SAMPLE NO. 453

SAMPLE DESCRIPTION: GMSPO - PONTIAC
EAST SIDE WALL - SOIL

DATE REPORTED: 02/03/92

DATE RECEIVED: 01/29/92

ORGANICS ANALYSIS DATA SHEET 8020 SCAN

COMPOUND NAME	REFERENCE METHOD	CONCENTRATION
BENZENE	8020/5030	*LESS THAN 10 ppBillion
ETHYL BENZENE	8020/5030	LESS THAN 10 ppBillion
TOLUENE	8020/5030	LESS THAN 10 ppBillion
XYLENES	8020/5030	LESS THAN 10 ppBillion

*NOTE: TERM LESS THAN DENOTES DETECTION LIMIT OF TEST.

JAMES TOMALIA, LABORATORY SUPERVISOR

C. BLOOM, ASSISTANT LABORATORY SUPERVISOR

REFERENCES: 40 CFR PART 136. CURRENT EDITION.



ENVIRONMENTAL QUALITY LABORATORIES, INC.

6540 Diplomat Drive
Sterling Heights, Michigan 48314-1420
(313) 731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 313-731-2590

CLIENT: O'BRIEN & GERE

39500 ORCHARD HILL PLACE DR.

SUITE 300

NOVI, MI 48050

SAMPLE DESCRIPTION: GMSPO - PONTIAC
EAST SIDE WALL - SOIL

DATE REPORTED: 02/03/92

DATE RECEIVED: 01/29/92

LAB NO. 453

ORGANICS ANALYSIS DATA SHEET

8310 SCAN

LAB NO.	COMPOUND NAME	REFERENCE METHOD	CONCENTRATION
	Napthalene	8310/3550	*Less Than 0.3 ppMillion
	Acenaphthylene	8310/3550	Less Than 0.3 ppMillion
	Acenaphthene	8310/3550	Less Than 0.3 ppMillion
	Fluorene	8310/3550	Less Than 0.3 ppMillion
	Phenanthrene	8310/3550	Less Than 0.3 ppMillion
	Anthracene	8310/3550	Less Than 0.3 ppMillion
	Fluoranthene	8310/3550	Less Than 0.3 ppMillion
	Pyrene	8310/3550	Less Than 0.3 ppMillion
	Benzo(a)anthracene	8310/3550	Less Than 0.3 ppMillion
	Chrysene	8310/3550	Less Than 0.3 ppMillion
	Benzo(b)fluoranthene	8310/3550	Less Than 0.3 ppMillion
	Benzo(k)fluoranthene	8310/3550	Less Than 0.3 ppMillion
	Benzo(a)pyrene	8310/3550	Less Than 0.3 ppMillion
	Dibenzo(ah)anthracene	8310/3550	Less Than 0.3 ppMillion
	Benzo(ghi)perylene	8310/3550	Less Than 0.3 ppMillion
	Indeno(123-cd)pyrene	8310/3550	Less Than 0.3 ppMillion

*NOTE: TERM LESS THAN DENOTES DETECTION LIMIT OF TEST.

James Tomalia, Laboratory Supervisor

Chris Bloom, Assistant Laboratory Supervisor

REFERENCES: 40 CFR PART 136. CURRENT EDITION.



ENVIRONMENTAL QUALITY LABORATORIES, INC.

6540 Diplomat Drive
Sterling Heights, Michigan 48314-1420
(313) 731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 313-731-2590

CLIENT NAME: O'BRIEN & GERE
39500 ORCHARD HILL PLACE DR.
SUITE 300
NOVI, MI 48050

SAMPLE NO. 448

SAMPLE DESCRIPTION: GMSPO - PONTIAC
EAST BOTTOM OF TANK - WATER

DATE REPORTED: 02/03/92

DATE RECEIVED: 01/29/92

ORGANICS ANALYSIS DATA SHEET 8020 SCAN

COMPOUND NAME	REFERENCE METHOD	CONCENTRATION
BENZENE	8020/5030	*LESS THAN 1.0 ppBillion
ETHYL BENZENE	8020/5030	LESS THAN 1.0 ppBillion
TOLUENE	8020/5030	LESS THAN 1.0 ppBillion
XYLENES	8020/5030	7.0 ppBillion

*NOTE: TERM LESS THAN DENOTES DETECTION LIMIT OF TEST.

JAMES TOMALIA, LABORATORY SUPERVISOR

C. BLOOM, ASSISTANT LABORATORY SUPERVISOR

REFERENCES: 40 CFR PART 136. CURRENT EDITION.



ENVIRONMENTAL QUALITY LABORATORIES, INC.

6540 Diplomat Drive
Sterling Heights, Michigan 48314-1420
(313) 731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 313-731-2590

CLIENT: O'BRIEN & GERE
39500 ORCHARD HILL PLACE DR.
SUITE 300
NOVI, MI 48050

SAMPLE DESCRIPTION: GMSPO - PONTIAC
EAST BOTTOM OF TANK - WATER

DATE REPORTED: 02/03/92

DATE RECEIVED: 01/29/92

LAB NO. 448

ORGANICS ANALYSIS DATA SHEET

8310 SCAN

LAB NO.	COMPOUND NAME	REFERENCE METHOD	CONCENTRATION
	Napthalene	8310/3550	*Less Than 5.0 ppBILLION
	Acenaphthylene	8310/3550	Less Than 5.0 ppBILLION
	Acenaphthene	8310/3550	43.9 ppBILLION
	Fluorene	8310/3550	Less Than 5.0 ppBILLION
	Phenanthrene	8310/3550	7.5 ppBILLION
	Anthracene	8310/3550	Less Than 5.0 ppBILLION
	Fluoranthene	8310/3550	26.1 ppBILLION
	Pyrene	8310/3550	30.6 ppBILLION
	Benzo(a)anthracene	8310/3550	5.0 ppBILLION
	Chrysene	8310/3550	Less Than 5.0 ppBILLION
	Benzo(b)fluoranthene	8310/3550	Less Than 5.0 ppBILLION
	Benzo(k)fluoranthene	8310/3550	Less Than 5.0 ppBILLION
	Benzo(a)pyrene	8310/3550	Less Than 5.0 ppBILLION
	Dibenzo(ah)anthracene	8310/3550	Less Than 5.0 ppBILLION
	Benzo(ghi)perylene	8310/3550	Less Than 5.0 ppBILLION
	Indeno(123-cd)pyrene	8310/3550	Less Than 5.0 ppBILLION

*NOTE: TERM LESS THAN DENOTES DETECTION LIMIT OF TEST.

James Tomalia, Laboratory Supervisor

Chris Bloom, Assistant Laboratory Supervisor
REFERENCES: 40 CFR PART 136. CURRENT EDITION.

CHAIN OF CUSTODY



ENVIRONMENTAL QUALITY INDEX

**6540 Diplomat Drive
Sterling Heights, Michigan 48314-1420
(313) 731-1818 • (800) 368-5227**

3344 No. 1

[illegible]



ENVIRONMENTAL QUALITY LABORATORIES, INC.

6540 Diplomat Drive
Sterling Heights, Michigan 48314-1420
(313) 731-1818
Outside Michigan Dial 1-800-368-5227
Fax Line 313-731-2590

CLIENT: O'BRIEN & GERE
39500 ORCHARD HILL PLACE DR.
SUITE 300
NOVI, MI 48050

DATE: 1-29 TO 2-03-92

SUBJECT NAME AND NUMBER: GMSPO - PONTIAC

LAB NO.: 448-453

METHOD SPIKE DUPLICATES					% RECOVERY ACCURACY CONTROL LIMITS		% RSD PRECISION CONTROL LIMITS	
TYPE	SPIKE	SPIKE	%	%	UPPER	LOWER	UPPER	LOWER
OF RUN	1	2	RECOVERY	RSD				
METHOD	ppB	ppB						
020					150	50	20	0
BENZENE	49.51	49.04	98.6	0.7	150	50	20	0
0LUENE	48.68	48.50	97.2	0.3	150	50	20	0
BENZENE	48.48	48.10	96.6	0.6	150	50	20	0
0LFNES	49.98	49.85	99.8	0.2	150	50	20	0
METHOD 8310	ppM	ppM						
PHTHALENE	1.3	1.5	140	9.9	150	50	20	0
0NAPHTHENE	1.5	1.6	155	4.6	150	50	20	0
0RANTHENE	1.2	1.4	130	10.7	150	50	20	0
0ZO (A)								
0THRACENE	1.2	1.4	130	10.7	150	50	20	0
0ENZO (A,H)								
0THRACENE	1.2	1.4	130	10.7	150	50	20	0

MATRIX: SOIL

Comments: METHOD BLANKS: ALL LESS THAN DETECTION LIMIT.

Thomas S. Megna, M.S., Lab Director

James Tomalia, Lab Supervisor

Bloom, Assistant Lab Supervisor

APPENDIX D
Water Well Records

WATER WELL RECORD

ACT 294 PA 1965

MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL

County 9414110 Township Name POUTINAC Fraction NW 1/4 SE 1/4 Section Number 10 Town Number 3 N N/S. Range Number 102 E/W.

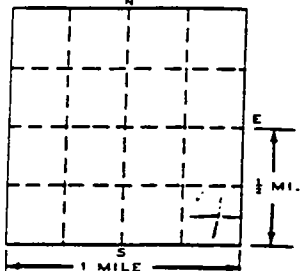
Distance And Direction from Road Intersections

1564 STIRLING

Street address & City of Well Location

Locate with "X" in section below

Sketch Map:



3 OWNER OF WELL:

Address

MI BLACK
1564 STIRLING
POUTINAC MI

4 WELL DEPTH: (completed) Date of Completion

60 ft. 12/17/83

5 ☐ Cable tool ☒ Rotary ☐ Driven ☐ Dug
☐ Hollow rod ☐ Jetted ☐ Bored ☐

6 USE: ☒ Domestic ☐ Public Supply ☐ Industry
☐ Irrigation ☐ Air Conditioning ☐ Commercial
☐ Test Well ☐

7 CASING: Threaded ☐ Welded ☒

Height: Above/Below

Diam.

4 in. to 56 ft. Depth
in. to ft. Depth

Surface 1 ft.Weight 11 lbs./ft.Drive Shoe? Yes ☒ No ☐

8 SCREEN:

Type: STAINLESS Dia.: 3"Slot/Gauge 10 Length 41Set between 56 ft. and 60 ft.

Fittings:

4 inch. 2' BLANK

9 STATIC WATER LEVEL

19 ft. below land surface

10 PUMPING LEVEL below land surface

27 ft. after 1 hrs. pumping 35 g.p.m.

11 WATER QUALITY in Parts Per Million:

Iron (Fe) _____ Chlorides (Cl) _____

Hardness _____ Other _____

12 WELL HEAD COMPLETION:

☐ In Approved Pit☒ Pitless Adapter ☐ 12" Above Grade13 Well Grouted? ☒ Yes ☐ No☐ Neat Cement ☒ Bentonite ☐Depth: From 70 ft. to 80 ft.

14 Nearest Source of possible contamination

50 feet E Direction SOUTHERN TypeWell disinfected upon completion ☐ Yes ☐ No

15 PUMP:

☐ Not installedManufacturer's Name MC DONALDModel Number 32H HP 3 Volts 220Length of Drop Pipe 42 ft. capacity 12 G.P.M.Type: ☒ Submersible☐ Jet☐ Reciprocating

USE A 2ND SHEET IF NEEDED

F k s, elevation, source of data, etc.

17 WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true
to the best of my knowledge and belief.

WILLIAM L. LUTHER WILLIAM L. LUTHER
REGISTERED BUSINESS NAME REGISTRATION NO.

Address 1515 OAKHILLSigned WILLIAM L. LUTHERDate 12/17/83

WATER WELL RECORD

ACT 294 PA 1965

MICHIGAN DEPARTMENT
OF
PUBLIC HEALTH

1 LOCATION OF WELL

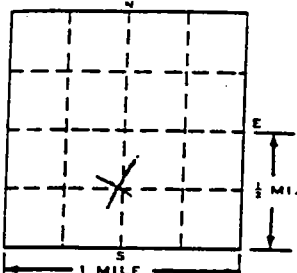
County Calhoun Township Name City of Port Huron Fraction S 1/4 S 1/4 Section Number 10 Town Number N/S. Range Number E/W.

Location And Direction from Road Intersections

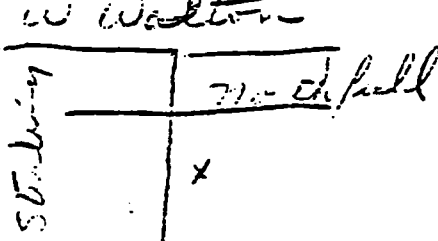
1/4 mile North
135 feet North of intersection

Street address & City of Well Location

Locate with "X" in section below



Sketch Map:



3 OWNER OF WELL:

Address

1585 St. Clair

4 WELL DEPTH: (completed) Date of Completion

ft.

5 ☐ Cable tool ☐ Rotary ☐ Driven ☐ Dug
☐ Hollow rod ☒ Jetted ☐ Bored ☐

6 USE: ☒ Domestic ☐ Public Supply ☐ Industry
☐ Irrigation ☐ Air Conditioning ☐ Commercial
☐ Test Well ☐

7 CASING: Threaded ☒ Welded ☐ Height: Above/Below

Diam. 2 in. to 105 ft. Depth Surface ft.

 in. to ft. Depth Weight lbs./ft.

Drive Shoe? Yes ☒ No ☐

8 SCREEN:

Type: Johnson Dia.: 1 1/4

Slot/Gauze 12-10 Length 6'

Set between 100 ft. and 105 ft.

Fittings: 2 screens 5' type

9 STATIC WATER LEVEL

40 ft. below land surface

10 PUMPING LEVEL below land surface

15 ft. after 1/2 hrs. pumping 15 g.p.m.

 ft. after hrs. pumping g.p.m.

11 WATER QUALITY in Parts Per Million:

Iron (Fe) Chlorides (Cl)

Hardness Other

12 WELL HEAD COMPLETION:

☐ In Approved Pit ☒ Pitless Adapter ☐ 12" Above Grade

13 Well Grouted? ☒ Yes ☐ No

☐ Neat Cement ☐ Bentonite ☐
Depth: From ft. to ft.

14 Nearest Source of possible contamination

50 feet W Direction SFPT Type

Well disinfected upon completion ☒ Yes ☐ No

15 PUMP:

☐ Not installed

Manufacturer's Name

Model Number HP Volts

Length of Drop Pipe ft. capacity G.P.M.

Type: ☐ Submersible ☒ Jet ☐ Reciprocating

USE A 2ND SHEET IF NEEDED

Remarks, elevation, source of data, etc.

