REPORT

Resource Conservation and Recovery Act Facility Investigation Phase I Report

Volume II of IV

General Motors Corporation
NAO Flint Operations Site
Flint, Michigan

June 28, 2002

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

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Table of Contents

Volume I

Acronyms 1

Section 1. Introduction 1-1

1.1 General 1-1
1.2 RFI Objectives 1-2
1.3 Report Organization 1-2

Section 2. RFI Overview 2-1

2.1 Site Description and History 2-1
2.2 Pre-RFI Investigations 2-1
2.3 RFI Investigations 2-2
2.3.1 GIS Database and Site Survey 2-2
2.3.2 RFI Sampling and Analysis Program 2-3
2.3.2.1 Boring/Well/Piezometer Installation and Sample Collection 2-3
2.3.2.2 Soil Sample Collection 2-3
2.3.2.3 Groundwater Elevation Measurement and Groundwater Sample Collection 2-4
2.3.2.4 LNAPL Delineation and Sample Collection 2-5
2.4 Interim Measures 2-6
2.4.1 Inactive IMs 2-7
2.4.2 Active IMs 2-9
2.4.3 IMs Under Design 2-10
2.4.4 Other LNAPL Areas Under Consideration 2-11

Section 3. Environmental Setting 3-1

3.1 Topography 3-1
3.2 Climate 3-1
3.3 Regional Hydrology 3-1
3.4 Regional Geology 3-2
3.4.1 Overburden 3-2
3.4.2 Bedrock 3-2
3.5 Regional Hydrogeology 3-2
3.6 Surface Water/Drainage 3-3
3.7 Site-Specific Geology 3-3
3.8 Site-Specific Hydrogeology 3-4
3.9 Land Use and Demographics 3-5

Section 4. Investigation Results and Discussion 4-1

4.1 Generic Michigan Department of Environmental Quality (MDEQ) Screening Criteria 4-1
4.2 Evaluation of Total Versus Dissolved PAL Inorganics Data 4-2
4.3 Data QA/QC Summary 4-3
4.4 AOIs North of Leith Street 4-3

4.4.1 AOI 38-1 (Process Waste Sumps, Trenches, and Former Hydraulic Car Lifts) .4-4
4.4.1.1 Scope 4-4
4.4.1.2 Results.....4-4
4.4.1.3 Conclusions 4-4
4.4.2 AOI 36-1 (Engine Manufacturing and Metal Machining Processes).....4-5
4.4.2.1 Scope 4-5
4.4.2.2 Results.....4-5
4.4.2.3 Conclusions 4-6
4.4.3 AOI 36-2 (Metal Chip Processing Area).....4-6
4.4.3.1 Scope 4-6
4.4.3.2 Results.....4-7
4.4.3.3 Conclusions 4-7
4.4.4 AOI 36-3 (Engine Assembly, Waste Oil Collection and Processing, Former USTs) 4-7
4.4.4.1 Scope 4-8
4.4.4.2 Results.....4-8
4.4.4.3 Conclusions 4-8
4.4.5 AOI 36-4 (Former Metal Machining and Active Engine Assembly) 4-9
4.4.5.1 Scope 4-9
4.4.5.2 Results.....4-9
4.4.5.3 Conclusions 4-9
4.4.6 AOI 36-5 (Former UST Farm and Active AST Farm).....4-9
4.4.6.1 Scope 4-10
4.4.6.2 Results.....4-10
4.4.6.3 Conclusions 4-10
4.4.7 AOI 55-1 (Industrial Wastewater Treatment Facilities) 4-11
4.4.7.1 Scope 4-11
4.4.7.2 Results.....4-11
4.4.7.3 Conclusions 4-12
4.4.8 AOI 10-1 (Manufacturing Operations and Several Tanks).....4-12
4.4.8.1 Scope 4-12
4.4.8.2 Results.....4-12
4.4.8.3 Conclusions 4-13
4.4.9 AOI 10-2 (Solid Waste Transfer Area and Former ASTs) 4-13
4.4.9.1 Scope 4-13
4.4.9.2 Results.....4-14
4.4.9.3 Conclusions 4-14
4.4.10 AOI 10-3 (Two Process Waste Oil Sumps).....4-14
4.4.10.1 Scope 4-15
4.4.10.2 Results.....4-15
4.4.10.3 Conclusions 4-15
4.4.11 AOI 10-4 (Scrapyard Area) 4-16
4.4.11.1 Scope 4-16
4.4.11.2 Results.....4-16
4.4.11.3 Conclusions 4-16
4.4.12 AOI 05-1 (Former Metal Machining Chip Processing) 4-17
4.4.12.1 Scope 4-17
4.4.12.2 Results.....4-17
4.4.12.3 Conclusions 4-18
4.4.13 AOI 05-2 (Filtration Room, Oil Room, Below-Grade Vault, and Elevator Pit)...4-18
4.4.13.1 Scope 4-18
4.4.13.2 Results.....4-18
4.4.13.3 Conclusions 4-19

4.4.14 AOI 05-3 (Building 43 Basement Containing Process Waste Oil Sumps and Drains) 4-19
4.4.14.1 Scope 4-19
4.4.14.2 Results 4-19
4.4.14.3 Conclusions 4-20
4.4.15 AOI 05-4 (Metal Forming Operations and Recirculation Trenches and Sumps) 4-20
4.4.15.1 Scope 4-20
4.4.15.2 Results 4-20
4.4.15.3 Conclusions 4-20
4.4.16 AOI 05-5 (Active Process Machinery, Collection Trenches, and Sumps) 4-21
4.4.16.1 Scope 4-21
4.4.16.2 Results 4-21
4.4.16.3 Conclusions 4-21
4.4.17 AOI-05-6 (Active Process Machinery, Collection Trenches, and Sumps) 4-22
4.4.17.1 Scope 4-22
4.4.17.2 Results 4-22
4.4.17.3 Conclusions 4-23
4.4.18 AOI 03-1 (Quenching and Cooling Oil Systems) 4-23
4.4.18.1 Scope 4-23
4.4.18.2 Results 4-23
4.4.18.3 Conclusions 4-24
4.4.19 AOI 81-1 (Metal Machining, Chip, Cooling, and Cutting Oil Filtration and Processing, a Hydraulic Elevator, Process Waste Sumps and Tanks, a Drum Storage Area, and an Active Hazardous Waste Accumulation Area) 4-24
4.4.19.1 Scope 4-24
4.4.19.2 Results 4-25
4.4.19.3 Conclusions 4-25
4.4.20 AOI 81-2 (Active Metal Welding and Machining and Torque Converter Assembly) 4-25
4.4.20.1 Scope 4-26
4.4.20.2 Results 4-26
4.4.20.3 Conclusions 4-26
4.4.21 AOI 81-3 (Former Foundry Operations, an Elevator Pit, Metal Machining Areas, and a Forklift Battery Charging Area) 4-27
4.4.21.1 Scope 4-27
4.4.21.2 Results 4-27
4.4.21.3 Conclusions 4-28
4.4.22 AOI 81-4 (Air Compressor Operations) 4-28
4.4.22.1 Scope 4-28
4.4.22.2 Results 4-28
4.4.22.3 Conclusions 4-29
4.4.23 AOI 81-5 (Existing and Former ASTs) 4-29
4.4.23.1 Scope 4-29
4.4.23.2 Results 4-29
4.4.23.3 Conclusions 4-30
4.4.24 AOI 21-1 (Former Metal Chip Briquetting Operations and Current Metal Welding and Tool Grinding Operations) 4-30
4.4.24.1 Scope 4-30
4.4.24.2 Results 4-30
4.4.24.3 Conclusions 4-31
4.4.25 AOI 65-1 (Air Compressor Station and a Main Process Waste Pump Station) 4-31

4.4.25.1 Scope 4-31
4.4.25.2 Results 4-31
4.4.25.3 Conclusions 4-32
4.4.26 AOI 83/84-1 (Former and Existing Machining Operations) 4-32
4.4.26.1 Scope 4-32
4.4.26.2 Results 4-32
4.4.26.3 Conclusions 4-33
4.4.27 AOI 83/84-2 (Former and Existing Machining Operations) 4-33
4.4.27.1 Scope 4-33
4.4.27.2 Results 4-33
4.4.27.3 Conclusions 4-34
4.4.28 AOI 83/84-3 (Former and Existing Machining Operations) 4-34
4.4.28.1 Scope 4-34
4.4.28.2 Results 4-35
4.4.28.3 Conclusions 4-35
4.4.29 AOI 83/84-4 (Former Machining Operations and an Inactive Rail Loading Area) 4-35
4.4.29.1 Scope 4-36
4.4.29.2 Results 4-36
4.4.29.3 Conclusions 4-36
4.4.30 AOI 83/84-5 (Former Process Trenches and Pits, and an Inactive Heat Treating Tunnel) 4-36
4.4.30.1 Scope 4-37
4.4.30.2 Results 4-37
4.4.30.3 Conclusions 4-37
4.4.31 AOI 83/84-6 (Forklift Battery Charging Area and Associated Trench and Pit, and a Drum Storage Area 4-37
4.4.31.1 Scope 4-38
4.4.31.2 Results 4-38
4.4.31.3 Conclusions 4-38
4.4.32 AOI 83/84-7 (Underground Storage Tanks) 4-38
4.4.32.1 Scope 4-38
4.4.32.2 Results 4-39
4.4.32.3 Conclusions 4-39
4.4.33 AOI 85-1 (Elevator Pit and Engine Test Area) 4-39
4.4.33.1 Scope 4-39
4.4.33.2 Results 4-40
4.4.33.3 Conclusions 4-40
4.4.34 AOI 86-1 (Hazardous Waste Drum Accumulation Area, Process Waste Sump and Pump Station, Waste Transport Vehicle Storage Area, and Former USTs) 4-40
4.4.34.1 Scope 4-41
4.4.34.2 Results 4-41
4.4.34.3 Conclusions 4-42
4.4.35 AOI 07-1 (Former Coal Yard) 4-42
4.4.35.1 Scope 4-42
4.4.35.2 Results 4-42
4.4.35.3 Conclusions 4-43
4.4.36 AOI 07-2 (Inactive Lime "Slaker House" and Inactive Lime Slurry Tank) 4-43
4.4.36.1 Scope 4-43
4.4.36.2 Results 4-43
4.4.36.3 Conclusions 4-44
4.4.37 AOI 07-3 (Two Elevator Pits and a bulk Acid AST) 4-44
4.4.37.1 Scope 4-44

4.4.37.2 Results 4-44
4.4.37.3 Conclusions 4-45
4.5 AOIs South of Leith Street 4-45
4.5.1 AOI Group 94-A (Sumps and Trenches in Oil Change Pits and Chemical Storage Areas) 4-45
4.5.1.1 Scope 4-45
4.5.1.2 Results 4-45
4.5.1.3 Conclusions 4-46
4.5.2 AOI Group 94-B (Process Sump and Trench) 4-46
4.5.2.1 Scope 4-46
4.5.2.2 Results 4-46
4.5.2.3 Conclusions 4-46
4.5.3 AOI Group 94-C (Hydraulic Oil Storage Areas) 4-47
4.5.3.1 Scope 4-47
4.5.3.2 Results 4-47
4.5.3.3 Conclusions 4-47
4.5.4 AOI Group 94-D (Pit For a Cable-Operated Car Elevator) 4-48
4.5.4.1 Scope 4-48
4.5.4.2 Results 4-48
4.5.4.3 Conclusions 4-48
4.5.5 AOI Group 94-E (Car-Loading Machinery and Hydraulic Oil Observed on Floor) 4-49
4.5.5.1 Scope 4-49
4.5.5.2 Results 4-49
4.5.5.3 Conclusions 4-49
4.5.6 AOI Group 84-A (Elevator Pits, Sumps, a Machine Shop, Hydraulic Cylinders, and a Hydraulic Lift) 4-49
4.5.6.1 Scope 4-50
4.5.6.2 Results 4-50
4.5.6.3 Conclusions 4-50
4.5.7 AOI Group 84-B (Sumps, Floor Drains, a Pit, a Flooded Basement, and a Below Grade Vault) 4-50
4.5.7.1 Scope 4-51
4.5.7.2 Results 4-51
4.5.7.3 Conclusions 4-51
4.5.8 AOI Group 84-C (Sumps, a Trench, and an Oil/Water Separator Pit) 4-51
4.5.8.1 Scope 4-51
4.5.8.2 Results 4-52
4.5.8.3 Conclusions 4-52
4.5.9 AOI Group 84-D (Former UST Farm, an AST Farm, and Drum Storage Area) 4-52
4.5.9.1 Scope 4-52
4.5.9.2 Results 4-53
4.5.9.3 Conclusions 4-53
4.5.10 AOI Group 17-A (Elevator Pit) 4-53
4.5.10.1 Scope 4-53
4.5.10.2 Results 4-54
4.5.10.3 Conclusions 4-54
4.5.11 AOI Group 02-A (Process Wastewater Sump) 4-54
4.5.11.1 Scope 4-54
4.5.11.2 Results 4-55
4.5.11.3 Conclusions 4-55
4.5.12 AOI Group 02-B (Elevator Pit) 4-55
4.5.12.1 Scope 4-55

4.5.12.2 Results....4-56
4.5.12.3 Conclusions....4-56
4.5.13 AOI Group 02-C (Sump In The Materials Laboratory)....4-56
4.5.13.1 Scope....4-56
4.5.13.2 Results....4-57
4.5.13.3 Conclusions....4-57
4.5.14 AOI Group 02-D (Press Machine Pit)....4-57
4.5.14.1 Scope....4-57
4.5.14.2 Results....4-58
4.5.14.3 Conclusions....4-58
4.5.15 AOI Group 02-E (Former UST)....4-58
4.5.15.1 Scope....4-58
4.5.15.2 Results....4-58
4.5.15.3 Conclusions....4-59
4.5.16 AOI Group 02-F (Hydraulic Oil AST and Pump)....4-59
4.5.16.1 Scope....4-59
4.5.16.2 Results....4-59
4.5.16.3 Conclusions....4-60
4.5.17 AOI Group 23-A (Process Waste Sumps, Dock Levelers, and Basements Used for Heat Treat Process Water)....4-60
4.5.17.1 Scope....4-60
4.5.17.2 Results....4-60
4.5.17.3 Conclusions....4-61
4.5.18 AOI Group 29-A (Elevator Pit and Observed Oil Staining)....4-61
4.5.18.1 Scope....4-61
4.5.18.2 Results....4-61
4.5.18.3 Conclusions....4-62
4.5.19 AOI Group 12-A (Press Pits, Sumps, Trenches, Traps, and Floor Staining)....4-62
4.5.19.1 Scope....4-62
4.5.19.2 Results....4-62
4.5.19.3 Conclusions....4-63
4.5.20 AOI Group 12-B (Truck Loading Dock Drain and Sump)....4-63
4.5.20.1 Scope....4-63
4.5.20.2 Results....4-63
4.5.20.3 Conclusions....4-64
4.5.21 AOI Group 12-C (Sump In Battery Charging Area, Deep Steam Pipe, and a Utility Pit Containing Oil and Water)....4-64
4.5.21.1 Scope....4-64
4.5.21.2 Results....4-64
4.5.21.3 Conclusions....4-65
4.5.22 AOI Group 12-D (Abandoned, Flooded Utility Tunnel)....4-65
4.5.22.1 Scope....4-65
4.5.22.2 Results....4-65
4.5.22.3 Conclusions....4-66
4.5.23 AOI Group 04-A (Process Waste Room and Waste Pit)....4-66
4.5.23.1 Scope....4-66
4.5.23.2 Results....4-66
4.5.23.3 Conclusions....4-67
4.5.24 AOI Group 04-B (Elevator Pits)....4-67
4.5.24.1 Scope....4-67
4.5.24.2 Results....4-67
4.5.24.3 Conclusions....4-68
4.5.25 AOI Group 04-C (Elevator Pit)....4-68
4.5.25.1 Scope....4-68

4.5.25.2 Results 4-68
4.5.25.3 Conclusions 4-69
4.5.26 AOI Group 04-D (Former USTs) 4-69
4.5.26.1 Scope 4-69
4.5.26.2 Results 4-69
4.5.26.3 Conclusions 4-69
4.5.27 AOI Group 16-A (Vehicle Fill-Up Station, Automatic Transmission Pump House, and a Gas Pump Station) 4-70
4.5.27.1 Scope 4-70
4.5.27.2 Results 4-70
4.5.27.3 Conclusions 4-70
4.5.28 AOI Group 16-B (Elevator Pit) 4-71
4.5.28.1 Scope 4-71
4.5.28.2 Results 4-71
4.5.28.3 Conclusions 4-71
4.5.29 AOI Group 16-C (Hydraulic Motor, Former AST, and Former USTs) 4-71
4.5.29.1 Scope 4-72
4.5.29.2 Results 4-72
4.5.29.3 Conclusions 4-72
4.5.30 AOI Group 16-D (Former UST and Process Wastewater Sump) 4-73
4.5.30.1 Scope 4-73
4.5.30.2 Results 4-73
4.5.30.3 Conclusions 4-74
4.5.31 AOI Group 40-A (Former UST Farm) 4-74
4.5.31.1 Scope 4-74
4.5.31.2 Results 4-74
4.5.31.3 Conclusions 4-75
4.5.32 AOI Group 40-B (Elevator Pit) 4-75
4.5.32.1 Scope 4-75
4.5.32.2 Results 4-75
4.5.32.3 Conclusions 4-76
4.5.33 AOI Group 40-C (Elevator Pit) 4-76
4.5.33.1 Scope 4-76
4.5.33.2 Results 4-76
4.5.33.3 Conclusions 4-77
4.5.34 AOI Group 40-D (Flooded Basement/Tunnel Area) 4-77
4.5.34.1 Scope 4-77
4.5.34.2 Results 4-78
4.5.34.3 Conclusions 4-78
4.5.35 AOI Group 44-A (Sumps, Pits, Trenches, Drains, Floor Stains, and ASTs) 4-78
4.5.35.1 Scope 4-78
4.5.35.2 Results 4-79
4.5.35.3 Conclusions 4-79
4.5.36 AOI Group 09-A (Former USTs, Floor Trenches, and Former AST) 4-80
4.5.36.1 Scope 4-80
4.5.36.2 Results 4-80
4.5.36.3 Conclusions 4-81
4.5.37 AOI Group 09-B (Hamilton Avenue Tank Farm) 4-81
4.5.37.1 Scope 4-81
4.5.37.2 Results 4-82
4.5.37.3 Conclusions 4-82
4.6 New AOIs 4-82
4.6.1 Former Aeration Lagoons Area 4-83
4.6.1.1 Scope 4-83

4.6.1.2 Results....4-83
4.6.1.3 Conclusions....4-83
4.6.2 Harriet Street Area (USTs)....4-83
4.6.2.1 Scope....4-84
4.6.2.2 Results....4-84
4.6.2.3 Conclusions....4-84
4.6.3 Former Administration Building Area (Transformer Yard, Soil Stockpile Area, and Former USTs)....4-85
4.6.3.1 Scope....4-85
4.6.3.2 Results....4-85
4.6.3.3 Conclusions....4-86
4.6.4 Former Building 94 Employee Parking Lot....4-86
4.6.4.1 Scope....4-86
4.6.4.2 Results....4-86
4.6.4.3 Conclusions....4-87

Section 5. Project Status....5-1

5.1 AOI Investigation Status Summary....5-1
5.1.1 AOIs Requiring No Further Investigation....5-1
5.1.2 AOIs Requiring No Further Investigation of Soil....5-2
5.1.3 AOIs Requiring No Further Investigation of Groundwater....5-3
5.1.4 AOIs Requiring Risk Evaluation....5-4
5.2 Background Soil Data....5-4
5.3 Sitewide Groundwater Quality....5-4
5.3.1 Upgradient Groundwater Quality....5-4
5.3.2 Sitewide Distribution of Constituents in Groundwater at Concentrations Above Generic Screening Criteria....5-5
5.4 Interim Measures Status Summary....5-6

Section 6. References....6-1

Tables

2-1 Soil Boring Inventory and Completion Summary
2-2 Monitoring Well Inventory and Completion Summary
2-3 Soil Sample Collection Summary
2-4 Water Sample Collection Summary
2-5 LNAPL Sample Collection Summary
2-6 Measured LNAPL Thickness Summary
3-1 Geotechnical Data Summary
3-2 Groundwater and LNAPL Elevation Data
5-1 Summary of RFI Activities, Results, and Investigation Status

Figures (Bound Separately)

2-1 Site Location Map
2-2 Decision Logic Flow Chart for Groundwater Sample Collection
2-3 Site Plan – Northend
2-4 Site Plan – Southend
2-5 Interim Measures and Storm Sewer Location Map - Northend
2-6 Interim Measures and Storm Sewer Location Map - Southend
3-1 Northend Well and Cross-Section Location Map
3-2 Southend Well and Cross-Section Location Map

D Groundwater Analytical Data
Table D-1 Groundwater Sample Collection Field Parameters
Table D-2 Groundwater Analytical Data
Table D-3 MDEQ Part 201 Groundwater Screening Criteria
Table D-4 Notes for Tables
E LNAPL Analytical Data
Table E-1 LNAPL Analytical Data
F Evaluation of Total and Dissolved TAL Data

Volume IV

G Analytical Data Review and Validation Report Summaries

Appendix A

Soil Boring and Monitoring Well Logs

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APPENDIX A
SOIL BORING AND MONITORING WELL LOGS

20-101R	RFI-05-08	RFI-09-15	RFI-12-07R	RFI-29-03	RFI-36-44	RFI-81-12R	RFI-83/84-26	WL-B4
20-105R	RFI-05-09	RFI-09-16	RFI-12-08	RFI-36-01	RFI-36-45	RFI-81-13	RFI-83/84-27	WL-B5
40-303R	RFI-05-09Geotech	RFI-09-18	RFI-12-08R	RFI-36-01Geotech	RFI-36-46	RFI-81-19	RFI-83/84-27R	WL-B6
40-4R	RFI-05-10	RFI-09-19	RFI-12-09	RFI-36-02	RFI-38-01	RFI-81-20	RFI-83/84-28	
40-7R	RFI-05-11	RFI-09-20	RFI-12-10	RFI-36-03	RFI-38-02	RFI-81-21	RFI-83/84-29	
43-101R	RFI-05-12	RFI-09-21	RFI-12-11S	RFI-36-03	RFI-38-03	RFI-81-22	RFI-84-01	
ACSP-B1	RFI-05-13	RFI-09-22	RFI-12-11D	RFI-36-04	RFI-38-04	RFI-81-23	RFI-84-02	
ACSP-B2	RFI-05-14	RFI-09-23	RFI-12-12S	RFI-36-05	RFI-38-05	RFI-81-24	RFI-84-03	
ACSP-B2C	RFI-05-15	RFI-09-24	RFI-12-14	RFI-36-06	RFI-38-06	RFI-81-25	RFI-84-04	
ACSP-B2D	RFI-05-16	RFI-09-25	RFI-12-15	RFI-36-07	RFI-40-01	RFI-81-26	RFI-84-05	
ACSP-B2E	RFI-05-17	RFI-09-26	RFI-12-16	RFI-36-08	RFI-40-02	RFI-81-27	RFI-84-06	
ACSP-B3	RFI-05-18	RFI-09-27	RFI-12-17	RFI-36-09	RFI-40-03R	RFI-81-28	RFI-85-02	
ACSP-B3D	RFI-05-19S	RFI-09-28	RFI-12-18	RFI-36-10	RFI-40-04	RFI-81-29	RFI-85-02R	
ACSP-B4	RFI-05-19D	RFI-09-29	RFI-12-20	RFI-36-11	RFI-40-05	RFI-81-30	RFI-85-03	
ACSP-B5	RFI-05-19DR	RFI-10-01	RFI-12-21	RFI-36-12	RFI-40-06	RFI-81-31	RFI-85-04	
ACSP-B6	RFI-05-20	RFI-10-02	RFI-12-22	RFI-36-13	RFI-40-07	RFI-81-32	RFI-85-04R	
BD01-01	RFI-05-21	RFI-10-03	RFI-16-01	RFI-36-14	RFI-40-08	RFI-81-33	RFI-85-05	
BD01-02	RFI-05-22	RFI-10-04	RFI-16-02	RFI-36-15	RFI-40-09	RFI-81-34	RFI-85-06	
BD01-03	RFI-05-23	RFI-10-05	RFI-16-03	RFI-36-16	RFI-40-10	RFI-81-35	RFI-85-07	
RFI-02-01	RFI-05-24	RFI-10-06	RFI-16-04	RFI-36-17	RFI-44-01	RFI-83/84-01	RFI-86-01	
RFI-02-02	RFI-05-25	RFI-10-07	RFI-16-05	RFI-36-18	RFI-44-02	RFI-83/84-02	RFI-86-01D	
RFI-02-03	RFI-05-27	RFI-10-08	RFI-16-06	RFI-36-19	RFI-44-03	RFI-83/84-03	RFI-86-01R	
RFI-02-04	RFI-05-29	RFI-10-11	RFI-16-07	RFI-36-20	RFI-44-04	RFI-83/84-04	RFI-86-02	
RFI-02-05	RFI-05-30	RFI-10-12	RFI-16-08	RFI-36-21	RFI-44-05	RFI-83/84-05	RFI-86-03	
RFI-02-06	RFI-07-01	RFI-10-13	RFI-16-09	RFI-36-22	RFI-44-06	RFI-83/84-06	RFI-86-04	
RFI-02-07	RFI-07-01R	RFI-10-14	RFI-16-10	RFI-36-23	RFI-44-07	RFI-83/84-07	RFI-86-05	
RFI-02-08	RFI-07-02	RFI-10-15	RFI-16-11	RFI-36-24	RFI-44-09	RFI-83/84-08	RFI-86-06D	
RFI-02-09	RFI-07-03	RFI-10-16	RFI-16-12	RFI-36-25	RFI-55-01	RFI-83/84-09	RFI-86-06S	
RFI-02-10	RFI-07-04	RFI-10-17	RFI-16-13	RFI-36-25R	RFI-55-01Geotech	RFI-83/84-10	RFI-86-07	
RFI-02-11	RFI-07-05	RFI-10-18	RFI-16-14	RFI-36-26	RFI-55-02	RFI-83/84-11	RFI-86-08	
RFI-03-01	RFI-07-06	RFI-10-19	RFI-16-15	RFI-36-27	RFI-55-03	RFI-83/84-12	RFI-86-08R	
RFI-03-02	RFI-07-07	RFI-10-20	RFI-16-16	RFI-36-28	RFI-55-04	RFI-83/84-13	RFI-86-10	
RFI-03-03	RFI-07-08	RFI-10-21	RFI-16-17	RFI-36-29	RFI-55-05	RFI-83/84-14	RFI-86-11	
RFI-03-04	RFI-07-09	RFI-10-22	RFI-16-18	RFI-36-29R	RFI-55-06	RFI-83/84-15	RFI-86-12	
RFI-03-05	RFI-09-01	RFI-10-23	RFI-16-19	RFI-36-30	RFI-55-09	RFI-83/84-16	RFI-86-12R	
RFI-03-06	RFI-09-02	RFI-10-24	RFI-16-20	RFI-36-31	RFI-55-10	RFI-83/84-17	RFI-86-13	
RFI-03-07	RFI-09-03	RFI-10-25	RFI-16-21	RFI-36-32	RFI-65-01	RFI-83/84-18	RFI-86-14	
RFI-03-08	RFI-09-04	RFI-10-26	RFI-16-22	RFI-36-33	RFI-81-01	RFI-83/84-19	RFI-86-15	
RFI-04-01	RFI-09-04R	RFI-10-27	RFI-16-23	RFI-36-34	RFI-81-02	RFI-83/84-20	RFI-94-01	
RFI-04-02	RFI-09-05	RFI-12-01	RFI-17-01	RFI-36-35	RFI-81-03	RFI-83/84-21	RFI-94-02	
RFI-04-03	RFI-09-06	RFI-12-01R	RFI-17-02	RFI-36-36	RFI-81-04	RFI-83/84-22	RFI-94-03	
RFI-04-04	RFI-09-07	RFI-12-02	RFI-21-01	RFI-36-36R	RFI-81-05	RFI-83/84-23	RFI-94-04	
RFI-05-01	RFI-09-08	RFI-12-03	RFI-21-02	RFI-36-37	RFI-81-06	RFI-83/84-24	RFI-94-05	
RFI-05-02	RFI-09-09	RFI-12-04	RFI-21-03	RFI-36-38	RFI-81-07	RFI-83/84-25	RFI-94-06	
RFI-05-03	RFI-09-10	RFI-12-05	RFI-21-04	RFI-36-39	RFI-81-08		RFI-EP94-02A	
RFI-05-04	RFI-09-11	RFI-12-06	RFI-23-01	RFI-36-40	RFI-81-09		RFI-EP94-02B	
RFI-05-05	RFI-09-12	RFI-12-07	RFI-23-02	RFI-36-41	RFI-81-10		WL-B1	
RFI-05-06	RFI-09-13		RFI-29-01	RFI-36-42	RFI-81-11		WL-B2	
RFI-05-07	RFI-09-14		RFI-29-02	RFI-36-43	RFI-81-12		WL-B3	

LOG ABBREVIATION LEGEND

GENERAL MOTORS CORPORATION
NAO FLINT OPERATION SITE
FLINT, MICHIGAN

-/+ = Negative/Positive Oil/Water Shake Test Result.
ags = above ground surface.
bgs = below ground surface.
CN = Clear NAPL.
HSA = Hollow Stem Auger.
ID = Inner Diameter.
NA = Not Applicable/Not Available.
pp = pocket penetrometer measurement (tons/square foot).
SS = Split Spoon.
WH/WOH = Weight of Hammer.

USCS = Unified Soil Classification System.

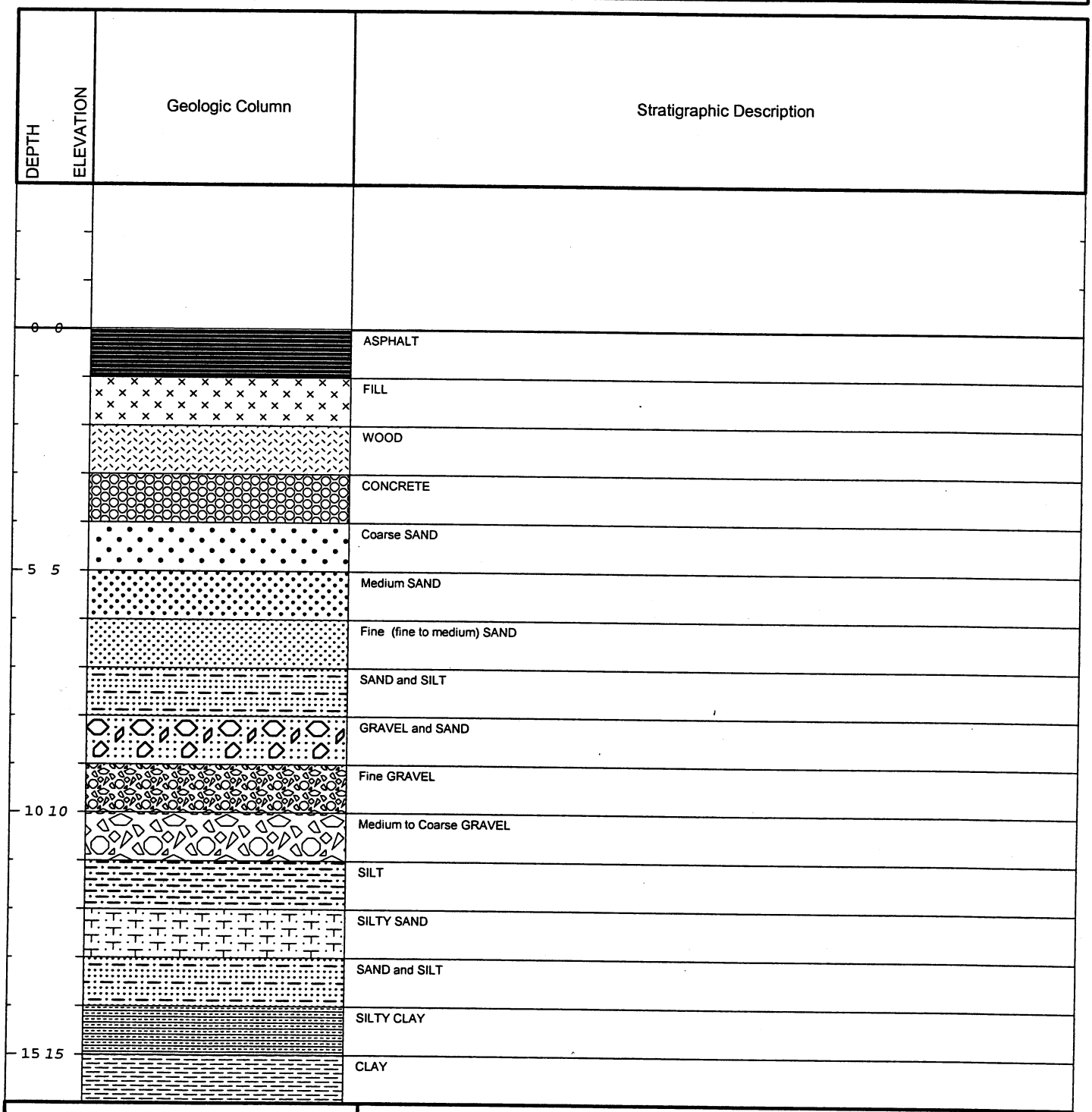
GW = Well-graded gravels, gravel-sand mixtures, little or no fines.
GP = Poorly-graded gravels, gravel-sand mixtures, little or no fines.
GM = Silty gravels, gravel-sand mixtures.
GC = Clayey gravels, gravel-sand-clay mixtures.
SW = Well-graded sands, gravelly sands, little or no fines.
SC = Clayey sands, sand-silt mixtures.
ML = Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts, with slight plasticity.
CL = Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
OL = Organic silts and organic silty clays of low plasticity.
MH = Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
CH = Inorganic clay of high plasticity, fat clays.
OH = Organic clay of medium to high plasticity, organic silts.