17 WATER WELL CONTRACTOR'S CERTIFICATION:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

2000 PAINT 0122
REGISTERED BUSINESS NAME REGISTRATION NO.

Address 1585 St. Clair

Signed Date

AUTHORIZED REPRESENTATIVE

Appendix AD

Appendix AD

- AD-1 Memo to BBL, re: Roll-Off Box Sampling Results (CRA, 2000d)
- AD-2 Memo to BBL, re: Roll-Off Box and Electrical Pit Sampling Results (CRA, 2000e)
- AD-3 Memo to BBL, re: Sediment Sampling (Duck Pond) Results (CRA, 2000h)
- AD-4 Memo to BBL, re: Roll-Off Box Sampling Results for #410740, #410748, #410689, and #410322 (CRA, 2000i)
- AD-5 Roll-Off Box Sampling Results for #410776 and #411666 (CRA, 2000j)
- AD-6 Status Summary Storm Sewer Sampling Results (CRA, 2000k)
- AD-7 Storm Sewer Water Sampling Results (CRA, 2000l)
- AD-8 Storm Sewer Water Sampling Results (CRA, 2000m)
- AD-9 Storm Sewer Water Sampling Results (CRA, 2000n)

AD-1

F 4/24/00 U



**CONESTOGA-ROVERS
& ASSOCIATES**

2578 Dougall Avenue, Windsor, Ontario, N8X 1T7
Telephone: (519) 966-9886 Fax: (519) 966-3894
www.CRAworld.com

MEMORANDUM

TO: Dan Fronczak REF. NO.: 15721
FROM: Gavin O'Neill *GO* DATE: April 24, 2000
C.C.: Keith West
RE: Roll-Off Box Sampling Results for GM Pontiac North Complex, Pontiac, MI

On April 5, 2000, CRA personnel collected composite samples for waste characterization from Roll-off boxes #6617 and #2562 that were filled with sediments from stormsewer cleaning activities at the GM North Complex in Pontiac, MI.

Sediments were analyzed for PCBs, Reactivity, Corrosivity, Ignitability, TCLP VOCs, and TCLP Metals. The samples were immediately placed in a cooler with ice and shipped FedEx to Columbia Analytical Services, Inc. under chain of custody for analysis.

As verbally indicated to you, Aroclor 1248 was detected at 1000 and 36 ppm in Roll-off box #6617 and #2562, respectively. In addition, #6617 did not pass the 40 CFR 261 hazardous waste criteria for ignitability. There were no VOCs detected in either box and the only TCLP metal to be detected was barium. Results are summarized in the attached table.

Should you have any questions, please do not hesitate to contact us.

TABLE 1

**RESULTS OF ROLL-OFF BOX SAMPLING
GM PONTIAC NORTH COMPLEX
PONTIAC, MI**

<i>Sample Number:</i>	<i>SEH-001</i>	<i>SEH-002</i>
<i>Sample Location:</i>	<i>Box #6617</i>	<i>Box#2562</i>
<i>Sample Date:</i>	<i>04/05/00</i>	<i>04/05/00</i>
<i>Sample Type:</i>	<i>sediment</i>	<i>sediment</i>
<i>QA/QC:</i>		

PCBs (mg/kg)

Aroclor 1016	ND (0.03)	ND (0.03)
Aroclor 1221	ND (0.03)	ND (0.03)
Aroclor 1232	ND (0.03)	ND (0.03)
Aroclor 1242	ND (0.03)	ND (0.03)
Aroclor 1248	1000	36
Aroclor 1254	ND (0.03)	ND (0.03)
Aroclor 1260	ND (0.03)	ND (0.03)

Characteristics of Hazardous WastesRegulatory Limits

Corrosivity	pH units	8.08	8.58	≤2 or ≥12.5
Ignitability	DEG F	125	>200	<140 °F
Cyanide	mg/kg	17	37.2	250 mg/kg
Reactive Sulfide	mg/kg	5	<3	500 mg/kg

TCLP VOCs (mg/L)Regulatory Limits

Benzene	ND(0.2)	ND(0.2)	0.5
Carbon Tetrachloride	ND(0.2)	ND(0.2)	0.5
Chlorobenzene	ND(0.2)	ND(0.2)	100
Chloroform	ND(0.2)	ND(0.2)	6
1,4-Dichlorobenzene	ND(0.2)	ND(0.2)	7.5
1,2-Dichloroethane (EDC)	ND(0.2)	ND(0.2)	0.5
1,1-Dichloroethene	ND(0.2)	ND(0.2)	0.7
2-Butanon (MEK)	ND(10)	ND(10)	200
Tetrachloroethene (PCE)	ND(0.2)	ND(0.2)	0.7
Trichloroethene (TCE)	ND(0.2)	ND(0.2)	0.5
Vinyl Chloride	ND(0.2)	ND(0.2)	0.2

TCLP Metals (µg/L)Regulatory Limits

Arsenic	ND(100)	ND(100)	5000
Barium	1450	857	100000
Cadmium	ND(10.0)	ND(10.0)	1000
Chromium	ND(10.0)	ND(10.0)	5000
Lead	ND(50.0)	ND(50.0)	5000
Mercury	ND(1.0)	ND(1.0)	200
Selenium	ND(100)	ND(100)	1000
Silver	ND(10.0)	ND(10.0)	5000
Total Solids (%)	68.8	72.3	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Conestoga Rovers & Assoc.
Project: Stormsewer Sampling/15721
Sample Matrix: Sediment

Service Request: K2002506
Date Collected: 4/5/00
Date Received: 4/6/00

Polychlorinated Biphenyls (PCBs)

Sample Name: S-15721-040500-SEH-001
Lab Code: K2002506-001
Test Notes: D

Units: ng/Kg (ppm)
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3540C	8082	100	0.03	1	4/6/00	4/12/00	ND	
Aroclor 1221	EPA 3540C	8082	100	0.03	1	4/6/00	4/12/00	ND	
Aroclor 1232	EPA 3540C	8082	100	0.03	1	4/6/00	4/12/00	ND	
Aroclor 1242	EPA 3540C	8082	100	0.03	1	4/6/00	4/12/00	ND	
Aroclor 1248	EPA 3540C	8082	100	0.03	1	4/6/00	4/12/00	1000	
Aroclor 1254	EPA 3540C	8082	100	0.03	1	4/6/00	4/12/00	ND	
Aroclor 1260	EPA 3540C	8082	100	0.03	1	4/6/00	4/12/00	ND	

D

The MRL is elevated because of matrix interferences and because the sample required diluting.

Approved By:
1022/020597p

Date:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Conestoga Rivers & Assoc.
Project: Stormsewer Sampling/15721
Sample Matrix: Sediment

Service Request: K2002506
Date Collected: 4/5/00
Date Received: 4/6/00

Polychlorinated Biphenyls (PCBs)

Sample Name: S-15721-040500-SEH-002
Lab Code: K2002506-002
Test Notes: D

Units: $\mu\text{g/Kg}$ (ppm)
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3540C	8082	1.0	0.03	1	4/6/00	4/12/00	ND	
Aroclor 1221	EPA 3540C	8082	2.0	0.03	1	4/6/00	4/12/00	ND	
Aroclor 1232	EPA 3540C	8082	1.0	0.03	1	4/6/00	4/12/00	ND	
Aroclor 1242	EPA 3540C	8082	1.0	0.03	1	4/6/00	4/12/00	ND	
Aroclor 1248	EPA 3540C	8082	1.0	0.03	1	4/6/00	4/12/00	36	
Aroclor 1254	EPA 3540C	8082	1.0	0.03	1	4/6/00	4/12/00	ND	
Aroclor 1260	EPA 3540C	8082	1.0	0.03	1	4/6/00	4/12/00	ND	

D

The MRL is elevated because of matrix interferences and because the sample required diluting.

Approved By:
1522/020597p

Date:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Conestoga Rivers & Assoc.
Project: Stormsewer Sampling/15721
Sample Matrix: Sediment

Service Request: K2002506
Date Collected: 4/5/00
Date Received: 4/6/00

Total Solids

Prep Method: NONE
Analysis Method: 160.3M
Test Notes:

Units: PERCENT
Basis: Wet

Sample Name	Lab Code	Date Analyzed	Result	Result Notes
S-15721-040500-SIE11-001	K2002506-001	4/10/00	65.8	
S-15721-040500-SIE11-002	K2002506-002	4/10/00	72.3	

Approved By:
TSOLDEXLT Sample/01071998a

Date:

FAX

GM Metal 2-5
15721
SDG: 6
TCLP MTL only

Date: Thursday, April 13, 2000

Time: 6:02:21 PM

3 / 91 Pages

To: Paul Wiseman
Conestoga Rovers & Associates

From: Mingta Lin
Columbia Analytical Services

Fax: 17349423080

Fax: 380-638-1068

Voice:

Voice: 380-577-7222

Comments:

Paul:

2506.

TCLP-Metals results for K2002050:

Pls. note that the unit is $\mu\text{g/L}$ for TCLP extract/Metals.

Columbia Analytical Services, Inc**TOTAL METALS**

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

040500-SEH-001

Contract: Conestoga Rivers & Assoc.Lab Code: KLABCase No.: 15721

SAS No.:

SDG NO.: K2002506Matrix (soil/water): TCLPLab Sample ID: K2002506-001Level (low/med): LOWDate Received: 04/06/00Concentration Units (ug/L or mg/kg dry weight): µg/L

CAS No.	Analyte	Concentration	C	Q	M
7440-39-2	Arsenic	100	U		P
7440-39-3	Barium	1450			P
7440-43-9	Cadmium	10.0	U		P
7440-47-3	Chromium	10.0	U		P
7439-92-1	Lead	50.0	U		P
7439-97-6	Mercury	1.0	U		CV
7782-49-2	Selenium	100	U		P
7440-22-4	Silver	10.0	U		P

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

Columbia Analytical Services, Inc

TOTAL METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

040500-SEH-002

Contract: Conestoga Rovers & Assoc.Lab Code: KLABCase No.: 15721

SAS No.:

SDG NO.: K2002506Matrix (soil/water): TCLPLab Sample ID: K2002506-002Level (low/med): LOWDate Received: 04/06/00Concentration Units (ug/L or mg/kg dry weight): µg/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	100	U		P
7440-39-3	Barium	857			P
7440-43-9	Cadmium	10.0	U		P
7440-47-3	Chromium	10.0	U		P
7439-92-1	Lead	50.0	U		P
7439-97-6	Mercury	1.0	U		CV
7782-49-2	Selenium	100	U		P
7440-22-4	Silver	10.0	U		P

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.**Analytical Report**

Client: Conestoga Rovers & Assoc.
Project: Stormsewer Sampling/15721
Sample Matrix: Sediment

Service Request: K2002506
Date Collected: 4/5/00
Date Received: 4/6/00
Date Extracted: NA

Characteristics of Hazardous Waste
RCRA, 40 CFR Part 261

Sample Name: S-15721-040500-SEH-001
Lab Code: K2002506-001
Test Notes:

Basis: Wet

Analyte	Analysis Method	Units	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes	Regulatory Limits
Corrosivity	SW-846 Sec. 7.2*	pH UNITS	--	--	1	4/13/00	8.08		≤ 2 or ≥ 12.5
Ignitability	SW-846 Sec. 7.1*	DEG F	--	--	1	4/14/00	125		<140°F
Cyanide	335.2	mg/Kg (ppm)	0.01	0.002	1	4/12/00	17.0		250 mg/Kg
Reactive Sulfide	SW-846 Sec. 7.3*	mg/Kg (ppm)	3	3	1	4/14/00	5		500 mg/Kg

* Analytical methods, regulatory limits and action levels used in this report are from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., September 1986 and as amended by Update I, July 1992.

Approved By: _____

Date: _____

1622/052595

02506WBT.LJ1 - obachw 4/14/00

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Conestoga Rivers & Assoc.
Project: Stormsewer Sampling/15721
Sample Matrix: Sediment

Service Request: K2002506
Date Collected: 4/5/00
Date Received: 4/6/00
Date Extracted: NA

Characteristics of Hazardous Waste RCRA, 40 CFR Part 261

Sample Name: S-15721-040500-SEH-002
Lab Code: K2002506-002
Test Notes:

Basis: Wet

Analyte	Analysis Method	Units	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes	Regulatory Limits
Corrosivity	SW-846 Sec. 7.2*	pH UNITS	—	—	1	4/13/00	8.58		≤ 2 or ≥ 12.5
Ignitability	SW-846 Sec. 7.1*	DEG F	—	—	1	4/14/00	> 200		< 140°F
Cyanide	335.2	mg/Kg (ppm)	0.01	0.002	1	4/12/00	37.2		250 mg/Kg
Reactive Sulfide	SW-846 Sec. 7.3*	mg/Kg (ppm)	3	3	1	4/14/00	< 3		500 mg/Kg

Analytical methods, regulatory limits and action levels used in this report are from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., September 1986 and as amended by Update I, July 1992.

Approved By: _____

Date: _____

1522/032595

02506WET.L1/1 - chadsw (2) 4/14/00

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Constoga Rovers & Assoc.
 Project: Storm Sampling/ 15721
 Sample Matrix: Sediment

Service Request: K2002506
 Date Collected: 4/5/00
 Date Received: 4/6/00
 Date TCLP Performed: 4/11/00
 Date Extracted: NA
 Date Analyzed: 4/14/00

Toxicity Characteristic Leaching Procedure (TCLP)
 EPA Method 1311
 Volatile Organic Compounds

Sample Name: S-15721-040500-SEH-001
 Lab Code: K2002506-001
 Test Notes:

Units: mg/L (ppm)
 Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Regulatory Limit*	Result	Result Notes
Benzene	EPA 1311	8260B	0.2	1	0.5	ND	
Carbon Tetrachloride	EPA 1311	8260B	0.2	1	0.5	ND	
Chlorobenzene	EPA 1311	8260B	0.2	1	100	ND	
Chloroform	EPA 1311	8260B	0.2	1	6	ND	
1,4-Dichlorobenzene	EPA 1311	8260B	0.2	1	7.5	ND	
1,2-Dichloroethane (EDC)	EPA 1311	8260B	0.2	1	0.5	ND	
1,1-Dichloroethene	EPA 1311	8260B	0.2	1	0.7	ND	
2-Butanone (MEK)	EPA 1311	8260B	10	1	200	ND	
Tetrachloroethene (PCE)	EPA 1311	8260B	0.2	1	0.7	ND	
Trichloroethene (TCE)	EPA 1311	8260B	0.2	1	0.5	ND	
Vinyl Chloride	EPA 1311	8260B	0.2	1	0.2	ND	

* From 40 CFR Part 261, et al., and *Federal Register*, March 29, 1990 and June 29, 1990.

Approved By: _____

Date: _____

TCLP 1311-040500-SEH-001 - Sample 4/14/00

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Constoga Rovers & Assoc.
Project: Storm Sampling/ 15721
Sample Matrix: Sediment

Service Request: K2002506
Date Collected: 4/5/00
Date Received: 4/6/00
Date TCLP Performed: 4/11/00
Date Extracted: NA
Date Analyzed: 4/14/00

Toxicity Characteristic Leaching Procedure (TCLP)

EPA Method 1311

Volatile Organic Compounds

Sample Name: S-15721-040500-SEH-002
Lab Code: K2002506-002
Test Notes:

Units: mg/L (ppm)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Regulatory Limit*	Result	Result Notes
Benzene	EPA 1311	8260B	0.2	1	0.5	ND	
Carbon Tetrachloride	EPA 1311	8260B	0.2	1	0.5	ND	
Chlorobenzene	EPA 1311	8260B	0.2	1	100	ND	
Chloroform	EPA 1311	8260B	0.2	1	6	ND	
1,4-Dichlorobenzene	EPA 1311	8260B	0.2	1	7.5	ND	
1,2-Dichloroethane (EDC)	EPA 1311	8260B	0.2	1	0.5	ND	
1,1-Dichloroethene	EPA 1311	8260B	0.2	1	0.7	ND	
2-Butanone (MEK)	EPA 1311	8260B	10	1	200	ND	
Tetrachloroethene (PCE)	EPA 1311	8260B	0.2	1	0.7	ND	
Trichloroethene (TCE)	EPA 1311	8260B	0.2	1	0.5	ND	
Vinyl Chloride	EPA 1311	8260B	0.2	1	0.2	ND	

* From 40 CFR Part 261, et al., and *Federal Register*, March 29, 1990 and June 29, 1990.