GEOLOGIC SYMBOL KEY

GENERAL MOTORS CORPORATION

NAO FLINT OPERATION SITE

FLINT, MICHIGAN



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Remarks:

Project:
Data File:Key.dat

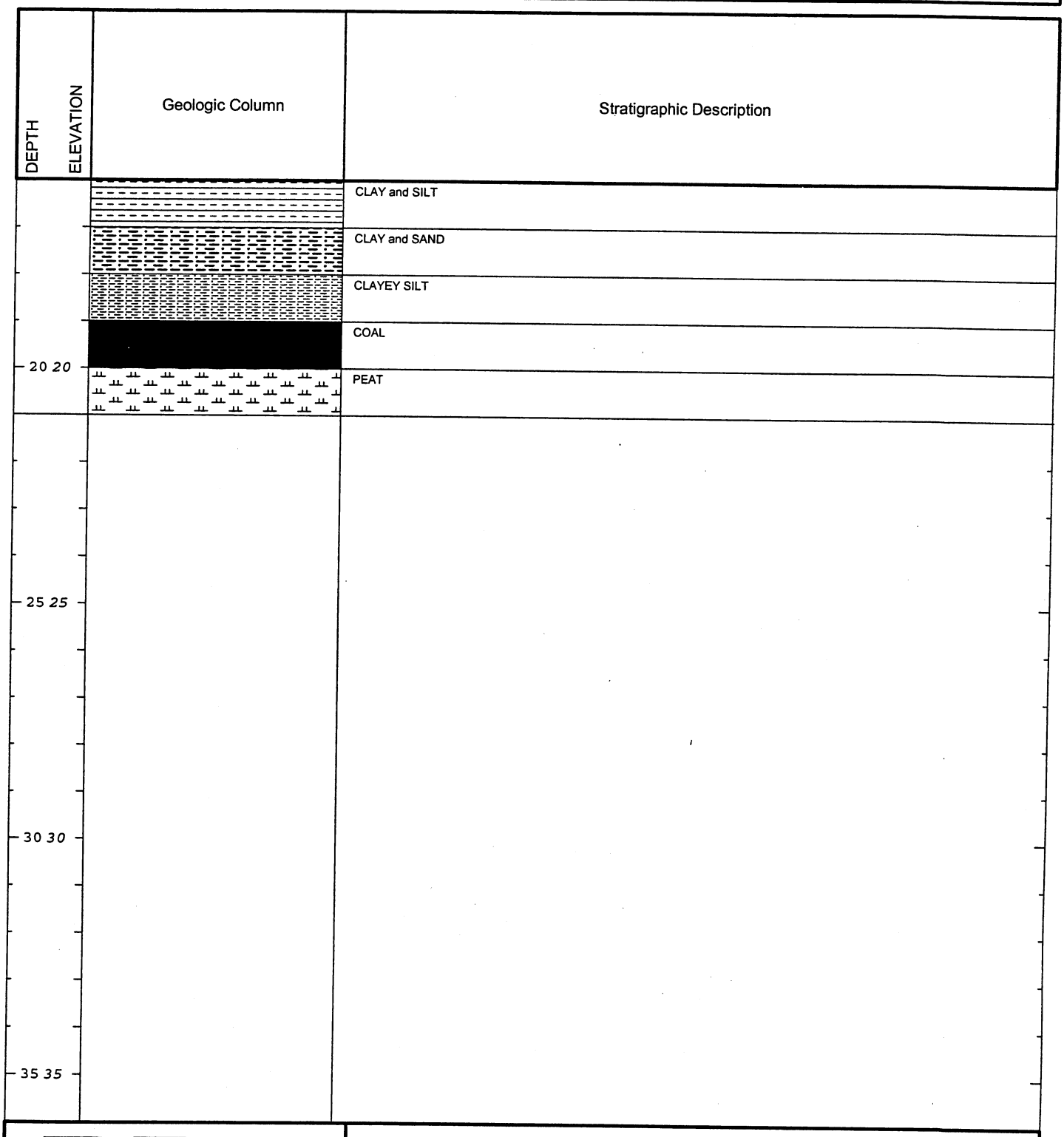
Template: J:\Rockware\LogPlot 2001\LogFiles\64410\Key.ldf
Date: 6/26/02

GEOLOGIC SYMBOL KEY

GENERAL MOTORS CORPORATION

NAO FLINT OPERATION SITE

FLINT, MICHIGAN



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Remarks:

Date Start/Finish: 11/5/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 85

Northing: 566784.36
Easting: 13306492.88
Casing Elevation: NA

Borehole Depth: 19' bgs
Surface Elevation: 751.69

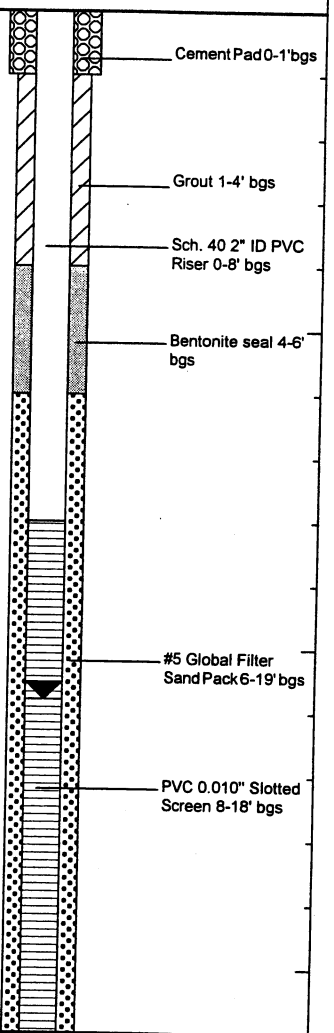
Descriptions By: SM Duly

Boring ID: 20-101R

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0												
		1	0-1.2	2 4	4	1.2	0.0	-	ML		Very dark gray (10YR 3/1) SILT, trace fine Sand, Clay, roots and organic matter (topsoil), earthy odor, moderately loose, moist.	SILT
	750		NA	NA	NA	NA	NA	-	FL		Concrete.	FILL
		2	3-5	7 7 6 4	13	1.5	0.0	-	ML		Very dark gray (10YR 3/1) SILT, trace fine Sand, Clay, roots and organic matter (old topsoil), earthy odor, moderately loose, moist. Dark grayish brown (10YR 4/2) SILT, some Clay, trace fine Sand, no odor, loose, moist, some local oxidation. Very dark gray (10YR 3/1) SILT, trace fine to medium Sand, trace Clay, no odor, dense, aplastic, moist to wet.	SILT
5		3	5-7	8 5 6 5	11	1.7	0.0	-	SW ML		Brown (10YR 4/3) fine to coarse well graded SAND, some Silt and Clay, predominantly fine grained, no odor, moist. Gray (10YR 5/1) Clayey SILT, trace fine Sand, moderately loose, somewhat plastic, moist.	SILT
	745	4	7-9	2 2 3 4	5	1.7	0.0	-	CL		Gray (10YR 5/1) CLAY, some Silt, trace fine Sand, no odor, plastic, damp.	CLAY
10		5	9-11	2 2 3 8	5	2	0.0	-	ML		Gray (10YR 5/1) SILT, trace Clay and fine Sand, no odor, moderately loose, moist to wet. 10.2' 10.7' bgs: Mottled (10YR 5/4) yellow-brown SILT. Saturated at 10.8' bgs, no Sand or Clay, loose.	SILT
	740	6	11-13	3 5 9 10	14	1.5	0.0	-				
		7	13-15	3 4 6 5	10	1.3	0.0	-				
15		8	15-17	3 4	9	1.7	0.0	-				



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected at 0-1.2' and 7-9' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: j:\rockware\logplot2001\logfiles\64410\20-101R.dat Date: 1/16/02

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: 20-101R

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	8	15-17	5 7	9	1.7	0.0	-	ML		Gray (10YR 5/1) SILT, trace Clay and fine Sand, no odor, moderately loose, moist to wet.	SILT	#5 Global Filter Sand Pack 6-19' bgs
	9	17-19	2 3 3 8	6	0.9	0.0	-					PVC 0.010" Slot Screen 8-18' bgs
20												PVC Cap 18.0-18.2' bgs
730												
25												
725												
30												
720												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected at 0-1.2' and 7-9' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\20-101R.dat Date: 1/16/02

Date Start/Finish: 08/17/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 16' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** ACSP-B3D **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	1	0-2	6 3 NA NA	NA	0.8	12.4	-	SM		Very dark gray-brown (10 YR 3/2) Silty fine to coarse subrounded SAND, few to little fine to coarse angular gravel, few clay, earthy odor, moderately loose to moderately dense, damp with rainfall, organic matter. Topsoil.	FILL	
								FILL		Reinforced in-situ concrete slabs and metallic debris, cinders.		
5 5	2	4-6	4 7 9 11	16	1.0	11.7	-					
	3	6-8	3 5 21 NA	26	1.0	17.7	-	SM		Silty SAND as at 0-0.8' bgs, no odor, no organic matter, dry. Mixed with concrete debris and cinders. Fill.	SAND and SILT	Borehole tremie grouted.
								FILL		Reinforced concrete.	FILL	
10 10	4	10-12	11 20 21 38	41	1.9	0.0	+	ML		Very pale brown SILT, some fine subangular to subrounded Sand, trace Clay, dense, no odor, aplastic, dry to damp.	SILT	
	5	12-14	21 35 50/.(0	NA	1.2	2.8	-	SM		Very pale brown SILTY fine to medium subangular to subrounded SAND, trace to few clay, aplastic, very dense, no odor, damp.	SAND and SILT	
15 15	6	14-16	11 17 31 42	48	1.6	0.0	-	ML		Yellow-brown (10 YR 5/4) SILT, little Clay, no odor, aplastic, very dense, damp. Saturated, 5" thick Silty SAND seam, as at 12-14' bgs.	SILT	

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available.
Samples collected at 0-2', 5-7', 7-9', 10-12' and 12-14' bgs

Water Level Data

Date	Depth	Elev.
08/17/01	15.0'	

Date Start/Finish: 10/26/00-10/26/00 **Drilling Company:** RAU Drilling **Driller's Name:** Rick Rau **Drilling Method:** Hollow Stem Auger **Bit Size:** NA **Auger Size:** 3.25" ID **Rig Type:** CME 45 B Truck Mounted Dill Rig **Sampling Method:** 2" spoon	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 16' bgs **Surface Elevation:** 738.9' **Geologist:** R Wagner	**Well/Boring ID:** ACSP-B4 **Client:** General Motors **Location:** GM-Flint - Phase II ESA AC Sparkplug Property

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N-Values	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
740										
0	1	0-2	0.9	4 17 14 15	31	23.5			Dark brown fine to medium SAND, some coarse Sand, little Cinders and Silt. [FILL]	
	2	2-4	1.1	11 22 11 50	33	19.9			Brown medium to coarse SAND, some fine Sand and Silt, little Concrete and Cinders, moist. [FILL]	
735	3	4-6	1.8	9 11 13 18	24	25.2			Brown SILT, some medium to coarse Sand and fine Gravel, little Concrete and Cinders, moist. [FILL]	Borehole backfilled with Bentonite chips.
5	4	6-8	1.9	9 18 28 29	46	25.9			Light brown fine SAND, little Silt and coarse Sand, compact, moist.	
730	5	8-10	2.0	11 16 19 22	45	31.4	X		As above, moist, compact.	
10	7	10-12	2.0	7 14 21 22	35	25.9			Light brown SILT, some fine Sand, moist, compact.	
	8	12-14	2.0	8 15 23 29	38	26.6			Light brown fine SAND, little Silt, compact, moist.	
725	9	14-16	1.8	7 8 7 11	15	12.4			Light brown SILT, some fine Sand grading to gray Silt, trace fine Sand, moist.	
15										

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Remarks: No temporary well installed at this location.
Sample ACSP-B4 (8-10') submitted for VOCs & Metals (Mich. 10) analysis. Borehole terminated at 16'.

Date Start/Finish: 10/26/00-10/26/00 **Drilling Company:** RAU Drilling **Driller's Name:** Rick Rau **Drilling Method:** Hollow Stem Auger **Bit Size:** NA **Auger Size:** 3.25" ID **Rig Type:** CME 45 B Truck Mounted Dill Rig **Sampling Method:** 2' x 2" ID	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 14' bgs **Surface Elevation:** 733' **Geologist:** R Wagner	**Well/Boring ID:** ACSP-B5 **Client:** General Motors **Location:** GM-Flint - Phase II ESA AC Sparkplug Property

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N-Values	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
735										
0	1	0-2	1.7	6, 10, 11, 13	21	18			Brown to black fine SAND, and misc. FILL material. [FILL]	
730	2	2-4	1.8	11, 12, 11, 11	23	7.3			As above, moist.	
5	3	4-6	2.0	5, 5, 8, 7	13	34.5			Brown SILT, little medium to coarse Sand, Brick and Concrete fragments, tracae fine Sand. [FILL]	Borehole backfilled with Bentonite chips.
	4	6-8	2.0	5, 13, 24, 29	37	55.5			As above, compact.	
725	5	8-10	1.9	10, 20, 26, 30	46	44.6			Brown medium to coarse Sandy SILT, very compact, dry.	
10	7	10-12	1.9	11, 22, 27, 33	49	49.1			Brown SILT and fine SAND, compact, dry.	
720	8	12-14	1.9	18, 30, 36, 30	66	58.6	X		As above, compact, dry.	
15										

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Remarks: No temporary well installed at this location.
Sample ACSP-B5 (12-14') submitted for VOCs & Metals (Mich. 10) analysis. MS/MSD submitted for Metals (Mich. 10).
Borehole terminated at 14'.

Date Start/Finish: 10/27/00-10/27/00
Drilling Company: RAU Drilling
Driller's Name: Rick Rau
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 3.25" ID
Rig Type: CME 45 B Truck Mounted Dill Rig
Sampling Method: 2" spoon

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 18' below grade
Surface Elevation: 735.6'

Geologist: Raymond Wagner

Well/Boring ID: ACSP-B6

Client: General Motors

Location: GM-Flint - Phase II ESA
AC Sparkplug Property

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N-Values	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0 / 735	1	0-2	0.7	8 25 50/ 0.0	-	31.7			Black SILT, Brick and Concrete fragments. [FILL]
	2	2-4	1.5	2 2 2 2	4	46.8	X		Brown SILT and fine SAND, some medium to coarse Sand, little coarse Gravel and Concrete, loose, moist. [FILL]
5 / 730	3	4-6	1.3	2 2 2 2	4	9.3			Brown fine Silty SAND (SM), trace medium to coarse Sand, loose, moist.
	4	6-8	1.6	2 2 3 3	5	27.1			Light brown fine SAND (SM), little Silt, loose, moist.
	5	8-10	1.8	3 3 3 4	6	13.3			As above, loose, moist.
10 / 725	7	10-12	1.9	4 5 6 9	11	24.2			As above, loose to firm, moist.
	8	12-14	2.0	8 10 12 13	22	24.7			As above, firm, moist.
15 / 720	9	14-16	2.0	9 12 13 13	25	2.1			Brown SILT (ML), some fine Sand, firm, moist.

Well/Boring Construction: Borehole backfilled with Bentonite chips.

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Remarks: No temporary well installed at this location.
Sample ACSP-B6 (2-4') submitted for VOCs & Metals (Mich. 10) analysis. Borehole terminated at 18'.

Client:
General Motors

Site Location:
GM-Flint - Phase II ESA
AC Sparkplug Property

Well/Boring ID: ACSP-B6

Borehole Depth: 18' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	10	16-18	2.0	10 13 16 18	29	21.2			As above, compact, moist to wet.	Borehole backfilled with Bentonite chips.
20 715										
25 710										
30 705										
35 700										

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Remarks: No temporary well installed at this location.
Sample ACSP-B6 (2-4') submitted for VOCs & Metals (Mich. 10) analysis. Borehole terminated at 18'.

Date Start/Finish: 12/03/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 28' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** BD01-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	1	0-2	6 3 2 2	5	1.0	0.0	-	FL	ASPHALT.		
								ML	Brown (10YR 5/3) SILT, some fine to coarse grained subangular Sand, little Clay, little fine to coarse grained angular Gravel (aggregate), no odor, moderately dense, aplastic, damp. Fill.	SILT	
	2	2-4	2 2 4 5	6	1.8	0.0	-		Yellow-brown (10YR 5/4) Silty CLAY, little fine to coarse subrounded to subangular Sand, few fine to medium rounded Gravel, no odor, moderately stiff, aplastic, damp to moist. Clay Till.	SILTY CLAY	
5 5	3	4-6	6 6 7 7	13	1.8	0.0	-		Occasional Silty lenses up to 2.5" thick, moist to wet. Dry, increased stiffness.		
	4	6-8	6 9 14 20	23	1.3	0.0	-				2" ID PVC Riser 0-21' bgs
	5	8-10	6 12 13 16	25	2.0	0.0	-	CL	Little medium to coarse Gravel. Occasionally fossiliferous Gravel.		Grout 0-18' bgs
10 10	6	10-12	2 10 13 17	23	1.0	0.0	-				
	7	12-14	9 13 10 14	23	1.7	0.0	-				
15 15	8	14-16	9 13 20 22	33	2.0	0.0	-	SW	Yellow-brown (10YR 5/4) aplastic well-graded fine to coarse grained subrounded to subangular SAND, some Silt, trace Clay, no odor, dense, damp. Fill Sand.	SILTY CLAY	
								ML	Brown (10YR 5/3) aplastic SILT, little Clay, no odor, dense, damp. Coarsens downward to a Sand.	SILT	

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.
12/03/01	24.5' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: BD01-01

Borehole Depth: 28' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
	9	16-18	7 14 24 25	38	1.5	0.0	-	ML		Brown (10YR 5/3) aplastic SILT, little Clay, no odor, dense, damp. Coarsens downward to a Sand.	SILT
	10	18-20	9 15 50/ 4"	65	1.3	0.0	-	SW		Light yellow-brown (10YR 6/4) fine to coarse grained well-graded subrounded to subangular SAND, little Silt, few fine to coarse subrounded Gravel, no odor, dense, aplastic, damp. Glacial-alluvial.	SAND
20 20										Gravel in shoe.	
	11	20-22	10 13 50/ 4"	NA	1.0	0.0	-			Gravel in shoe. Increased coarseness and angularity with depth. Increased oxidation, dark yellow-brown (10YR 4/6).	
	12	22-24	16 20 39 43	69	1.7	0.0	-				
								SM		Fining downwards to a Silty SAND, increased angularity and coarseness, increased density. Moist.	Silty SAND
25 25	13	24-26	10 22 44 50	66	NA	0.0	-	CL		Gray (10YR 2/1) Silty lean CLAY, little fine to coarse subrounded Sand, few fine to medium rounded Gravel, no odor, hard, weakly plastic, dry. Occasional saturated well-graded fine to coarse subrounded to subangular SAND (SW) lenses up to 2" thick. Occasional Silt, saturated, lenses up to 2" thick.	SILTY CLAY
	14	26-28	50 8 50/ 2"	NA	NA	0.0	-			Gray (10YR 5/1) Silty CLAY, little fine to coarse subrounded Sand, few fine to medium rounded Gravel, no odor, hard, weakly plastic, dry. Clay Till.	
30 30											
35 35											

Boring Construction

- Grout 0-18' bgs
- 2" ID PVC Riser 0-21' bgs
- Sand Pack 18-26' bgs
- Temporary Well Screen 21' - 26' bgs
- PVC Cap 26-26.2' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.
12/03/01	24.5' bgs	

Date Start/Finish: 11/30/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 18' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: BD01-02

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	1	0-2	6 7 9 10	16	1.8	0.0	-	SM		Gray-brown (10YR) Silty SAND, fine subangular Sand, little Clay, poorly graded, no odor, dense, damp under rainfall. Vegetation and roots present. Topsoil.	SILTY SAND	
	2	2-4	NA	NA	NA	NA	NA			Spoon refusal, rubbly drilling. Subsurface CONCRETE as stacked thick slabs.	FILL	
5 5	3	4-6	3 3 5 50"/0	8	0.0	0.0	-	FL		Terra cotta fragments, water immediately above concrete.		Borehold backfilled with Bentonite to grade.
	NA	NA	NA	NA	NA	NA	NA			CONCRETE, in situ.		
	4	8-10	5 6 10 9	16	1.5	0.0	-	SM		Yellow-brown (10YR 5/4) Silty SAND, fine subangular Sand, little Clay, poorly graded, no odor, moderately dense to dense, aplastic, damp.	SAND	
10 10								CL		Yellow-brown (10 YR 5/4) lean Silty CLAY, little fine to coarse subangular to subrounded Sand, no odor, stiff, weakly to moderately plastic, dry. Clay Till.	CLAY	
	5	10-12	4 6 6 5	12	1.8	0.0	-	SM		Yellow-brown (10YR 5/4) fine subangular Silty SAND, little Clay, poorly graded, no odor, dense, aplastic, damp. Coarsens downward.	SAND	
	6	12-14	7 18 19 9	37	1.9	0.0	-	SW		Gray-brown fine to coarse grained subrounded to subangular SAND, little Silt, trace Clay, well graded, no odor, moderately dense, aplastic, damp to moist. Glacial-alluvial.		
15 15	7	14-16	2 4 9 13	13	1.2	0.0	-					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0-2', 8-10' and 12-14' bgs.

Water Level Data

Date	Depth	Elev.
11/30/01	15.0' bgs	

Project: 644.12.001 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: BD01-02.dat Date: 1/22/02

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: BD01-02

Borehole Depth: 18' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	16-18	4 6 6 13	12	1.6	0.0	-	SW		Gray-brown fine to coarse grained subrounded to subangular SAND, little Silt, trace Clay, well graded, no odor, moderately dense, aplastic, damp to moist. Glacial-alluvial.	SAND	Borehold backfilled with Bentonite to grade.
										Gray (10YR 5/1) Silty CLAY (CL), little fine to coarse subangular to subrounded Sand, no odor, stiff, weakly plastic, dry. Clay Till.		
20 20												
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0-2', 8-10' and 12-14' bgs.

Water Level Data

Date	Depth	Elev.
11/30/01	15.0' bgs	

Project: 644.12.001 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: BD01-02.dat Date: 1/22/02

Date Start/Finish: 12/3/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 24' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: BD01-03

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								FL		ASPHALT.		
	1	0-2	4 5 5 4	10	1.8	0.0	-	ML		Yellow brown (10YR 5/4) SILT, some poorly graded fine to medium subangular Sand, few Clay, no odor, moderately dense, aplastic, dry.	SILT	
	2	2-4	6 6 5 5	11	1.5	0.0	-	CL		Yellow brown (10YR 5/4) lean Silty CLAY, little fine to medium subangular Sand, no odor, moderately stiff, weakly to moderately plastic, dry. Clay Till.	CLAY	2" ID PVC Riser 0-19' bgs
5 5	3	4-6	3 3 3 4	6	2.0	0.0	-			Occasional Silty Sand seams, moist to wet, up to 1.5" thick.		
	4	6-8	3 3 3 3	6	1.8	0.0	-	SW		Yellow brown (10YR 5/4) fine to coarse subangular to subrounded SAND, some to little Silt, trace Clay, well graded, no odor, moderately dense, aplastic, moist. Fill.	SAND	Grout 0-17' bgs
	5	8-10	3 3 4 5	7	1.3	0.0	-			Yellow brown (10YR 5/6) and well graded. Coarsens downward.		
10 10	6	10-12	2 4 4 3	8	1.6	0.0	-			Thin (approximately 3 mm) lens of black ash.		
	7	12-14	2 4 6 10	10	1.5	0.0	-					
15 15	8	14-16	6 16 16 18	32	1.2	0.0	-			Light yellow brown (10YR 6/4) fine to coarse subangular to subrounded SAND, little Silt and Clay, trace fine rounded Gravel, well graded, no odor, dense, aplastic, moist.		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.
12/3/01	20.5' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: BD01-03

Borehole Depth: 24' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	5 13 17 24	30	1.7	0.0	-	SW		Light yellow brown (10YR 6/4) fine to coarse grained subangular to subrounded SAND, little Silt and Clay, trace fine rounded Gravel, especially confined to lenses, occasional Silty Sand lenses up to 1" thick throughout, well graded, no odor, dense, aplastic, moist. [Glacial-alluvial.] Increased angularity, density, and coarseness with depth.	SAND	Grout 0-17' bgs
	10	18-20	10 21 20 22	41	1.7	0.0	-			Moist to wet.		2" ID PVC Riser 0-19' bgs
20 20	11	20-22	10 13 20 20	33	1.8	0.0	-			Saturated. Increased grain size to fine to coarse grained subrounded Gravel.		Sand Pack 17-24' bgs
	12	22-24	9 12 13 27	25	2.0	0.0	-			Yellow brown (10YR 6/8) with increased oxidation.		Temporary Well Screen 19-24' bgs
								ML		Gray (10YR 5/1) SILT, some to little Clay, no odor, dense, aplastic, saturated. Glacial-alluvial.	SILT	PVC Cap 24-24.2' bgs
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

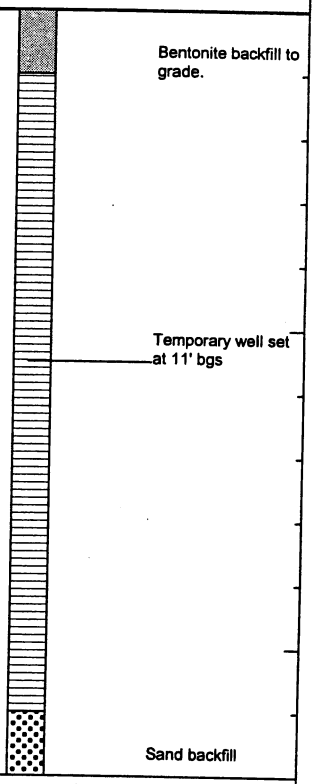
Water Level Data

Date	Depth	Elev.
12/3/01	20.5' bgs	

Date Start/Finish: 5/09/01 **Drilling Company:** Mateco **Driller's Name:** Gary Swift **Drilling Method:** Direct Push **Sampler Size:** 2 ft cont. acetate sleeve **Auger Size:** **Rig Type:** 66 DT Advance Geoprobe	**Northing:** 562286.44 **Easting:** 13305746.34 **Casing Elevation:** NA **Borehole Depth:** 12' bgs **Surface Elevation:** 738.77 **Descriptions By:** S Kerr	**Boring ID:** RFI-02-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
	740								
0							FL	CONCRETE.	FILL
		1	0-2	0.5	4.1	-		Very dark grayish brown fine SAND, little Silt and Clay, dense, moist, no odor.	SAND
		2	2-4	1.7	4.5	-	SP	Trace coarse Sand.	
	735						FL	CONCRETE.	FILL
5		3	4-6	2.0	5.9	-	ML	Grayish brown SILT, very stiff, dry, no odor.	SAND and SILT
		4	6-8	2.0	4.5	-	SM	Dark gray Silty fine to medium SAND, moist, no odor.	
							ML	SILT as above at 4.7-6.0'.	
	730	5	8-10	1.8	5.0	-	SP	Light olive brown fine to medium SAND, wet, no odor.	
10							ML	SILT as above at 4.7-6.0', moist.	
		6	10-12	2.0	1.7	-	SP	SAND as above at 9.0-9.5' with trace subangular Gravel at approximately 10.8'.	
							ML	SILT as above at 4.7-6.0', no mottling, trace subangular Gravel.	
	725								
15									

Boring Construction



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Remarks: bgs=below ground surface;
Sample collected at 0-2', 8-10' bgs.
1" ID 10-ft 0.01" slot screen temporary well set 1-11' bgs.
NA = Not Applicable/Not Available

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 5/9/01
Drilling Company: Rau Drilling
Driller's Name: Allen Rau
Drilling Method: Direct push
Sampler Size: 2 ft cont. acetate sleeve
Auger Size: NA
Rig Type: 66 DT Advance Geoprobe

Northing: 562113.94
Easting: 13305719.46
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 738.87

Descriptions By: S Kerr

Boring ID: RFI-02-02

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
	740									
0							FL		CONCRETE.	FILL
									Black medium to coarse SAND, no odor, loose, aplastic, dry. (SP)	
		1	0-2	1.3	2.5	-	CL		Grayish brown Silty CLAY, trace fine Sand and Gravel, dry, no odor.	
							SP		Very dark brown fine SAND, trace subangular Gravel, dry, no odor, aplastic.	SAND
		2	2-4	1.8	4.2	-				
	735								As above, yellowish brown, loose.	
							SM		Very dark brown Silty SAND, moist, no odor, moderately loose.	
5		3	4-6	2.0	5.5	-	CL		Brown CLAY, dry, no odor.	CLAY
		4	6-8	2.0	8.1	-	SP		Yellow brown fine SAND, trace subangular Gravel, moist, no odor, aplastic.	SAND
	730						ML		Yellowish brown Clayey SILT, gray mottling, trace angular Gravel, dry, no odor. Moist at 8.0', trace Sand.	CLAYEY SILT
		5	8-10	2.0	9.6	-				
10										
		6	10-12	2.0	3.4	-	SP		Yellowish brown fine to medium SAND, aplastic, saturated, no odor, fairly loose.	SAND
							ML		Yellowish brown SILT, wet, dense, no odor.	SILT
	725									
15										

Boring Construction

Borehole backfilled with bentonite to grade.

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Remarks: bgs = below ground surface; pp=pocket penetrometer
NA = Not Applicable/Not Available
1" ID 5-ft 0.01" slot screen temporary well set at 12' bgs.
Samples collected 0.5-2' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 5/9/01
Drilling Company: Rau Drilling
Driller's Name: Allen Rau
Drilling Method: Direct Push
Sampler Size: 2 ft cont. acetate sleeve
Auger Size: NA
Rig Type: 66 DT Advance Geoprobe

Northing: 562056.8
Easting: 13305709.36
Casing Elevation: NA

Borehole Depth: 14' bgs
Surface Elevation: 738.97

Descriptions By: B Loomis

Boring ID: RFI-02-03

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	740										
0									CONCRETE.	FILL	
		1	0-2	0.9	0.0	-			Very dark brown (10YR 2/2) fine to medium SAND, trace bright yellow chunks that appear to be paint, aplastic, dry, no odor.	SAND	
		2	2-4	1.6	0.0	-	SP		2.3-3.6': Dark yellowish brown (10YR 4/6) fine subangular SAND with some Silt, dry, no odor. 4-4.7': Reddish brown fine SAND, moist.		Borehole backfilled with Bentonite to grade.
	735								4.7-5.0': Dark yellow brown (10 YR 4/6) fine to medium subrounded to subangular SAND, trace subrounded Gravel, moist.		
5		3	4-6	1.5	4.6	-	ML		Very dark grayish brown (10YR 3/2) SILT, gray mottles, dry, no odor.	SILT	
		4	6-8	2.0	1.5	-			Brown (10YR 4/3) CLAY, trace fine Sand, gray mottles, stiff to very stiff, no odor. Clay Till.	CLAY	
	730	5	8-10	2.0	0.9	-	CL		8-12.4': No gray mottles, trace subrounded Gravel, moist to wet, and a brown (10YR 4/3) fine to medium subrounded Sand seam. Clay Till.		
10		6	10-12	1.5	0.0	-					
		7	12-14	2.0	NA		SP		Brown (10YR 4/3) fine to medium subrounded SAND, some subrounded to subangular Gravel, loose, saturated, no odor.	SAND	
	725						CL		CLAY, as at 8-10'. Clay Till.		
15											

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples collected at 0-2' and 8-10' bgs.
Temporary well set at 14' bgs with a 1' stick up.