Approved By: _____

Date: _____

TCLP IS 15721-040500-SEH-002 - Sample (2) 4/14/00

Page No.: _____

AD-2



**CONESTOGA-ROVERS
& ASSOCIATES**

2578 Dougall Avenue, Windsor, Ontario, N8X 1T7
Telephone: (519) 966-9886 Fax: (519) 966-3894
www.CRAworld.com

MEMORANDUM

TO: Dan Fronczek REF. NO.: 15721
FROM: Sarah Hunt *SH* DATE: July 12, 2000
CC: Keith West
Gavin O'Neill
RE: Roll-Off Box and Electrical Pit Sampling Results for GM Pontiac North Complex
Pontiac, MI

The memorandum has been prepared in order to summarize the analytical results from the sediment samples collected from the fourth and fifth roll-off boxes and the oil samples collected from electrical Pits #1 and #2 at the GM Pontiac North Complex, MI.

FOURTH AND FIFTH ROLL-OFF BOXES

On June 8, 2000, CRA personnel collected composite samples for waste characterization from the fourth and fifth roll-off boxes (#410884 and #410717, respectively) that were filled with sediments from stormsewer cleaning activities at the GM Pontiac North Complex in Pontiac, MI.

Sediments were analyzed for PCBs, reactivity, corrosivity, ignitability, TCLP VOCs, and TCLP Metals. The samples were immediately placed in a cooler with ice and shipped FedEx to Columbia Analytical Services (CAS), Inc. under chain of custody protocol for analysis.

Aroclor 1248 was detected at 2.6 and 3.7 ppm, and Aroclor 1260 was detected at 0.28 and 0.86 ppm in roll-off box #410884 and #410717, respectively. The sediments did not exceed any of the 40 CFR 261 hazardous waste criteria for reactivity, corrosivity, or ignitability. There were no VOCs detected. TCLP metals detected included barium, cadmium, and lead but at levels below the regulatory limits. Results are summarized in the attached Table 1.

ELECTRICAL PITS

On May 12, 2000, CRA personnel collected two oil samples for waste characterization from the Electrical Pits #1 and #2 located in the north end of the West Yard.

The oil was analyzed for PCBs, reactivity, corrosivity, ignitability, TCLP VOCs, TCLP metals, viscosity, and density. The samples were immediately placed in a cooler with ice and shipped FedEx to CAS under chain of custody protocol for analysis.

Electrical Pit #1 contained a dark brown oil in small globules on the surface and an oily greenish-yellow liquid below. The top layer was approximately 1 inch thick and the total depth of the oily water was approximately 1.5 feet. The oil sample collected from Electrical Pit #1 contained both the dark brown and the greenish-yellow oil. Electrical Pit #2 primarily contained water approximately 1.5 feet in depth. The water had a faint bluish sheen and a slight aqua-green color to it.

Results are summarized in the attached Table 2. Samples from Electrical Pit #1 contained 160 ppb of Aroclor 1242 and 93 ppb of Aroclor 1254. No exceedances of regulatory limits were detected for TCLP, reactivity, corrosivity, and ignitability. Samples from Electrical Pit #2 had no detections.

Should you have any questions, please do not hesitate to contact us.

TABLE 2
RESULTS OF OIL SAMPLING
GM PONTIAC NORTH COMPLEX
PONTIAC, MI

Sample Identification		0-15721-051200-SEH-001	0-15721-051200-SEH-002	
Sample Date		05/12/00	05/12/00	
Sample Location		Electrical Pit #1	Electrical Pit #2	
Sample Matrix		Oil	Oil	
<u>Viscosity and Density</u>				
API Gravity @ 60 °F		33.45	NA	
Specific Gravity @ 60 °F		0.8578	NA	
Density @ 60 °F		0.857	NA	
Viscosity @ 100 °F in CST		10.58	NA	
Viscosity @ 100 °F in SUS		60.9	NA	
<u>PCBs (ug/L)</u>				
Aroclor 1016		ND(10)	ND(10)	
Aroclor 1221		ND(20)	ND(20)	
Aroclor 1232		ND(10)	ND(10)	
Aroclor 1242		160	ND(10)	
Aroclor 1248		ND(10)	ND(10)	
Aroclor 1254		93	ND(10)	
Aroclor 1260		ND(10)	ND(10)	
<u>Characteristics of Hazardous Wastes</u>				<u>Regulatory Limits</u>
Corrosivity	pH	6.77	7.01	≤2 or ≥12.5
Ignitability	°F	>200	>200	<140 °F
Cyanide	mg/kg	<0.5	<0.5	250 mg/kg
Reactive Sulfide	mg/kg	<20	<20	500 mg/kg
<u>TCLP VOCs (mg/L)</u>				<u>Regulatory Limits</u>
Benzene		ND(0.2)	ND(0.2)	0.5
Carbon Tetrachloride		ND(0.2)	ND(0.2)	0.5
Chlorobenzene		ND(0.2)	ND(0.2)	100
Chloroform		ND(0.2)	ND(0.2)	6
1,4-Dichlorobenzene		ND(0.2)	ND(0.2)	7.5
1,2-Dichloroethane (EDC)		ND(0.2)	ND(0.2)	0.5
1,1-Dichloroethene		ND(0.2)	ND(0.2)	0.7
2-Butanone (MEK)		ND(10)	ND(10)	200
Tetrachloroethene (PCE)		ND(0.2)	ND(0.2)	0.7
Trichloroethene (TCE)		ND(0.2)	ND(0.2)	0.5
Vinyl Chloride		ND(0.2)	ND(0.2)	0.2
<u>TCLP Metals (ug/L)</u>				<u>Regulatory Limits</u>
Arsenic		ND(100)	ND(100)	5000
Barium		696	ND(500)	100000
Cadmium		ND(10)	ND(10)	1000
Chromium		ND(10)	ND(10)	5000
Lead		ND(50)	ND(50)	5000
Mercury		ND(1)	ND(1)	200
Selenium		ND(100)	ND(100)	1000
Silver		ND(10)	ND(10)	5000

NOTE

Regulatory limits are from 40 CFR Part 261, et al., and Federal Register, March 29, 1990 and June 29, 1990.

NA = not applicable because no oil phase was present

ND = not detected at the minimum reporting limit

AD-3



MEMORANDUM

TO: Dan Fronczek
FROM: Jeramy Bell 
CC: Keith West
Gavin O'Neill
RE: Sediment Sampling (Duck Pond) Results for GM Pontiac North Complex
Pontiac, MI
REF. NO.: 15721
DATE: September 20, 2000

This memorandum has been prepared to summarize the analytical results from the sediment samples collected on August 24, 2000 at your request from the "Duck Pond", at the GM Pontiac North Complex in Pontiac Michigan.

Four sediment samples (A3, D3, E1, and E4) were collected throughout the Duck Pond as shown on Figure 1 attached. The sediment samples were analyzed for TCLP VOCs, TCLP Metals, Oil and Grease, Grain Size and General Chemistry (corrosivity, ignitability, cyanide, and reactive sulfide). The samples were immediately placed in a cooler with ice and shipped FedEx to Columbia Analytical Services (CAS), Inc. under chain of custody protocol for analysis. All results are summarized in the attached Table 1. The raw data is presented in Appendix A.

Aroclor 1248 was detected at 30, 27, 35, and 23 ppm in A3, D3, E1, and E4, respectively.

Barium was detected in each of the samples, ranging from 659 µg/L to 1160 µg/L. These results were well below the regulatory limit of 100,000 µg/L.

Corrosivity for the samples ranged from a pH of 7.00 to 7.85. For each sample cyanide was not detected and the ignitability was greater than 200 degrees Fahrenheit. Reactive Sulfide was detected in three of the four samples, 357 mg/Kg for D3, 202 mg/Kg for E1 and 104 mg/Kg for E4. Each result was below the regulatory limit.

Two methods of analysis were used to determine the oil and grease content. Method 5520B was significantly higher for each sample with values ranging from 180,000 to 430,000 mg/Kg. Method 5520F had values ranging from 62,000 to 280,000 mg/Kg.

Should you have any questions, please do not hesitate to contact us.

FIGURE 1
 SEDIMENT SAMPLE LOCATIONS
 GM PONTIAC NORTH COMPLEX
 PONTIAC, MICHIGAN

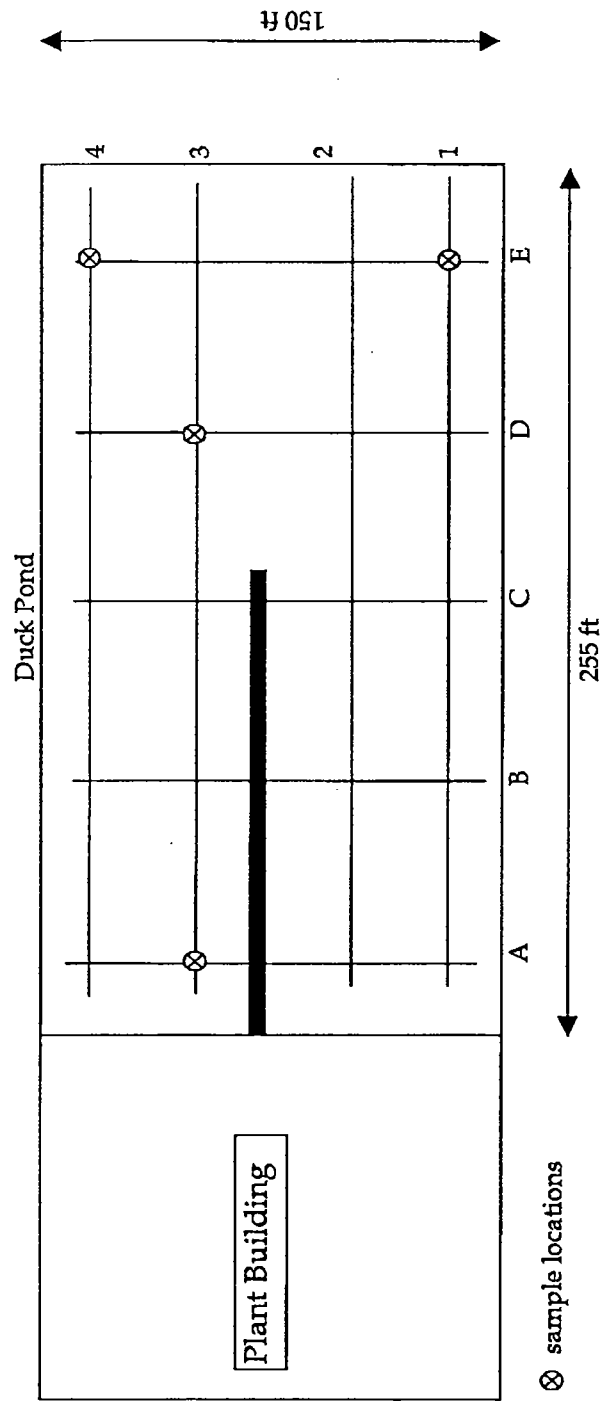


TABLE 1

RESULTS OF SEDIMENT SAMPLING (DUCK POND)
GM PONTIAC NORTH COMPLEX
PONTIAC, MICHIGAN

<i>Sample Number:</i>	JJB-A3	JJB-D3	JJB-E1	JJB-E4
<i>Sample Date:</i>	08/24/00	08/24/00	08/24/00	08/24/00
<i>Sample Type:</i>	sediment	sediment	sediment	sediment
<i>QA/QC:</i>				

Regulatory
Limit

TCLP VOCs (mg/L)

Vinyl Chloride	0.2	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
1,1- Dichloroethene	0.7	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
2-Butanone (MEK)	200	ND(8.0)	ND(8.0)	ND(8.0)	ND(8.0)
Chloroform	6	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
Carbon Tetrachloride	0.5	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
1,2-Dichloroethane (EDC)	0.5	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
Benzene	0.5	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
Trichloroethene (TCE)	0.5	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
Tetrachloroethene (PCE)	0.7	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
Chlorobenzene	100	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)
1,4-Dichlorobenzene	7.5	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)

PCBs (ug/Kg)

Aroclor 1016	ND(2500)	ND(2500)	ND(2500)	ND(2500)
Aroclor 1221	ND(5000)	ND(5000)	ND(5000)	ND(5000)
Aroclor 1232	ND(2500)	ND(2500)	ND(2500)	ND(2500)
Aroclor 1242	ND(2500)	ND(2500)	ND(2500)	ND(2500)
Aroclor 1248	30000	27000	35000	23000
Aroclor 1254	ND(2500)	ND(2500)	ND(2500)	ND(2500)
Aroclor 1260	ND(2500)	ND(2500)	ND(2500)	ND(2500)

TCLP Metals (ug/L)

Arsenic	5000	ND(100)	ND(100)	ND(100)	ND(100)
Barium	100000	659	1160	1080	1080
Cadmium	1000	ND(10)	ND(10)	ND(10)	ND(10)
Chromium	5000	ND(10)	ND(10)	ND(10)	ND(10)
Lead	5000	ND(50)	ND(50)	ND(50)	ND(50)
Mercury	200	ND(1)	ND(1)	ND(1)	ND(1)
Selenium	1000	ND(100)	ND(100)	ND(100)	ND(100)
Silver	5000	ND(10)	ND(10)	ND(10)	ND(10)

TABLE 1

RESULTS OF SEDIMENT SAMPLING (DUCK POND)
GM PONTIAC NORTH COMPLEX
PONTIAC, MICHIGAN

Sample Number:	JJB-A3	JJB-D3	JJB-E1	JJB-E4
Sample Date:	08/24/00	08/24/00	08/24/00	08/24/00
Sample Type:	sediment	sediment	sediment	sediment
QA/QC:				

Regulatory
Limit

General Chemistry

Corrosivity	pH	<2 or >12.5	7.85	7.00	7.19	7.24
Ignitability	°F	<140	>200	>200	>200	>200
Cyanide	mg/kg	250	ND(5)	ND(5)	ND(5)	ND(5)
Reactive Sulfide	mg/kg	500	ND(55)	357	202	104

Oil and Grease (mg/Kg)

Method -	5520B	430000	180000	310000	330000
	5520F	280000	62000	210000	170000

Grain Size

Description	Sieve Size	Sieve #	JJB-A3		JJB-D3		JJB-E1		JJB-E4	
			Dry Weight (g)	% of Total Weight Recovered	Dry Weight (g)	% of Total Weight Recovered	Dry Weight (g)	% of Total Weight Recovered	Dry Weight (g)	% of Total Weight Recovered
Medium Gravel	4.75 mm	4	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00
Fine Gravel	2.00 mm	10	0.0012	0.03	0.0097	0.18	0.2174	2.91	0.1343	1.79
Very Coarse Sand	0.850 mm	20	0.0249	0.59	0.0716	1.36	0.4344	5.82	0.5627	7.51
Coarse Sand	0.425 mm	40	0.0348	0.83	0.0926	1.76	0.4652	6.23	0.6835	9.12
Medium Sand	0.250 mm	60	0.0277	0.66	0.0934	1.78	0.3916	5.24	0.5450	7.27
Fine Sand	0.106 mm	140	0.0406	0.97	0.1475	2.81	0.2615	3.50	0.6650	8.87
Very Fine Sand	0.075 mm	200	0.0021	0.05	0.1059	2.01	0.0000	0.00	0.0162	0.22
Clay			1.2350	29.4	1.2300	23.4	1.0750	14.4	0.8400	11.2
Silt			2.4750	58.9	2.8800	54.8	2.5250	33.8	2.3200	31.0

AD-4



**CONESTOGA-ROVERS
& ASSOCIATES**

2578 Dougall Avenue, Windsor, Ontario, N8X 1T7
Telephone: (519) 966-9886 Fax: (519) 966-3894
www.CRAworld.com

MEMORANDUM

TO: Dan Fronczek

REF. NO.: 15721

FROM: Jeramy Bell/Gavin O'Neill

DATE: October 11, 2000

C.C.: Keith West
Gavin O'Neill

DRAFT

RE: Roll-Off Box Sampling Results for #410740, #410748, #410689 and #410322 for GM Pontiac
North Campus
Pontiac, MI

On September 7, 2000, CRA personnel collected composite samples for waste characterization from Roll-off boxes #410740, #410748, #410689 and #410322 that were filled with sediments from stormsewer cleaning activities at the GM North Campus in Pontiac, MI.

Sediments were analyzed for PCBs, Reactivity, Corrosivity, Ignitability, TCLP VOCs, and TCLP Metals. The samples were immediately placed in a cooler with ice and shipped FedEx to Columbia Analytical Services, Inc. under chain of custody for analysis.

Aroclor 1248 was detected in each Roll-off box ranging from 4 ppm to 43 ppm. Aroclor 1260 was also detected in Roll-off box #410740 at 4 ppm. There were no TCLP VOCs detected in any of the boxes and all results were below the RCRA regulatory limits for corrosivity, ignitability, cyanide and reactive sulfide. Barium was detected in each of the boxes ranging from 605 µg/L to 1400 µg/L. Chromium and lead were also detected in Roll-off box #410740. All of the detected metals were well below the RCRA regulatory limits. The preliminary analytical results are summarized in Table 1, with preliminary laboratory data presented in Appendix A. CRA will validate the results following receipt of the final laboratory reports.

CRA is still awaiting results from Roll-off boxes #411666 and #410776, which were sampled on September 14, 2000. CRA will summarize and forward the analytical results when the data becomes available.

Should you have any questions, please do not hesitate to contact us.

TABLE 1

**RESULTS OF ROLL-OFF BOX SAMPLING
GM PONTIAC NORTH CAMPUS
PONTIAC, MI**

DRAFT

Sample Number:	JJB-008	JJB-009	JJB-010	JJB-011
Sample Location:	Box #410740	Box #410748	Box #140689	Box #410322
Sample Date:	9/7/2000	9/7/2000	9/7/2000	9/7/2000
Sample Type:	sediment	sediment	sediment	sediment
QA/QC:				

PCBs (mg/kg)

Aroclor 1016	ND (1)	ND (1)	ND (1)	ND (1)
Aroclor 1221	ND (2)	ND (2)	ND (2)	ND (2)
Aroclor 1232	ND (1)	ND (1)	ND (1)	ND (1)
Aroclor 1242	ND (1)	ND (1)	ND (1)	ND (1)
Aroclor 1248	43	10	4	6
Aroclor 1254	ND (1)	ND (1)	ND (1)	ND (1)
Aroclor 1260	4	ND (1)	ND (1)	ND (1)

Characteristics of Hazardous WastesRegulatory Limits (1)

Corrosivity	pH units	8	7.91	8.01	7.72	≤2 or ≥12.5
Ignitability	DEG F	>200	>200	>200	>200	<140 °F
Cyanide	mg/kg	15.3	0.7	0.6	ND	250 mg/kg
Reactive Sulfide	mg/kg	ND	ND	ND	26	500 mg/kg

TCLP VOCs (mg/L)Regulatory Limits (1)

Benzene	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	0.5
Carbon Tetrachloride	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	0.5
Chlorobenzene	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	100
Chloroform	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	6
1,4-Dichlorobenzene	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	7.5
1,2-Dichloroethane (EDC)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	0.5
1,1-Dichloroethene	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	0.7
2-Butanone (MEK)	ND(8)	ND(8)	ND(8)	ND(8)	200
Tetrachloroethene (PCE)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	0.7
Trichloroethene (TCE)	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	0.5
Vinyl Chloride	ND(0.2)	ND(0.2)	ND(0.2)	ND(0.2)	0.2

TCLP Metals (µg/L)Regulatory Limits (1)

Arsenic	ND(100)	ND(100)	ND(100)	ND(100)	5000
Barium	1400	877	1490	605	100000
Cadmium	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	1000
Chromium	27.5	ND(10.0)	ND(10.0)	ND(10.0)	5000
Lead	57.3	ND(50.0)	ND(50.0)	ND(50.0)	5000
Mercury	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	200
Selenium	ND(100)	ND(100)	ND(100)	ND(100)	1000
Silver	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	5000
Total Solids (%)	61.9	84.4	84.3	84.3	

NOTES: (1) RCRA Regulatory Limits, 40 CFR Part 261.

APPENDIX A

Client: Conestoga Rovers & Assoc.
Project: GM Storm Water Sampling/15721

Service Request: K2006951

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
S-15721-090700-JJB-008	K2006951-001	09/07/2000	09/08/2000
S-15721-090700-JJB-009	K2006951-002	09/07/2000	09/08/2000
S-15721-090700-JJB-010	K2006951-003	09/07/2000	09/08/2000
S-15721-090700-JJB-011	K2006951-004	09/07/2000	09/08/2000

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: Meena ShihDate: 10/5/00Title: Scientist

Analytical Results

Client: Conestoga Rivers & Assoc.
 Project: GM Storm Water Sampling/15721
 Sample Matrix: Sediment

Service Request: K2006951
 Date Collected: 09/07/2000
 Date Received: 09/08/2000
 Date Prepared: 09/18/2000

Volatile Organic Compounds

Sample Name: S-15721-090700-JIB-008
 Lab Code: K2006951-001
 Preparation Method: EPA 1311
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: mg/L
 Basis: NA
 Level: Low

Analyte Name	Result Q	MRL	Regulatory Limit	Dilution Factor	Date Extracted	Date Analyzed	Note
Vinyl Chloride	ND U	0.20	0.2	1	09/30/00	09/30/00	
1,1-Dichloroethene	ND U	0.20	0.7	1	09/30/00	09/30/00	
2-Butanone (MEK)	ND U	8.0	200	1	09/30/00	09/30/00	
Chloroform	ND U	0.20	6	1	09/30/00	09/30/00	
Carbon Tetrachloride	ND U	0.20	0.5	1	09/30/00	09/30/00	
1,2-Dichloroethane (EDC)	ND U	0.20	0.5	1	09/30/00	09/30/00	
Benzene	ND U	0.20	0.5	1	09/30/00	09/30/00	
Trichloroethene (TCE)	ND U	0.20	0.5	1	09/30/00	09/30/00	
Tetrachloroethene (PCE)	ND U	0.20	0.7	1	09/30/00	09/30/00	
Chlorobenzene	ND U	0.20	100	1	09/30/00	09/30/00	
1,4-Dichlorobenzene	ND U	0.20	7.5	1	09/30/00	09/30/00	

Surrogate Name	%Rec	Control Limits	Note
Dibromofluoromethane	93	87-115	Acceptable
Toluene-d8	96	82-116	Acceptable
4-Bromofluorobenzene	95	75-120	Acceptable

Analytical Results

Client: Conestoga Rovers & Assoc.
 Project: GM Storm Water Sampling/15721
 Sample Matrix: Sediment

Service Request: K2006951
 Date Collected: 09/07/2000
 Date Received: 09/08/2000
 Date Prepared: 09/18/2000

Volatile Organic Compounds

Sample Name: S-15721-090700-JIB-009
 Lab Code: K2006951-002
 Preparation Method: EPA 1311
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: mg/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	Regulatory Limit	Dilution Factor	Date Extracted	Date Analyzed	Note
Vinyl Chloride	ND	U	0.20	0.2	1	09/30/00	09/30/00	
1,1-Dichloroethene	ND	U	0.20	0.7	1	09/30/00	09/30/00	
2-Butanone (MEK)	ND	U	8.0	200	1	09/30/00	09/30/00	
Chloroform	ND	U	0.20	6	1	09/30/00	09/30/00	
Carbon Tetrachloride	ND	U	0.20	0.5	1	09/30/00	09/30/00	
1,2-Dichloroethane (EDC)	ND	U	0.20	0.5	1	09/30/00	09/30/00	
Benzene	ND	U	0.20	0.5	1	09/30/00	09/30/00	
Trichloroethene (TCE)	ND	U	0.20	0.5	1	09/30/00	09/30/00	
Tetrachloroethene (PCE)	ND	U	0.20	0.7	1	09/30/00	09/30/00	
Chlorobenzene	ND	U	0.20	100	1	09/30/00	09/30/00	
1,4-Dichlorobenzene	ND	U	0.20	7.5	1	09/30/00	09/30/00	

Surrogate Name	%Rec	Control Limits	Note
Dibromofluoromethane	93	87-115	Acceptable
Toluene-d8	98	82-116	Acceptable
4-Bromofluorobenzene	96	75-120	Acceptable

Analytical Results

Client: Conestoga Rovers & Assoc.
 Project: GM Storm Water Sampling/15721
 Sample Matrix: Sediment

Service Request: K2006951
 Date Collected: 09/01/2000
 Date Received: 09/08/2000
 Date Prepared: 09/18/2000

Volatile Organic Compounds

Sample Name: S-15721-090700-JJB-010
 Lab Code: K2006951-003
 Preparation Method: EPA 1311
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: mg/l.
 Basis: NA
 Level: Low

Analyte Name	Result Q	MRL	Regulatory Limit	Dilution Factor	Date Extracted	Date Analyzed	Note
Vinyl Chloride	ND U	0.20	0.2	1	09/30/00	09/30/00	
1,1-Dichloroethene	ND U	0.20	0.7	1	09/30/00	09/30/00	
2-Butanone (MEK)	ND U	8.0	200	1	09/30/00	09/30/00	
Chloroform	ND U	0.20	6	1	09/30/00	09/30/00	
Carbon Tetrachloride	ND U	0.20	0.5	1	09/30/00	09/30/00	
1,2-Dichloroethane (EDC)	ND U	0.20	0.5	1	09/30/00	09/30/00	
Benzene	ND U	0.20	0.5	1	09/30/00	09/30/00	
Trichloroethene (TCE)	ND U	0.20	0.5	1	09/30/00	09/30/00	
Tetrachloroethene (PCE)	ND U	0.20	0.7	1	09/30/00	09/30/00	
Chlorobenzene	ND U	0.20	100	1	09/30/00	09/30/00	
1,4-Dichlorobenzene	ND U	0.20	7.5	1	09/30/00	09/30/00	

Surrogate Name	%Rec	Control Limits	Note
Dibromofluoromethane	92	87-115	Acceptable
Toluene-d8	98	82-116	Acceptable
4-Bromofluorobenzene	95	75-120	Acceptable

Analytical Results

Client: Conestoga Rivers & Assoc.
 Project: GM Storm Water Sampling/15721
 Sample Matrix: Sediment

Service Request: K2006951
 Date Collected: 09/01/2000
 Date Received: 09/08/2000
 Date Prepared: 09/18/2000

Volatile Organic Compounds

Sample Name: S-15721-090700-JTB-011
 Lab Code: K2006951-004
 Preparation Method: EPA 1311
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: mg/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	Regulatory Limit	Dilution Factor	Date Extracted	Date Analyzed	Note
Vinyl Chloride	ND	U	0.20	0.2	1	09/30/00	09/30/00	
1,1-Dichloroethene	ND	U	0.20	0.7	1	09/30/00	09/30/00	
2-Butanone (MEK)	ND	U	8.0	200	1	09/30/00	09/30/00	
Chloroform	ND	U	0.20	6	1	09/30/00	09/30/00	
Carbon Tetrachloride	ND	U	0.20	0.5	1	09/30/00	09/30/00	
1,2-Dichloroethane (EDC)	ND	U	0.20	0.5	1	09/30/00	09/30/00	
Benzene	ND	U	0.20	0.5	1	09/30/00	09/30/00	
Trichloroethene (TCE)	ND	U	0.20	0.5	1	09/30/00	09/30/00	
Tetrachloroethene (PCE)	ND	U	0.20	0.7	1	09/30/00	09/30/00	
Chlorobenzene	ND	U	0.20	100	1	09/30/00	09/30/00	
1,4-Dichlorobenzene	ND	U	0.20	7.5	1	09/30/00	09/30/00	

Surrogate Name	%Rec	Control Limits	Note
Dibromofluoromethane	92	87-115	Acceptable
Toluene-d8	96	82-116	Acceptable
4-Bromofluorobenzene	96	75-120	Acceptable

METALS
- Cover Page -

INORGANIC ANALYSIS DATA PACKAGE

Contract: Conestoga Rovers & Assoc.SDG No.: K2006951Lab Code: KLABCase No.: 15721

SAS No.:

SOW No.: SW-846Sample No.Lab Sample ID.090700-JJB-008K2006951-001090700-JJB-008DK2006951-001D090700-JJB-008SK2006951-001S090700-JJB-009K2006951-002090700-JJB-009DK2006951-002D090700-JJB-009SK2006951-002S090700-JJB-010K2006951-003090700-JJB-011K2006951-004

Were ICP interelement corrections applied?

Yes/No YES

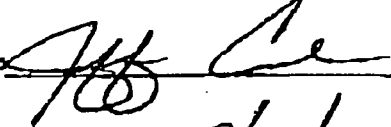
Were ICP background corrections applied?