Water Level Data

Date	Depth	Elev.
05/09/01	12.4'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-02-03.dat
Date: 5/25/01

Date Start/Finish: 5/9/01 - 5/10/01 **Drilling Company:** Rau Drilling **Driller's Name:** Allen Rau **Drilling Method:** Direct Push **Sampler Size:** 2 ft cont. acetate sleeve **Auger Size:** NA **Rig Type:** 66 DT Advance Geoprobe	**Northing:** 561932.78 **Easting:** 13305913.68 **Casing Elevation:** NA **Borehole Depth:** 12' bgs **Surface Elevation:** 739.26 **Descriptions By:** S. Kerr	**Boring ID:** RFI-02-04 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	740										Temporary well riser 3.5' above ground surface
0									CONCRETE.	FILL	
		1	0-2	0.9	9.1	-	SW		Black (10YR 2/1) fine SAND, aplastic, medium dense, dry, no odor, trace dark yellowish brown fine Sand.	SAND, FINE	
		2	2-4	1.3	9.0	-			Dark yellowish brown (10YR 3/4) coarse SAND, loose, dry, no odor, with Wood debris, few fine to medium Sand, Rubble, and fine Gravel.		
	735										
5		3	4-6	1.2	13.3	-	SP		Dark yellowish brown (10 YR 4/6) coarse SAND, moderately loose, dry, some subangular Gravel, aplastic, no odor.		1" ID Sch. 40 PVC riser 0.2-6.8' bgs
		4	6-8	1.6	32.3	-	ML		Wood debris, Rocks, Gravel, some dark brown Silt, moist. Fill.	FILL	
							SP		SAND as at 4 - 6.8' bgs, some fine and coarse rounded Gravel, saturated, no odor.		#5 Global filter sand pack 5-12' bgs
	730	5	8-10	2.0	16.0	-	CL		Dark grayish brown (2.5 YR 4/2) Silty CLAY, some gray mottling, trace subrounded coarse Sand, hard, moist, slight odor.		
10							SP		Very dark grayish-brown (10YR 3/2) medium to coarse subrounded SAND, little fine Sand, loose, no odor, saturated.	SAND	1" ID Sch. 40 PVC 0.010" slotted screen 6.8-11.8' bgs.
		6	10-12	2.0	8.5	-	CL		Silty CLAY as at 8.8 - 10' bgs, no odor.		
	725										
15											

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples collected at 1.1-2', 6-8', and 8-10' bgs.

Water Level Data

Date	Depth	Elev.
5/10/01	9.0'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-02-04.dat
Date: 9/14/01

Date Start/Finish: 5/18/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4" ID
Rig Type: CME 55

Northing: 562376.22
Easting: 13305695.45
Casing Elevation: 738.88

Borehole Depth: 8' bgs
Surface Elevation: 739.25

Descriptions By: SM Duly

Boring ID: RFI-02-05

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
	740											
0		1	0-2	NA 3 7 18	10	1.2	0.2	-	FL		CONCRETE.	FILL
									SP		Black (10 YR 2/1) medium to coarse angular SAND, little Silt, no odor, dry, loose. Slag and/or Foundry sand.	SAND
		2	2-4	5 4 4 4	8	1.4	5.0	+	ML		Black (10 YR 2/1) and dark gray (10 YR 4/1) varved SILT, little fine to medium subangular Sand and Clay, aplastic, weak odor, moist, dense, varves up to 1" thick.	SILT
	735											
5		3	4-6	3 3 6 8	9	1.6	2.9	-	SP		Black (10 YR 2/1) coarse angular SAND, as at 0.7-2.8' bgs, wet.	
									CL		Very dark gray (10 YR 3/1) to gray (10 YR 5/1) mottled Silty CLAY, little fine to medium subangular Sand, no odor, wet, soft (pp=0.75 tons/sq. feet).	SILT
									ML			
		4	6-8	6 8 9 11	17	1.6	2.3	-	SP		Gray-brown (10 YR 5/2) SILT, few to little fine to medium subangular Sand, little Clay, aplastic, no odor, wet, dense.	SAND
									CL		Dark gray (10 YR 4/1) fine to coarse subrounded to subangular SAND, some Silt, little Clay, aplastic, no odor, wet, moderately dense.	CLAY
	730										Gray-brown CLAY, some Silt, little fine to medium subangular to subrounded Sand, few fine to coarse rounded Gravel, no odor, dry, hard (pp=>4.5 tons/sq. feet). Locally oxidized along fractures and selvages. Clay Till.	
10												
	725											
15												

Boring Construction

- Cement pad with 9" diam. flush-mount cover
- Cement/bentonite gorut 1-1.5' bgs
- Bentonite seal 1.5-2' bgs
- 2" ID Sch. 40 PVC riser 0.2-2.8' bgs
- #5 Global filter sandpack 2-8' bgs
- 2" ID Sch. 40 PVC 0.010"slottedscreen 2.8-7.8' bgs

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available.
Samples collected 0.7-2' and 2-4' bgs.
pp=pocket penetrometer

Water Level Data

Date	Depth	Elev.
5/18/01	4.9' bgs	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-02-05.dat
Date: 9/14/01

Date Start/Finish: 5/10/01 **Drilling Company:** Rau Drilling **Driller's Name:** Allen Rau **Drilling Method:** Direct Push **Sampler Size:** 2 ft cont. acetate sleeve **Auger Size:** 2 1/4" **Rig Type:** 66 DT Advanced Geoprobe	**Northing:** 562718.38 **Easting:** 13306072.3 **Casing Elevation:** NA **Borehole Depth:** 6.6' bgs **Surface Elevation:** 738.87 **Descriptions By:** S Kerr	**Boring ID:** RFI-02-06 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	740										
0							FL		CONCRETE.		
		1	0-2	1.2	20.8	-	SM		Black (10YR 2/1) fine to medium Silty SAND, few subrounded Gravel, aplastic, wet, no odor, medium dense. Fill.	SAND	Borehole backfilled with Bentonite to grade.
									Brown (10YR 5/3) fine to medium SAND, trace rounded Gravel, aplastic, moist, medium dense.		
		2	2-4	2.0	52.5	-			As 0.7-1.1' bgs, trace Clay.		
									Yellow brown (10YR 5/4) Silty fine SAND, aplastic, loose, dry, no odor.		
	735						GW		As above, black (10YR 2/1), little Clay, aplastic, dry, slight odor, medium dense.		
5		3	4-6	2.0	43.1	-	SP		Gray-brown to black coarse angular to subangular GRAVEL, few fine to medium Sand, trace Silt and Clay.	SAND, CLAY LENSE	
							CL		Very dark gray brown (10YR 3/2) Silty SAND, little subrounded to angular Gravel, dry, no odor, loose.		
		4	6-6.6	0.3	35.3	-	SM		Orange brown fine to coarse SAND, some subangular Gravel and Concrete, dense, dry, no odor. Fill.		
									Dark gray brown Silty CLAY, little fine to coarse Sand, some oxidation, moist.		
									Black (10YR 2/1) fine Silty SAND, little Clay, aplastic, dry, slight odor, medium dense.		
	730								Gray brown fine to medium SAND, little Clay, trace Silt, no odor, medium dense, moist.		
10											
	725										
15											

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Remarks: bgs=below ground surface; NA = Not Applicable/Not Available; Cored 8.5" of concrete with water.

Soil samples collected from 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 11/21/01 **Drilling Company:** Rau Drilling **Driller's Name:** Rod Chaperon **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" **Rig Type:** CME 55	**Northing:** 566522.57 **Easting:** 13306799.00 **Casing Elevation:** 751.91 **Borehole Depth:** 18' bgs **Surface Elevation:** **Descriptions By:** SM Duly	**Boring ID:** 20-105R **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0				-- --					FL		Concrete.	FILL	Cement pad with 9" diam. flush-mount cover.
	750	1	1-3	5 9 9 13/5"	18	2.0	0.0	-	ML		Very dark brown (10YR 4/1) SILT, little fine subangular Sand, little Clay, no odor, dense, aplastic, damp. Fill.	SILT	Grout 1-3' bgs.
		2	3-5	3 2 2 2	4	1.6	0.0	-	FL		Concrete.		Bentonite seal 3-5' bgs.
5		3	5-7	1 2 2 3	4	1.8	0.0	-	CL		Yellow-brown (10YR 5/4) Silty lean CLAY, little fine subangular Sand, trace fine rounded Gravel, no odor, initially soft becoming more stiff with depth, damp. Clay Till. Moist.	SILTY CLAY	2" ID Sch. 40 PVC riser 0.2-7' bgs.
	745	4	7-9	1 3 4 3	7	2.0	0.0	-	ML		Yellow-brown (10YR 5/4) SILT, little Clay, little fine subangular Sand, no odor, moderately dense, aplastic, moist. Fill. Becomes more sandy.	SILT	Global #5 sand pack 5-17' bgs.
10		5	9-11	1 6 5 5	11	NA	0.0	-			Saturated.		2" ID Sch. 40 PVC 0.010"slottedscreen 7-17' bgs.
	740	6	11-13	3 6 7 10	13	1.8	0.0	-			Becomes grayer. Glacial-alluvial. Local oxidation as varves/lenses up to 1/2" thick.		
		7	13-15	4 7 9 8	16	2.0	0.0	-					
15		8	15-17	4 5	11	0.8	0.0	-			Gray (10YR 5/1). No oxidation present to end of boring. Increased Sand content to a Silty SAND locally.		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
PID Background: 0.0 ppm.
Samples collected 1-3' and 7-9' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\20-105R.dat Date: 1/16/02

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: 20-105R

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	8	15-17	6 9	11	0.8	0.0	-	ML		Yellow-brown (10YR 5/4) SILT, little Clay, little fine subangular Sand, no odor, moderately dense, aplastic, moist. Fill.	SILT	Global #5 sand pack 5-17' bgs.
										Overdrilled to accomodate heaving sand.	SAND	2" ID Sch. 40 PVC 0.010"slottedscreen 7-17' bgs.
20												
730												
25												
725												
30												
720												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
PID Background: 0.0 ppm.
Samples collected 1-3' and 7-9' bgs.

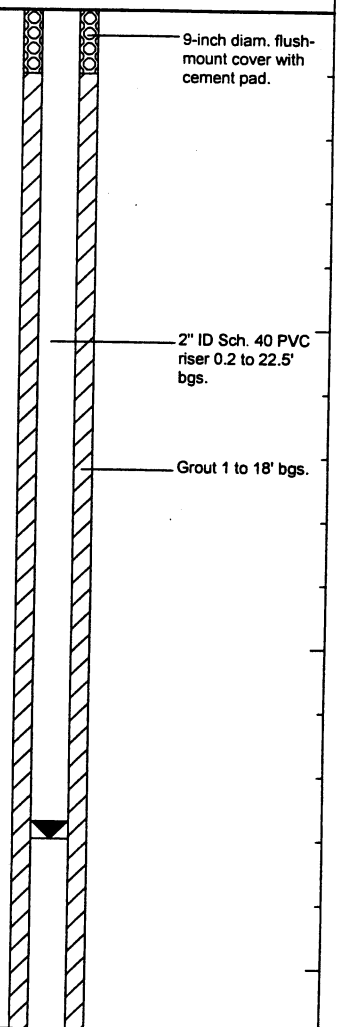
Water Level Data

Date	Depth	Elev.

Date Start/Finish: 11/12/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 561072.94 **Easting:** 13305831.86 **Casing Elevation:** 730.46 **Borehole Depth:** 33' bgs **Surface Elevation:** 730.31 **Descriptions By:** SM Duly	**Boring ID:** 40-303R **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0	730								Fill	Concrete.	FILL
		1	1-3	3 3 3 4	6	1.8	0.0	-	SM	Yellow-brown (10 YR 5/4) Silty fine to medium SAND, trace Clay, aplastic, moderately dense, no odor, dry. Fill.	SILTY SAND
		2	3-5	3 4 4 4	8	1.2	0.0	-			
5	725	3	5-7	7 8 10 8	18	2.0	0.0	-	CL	Gray (10 YR 6/1) Silty CLAY, with extensive yellow-brown (10 YR 5/6) mottling and oxidation, trace fine to coarse subrounded Sand, plastic, moderately soft, no odor, damp. Clay Till.	Silty Clay
									ML	Yellow-brown (10 YR 5/4) SILT, little Clay, aplastic, dense, no odor, moist. Light brown-gray (10 YR 6/2).	SILT
		4	7-9	5 6 9 14	15	2.0	0.0	-	CL	Gray (10 YR 5/1) Silty CLAY, as at 4.7-6' bgs, with yellow-brown (10 YR 5/6) oxidation/mottling, moist.	SILTY CLAY
10	720	5	9-11	9 14 32 39	46	2.0	0.0	-		Little fine rounded Gravel and little fine to medium subrounded Sand, wet to moist. Dry, homogeneous weakly plastic gray (10 YR 5/1), little fine to medium subrounded to subangular Sand, trace rounded fine to medium Gravel, hard, no odor. Clay Till.	
		6	11-13	9 19 29 36	48	2.0	0.0	-			
		7	13-15	8 15 19 22	34	2.0	0.0	-			
15	715	8	15-17	8 15	34	2.0	0.0	-			

Boring Construction



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected at 1-3', 8-10', and 27-29' bgs.

Water Level Data

Date	Depth	Elev.
11/13/01	13' bgs	
11/13/01	30.3' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: 40-303R

Borehole Depth: 33' bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
		8	15-17	19 26	34	2.0	0.0	-			Gray (10 YR 5/1) Silty CLAY, as at 4.7-6' bgs, with yellow-brown (10 YR 5/6) oxidation/mottling, moist.	
		9	17-19	10 17 24 28	41	2.0	0.0	-				
20	710	10	19-21	9 16 21 23	37	2.0	0.0	-			Occasional to rare silt to fine sand lenses up to 1" wide, moist to wet.	
		11	21-23	11 17 22 21	39	2.0	0.0	-	CL		Few Sand, no gravel present.	SILTY CLAY
		12	23-25	8 15 22 26	37	2.0	0.0	-			Faint varves present.	
25	705	13	25-27	7 14 26 36	40	2.0	0.0	-			2" wide wet fine sand to silt lens.	
		14	27-29	16 32 26 31	58	2.0	0.0	-	ML		Gray (10 YR 6/1) SILT, some to little Clay, aplastic, very dense, no odor, dry. Glacial-alluvial.	SILT
30	700	15	29-31	10 12 14 15	26	2.0	0.0	-			4" wide very fine to fine sand and silt seam. Wet to saturated.	
		16	31-33	14 13 19 28	32	2.0	0.0	-	CL		Silty CLAY as at 7.2-27.2' bgs, very stiff to hard, dry.	SILTY CLAY
35	695											

Boring Construction

- Grout 1 to 18' bgs.
- 2" ID Sch. 40 PVC riser 0.2 to 22.5' bgs.
- Bentonite seal 18 to 21' bgs.
- Global filter sandpack 21 to 33' bgs.
- 2" ID Sch. 40 PVC 0.010" slotted screen 22.5 to 32.5' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected at 1-3', 8-10', and 27-29' bgs.

Water Level Data

Date	Depth	Elev.
11/13/01	13' bgs	
11/13/01	30.3' bgs	

Project: 644.10.022
Data File:40-303R.dat
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 1/16/02

Date Start/Finish: 11/13/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: 561783.6
Easting: 13305750.8
Casing Elevation: 737.9

Borehole Depth: 25' bgs
Surface Elevation: 738.44

Descriptions By: SM Duly

Boring ID: 40-4R

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
740 / 0								Fill	Concrete.	FILL
735 / 5	1	1-3	5 5 6 7	11	1.4	3.8	-	SP	Yellow-brown (10 YR 5/6) poorly graded fine to medium subrounded to subangular SAND, some Silt, trace Clay, aplastic, moderately dense to dense, no odor, dry. Fill.	SAND
	2	3-5	5 6 6 7	12	1.8	23.8	-		Trace fine rounded Gravel, damp.	
	3	5-7	3 4 4 5	8	1.8	32.1	-			
730 / 10	4	7-9	3 3 2 2	5	1.1	78.4	-		Color change to a browner yellow-brown (10 YR 5/4).	
	5	9-11	5 5 6 6	11	1.5	107	-		Brown (10 YR 5/3), moderate odor.	
	6	11-13	5 6 32 7	38	1.2	954	+		Black (10 YR 2/1) oily sheen, strong odor, moist.	
725 / 15								Fill	Concrete rubble and debris. Fill.	SILTY CLAY
	7	13-15	5 7 7 9	14	1.7	1637	+	CL	Gray (10 YR 5/1) Silty CLAY with black (10 YR 2/1) and yellow-brown (10 YR 5/6) mottling, little fine to medium subrounded Gravel, plastic, soft to moderately stiff, moderate odor, dry.	
	8	15-17	7 5	8	1.9	953	+	SM	Gray-brown (10 YR 5/2) Silty fine to medium subangular poorly graded SAND, few Clay, little to few fine rounded Gravel, aplastic, moderately dense, moderate odor, moist.	

Boring Construction

- 9-inch diam. flush-mount cover with cement pad.
- 2" ID Sch. 40 PVC riser 0.2 to 15' bgs.
- Grout 1 to 9' bgs.
- Bentonite seal 9 to 13' bgs.
- Global filter sand pack 13 to 25' bgs.
- 2" ID Sch. 40 PVC 0.010" slotted screen 15 to 25' bgs.

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available
Samples collected at 1-3', 8-10', 13-15', and 15-17' bgs.

Water Level Data

Date	Depth	Elev.
11/13/01	17.5' bgs	

Project: 644.10.022
Data File:40-4R.dat
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 1/22/02

Client: General Motors

Site Location: GM Flint, Flint, Michigan

Boring ID: 40-4R

Borehole Depth: 25' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	15-17	3 3	8	1.9	953	+	SM		As above, oily sheen, increased moisture with depth.	SILTY SAND	
720	9	17-19	2 2 3 2	5	1.5	1800	+			Saturated, strong odor.		Global filter sand pack 13 to 25' bgs.
20	10	19-21	2 3 4 3	7	1.4	1157	+					
	11	21-23	1 3 3 1	6	1.2	1008	+					
715	12	23-25	5 5 6 7	11	1.3	403	+	SW		Dark gray-brown (10 YR 4/2) fine to coarse subrounded to subangular well graded SAND, few Silt, few fine rounded Gravel, aplastic, loose, moderate odor, oily sheen, saturated. Glacial-alluvial.	SAND	2" ID Sch. 40 PVC 0.010" slotted screen 15 to 25' bgs.
25										Black (10 YR 2/1), oily sheen, strong odor.		
710												
30												
705												
35												

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NA = Not Applicable/Not Available
Samples collected at 1-3', 8-10', 13-15', and 15-17' bgs.

Water Level Data

Date	Depth	Elev.
11/13/01	17.5' bgs	

Project: 644.10.022
Data File: 40-4R.dat
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 1/22/02

Date Start/Finish: 11/20/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: 561635.2
Easting: 13305941.08
Casing Elevation: 733.18

Borehole Depth: 22' bgs
Surface Elevation: 733.89

Descriptions By: SM Duly

Boring ID: 40-7R

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	735												
0		1	0-2	8 8 8 6	16	1.5	1.0	+	ML		Fine grained to cobble-sized angular aggregate GRAVEL (GW). Aggregate Fill. Dark brown (10YR 3/1) SILT, little to some Clay, little fine to medium subangular Sand, few fine to coarse grained angular large Gravel (aggregate),weak odor, moderately dense, aplastic, damp. Wide lense of black Coal fragments 1.2'-2.0' bgs.	SILT	Cement pad with 9" diam. flush-mount cover. Grout 1-4' bgs.
	730	2	2-4	4 4 5 8	9	2.0	10.4	+			Becomes wet, yellow brown (10YR 5/4) 3'-5' bgs. Perched water. No odor.		
5		3	4-6	7 9 6 5	15	1.0	0.0	+			Rubbly drilling. Moist 5.0'5.5' bgs. Wet.		Bentonite seal 4-6' bgs.
		4	6-8	3 2 3 5	5	1.7	0.0	+			Brown (10YR 5/3) with gray (10YR 5/1) mottling lean CLAY, some Silt, few fine to medium subangular Sand, trace fine to medium rounded to subrounded Gravel, no odor, moderately stiff, weakly plastic, damp. Clay Till.		2" ID Sch. 40 PVC riser 0.2-8' bgs.
	725	5	8-10	2 4 6 12	10	2.0	0.0	+					Global #5 sand pack 6-23' bgs.
10									CL			CLAY	
		6	10-12	11 20 33 28	53	2.0	46.8	+			Becomes dry and hard. Rare moist Silty Sand lenses up to 1" wide.		2" ID Sch. 40 PVC 0.010"slottedscreen 8-18' bgs.
	720	7	12-14	18 19 10 8	29	2.0	3291	+			Gray (10YR 5/1) fine poorly graded SAND, some Silt, few Clay, moderate odor, moderately dense, aplastic, moist.	SAND	
15		8	14-16	8 2 3 3	5	1.2	1610	+	SP		Saturated. Strong odor, oily sheen.		

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Remarks: bgs = below ground surface;+ = Positive Test Result
NA = Not Applicable/Not Available
WH=Weight of Hammer
Samples collected at 0-2', 2-4', 8-10', and 12-14' intervals

Water Level Data

Date	Depth	Elev.
11/13/01	15.0' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: 40-7R

Borehole Depth: 22' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	WH 1 1 1	2	1.3	1589	+	SP		Gray (10YR 5/1) fine poorly graded SAND, some Silt, few Clay, moderate odor, moderately dense, aplastic, moist.	SAND	Global #5 sand pack 6-23' bgs.
715												2" ID Sch. 40 PVC 0.010"slottedscreen 8-18' bgs.
	10	18-20	WH WH 1 1	1	NA	1767	+			Black (10YR 2/1).		
20												
	11	20-22	WH 1 2 5	3	NA	1778	+			Overdrilled 1' to 23' because of heaving sands.		
710												
25												
705												
30												
700												
35												

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Remarks: bgs = below ground surface;+ = Positive Test Result
NA = Not Applicable/Not Available
WH=Weight of Hammer
Samples collected at 0-2', 2-4', 8-10', and 12-14' intervals

Water Level Data

Date	Depth	Elev.
11/13/01	15.0' bgs	

Date Start/Finish: 11/8/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 566567.49 **Easting:** 13305609.22 **Casing Elevation:** 752.6 **Borehole Depth:** 18' bgs **Surface Elevation:** 752.6 **Descriptions By:** S Kerr	**Boring ID:** 43-101R **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
755										
0	1	0-2	-- -- -- --	--	NA	0.0	-	GP	Coarse GRAVEL, aggregate.	
									Very dark gray (10YR 3/1) SILT, little fine to coarse Sand, few to coarse angular to subrounded Gravel, trace Clay, no odor, loose, damp.	SILT
750	2	2-4	2 2 2 2	4	0.9	0.0	-	ML	No gravel.	
5	3	4-6	2 3 3 5	6	1.3	0.0	-		Olive-yellow (2.5 Y 6/6) SILT, some Clay, no odor, aplastic, dry.	
	4	6-8	1 1 2 2	3	1.6	0.0	-		Yellow-brown (10YR 5/6) fine poorly graded SAND, little Silt, trace Clay, loose, aplastic, dry to damp.	SAND
745									Black (10YR 2/1) fine SAND, little Silt, trace Clay, loose, aplastic, dry to damp.	
									Yellow-brown (10YR 5/6) fine SAND, little Silt, trace Clay, loose, aplastic, dry to damp.	
	5	8-10	1 2 2 1	4	1.2	4.0	-		Mottled (10YR 5/6) and dark grayish brown (10YR 4/2) SAND, trace Clay, trace fine to medium Gravel, moist. Some Clay 7.1-7.4' bgs.	
10								SP		
	6	10-12	1 1 1 1	2	1.6	0.0	-		Black (10YR 2/1) fine, poorly graded SAND, little Silt, trace Clay, loose, aplastic, dry to damp. Saturated @ 11.3' bgs.	
740									11.7: Mottled yellow (10YR 5/6) and dark grayish brown (10YR 4/2) SAND.	
	7	12-14	1 1 3 4	4	1.6	0.0	-		12.4: Yellow-brown (10YR 5/6) fine SAND, some Silt, no odor, loose, saturated.	
15	8	14-16	3 3 4 5	7	1.5	0.0	-		Dark grayish brown (10YR 4/2) fine SAND, some Silt, no odor, loose, saturated.	

Boring Construction

- Cement Pad 0-1' bgs
- Grout 1-4' bgs
- Bentonite Seal 4-6' bgs
- 2" ID Sch. 40 PVC Riser 0-8' bgs
- #5 Global Filter Sand Pack 6-18' bgs
- 2" ID Sch. 40 PVC 0.010" Slotted Screen 8-18' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected at 0.5-2' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.
11/8/01	11.3' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: 43-101R

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	9	16-18	2 3 4 4	7	1.3	0.0	-	SP		Dark grayish brown (10YR 4/2) fine poorly graded SAND, some Silt, no odor, loose, saturated..	SAND	#5 Global Filter Sandpack 6-18' bgs 2" ID Sch. 40 PVC 0.010" Slotted Screen 8-18' bgs PVC Cap 18-18.2' bgs

20
730
25
725
30
720
35

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected at 0.5-2' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.
11/8/01	11.3' bgs	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File:43-101R.dat Date: 1/16/02

Date Start/Finish: 10/26/00-10/26/00
Drilling Company: RAU Drilling
Driller's Name: Rick Rau
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 3.25" ID
Rig Type: CME 45 B Truck Mounted Dill Rig
Sampling Method: 2" spoon

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 16' below grade
Surface Elevation: 734.5'

Geologist: R. Wagner

Well/Boring ID: ACSP-B1
ACSP-TW1

Client: General Motors

Location: GM-Flint - Phase II ESA
AC Sparkplug Property

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N-Values	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
	735									
0		1	0-2	1.2	7 10 11 11	21	6.6			Dark brown fine to medium SAND, little coarse Sand and fine Gravel, moist, little Silt. Fill.
		2	2-4	1.5	4 5 32 -	37	8.3			Brown to black fine SAND, little Silt and medium to coarse Sand, moist.
										SLAG.
	730	3	4-6	0.9	40 34 32 50/0	66	9.6			CONCRETE with little medium to coarse Sand, trace Coal and Wood fragments, moist. Fill.
5		4	6-8	0.0	7 12 17 39	29	NA			No Recovery, Concrete debris.
		5	8-10	0.2	100/ 0.5	NA	11.2			WOOD and CONCRETE, moist.
	725									
10		7	10-12	0.2	100/ 0.2	NA	10.2			As above, little fine to medium Sand, moist. Augered-Concrete from 8-10.5'.
		8	12-14	2.0	14 17 41 50	58	9.1			Light brown Silty fine SAND, little coarse Sand and fine Gravel embedded, very dense, wet.
	720									
15		9	14-16	2.0	23 44 44 29	88	22.8	X		As above, wet, very dense.

Well/Boring Construction: Borehole backfilled with Bentonite chips.

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Remarks: Sample ACSP-B1 (14-16') submitted for VOCs & Metals (Mich. 10) analysis. Borehole terminated at 16'. Temp. 2" diam. PVC well with 10 slot, 5' screen was set in soil boring. ACSP-TW1 water sample collected for VOCs, SVOCs, Metals (Mich. 10), and PCBs. ACSP-TW-DUP-1 duplicate sample was collected for Metals.

Date Start/Finish: 10/26/00-10/26/00
Drilling Company: RAU Drilling
Driller's Name: Rick Rau
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 3.25" ID
Rig Type: CME 45 B Truck Mounted Dill Rig
Sampling Method: 2" spoon

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 18' below grade
Surface Elevation: 739.4'

Geologist: Raymond Wagner

Well/Boring ID: ACSP-B2
ACSP-TW2

Client: General Motors

Location: GM-Flint - Phase II ESA
AC Sparkplug Property

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N-Values	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	740										
0		1	0-2	1.2	5 5 12 6	17	30.9			Dark brown medium to coarse SAND and fine Gravel, some Brick and Concrete fragments, little Silt, moist. [FILL]	
		2	2-4	1.8	2 2 4 3	6	37.2			Brown fine SAND (SM), some Silt, little medium to coarse Sand, wet, loose.	
	735	3	4-6	1.6	2 4 4 4	8	39.4			Brown SILT (ML), little fine to medium Sand, trace Clay, moist, loose.	Borehole backfilled with Bentonite chips.
5		4	6-8	1.8	2 2 5 6	7	42.1			As above, moist, loose.	
	730	5	8-10	1.7	3 5 5 6	10	23.6				
10		7	10-12	1.6	3 3 4 6	7	48.7				
		8	12-14	1.7	2 2 4 4	6	812			Brown to gray SILT (ML), little fine Sand, trace coarse Sand, moist, slight hydrocarbon odor noticed. Possibly glacial-alluvial.	
	725	9	14-16	1.9	2 2 4 4	6	2852	X		Brown to gray fine Silty SAND, little coarse Sand and Clay, slight degraded hydrocarbon odor, moist. Possibly glacial-alluvial.	
15											

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Remarks: Sample ACSP-B2 (14-16') submitted for VOCs, SVOCs, & Metals (Mich. 10) analysis. ACSP-DUP-1 submitted for SVOCs & VOCs. MS/MSD submitted for SVOC analysis. Borehole terminated at 18'. Temporary 2" diam. PVC well with 10 slot, 5' screen was set in soil boring. ACSP-TW2 temporary well was dry, no sample collected.

Client:
General Motors

Site Location:
GM-Flint - Phase II ESA
AC Sparkplug Property

Well/Boring ID: ACSP-B2

Borehole Depth: 18' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	10	16-18	1.8	2 5 7 12	12	2711			Brown to gray SILT (ML), little fine Sand and Clay, trace coarse Sand, degraded hydrocarbon odor, moist to wet. Possibly glacial-alluvial.	Borehole backfilled with Bentonite chips.
720 20										
715 25										
710 30										
705 35										

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Remarks: Sample ACSP-B2 (14-16') submitted for VOCs, SVOCs, & Metals (Mich. 10) analysis. ACSP-DUP-1 submitted for SVOCs & VOCs. MS/MSD submitted for SVOC analysis. Borehole terminated at 18'. Temporary 2" diam. PVC well with 10 slot, 5' screen was set in soil boring. ACSP-TW2 temporary well was dry, no sample collected.

Date Start/Finish: 5/08/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 20' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** ACSP-B2C **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	1	0-2	5 7 7 5	14	1.6	5.2	-	ML		Brown (10YR 4/3) aplastic SILT, little fine to coarse subangular Sand, Gravel, and rubble, little to some Clay; moist, loose organic matter (roots) and topsoil, no odor. At 1.2-2' very dark brown 10YR 2/2 aplastic SILT, some light yellow brown (10YR 6/9) aplastic fine to medium Sand, moist, moderately loose to moderately dense.	SILT	
	2	2-4	4 7 9 13	16	1.3	6.7	-			Brown (10YR 3/3) with gray (10YR 5/1) mottling hard CLAY, some to little medium subangular Sand, some Silt, trace to few fine to coarse subrounded Gravel, dry, hard, no odor.	CLAY and SILTY CLAY	
5 5	3	4-6	6 9 10 12	19	1.3	2.4	-					Borehole backfilled with bentonite to grade.
	4	6-8	3 9 15 27	24	1.3	4.3	-	CL		Yellow brown (10YR 4/4) plastic Silty CLAY, little fine to medium subangular Sand, moist to wet, soft, no odor. CLAY as at 2.0-5.6' bgs, hard. Silty CLAY as at 5.6-6.9' bgs. Hard CLAY as at 2-5.6' bgs.		
	5	8-10	9 28 28 39	56	2.0	5.0	-					
10 10	6	10-12	9 38 50 5	88	1.4	4.8	-					
	7	12-14	8 19 21 28	40	1.6	2.0	-	ML		Light yellow brown (10YR 6/4) aplastic, fine to coarse subangular SAND (SP), some Gravel, some to little Silt, dry, loose, no odor. Very dark brown (10YR 7/4) aplastic fine to medium Silty SAND, trace Clay, dry, moderately loose, no odor. Moist to damp at 14' bgs, saturated at 17.8' bgs.	SILTY SAND	
15 15	8	14-16	11 12 19 22	31	1.5	2.4	-					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 8-10' bgs.

Water Level Data

Date	Depth	Elev.
5/10/01	17.8' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: ACSP-B2C

Borehole Depth: 20' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	8 11 15 11	26	2.0	2.4	-	ML		Very dark brown (10YR 7/4) aplastic fine to medium Silty SAND, trace Clay, dry, moderately loose, no odor. Moist to damp at 14' bgs, saturated at 17.8' bgs. 18.7-19.2 same as above, fine to coarse Gravel.	SILTY SAND	
	10	18-20	9 38 25 26	63	4.4	1.7	-					
20 20										Hard CLAY (CL) as at 2-5.6' bgs but dark yellow brown (10YR 4/4).		
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 8-10' bgs.