Yes/No YESIf yes-were raw data generated before
application of background corrections?Yes/No NO

Comments:

TCLP EXTRACTIONP = 6010HCV = 7470A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: Jeff CornmanDate: 9/26/00Title: METALS LAB MANAGER

METALS
-1-
INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

090700-JJB-008

Contract: Conestoga Rovers & Assoc.Lab Code: KLABCase No.: 15721

SAS No.:

SDG NO.: K2006951Matrix (soil/water): TCLPLab Sample ID: K2006951-001Level (low/med): LOWDate Received: 09/08/00% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): µG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	100	U		P
7440-39-3	Barium	1400			P
7440-43-9	Cadmium	10.0	U		P
7440-47-3	Chromium	27.5			P
7439-92-1	Lead	57.3			P
7439-97-6	Mercury	1.00	U		CV
7782-49-2	Selenium	100	U		P
7440-22-4	Silver	10.0	U		P

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

090700-JJB-009

Contract: Conestoga Hovers & Assoc.Lab Code: KLABCase No.: 15721

SAS No.:

SDS NO.: K2006951Matrix (soil/water): TCLPLab Sample ID: K2006951-002Level (low/mad): LOWDate Received: 09/08/00% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	100	U		P
7440-39-3	Barium	877			P
7440-43-9	Cadmium	10.0	U		P
7440-47-3	Chromium	10.0	U		P
7439-92-1	Lead	50.0	U		P
7439-97-6	Mercury	1.00	U		CV
7782-49-2	Selenium	100	U		P
7440-22-4	Silver	10.0	U		P

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

090700-JJB-010

Contract: Conestoga Rivers & Assoc.Lab Code: KLABCase No.: 15721

SAS No.:

SDG NO.: K2006951Matrix (soil/water): TCLPLab Sample ID: K2006951-003Level (low/med): LOWDate Received: 09/08/00* Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): ug/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	100	U		P
7440-39-3	Barium	1490			P
7440-43-9	Cadmium	10.0	U		P
7440-47-3	Chromium	10.0	U		P
7439-92-1	Lead	50.0	U		P
7439-97-6	Mercury	1.00	U		CV
7782-49-2	Selenium	100	U		P
7440-22-4	Silver	10.0	U		P

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

090700-JJB-011

Contract: Conestoga Rovers & Assoc.Lab Code: KLABCase No.: 15721

SAS No.:

SDG NO.: K2006951Matrix (soil/water): TCLPLab Sample ID: K2006951-004Level (low/mad): LOWData Received: 09/08/00* Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): µg/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	100	U		P
7440-39-3	Barium	605			P
7440-43-9	Cadmium	10.0	U		P
7440-47-3	Chromium	10.0	U		P
7439-92-1	Lead	50.0	U		P
7439-97-6	Mercury	1.00	U		CV
7782-49-2	Selenium	100	U		P
7440-22-4	Silver	10.0	U		P

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Onnestoga Rivers & Assoc.
 Project: GM Storm Water Sampling/15721
 Sample Matrix: Sediment

Service Request: K2006951
 Date Collected: 9/7/00
 Date Received: 9/8/00

Polychlorinated Biphenyls (PCBs)

Sample Name: S-15721-090700-JJB-008
 Lab Code: K2006951-001
 Test Notes: D

Units: mg/Kg (ppm)
 Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	
Aroclor 1221	EPA 3545	8082	2	10	9/14/00	9/18/00	ND	
Aroclor 1232	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	
Aroclor 1242	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	
Aroclor 1248	EPA 3545	8082	1	10	9/14/00	9/18/00	43	
Aroclor 1254	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	
Aroclor 1260	EPA 3545	8082	1	10	9/14/00	9/18/00	4	

Approved By:
 15220203976

Date:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Canastota Rivers & Assoc.
Project: GM Storm Water Sampling/15721
Sample Matrix: Sediment

Service Request: K2006951
Date Collected: 9/7/00
Date Received: 9/8/00

Polychlorinated Biphenyls (PCBs)

Sample Name: S-15721-090700-JJB-009
Lab Code: K2006951-002
Test Notes: D

Units: mg/kg (wet)
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	
Aroclor 1221	EPA 3545	8082	2	10	9/14/00	9/18/00	ND	
Aroclor 1232	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	
Aroclor 1242	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	
Aroclor 1248	EPA 3545	8082	1	10	9/14/00	9/18/00	10	
Aroclor 1254	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	
Aroclor 1260	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	

Approved By:
1522/020597p

Date:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Onnestoga Rivers & Assoc.
 Project: GM Storm Water Sampling/15721
 Sample Matrix: Sediment

Service Request: K2006951
 Date Collected: 9/7/00
 Date Received: 9/8/00

Polychlorinated Biphenyls (PCBs)

Sample Name: S-15721-090700-JTB-010
 Lab Code: K2006951-003
 Test Notes: D

Units: mg/kg (ppm)
 Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	
Aroclor 1221	EPA 3545	8082	2	10	9/14/00	9/18/00	ND	
Aroclor 1232	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	
Aroclor 1242	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	
Aroclor 1248	EPA 3545	8082	1	10	9/14/00	9/18/00	4	
Aroclor 1254	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	
Aroclor 1260	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	

Approved By:
 1522/0203976

Date:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Conestoga Rivers & Assoc.
 Project: GM Storm Water Sampling/15721
 Sample Matrix: Sediment

Service Request: K2006951
 Date Collected: 9/7/00
 Date Received: 9/8/00

Polychlorinated Biphenyls (PCBs)

Sample Name: S-15721-090700-JJB-011
 Lab Code: K2006951-001
 Test Notes: D

Units: mg/kg (wet)
 Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	
Aroclor 1221	EPA 3545	8082	2	10	9/14/00	9/18/00	ND	
Aroclor 1232	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	
Aroclor 1242	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	
Aroclor 1248	EPA 3545	8082	1	10	9/14/00	9/18/00	6	
Aroclor 1254	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	
Aroclor 1260	EPA 3545	8082	1	10	9/14/00	9/18/00	ND	

Approved By:

1522020197p

Date:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Onnestoga Rivers & Assoc.
Project: GM Storm Water Sampling/15721
Sample Matrix: Sediment

Service Request: K2006951
Date Collected: 9/7/00
Date Received: 9/8/00

Total Solids

Prep Method: NONE
Analysis Method: 160.3M
Test Notes:

Units: PERCENT
Basis: Wet

Sample Name	Lab Code	Date Analyzed	Result	Result Notes
S-15721-090700-JJ13-008	K2006951-001	9/11/00	61.9	
S-15721-090700-JJ13-009	K2006951-002	9/11/00	84.4	
S-15721-090700-JJ13-010	K2006951-003	9/11/00	84.3	
S-15721-090700-JJ13-011	K2006951-004	9/11/00	84.3	

Approved By:
TSOLDSXLT Sample01071998a

Date:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Onnesaga Rivers & Assoc.
 Project: GM Storm Water Sampling/15721
 Sample Matrix: Sediment

Service Request: K2006951
 Date Collected: 9/7/00
 Date Received: 9/8/00
 Date Extracted: NA

Characteristics of Hazardous Waste
 RCRA, 40 CFR Part 261

Sample Name: S-15721-090700-JJB-008
 Lab Code: K2006951-001
 Test Notes:

Basis: Wet

Analyte	Analysis Method	Units	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes	Regulatory Limits
Corrosivity	9056C	pH UNITS	--	--	1	9/26/00	8.00		≤ 2 or ≥ 12.5
Ignitability	1020	DIK°F	--	--	1	9/22/00	> 200		<140°F
Cyanide	9010B	mg/Kg (ppm)	0.3	0.3	1	9/18/00	15.3		250 mg/Kg
Sulfide, Reactive	SW-846 Sec. 7.3*	mg/Kg (ppm)	21	21	1	9/15/00	ND		500 mg/Kg

Analytical methods, regulatory limits and action levels used in this report are from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., September 1986 and as amended by Update 1, July 1992.

Approved By:
 1522032595

Date:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Onastoga River & Assoc.
 Project: GM Storm Water Sampling/15721
 Sample Matrix: Sediment

Service Request: K2006951
 Date Collected: 9/7/00
 Date Received: 9/8/00
 Date Extracted: NA

Characteristics of Hazardous Waste
 RCRA, 40 CFR Part 261

Sample Name: S-15721-090700-JTB-009
 Lab Code: K2006951-002
 Test Notes:

Basis: Wet

Analyte	Analysis Method	Units	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes	Regulatory Limits
Corrosivity	9056C	pH UNITS	—	—	1	9/26/00	7.91		≤ 2 or ≥ 12.5
Ignitability	1020	DIST	—	—	1	9/22/00	> 200		< 140°F
Cyanide	9010B	mg/Kg (ppm)	0.3	0.3	1	9/18/00	0.7		250 mg/Kg
Sulfide, Reactive	SW-846 Sec. 7.3*	mg/Kg (ppm)	20	20	1	9/15/00	NID		500 mg/Kg

Analytical methods, regulatory limits and action levels used in this report are from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., September 1986 and as amended by Update I, July 1992.

Approved By:
 15721/052395

Date:

Analytical Report

Service Request: K2006951
Date Collected: 9/7/00
Date Received: 9/8/00
Date Extracted: NA

Basis: Wel

Analyte	Analysis Method	Units	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes	Regulatory Limits
Corrosivity	9056C	pH UNITS	—	—	1	9/26/00	8.01		≤ 2 or ≥ 12.5
Ignitability	1020	DISSIP	—	—	1	9/22/00	> 200		< 100°F
Cyanide	9010B	mg/Kg (ppm)	0.3	0.3	1	9/18/00	0.6		250 mg/Kg
Sulfide, Reactive	SW-846 Sec. 7.3*	mg/Kg (ppm)	20	20	1	9/15/00	NID		500 mg/Kg

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Onastoga Rivers & Assoc.
 Project: GM Storm Water Sampling/15721
 Sample Matrix: Sediment

Service Request: K2006951
 Date Collected: 9/7/00
 Date Received: 9/8/00
 Date Extracted: NA

Characteristics of Hazardous Waste
 RCRA, 40 CFR Part 261

Sample Name: S-15721-090700-JJB-011
 Lab Code: K2006951-001
 Test Notes:

Basis: Wet

Analyte	Analysis Method	Units	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes	Regulatory Limits
Corrosivity	9056C	pH UNITS	—	—	1	9/26/00	7.72		≤ 2 or ≥ 12.5
Ignitability	1020	DMGP	—	—	1	9/22/00	≥ 2000		$\leq 140^\circ\text{F}$
Cyanide	9010B	mg/Kg (ppm)	0.3	0.3	1	9/18/00	ND		250 mg/Kg
Sulfide, Reactive	SW-846 Sec. 7.3*	mg/Kg (ppm)	20	20	1	9/15/00	26		500 mg/Kg

Analytical methods, regulatory limits and action levels used in this report are from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., September 1986 and as amended by Update 1, July 1992.

Approved By:
 15722052395

Date:

AD-5



MEMORANDUM

TO: Dan Fronczek REF. No.: 15721
FROM: Jeramy Bell  DATE: October 13, 2000
C.C.: Keith West
Gavin O'Neill
RE: Roll-Off Box Sampling Results for #410776 and #411666

**GM Pontiac North Campus
Pontiac, MI**

On September 14, 2000, CRA personnel collected composite samples for waste characterization from Roll-off boxes #410776 and #411666 that were filled with sediments from stormsewer cleaning activities at the GM North Campus in Pontiac, MI.

Sediments were analyzed for PCBs, Reactivity, Corrosivity, Ignitability, TCLP VOCs, and TCLP Metals. The samples were immediately placed in a cooler with ice and shipped FedEx to Columbia Analytical Services, Inc. under chain of custody for analysis.

Aroclor 1242 and 1254 were detected in both Roll-off boxes. Aroclor 1242 was detected at 1.9 ppm and 1.8 ppm while Aroclor 1254 was detected at 0.71 ppm and 0.62 ppm for Roll-off box #410777 and #411666, respectively. There were no TCLP VOCs detected in either of the boxes and all results were below the RCRA regulatory limits for corrosivity, ignitability, cyanide and reactive sulfide. Barium was detected in each of the boxes with a value of 2,420 µg/L for box #410777 and 1,230 µg/L for box #411666. Chromium and lead were also detected in Roll-off box #410777. All of the detected metals were well below the RCRA regulatory limits. The preliminary analytical results are summarized in Table 1, with preliminary laboratory data presented in Appendix A. CRA will validate the results following receipt of the final laboratory reports.

Should you have any questions, please do not hesitate to contact us.

TABLE 1

**RESULTS OF ROLL-OFF BOX SAMPLING
GM PONTIAC NORTH CAMPUS
PONTIAC, MI**

<i>Sample Number:</i>	<i>JJB-012</i>	<i>JJB-013</i>
<i>Sample Location:</i>	<i>Box #410776</i>	<i>Box#411666</i>
<i>Sample Date:</i>	<i>9/14/2000</i>	<i>9/14/2000</i>
<i>Sample Type:</i>	<i>sediment</i>	<i>sediment</i>

PCBs (mg/kg)

Aroclor 1016	ND (0.33)	ND (0.33)
Aroclor 1221	ND (0.33)	ND (0.33)
Aroclor 1232	ND (0.33)	ND (0.33)
Aroclor 1242	1.9	1.8
Aroclor 1248	ND (0.33)	ND (0.33)
Aroclor 1254	0.71	0.62
Aroclor 1260	ND (0.33)	ND (0.33)

Characteristics of Hazardous WastesRegulatory Limits (1)

Corrosivity	pH units	8.34	8.96	≤2 or ≥12.5
Ignitability	DEG F	>200	>200	<140 °F
Cyanide	mg/kg	1.8	0.2	250 mg/kg
Reactive Sulfide	mg/kg	ND	ND	500 mg/kg

TCLP VOCs (mg/L)Regulatory Limits (1)

Benzene	ND(0.2)	ND(0.2)	0.5
Carbon Tetrachloride	ND(0.2)	ND(0.2)	0.5
Chlorobenzene	ND(0.2)	ND(0.2)	100
Chloroform	ND(0.2)	ND(0.2)	6
1,4-Dichlorobenzene	ND(0.2)	ND(0.2)	7.5
1,2-Dichloroethane (EDC)	ND(0.2)	ND(0.2)	0.5
1,1-Dichloroethene	ND(0.2)	ND(0.2)	0.7
2-Butanon (MEK)	ND(8)	ND(8)	200
Tetrachloroethene (PCE)	ND(0.2)	ND(0.2)	0.7
Trichloroethene (TCE)	ND(0.2)	ND(0.2)	0.5
Vinyl Chloride	ND(0.2)	ND(0.2)	0.2

TCLP Metals (µg/L)Regulatory Limits (1)

Arsenic	ND(100)	ND(100)	5000
Barium	2420	1230	100000
Cadmium	ND(10.0)	ND(10.0)	1000
Chromium	27.5	ND(10.0)	5000
Lead	57.3	ND(50.0)	5000
Mercury	ND(1.0)	ND(1.0)	200
Selenium	ND(100)	ND(100)	1000
Silver	ND(10.0)	ND(10.0)	5000
Total Solids (%)	83.8	88.1	

NOTES: (1) RCRA Regulatory Limits, 40 CFR Part 261.

APPENDIX A

METALS
- Cover Page -

INORGANIC ANALYSIS DATA PACKAGE

Contract: Conestoga Rovers & Assoc.SDG No.: K2007200Lab Code: KLABCase No.: 15721

SAS No.:

SOW No.: SW-846Sample No.091400-JJB-012091400-JJB-012D091400-JJB-012S091400-JJB-013Lab Sample ID.K2007200-001K2007200-001DK2007200-001SK2007200-002

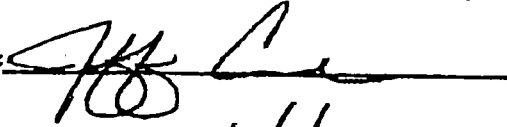
Were ICP interelement corrections applied?

Yes/No YES

Were ICP background corrections applied?