Water Level Data

Date	Depth	Elev.
5/10/01	17.8' bgs	

Project: 644.17.002 Template: j:\rockware\logplot2001\logfiles\64410\auger_well.ldf
Data File:ACSP-B2C.dat Date: 5/31/01

Date Start/Finish: 08/17/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 29' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** ACSP-B2D **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	0												
		1	0-2	6 6 9 8	15	1.3	1.1	-	ML		Medium dense, dark gray-brown (10 YR 4/2) SILT, some to little Clay, few fine to coarse subrounded Sand, trace fine to medium round Gravel, no odor, aplastic, dry, organic matter. Topsoil	Topsoil	
		2	2-4	10 10 12 15	22	1.0	0.1	-			Medium dense, dark gray-brown (10 YR 4/2) changing to pale brown (10 YR 7/4) SILT, no organic matter.	SILT	
5	5	3	4-6	5 8 8 9	16	1.5	2.3	-			Yellow-brown (10 YR 5/4), some clay, damp.		
		4	6-8	6 9 9 11	18	1.8	1.9	-			Very stiff, yellow-brown (10YR 5/4) Silty CLAY, litte fine to coarse subangular to subrounded Sand, few fine to coarse rounded to subrounded Gravel, no odor, damp.	SILTY CLAY	
		5	8-10	9 17 44 31	61	0.5	0.0	-			Gravel as cobbles.		
10	10	6	10-12	4 15 25 32	40	2.0	0.0	-			Hard		Borehole tremie grouted.
		7	12-14	9 18 28 32	46	2.0	0.0	-	CL		Very dense, light yellow-brown (10 YR 6/4) SILT, few fine subangular Sand, little Clay, no odor, aplastic, damp.	SILT	
15	15	8	14-16	6 16 17 18	33	1.8	0.0	-			Dense, yellow-brown (10 YR 5/4) Silty CLAY, some fine to medium subrounded Sand, moist.	silty clay	

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected at 0-2', 2-4', 4-6', 14-16' and 24-26' bgs

Water Level Data

Date	Depth	Elev.
08/17/01	27.8'	

Project: 644.10.022
Data File:ACSP-B2D
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 09/15/01

Client: General Motors

Site Location: GM Flint, Flint, Michigan

Boring ID: ACSP-B2D

Borehole Depth: 29' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	11 14 22 25	36	2.0	0.0	-	CL SW CL		Dense, yellow-brown (10 YR 5/4) Silty CLAY, some fine to medium subrounded Sand, moist. Dense, light yellow-brown (10 YR 6/4), fine to medium SAND, some Silt, few Clay, no odor, aplastic, dry to damp. Dense, yellow-brown (10 YR 5/4) Silty CLAY, some to little Sand.	SILT and CLAY	
	10	18-20	7 12 19 32	31	2.0	0.0	-			Dense, gray (10 YR 5/1) SILT, some Clay, fine to coarse subangular to subrounded Sand, fine to medium rounded to subrounded Gravel, no odor, aplastic, moist.		
20 20	11	20-22	31 50/ 0.5' NA	NA	0.7	0.0	-	ML		Very dense, gray-brown (10 YR 5/1) Silty fine to medium subangular to subrounded SAND lenses throughout, few to little Clay, moist. Moist to wet.		
	12	22-24	12 20 50/ 0.4'	70	0.9	0.0	-					
25 25	13	24-26	11 23 20 24	43	2.0	0.0	-			Increased clay to a SILT with Clay, damp to dry.		Borehole tremie grouted.
	14	26-28	24 34 50/ 0.6'	84	1.5	0.0	-	ML/CL		Moist. Silty SAND lenses 8" wide as at 21' bgs, wet.		
	15	28-29	36 50/ 0.5'	NA	1.0	0.0	-					
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected at 0-2', 2-4', 4-6', 14-16' and 24-26' bgs

Water Level Data

Date	Depth	Elev.
08/17/01	27.8'	

Project: 644.10.022
Data File:ACSP-B2D
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 09/15/01

Date Start/Finish: 08/20/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 26' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** ACSP-B2E **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	1	0-2	3 4 7 9	11	1.0	0.0	-	ML		Dense, brown-yellow (10 YR 6/6) SILT, little fine subangular to subrounded Sand, few Clay, no odor, aplastic, organic matter, damp with rainfall. Topsoil	Topsoil	
	2	2-4	9 7 11 13	18	1.0	0.0	-			Dense, brown (10 YR 5/3) SILT, some Clay, little fine to medium subrounded Sand, no odor, aplastic, dry. Old root structure present along with wooden debris. Former topsoil horizon. Few fine to coarse subrounded gravel, no root structures. Till.	SILT	
5 5	3	4-6	9 10 13 15	23	1.5	0.1	-					
	4	6-8	6 10 12 19	22	2.0	0.0	-					
	5	8-10	7 9 19 23	28	1.8	0.0	-	CL		Hard to very stiff, brown (10 YR 5/3) Silty CLAY, little to few fine to coarse subangular to subrounded Sand, few fine to coarse subrounded to rounded Gravel, no odor, heavily oxidized, dry. Till.	SILTY CLAY	
10 10	6	10-12	10 20 22 27	42	1.0	0.0	-					Borehole tremie grouted.
	7	12-14	7 9 15 23	24	2.0	0.0	-	ML		Dense, gray (10 YR 5/1) SILT, some to little Clay, no odor.	SILT	
15 15	8	14-16	4 9 13 16	22	2.0	0.0	-			Medium dense, brown (10 YR 5/5) SILT, aplastic.		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected at 0-2' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.
8/20/01	25.9'	

Project: 644.10.022
Data File:ACSP-B2E
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 09/15/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: ACSP-B2E

Borehole Depth: 26' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	34 50/ 0.6' NA	NA	1.0	0.0	-	ML		Medium dense, brown (10 YR 5/5) SILT, aplastic, some fine to medium subangular Sand.	SILT	
	10	18-20	6 13 20 23	33	1.5	0.0	-					
20 20	11	20-22	13 19 23 29	42	2.0	0.0	-			Gray (10 YR 5/1), little fine to medium subangular sand.		
								CL		Hard to very stiff, gray (10 YR 5/1) CLAY as at 8.5-14.4' bgs. Clay Till.	CLAY	
	12	22-24	6 11 14 22	25	2.0	0.0	-	ML		Very dense, gray (10 YR 5/1) SILT, no odor, damp to moist. Till.	SILT	Borehole tremie grouted.
25 25	13	24-26	13 31 50/ 0.6'	NA	1.5	0.0	-			at 25.9': Gray (10 YR 5/1) Silty fine to medium subangular to subrounded SAND lens/seam, few clay, no odor, saturated, moderately dense.		
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected at 0-2' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.
8/20/01	25.9'	

Project: 644.10.022
Data File:ACSP-B2E
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 09/15/01

Date Start/Finish: 10/26/00-10/26/00
Drilling Company: RAU Drilling
Driller's Name: Rick Rau
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 3.25" ID
Rig Type: CME 45 B Truck Mounted Dill Rig
Sampling Method: 2' x 2" ID

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 18' bgs
Surface Elevation: 735.2'

Geologist: Raymond Wagner

Well/Boring ID: ACSP-B3
ACSP-TW3

Client: General Motors

Location: GM-Flint - Phase II ESA
AC Sparkplug Property

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N-Values	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	735	1	0-2	1.3	8 12 8 7	20	30.7			Dark brown medium SAND, little Slag and fine Sand, dry. [FILL]
		2	2-4	0.7	2 3 3 3	6	16.2			As above, with some Concrete fragments, dry, loose. [FILL]
5	730	3	4-6	0.3	5 50/0.	NA	45.6			WOOD, little fine to medium Sand, moist. [FILL]
		4	6-8	0.4	H H 1 3	4	3.1			Black SILT, Wood, little fine to medium Sand. [FILL]
		5	8-10	1.5	3 5 9 10	14	34.4			Light brown fine SAND, little Silt and medium Sand, trace Metal fragments, moist. [FILL]
10	725	7	10-12	1.7	5 8 8 6	16	48.6	X		As above, firm, moist.
		8	12-14	1.4	16 25 50 -	75	37.5			Light brown SILT, some fine Sand, compact, wet.
15	720	9	14-16	1.6	23 39 50/ 0.5	-	44.4			Light brown fine SAND, little Silt, wet.

Well/Boring Construction: Borehole backfilled with Bentonite chips to grade.

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Remarks: Sample ACSP-B3 (10-12) submitted for VOCs & Metals (Mich 10) analysis. Also collected MS/MSD for SVOCs & VOCs, & DUP-1 for Metals (Mich. 10). Temporary 2" diam. PVC well with 5', 10 slot screen was set in boring. ACSP-TW3 was collected for VOCs, SVOCs, Metals (Mich. 10) & PCBs. ACSP-TW-DUP-1 was collected for VOCs, SVOCs, & PCBs & MS/MSD for VOCs.

Client:
General Motors

Site Location:
GM-Flint - Phase II ESA
AC Sparkplug Property

Well/Boring ID: ACSP-B3

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	10	16-18	1.8	19 28 23 29	56	32.1			Brown SAND and SILT grading to gray SILT with little coarse Sand and fine Gravel with medium to coarse Sand embedded, compact, moist to wet.	Borehole backfilled with Bentonite chips to grade.
20 715										
25 710										
30 705										
35 700										

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Remarks: Sample ACSP-B3 (10-12) submitted for VOCs & Metals (Mich 10) analysis. Also collected MS/MSD for SVOCs & VOCs, & DUP-1 for Metals (Mich. 10). Temporary 2" diam. PVC well with 5', 10 slot screen was set in boring. ACSP-TW3 was collected for VOCs, SVOCs, Metals (Mich. 10) & PCBs. ACSP-TW-DUP-1 was collected for VOCs, SVOCs, & PCBs & MS/MSD for VOCs.

Date Start/Finish: 5/18/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4"
Rig Type: CME 55

Northing: 562751.91
Easting: 13306108.28
Casing Elevation: 735.06

Borehole Depth: 12' bgs
Surface Elevation: 735.29

Descriptions By: SM Duly

Boring ID: RFI-02-07

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0	735	1	0-2	NA 2 2 4	4	1.1	0.2	-	FL		CONCRETE.	FILL
									SP		Dark yellow brown (10 YR 4/4) fine to medium subrounded to subangular SAND, mostly medium-grained, little Silt, trace Clay, aplastic, no odor, wet, moderately loose.	SAND
		2	2-4	1	NA	NA	NA	-	FL		CONCRETE.	FILL
5	730	3	4-6	4 6 8 12	14	1.7	1.8	-	CL		Gray (10YR 5/1) CLAY, with extensive brown (10YR 5/3) mottling/oxidation along fractures and fracture selvages, some Silt, little fine to medium subrounded to subangular Sand, few to trace fine to coarse rounded Gravel, no odor, dry, hard (pp=>4.5 tons/sq. feet). Clay Till.	CLAY
		4	6-8	3 7 9 9	16	2.0	1.0	-			2" wide zone bleached to light gray (10 YR 7/1).	
		5	8-10	2 11 12 15	23	1.7	0.9	-			Decreased mottling. Increased mottling.	
10	725	6	10-12	17 17 17 55	34	1.8	4.5	-	SP		Yellow brown (10 YR 5/6) fine to coarse subrounded to subangular SAND, some Silt, little to few Clay, no odor, wet, moderately loose to moderately dense.	SAND
									CL		Homogeneous dark gray (10 YR 4/1) CLAY, some Silt, little fine to medium subangular to subrounded Sand, few fine to coarse rounded Gravel, no odor, dry, hard (pp=>4.5 tons/sq. feet). Clay Till.	CLAY
15	720											

Boring Construction

- Cement pad with 9" diam. flush-mount cover
- Grout 0.9-4' bgs
- Bentonite seal 4-5' bgs
- 2" ID Sch. 40 PVC riser 0.2-6.8' bgs
- #5 Global filter sand pack 5-12' bgs
- 2" ID Sch. 40 PVC 0.010"slottedscreen 6.8-11.8' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.9-2', 4-6', and 6-8' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.022
Data File:RFI-02-07.dat
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 9/14/01

Date Start/Finish: 5/21/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4" ID
Rig Type: CME 55

Northing: 563017.65
Easting: 13306187.7
Casing Elevation: 735.82

Borehole Depth: 18' bgs
Surface Elevation: 735.99

Descriptions By: SM Duly

Boring ID: RFI-02-08

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0	735	1	0-2	NA 6 15 21	21	0.7	2.9	-	FL	CONCRETE.	FILL
									ML	Gray (10 YR 6/1) SILT, some fine to coarse subangular Sand, trace Clay, few fine to coarse subangular Gravel and wooden debris, aplastic, no odor, dry, loose. Fill.	
		2	2-4	14 12 12 14	24	1.0	1.2	-	SP	Yellow-brown (10 YR 5/8) fine to medium SAND, some Silt, few Clay, aplastic, no odor, moist, moderately dense.	SAND
5	730	3	4-6	4 9 13 13	22	1.8	1.6	-	CL	Dark gray (10 YR 4/1) CLAY, some Silt, little fine to medium subrounded Sand, few to trace fine to coarse subrounded to rounded Gravel, no odor, dry, hard (pp=4.5 tons/sq. feet). Locally mottled along fractures and selvages to yellow-brown (10 YR 5/6).	CLAY
		4	6-8	5 9 8 8	17	2.0	3.5	-	ML	Gray (10 YR 6/1) SILT, some Clay, little fine subangular Sand, aplastic, no odor, wet, moderately dense.	SILT
		5	8-10	5 7 7 8	14	1.5	4.3	-			
10	725	6	10-12	4 4 5 6	9	1.8	1.1	-	SP	Gray-brown (10 YR 5/2) fine to coarse subangular SAND, little Silt, few to trace Clay, aplastic, no odor, wet, moderately loose.	SAND
										Fine subangular SAND, some Silt, trace Clay, aplastic, no odor, wet, loose.	
		7	12-14	7 12 15 17	27	2.0	1.0	-			
									ML	Same as 9.8-10.5' bgs, moist to damp.	SILT
15	720	8	14-16	31 50/ 5"	NA	1.2	1.6	-			
									CL	Gray (10 YR 4/1) CLAY, some Silt, little fine to medium	

Boring Construction

- Cement pad with 9" diam. flush-mount cover
- Bentonite seal 1-2' bgs
- 2" ID Sch. 40 PVC riser 0.2-3.8' bgs
- #5 Global filter sand pack 2-18' bgs
- 2" ID Sch. 40 PVC 0.010"slottedscreen 3.8-13.8' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.7-2' and 4-6' bgs.
pp=pocket penetrometer

Water Level Data

Date	Depth	Elev.
5/21/01	6.0' bgs	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-02-08.dat Date: 9/14/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-02-08

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	25 34 37 47	71	NA	1.4	-	CL		subangular to subrounded Sand. Gray (10 YR 4/1) CLAY, some Silt, little fine to medium subangular to subrounded Sand, few fine to coarse subrounded to rounded Gravel, no odor, dry, hard. Clay Till.	CLAY	#5 Global filter sand pack 2-18' bgs
20 / 715												
25 / 710												
30 / 705												
35 / 700												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.7-2' and 4-6' bgs.
pp=pocket penetrometer

Water Level Data

Date	Depth	Elev.
5/21/01	6.0' bgs	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-02-08.dat Date: 9/14/01

Date Start/Finish: 9/6/01-9/7/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: Truck-Mounted Geoprobe
Sampler Size: 2'x2" ID
Auger Size: 3 1/4" ID
Rig Type: Direct Push

Northing: 562080.10
Easting: 13305714.33
Casing Elevation: NA

Borehole Depth: 3.7' bgs
Surface Elevation: 738.71

Descriptions By: SM Duly

Boring ID: RFI-02-09

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								CONCRETE.		
	1	1.7-3.7	2.0	0.0	-	CL		Yellow brown (10YR 5/4) Silty lean CLAY, little fine to coarse subangular Sand, trace fine subrounded Gravel, no odor, damp, moderately stiff. Clay Till.	CLAY	Borehole backfilled to grade with Bentonite.
						SP		Black 10YR 2/1 angular medium- to coarse-grained poorly graded SAND, some to little Silt, few Clay, no odor, loose, dry. .		
						CL		Silty lean CLAY, as above at 1.7-2.5' bgs.	CLAY	
5 5										
10 10										
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Sample collected 1.7-3.7' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-02-09.dat
Date: 11/19/01

Date Start/Finish: 9/7/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** Truck-Mounted Geoprobe **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" ID **Rig Type:** Direct Push	**Northing:** 562055.96 **Easting:** 13305733.91 **Casing Elevation:** NA **Borehole Depth:** 3.3' bgs **Surface Elevation:** 738.79 **Descriptions By:** SM Duly	**Boring ID:** RFI-02-10 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0						FL		CONCRETE.	FILL	
	1	1.3-3.3	2.0	0.0	-	SM		Black (10YR 2/1) Silty SAND, fine subangular Sand, few Clay, earthy odor, damp, moderately dense. Fill.	SILTY SAND	Borehole backfilled to grade with Bentonite.
5 5										
10 10										
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Sample collected 1.3-3.3' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-02-10.dat
Date: 11/19/01

Date Start/Finish: **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" ID **Rig Type:** CME 55	**Northing:** 559227.43 **Easting:** 13305409.17 **Casing Elevation:** 725.95 **Borehole Depth:** 19' bgs **Surface Elevation:** 725.92 **Descriptions By:** SM Duly	**Boring ID:** RFI-09-04R **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0													
	725	1	0-2	- 39 25 15	64	1.4	14.7	+	ML		Light brown-gray SILT, some fine to medium Sand, little fine to coarse Gravel, trace organic matter, damp, dense [Fill/Topsoil].	SILT	Cement pad with 9" diam. flush-mount cover.
		2	2-4	12 15 10 8	25	1.5	5.9	-			Black SILT, some fine to coarse SAND, little fine to medium Gravel and Clay, dry, dense.		2" ID Sch. 40 PVC riser 0-14' bgs.
5		3	4-6	2 4 5 6	9	1.8	10.2	-			Gray-brown SILT, little fine to medium Sand, trace Clay, saturated, dense.		
	720	4	6-8	3 4 7 7	11	1.9	4.3	-					
		5	8-10	3 4 4 11	8	2.0	1.0	-					Grout 1-11' bgs.
10		6	10-12	4 12 13 15	25	1.5	1.5	-	SP		Yellow-brown fine to coarse SAND, little Silt and fine to medium Gravel, saturated, loose.	SAND	
	715	7	12-14	19 17 17 12	34	1.3	3.4	-					Bentoniteseal11-13' bgs.
15													#5 Global filter sandpack 13-19' bgs.
	710												2" ID Sch. 40 PVC 0.010"slottedscreen 14-19' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Stratigraphic Descriptions are from RFI-09-04.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 9/7/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** Truck-Mounted Geoprobe **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" ID **Rig Type:** Direct Push	**Northing:** 562031.95 **Easting:** 13305705.47 **Casing Elevation:** NA **Borehole Depth:** 3.7' bgs **Surface Elevation:** 738.88 **Descriptions By:** SM Duly	**Boring ID:** RFI-02-11 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0						FL		CONCRETE.	FILL	Borehole backfilled to grade with Bentonite.
	1	1.7-3.7	1.5	0.0	-	SM		Very dark gray-brown (10YR 3/2) Silty SAND, fine to coarse subangular Sand, little Clay, few fine to coarse subrounded Gravel, no odor, damp, moderately dense.	← SAND →	
5 5										
10 10										
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Sample collected 1.7-3.7' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-02-11.dat Date: 11/19/01

Date Start/Finish: 8/1/01 - 8/2/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 45C skidrig	**Northing:** 565423.87 **Easting:** 13305850.44 **Casing Elevation:** 748.38 **Borehole Depth:** 21' bgs **Surface Elevation:** 748.65 **Descriptions By:** SM Duly	**Boring ID:** RFI-03-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	750												
0			NA	NA	NA	NA	NA	NA			Reinforced concrete.	FILL	Cement pad with 9" diam. flush-mount cover
		1	2-4	1 1 1 1	2	1.0	4638	-	SM		Very dark gray-brown (10 YR 5/2) Silty fine to medium subangular to subrounded SAND, trace Clay, aplastic, dry, no odor, loose.		Grout 1-2' bgs
	745										Yellow-brown (10 YR 5/6) SILT, some to little fine subangular to subrounded Sand, few Clay, aplastic, no odor, damp, moderately loose to loose. Increased clay content to some with depth.	SILT	Bentonite seal 2-7' bgs
5		2	4-6	2 3 3 4	6	1.2	>10000	-			Dark brown (10 YR 3/3) fine to medium subrounded Sandy SILT, trace fine to medium rounded Gravel, little to some Clay, aplastic, no odor, damp, moderately loose. Metallic ash patches up to 1" diameter.	SANDY SILT	2" ID Sch. 40 PVC riser 0.2-9' bgs
		3	6-8	2 4 4 6	8	1.5	>10000	-	ML		Brown (10 YR 5/3) with very dark brown (10 YR 2/2) mottling alternated with damp to moist areas. Increasing moisture with depth. Local patches of clay to a soft Silty Clay (CL).		
	740	4	8-10	2 3 2 2	5	1.8	>10000	+			Moderate odor and oily sheen in and on core present, moist.		#5 Global filter sand pack 7-19.2' bgs
10									SM		Very dark gray-brown (10 YR 3/2) Silty fine to medium subrounded SAND, aplastic, moderate odor, moist to wet, oily, loose.		
		5	10-12	2 2 3 4	5	1.5	3866	+	ML		Sandy SILT as at 5-9.6' bgs, moderate odor.		
									SM		Silty SAND as at 9.6-9.9' bgs, weak odor.		
									CL		Black (10 YR 2/1) Silty CLAY, fine subrounded Sand, trace splintered wood, soft, weak odor, damp.		2" ID Sch. 40 PVC 0.010" slotted screen 9-19' bgs
	735	6	12-14	2 4 5 7	9	1.5	>10000	+	SM		Silty SAND as at 9.6-9.9' bgs, moderate odor, oily, wet to moist.	SILTY SAND	
15		7	14-16	4 5 7 10	12	1.5	>10000	+	SP		Gray (10 YR 6/1) fine to medium SAND, some to little Silt, saturated, weak odor, moderately dense to very dense with depth, fining downwards. Glacial-alluvial.	SAND	

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
+ = Positive Test Result
Samples collected 2-4', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
8/1/01	12.1	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well.ldf
Data File:RFI-03-01.dat Date: 9/18/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-03-01

Borehole Depth: 21' bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
		8	16-18	NA	NA	NA	NA	NA	SP		Gray (10 YR 6/1) fine to medium SAND, some to little Silt, saturated, weak odor, moderately dense to very dense with depth, fining downwards. Glacial-alluvial.	SAND	2" ID Sch. 40 PVC 0.010" slotted screen 9-19' bgs
	730	9	18-19	NA	NA	0.0	NA	NA			No recovery. CLAY from 17-18' bgs per drillers.		#5 Global filter sand pack 7-19.2' bgs
20		10	19-21	4 4 4 4	8	2.0	>10000	+					Natural collapse 19.2-21' bgs
									CL		Gray (10 YR 6/1) Silty CLAY, trace fine subangular to subrounded Sand, plastic, no odor, damp, very stiff to stiff. Clay Till.		
	725												
25													
	720												
30													
	715												
35													

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
+ = Positive Test Result
Samples collected 2-4', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
8/1/01	12.1	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well.ldf
Data File:RFI-03-01.dat Date: 9/18/01

Date Start/Finish: 06-25-01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 2 1/4" ID
Rig Type: CME 55

Northing: 565083.74
Easting: 13306166.78
Casing Elevation: 792.35

Borehole Depth: 17' bgs
Surface Elevation: 742.62

Descriptions By: SM Duly

Boring ID: RFI-03-02

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
	745											
0									GP		Coarse gray angular to pebble sized fossilferous limestone GRAVEL, loose, dry.	GRAVEL
	740	1	1-3	9 16 16 9	32	1.5	793	-	SM		Dark yellow brown (10 YR 4/1) Silty SAND and fine subangular SAND, no odor, moderately dense to dense, damp to dry, becomes yellow brown (10 YR 5/6), moist at 5'. Fill.	SILTY SAND
		2	3-5	8 7 6 5	13	2	1163	-				
5		3	5-7	1 1 1 2	2	1.6	339	-			Saturated.	
	735	4	7-9	4 5 8 20	13	2	86.8	-	SP		Fine to medium subangular to subrounded SAND, trace coarse rounded Sand.	SAND
10		5	9-11	5 5 5 5	10	2	129	+				
	730	6	11-13	3 4 3 2	7	1.8	76.9	-				
		7	13-15	2 2 3 3	5	1.8	132	-				
15		8	15-17	2 2	5	0.8	82.7	-	CL		Gray (10 YR 4/1) CLAY, becoming stiff with depth, some Silt, little fine to medium subangular to subrounded Sand, trace fine to medium subrounded to rounded Gravel, no odor, damp, becoming dry with depth. Till.	CLAY

Boring Construction

- Cement pad with 9" diam. flush-mount cover
- Grout 1-2' bgs
- Bentonite seal 2-3' bgs
- 2" ID Sch. 40 PVC riser 0.2-5' bgs
- #5 Global filter sand pack 3-17' bgs
- 2" ID Sch. 40 PVC 0.010"slottedscreen 5-15' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3', 3-5' and 5-7' bgs.

Water Level Data

Date	Depth	Elev.
06/25/01	7.0	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: RFI-03-02.dat Date: 8/8/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-03-02

Borehole Depth: 17' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	15-17	3 3	5	0.8	82.7	-	CL		Gray (10 YR 4/1) CLAY, becoming stiff with depth, some Silt, little fine to medium subangular to subrounded Sand, trace fine to medium subrounded to rounded Gravel, no odor, damp, becoming dry with depth. Till.	CLAY	#5 Global filter sand pack 3-17' bgs

725
20
720
25
715
30
710
35

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3', 3-5' and 5-7' bgs.

Water Level Data

Date	Depth	Elev.
06/25/01	7.0	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: RFI-03-02.dat Date: 8/8/01

Date Start/Finish: 06/22/01 **Drilling Company:** Rau Drilling **Driller's Name:** Rod Champeron **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 45B	**Northing:** 564987.08 **Easting:** 13306022.7 **Casing Elevation:** 742.01 **Borehole Depth:** 14' bgs **Surface Elevation:** 742.41 **Descriptions By:** SM Duly	**Boring ID:** RFI-03-03 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy	Boring Construction
745											
0			n/a					GP	Coarse angular fossiliferous GRAVEL and PEBBLES. Loose, dry, no odor. Fill/ Aggregate.	GRAVEL	Cement pad with 9" diam. flush-mount cover.
	1	0-2	n/a 7 12	7	0.8	290	-	ML	Dark gray brown (10 YR 4/2) aplastic SILT, little fine subangular Sand, trace Clay, no odor, damp, moderately dense. Becomes moist and black (10 YR 2/1) at 1.6' bgs.	SILT	Grout 0.5-1' bgs.
740	2	2-4	10 11 9 7	20	1.4	256	-	GP	Gray brown (10 YR 5/2) medium subangular to subrounded GRAVEL, some fine to coarse subangular to subrounded Sand, trace fine to medium black dense slag, no odor, saturated, loose, aplastic. Fill.		Bentonite seal 1-1.5' bgs. 2" ID Sch. 40 PVC riser 0.2-2.5' bgs.
5	3	4-6	5 4 3 6	7	0.2	NA	-	ML	Light yellow brown (10 YR 6/4) aplastic SILT with black (10 YR 6/4) mottling, some to little fine subangular Sand, no odor, moist to wet, dense. At 5' bgs, some gray (10 YR 2/1) Clay and becomes dense and saturated.	SILT	
735	4	6-8	2 3 2 3	5	1.0	461	-		Gray-black (10 YR 2/1) aplastic SILT (PEAT), some Clay, earthy odor, old roots and organic debris, moist, dense.		#5 Global filter sandpack 1.5-14' bgs.
	5	8-10	3 5 8 7	13	1.7	316	-	SP	Dark gray (10 YR 4/1) to gray (10 YR 45/1) fine to coarse aplastic subangular to subrounded SAND, little Silt, little to few fine subrounded Gravel, trace shells, no odor, saturated, loose to moderately dense. At 10' bgs, fining downward, no gravel, some Silt. Alluvial/ Riverine sand.	SAND	
10	6	10-12	3 5 6 7	11	1.8	81.8	-				2" ID Sch. 40 PVC 0.010"slottedscreen 2.5-12.5' bgs.
730	7	12-14	3 7 11 17	18	1.7	60.1	-	CL	Gray (10 YR 5/1) CLAY, some Silt, little fine to medium subangular Sand, trace to few fine to medium subrounded to rounded Gravel, no odor, damp, very stiff to stiff. Dry at 13' bgs, stiffness increasing with depth. Clay Till.	CLAY	
15											

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0-2' bgs.

Water Level Data

Date	Depth	Elev.
06/22/01	3.2'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: RFI-03-03.dat Date: 8/8/01

Date Start/Finish: 7/23/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** 565487.54 **Easting:** 13306291.14 **Casing Elevation:** 746.67 **Borehole Depth:** 16' bgs **Surface Elevation:** 746.85 **Descriptions By:** SM Duly	**Boring ID:** RFI-03-04 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0													
	745	1	0-2	27 32 51/ 4"	83	1.1	>10,000	-	FILL		Asphalt.		Cement pad with 9" diam. flush-mount cover
											Very dark gray-brown (10 YR 3/2) SILT, some fine to coarse subrounded to subangular Sand, few Clay, aplastic, dense to very dense, no odor, dry. Wood, metallic debris, slag, and broken glass. Fill.	SILT	
		2	2-4	4 5 6 5	11	0.2	>10,000	+					Grout 1-2' bgs
											Damp.		Bentonite seal 2-4' bgs
5		3	4-6	4 6 6 4	12	0.3	8118	+	ML				2" ID Sch. 40 PVC riser 0.2-5' bgs
	740										Wood debris, reddish-orange Silt, moderate odor.		
		4	6-8	4 4 4 4	8	0.7	>10,000	+			Moist.		
											Saturated, loose, lightweight silvery metallic angular silt to medium gravel-sized fragments. What appears to be ball bearings were identified.		
		5	8-10	2 5 4 5	9	1.1	1496	-			Gray-brown (10 YR 5/2) Silty SAND, fine to medium subangular to subrounded Sand, trace Clay, aplastic, moderately loose to loose, no odor, saturated.	SILTY SAND	
10													
		6	10-12	6 6 9 12	15	1.5	4736	NA	SM				#5 Global filter sand pack 4-16' bgs
	735												
		7	12-14	4 6 6 6	12	1.8	>10,000	NA					2" ID Sch. 40 PVC 0.010"slottedscreen 5-15' bgs
											Gray-brown (10 YR 5/2) SILT, little to some Clay, aplastic, dense, no odor, moist to wet.	SILT	
15		8	14-16	4 5 5 6	10	0.5	0.0	NA	ML		Moist, some Clay.		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.5-2.5' and 4.5-6.5' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: RFI-03-04.dat Date: 8/10/01

Date Start/Finish: 11/29/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** 565537.6 **Easting:** 13306311.75 **Casing Elevation:** NA **Borehole Depth:** 2.5' bgs **Surface Elevation:** 747.45 **Descriptions By:** SM Duly	**Boring ID:** RFI-03-05 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
750												
0										Asphalt.		
	1	0.5-2.5	17 26 34 44	60	1.3	NA	NA	ML		Black (10YR 2/1) SILT, some fine to coarse angular Sand, few to little Clay, no odor, very dense, aplastic, damp. Ash and Slag-Fill.	← SILT →	Borehole backfilled with bentonite 0-2.5' bgs.
745												
5												
740												
10												
735												
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0.5-2.5' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 11/29/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** 565432.32 **Easting:** 13306270.11 **Casing Elevation:** NA **Borehole Depth:** 2.5' bgs **Surface Elevation:** 746.28 **Descriptions By:** SM Duly	**Boring ID:** RFI-03-06 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0												
745										Asphalt.		
	1	0.5-2.5	14 16 16 19	32	1.7	NA	NA	ML		Black (10YR 2/1) SILT, some fine to coarse angular Sand, little Clay, no odor, dense, aplastic, dry. Dark brown (10YR) 1" at upper contact. Slag and Ash - Fill.	SILT	Borehole backfilled with bentonite 0-2.5' bgs
5												
740												
10												
735												
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0.5-2.5' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 11/29/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4" ID HSA
Rig Type: CME 55

Northing: 565472.3
Easting: 13306342.32
Casing Elevation: NA

Borehole Depth: 3.0' bgs
Surface Elevation: 746.19

Descriptions By: SM Duly

Boring ID: RFI-03-07

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 745	1	1-3	19 50 30 25	80	1.6	NA	NA	ML		Concrete. Black (10YR 2/1) SILT, some fine to coarse angular Sand, few Clay, no odor, very dense, aplastic, damp. Ash and Slag-Fill.	SILT	Borehole backfilled with bentonite 0-2.5' bgs

5 / 740

10 / 735

15

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 1-3' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.039 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: RFI-03-07.dat Date: 1/16/02

Date Start/Finish: 11/29/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4" ID
Rig Type: CME 55

Northing: 565429.27
Easting: 13306238.73
Casing Elevation: NA

Borehole Depth: 2.5' bgs
Surface Elevation: 747.86

Descriptions By: SM Duly

Boring ID: RFI-03-08

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
750 / 0										Asphalt.		
	1	0.5-2.5	18 60/ 4"	NA	1.3	16.8	NA	ML		Black (10YR 2/1) SILT, some fine to coarse angular Sand, few Clay, few fine to coarse angular Gravel--all composed of Slag and Ash, weak odor, very dense, aplastic, dry. Ash and Slag Fill.	SILT	Borehole backfilled with bentonite 0-2.5' bgs
745 / 5												
740 / 10												
735 / 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0.5-2.5' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.039 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: RFI-03-08.dat
Date: 1/16/02

Date Start/Finish: 6/04/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** 560302.52 **Easting:** 13305169.03 **Casing Elevation:** 731.03 **Borehole Depth:** 17' bgs **Surface Elevation:** 738.48 **Descriptions By:** SM Duly/SC Kerr	**Boring ID:** RFI-04-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0	730	1	0-2	8 9 11 13	20	1.4	1.3	-		CONCRETE	FILL
									ML	Brown (10 YR 4/3) SILT with black and very dark brown (10 YR 2/2) mottling, some fine to medium subangular Sand, trace Clay, moderately dense to moderately loose, dry, no odor.	SILT
		2	2-4	5 8 12 16	20	1.6	1.2	-		Yellowish brown (10 YR 5/6).	
5		3	4-6	6 8 11 13	19	2	3.6	-		Few Clay.	
	725	4	6-8	5 7 10 12	17	1.4	2.5	-			
		5	8-10	6 7 6 5	13	1.4	3.6	-		More dense, moist.	
10	720	6	10-12	4 4 4 4	8	1.7	2.2	-			
		7	12-14	8 15 20 22	35	2	2.3	-	SP	Yellow brown (10 YR 5/6) fine to medium subangular SAND, some Silt, wet, moderately dense, no odor.	SAND
									CL	Dark gray (10 YR 4/1) CLAY, some Silt, few fine to medium subangular Gravel, trace medium Sand, dry, no odor, hard. Clay Till.	CLAY
15		8	14-16	9 22 25 27	47	1.3	0.7	-			

Boring Construction

Borehole backfilled with bentonite to grade after well milled and abandoned.

Temporary well set at 16' bgs with a 5' screen 11-16' bgs

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Soil samples collected from 1-3' and 9-11' bgs.

Water Level Data

Date	Depth	Elev.
6/04/01	12'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\augerwell2.ldf
Data File: RFI-04-01 Date: 6/29/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-04-01

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-17	NA NA	NA	NA	NA	NA	CL			CLAY	Sand backfill
20 / 710												
25 / 705												
30 / 700												
35												

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Soil samples collected from 1-3' and 9-11' bgs.

Water Level Data

Date	Depth	Elev.
6/04/01	12'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\augerwell2.ldf
Data File: RFI-04-01 Date: 6/29/01

Date Start/Finish: 06-04-01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 560346.41 **Easting:** 13305245.43 **Casing Elevation:** 730.37 **Borehole Depth:** 18' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly/SC Kerr	**Boring ID:** RFI-04-02 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	730			N/A							Concrete	FILL	
		1	0.7-2.7	N/A N/A 7 9	7	0.9	2.1	-	ML		Dark yellowish brown (10 YR 4/6) SILT and black mottling, some fine subangular Sand, loose, no odor, aplastic, dry.		
		2	2.7-4.7	8 11 10 7	21	2.8	2.8	-			Building debris. Dark gray (10 YR 4/1) CLAY, little Silt, few Sand and Gravel, dry, no odor, hard.		
5	725	3	4.7-6.7	7 4 5 4	9	1.7	1.7	-			SILT as 0.7'-3.9' bgs with Clay lenses as described above up to 1" wide.	SILT and CLAY	Borehole backfilled with bentonite chips to grade.
		4	6.7-8.7	4 7 8 9	15	1.3	1.3	-	CL		CLAY as above, but Silty. Silt lenses as above up to 1" wide. Moist at 9.7' bgs.		
10	720	5	8.7-10.7	2 3 3 6	6	1.6	1.6	-					Temporary well screen set at 6' - 16' bgs.
		6	10.7-12.7	5 5 6 5	11	1.3	1.6	-	ML-CL		SILT with Clay lenses as above, saturated, mild odor at 12.4' bgs.		
		7	12.7-14.7	3 4 5 6	9	1.9	4.2	-			Gray (10 YR 5/1) CLAY, some Silt, little fine to medium subangular Sand, trace fine to medium subangular Gravel, no odor, damp, soft. At 12.8' bgs becoming moderately stiff to stiff.		
15	715	9	14.7-16.7	4 6 7	13	2	2.1	-			Clayey SILT lenses as 6.7-10.7' bgs, moist at 14.9' bgs.		
									SW		Gray (10 YR 5/1) fine to coarse subangular SAND, little		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Soil samples collected from 0.7-2.7' and 8.7-10.7' bgs.

Water Level Data

Date	Depth	Elev.
06/04/01	10.7	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-04-02

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	14.7-16.7	10	13	2	2.1	-	CL		subrounded Gravel, some to little Silt, loose, saturated, no odor. Glacial-Alluvial.	CLAY	Sand backfill from 16' to 18' bgs.
			8							Gray CLAY as 12.8-14' bgs, hard.		
	10	16.7-18	18 21	39	1.2	0.4	-					
20 / 710												
25 / 705												
30 / 700												
35 / 695												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Soil samples collected from 0.7-2.7' and 8.7-10.7' bgs.

Water Level Data

Date	Depth	Elev.
06/04/01	10.7	

Date Start/Finish: 06/01/01-06/04/01 **Drilling Company:** Rau Drilling **Driller's Name:** Ron Camperon **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" ID **Rig Type:** CME 55	**Northing:** 560324.69 **Easting:** 13305288.42 **Casing Elevation:** 730.19 **Borehole Depth:** 19' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly/SC Kerr	**Boring ID:** RFI-04-03 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0	730						FL	CONCRETE.	FILL
		1	0-2	0.8	2.9	-	CL	Dark Gray brown (10YR 4/2) CLAY. Some Silt with local increases to a Clay with silt. Little fine to medium subrounded to subangular Gravel. No odor, damp, hard.	CLAY
		2	2-4	1.1	2.6	-	ML	Very dark brown (10YR 2/2) aplastic SILT, some decreasing to little Clay after 2' bgs, little fine to medium Sand (predominantly fine subangular sand). No odor, damp, moderately dense.	SILT
5	725		4-6	n/a	n/a	n/a	FL	CONCRETE.	FILL
		3	6-8	1.7	n/a	n/a	CL	Dark yellowish brown (10YR 4/6) SILTY CLAY, little fine subangular Sand, no odor, hard, damp.	SILTY CLAY
		4	8-10	1.4	1.2	-		Silty CLAY as above but dark gray (10YR 4/1) with few fine to medium subrounded Gravel. Saturated at 12.1' bgs. Below 12.1 bgs, 1" wide Silt seams throughout. At 14.2' incerease of fine to coarse Sand content and increase in coarseness of Gravel.	
10	720	5	10-12	1.3	1.4	-			
		6	12-14	1.7	1.0	-		Saturated at 12.1' bgs. Below 12.1 bgs, 1" wide Silt seams throughout.	
15	715	7	14-16	2	1.4	-		At 14.2' increased fine to coarse subangular Sand and increased coarseness of Gravel to fine to coarse, trace subrounded to subangular pebbles (Fining upward).	

Boring Construction

Temp well then backfilled with Bentonite to grade after sampling.

Screen from 17' to 7' bgs.

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Remarks: bgs=below ground surface; PID Background:2 ppm
NA = Not Applicable/Not Available
Refusal at 7.5' bgs. Moved 3'- probably on a footing.
Soil samples from 0.8-2.8', 7-9', and 9-11'.

Water Level Data

Date	Depth	Elev.
06-04-01	12.1'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-04-03

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	16-18	1.7	1.4	-	CL		As above but damp. As above but no Silt seams, hard, dry. Glacial Till.	LTY CLA	Screen from 17' to 7' bgs.
	9	18-19	n/a	1.1	-					
20 710										
25 705										
30 700										
35 695										

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Remarks: bgs=below ground surface; PID Background:2 ppm
NA = Not Applicable/Not Available
Refusal at 7.5' bgs. Moved 3'- probably on a footing.
Soil samples from 0.8-2.8', 7-9', and 9-11'.

Water Level Data

Date	Depth	Elev.
06-04-01	12.1'	

Date Start/Finish: 06/01/01 **Drilling Company:** Rau Drillling **Driller's Name:** Rod Camperon **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" ID **Rig Type:** CME 55	**Northing:** 561788.64 **Easting:** 13305745.70 **Casing Elevation:** 738.17 **Borehole Depth:** 17' bgs **Surface Elevation:** 738.44 **Descriptions By:** S.M. Duly	**Boring ID:** RFI-04-04 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0	0	1	0-2	8 11 n/a n/a	11	0.5	2.8		FL		Concrete	FILL
									ML		Black (10 YR 2/1) aplastic SILT, few fine subangular Sand, few Clay. No odor, damp to dry, moderately loose. Fill.	SILT
		2	2-4	7 6 6 7	12	1.5	3.2		FL		Concrete	FILL
5	5	3	4-6	12 6 8 6	14	1.9	2.1		ML		Yellow-brown 10 YR 5/4 aplastic SILT, little fine to medium Sand (predominantly fine subangular fine Sand), trace Clay. No odor, dry to damp, dense. Fill. At 5.0 ' bgs, local mottled brown (10YR 4/3) and increase in density observed. At 7.0' bgs, increase in moisture content: damp to moist. Saturated at 8.2' bgs.	SILT
		4	6-8	7 7 8 9	15	1.8	3.8					
		5	8-10	4 6 8 10	14	2	2.7					
10	10	6	10-12	n/a	n/a	1.5	3.1		CL		Gray 10 YR 5/1 CLAY, localized mottling with oxidation to yellow-brown 10 YR 5/4, some Silt, little fine to medium subrounded to subangular Sand, trace Gravel. No odor, damp to dry, hard (pp>=4.5 tons/sq. ft).	CLAY
		7	12-14	2 5 3 5	8	1.5	3.3		SP		Yellow-brown 10 YR 5/6 fine to medium subangular aplastic SAND (predominantly fine sand), some to little Silt. No odor, moist, moderately dense. Fill.	SAND
15	15	8	14-16	2 2 4 4	6	1.5	1.1		CL		Oxidized yellow-brown 10 YR 5/6 hard CLAY as above (9.4'-12.1' bgs) with local increases in Silt lenses up to 1" wide throughout to 15.3' bgs. Below 15.3' bgs the Clay is homogeneous and gray 10 YR 5/1 (native glacial till).	CLAY

Boring Construction

Temp well then backfilled with Bentonite to grade after sampling.

Screen from 15' to 5' bgs.

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
PID Background = 0.6 ppm
Soil samples from 1.3-2.1', 3.1-5.1', and 5.1-7.1'.

Water Level Data

Date	Depth	Elev.
6/1/01	8'	
6/1/01	14'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-04-04

Borehole Depth: 17' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-17	n/a	n/a	n/a	n/a		CL				

20 20

25 25

30 30

35 35

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
PID Background = 0.6 ppm
Soil samples from 1.3-2.1', 3.1-5.1', and 5.1-7.1'.

Water Level Data

Date	Depth	Elev.
6/1/01	8'	
6/1/01	14'	

Date Start/Finish: 06/26/01
Drilling Company: Rau Drilling
Driller's Name: Rod Champeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4"
Rig Type: CME 55

Northing: 566149.89
Easting: 13305626.59
Casing Elevation: 750.38

Borehole Depth: 17' bgs
Surface Elevation: 750.67

Descriptions By: SM Dully

Boring ID: RFI-05-01

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0	750											
		1	0-2	3 1 2 2	3	1.3	>9999		FL		Concrete.	FILL
											Yellow brown (10YR 5/6) aplastic fine subangular Silty SAND, no to trace Clay, moderately loose to moderately dense, damp, no odor. Fill.	SILTY SAND
		2	2-4	2 1 1 2	2	2.0	7909		SM			
5	745	3	4-6	2 2 1 2	3	1.5	>9999		ML		Dark yellow brown (10 YR 4/6) aplastic SILT, little to some fine to coarse subrounded to subangular Sand (increased roundness with grain size), little to some Clay, moist, moderate dense, no odor. Till.	SILT
		4	6-8	1 1 1 1	2	1.7	1508		SM		Yellow brown (10YR 5/6) aplastic fine subangular Silty SAND, moist, saturated at 9.5' bgs.	SILTY SAND
		5	8-10	1 1/12' 1 NA	1/12	1.7	223					
10	740	6	10-12	NA NA NA NA	NA	2.0	108		ML		Dark yellow brown (10 YR 4/6) aplastic SILT, saturated, local patches of black slightly oily material upto 1" in diameter throughout at 11' bgs, no odor, increased fine to medium rounded gravel, decreased clay to none.	SILT
		7	12-14	NA NA NA NA	NA	1.0	261					
15	735	8	14-16	NA 1 1 2	2		8.8					

Boring Construction

- Cement pad with 9" diam flush-mount cover.
- Cement/bentonite grout 1-3' bgs.
- Bentonite seal 3-5' bgs.
- 2" ID Sch. 40 PVC riser 0.2-7' bgs.
- #5 Global filter sandpack 5-17' bgs.
- 2" ID Sch. 40 PVC 0.010"slottedscreen 7-17' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
+ = Positive Test Result
Samples collected 1-3' and 7-9' bgs.

Water Level Data

Date	Depth	Elev.
06/26/01	9.5	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-05-01.dat Date: 07/12/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-05-01

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-17						ML		Dark yellow brown (10 YR 4/6) aplastic SILT, saturated, local patches of black slightly oily material upto 1" in diameter throughout at 11' bgs, no odor, increased fine to medium rounded gravel, decreased clay to none.	SILT	2" ID Sch. 40 PVC 0.010"slottedscreen 7-17' bgs. #5 Global filter sandpack 5-17' bgs.
20 / 730												
25 / 725												
30 / 720												
35 / 715												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
+ = Positive Test Result
Samples collected 1-3' and 7-9' bgs.

Water Level Data

Date	Depth	Elev.
06/26/01	9.5	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-05-01.dat Date: 07/12/01

Date Start/Finish: 1/23/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Bit Size:
Auger Size:
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" diam. + disposable liner
Hammer Weight:

Northing: 566274.16
Easting: 13305499.50
Casing Elevation: NA

Borehole Depth: 18' bgs
Surface Elevation: 754.10

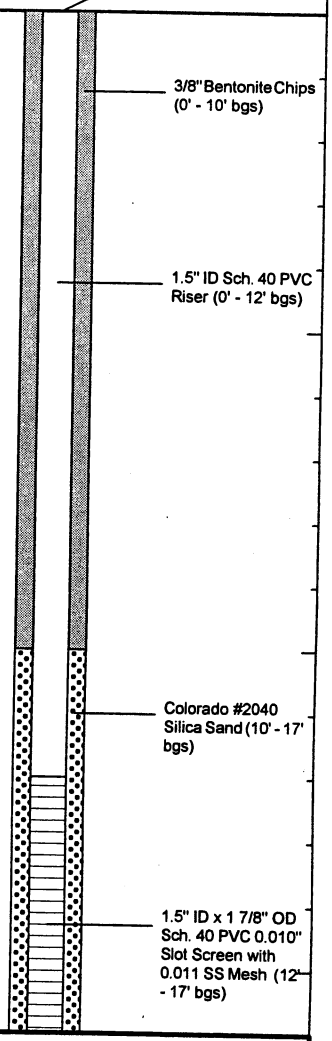
Geologist: Shawn Kerr

Well/Boring ID: RFI-05-02

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0 0	1	0-0.8	-		NA			CONCRETE.
	2	0.8-2	1.2		NA	*		Brown fine to medium SAND.
	3	2-4	1.8		NA			
5 5	4	4-6	2.0		NA			Brown fine to medium SAND with Clay.
	5	6-8	0.4		NA			Brown CLAY with brown fine to medium Sand.
	6	8-10	1.9		NA	*		Brown fine to medium SAND with Clay.
10 10	7	10-12	1.3		NA	*		Brown fine to medium SAND.
	8	12-14	1.5		NA			Brown CLAY with brown fine to medium Sand.
15 15	9	14-16	1.5		NA			Brown fine to medium SAND.
								As above, moist to wet.
								As above, wet to saturated.



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Remarks: Samples collected 0-2', 8-10' and 10-12' bgs.

Client:
General Motors

Site Location:
GM-Flint - Focused RFI
Factory 36, Building 36

Well/Boring ID: RFI-05-02

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	10	16-18	1.4		NA			As above, wet to saturated.	Colorado #2040 Silica Sand (10' - 17' bgs); 1.5" ID x 1 7/8" OD Sch. 40 PVC 0.010" Slot Screen with 0.011 SS Mesh. (12' - 17' bgs)

20 20

25 25

30 30

35 35

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Remarks: Samples collected 0-2', 8-10' and 10-12' bgs.

Date Start/Finish: 06/26/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4"
Rig Type: CME 55

Northing: 566807.51
Easting: 13305620.35
Casing Elevation: NA

Borehole Depth: 20' bgs
Surface Elevation: 752.43

Descriptions By: SM Dully

Boring ID: RFI-05-03

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
755 / 0												
	1	0-2	N/A 7 6 7	13	1.2	4995		FL		Concrete.	FILL	Cement pad with 9" diam. flush-mount cover.
								ML		Dark yellow brown (10YR 4/6) aplastic SILT, little to some Clay, little to some fine to medium subrounded Sand, little to few fine to medium rounded to subrounded Gravel, damp, dense, no odor. Fill.	SILT	
750	2	2-4	5 3 4 6	7	1.8	4185						Cement/bentonite grout seal 1-4' bgs.
								CL		Dark yellow brown (10YR 4/6) slight to moderately stiff Silty CLAY, little fine to medium subangular to subrounded Sand, trace fine to medium rounded to subrounded Gravel, damp to moist, soft to moderate stiff, no odor. Fill.	CLAY	
5	3	4-6	3 4 4 6	8	1.8	1745						Bentonite seal 4-6' bgs.
	4	6-8	3 5 5 7	10	1.3	1912		SM		Yellow brown (10YR 6/4) aplastic Silty SAND, fine subangular SAND, damp, moderately loose, no odor, more dense with depth, more moist with depth, saturated at 10.7' bgs, more silt with depth to SILT with Sand at 12' bgs and back to Silty SAND from 12.6' bgs. Fill.	SILTY SAND	2" ID Sch. 40 PVC riser 0.2-8' bgs.
745	5	8-10	3 7 8 8	15	1.6	1945						
10	6	10-12	2 4 4 6	8	1.6	270						#5 Global filter sandpack 6-20' bgs.
740	7	12-14	4 4 3 4	7	1.7	58.4						2" ID Sch. 40 PVC 0.010"slottedscreen 8-18' bgs.
15	8	14-16	2 3 5 7	12	1.8	61.3				SAA, but brown (10YR 5/3), alluvial or river deposits.		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
+ = Positive Test Result
Samples collected 0.6-2.6' and 8.6-10.6' bgs.

Water Level Data

Date	Depth	Elev.
06/26/01	10.7	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: j:\rockware\logplot2001\logfiles\64410\RFI-05-03.dat Date: 07/12/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-05-03

Borehole Depth: 20' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	9	16-18	2 2 3 5	5	1.6	31.7		SM		SAA, but brown (10YR 5/3), alluvial or river deposits.	SILTY SAND	2" ID Sch. 40 PVC 0.010"slottedscreen 8-18' bgs.
20	10	18-20	2 4 7 9	11	1.6	266						#5 Global filter sandpack 6-20' bgs.
730												
25												
725												
30												
720												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
+ = Positive Test Result
Samples collected 0.6-2.6' and 8.6-10.6' bgs.

Water Level Data

Date	Depth	Elev.
06/26/01	10.7	

Date Start/Finish: 1/24/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Bit Size:
Auger Size:
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" diam. + disposable liner
Hammer Weight:

Northing: 566788.71
Easting: 13305470.92
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 754.32

Geologist: Shawn Kerr

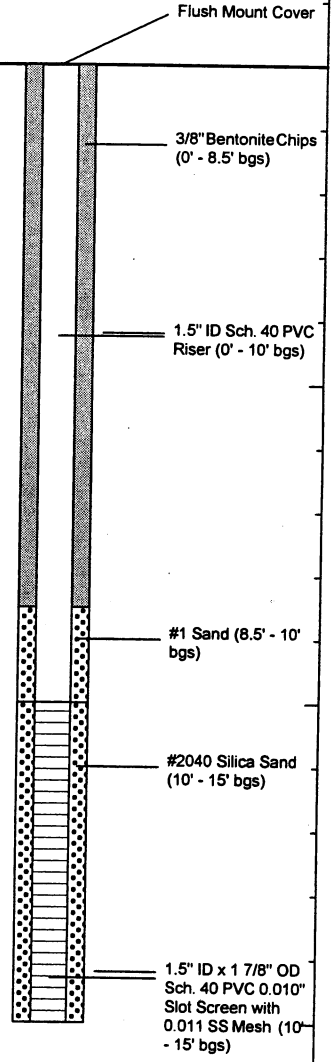
Well/Boring ID: RFI-05-04

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	0	1	0-0.7	-	-	NA			CONCRETE.
		2	0.7-2	1.6	-	NA			Brown fine to medium SAND. Dark brown fine to medium SAND with Clay.
		3	2-4	2.0	-	NA			Brown fine to medium SAND. Dark brown fine to medium SAND with Clay and Gravel. Dark brown fine to medium SAND.
5	5	4	4-6	1.7	-	NA			Dark brown fine to medium SAND with Clay. Brown fine SAND. Brownish-gray CLAY, trace brown Sand.
		5	6-8	1.7	-	NA			Brown fine SAND with Clay.
		6	8-10	1.6	-	NA			Dark gray CLAY with brown fine Sand. Brown CLAY with brown fine Sand.
10	10	7	10-12	1.7	-	NA			Brown fine SAND with trace Clay and rounded Gravel. Dark brown CLAY with brown fine Sand. Brown fine SAND, moist to wet. Brown fine SAND, saturated.
		8	12-14	1.3	-	NA			
15	15	9	14-16	1.8	-	NA			

Well/Boring Construction



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Remarks: Samples collected 0-2' and 8-10' bgs.

Date Start/Finish: 1/23/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Bit Size:
Auger Size:
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" diam. + disposable liner
Hammer Weight:

Northing: 566595.93
Easting: 13305461.49
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 754.34

Geologist: Shawn Kerr

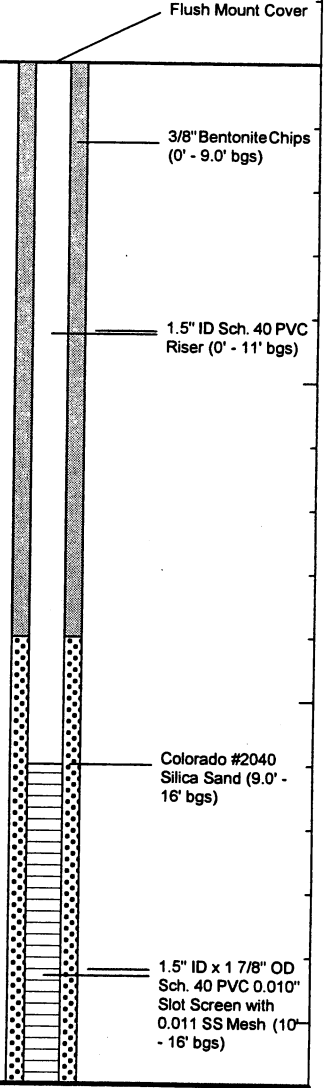
Well/Boring ID: RFI-05-05

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	0	1	0-0.7	-		NA			CONCRETE.
		2	0.7-2	1.0		NA			Brown fine to medium SAND, rounded Gravel, Silt, and Clay.
		3	2-4	2.0		NA			Brown fine to medium SAND with Gravel and Clay. Brown fine to medium SAND.
5	5	4	4-6	1.8		NA			Brown fine SAND, trace Clay.
		5	6-8	1.5		NA			Brown fine SAND.
		6	8-10	1.5		NA			
10	10	7	10-12	2.0		NA			As above, moist.
		8	12-14	1.0		NA			Brown fine SAND, saturated.
15	15	9	14-16	1.5		NA			

Well/Boring Construction



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Remarks: Samples collected 0-2', 8-10' and 10-12' bgs.

Date Start/Finish: 7/25/01-7/26/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID SS **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 566372.86 **Easting:** 13305594.28 **Casing Elevation:** NA **Borehole Depth:** 22' bgs **Surface Elevation:** 752.13 **Descriptions By:** SM Duly	**Boring ID:** RFI-05-06 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
755												
0	1	0-2	7, 7, 6, 5	13	1.3	0.0		ML		Brown (10YR 4/3) SILT, little to some fine subangular to subrounded Sand, few Clay, moderately loose, no odor, dry. Roots and Vegetation present. Topsoil.	SILT	Cement pad with 9" diam. flush-mount cover.
750	2	2-4	4, 3, 4, 5	7	1.0	0.0		SP		Yellow-brown (10YR 5/6) fine to medium subangular to subrounded poorly graded SAND, some to little Silt, no odor, moderately loose, aplastic, dry. Fill.	SAND	Cement/Bentonite Grout (1' - 2' bgs)
5	3	4-6	2, 3, 3, 4	6	1.7	0.0						Bentonite Seal (2' - 8' bgs)
745	4	6-8	2, 3, 2, 3	5	1.2	0.0				Gray-brown (10YR 5/2) SILT, some Clay, little fine to medium subangular to subrounded Sand, few fine to medium rounded Gravel, no odor, damp. Glacial Till.	SILT	2" ID Sch. 40 PVC Riser (0 - 10' bgs)
	5	8-10	2, 3, 3, 4	6	2.0	0.0				1-1/2" wide band of black Silt possibly indicating a previous Topsoil horizon.		
10	6	10-12	2, 4, 3, 4	7	1.0	0.0		ML		Yellow-brown (10YR 5/4) SILT, some fine subangular to subrounded Sand, trace Clay, moist, moderately loose, aplastic, no odor. Wood debris at upper contact.	SILT	#5 Global Filter Sand Pack (8' - 22' bgs)
740	7	12-14	4, 6, 8, 10	14	1.6	0.0						2" ID Sch. 40 PVC 0.010" Slotted Screen (10' - 20' bgs)
15	8	14-16	4, 6, 9, 11	15	1.5	0.0						

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
PID background : 0.0 ppm
Samples collected 0-2' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.
7/25/01	11.8	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-05-06

Borehole Depth: 22' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	9	16-18	4 7 3 10	16	1.8	0.0		ML		Yellow-brown (10YR 5/4) SILT, some fine subangular to subrounded Sand, trace Clay, moist, moderately loose, aplastic, no odor. Wood debris at upper contact.	SILT	2" ID Sch. 40 PVC 0.010" Slotted Screen (10' - 20' bgs)
	10	18-20	3 3 6 7	9	1.5	0.0						#5 Global Filter Sand Pack (8' - 22' bgs)
20	11	20-22	3 4 5 8	9	1.5	0.0		CH		Gray (10YR 5/1) fat CLAY, some Silt, soft, highly plastic, moist, no odor.	CLAY	PVC Bottom Cap
730												
25												
725												
30												
720												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
PID background : 0.0 ppm
Samples collected 0-2' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.
7/25/01	11.8	

Date Start/Finish: 1/24/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Bit Size:
Auger Size:
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" diam. + disposable liner
Hammer Weight:

Northing: 566936.95
Easting: 13305313.34
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 754.38

Geologist: Shawn Kerr

Well/Boring ID: RFI-05-07

Client: General Motors
Location: GM-Flint - Focused RFI
Flint, Michigan
Factory 36, Building 36

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0 0	1	0-0.9	-	NA	NA			CONCRETE.
	2	0.9-2	1.1	NA	NA	*		Brown fine to medium SAND.
								Brownish-gray CLAY.
	3	2-4	1.3	NA	NA			Brown fine to medium SAND, trace Clay.
								Black SAND with rounded and angular Rock.
								CONCRETE Chunks.
								Grayish-brown CLAY with brown fine Sand.
5 5	4	4-6	1.7	NA	NA			Crushed CONCRETE.
								Dark gray CLAY with brown fine Sand.
	5	6-8	1.2	NA	NA			Gray fine GRAVEL, trace brown fine Sand.
								Brown fine SAND, trace Clay and small Gravel.
								Pinkish-white Rock.
	6	8-10	1.4	NA	NA	*		Grayish-brown CLAY with brown fine to medium Sand and small to medium Gravel.
								Brown fine SAND.
10 10								As above, moist.
	7	10-12	1.7	NA	NA	*		Brown medium SAND and large pink Granite Rock.
								Brown fine to medium SAND, moist.
								Brown fine to medium SAND, moist to wet.
	8	12-14	1.3	NA	NA			Brown fine to medium SAND, saturated.
15 15	9	14-16	1.4	NA	NA			

Well/Boring Construction

- Flush Mount Cover
- 3/8" Bentonite Chips (0' - 9.5' bgs)
- 1.5" ID Sch. 40 PVC Riser (0' - 11' bgs)
- #1 Sand (9.5' - 11' bgs)
- #2040 Silica Sand (11' - 16' bgs)
- 1.5" ID x 1 7/8" OD Sch. 40 PVC 0.010" Slot Screen with 0.011 SS Mesh (11' - 16' bgs)

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Remarks: bgs - below ground surface

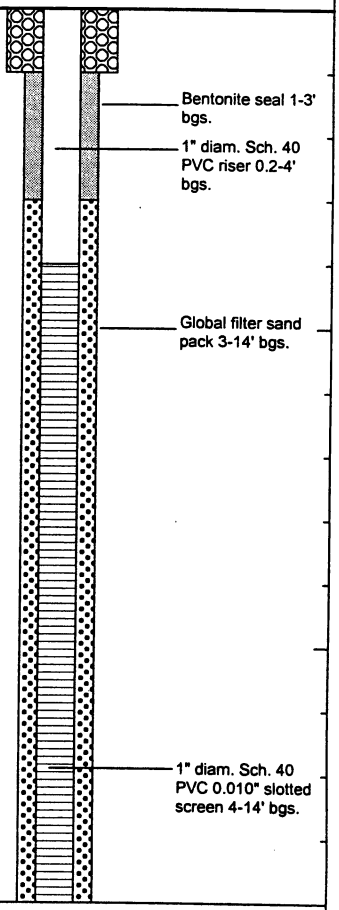
Samples collected 0-2', 8-10' and 10-12' bgs.
NA = Not Available/Not Applicable

Project: 869.34.011 Template: j:\rockware\logplot2001\logfiles\86934\011\SB_Well2.ldf
Data File:RFI-05-07.dat Date: 2/7/01

Date Start/Finish: 06/27/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2"x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 566961.76 **Easting:** 13304944.03 **Casing Elevation:** NA **Borehole Depth:** 14' bgs **Surface Elevation:** 755.77 **Descriptions By:** SM Duly	**Boring ID:** RFI-05-08 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0	755	1	0-2	- 4 5 11	9	0.8	1177		SP	Asphalt.	FILL
										Dark yellow brown (10YR 4/6) subangular to subrounded fine SAND, trace subangular to subrounded medium to coarse Sand, Silt, damp, loose.	SAND
		2	2-4	10 10 12 9	22	1.6	809		SM	Very dark gray (10YR 3/1) subangular to subrounded Silty fine SAND, few subangular to subrounded medium to coarse Sand, trace subrounded fine Gravel, coal/slag, damp/moist, moderately dense.	SILTY SAND
5	750	3	4-6	3 8 8 7	16	1.7	4052			Yellow brown (10YR 5/6) subangular to subrounded fine SAND, trace medium to coarse subangular to subrounded Sand and fine to medium subangular to subrounded Gravel, moist, moderately dense, saturated at 5' bgs.	
		4	6-8	3 4 4 7	8	1.7	2214		CL	Yellow brown (10 YR 5/6) CLAY (Till), trace fine to coarse subrounded Sand and fine to medium subrounded Gravel, local oxidation (increased with depth), moist, moderately stiff, silt seams up to 1" wide throughout 8'-10' bgs, from 10.7' bgs becomes gray (10YR 5/1) CLAY and no more silt seams.	CLAY
		5	8-10	2 4 7 10	11	1.9	8028				
10	745	6	10-12	3 5 6 8	11	1.8	4540				
		7	12-14	2 1 3 4	4	1.8	4976		SP	Yellow brown (10YR 5/6) aplastic subangular fine SAND, some Silt, trace Clay, no odor, moist, dense (alluvial or river deposits), saturated at 12' bgs.	SAND
15	740										

Boring Construction



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Piezometer installed, screened 4'-14' bgs.
Samples collected 0.7-2.7' and 2.7-4.7' bgs.

Water Level Data

Date	Depth	Elev.
6/27/01	5.0' bgs	

Date Start/Finish: 06/27/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 565732.06 **Easting:** 13304975.79 **Casing Elevation:** 751.65 **Borehole Depth:** 18' bgs **Surface Elevation:** 752.03 **Descriptions By:** SM Dully	**Boring ID:** RFI-05-09 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 750	1	0-2	- 6 10 11	16	1.5	1756	+	ML		Asphalt. Very dark gray brown (10YR 3/2) to black (10YR 2/1) aplastic SILT, little Clay, fine to coarse subangular to subrounded Sand, fine to medium subrounded Gravel, and asphalt fragments, no odor, damp, moderately dense to moderately loose (topsoil and asphalt debris).	SILT	Concrete pad 0'-1' bgs
	2	2-4	4 9 9 6	18	1.7	1056	+			Black (10YR 2/1) aplastic SILT, little fine subangular Sand, red mottling at 3.5'-4' bgs, slag from 3' to 3.5' bgs, no odor, dry, dense, became moist at 5.5' bgs. Fill.		Grout 1'-2' bgs
5	3	4-6	3 9 6 4	15	0.9	1452	+					Bentonite 2'-4' bgs
745	4	6-8	2 2 13 9	15	1.1	572	+	CL		Concrete RUBBLES. Gray brown (10YR 5/2) soft CLAY, some Silt, little fine to medium subrounded to subangular Sand, trace to few fine to medium subangular to subrounded Gravel, no odor, damp, soft to moderate stiff (extremely oxidized glacial till).	CLAY	Sand pack 4'-16' bgs
	5	8-10	5 5 7 9	12	1.6	1363	+			Yellow brown (10YR 5/4) aplastic Silty SAND, few to trace Clay, no odor, moist, dense, concrete rubble at 8' bgs, saturated at 9.7' bgs, decreased sand to Sandy SILT, from 10.6' bgs downward increased sand to Silty SAND, from 13.5' bgs downward increased coarseness, fine to medium subangular SAND, otherwise Silty SAND as above.	SILTY SAND	
10 / 740	6	10-12	2 3 4 4	7	1.3	1160	-					Screen 6'-16' bgs
	7	12-14	3 3 3 4	6	1.6	805	-	SM				
15	8	14-16	2 3 3 5	6	2.0	981	-					

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Remarks: bgs = below ground surface; +=Positive Test Result
NA = Not Applicable/Not Available
Samples collected 0.2-2.2' and 6.2-8.2' bgs.
Piezometer installed 6-16' bgs.