Yes/No YESIf yes-were raw data generated before
application of background corrections?Yes/No NOComments: TCLP EXTRACTIONP = 6010B; 7470A (Hg)

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: 

Name:

JEFF CORONADO

Date:

10/2/0

Title:

METALS LAB MANAGER

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

091400-JJB-012

Contract: Conestoga Rivers & Assoc.Lab Code: KLABCase No.: 15721

SAS No.:

SDG NO.: K2007200Matrix (soil/water): TCLPLab Sample ID: K2007200-001Level (low/med): LOWDate Received: 09/15/00% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): µg/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	100	U		P
7440-39-3	Barium	2420			P
7440-43-9	Cadmium	10.0	U		P
7440-47-3	Chromium	10.0	U		P
7439-92-1	Lead	50.0	U		P
7439-97-6	Mercury	1.00	U		CV
7782-49-2	Selenium	100	U		P
7440-22-4	Silver	10.0	U		P

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

METALS

-1-

INORGANIC ANALYSIS DATA SHEET

SAMPLE NO.

091400-JJB-013

Contract: Conestoga Rovers & Assoc.Lab Code: KLABCase No.: 15721

SAS No.:

SDG NO.: K2007200Matrix (soil/water): TCLPLab Sample ID: K2007200-002Level (low/med): LOWDate Received: 09/15/00% Solids: 0.0Concentration Units (ug/L or mg/kg dry weight): µG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	100	U		P
7440-39-3	Barium	1230			P
7440-43-9	Cadmium	10.0	U		P
7440-47-3	Chromium	10.0	U		P
7439-92-1	Lead	50.0	U		P
7439-97-6	Mercury	1.00	U		CV
7782-49-2	Selenium	100	U		P
7440-22-4	Silver	10.0	U		P

Color Before:

Clarity Before:

Texture:

Color After:

Clarity After:

Artifacts:

Comments:

Client: Conestoga Rovers & Assoc.
Project: GM Metal Fab./15721

Service Request: K2007200

**Cover Page - Organic Analysis Data Package
Volatile Organic Compounds**

Sample Name	Lab Code	Date Collected	Date Received
S-15721-091400-JJB-012	K2007200-001	09/14/2000	09/15/2000
S-15721-091400-JJB-013	K2007200-002	09/14/2000	09/15/2000

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____

Name: _____

Date: _____

Title: _____

Analytical Results

Client: Conestoga Rovers & Assoc.
 Project: GM Metal Fab./15721
 Sample Matrix: Sediment

Service Request: K2007200
 Date Collected: 09/14/2000
 Date Received: 09/15/2000
 Date Prepared: 09/18/2000

Volatile Organic Compounds

Sample Name: S-15721-091400-JJB-012
 Lab Code: K2007200-001
 Preparation Method: EPA 1311
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: mg/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	Regulatory Limit	Dilution Factor	Date Extracted	Date Analyzed	Note
Vinyl Chloride	ND	U	0.20	0.2	1	09/30/00	09/30/00	
1,1-Dichloroethene	ND	U	0.20	0.7	1	09/30/00	09/30/00	
2-Butanone (MEK)	ND	U	8.0	200	1	09/30/00	09/30/00	
Chloroform	ND	U	0.20	6	1	09/30/00	09/30/00	
Carbon Tetrachloride	ND	U	0.20	0.5	1	09/30/00	09/30/00	
1,2-Dichloroethane (EDC)	ND	U	0.20	0.5	1	09/30/00	09/30/00	
Benzene	ND	U	0.20	0.5	1	09/30/00	09/30/00	
Trichloroethane (TCE)	ND	U	0.20	0.5	1	09/30/00	09/30/00	
Tetrachloroethene (PCE)	ND	U	0.20	0.7	1	09/30/00	09/30/00	
Chlorobenzene	ND	U	0.20	100	1	09/30/00	09/30/00	
1,4-Dichlorobenzene	ND	U	0.20	7.5	1	09/30/00	09/30/00	

Surrogate Name	%Rec	Control Limits	Note
Dibromofluoromethane	92	87-115	Acceptable
Toluene-d8	98	82-116	Acceptable
4-Bromofluorobenzene	92	75-120	Acceptable

Analytical Results

Client: Conestoga Rovers & Assoc.
 Project: GM Metal Fab./15721
 Sample Matrix: Sediment

Service Request: K2007200
 Date Collected: 09/14/2000
 Date Received: 09/15/2000
 Date Prepared: 09/18/2000

Volatile Organic Compounds

Sample Name: S-15721-091400-JJB-013
 Lab Code: K2007200-002
 Preparation Method: EPA 1311
 Extraction Method: EPA 5030B
 Analysis Method: 8260B

Units: mg/L
 Basis: NA
 Level: Low

Analyte Name	Result	Q	MRL	Regulatory Limit	Dilution Factor	Date Extracted	Date Analyzed	Note
Vinyl Chloride	ND	U	0.20	0.2	1	09/30/00	09/30/00	
1,1-Dichloroethene	ND	U	0.20	0.7	1	09/30/00	09/30/00	
2-Butanone (MEK)	ND	U	8.0	200	1	09/30/00	09/30/00	
Chloroform	ND	U	0.20	6	1	09/30/00	09/30/00	
Carbon Tetrachloride	ND	U	0.20	0.5	1	09/30/00	09/30/00	
1,2-Dichloroethane (EDC)	ND	U	0.20	0.5	1	09/30/00	09/30/00	
Benzene	ND	U	0.20	0.5	1	09/30/00	09/30/00	
Trichloroethene (TCE)	ND	U	0.20	0.5	1	09/30/00	09/30/00	
Tetrachloroethene (PCE)	ND	U	0.20	0.7	1	09/30/00	09/30/00	
Chlorobenzene	ND	U	0.20	100	1	09/30/00	09/30/00	
1,4-Dichlorobenzene	ND	U	0.20	7.5	1	09/30/00	09/30/00	

Surrogate Name	%Rec	Control Limits	Note
Dibromofluoromethane	94	87-115	Acceptable
Toluene-d8	97	82-116	Acceptable
4-Bromofluorobenzene	97	75-120	Acceptable

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Conestoga Rivers & Assoc.
Project: GM Metall Fab./15721
Sample Matrix: Sediment

Service Request: K2007200
Date Collected: 9/14/00
Date Received: 9/15/00

Polychlorinated Biphenyls (PCBs)

Sample Name: S-15721-091400-JJB-012
Lab Code: K2007200-001
Test Notes:

Units: mg/Kg (ppm)
Basis: dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3540C	8082	0.33	1	9/26/00	9/28/00	ND	
Aroclor 1221	EPA 3540C	8082	0.33	1	9/26/00	9/28/00	ND	
Aroclor 1232	EPA 3540C	8082	0.33	1	9/26/00	9/28/00	ND	
Aroclor 1242	EPA 3540C	8082	0.33	1	9/26/00	9/28/00	1.9	
Aroclor 1248	EPA 3540C	8082	0.33	1	9/26/00	9/28/00	ND	
Aroclor 1254	EPA 3540C	8082	0.33	1	9/26/00	9/28/00	0.71	
Aroclor 1260	EPA 3540C	8082	0.33	1	9/26/00	9/28/00	ND	

Approved By:
1222/020527p

Date:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Conestoga Rovers & Assoc.
Project: GM Metall Fab./15721
Sample Matrix: Sediment

Service Request: K2007200
Date Collected: 9/14/00
Date Received: 9/15/00

Polychlorinated Biphenyls (PCBs)

Sample Name: S-15721-091400-JJB-013
Lab Code: K2007200-002
Test Notes:

Units: mg/kg (ppm)
Basis: Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3540C	8082	0.33	1	9/26/00	9/28/00	ND	
Aroclor 1221	EPA 3540C	8082	0.33	1	9/26/00	9/28/00	ND	
Aroclor 1232	EPA 3540C	8082	0.33	1	9/26/00	9/28/00	ND	
Aroclor 1242	EPA 3540C	8082	0.33	1	9/26/00	9/28/00	1.8	
Aroclor 1248	EPA 3540C	8082	0.33	1	9/26/00	9/28/00	ND	
Aroclor 1254	EPA 3540C	8082	0.33	1	9/26/00	9/28/00	0.62	
Aroclor 1260	EPA 3540C	8082	0.33	1	9/26/00	9/28/00	ND	

Approved By:

1222/020397p

Date:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Onnestoga Rivers & Assoc.
Project: GM Metal Fab./15721
Sample Matrix: Sediment

Service Request: K2007200
Date Collected: 9/14/00
Date Received: 9/15/00

Total Solids

Prep Method: NONE
Analysis Method: 160.3M
Test Notes:

Units: PERCENT
Basis: Wet

Sample Name	Lab Code	Date Analyzed	Result	Result Notes
S-15721-091400-1113-012	K2007200-001	9/21/00	83.8	
S-15721-091400-1113-013	K2007200-002	9/21/00	88.1	

Approved By:
TSOLIDS.XLT Sample/01071998a

Date:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Conestoga Rivers & Assoc.
 Project: GM Metal Fab./15721
 Sample Matrix: Sediment

Service Request: K2007200
 Date Collected: 9/14/00
 Date Received: 9/15/00
 Date Extracted: NA

Characteristics of Hazardous Waste
 RCRA, 40 CFR Part 261

Sample Name: S-15721-091400-JJB-012
 Lab Code: K2007200-001
 Test Notes:

Basis: Wt

Analyte	Analysis Method	Units	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes	Regulatory Limits
Corrosivity	9045C	pH UNITS	--	--	1	9/26/00	8.34		≤ 2 or ≥ 12.5
Ignitability	1020	DISS P	--	--	1	9/28/00	> 200		<140°F
Cyanide	9010B	mg/Kg (ppm)	1.7	0.2	1	9/27/00	1.8		250 mg/Kg
Sulfide, Reactive	SW-846 Sec. 7.3*	mg/Kg (ppm)	20	20	1	9/28/00	ND		500 mg/Kg

Analytical methods, regulatory limits and action levels used in this report are from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., September 1986 and as amended by Update I, July 1992.

Approved By:
 1322/052595

Date:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Conestoga Rivers & Assoc.
 Project: GM Metal Fab./15721
 Sample Matrix: Sediment

Service Request: K2007200
 Date Collected: 9/14/00
 Date Received: 9/15/00
 Date Extracted: NA

Characteristics of Hazardous Waste
 RCRA, 40 CFR Part 261

Sample Name: S-15721-091400-JJB-013
 Lab Code: K2007200-002
 Test Notes:

Basis: Wet

Analyte	Analysis Method	Units	MRL	MDL	Dilution Factor	Date Analyzed	Result	Result Notes	Regulatory Limits
Corrosivity	9045C	pH UNITS	--	--	1	9/26/00	8.96		≤ 2 or ≥ 12.5
Ignitability	1020	TEMP	--	--	1	9/28/00	> 200		$\leq 140^{\circ}\text{F}$
Cyanide	9010B	mg/Kg (ppm)	1.7	0.2	1	9/27/00	0.2	J	250 mg/Kg
Sulfide, Reactive	SW-846 Sec. 7.3*	mg/Kg (ppm)	20	15	1	9/28/00	NID		500 mg/Kg

Analytical methods, regulatory limits and action levels used in this report are from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Ed., September 1986 and as amended by Update 1, July 1992.

Approved By:
 1822/032595

Date:

AD-6



MEMORANDUM

TO: Dan Fronczek REF. NO.: 15721/Fron/18

FROM: Jeramy Bell/Gavin O'Neill DATE: October 19, 2000

C.C.: Keith West
Tom Ramos
Ken Malinowski

RE: **Status Summary Storm Sewer Sampling Results
GM Pontiac North Campus
Pontiac, Michigan**

This memorandum has been prepared to provide an ongoing summary of the analytical results received to date from all storm sewer samples collected from the GM Pontiac North Campus in Pontiac, Michigan. It should be noted that the results include both preliminary and final data received from the lab. The summary tables will be updated, as necessary, and the data will be validated upon receipt of all final data.

A sample key is provided in the attached Table 1, which provides the sampling date, matrix, analysis and sample location of each sample. All samples collected were immediately placed in a cooler with ice and shipped FedEx to Columbia Analytical Services (CAS), Inc. under chain of custody protocol for analysis.

CRA has been collecting stormwater samples from various areas of the storm sewer system since February 2000 including ST4 (previously referred to as MH4), the diverter valve (ST100) and various other manholes.

The analytical results for all storm sewer samples collected to date are presented in Table 2. The raw data is included in Appendix A. Please note that Table 2 includes the results of recent samples collected on September 8, 14, and 21, 2000 from ST13A, 412, 11A, 008, 308, 006, 304C, 102, 004 and 300B. All other analytical results were previously forwarded to you and GM.

CRA has continued to monitor various storm sewer manholes at your request. CRA is still waiting for the results of storm sewer samples collected on September 29, 2000. Storm sewer samples were also collected on October 12, 2000 from ST4, 7, 200, 18, 11, 11C and 102. CRA will continue to sample ST102 weekly until the end of October, as requested. CRA will summarize and forward the analytical results when the additional data becomes available.

Please note that Table 2 also includes the results of samples collected by Mr. Bob Doyle on April 27, 2000 (BD-001, BD-002, and BD-003).

Should you have any questions, please do not hesitate to contact us.

TABLE 1
SAMPLE KEY FOR STORM SEWER SAMPLING
GM PONTIAC NORTH CAMPUS
PONTIAC, MI

<i>Sample ID</i>	<i>Matrix</i>	<i>Location</i>	<i>QA/QC</i>	<i>Analysis</i>	<i>Sample Date</i>
W-15721-021500-BJE-001	water	ST104	--	PCBs	02/15/00
W-15721-021500-BJE-002	water	ST104	duplicate	PCBs	02/15/00
W-15721-021500-BJE-003	water	--	rinse blank	PCBs	02/15/00
W-15721-021500-BJE-004	water	ST107	--	PCBs	02/15/00
W-15721-021500-BJE-005	water	ST106	--	PCBs	02/15/00
W-15721-021500-BJE-006	water	ST4	--	PCBs	02/15/00
W-15721-022300-SH-001	water	ST103	--	PCBs	02/23/00
W-15721-022300-SH-002	water	ST103	duplicate	PCBs	02/23/00
W-15721-022300-SH-003	water	--	rinse blank	PCBs	02/23/00
W-15721-022300-SH-004	water	ST102	--	PCBs	02/23/00
W-15721-030300-BJE-001	water	ST4	--	PCBs	03/03/00
W-15721-031500-SEH-201	water	ST100	--	PCBs	03/15/00
W-15721-031500-BMW-401	water	ST4	--	PCBs	03/15/00
W-15721-032700-SEH-202	water	ST100	--	PCBs	03/27/00
W-15721-032700-SEH-402	water	ST4	--	PCBs	03/27/00
W-15721-040500-SEH-203	water	ST100	--	PCBs	04/05/00
W-15721-040500-SEH-204	water	ST100	duplicate	PCBs	04/05/00
W-15721-040500-SEH-205	water	ST100	rinse blank	PCBs	04/05/00
W-15721-040500-SEH-403	water	ST4	--	PCBs	04/05/00
W-15721-041200-SEH-404	water	--	rinse blank	PCBs	04/12/00
W-15721-041200-SEH-405	water	ST4	--	PCBs	04/12/00
W-15721-041200-SEH-406	water	ST4	duplicate	PCBs	04/12/00
W-15721-041200-SEH-206	water	ST100	--	PCBs	04/12/00
W-15721-042000-SEH-407	water	ST4	--	PCBs	04/20/00
W-15721-042000-SEH-207	water	ST100	--	PCBs	04/20/00
W-15721-042000-SEH-408	water	ST4	--	PCBs	04/20/00
W-15721-042000-SEH-409	water	ST4	--	PCBs	04/20/00
W-15721-042000-SEH-410	water	ST4	duplicate	PCBs	04/20/00
W-15721-042700-BD-001	water	effluent	--	PCBs	04/27/00
W-15721-042700-BD-002	water	midfluent	--	PCBs	04/27/00
W-15721-042700-BD-003	water	influent	--	PCBs	04/27/00
W-15721-050100-DRD-001	water	ST213	--	PCBs	05/01/00
W-15721-050100-DRD-002	water	ST12	--	PCBs	05/01/00
W-15721-050100-DRD-208	water	ST100	--	PCBs	05/01/00
W-15721-050100-DRD-411	water	ST4	--	PCBs	05/01/00
W-15721-050100-DRD-412	water	ST4	duplicate	PCBs	05/01/00
W-15721-050900-DRD-001	water	ST100	--	PCBs	05/09/00
W-15721-050900-DRD-002	water	ST4	--	PCBs	05/09/00
W-15721-050900-DRD-003	water	ST4	duplicate	PCBs	05/09/00

TABLE 1
SAMPLE KEY FOR STORM SEWER SAMPLING
GM PONTIAC NORTH CAMPUS
PONTIAC, MI

<i>Sample ID</i>	<i>Matrix</i>	<i>Location</i>	<i>QA/QC</i>	<i>Analysis</i>	<i>Sample Date</i>
W-15721-051000-SEH-209	water	ST100	--	PCBs	05/10/00
W-15721-051000-SEH-210	water	ST100	duplicate	PCBs	05/10/00
W-15721-051000-SEH-413	water	ST4	--	PCBs	05/10/00
W-15721-060800-SEH-414	water	ST4	--	PCBs	06/08/00
W-15721-071900-SEH-214	water	ST214	--	PCBs	07/19/00
W-15721-071900-SEH-212	water	ST212	--	PCBs	07/19/00
W-15721-071900-SEH-006	water	ST6	--	PCBs	07/19/00
W-15721-071900-SEH-223	water	ST223	--	PCBs	07/19/00
W-15721-071900-SEH-415	water	ST4	--	PCBs	07/19/00
W-15721-090800-SEH-004	water	ST4	MS/MSD	PCBs	09/08/00
W-15721-090800-SEH-300b	water	ST300B	--	PCBs	09/08/00
W-15721-090800-SEH-300x	water	ST300B	duplicate	PCBs	09/08/00
W-15721-090800-SEH-102	water	ST102	--	PCBs	09/08/00
W-15721-090800-SEH-142	water	ST412	--	PCBs	09/08/00
W-15721-090800-SEH-304c	water	ST304C	--	PCBs	09/08/00
W-15721-090800-SEH-006	water	ST6	--	PCBs	09/08/00
W-15721-090800-SEH-308	water	ST308	--	PCBs	09/08/00
W-15721-090800-SEH-011a	water	ST11A	--	PCBs	09/08/00
W-15721-090800-SEH-008	water	ST8	--	PCBs	09/08/00
W-15721-090800-SEH-008R	water	--	rinse blank	PCBs	09/08/00
W-15721-091400-JJB-300b	water	ST300B	MS/MSD	PCBs	09/14/00
W-15721-091400-JJB-004	water	ST4	--	PCBs	09/14/00
W-15721-091400-JJB-004x	water	ST4	duplicate	PCBs	09/14/00
W-15721-091400-JJB-102	water	ST102	--	PCBs	09/14/00
W-15721-091400-JJB-142	water	ST412	--	PCBs	09/14/00
W-15721-091400-JJB-011a	water	ST011A	--	PCBs	09/14/00
W-15721-091400-JJB-008	water	ST8	--	PCBs	09/14/00
W-15721-091400-JJB-006	water	ST6	--	PCBs	09/14/00
W-15721-091400-JJB-304c	water	ST304C	--	PCBs	09/14/00
W-15721-091400-JJB-308	water	ST308	--	PCBs	09/14/00
W-15721-091400-JJB-RB	water	--	rinse blank	PCBs	09/14/00
W-15721-092100-JJB-004	water	ST4	--	PCBs	09/21/00
W-15721-092100-JJB-102	water	ST102	--	PCBs	09/21/00
W-15721-092100-JJB-142	water	ST412	--	PCBs	09/21/00
W-15721-092100-JJB-11A	water	ST11A	--	PCBs	09/21/00
W-15721-092100-JJB-308	water	ST308	--	PCBs	09/21/00
W-15721-092100-JJB-008	water	ST8	--	PCBs	09/21/00
W-15721-092100-JJB-304C	water	ST304C	--	PCBs	09/21/00
W-15721-092100-JJB-304C1	water	ST304C	duplicate	PCBs	09/21/00

TABLE 2

SUMMARY OF STORMSEWER SAMPLING
GM PONTIAC NORTH CAMPUS
PONTIAC, MI

Summary: ST4

Sample Number:		BJE-001	BMW-401	SEH-402	SEH-403	SEH-405	SEH-406	SEH-407	SEH-408	SEH-409	SEH-410
Sample Date:		02/15/00	03/15/00	03/27/00	4/5/2000	4/12/2000	4/12/2000	04/20/00	04/20/00	04/20/00	04/20/00
Sample Type:		water	water	water	water	water	water	water	water	water	water
QA/QC:							duplicate				duplicate
PCBs (µg/L)											
Aroclor 1016		ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)
Aroclor 1221		ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)
Aroclor 1232		ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)
Aroclor 1242		ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)
Aroclor 1248		0.5	2.1	1.6	1.6	0.67	6.9	1.9	0.6	0.34	0.46
Aroclor 1254		ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)
Aroclor 1260		ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)
Flow (gpm)		87	130	170	74	266	238	8124	3714	3057	3018

Summary: ST4 (cont.)

Sample Number:		DRD-411	DRD-412	DRD-002	DRD-003	SEH-413	SEH-414	SEH-415	SEH-004	JJB-004	JJB-004X
Sample Date:		5/1/2000	5/1/2000	5/9/2000	5/9/2000	5/10/2000	6/8/2000	07/19/00	9/8/2000	9/14/2000	9/21/2000
Sample Type:		water	water	water	water	water	water	water	water	water	water
QA/QC:			duplicate		duplicate						duplicate
PCBs (µg/L)											
Aroclor 1016		ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.06)	ND (0.06)	ND (0.08)	ND (0.06)
Aroclor 1221		ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.06)	ND (0.06)	ND (0.08)	ND (0.06)
Aroclor 1232		ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.06)	ND (0.06)	ND (0.08)	ND (0.06)
Aroclor 1242		3.3	1.9	ND (0.08)	ND (0.08)	ND (0.08)	1.2	ND (0.06)	ND (0.06)	ND (0.08)	ND (0.06)
Aroclor 1248		ND (0.08)	ND (0.08)	0.35	0.25	2.2	ND (0.08)	1.2	0.21	1	0.98
Aroclor 1254		ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.06)	ND (0.06)	ND (0.08)	ND (0.06)
Aroclor 1260		ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.08)	ND (0.06)	ND (0.06)	ND (0.08)	ND (0.06)
Flow (gpm)		876*	3413*	**	**	**	83	**	-	-	-

**SUMMARY OF STORMSEWER SAMPLING
GM PONTIAC NORTH CAMPUS
PONTIAC, MI**

Summary: Diverter Valve Pit (ST100)

Sample Number: SEH-201 SEH-202 SEH-203 SEH-204 SEH-206 SEH-207 DRD-208 DRD-001 SEH-209 SEH-210 Summary: ST412
Sample Date: 03/15/00 03/27/00 4/5/2000 4/5/2000 4/12/2000 04/20/00 5/1/2000 5/9/2000 5/10/2000 5/10/2000
Sample Type: water water water water water water water water water water
QA/QC: duplicate duplicate

PCBs (µg/L)
 Aroclor 1016 ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08)
 Aroclor 1221 ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08)
 Aroclor 1232 ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08)
 Aroclor 1242 ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08)
 Aroclor 1248 4.5 1.4 0.48 0.1 J 0.1 J 0.28 0.29 0.08 J 0.11 0.12
 Aroclor 1254 ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08)
 Aroclor 1260 ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08) ND (0.08)

Summary: ST6

Sample Number: SEH-006 SEH-006 JTB-006
Sample Date: 07/19/00 9/8/2000 9/14/2000
Sample Type: water water water
QA/QC:

PCBs (µg/L)
 Aroclor 1016 ND(0.06) ND(0.08) ND(0.08)
 Aroclor 1221 ND(0.06) ND(0.08) ND(0.08)
 Aroclor 1232 ND(0.06) ND(0.08) ND(0.08)
 Aroclor 1242 ND(0.06) ND(0.08) 0.5
 Aroclor 1248 3.2 0.23 ND(0.08)
 Aroclor 1254 ND(0.06) ND(0.08) ND(0.08)
 Aroclor 1260 ND(0.06) ND(0.08) ND(0.08)

Summary: ST212

Sample Number: SEH-212
Sample Date: 07/19/00
Sample Type: water
QA/QC:

PCBs (µg/L)
 Aroclor 1016 ND(0.06)
 Aroclor 1221 ND(0.06)
 Aroclor 1232 ND(0.06)
 Aroclor 1242 ND(0.06)
 Aroclor 1248 ND(0.06)
 Aroclor 1254 0.32
 Aroclor 1260 ND(0.06)

NOTES

ND (0.08) = not detected at the method detection limit
 QA/QC = quality assurance/ quality control
 J = estimated value
 * flow meter may have been dislodged at this time - flow values may not be accurate
 ** flow meter was dislodged

TABLE 2

SUMMARY OF STORMSEWER SAMPLING
GM PONTIAC NORTH CAMPUS
PONTIAC, MI

3 of 6

Summary: ST8

Sample Number: JJB-008
Sample Date: 9/21/2000
Sample Type: water
QA/QC:

SEH-008
9/8/2000
water

JJB-008
9/21/2000
water

Summary: ST213

Sample Number:
Sample Date:
Sample Type:
QA/QC:

DRD-001
5/1/2000
water

PCBs (µg/L)

PCBs (µg/L)

Aroclor 1016
Aroclor 1221
Aroclor 1232
Aroclor 1242
Aroclor 1248
Aroclor 1254
Aroclor 1260

ND(0.08)
ND(0.08)
ND(0.08)
ND(0.08)
ND(0.08)
ND(0.08)
ND(0.08)

ND(0.08)
ND(0.08)
ND(0.08)
ND(0.08)
0.1
ND(0.08)
ND(0.08)

ND(0.08)
ND(0.08)
ND(0.08)
ND(0.08)
0.48
ND(0.08)
ND(0.08)

Summary: ST11A

Sample Number:
Sample Date:
Sample Type:
QA/QC:

SEH-11A
9/8/2000
water

JJB-11A
9/14/2000
water

SEH-11A
9/21/2000
water

PCBs (µg/L)

PCBs (µg/L)

Aroclor 1016
Aroclor 1221
Aroclor 1232
Aroclor 1242
Aroclor 1248
Aroclor 1254
Aroclor 1260

ND(0.08)
ND(0.08)
ND(0.08)
ND(0.08)
ND(0.08)
ND(0.08)
ND(0.08)

ND(0.08)
ND(0.08)
ND(0.08)
ND(0.08)
0.09 J
ND(0.08)
ND(0.08)

ND(0.06)
ND(0.06)
ND(0.06)
ND(0.06)
0.33
ND(0.06)
ND(0.06)

Summary: ST214

Sample Number:
Sample Date:
Sample Type:
QA/QC:

SEH-214
07/19/00
water

NOTES

ND (0.08) = not detected at the method detection limit

QA/QC = quality assurance/ quality control

J = estimated value

* flow meter may have been dislodged at this time - flow values may not be accurate

** flow meter was dislodged

SUMMARY OF STORMSEWER SAMPLING
GM PONTIAC NORTH CAMPUS
PONTIAC, MI

Summary: ST12

Sample Number: DRD-002
Sample Date: 5/1/2000
Sample Type: water
QA/QC:

PCBs (µg/L)

Aroclor 1016 ND (0.08)
Aroclor 1221 ND (0.08)
Aroclor 1232 ND (0.08)
Aroclor 1242 ND (0.08)
Aroclor 1248 ND (0.08)
Aroclor 1254 ND (0.08)
Aroclor 1260 ND (0.08)

Summary: ST 102

Sample Number: SH-004
Sample Date: 02/23/00
Sample Type: water
QA/QC:

PCBs (µg/L)

Aroclor 1016 ND (0.08)
Aroclor 1221 ND (0.08)
Aroclor 1232 ND (0.08)
Aroclor 1242 ND (0.08)
Aroclor 1248 ND (0.08)
Aroclor 1254 ND (0.08)
Aroclor 1260 ND (0.08)

NOTES

ND (0.08) = not detected at the method detection limit
QA/QC = quality assurance/quality control

J = estimated value

* flow meter may have been dislodged at this time - flow values may not be accurate

** flow meter was dislodged

Summary: ST223

Sample Number: SEH-223
Sample Date: 07/19/00
Sample Type: water
QA/QC:

PCBs (µg/L)

Aroclor 1016 ND(0.06)
Aroclor 1221 ND(0.06)
Aroclor 1232 ND(0.06)
Aroclor 1242 ND(0.06)
Aroclor 1248 ND(0.06)
Aroclor 1254 ND(0.06)
Aroclor 1260 ND(0.06)

Summary: ST300B

Sample Number: SEH-300B
Sample Date: 9/8/2000
Sample Type: water
QA/QC:

PCBs (µg/L)

Aroclor 1016 ND(0.06)
Aroclor 1221 ND(0.06)
Aroclor 1232 ND(0.06)
Aroclor 1242 ND(0.06)
Aroclor 1248 ND(0.06)
Aroclor 1254 ND(0.06)
Aroclor 1260 ND(0.06)

TABLE 2

**SUMMARY OF STORMSEWER SAMPLING
GM PONTIAC NORTH CAMPUS
PONTIAC, MI**

Summary: ST 103

Sample Number: SH-001 SH-002
Sample Date: 02/23/00 02/23/00
Sample Type: water water
QA/QC: duplicate duplicate

PCBs (µg/L)

Aroclor 1016 ND (0.08) ND (0.08)
Aroclor 1221 ND (0.08) ND (0.08)
Aroclor 1232 ND (0.08) ND (0.08)
Aroclor 1242 ND (0.08) ND (0.08)
Aroclor 1248 ND (0.08) ND (0.08)
Aroclor 1254 ND (0.08) ND (0.08)
Aroclor 1260 ND (0.08) ND (0.08)

Summary: ST 104

Sample Number: BJE-001 BJE-002
Sample Date: 02/15/00 02/15/00
Sample Type: water water
QA/QC: duplicate duplicate

PCBs (µg/L)