Water Level Data

Date	Depth	Elev.
6/27/01	9.7	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-05-09

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	9	16-18	2 2 5 8	7	1.5	601	+			Yellow brown (10YR 5/4) aplastic Silty SAND, few to trace Clay, no odor, moist, dense, concrete rubble at 8' bgs, saturated at 9.7' bgs, decreased sand to Sandy SILT, from 10.6' bgs downward increased sand to Silty SAND, from 13.5' bgs downward increased coarseness, fine to medium subangular SAND, otherwise Silty SAND as above.	SILTY SAND	
20												
730												
25												
725												
30												
720												
35												

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Remarks: bgs = below ground surface; +=Positive Test Result
NA = Not Applicable/Not Available
Samples collected 0.2-2.2' and 6.2-8.2' bgs.
Piezometer installed 6-16' bgs.

Water Level Data

Date	Depth	Elev.
6/27/01	9.7	

Date Start/Finish: 8/2/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID HSA **Rig Type:** CME 55	**Northing:** 565732.06 **Easting:** 13304975.79 **Casing Elevation:** 751.65 **Borehole Depth:** 34' bgs **Surface Elevation:** 752.03 **Descriptions By:** SM Duly	**Boring ID:** RFI-05-09Geotech **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0										Asphalt.		
		NA	NA	NA	NA	NA	NA	ML		Very dark gray brown (10YR 3/2) to black (10YR 2/1) SILT, little Clay, fine to coarse subangular to subrounded Sand, fine to medium subrounded Gravel, and asphalt fragments, aplastic, no odor, damp, moderately dense to moderately loose (topsoil and asphalt debris). Black (10YR 2/1) aplastic SILT, little fine subangular Sand, red mottling at 3.5-4' bgs, slag from 3-3.5' bgs, no odor, dry, dense. Fill.	SILT	
5 5	1	5-7	7 11 5 4	16	1.0	NA	NA			Very dark gray-brown (10YR 3/2) Silty fine to coarse subangular to subrounded SAND, few Clay, no odor, damp, dense. Fill. Light brown (10YR 6/4) Silty fine to medium subrounded to subangular SAND, few Clay, some coarse grained Gravel- to Pebble-sized angular pieces of Cement, no odor, dense, damp. Fill.	SILTY SAND	Borehole backfilled with Bentonite to grade.
		NA	NA	NA	NA	NA	NA					
10 10	2	9-11	3 4 6 5	10	1.2	NA	NA	SM		Silty SAND as above from 6-9' bgs, saturated. Sandstone and other coarse grained Gravel to Pebble-sized rocks at lower contact.	SILTY SAND	
	3	11-13	3 5 7 7	12	1.5	NA	NA					
15 15		NA	NA	NA	NA	NA	NA					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected for Geotechnical analyses from 9-11', 11-13', 27-29' and 31-33' bgs.

Water Level Data

Date	Depth	Elev.
8/2/01	9.0'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-05-09Geotech

Borehole Depth: 34' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
		NA	NA	NA	NA	NA	NA	SM		Silty SAND as above from 6-9' bgs, saturated. Sandstone and other coarse grained Gravel to Pebble-sized rocks at lower contact.	SILTY SAND	
20 20	4	19-21	2 3 3 4	6	1.8	NA	NA					Borehole backfilled with Bentonite to grade.
	5	21-23	3 4 6 6	10	1.8	NA	NA			Gray (10YR 5/1) Silty CLAY, little fine to medium subangular to subrounded Sand, few fine to medium rounded Gravel, no odor, increasing stiffness with depth, moist to damp, increasingly dry with depth, no odor. Local lenses of Silt up to 2" wide throughout. Clay Till.	SILTY CLAY	
		NA	NA	NA	NA	NA	NA					
25 25	6	25-27	4 5 9 15	14	2.0	NA	NA			Gray (10YR 5/1) fine to coarse subangular Sand lense, some Silt, little Clay, aplastic, no odor, wet to moist, moderately dense.		
	7	27-29	10 15 37 50/ 5"	52	1.5	NA	NA	CL		at 27': Stiff, dry to damp. Very stiff to hard.		
30 30		NA	NA	NA	NA	NA	NA			Hard.		
	8	31-33	16 29 33 52	62	1.8	NA	NA					
		33-34	60/ 4"	NA	NA	NA	NA			Drillers having a great deal of difficulty turning augers.		
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected for Geotechnical analyses from 9-11', 11-13', 27-29' and 31-33' bgs.

Water Level Data

Date	Depth	Elev.
8/2/01	9.0'	

Date Start/Finish: 1/23/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Bit Size:
Auger Size:
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" diam. + disposable liner
Hammer Weight:

Northing: 566430.44
Easting: 13305462.50
Casing Elevation: NA

Borehole Depth: 17' bgs
Surface Elevation: 754.21

Geologist: Shawn Kerr

Well/Boring ID: RFI-05-10

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	0	1	0-0.7	-	NA	NA			CONCRETE.
		2	0.7-2	1.5	NA	NA	*		Brown fine SAND.
		3	2-4	1.9	NA	NA			Dark brown fine SAND, odor.
									Brown fine SAND.
5	5	4	4-6	2.0	NA	NA			Brown CLAY with fine Sand.
		5	6-8	1.6	NA	NA			Brown fine SAND with Clay.
									Brown CLAY with fine brown Sand.
									Brown fine SAND, trace Clay, slight odor.
		6	8-10	1.8	NA	NA	*		Brown CLAY, trace fine Sand.
									Brown fine SAND.
10	10	7	10-12	1.7	NA	NA	*		Brownish-gray CLAY with trace brown Sand.
									Brown fine SAND.
									Gray-brown fine SAND, moist.
		8	12-14	1.4	NA	NA			Gray-brown fine SAND, saturated.
15	15	9	14-16	1.4	NA	NA			

Well/Boring Construction

- Flush Mount Cover
- 3/8" Bentonite Chips (0' - 10' bgs)
- 1.5" ID Sch. 40 PVC Riser (0' - 12' bgs)
- Colorado #2040 Silica Sand (10' - 17' bgs)
- 1.5" ID x 1 7/8" OD Sch. 40 PVC 0.010" Slot Screen with 0.011 SS Mesh (12' - 17' bgs)

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Remarks: Samples collected 0-2', 8-10' and 10-12' bgs.
Duplicate sample collected from 10'-12' interval.

Client:
General Motors

Site Location:
GM-Flint - Focused RFI
Factory 36, Building 36

Well/Boring ID: RFI-05-10

Borehole Depth: 17' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
									Colorado #2040 Silica Sand (10' - 17' bgs)
				NA	NA				1.5" ID x 1 7/8" OD Sch. 40 PVC 0.010" Slot Screen with 0.011 SS Mesh (12' - 17' bgs)
20 20									
25 25									
30 30									
35 35									

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Remarks: Samples collected 0-2', 8-10' and 10-12' bgs.
Duplicate sample collected from 10'-12' interval.

Date Start/Finish: 1/23/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Bit Size:
Auger Size:
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" diam. + disposable liner
Hammer Weight:

Northing: 566348.39
Easting: 13305496.80
Casing Elevation: NA

Borehole Depth: 17.5' bgs
Surface Elevation: 754.42

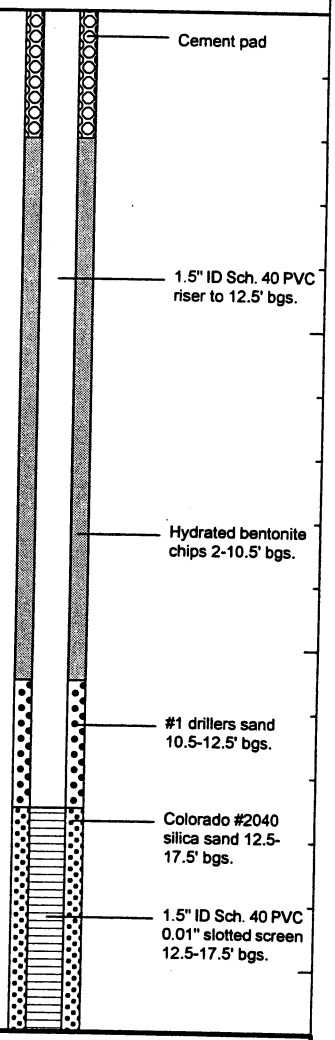
Geologist: Shawn Kerr

Well/Boring ID: RFI-05-11

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0 0	1	0-0.7	-		NA			CONCRETE.
								Dark brown fine to medium SAND.
	2	0.7-2	1.3	-	NA	*		Brown fine to medium SAND.
	3	2-4	1.2	-	NA			Brown fine SAND with Clay.
5 5	4	4-6	1.0	-	NA			Brown fine SAND, trace Clay.
	5	6-8	0.3	-	NA			Gray-brown Silty SAND with 1" angular Rock.
	6	8-10	1.6	-	NA	*		Brown fine SAND.
10 10	7	10-12	1.8	+	NA	*		Dark gray fine SAND, moist.
								Brown fine SAND.
	8	12-14	1.8	+	NA			Dark gray fine SAND.
								Brownish-gray fine SAND, moist to wet, strong odor, visible product.
15 15	9	14-16	1.6	+	NA			Brown fine SAND, saturated, no odor.



Well/Boring Construction

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Remarks: Samples collected 0-2', 8-10' and 10-12' bgs.

+ = Positive Test Result

Client:
General Motors

Site Location:
GM-Flint - Focused RFI
Factory 36, Building 36

Well/Boring ID: RFI-05-11

Borehole Depth: 17.5' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	10	16-17.5	1.5	-	NA			Brown fine SAND, saturated, slight odor.	1.5" ID Sch. 40 PVC 0.01" slotted screen 12.5-17.5' bgs. Colorado #2040 silica sand 12.5-17.5' bgs.
20 20									
25 25									
30 30									
35 35									

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Remarks: Samples collected 0-2', 8-10' and 10-12' bgs.

+ = Positive Test Result

Date Start/Finish: 1/24/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Bit Size:
Auger Size:
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" diam. + disposable liner
Hammer Weight:

Northing: 566218.36
Easting: 13305286.77
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 754.03

Geologist: Shawn Kerr

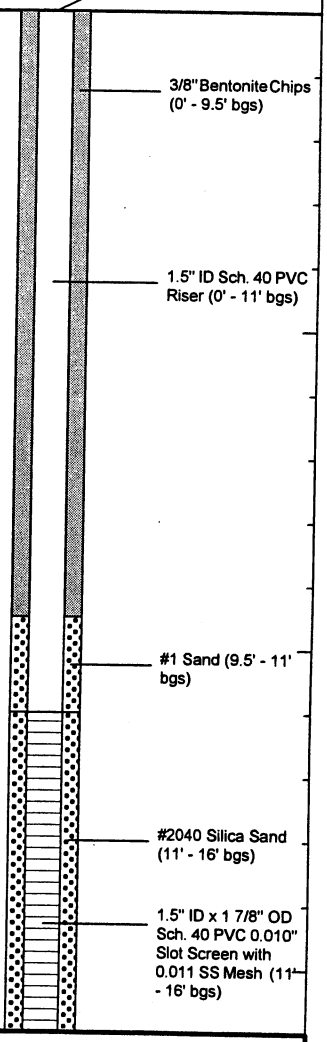
Well/Boring ID: RFI-05-12

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0 0	1	0-0.7	-	-	NA			CONCRETE.
								Dark brown fine to medium SAND with gray Clay, moist, oily.
	2	0.7-2	1.1	-	NA	*		Brown fine to medium SAND.
								Light brown fine SAND.
	3	2-4	1.9	-	NA			Brown fine SAND, with Clay.
								Brown CLAY with fine Sand, trace Gravel.
5 5	4	4-6	2.0	-	NA			
								Brown fine SAND.
	5	6-8	2.0	-	NA			Brown fine SAND with Clay.
								Brown fine SAND, moist @ 10.7' bgs.
	6	8-10	1.3	-	NA	*		
10 10	7	10-12	1.7	-	NA	*		
								Brown/Gray fine SAND, saturated.
	8	12-14	1.5	-	NA			
15 15	9	14-16	1.5	-	NA			Dark gray fine SAND.
								Brown fine SAND, saturated.

Well/Boring Construction



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Remarks: Samples collected 0-2', 8-10' and 10-12' bgs.

Date Start/Finish: 1/22/01 **Drilling Company:** Mateco **Driller's Name:** Gary Swift **Drilling Method:** Direct Push **Bit Size:** **Auger Size:** **Rig Type:** Geoprobe 66 DT Track Rig **Sampling Method:** 2" diam. + disposable liner **Hammer Weight:**	**Northing:** 566012.39 **Easting:** 13305522.59 **Casing Elevation:** NA **Borehole Depth:** 16' bgs **Surface Elevation:** 754.16 **Geologist:** Shawn Kerr	**Well/Boring ID:** RFI-05-13 **Client:** General Motors **Location:** GM-Flint - Focused RFI

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	0	1	0-0.8	-	-	NA			CONCRETE.
		2	0.8-2	1.2	-	NA	*		Brown fine to medium SAND.
		3	2-4	1.8	-	NA			Brown Sandy CLAY, stiff. Brown fine to medium SAND.
5	5	4	4-6	1.5	-	NA			Brown fine to medium SAND, some rounded grade Backfill, trace Clay. Brown fine to medium SAND.
		5	6-8	0.3	-	NA			Gray angular GRAVEL with brown Sand.
		6	8-10	1.3	-	NA	*		CONCRETE. Gray angular GRAVEL with brown Sand. Brown fine SAND.
10	10	7	10-12	1.7	-	NA	*		As above, wet.
		8	12-14	1.3	+	NA			As above, saturated. As above, saturated, odor.
15	15	9	14-16	1.8	-	NA			Brown fine SAND, saturated. Brown fine to medium SAND, saturated.

Well/Boring Construction:
- Cement pad with 9" diam. flush-mount cover.
- Grout 1-7' bgs
- Bentonite seal 7-9' bgs.
- 1" ID Sch. 40 PVC riser 0.2-11' bgs.
- Global #5 sandpack 9-16' bgs.
- 1" ID Sch. 40 PVC 0.010"slottedscreen 11-16' bgs.

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Remarks: Soil samples collected 0-2' 8-10' and 10-12' bgs.

+ = Positive Test Result

Installed permanent 1.5" diam., 5-ft well 11-16' bgs.

Project: 869.34.011 Template: j:\rockware\logplot2001\logfiles\86934\011\SB_Well2.ldf

Data File:RFI-05-13.dat Date: 2/7/01

Date Start/Finish: 1/22/01
Drilling Company: Mateco
Driller's Name: Gary Swift, Dennis Powney
Drilling Method: Direct Push
Bit Size:
Auger Size:
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" diam. + disposable liner
Hammer Weight:

Northing: 565710.21
Easting: 13305445.39
Casing Elevation: NA

Borehole Depth: 17' bgs
Surface Elevation: 754.12

Geologist: Ron Kuhn

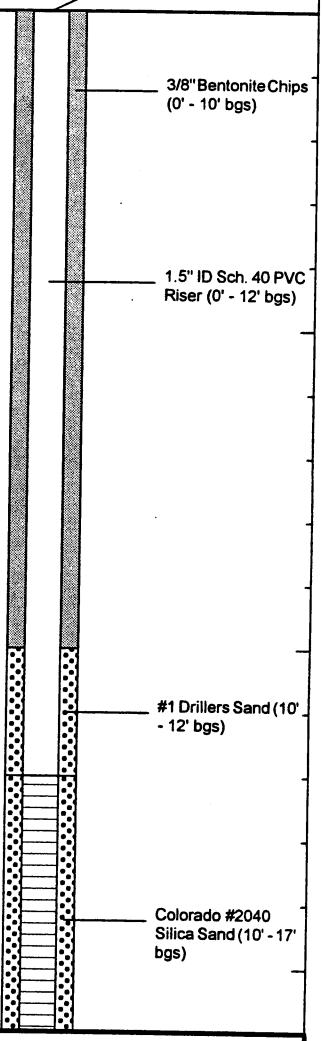
Well/Boring ID: RFI-05-14

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0 0	1	0-0.5	-		NA			CONCRETE.
	2	0.5-2	2.0	-	NA	X		Brown fine to medium SAND.
	3	2-4	1.5	-	NA			Dark brown-black SAND. Brown fine to medium SAND.
5 5	4	4-6	1.8	-	NA			Black medium SAND. Brown fine to medium SAND, trace Clay.
	5	6-8	1.9	-	NA			Brown fine to medium SAND. Dark brown SAND. Gray angular GRAVEL with Sand. Brown fine SAND.
	6	8-10	2.0	-	NA	X		
10 10	7	10-12	1.2	-	NA	X		Brown fine SAND, moist to wet. Very fine SAND, wet, odor.
	8	12-14	1.0	+	NA			As above, saturated.
15 15	9	14-16	1.9	+	NA			

Well/Boring Construction



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Remarks: Samples collected 0-2', 8-10' and 10-12' bgs.
+ = Positive Test Result

Client:
General Motors

Site Location:
GM-Flint - Focused RFI
Factory 36, Building 36

Well/Boring ID: RFI-05-14

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
									Colorado #2040 Silica Sand (10' - 17' bgs); 1.5" ID Sch. 40 PVC 0.010" Slot Screen (12' - 17' bgs)
20 20									
25 25									
30 30									
35 35									

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Remarks: Samples collected 0-2', 8-10' and 10-12' bgs.
+ = Positive Test Result

Date Start/Finish: 9/8/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Campeau **Drilling Method:** Direct Push **Sampler Size:** 2" ID Acetate Sleeve **Auger Size:** NA **Rig Type:** Mule-Mounted Geoprobe	**Northing:** 566437.69 **Easting:** 13305430.92 **Casing Elevation:** NA **Borehole Depth:** 12' bgs **Surface Elevation:** 754.51 **Descriptions By:** SM Duly	**Boring ID:** RFI-05-15 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	755										
0							FL		CONCRETE.	FILL	
		1	0-4	3.0	0.0	-	SM		Light yellow-brown 10YR 6/4 to yellow-brown 10YR 5/4 Silty SAND (SM), fine grained subangular Sand, trace Clay, aplastic, no odor, moderately dense to dense, dry, Fill.	SILTY SAND	
					0.0	-					
	750										
5		2	4-8	4.0	0.0	+	CL		Brown 10YR 5/3 Silty lean CLAY (CL), little fine to coarse subangular Sand, trace fine to medium subangular Gravel, moderately stiff, no odor, dry, heavily oxidized. Native Clay Till used as backfill.	SILTY CLAY	Borehole backfilled with Bentonite to grade.
					0.0	+			Occasional Silt lenses up to 3" thick throughout.		
					0.0	+	SM		Silty SAND (SM) as at 0.9' - 5.6' bgs, but damp.	SILTY SAND	
	745										
10		3	8-12	4.0					Saturated with oil, oily sheen, moderate odor.		
					0.0	+					
	740										
15											

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Remarks: bgs = below ground surface; +=Positive Test Result
NA = Not Applicable/Not Available
Saturated with oil at 9.7' bgs.
Samples collected 0.9-2.9' and 6.9-8.9' bgs.

Water Level Data

Date	Depth	Elev.
9/8/01	9.7'	

Date Start/Finish: 9/8/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Campeau **Drilling Method:** Direct Push **Sampler Size:** 2" ID Acetate Sleeve **Auger Size:** NA **Rig Type:** Mule-Mounted Geoprobe	**Northing:** 566056.82 **Easting:** 13305416.35 **Casing Elevation:** NA **Borehole Depth:** 16' bgs **Surface Elevation:** 754.45 **Descriptions By:** SM Duly	**Boring ID:** RFI-05-16 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	755										
0									CONCRETE.	FILL	
					0.0	-	SM		Light yellow-brown (10YR 6/4) Silty SAND, fine subangular Sand, trace Clay, no odor, moderately dense to dense, dry. Fill.		
		1	0-4	3.0					Yellow-brown (10YR 5/4) SILT, little fine subangular Sand and Clay, no odor, dense, dry. Fill.	SILT	
					0.0	+	ML		Black (10YR 2/1) SILT, few Clay, no odor, damp, aplastic, moderately dense. Fill.		
	750										
5					0.0	-			Yellow-brown (10YR 5/4) Silty SAND, as above from 2.1-3.6' bgs, aplastic.	SILTY SAND	
		2	4-8	3.0			SM				Borehole backfilled with Bentonite to grade.
					0.0	-					
	745				0.0	-			Gray-brown (10YR 5/2) Silty lean CLAY, little fine to medium subangular Sand, trace fine to medium subrounded Gravel, heavily mottled and oxidized, no odor, moderately stiff, damp. Clay Till.	SILTY CLAY	
10		3	8-12	4.0			CL				
					0.0	-					
					0.0	-			Gray (10YR 5/1) to yellow-brown (10YR 5/4) Silty SAND, little fine to medium subangular Sand, few Clay, no odor, varved, aplastic, moderately dense to moderately loose, damp becoming increasingly moist with depth. Saturated.	SILTY SAND	
	740	4	12-16	3.1			SM				
15					0.0	-					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
+ = Positive Test Result
Samples collected 0.8-2.8', 8.8-10.8' and 10.8-12.8' bgs.

Water Level Data

Date	Depth	Elev.
9/8/01	12.8'	

Date Start/Finish: 9/8/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Campeau **Drilling Method:** Direct Push **Sampler Size:** 2" ID Acetate Sleeve **Auger Size:** NA **Rig Type:** Mule-Mounted Geoprobe	**Northing:** 565981.14 **Easting:** 13305413.33 **Casing Elevation:** NA **Borehole Depth:** 16' bgs **Surface Elevation:** 754.34 **Descriptions By:** SM Duly	**Boring ID:** RFI-05-17 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
	755								
0							FL	CONCRETE.	FILL
		1	0-4	3.0	NA	-	SM	Yellow-brown (10YR 5/4) Silty lean CLAY, little fine to medium subangular to subrounded Sand, trace fine to coarse grained rounded Gravel, weakly plastic, moderately stiff, no odor, dry. Clay Till.	
						+	ML	Yellow-brown (10YR 5/4) SILT, little to few fine subangular Sand, few Clay, no odor, moderately dense to dense, dry, aplastic.	SILT
	750							Becomes black (10YR 2/1).	
5		2	4-8	4.0	NA	+		Becomes Oily, increased Clay content to little to some.	
							CL	4" of Terracotta debris mixed with gray (10YR 5/1) Silty lean CLAY as at 0.9' - 2.2' bgs.	
						-	SW	Yellow (10YR 7/6) fine to coarse subangular well graded SAND, some Silt, semi-lithified, aplastic, no odor, dense, dry.	SAND
							CL	Yellow-brown (10YR 5/4) Silty CLAY, as above from 0.9-2.2' bgs, damp. Fill.	SILTY CLAY
	745					-			
10		3	8-12	3.0	NA	-	SM	Yellow-brown (10YR 5/6) Silty SAND, fine to medium subangular Sand, few Clay, no odor, damp to moist, dense, aplastic. Fill.	SILTY SAND
						-		Saturated.	
	740	4	12-16	3.0	NA				
15						-			

Borehole backfilled with Bentonite to grade.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Background PID = 0.0 ppm
Samples collected 0.9-2.9', 8.9-10.9' and 10.9-12.9' bgs.

Water Level Data

Date	Depth	Elev.
9/8/01	13.5'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-05-17.dat Date: 11/19/01

Date Start/Finish: 8/8/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Campeau **Drilling Method:** Direct Push **Sampler Size:** 2" ID Acetate Sleeve **Auger Size:** NA **Rig Type:** Mule-Mounted Geoprobe	**Northing:** 565720.11 **Easting:** 13305335.02 **Casing Elevation:** NA **Borehole Depth:** 14' bgs **Surface Elevation:** 754.38 **Descriptions By:** SM Duly	**Boring ID:** RFI-05-18 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
	755									
0							FL		CONCRETE.	FILL
		1	0-4	3.0	0.0	+	SM		Pale brown (10YR 6/3) Silty SAND, fine subangular Sand, few Clay, aplastic, no odor, dense, dry. Varved with lenses up to 2" thick throughout of fine to medium angular yellow-brown (10YR 5/4) Sand (SP), no odor, dense, dry. Fill	SILTY SAND
					0.0	+	ML		Brown 10YR 4/3 SILT, little Clay, no odor, aplastic, dense.	SILT
	750						SP		Pale brown (10YR 6/3) SAND as above from 0.9-3.2' bgs, aplastic.	SAND
5		2	4-8	4.0	0.0	+	ML		Black (10YR 2/1) SILT, few Clay, aplastic, no odor, dense, dry, Fill.	SILT
							SM		Gray-brown (10YR 5/2) Silty SAND, little Clay, no odor, dry, very dense, aplastic.	
					0.0	+	CL		Very dark gray (10YR 3/1) Silty CLAY, little fine to medium subangular Sand, very stiff, moderate odor, oily sheen, weakly plastic.	SILTY CLAY
	745				0.0	+	SM		Very dark gray (10YR 3/1) Silty SAND, as above from 6.4-6.8' bgs but mixed with very fine to coarse sand-sized angular Slag. Fill	SILTY SAND
10		3	8-12	4.0	0.0	+			Yellow-brown (10YR 5/2) Silty SAND, as above from 6.4-6.8' bgs but moist to increasingly moist, aplastic.	
		4	12-14	2.0	0.0	+			Very dark gray-brown (10YR 5/2) Silty SAND, aplastic, oily, moderate odor. Varved throughout with alternating yellow-brown (10YR 5/4) and black (10YR 2/1) Silt lenses, moist.	
									Yellow-brown (10YR 5/4) Silty SAND as above at 12-13.5' bgs, saturated.	
	740									
15										

Boring Construction: Borehole backfilled with Bentonite to grade.

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Remarks: bgs = below ground surface; +=Positive Test Result;
NA = Not Applicable/Not Available
Background PID = 0.0 ppm
Samples collected 0.9-2.9', 6.9-8.9' and 8.9-10.9' bgs.

Water Level Data

Date	Depth	Elev.
8/8/01	12'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-05-18.dat Date: 11/16/01

Date Start/Finish: 06/26/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4"
Rig Type: CME 55

Northing: 565337.75
Easting: 13305443.96
Casing Elevation: NA

Borehole Depth: 17' bgs
Surface Elevation: 749.48

Descriptions By: SC Kerr

Boring ID: RFI-05-19S

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0	750											
		1	0-2	6 5 4 3	9	1.2	>9999	-	FL		Concrete.	FILL
									SP		Yellow brown (10YR 5/6) fine to coarse SAND, little Clay, moist, loose, no odor.	SAND
		2	2-4	3 4 5 5	9	1.8	355	-	CL		Yellow brown (10YR 5/4) Silty CLAY, stiff, (pp>4.5), dry, low plastic, trace fine to coarse subangular Sand, no odor.	CLAY
5	745	3	4-6	3 3 4 4	7	1.8	373	-	ML		Yellow brown (10YR 5/6) SILT, little fine Sand, damp, moderately dense, no odor.	SILT
		4	6-8	3 3 4 7	7	1.3	163	-	SP		Yellow brown (10YR 5/6) fine to medium SAND, little Silt above 7' bgs, no silt from 7' bgs, moist, loose, no odor, wet at 8.2' bgs, saturated at 9.8' bgs.	SAND
10	740	5	8-10	3 4 6 4	10	1.6	96.9	-				
		6	10-12	3 3 4 6	7	1.6	0	-				
		7	12-14	2 5 7 14	12	1.7	0	-				
15	735	8	14-16	NA	NA	1.8	0	-	SM		Yellow brown (10YR 5/6) Sandy SILT and fine to medium SAND, moist, moderately dense, no odor.	

Boring Construction

- Cement pad with 9" diam. flush-mount cover.
- Cement/bentonite grout 1-4' bgs.
- Bentonite chip seal 4-5' bgs.
- 2" ID PVC riser to 7' bgs.
- #5 Global filter pack sandpack 5-17' bgs.
- 2" ID PVC 0.010" slotted screen 7.0-17.0' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
PID background : 0.0 ppm
Samples collected 0.8-2.8' and 6.8-8.8' bgs.

Water Level Data

Date	Depth	Elev.
6/26/01	9.8	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-05-19S

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
								SM		Yellow brown (10YR 5/6) Sandy SILT and fine to medium SAND, moist, moderately dense, no odor.		2" ID PVC 0.010" slotted screen 7.0-17.0' bgs #5 Global filter pack sandpack 5-17' bgs.

730
20
725
25
720
30
715
35

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
PID background : 0.0 ppm
Samples collected 0.8-2.8' and 6.8-8.8' bgs.

Water Level Data

Date	Depth	Elev.
6/26/01	9.8	

Date Start/Finish: 7/23/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 4 1/4" **Rig Type:** CME 55	**Northing:** 565337.57 **Easting:** 13305442.85 **Casing Elevation:** NA **Borehole Depth:** 29' bgs **Surface Elevation:** 749.31 **Descriptions By:** SM Duly	**Boring ID:** RFI-05-19D **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
750 / 0								FILL	Concrete.	FILL
								SP	Yellow brown (10YR 5/6) fine to coarse SAND, little Clay, moist, loose, no odor.	SAND
								CL	Yellow brown (10YR 5/4) Silty CLAY, stiff, (pp>4.5), dry, low plastic, trace fine to coarse subangular Sand, no odor.	CLAY
745 / 5								ML	Yellow brown (10YR 5/6) SILT, little fine Sand, damp, moderately dense, no odor.	SILT
								SP	Yellow brown (10YR 5/6) fine to medium SAND, little Silt above 7' bgs, no silt from 7' bgs, moist, loose, no odor, wet at 8.2' bgs, saturated at 9.8' bgs.	SAND
740 / 10										
735 / 15								SM	Yellow brown (10YR 5/6) Sandy SILT and fine to medium SAND, moist, moderately dense, no odor.	
	1	15-17	2 2	5	1.3	0.0	-	SP	Yellow-brown (10YR 5/4) fine to medium subangular to subrounded SAND, some Silt, loose, no odor, saturated.	SAND

Boring Construction

- Cement pad with 9" diam. flush-mount cover.
- Cement/bentonite grout 1-4' bgs.
- Bentonite seal 4-24.5' bgs.
- 2" ID PVC riser 0.2-26.5' bgs.

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Remarks: bgs = below ground surface; pp=pocket penetrometer
NA = Not Applicable/Not Available
PID background : 0.0 ppm; Drilled down to 15' bgs.
Geologic descriptions for 0-15' bgs from RFI-05-19S.

Water Level Data

Date	Depth	Elev.
7/23/01	27.0'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-05-19D

Borehole Depth: 29' bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
		1	15-17	3 2	5	1.3	0.0	-	SP		Yellow-brown (10YR 5/4) fine to medium subangular to subrounded SAND, some Silt, loose, no odor, saturated. Heavily oxidized @ 16.8' bgs.	SAND
		2	17-19	1 2 3 4	5	1.3	0.0	-			Gray (10YR 5/1) Silty CLAY, few to little subrounded Sand, trace fine rounded Gravel, moderately stiff, no odor, damp. Clay Till.	SILTY CLAY
20	730	3	19-21	2 2 4 6	6	1.2	0.0	-				
		4	21-23	4 7 13 15	20	1.6	0.0	-	CL		Increased sand to little, fine to medium subrounded; increased gravel to few fine to coarse rounded; increased stiffness to stiff to very stiff.	
25	725	5	23-25	7 14 19 27	33	1.7	0.0	-			hard	
		6	25-27	3 10 11 12	21	1.8	0.0	-				
		7	27-29	27 32 50/ 4"	NA	NA	0.0	-	SP		Fine to medium rounded to subrounded SAND with fine to coarse rounded Gravel and Pebbles, little Silt, little Clay, loose, no odor, saturated. Glacial-alluvial (possible outwash).	SAND
									CL		Silty CLAY as above at 17-27' bgs, very hard, dry, friable. Clay Till.	
30	720											
35	715											

Boring Construction

- Bentonite seal 4-24.5' bgs.
- 2" ID PVC riser 0.2-26.5' bgs.
- #5 Global filter pack sandpack 24.5-29' bgs.
- 2" ID PVC 0.010" slotted screen 26.5-28.5' bgs

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Remarks: bgs = below ground surface; pp=pocket penetrometer
NA = Not Applicable/Not Available
PID background : 0.0 ppm; Drilled down to 15' bgs.
Geologic descriptions for 0-15' bgs from RFI-05-19S.