Aroclor 1016 ND (0.08) ND (0.08)
Aroclor 1221 ND (0.08) ND (0.08)
Aroclor 1232 ND (0.08) ND (0.08)
Aroclor 1242 ND (0.08) ND (0.08)
Aroclor 1248 ND (0.08) ND (0.08)
Aroclor 1254 ND (0.08) ND (0.08)
Aroclor 1260 ND (0.08) ND (0.08)

NOTES

ND (0.08) = not detected at the method detection limit
QA/QC = quality assurance/quality control

J = estimated value

* flow meter may have been dislodged at this time - flow values may not be accurate

** flow meter was dislodged

Summary: ST304C

Sample Number: JJB-304C JJB-304C
Sample Date: 9/14/2000 9/21/2000
Sample Type: water water
QA/QC: duplicate duplicate

PCBs (µg/L)

Aroclor 1016 ND(0.08) ND(0.08)
Aroclor 1221 ND(0.08) ND(0.08)
Aroclor 1232 ND(0.08) ND(0.08)
Aroclor 1242 18 7.4 4.9
Aroclor 1248 ND(0.08) ND(0.08)
Aroclor 1254 ND(0.08) ND(0.08)
Aroclor 1260 ND(0.08) ND(0.08)

Summary: ST308

Sample Number: SEH-308 JJB-308
Sample Date: 9/8/2000 9/14/2000
Sample Type: water water
QA/QC: duplicate duplicate

PCBs (µg/L)

Aroclor 1016 ND(0.08) ND(0.08)
Aroclor 1221 ND(0.08) ND(0.08)
Aroclor 1232 ND(0.08) ND(0.08)
Aroclor 1242 1.3 ND(0.08) ND(0.08)
Aroclor 1248 ND(0.08) ND(0.08)
Aroclor 1254 ND(0.08) ND(0.08)
Aroclor 1260 ND(0.08) ND(0.08)

TABLE 2

SUMMARY OF STORMSEWER SAMPLING
GM PONTIAC NORTH CAMPUS
PONTIAC, MI

Summary: ST 106

Sample Number: BJE-005
Sample Date: 02/15/00
Sample Type: water
QA/QC:

PCBs (µg/L)

Aroclor 1016 ND (0.08)
Aroclor 1221 ND (0.08)
Aroclor 1232 ND (0.08)
Aroclor 1242 ND (0.08)
Aroclor 1248 ND (0.08)
Aroclor 1254 ND (0.08)
Aroclor 1260 ND (0.08)

Summary: ST 107

Sample Number: BJE-004
Sample Date: 02/15/00
Sample Type: water
QA/QC:

PCBs (µg/L)

Aroclor 1016 ND (0.08)
Aroclor 1221 ND (0.08)
Aroclor 1232 ND (0.08)
Aroclor 1242 ND (0.08)
Aroclor 1248 ND (0.08)
Aroclor 1254 ND (0.08)
Aroclor 1260 ND (0.08)

NOTES

ND (0.08) = not detected at the method detection limit
QA/QC = quality assurance/quality control

J = estimated value

* flow meter may have been dislodged at this time - flow values may not be accurate

** flow meter was dislodged

Summary: Effluent, Midfluent, Influent

Sample Number: BD-001
Sample Date: 04/27/00
Sample Type: water
QA/QC:

PCBs (µg/L)

Aroclor 1016 ND (0.08)
Aroclor 1221 ND (0.08)
Aroclor 1232 ND (0.08)
Aroclor 1242 ND (0.08)
Aroclor 1248 ND (0.08)
Aroclor 1254 ND (0.08)
Aroclor 1260 ND (0.08)

Summary: Rinse Blank

Sample Number: BJE-003
Sample Date: 2/15/2000
Sample Type: water
QA/QC:

PCBs (µg/L)

Aroclor 1016 ND(0.06)
Aroclor 1221 ND(0.06)
Aroclor 1232 ND(0.06)
Aroclor 1242 ND(0.06)
Aroclor 1248 ND(0.06)
Aroclor 1254 ND(0.06)
Aroclor 1260 ND(0.06)

Sample Number: SH-003
Sample Date: 2/23/2000
Sample Type: water
QA/QC:

PCBs (µg/L)
Aroclor 1016 ND(0.06)
Aroclor 1221 ND(0.06)
Aroclor 1232 ND(0.06)
Aroclor 1242 ND(0.06)
Aroclor 1248 ND(0.06)
Aroclor 1254 ND(0.06)
Aroclor 1260 ND(0.06)

Sample Number: SEH-003
Sample Date: 4/5/2000
Sample Type: water
QA/QC:

PCBs (µg/L)
Aroclor 1016 ND(0.06)
Aroclor 1221 ND(0.06)
Aroclor 1232 ND(0.06)
Aroclor 1242 ND(0.06)
Aroclor 1248 ND(0.06)
Aroclor 1254 ND(0.06)
Aroclor 1260 ND(0.06)

Sample Number: SEH-404
Sample Date: 4/12/2000
Sample Type: water
QA/QC:

PCBs (µg/L)
Aroclor 1016 ND(0.06)
Aroclor 1221 ND(0.06)
Aroclor 1232 ND(0.06)
Aroclor 1242 ND(0.06)
Aroclor 1248 ND(0.06)
Aroclor 1254 ND(0.06)
Aroclor 1260 ND(0.06)

Sample Number: SEH-008R
Sample Date: 9/8/2000
Sample Type: water
QA/QC:

PCBs (µg/L)
Aroclor 1016 ND(0.06)
Aroclor 1221 ND(0.06)
Aroclor 1232 ND(0.06)
Aroclor 1242 ND(0.06)
Aroclor 1248 ND(0.06)
Aroclor 1254 ND(0.06)
Aroclor 1260 ND(0.06)

Sample Number: JJB-RB
Sample Date: 9/14/2000
Sample Type: water
QA/QC:

PCBs (µg/L)
Aroclor 1016 ND(0.06)
Aroclor 1221 ND(0.06)
Aroclor 1232 ND(0.06)
Aroclor 1242 ND(0.06)
Aroclor 1248 ND(0.06)
Aroclor 1254 ND(0.06)
Aroclor 1260 ND(0.06)

AD-7



**CONESTOGA-ROVERS
& ASSOCIATES**

2578 Dougall Avenue, Windsor, Ontario, N8X 1T7
Telephone: (519) 966-9886 Fax: (519) 966-3894
www.CRAworld.com

MEMORANDUM

TO: Dan Fronczek REF. NO.: 15721/Fron/21

FROM: Jeramy Bell/Gavin O'Neill *[Signature]* DATE: October 20, 2000

CC: Keith West

RE: Storm Sewer Water Sampling Results
GM Pontiac North Campus
Pontiac, Michigan

This memorandum has been prepared in order to summarize the preliminary analytical results from the water samples collected at your request on September 29, 2000 from storm sewers ST102 and ST412 at the GM Pontiac North Campus in Pontiac Michigan. The data will be validated upon receipt of the final analytical data reports.

The samples collected were immediately placed in a cooler with ice and shipped FedEx to Columbia Analytical Services (CAS), Inc. under chain of custody protocol for PCB analysis. The analytical results are summarized in Table 1, with the raw laboratory data presented in Appendix A.

There was no observed flow in ST412, while ST102 had a constant low volume flow throughout the sampling period. Aroclor 1242 was detected at 0.1 J ppm in both ST102 and ST412. For both samples the detected value of Aroclor 1242 represents an estimated value and will be validated upon receipt of final data.

Should you have any questions, please do not hesitate to contact us.

SUMMARY OF STORMSEWER SAMPLING
GM PONTIAC NORTH CAMPUS
PONTIAC, MI

Summary: ST 102

Sample Number: JJB-102
Sample Date: 9/29/2000
Sample Type: water
QA/QC:

PCBs (µg/L)

Aroclor 1016	ND(0.08)
Aroclor 1221	ND(0.08)
Aroclor 1232	ND(0.08)
Aroclor 1242	0.1 J
Aroclor 1248	ND(0.08)
Aroclor 1254	ND(0.08)
Aroclor 1260	ND(0.08)

Summary: ST412

Sample Number: JJB-142
Sample Date: 9/29/2000
Sample Type: water
QA/QC:

PCBs (µg/L)

Aroclor 1016	ND(0.08)
Aroclor 1221	ND(0.08)
Aroclor 1232	ND(0.08)
Aroclor 1242	0.1 J
Aroclor 1248	ND(0.08)
Aroclor 1254	ND(0.08)
Aroclor 1260	ND(0.08)

NOTES

ND (0.08) = not detected at the method detection limit

QA/QC = quality assurance/quality control

J = estimated value

AD-8

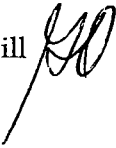


**CONESTOGA-ROVERS
& ASSOCIATES**

2578 Dougall Avenue, Windsor, Ontario, N8X 1T7
Telephone: (519) 966-9886 Fax: (519) 966-3894
www.CRAworld.com

MEMORANDUM

TO: Dan Fronczek REF. NO.: 15721/Fron/22

FROM: Jeramy Bell/Gavin O'Neill  DATE: October 25, 2000

CC: Keith West

RE: Storm Sewer Water Sampling Results
GM Pontiac North Campus
Pontiac, Michigan

This memorandum has been prepared to summarize the preliminary analytical results from the water samples collected at your request on October 10, 2000 from storm sewers ST4, 7, 11, 11C, 18, 102 and 200 at the GM Pontiac North Campus in Pontiac, Michigan. The data will be validated upon receipt of the final analytical data reports.

The samples collected were immediately placed in a cooler with ice and shipped FedEx to Columbia Analytical Services (CAS), Inc. under chain of custody protocol for PCB analysis. The analytical results are summarized in Table 1, with the raw laboratory data presented in Appendix A.

In each of the storm sewers sampled, a constant flow was observed throughout the sampling period with the exception of ST200. A sample was not collected from ST200 due to insufficient flow. Aroclor 1248 was detected in each of the samples ranging from 0.17 µg/L to 5.1 µg/L.

CRA is awaiting the analytical results for the storm sewer samples collected on October 20, 2000. One additional sample will be collected, as requested, from ST102 on October 26, 2000 from ST102. CRA will summarize and forward these results upon receipt of the analytical data.

Should you have any questions, please do not hesitate to contact us.

TABLE 1
SUMMARY OF STORMSEWER SAMPLING
GM PONTIAC NORTH CAMPUS
PONTIAC, MI

<u>Summary: ST18</u>	<u>Summary: ST14</u>	<u>Summary: ST102</u>	<u>Summary: Rinse Blank</u>
Sample Number: Sample Date: Sample Type: QA/QC:	Sample Number: Sample Date: Sample Type: QA/QC:	Sample Number: Sample Date: Sample Type: QA/QC:	Sample Number: Sample Date: Sample Type: QA/QC:
JTB-900 10/12/2000 water MS/MSD	JTB-901 10/12/2000 water MS/MSD	JTB-902 10/12/2000 water duplicate	JTB-907 10/12/2000 water rinse blank
PCBs (µg/L)	PCBs (µg/L)	PCBs (µg/L)	PCBs (µg/L)
Aroclor 1016	ND(0.08)	Aroclor 1016	ND(0.08)
Aroclor 1221	ND(0.08)	Aroclor 1221	ND(0.08)
Aroclor 1232	ND(0.08)	Aroclor 1232	ND(0.08)
Aroclor 1242	ND(0.08)	Aroclor 1242	ND(0.08)
Aroclor 1248	0.15	Aroclor 1248	ND(0.08)
Aroclor 1254	ND(0.08)	Aroclor 1254	ND(0.08)
Aroclor 1260	ND(0.08)	Aroclor 1260	ND(0.08)
<u>Summary: ST7</u>	<u>Summary: ST11C</u>	<u>Summary: ST11</u>	
Sample Number: Sample Date: Sample Type: QA/QC:	Sample Number: Sample Date: Sample Type: QA/QC:	Sample Number: Sample Date: Sample Type: QA/QC:	
JTB-904 10/12/2000 water	JTB-905 10/12/2000 water	JTB-906 10/12/2000 water	
PCBs (µg/L)	PCBs (µg/L)	PCBs (µg/L)	
Aroclor 1016	ND(0.08)	Aroclor 1016	ND(0.08)
Aroclor 1221	ND(0.08)	Aroclor 1221	ND(0.08)
Aroclor 1232	ND(0.08)	Aroclor 1232	ND(0.08)
Aroclor 1242	ND(0.08)	Aroclor 1242	ND(0.08)
Aroclor 1248	0.21	Aroclor 1248	5.1
Aroclor 1254	ND(0.08)	Aroclor 1254	ND(0.08)
Aroclor 1260	ND(0.08)	Aroclor 1260	ND(0.08)

NOTES

ND (0.08) = not detected at the method detection limit
QA/QC = quality assurance/quality control
J = estimated value

AD-9



**CONESTOGA-ROVERS
& ASSOCIATES**

2578 Dougall Avenue, Windsor, Ontario, N8X 1T7
Telephone: (519) 966-9886 Fax: (519) 966-3894
www.CRAworld.com

MEMORANDUM

TO: Dan Fronczek
FROM: Jeramy Bell/Gavin O'Neill *[Signature]*
CC: Keith West
REF. NO.: 15721/Fron/23
DATE: October 30, 2000
RE: Storm Sewer Water Sampling Results
GM Pontiac North Campus
Pontiac, Michigan

This memorandum has been prepared to summarize the preliminary analytical results from the water samples collected at your request on October 20, 2000 from storm sewer ST102 at the GM Pontiac North Campus in Pontiac, Michigan. The data will be validated upon receipt of the final analytical data reports.

The samples collected were immediately placed in a cooler with ice and shipped FedEx to Columbia Analytical Services (CAS), Inc. under chain of custody protocol for PCB analysis. The analytical results are summarized in Table 1, with the raw laboratory data presented in Appendix A.

A constant flow was observed during the collection of two samples from ST102. Aroclor 1242 was detected in both of the samples with values of 0.54 µg/L and 1.4 µg/L.

CRA is awaiting the analytical results for the storm sewer samples collected on October 27, 2000 from ST102. CRA will summarize and forward these results upon receipt of the analytical data.

Should you have any questions, please do not hesitate to contact us.

SUMMARY OF STORMSEWER SAMPLING
GM PONTIAC NORTH CAMPUS
PONTIAC, MI

Summary: ST 102

Sample Number: JJB-908
Sample Date: 10/20/2000
Sample Type: water
QA/QC:

PCBs (µg/L)

Aroclor 1016	ND(0.08)
Aroclor 1221	ND(0.08)
Aroclor 1232	ND(0.08)
Aroclor 1242	0.54
Aroclor 1248	ND(0.08)
Aroclor 1254	ND(0.08)
Aroclor 1260	ND(0.08)

Summary: ST102

Sample Number: JJB-909
Sample Date: 10/20/2000
Sample Type: water
QA/QC: duplicate

PCBs (µg/L)

Aroclor 1016	ND(0.08)
Aroclor 1221	ND(0.08)
Aroclor 1232	ND(0.08)
Aroclor 1242	1.4
Aroclor 1248	ND(0.08)
Aroclor 1254	ND(0.08)
Aroclor 1260	ND(0.08)

NOTES

ND (0.08) = not detected at the method detection limit
QA/QC = quality assurance/quality control