Water Level Data

Date	Depth	Elev.
7/23/01	27.0'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-05-19D.dat Date: 8/10/01

Date Start/Finish: 11/07/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID HSA **Rig Type:** CME 55	**Northing:** 565330.81 **Easting:** 13305450.8 **Casing Elevation:** NA **Borehole Depth:** 29' bgs **Surface Elevation:** 749.48 **Descriptions By:** SM Duly	**Boring ID:** RFI-05-19DR **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
750 / 0								FILL		Concrete.	FILL	Cement pad with 9" diam. flush-mount cover.
								SW		Yellow brown (10YR 5/6) fine to coarse SAND, little Clay, moist, loose, no odor.	SAND	Cement/bentonite grout 1-3' bgs.
								CL		Yellow brown (10YR 5/4) Silty CLAY, stiff, (pp>4.5), dry, low plastic, trace fine to coarse subangular Sand, no odor.	CLAY	
745 / 5								ML		Yellow brown (10YR 5/6) SILT, little fine Sand, damp, moderately dense, no odor.	SILT	
	1	HSA	NA	NA	NA	NA	NA	SP		Yellow brown (10YR 5/6) fine to medium SAND, little Silt above 7' bgs, no silt from 7' bgs, moist, loose, no odor, wet at 8.2' bgs, saturated at 9.8' bgs.	SAND	Bentonite seal 3-17.5' bgs.
740 / 10								SP		Saturated.		2" ID PVC riser 0.3-20' bgs.
735 / 15								SM		Yellow brown (10YR 5/6) Sandy SILT and fine to medium SAND, moist, moderately dense, no odor.	SAND	
								SP		Yellow-brown (10YR 5/4) fine to medium subangular to subrounded SAND, some Silt, loose, no odor, saturated.		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Stratigraphy to 25' bgs is from RFI-05-19D (7/23/01)

Water Level Data

Date	Depth	Elev.
11/7/01	9.8' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-05-19DR

Borehole Depth: 29' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
								SP		Yellow-brown (10YR 5/4) fine to medium subangular to subrounded SAND, some Silt, loose, no odor, saturated. Heavily oxidized @ 16.8' bgs.	SAND
										Gray (10YR 5/1) Silty CLAY, few to little subrounded Sand, trace fine rounded Gravel, moderately stiff, no odor, damp. Clay Till.	SILTY CLAY
730 20	1	HSA	NA	NA	NA	NA	NA	CL		Increased sand to little, fine to medium subrounded; increased gravel to few fine to coarse rounded; increased stiffness to stiff to very stiff.	
										Hard.	
725 25										(10YR 5/1) Silty lean CLAY, little fine to coarse subangular to subrounded Sand, very stiff to hard, weakly plastic, no odor, dry. Clay Till.	
	2	27-29	31 50/ 5"	NA	1.0	0.0	-	CL		Fine to medium rounded to subrounded SAND with fine to coarse rounded Gravel and Pebbles, little Silt, little Clay, loose, no odor, saturated. Glacial-alluvial (possible outwash).	SAND
										Silty CLAY as above at 17-27' bgs, very hard, dry, friable. Clay Till.	
720 30											
715 35											

Boring Construction

- Bentonite seal 3-17.5' bgs.
- 2" ID PVC riser 0.3-20' bgs.
- 2" ID PVC 0.010" slotted screen 20-25' bgs
- #5 Global filter pack sandpack 17.5-29' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Stratigraphy to 25' bgs is from RFI-05-19D (7/23/01)

Water Level Data

Date	Depth	Elev.
11/7/01	9.8' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-05-19DR.dat Date: 1/16/02

Date Start/Finish: 06/22/01
Drilling Company: Rau Drilling
Driller's Name: Greg Campeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID split spoon
Auger Size: 3 1/4"
Rig Type: CME 55

Northing: 565364.93
Easting: 13305321.57
Casing Elevation: NA

Borehole Depth: 17' bgs
Surface Elevation: 750.41

Descriptions By: S. Kerr

Boring ID: RFI-05-20

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0	750			n/a					FL	Concrete.	FILL
		1	0-2	3 2 3	5	0.8	3.1	-	ML-CL	Gray brown (10 YR 5/2) SILTY CLAY. Little fine Sand. Moist, no odor, moderate plasticity.	SILTY CLAY
		2	2-4	4 5 5 3	10	n/a	0.0	-		Yellow brown (10 YR 5/6) fine to medium SAND. Loose, wet.	
5	745	3	4-6	4 5 5 7	10	1.7	0.0	-	ML	Gray brown (10 YR 5/2) SILTY CLAY. Little fine Sand. Moist, no odor, moderate plasticity. Dark yellow brown SILT(10 YR 4N). Some Clay. Little Sand. Dense, damp, no odor. Local oxidation. No recovery at 3.5' bgs. From 5.3'-5.8' bgs, decrease in Sand finesse (fine to coarse).	SILT
		4	6-8	4 5 5 4	10	1.5	0.0	-			
		5	8-10	4 5 4 4	9	1.5	0.0	-	SP	Yellow brown (10 YR 5/6) fine to coarse SAND. Some Silt. Saturated. Local oxidation at 14.0' bgs.	SAND
10	740	6	10-12	2 4 5 5	9	1.5	0.0	-			
		7	12-14	2 3 7 9	10	1.5	0.0	-			
15	735	8	14-16	2 4 5 7	9		1.5	-	CL	Gray (10 YR 6/1) highly plastic CLAY. Soft, no odor.	

Boring Construction

- Cement pad with 9" diam. flush-mount cover.
- Bentonite chip seal 1-3.5' bgs.
- 2" ID PVC riser to 5.5' bgs.
- #5 Global filter sandpack 3.5-17' bgs.
- 2" ID PVC 0.010" slotted screen 5.5-15.5' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
PID background : 0.0 ppm
Samples collected 0.7-2.7' and 6.7-8.7' bgs.

Water Level Data

Date	Depth	Elev.
06/22/01	8.6'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well.ldf
Data File: RFI-05-20 Date: 07/02/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-05-20

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
								CL		Gray (10 YR 6/1) highly plastic CLAY. Soft, no odor.	CLAY	#5 Global filter sandpack 3.5-17' bgs.
20 / 730												
25 / 725												
30 / 720												
35 / 715												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
PID background : 0.0 ppm
Samples collected 0.7-2.7' and 6.7-8.7' bgs.

Water Level Data

Date	Depth	Elev.
06/22/01	8.6'	

Date Start/Finish: 06/26/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 565554.79 **Easting:** 13305577.26 **Casing Elevation:** 748.73 **Borehole Depth:** 18' bgs **Surface Elevation:** 749.06 **Descriptions By:** SC Kerr	**Boring ID:** RFI-05-21 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	750												
0		1	0-2	3 3 2 6	5	1.5	>9999	-	SP		Yellow brown (10YR 5/6) fine to medium SAND, some Silt, little Clay, dry to damp, loose, no odor.	SAND	Cement pad with 9" diam. flush-mount cover.
									ML		Very dark grayish brown (10YR 3/2) SILT, some Clay, little fine to medium Sand, trace subangular Gravel, moist.	SILT and CLAY	
		2	2-4	5 7 9 11	16	1.3	1460	-	CL		Very dark grayish brown (10YR 3/2) CLAY, some Silt, little fine to coarse Sand, dry, local oxidation, pp=3.0, from 2.5' bgs increased silt to Silty CLAY.		Cement/bentonite grout 1-4' bgs.
	745								ML		Dark grayish brown (10YR 4/2) SILT, some Clay, some fine to coarse Sand, few medium to coarse Gravel and concrete rubbles, dry to moist, loose, no odor.		
5		3	4-6	1 3 2 1	5	1.1	1220	-	SP		Yellow brown (10YR 5/4) fine to medium SAND, wet, loose, no odor.	SAND	Bentonite chip seal 4-6' bgs.
		4	6-8	1 1 2 1	3	1.5	640	-	ML		Black (10YR 2/1) SILT, some Clay, little fine Sand, trace coarse subangular Gravel, wet, moderately dense, no odor.	SILT	2" ID PVC riser to 8' bgs.
	740	5	8-10	1 4 7 10	11	1.7	91	-			Light olive brown (2SY 5/3) SILT, some Clay, some fine toi medium Sand, wet, dense, no odor.		
10		6	10-12	4 4 3 5	7	1.4	0	-	SP		Grayish brown (2SY 5/2) fine to medium SAND, saturated, moderately dense, no odor, color turns to brown (10YR 5/3) at 13.2' bgs.	SAND	#5 Global filter pack sandpack 6-18' bgs.
		7	12-14	4 6 7 11	13	2.0	2.1	-					2" ID PVC 0.010" slotted screen 8.0'-18.0' bgs
	735												
15		8	14-16	4 3 6 6	9	1.8	0	-					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
pp=pocket penetrometer.
Samples collected 0-2' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
6/26/01	9.3	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: j:\rockware\logplot2001\logfiles\64410\RFI-05-21.dat Date: 07/12/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-05-21

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	4 4 6 4	10	2.0	NA	-	SP		Grayish brown (2SY 5/2) fine to medium SAND, saturated, moderately dense, no odor, color turns to brown (10YR 5/3) at 13.2' bgs.	← SAND →	2" ID PVC 0.010" slotted screen 8.0'-18.0' bgs #5 Global filter pack sandpack 6-18' bgs.
								CL		Gray (10YR 5/1) CLAY, some Silt, trace fine Sand, soft, no odor.		
730												
20												
725												
25												
720												
30												
715												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
pp=pocket penetrometer.
Samples collected 0-2' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
6/26/01	9.3	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-05-21.dat Date: 07/12/01

Date Start/Finish: 11/26/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Campeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 565581.01 **Easting:** 13305577.68 **Casing Elevation:** NA **Borehole Depth:** 6' bgs **Surface Elevation:** 748.87 **Descriptions By:** S.M. Duly	**Boring ID:** RFI-05-22 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
750 / 0												
	1	0-2	4 6 4 5	10	1.5	0.0	-	FL		Large GRAVEL to cobble-sized angular large AGGREGATE. Fill.		
								SW		Yellow-brown (10YR 5/4) fine to medium subangular well graded SAND, some Silt, no odor, moderately dense, aplastic, damp. Fill.		
								ML		Brown (10YR 5/3) SILT, little fine to medium subrounded to subangular Sand, little Clay, no odor, moderately dense, aplastic, damp.	SILT	
	2	2-4	4 7 50/ 3"	57	0.5	0.0	-	FL		CONCRETE.	FILL	Borehole backfilled with bentonite to grade.
745 / 5	3	4-6	4 4 4 3	8	1.0	0.0	+	ML		Brown (10YR 5/3) SILT, little fine to medium subrounded to subangular Sand, little Clay, weak to moderate odor, oily sheen, moderately dense, aplastic, moist, presence of ash and wood debris.	SILT	
740 / 10												
735 / 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
PID background : 0.0 ppm
Samples collected 0.5-2.5' and 4-6' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: RFI-05-22 Date: 1/16/02

Date Start/Finish: 11/26/01
Drilling Company: Rau Drilling
Driller's Name: Greg Campeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 2 1/4"
Rig Type: CME 55

Northing: 565554.46
Easting: 13305600.73
Casing Elevation: NA

Borehole Depth: 6' bgs
Surface Elevation: 747.97

Descriptions By: S.M. Duly

Boring ID: RFI-05-23

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
750 / 0												
	1	0-4	44 47 45 14	92	1.7	0.0	-	FL		Asphalt and Concrete (at 4", asphalt on top of concrete).	FILL	
								SW		Brown (10YR 5/3) to black (10YR 2/1) well graded subangular SAND mixed with Slag, Glass, and Ash, no odor, very dense, aplastic, dry. SLAG & FILL.	SAND	
745								FL		CONCRETE.	FILL	Borehole backfilled with bentonite to grade.
										Wood and wood debris.		
5	2	4-6	10 12 14 14	26	1.0	2.2	+	SW		Brown (10YR 5/3) to black (10YR 7/1) well graded subangular SAND mixed with Slag, Ash, Cinder, and Brick fragments, no odor, very dense, aplastic, dry. SLAG & FILL.	SAND	
740												
10												
735												
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
+ = Positive Test Result
Samples collected 1.3-3' and 4-6' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.022
Data File: RFI-05-23
Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Date: 1/16/02

Date Start/Finish: 11/26/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Campeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 565530.36 **Easting:** 13305576.07 **Casing Elevation:** NA **Borehole Depth:** 5' bgs **Surface Elevation:** 749.26 **Descriptions By:** S.M. Duly	**Boring ID:** RFI-05-24 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	750												
0									FL		CONCRETE.	FILL	
		1	0-2	14 14 19 19	33	1.3	0.0	-	ML		Brown (10YR 5/3) SILT, little Clay, little fine subrounded to subangular Sand, no odor, dense, aplastic, dry. Fill.	SILT	Borehole backfilled with bentonite to grade.
	745	2	2-5	3 4 4 3	8	1.7	0.0	-			Becomes more Sandy with increased Sand content to some, decreased Clay content to few. Also becoming moderately dense.		
5													
	740												
10													
	735												
15													

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3' and 3-5' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: RFI-05-24 Date: 1/16/02

Date Start/Finish: 11/26/01
Drilling Company: Rau Drilling
Driller's Name: Greg Campeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 2 1/4"
Rig Type: CME 55

Northing: 565554.07
Easting: 13305554.34
Casing Elevation: NA

Borehole Depth: 2' bgs
Surface Elevation: 749.88

Descriptions By: S.M. Duly

Boring ID: RFI-05-25

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 750												
			4							Coarse Gravel to Cobble large Aggregate.		
	1	0-2	8 8 12	16	2	NA	NA	ML		Gray (10YR 5/1) SILT, some fine subangular Sand, little Clay, poorly graded, moderate to strong odor, moderately dense, damp with oily sheen in patches. Fill.	SILT	Borehole backfilled with bentonite to grade.
										Refusal. Concrete.		
5 745												
10 740												
15 735												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0-2' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.039 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: RFI-05-25a Date: 1/16/02

Date Start/Finish: 12/10/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** Direct Push **Sampler Size:** 2" ID x 4' Acetate Sleeve **Auger Size:** **Rig Type:** Mule-mounted Geoprobe	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 9' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-05-27 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0						FL		Reinforced CONCRETE.	FILL	
	1	1-5	0.4	NA	NA	SM		Brown (10YR 5/4) Silty fine to medium subangular SAND, few Clay, poorly graded, no odor, dense, aplastic, dry. Fill. 4.0: Color changes to brown (10YR 5/3).	SILTY SAND	Borehole backfilled with bentonite to grade (0-9' bgs).
5 5	2	5-9	1	NA	NA			5.0: Color changes to brown (10YR 5/4), trace to few coarse rounded to sub-rounded Sand.		
								Borehole terminated at 9'.		
10 10										
15 15										

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Sample collected 7-9' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/10/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** Direct Push **Sampler Size:** 2" diameter, 4' long acetate sleeve **Auger Size:** **Rig Type:** Mule-mounted Geoprobe	**Northing:** 565719.88 **Easting:** 13305309.76 **Casing Elevation:** NA **Borehole Depth:** 9' bgs **Surface Elevation:** 754.32 **Descriptions By:** SM Duly	**Boring ID:** RFI-05-29 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0						FL		Reinforced CONCRETE.	FILL	
						SW		Yellow-brown (10YR 5/4) well graded, fine to coarse subangular SAND, some Silt, no odor, dense, aplastic, dry. Fill.	SAND	Borehole backfilled with bentonite (0-9' bgs).
	1	0.7-4.7	3.8	NA	NA	SM		Brown (10YR 4/3) poorly graded fine to medium subrounded Silty SAND, few medium rounded gravel, no odor, dense, aplastic, dry. Fill. 3.2-4.8: Yellow-brown (10YR 5/4) poorly graded Silty SAND, fine subangular Sand, trace Clay, no odor, dense, aplastic, dry. Fill.	SILTY SAND	
5 5								4.8-6.1: Dark Brown (10YR 3/3) aplastic, poorly graded Silty SAND (SP), fine subangular Sand, little to few clay, no odor, dense, aplastic, damp to dry. Fill. 6.1-6.3: Yellow-brown (10YR 5/4) poorly graded Silty SAND, fine subangular Sand, trace Clay, no odor, dense, aplastic, dry. Fill.		
	2	4.7-9.0	3.9	NA	NA			6.3-7.3: (Black 10YR 2/1) poorly graded fine to medium subrounded Silty SAND, few medium rounded gravel, no odor, very dense, aplastic, dry. Foundry/Fill Sand.		
						CL		Very dark brown (10YR) Silty lean CLAY, little fine to coarse sand-sized angular Slag, no odor, moderately stiff, weakly to moderately plastic, damp to dry. Till and Slag Fill.	CLAY	
10 10								Borehole terminated at 9'.		
15 15										

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Sample collected 7-9' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.101 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-05-29.dat Date: 12/18/01

Date Start/Finish: 1/10/02
Drilling Company: Rau Drilling
Driller's Name: Allan Rau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 4 1/4" ID HSA
Rig Type: CME 75

Northing: 565329.79
Easting: 13305553.38
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 748.54

Descriptions By: SM Duly

Boring ID: RFI-05-30

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	1	0-2	4 5 8 6	13	1.3	NA	-	SM		Brown (10 YR) Silty fine to coarse well-graded subangular SAND, some to little fine to coarse angular predominantly large Gravel (aggregate, decreased content with depth), few Clay, aplastic, no odor, damp, dense. Organic matter such as roots present. Aggregate fill and topsoil.	SILTY SAND	Flush-mount cover. Grout 0.5-1' bgs.
	2	2-4	5 5 6 5	11	1.7	NA	-	ML		Yellow-brown (10 YR 5/4) SILT, some fine subangular to subrounded Sand, few to little Clay, aplastic, no odor, damp, dense. Possible fill.	SILT	2" ID PVC riser 0.3-6' bgs.
5 5	3	4-6	4 3 3 4	6	1.7	NA	-					Bentonite seal 1-5.5' bgs.
	4	6-8	2 3 2 3	5	1.8	NA	-	SP		Yellow-brown (10 YR 5/4) poorly graded fine subangular SAND, little to some Silt, few Clay, aplastic, no odor, dry, moderately dense. Possible fill sand. Moist. Wet. Saturated, increasingly gray in color.	SAND	Global filter sandpack 5.5-16' bgs.
	5	8-10	1 2 4 5	6	1.7	NA	-					
10 10	6	10-12	2 2 5 8	7	1.6	NA	-					2" ID Sch. 40 PVC 0.010"slottedscreen 6-16' bgs.
	7	12-14	3 4 8 7	12	1.9	NA	-					
15 15	8	14-16	3 5 5 4	10	NA	NA	-			Increased Silt to some, gray (10 YR 5/1).		

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
1/10/02	8.5'	

Project: 64410.101
Data File:RFI-05-30.dat
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 2/7/02

Date Start/Finish: 06/22/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 563375.77 **Easting:** 13306676.46 **Casing Elevation:** NA **Borehole Depth:** 12' bgs **Surface Elevation:** 730.56 **Descriptions By:** S. Kerr / SM Duly	**Boring ID:** RFI-07-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 730	1	0-2	n/a 2 3 4	5	1.3	187	-	FL		Asphalt	FILL	Cement pad with 8" diam. flush-mount cover.
										Yellow brown (10 YR 5/6) SILT. Little fine to medium subangular Sand. Damp, moderately dense, no odor. Little local oxidation. At 2.7' bgs, the Clay content increases and the sand grain-size goes from fine to coarse. Saturated at 4.5' bgs.		Grout 0.8-1' bgs.
	2	2-4	3 3 3 2	6	1.2	297	-					Bentonite seal 1-2' bgs.
												2" ID Sch. 40 PVC riser 0.2-4' bgs.
5 725	3	4-6	4 6 7 8	13	1.5	0.0	-	ML			SILT	#5 Global filter sandpack 2-12' bgs.
	4	6-8	3 4 8 7	12	1.4	0.0	-			Grayish brown (10 YR 5/2) SILT. Saturated, dense, no odor, As above but with some fine to coarse Sand and Gravel.		2" ID Sch. 40 PVC 0.010"slottedscreen 4-9' bgs.
	5	8-10	6 15 28 34	43	1.6	0.0	-					
10 720	6	10-12	16 26 39 43	65	2	0.0	-	CL		Gray (10 YR 5/1) CLAY, little Silt, few fine to coarse subangular to subrounded Sand. Dry, no odor, stiff, oxidation present. Clay Till.	CLAY	
15 715												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.3-2.3' and 2.3-4.3' bgs.

Water Level Data

Date	Depth	Elev.
6/22/01	6.5'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well.ldf
Data File: RFI-07-01.dat Date: 9/14/01

Date Start/Finish: 1/12/02 **Drilling Company:** Rau Drilling **Driller's Name:** Rod Camperon **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 4 1/4" **Rig Type:** CME 75	**Northing:** 563375.77 **Easting:** 13306676.46 **Casing Elevation:** 730.56 **Borehole Depth:** 10' **Surface Elevation:** 730.94 **Descriptions By:** SM Duly	**Boring ID:** RFI-07-01R **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0										See original log RFI-07-01 for geologic description for 0-8.0' bgs.		
5 5												Borehole backfilled with bentonite to grade.
	1	8-10	8 25 50/ 3"	NA	1.0	NA	-	ML		Yellow brown (10 YR 5/4) SILT, little fine to coarse subangular Sand, few fine to medium subangular Gravel, few to little Clay, aplastic, no odor, saturated, moderately dense to dense.	SILT	
10 10								CL		Gray (10 YR 5/1) Silty CLAY, few fine to coarse subrounded to subangular Sand, trace fine to medium subrounded Gravel, weakly plastic, dry, no odor, hard. Native glacial clay till.		
15 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
No soil samples collected.

Water Level Data

Date	Depth	Elev.
1/12/02	8.0'	

Date Start/Finish: 06/13/01
Drilling Company: Rau Drilling
Driller's Name: Greg Campeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 2 1/4"
Rig Type: CME 55

Northing: 563585.94
Easting: 13306765.13
Casing Elevation: NA

Borehole Depth: 12' bgs
Surface Elevation: 727.47

Descriptions By: SM. Duly / S.C. Kerr

Boring ID: RFI-07-02

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730 / 0												
			n/a							Concrete	FILL	
	1	0-2	n/a 5 3	5	0.5	961	-	SP		Grayish brown (10 YR 5/2) fine to coarse, aplastic, subangular to subrounded SAND, some Silt, little Clay, few subangular Gravel, wet, no odor. Black Staining at 2.8'bgs.	SAND	
725	2	2-4	2 1 1 2	2	1.2	54.5	-	ML		Very dark greyish brown (10 YR 3/2) SILT, some Clay, few Sand, dense, moist, no odor. Becomes black (10 YR 2/1) at 3.3' bgs.	SILT	Borehole backfilled with bentonite chips to grade.
5	3	4-6	4 16 20 21	36	0	1153	-	CL		Dark gray (10 YR 4/1) Sandy CLAY, little fine to medium Sand, some Silt, soft, moist to wet, no odor. No recovery from 4'-6' bgs (rock in shoe).	CLAY	
										Saturated at 6.2' bgs. Increased coarse Sand to 6.6' bgs.		
720	4	6-8	4 15 19 22	34	2	70.6	-			Dark gray (10 YR 4/1) CLAY, trace subangular Gravel, some Silt, little fine to medium subangular to subrounded Sand. Hard, dry, no odor. Oxidation along fractures until 9' bgs. Clay Till.		Temporary well screen installed at 8'-3' bgs.
	5	8-10	7 30 55/ 5"	80	1.6	348	-					
10	6	10-12	9 16 21 34	37	1.8	2349	NA					
715												
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
PID background : 0.0 ppm
Samples collected 0.8-2.8' and 2.8-4.8' bgs.

Water Level Data

Date	Depth	Elev.
06/13/01	6.2'	

Project: 64410.022
Data File: RFI-07-02
Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Date: 07/03/01

Date Start/Finish: 6/14/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 3 1/4" ID
Rig Type: CME 55

Northing: 563659.33
Easting: 13306888.58
Casing Elevation: NA

Borehole Depth: 10' bgs
Surface Elevation: 726.74

Descriptions By: SM Duly

Boring ID: RFI-07-03

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0 / 725	1	0-2	4 5 5 6	10	2.0	2248	-	ML		Black (10 YR 2/1) SILT, some fine to coarse subangular Sand, some fine to coarse subangular Gravel all composed of anthracite Coal, little Clay, aplastic, no odor, moderately dense to moderately loose, damp, few topsoil and vegetation present.	SILT
	2	2-4	3 4 6 6	10	1.5	854	-	CH		Very dark grayish-brown (10 YR 5/4) SILT, some Clay, little fine to medium subangular Sand, aplastic, no odor, damp, moderately dense.	CLAY
								ML		Brown (10 YR 4/3) fat CLAY, some Silt, little fine to medium subangular Sand, trace fine to medium subrounded Gravel, soft to medium stiff, no odor, damp.	
5	3	4-6	16 25 25 31	50	1.8	83.9	-			Yellow-brown (10 YR 5/4) SILT, little fine to medium subangular Sand, little to few Clay, no odor, saturated, moderately dense.	SILT
720	4	6-8	11 26 31 36	57	2.0	8.5	-	CL		Gray (10 YR 4/1) lean CLAY, some Silt, little fine to medium subrounded to subangular Sand, few fine to medium subangular to subrounded Gravel, no odor, dry, very hard. Clay Till locally oxidized along fractures and selvages (mottled) to dark yellow brown (10 YR 4/4) to 6.2' bgs.	CLAY
	5	8-10	22 43 50/ 5"	NA	1.4	0.0	-				
10 / 715											
15											

Boring Construction

- Portland Cement 0-0.6' bgs
- Grout 0.6-0.8' bgs
- BentoniteSeal0.8-1' bgs
- Sch 40 PVC Riser 0-2' bgs
- #5 Global Filler Sand Pack 2-7' bgs
- Sch 40 0.010" Slot PVC Screen 2-7' bgs
- PVC Cap

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0-2' bgs.

Water Level Data

Date	Depth	Elev.
6/14/01	3.6' bgs	

Project: 64410.022
Data File:RFI-07-03.dat
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 11/19/01

Date Start/Finish: 6/14/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** **Rig Type:** CME 55	**Northing:** 563920.76 **Easting:** 13306896.52 **Casing Elevation:** NA **Borehole Depth:** 11' bgs **Surface Elevation:** 733.01 **Descriptions By:** SM Duly	**Boring ID:** RFI-07-04 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735												
0	1	0-2	4 5 5 6	10	1.9	862	-	ML FL		Gray-brown (10 YR 5/2) SILT, little fine to coarse subangular Sand, fine to coarse subangular ("pea") Gravel and black Sand to Gravel-sized anthracite Coal, aplastic, no odor, damp, moderately dense. Vegetation and roots present. Topsoil mixed with anthracite coal and Gravel fill.	COAL/SILT	
730	2	2-4	6 4 3 8	7	1.3	118	-	ML		Black (10 YR 2/1) fine to coarse Sand to Pebble-sized Anthracite COAL, aplastic, no odor, dry, moderately dense.	FILL	
										Gray (2.5 YR 5/1) SILT, some to little Clay and fine to coarse Sand to Gravel-sized fragments of Anthracite Coal, aplastic, no odor, dense, dry.		
5	3	4-6	5 5 5 6	10	1.6	0.0	-	CL		Gray (10 YR 5/1) lean CLAY, some Silt, little fine to medium subangular Sand, few fine to medium subrounded to subangular Gravel; no odor, dry, dense, hard, locally oxidized along fractures and selvages to yellow brown (10 YR 5/4). Clay Till.	CLAY	Bentonite (0.0-11.0' bgs)
	4	6-8	2 2 4 5	6	1.3	0.0	-			Becomes softer and damp; soft to medium stiff @ 6'bgs. Moist and soft.		
725	5	8-10	11 33 50/ 5"	NA	1.0	0.0	-	SP		Yellow brown (10 YR 5/4) fine subangular poorly graded SAND, some Silt, little Clay, few coarse subrounded to subangular Gravel, no odor, wet (saturated), moderately dense.	SAND	
10	6	10-11	43 50/ 4"	NA	NA	0.0	-	CL		Gray (10 YR 5/1) CLAY as at 2.7-7.7' bgs, but very hard, with oxidation to yellow-brown (10 YR 5/4) along fractures and selvages. Clay Till.	CLAY	
720												
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Set temp well, 9' bgs with screen 9-4', 0.010" Slot
Samples collected 0-2' and 2-4' bgs.

Water Level Data

Date	Depth	Elev.
6/14/01	7.1' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-07-04.dat Date: 11/19/01

Date Start/Finish: 6/14/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" ID **Rig Type:** CME 55	**Northing:** 563195.82 **Easting:** 13306478.26 **Casing Elevation:** NA **Borehole Depth:** 19' bgs **Surface Elevation:** 732.73 **Descriptions By:** SM Duly	**Boring ID:** RFI-07-05 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
735										
0		0-1	NA	NA	NA	NA	NA	FL	Concrete.	FILL
730	1	1-3	9 11 10 9	21	1.2	2393	-	ML	Yellow-brown (10 YR 5/6) SILT, some fine subangular Sand, trace Clay, aplastic, no odor,.damp, loose to moderate density, fill.	SILT
	2	3-5	9 9 10 9	19	1.4	74.7	-		Increased coarseness to a fine subangular SAND with some Silt, No Clay.	
5	3	5-7	9 10 11 12	21	2.0	78.1	-	CL	Dark grayish-brown (10 YR 4/2) CLAY, some Silt, little fine to medium subrounded to subangular Sand, trace to few fine to medium subangular to subrounded Gravel, no odor, dry, very hard to hard. Clay Till.	CLAY
725	4	7-9	5 7 9 9	16	2.0	0.0	-	ML	Pale brown (10 YR 6/3) SILT, some fine subangular Sand, trace Clay, aplastic, no odor, damp, loose to moderate density. Becomes softer and damp; soft to medium stiff at 6.0' to 7.1' bgs. Moist and soft from 7.1' to 7.7' bgs.	SILT
10	5	9-11	4 6 7 9	13	1.6	0.0	-			
	6	11-13	3 3 4 3	7	1.4	0.0	-		Gray (10 YR 6/1), saturated.	
720	7	13-15	3 2 5 3	7	1.5	0.0	-		Brown (10 YR 5/3), saturated. Gray (10 YR 6/1), saturated. Moist.	
15	8	15-17	9 16	33	1.3	0.0	-			

Boring Construction: Bentonite (0.0 to 19.0' bgs).

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Set 1" diam., 0.010' slot temp well screen 8-18' bgs.
Samples collected 5-7' and 9-11' bgs.

Water Level Data

Date	Depth	Elev.
6/14/01	11.8' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-07-05.dat Date: 9/24/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-07-05

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	15-17	17 23	33	1.3	0.0	-	SP		Subrounded to subangular SAND, some to little fine to coarse subrounded Gravel, little to few Silt; no odor, including fossiliferous, loose, saturated, riverine/alluvial deposit, moderately high energy envirnoment of deposition.	SAND	Bentonite (0.0 to 19.0' bgs).
715	9	17-19	12 20 33 36	53	1.6	0.0	-	CL		Homogenous gray (10 YR 5/1) CLAY, with oxidation confied to 1 to 3 inches only, very hard to hard, increasing hardness with depth.	CLAY	
20												
710												
25												
705												
30												
700												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Set 1" diam., 0.010' slot temp well screen 8-18' bgs.
Samples collected 5-7' and 9-11' bgs.

Water Level Data

Date	Depth	Elev.
6/14/01	11.8' bgs	

Date Start/Finish: 7/20/01 / 9/6/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau/Greg Compeau **Drilling Method:** Direct Push **Sampler Size:** 2'x2" ID **Auger Size:** **Rig Type:** mule-mounted Geoprobe	**Northing:** 563381.88 **Easting:** 13306593.09 **Casing Elevation:** NA **Borehole Depth:** 15' bgs **Surface Elevation:** 732.88 **Descriptions By:** S Kerr / SM Duly	**Boring ID:** RFI-07-06 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735										
0						FILL		Concrete	Fill	
	1	0-2	1.4	>9999	NA	SP		Pale brown (10 YR 6/3) fine SAND, trace subrounded Gravel, loose, no odor, dry. Damp.	Sand	
730	2	2-4	2.0	>9999	NA	ML/ SM		Brown (10 YR 5/3) SILT, trace Clay, trace fine to coarse Sand, trace medium Gravel, loose, no odor, damp. Increased Clay to Silty CLAY, dense.	SILT	Borehole backfilled with bentonite chips to grade.
5	3	4-6	2.0	>9999	NA	CL		Brown (10 YR 5/3) and gray (10 YR 6/1) mottled CLAY, some Silt, little fine to coarse Sand, oxidized, stiff, no odor, damp.	Clay	
	4	6-8	1.6	>9999	NA	ML		Yellow-brown (10 YR 5/6) SILT, trace Clay, trace fine Sand, moderately dense, aplastic, moist.	SILT	
725	5	8-10	2.0	>9999	NA			Saturated.		Temporary well screen installed at 8.4-13.4' bgs.
10	6	10-12	1.7	>9999	NA			Grayish-brown (10 YR 5/2) Clayey SILT, no odor, saturated.		
						SP		Grayish-brown (10 YR 5/2) fine to coarse SAND, dense, saturated.		
720	7	12-14	2.0	>9999	NA	CL		Gray (10 YR 5/1) CLAY, trace fine to coarse Sand, aplastic, stiff, no odor, damp. Dry.	CLAY	
	8	14-15	NA	NA	NA					
15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.5-2.5'; 6.5-8.5' bgs.
Temporary well screened 8.4-13.4' bgs.

Water Level Data

Date	Depth	Elev.
7/20/01	9.8' bgs	

Date Start/Finish: 7/20/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** Direct Push **Sampler Size:** 2'x2" ID **Auger Size:** **Rig Type:** mule-mounted Geoprobe	**Northing:** 563199.88 **Easting:** 13306652.24 **Casing Elevation:** NA **Borehole Depth:** 24' bgs **Surface Elevation:** 732.81 **Descriptions By:** S Kerr	**Boring ID:** RFI-07-07 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735										
0						FILL		Concrete	FILL	
	1	0-2	1.5	>9999	NA	SM		Yellow-brown (10 YR 5/4) fine to medium SAND, some Silt, trace medium to coarse subrounded Gravel, trace Clay to 1.3' bgs, moderately loose, no odor, dry.	SAND	
730	2	2-4	1.5	>9999	NA					
	3	4-6	2.0	>9999	NA			Damp. Some fine to coarse gravel to 4.6' bgs.		
5	4	6-8	2.0	>9999	NA			Yellow-brown (10 YR 5/4) Silty fine to medium SAND, heavily oxidized, some Clay to 5.3' bgs, moderately loose, no odor, damp.	SILTY SAND	Borehole backfilled with bentonite chips to grade.
725	5	8-10	1.8	>9999	NA			Wet.		
	6	10-12	1.5	>9999	NA	ML		Brownish-yellow (10 YR 6/6) SILT, some fine to medium Sand, heavily oxidized, loose, no odor, damp.	SILT	
10	7	12-14	1.6	>9999	NA	SM		Pale brown (10 YR 6/3) fine SAND, some Silt, moderately loose, no odor, moist.	SAND	
720	8	14-16	1.7	>9999	NA			Increased coarseness to fine to medium.		Temporary well screen installed at 12-22' bgs.
15						ML		Silt as at 9.2' bgs.	silt &clay	
						CL		Gray (10 YR 5/1) CLAY, highly plastic, soft, no odor, moist.		
						ML		Brown (10 YR 5/3) SILT, trace fine Sand, dense, no odor, wet.		
						SP				

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected at 0.5-2.5'; 8.5-10.5'; 14.5-16.5' bgs.
pp=pocket penetrometer

Water Level Data

Date	Depth	Elev.
7/20/01	17.2' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-07-07

Borehole Depth: 24' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
715	9	16-18	1.8	>9999	NA	SP		Yellow-brown (10 YR 5/6) fine to medium SAND, moderately loose, no odor, wet.	SAND	
								17.2': Brown (10 YR 5/3) fine to medium SAND, little Silt, moderately loose, no odor, saturated.		
	10	18-20	2.0	>9999	NA			As above, fine to coarse SAND, predominantly medium-grained.		
20								Saturated, sand as at 19.2' bgs. Predominantly fine-grained.		Temporary well screen installed at 12-22' bgs.
	11	20-22	2.0	NA	NA			Increased coarse sand.		
						CL		Gray (10 YR 5/1) CLAY.		
						SP		Sand as at 20.2' bgs.		
710	12	22-24	2.0	NA	NA	CL		Gray (10 YR 5/1) CLAY, trace fine to coarse Sand, trace coarse Gravel, stiff (pp>4.5 tons/sq. ft.), no odor. Clay Till.	CLAY	
25										
705										
30										
700										
35										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected at 0.5-2.5'; 8.5-10.5'; 14.5-16.5' bgs.
pp=pocket penetrometer

Water Level Data

Date	Depth	Elev.
7/20/01	17.2' bgs	

Date Start/Finish: 7/30/01 **Drilling Company:** RAU **Driller's Name:** Greg Compeau **Drilling Method:** HSA **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" ID HSA **Rig Type:** CME 55	**Northing:** 563062.19 **Easting:** 13306928.48 **Casing Elevation:** NA **Borehole Depth:** 23.5 bgs **Surface Elevation:** 728.12 **Descriptions By:** S. Kerr	**Boring ID:** RFI-07-08 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	730												
0													
		1	0-2	3 4 5 5	9	1.2	0.0	NA	ML		Light brownish gray (10 YR 6/2) SILT, some fine to coarse Sand, trace coarse Gravel, roots, loose, dry, no odor. Topsoil	SILT	Portland Cement (0.0' -1.0' bgs)
											As above, but yellow brown (10 YR 5/6), trace Clay.		
	725	2	2-4	5 7 9 9	16	0.4	0.0	NA	ML				2" ID Riser (0.0' - 10.0' bgs)
5		3	4-6	4 7 9 13	16	1.2	0.0	NA	SP CL		Yellow brown (10 YR 5/6) predominantly fine to medium poorly graded SAND, little Silt, loose, moist, no odor, some oxidation.		Grout (1.0' - 6.0' bgs)
											Brown (10 YR 5/3) lean CLAY, little fine to coarse Sand, stiff, damp, no odor, local oxidation.		
		4	6-8	4 6 9 10	15	1.4	0.0	NA			SAND as above from 4.8' - 5.1' bgs, poorly graded, moist.		Bentonite Seal (6.0 to 8.0' bgs)
	720	5	8-10	4 6 7 10	13	1.4	0.0	NA					
10									SP		Predominantly medium-grained.	SAND	
		6	10-12	3 4 5 8	9	1.5	2.4	NA			Moist to wet		#5 Global Filter Pack (8.0 to 25.5' bgs)
											Saturated		
	715	7	12-14	2 3 6 5	9	1.4	0.0	NA			Brown (10 YR 5/3) fine to medium well graded SAND, loose, saturated, no odor.		Sch 40 machined 0.010" Slot PVC Screen (10.0' - 20.0' bgs).
15		8	14-16	4 7 13 16	20	1.6	0.0	NA	CL		Gray (10 YR 5/1) lean CLAY, trace fine to coarse Sand, stiff, dry, aplastic, pp>4.5.	CLAY	

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available

Water Level Data

Date	Depth	Elev.
7/30/01	12.6' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-07-08

Borehole Depth: 23.5 bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
710 / 20	NA	NA	NA	NA	NA	NA	NA			Blind drilled to 22.5' bgs, geotechnical samples collected.		Sch 40 machined 0.010" Slot PVC Screen (10.0' - 20.0' bgs).
705	9	21.5-2	10 37 50/ 5"	NA	1.5	NA	NA					PVC Cap
25	10	23.5-2	21 37 50/ 5"	NA	NA	NA	NA					#5 Global Filter Pack (8.0 to 25.5' bgs)
700 / 30												
695 / 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available

Water Level Data

Date	Depth	Elev.
7/30/01	12.6' bgs	

Project: 64410.022
Data File:RFI-07-08.dat
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 11/19/01

Date Start/Finish: 6/14/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" ID **Rig Type:** CME 55	**Northing:** 563827.44 **Easting:** 13306761.73 **Casing Elevation:** NA **Borehole Depth:** 12.0 bgs **Surface Elevation:** 729.68 **Descriptions By:** SM Duly	**Boring ID:** RFI-07-09 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	730												
0		1	0-2	2 4 4 3	8	1.5	131	-	ML		Gray-brown (10YR 5/2) SILT, little fine to coarse subangular Sand, little to some silt to cobble-sized subangular black fragments of Anthracite Coal, aplastic, damp, moderately dense to moderately loose, no odor. Few vegetation and roots, topsoil mixed with anthracite coal.	SILT	
		2	2-4	3 2 2 4	4	1.6	0.0	-			Yellow-brown (10 YR 5/4) SILT, some Clay, little fine to medium subangular Sand, few fine to medium subrounded to subangular Sand, local lenses of silt to coarse gravel-sized anthracite Coal, aplastic, dense, damp, no odor. Moist at 2.0' bgs.		
5	725	3	4-6	4 9 16 21	25	1.6	0.0	-	CL		Dark gray-brown (10 YR 4/2) SILT, some Clay, little fine to medium subrounded to subangular Sand, trace old roots, wet, moderately dense, no odor.		
											Yellow-brown (10 YR 5/4) lean CLAY, heavily oxidized with yellow-brown (10 YR 5/4) along fractures and selvages, some Silt, little fine to medium subrounded to subangular Sand, trace to few fine to medium subangular to subrounded Gravel, very hard, dry, no odor. Native Till.	CLAY	
									ML			SILT	
		4	6-8	11 29 50/ 5"	NA	NA	0.0	-			SILT as at 2.7-4.3' bgs, but pale brown (10 YR 6/3), saturated, no odor, few coarse Gravel at 6' bgs.		
											CLAY as at 4.3-5.7' bgs, but gray brown (10 YR 5/2), with local oxidation(yellow-brown 10 YR 5/4) along selvages and fractures.		
		5	8-10	13 40 50/ 5"	NA	1.4	68.5	-	CL		at 8': becomes gray (10 YR 5/1). Clay Till.	CLAY	
10	720										No oxidation after 10.0' bgs.		
		6	10-12	27 53 50/ 4"	NA	1.2	3233	-					
	715												
15													

Bentonite (0.0 to 12.0' bgs)

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0-2' bgs.

Water Level Data

Date	Depth	Elev.
6/14/01	2.7' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-07-09.dat Date: 11/19/01

Date Start/Finish: 5/29/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" ID **Rig Type:** CME 55	**Northing:** 559602.42 **Easting:** 13305517.7 **Casing Elevation:** 725.15 **Borehole Depth:** 15' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-09-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	725		Auger	NA	NA	NA	NA	NA			ASPHALT.	FILL	Cement pad with 9" diam. flush-mount cover.
		1	1-3	1 1 2 1	3	1.1	8.1	-			Dark gray-brown aplastic SILT, little fine to coarse Sand and Gravel, trace Clay, earthy odor, damp, moderately loose, saturated at 4.5' bgs.	SILT	Grout 0.8-1' bgs. Bentonite seal 1-2' bgs.
		2	3-5	2 3 3 3	6	0.6	9.1	-					2" ID Sch. 40 PVC riser 0.2-2.8' bgs.
5	720	3	5-7	1 1 2 4	3	1.1	4.8	-			Orange aplastic SILT, some Clay, little fine to medium Sand, saturated, moderately loose to moderately dense.		
		4	7-9	1 3 3 3	6	2.0	8.0	-					
									ML				#5 Global filter sand pack 2-15' bgs.
10	715	5	9-11	2 2 2 3	4	1.8	39	-					
		6	11-13	4 4 4 6	8	1.8	5.5	+					2" ID Sch. 40 PVC 0.010"slottedscreen 2.8-12.8' bgs.
		7	13-15	16 17 19 31	36	1.6	5.2	-	CL		Orange CLAY, some Silt, little fine to medium Sand, trace fine to medium Gravel, dry to damp, hard.	CLAY	
15	710												

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Remarks: bgs = below ground surface;
+ = Positive Test Result
NA = Not Applicable/Not Available
Sample collected 1-3' bgs.

Water Level Data

Date	Depth	Elev.
5/29/01	4.5'	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-09-01.dat Date: 5/30/01

Date Start/Finish: 5/16/01 **Drilling Company:** Rau Drilling **Driller's Name:** Allan Rice **Drilling Method:** Direct Push **Sampler Size:** 2" continous acetate sleeve **Auger Size:** **Rig Type:** Geoprobe	**Northing:** 559559.1 **Easting:** 13305493.87 **Casing Elevation:** NA **Borehole Depth:** 10' bgs **Surface Elevation:** 726.41 **Descriptions By:** S. Kerr	**Boring ID:** RFI-09-02 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 725	1	0-2	2.0	80.3	-	FL		ASPHALT. ASPHALT fragmants. Very dark grayish-brown (10YR 3/2) fine Silty SAND, trace Clay, trace subangular to subrounded Gravel, medium dense, no odor, dry.	asphalt	
								Olive-brown (2.5YR 4/3) fine to medium SAND, trace Clay, trace subrounded to subangular Gravel, dense, no odor, dry.	SAND	Borehole backfilled with Bentonite to grade.
	2	2-4	1.6	61.1	-			Light yellowish-brown (2.5Y 6/3) medium SAND, trace red fragments (brick), dense, moist. Fill.		
						SP		Very dark brown (10YR 2/2) medium to coarse SAND, trace Clay, very dense, wet. Yellow (2.5Y 8/6) coarse SAND, some solid chunks of Sand, loose, saturated at 4' bgs. Brown (10YR 4/3) fine SAND, dense, no odor, moist.		
5	3	4-6	1.6	44.8	-	ML		Dark grayish-brown SILT, trace fine Sand and Clay, dense, no odor, wet.		
						SP		SAND, as at 3' - 5.2' bgs.	SAND	
720	4	6-8	1.7	14.4	-	ML		Light olive-brown and gray (2.5Y 5/6 and 6/1) SILT, mottled, dense, moist. All gray Silt at 7' bgs.	SILT	
	5	8-10	1.6	22.8	-					
10 / 715										
15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.4-2' and 2-4'.
1" Temporary Well set at 8' bgs.

Water Level Data

Date	Depth	Elev.
5/16/01	4'	NA

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-09-02.dat
Date: 5/31/01

Date Start/Finish: 5/16/01 **Drilling Company:** Rau Drilling **Driller's Name:** Allen Rau **Drilling Method:** Direct Push **Sampler Size:** 2" continous acetate sleeve **Auger Size:** 2 1/4" **Rig Type:** 66 DT Advance Geoprobe	**Northing:** 559436.94 **Easting:** 13305471.1 **Casing Elevation:** NA **Borehole Depth:** 10' bgs **Surface Elevation:** 726.02 **Descriptions By:** S. Kerr	**Boring ID:** RFI-09-03 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0											
	725	1	0-2	1.6	37.5	-	FL		ASPHALT.	Fill	
							MW		Very dark brown (10YR 2/2) fine Silty SAND, trace Clay, trace subrounded to subangular Gravel, dense, no odor, dry.	S. Sand	
							SP		Brown (10YR 4/3) fine to medium SAND, trace coarse Sand, Silt, and Clay, dense, no odor, moist.	Sand	Borehole backfilled with Bentonite to grade.
		2	2-4	1.5	33.7	-			Olive-brown (2.5YR 4/3) fine SAND, trace Clay, dense, moist, wet at 3.4'bgs, saturated at 4' bgs.		
									(3.8-4.4) Fine SAND as above with trace medium to coarse Sand, loose.		
5		3	4-6	1.8	41.5	-	ML		Gray to light olive-brown (2.5Y 5/1 and 5/6) SILT, mottled, dense, no odor, moist to wet.	Silt	
	720	4	6-8	1.6	24.6	-			(6.7-8.0) SILT as above but all gray.		
		5	8-10	0.0	NA	-			No Recovery.		
10							ML		SILT as at 4.4' - 6.7' bgs.		
	715										
15											

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collect from 0.4-2' and 2-4'.
1" Temporary Well set at 8' bgs.

Water Level Data

Date	Depth	Elev.
5/16/01	4'	NA

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-09-03.dat
Date: 5/31/01

Date Start/Finish: 5/30/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" ID **Rig Type:** CME 55	**Northing:** 559224.65 **Easting:** 13305418.05 **Casing Elevation:** 725.92 **Borehole Depth:** 14' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-09-04 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 725	1	0-2	- 39 25 15	64	1.4	14.7	+	ML		Light brown-gray SILT, some fine to medium Sand, little fine to coarse Gravel, trace organic matter, damp, dense. Fill, Topsoil.	SILT	Cement pad with 9" diam. flush-mount cover. Grout 0.8-1' bgs.
	2	2-4	12 15 10 8	25	1.5	5.9	-			Black SILT, some fine to coarse SAND, little fine to medium Gravel and Clay, dry, dense.		Bentonite seal 1-2.5' bgs. 2" ID Sch. 40 PVC riser 0.2-3.3' bgs.
5 720	3	4-6	2 4 5 6	9	1.8	10.2	-			Gray-brown SILT, little fine to medium Sand, trace Clay, saturated, dense.		
	4	6-8	3 4 7 7	11	1.9	4.3	-					
	5	8-10	3 4 4 11	8	2.0	1.0	-					
10 715	6	10-12	4 12 13 15	25	1.5	1.5	-	SP		Yellow-brown fine to coarse SAND, little Silt and fine to medium Gravel, saturated, loose.	SAND	#5 Global filter sandpack 2.5-14' bgs.
	7	12-14	19 17 17 12	34	1.3	3.4	-					2" ID Sch. 40 PVC 0.010"slottedscreen 3.3-13.3' bgs.
15 710												

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+ = Positive Test Result
NA = Not Applicable/Not Available
Samples collected 0-2' and 2-4' bgs.

Water Level Data

Date	Depth	Elev.
5/30/01	4.7'	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-09-04.dat Date: 8/6/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-09-04R

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
20 / 705												2" ID Sch. 40 PVC 0.010"slottedscreen 14-19' bgs.
25 / 700												#5 Global filter sandpack 13-19' bgs.
30 / 695												
35 / 690												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Stratigraphic Descriptions are from RFI-09-04.

Water Level Data

Date	Depth	Elev.

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-09-04R.dat Date: 8/6/01

Date Start/Finish: 5/16/01 **Drilling Company:** Rau Drilling **Driller's Name:** Allen Rau **Drilling Method:** Direct Push **Sampler Size:** 2" continous acetate sleeve **Auger Size:** 2 1/4" ID **Rig Type:** 66 DT Advance Geoprobe	**Northing:** 559748.04 **Easting:** 13305255.34 **Casing Elevation:** NA **Borehole Depth:** 14' bgs **Surface Elevation:** 730.99 **Descriptions By:** S. Kerr	**Boring ID:** RFI-09-05 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	730	1	0-2	1.5	36	-	FL	ASPHALT.	FILL	Borehole backfilled with Bentonite to grade.
							SM	Very dark brown (10YR 2/2) Silty SAND, trace subrounded and subangular Gravel, trace Clay, aplastic, dense, dry, no odor. Fill.	SAND/SILTY SAND	
							SP	Yellowish-brown fine to medium SAND, trace Clay, aplastic, dense, no odor, dry. Fill.		
							SM	Very dark grayish-brown fine Silty SAND, trace subrounded Gravel and small brick-like fragments and Clay, dense, no odor, dry.Fill.		
		2	2-4	1.0	20.1	-		Yellowish-brown (10YR 5/4) fine Silty SAND, little shiny black particles, medium dense, no odor, dry. Fill.		
							ML	Yellow-brown (10YR 5/4) SILT, trace fine Sand, trace Silt.		
							FL	CONCRETE rubble.		
							ML	Yellow-brown (10YR 5/4) Sandy SILT, aplastic, dense, no odor, moist.	SILT/SILTY SAND	
							SM	Brown (10YR 4/3) fine to medium Silty SAND, trace subrounded to subangular Gravel, medium dense, no odor, moist.		
5		3	4-6	1.8	25.6	-	ML	Yellow-brown (10YR 5/6) SILT, little fine Sand, trace Clay, dense, moist.		
	725							Yellow-brown (10YR 5/6) Sandy SILT, trace medium Sand and small brick-like fragments, medium dense, no odor, moist.		
		4	6-8	2.0	30.5	-		Yellow-brown and gray (10YR 5/6 and 6/1) SILT, trace Clay, mottled, dense, moist.		
		5	8-10	2.0	59.4	-		Yellowish-brown (10YR 5/6) Sandy SILT, trace subangular Gravel, dense, moist, saturated at 9.1' bgs.		
10										
	720	6	10-12	1.9	22.7	-	SM	Light yellow-brown (10YR 6/4) fine Silty SAND, dense to moderately dense, no odor, saturated.		
		7	12-14	2.0	32.3	-	ML	Dark gray (10YR 4/1) SILT, trace Clay, moderately dense, no odor, moist.		
15										

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NA = Not Applicable/Not Available
Samples collect from 0.5-2' and 6-8'.
1" Temporary Well set at 13' bgs.

Water Level Data

Date	Depth	Elev.
5/16/01	9.1'	NA

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-09-05.dat
Date: 5/31/01

Date Start/Finish: 5/30/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 3 1/4" ID HSA
Rig Type: CME 55

Northing: 559901.6
Easting: 13305367.91
Casing Elevation: 727.66

Borehole Depth: 14' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: RFI-09-06

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730 / 0												
	1	0-2	- 12 12 15	24	1.1	115.0	-	FILL		CONCRETE.	FILL	Cement pad with 9" diam. flush-mount cover. Grout 0.8-1' bgs.
										Very dark gray-brown (10YR 3/2) SILT, little fine to coarse subangular Sand, little to few Clay, few fine to coarse angular to subangular Gravel, weak odor, damp, moderately dense to loose.	SILT	
725	2	2-4	12 12 5 6	17	0.8	95.5	-	ML		Some Clay.		Bentonite hole plug seal 1-2.7' bgs.
												2" ID Sch. 40 PVC riser 0.3-3.5' bgs.
5	3	4-6	1 2 3 7	5	1.5	65.9	-			Gray-brown (10YR 5/2) fine to coarse subangular aplastic SAND, little Silt and fine to coarse subrounded to subangular Gravel, few Clay, weak odor, moist, loose, saturated at 5.0 bgs.	SAND	
	4	6-8	7 12 11 8	23	1.6	2803	+	SP				
720								ML		Black (10YR 2/1) SILT as at 0.5-4.7' bgs, but dense, saturated.	CLAY	
	5	8-10	4 8 12 17	20	1.6	2162	+	CL		Gray (10YR 5/1) CLAY, some Silt, little fine to medium subangular Sand, trace subrounded fine to medium Gravel, damp, hard, no odor, locally oxidized to yellow brown (10YR 5/6) along fractures and selvages.		
10								SP		SAND as at 4.7-7.5' bgs, but black (10YR 2/1), oily, strong odor.	SAND	#5 Global filter sandpack 2.7-14' bgs.
	6	10-12	12 13 15 16	28	1.0	2386	+					
715	7	12-14	8 10 10 12	20	1.6	87.9	-	ML		Gray (10YR 5/1) SILT, few to little fine to medium subangular (predominantly fine) Sand, little Clay, weak odor, damp, dense. Moist to saturated. 1" wide sand seam, moist.	SILT	2" ID Sch. 40 PVC 0.010"slottedscreen 3.5-13.5' bgs.
15												

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+ = Positive Test Result
NA = Not Applicable/Not Available
Samples collected 0.5-2.5' and 2.5-4.5' bgs.

Water Level Data

Date	Depth	Elev.
5/30/01	5.0'	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-09-06.dat Date: 8/6/01

Date Start/Finish: 5/29/01 - 5/30/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 2 1/4" ID
Rig Type: CME 55

Northing: 559948.49
Easting: 13305603.85
Casing Elevation: 727.51

Borehole Depth: 17' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: RFI-09-07

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
730										
0		Auger	NA	NA	NA	NA	NA	Fill	ASPHALT.	FILL
725	1	1-3	10 3 3 2	6	0.6	2.5	-	ML	Dark gray-brown aplastic SILT, some fine to coarse Sand. little Clay, damp, moderately loose to moderatley dense.	SILT
	2	3-5	1 2 2 3	5	1.8	5.4	-			
5	3	5-7	1 1 3 4	4	1.0	5.0	-	SP	Yellow-brown quartz-rich, fine to medium aplastic SAND, some Silt, damp, moderately loose.	SAND
720	4	7-9	1 3 4 5	7	1.2	4.3	-			
10	5	9-11	3 4 3 5	7	2.0	4.6	-	ML	Brown aplastic SILT, little fine to medium Sand, trace Clay, damp, moderately dense. Gray-brown Silty CLAY, little fine to medium Sand, damp, very dense. Orange aplastic SILT, some Clay, saturated, dense to moderately dense.	SILT
715	6	11-13	2 50 19 15	69	1.7	1210	+			
15	7	13-15	3 11 12 13	23	NA	1069	+	SP	Yellow-brown quartz-rich, fine to medium aplastic SAND, some Silt, saturated, oil present, moderately loose.	SAND
	8	15-17	6 10	25	1.8	551	+			

Boring Construction:
- Cement pad with 9" diam. flush-mount cover.
- Grout 1-1.3' bgs.
- Bentonite seal 1.3-3.3' bgs.
- 2" ID Sch. 40 PVC riser 0.2-5.3' bgs.
- #5 Global filter sandpack 3.3-17' bgs.
- 2" ID Sch. 40 PVC 0.010"slottedscreen 5.3-15.3' bgs.

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Remarks: bgs = below ground surface;
+ = Positive Test Result
NA = Not Applicable/Not Available
Samples collected 1-3' and 3-5' bgs.

Water Level Data

Date	Depth	Elev.
5/30/01	9.3'	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-09-07.dat Date: 8/6/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-09-07

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	15-17	15 25	25	1.8	551	+	SP		Yellow-brown quartz-rich, fine to medium aplastic SAND, some Silt, saturated, oil present, moderately loose.		#5 Global filter sandpack 3.3-17' bgs
								ML		Orange SILT, damp.		
710												
20												
705												
25												
700												
30												
695												
35												

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+ = Positive Test Result
NA = Not Applicable/Not Available
Samples collected 1-3' and 3-5' bgs.

Water Level Data

Date	Depth	Elev.
5/30/01	9.3'	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-09-07.dat Date: 8/6/01

Date Start/Finish: 5/29/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" ID **Rig Type:** CME 55	**Northing:** 560189.77 **Easting:** 13305655.95 **Casing Elevation:** 728.45 **Borehole Depth:** 15' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-09-08 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730 / 0		Auger	NA NA					FILL		CONCRETE.	FILL	Cement pad with 9" diam. flush-mount cover. Grout 0.8-1' bgs.
	1	1-3	2 4 24 13	28	1.6	8.1	-	ML		Black and yellow-brown aplastic SILT, little fine Sand and Gravel, trace Clay, Concrete, Asphalt, and Wood, very dense to dense, slight hydrocarbon odor, moist to saturated at 7.6'.	SILT	Bentonite seal 1-3' bgs.
725	2	3-5	11 15 16 12	31	1.8	8.0	-					2" ID Sch. 40 PVC riser 0.2-3.8' bgs.
5	3	5-7	5 8 9 6	17	1.6	133	+					
	4	7-9	4 4 5 6	9	1.7	75.2	+			Gray aplastic SILT and CLAY, little fine Sand, slight hydrocarbon odor, saturated, very dense.	SILT and CLAY	
720	5	9-11	1 3 3 4	6	1.8	70	+	ML				#5 Global filter sandpack 3-15' bgs.
10	6	11-13	3 4 3 4	7	2.0	34.9	-					2" ID Sch. 40 PVC 0.010"slottedscreen 3.8-13.8' bgs.
715	7	13-15	15 25 22 30	47	1.5	65.4	-					
15								SP		Gray aplastic fine to coarse SAND, little Silt, moist, moderately dense to moderately loose.	Sand	

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+ = Positive Test Result
NA = Not Applicable/Not Available
Samples collected 1-3' and 5-7' bgs.

Water Level Data

Date	Depth	Elev.
5/29/01	7.6'	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-09-08.dat Date: 8/6/01

Date Start/Finish: 5/29/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 2 1/4" ID
Rig Type: CME 55

Northing: 560137.69
Easting: 13305495.75
Casing Elevation: 728.2

Borehole Depth: 16' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: RFI-09-09

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	730												
0				-					FILL		CONCRETE.	FILL	Cement pad with 9" diam. flush-mount cover.
		1	0-2	9 11 9	20	1.2	5.0	-			Yellow-brown aplastic SILT, some fine to coarse subangular Sand, little fine to coarse subangular Gravel, trace Clay, dry, loose.		Grout 0.8-1' bgs.
									ML		Dark gray-brown aplastic SILT, little Clay and fine to medium subangular Sand, dry to damp, moderately dense to dense.	SILT	
	725	2	2-4	9 8 7 9	15	1.6	6.0	-			Dark brown aplastic SILT, some fine to coarse subrounded to subangular SAND, little Clay, dry, moderatley dense to moderately loose.		Bentonite seal 1-3' bgs.
											Yellow-brown aplastic SILT, some fine to coarse subangular Sand, little fine to coarse subangular Gravel, trace Clay, dry, loose.		2" ID Sch. 40 PVC riser to 3.8' bgs.
5		3	4-6	6 7 8 9	15	1.3	4.6	-			Light yellow-brown aplastic, quartz-rich fine to medium SAND, some SIlt, trace Clay, moist, moderately dense to dense.	SAND	
		4	6-8	6 6 9 11	15	1.5	10.0	+	SP				
	720	5	8-10	4 8 8 11	16	1.5	432	+			Gray-brown aplastic SILT, some Clay, hydrocarbon odor, saturated, dense, oily sheen.	SILT	#5 Global filter sandpack 3-14' bgs.
10											Gray SILT and CLAY, little fine to medium Sand, hydrocarbon odor, oil, damp. very dense.		
		6	10-12	12 15 15 13	30	1.5	1782	+	ML-C		Brown aplastic SILT, little fine to medium Sand, some coarse angular Gravel, littel Clay, hydrocarbon odor, oily sheen, wet, moderately to very dense.	SILT	2" ID Sch. 40 PVC 0.010" slotted screen 3.8-13.8' bgs.
	715	7	12-14	9 12 25 18	40	1.6	1679	+					
15		8	14-16	4 9 11 15	20	1.4	39.3	-	SP		Gray aplastic fine to coarse SAND, little Silt and fine to coarse Gravel, slight hydrocarbon odor, saturated, loose.	SAND	Natural collapse 14-16' bgs.

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Remarks: bgs = below ground surface;
+ = Positive Test Result
NA = Not Applicable/Not Available
Samples collected 0.7-2.7' and 4.7-6.7' bgs.

Water Level Data

Date	Depth	Elev.
5/29/01	11.0' bgs	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-09-09.dat Date: 8/6/01

Date Start/Finish: 5/29/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 2 1/4"
Rig Type: CME 55

Northing: 559790.25
Easting: 13305453.37
Casing Elevation: 726.45

Borehole Depth: 26' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: RFI-09-10

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0 / 726			- -					FL		Concrete.	FILL
725	1	1-3	2 3 NA NA	3	1.8	3487	-	ML		Black (10 YR 2/1) SILT. Some fine to medium (predominantly fine) Sand. Little Clay. Local increase in clay content to some. Aplastic, no odor, moderately dense, moist to wet. Fill	SILT
										Rubble and brick. Spoon refusal.	
	2	3-5	1 2 2 3	4	1.8	3841	-	ML		SILT as above (0.8-2.0' bgs) but brown (10 YR 5/3). Saturated. Decrease in Clay content to few after 3.7' bgs.	
5	3	5-7	1 3 5 7	8	2.0	152	-	CL		Grey (10 YR 5/1) SILTY CLAY. Little fine to medium subangular Sand. No odor, soft, moist but saturated with local increase in silt content to Silt. Clay Till.	CLAY
720								SP		Brown (10 YR 5/3) fine to coarse (predominantly fine to medium) subangular SAND, some Silt, trace angular Gravel. Aplastic, no odor, saturated, loose.	SAND
	4	7-9	4 6 7 7	13	1.6	1621	-	ML		Brown (10 YR 5/3) SILT, little Clay. Aplastic, no odor, saturated, moderately dense. Turn to grey (10 YR 5/1) with brown mottling after 7.0' bgs and homogenous grey at 8.0' bgs. 3" thick Sand lens at 7.0' as described above (5.5'-6.5' bgs). Moist at 12.9' bgs instead of saturated.	SILT
10	5	9-11	4 4 5 7	9	1.6	3664	-				
715	6	11-13	4 6 3 7	9	1.4	4367	-				
	7	13-15	1 2 9 29	11	NA	1740	-				
15	8	15-17	22 26	54	NA	1972	-	GP		Grey (10 YR 5/1) fine to coarse subrounded to angular GRAVEL, some fine to coarse subangular Sand, little Silt, no odor, saturated, loose. Fines downward to a Silt. Glacial-alluvial.	GRAVEL

Boring Construction

- Cement pad with 9" diam. flush-mount cover.
- Grout 0.8-1' bgs.
- Bentonite seal 1-2' bgs.
- 2" ID Sch. 40 PVC riser 0.2-3.5' bgs.
- #5 Global filter sandpack 2-17' bgs.
- 2" ID Sch. 40 PVC 0.010"slottedscreen 3.5-13.5' bgs.

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Remarks: bgs = below ground surface;
Sample collected 0.8-2' bgs.
NA = Not Available/Not Applicable

Water Level Data

Date	Depth	Elev.
5/29/01	3.7'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-09-10

Borehole Depth: 26' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
710	8	15-17	29 27	54	NA	1972	-	CL		Gray (10 YR 5/1) CLAY, some Silt, little fine to medium subangular to subrounded Sand, few fine to medium subrounded Gravel. Hard , no odor, dry. Clay Till.	CLAY	#5 Global filter sandpack 2-17' bgs.
20 / 705												
25 / 700												
30 / 695												
35												

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Remarks: bgs = below ground surface;
Sample collected 0.8-2' bgs.
NA = Not Available/Not Applicable

Water Level Data

Date	Depth	Elev.
5/29/01	3.7'	

Project: 644.10.023
Data File: RFI-09-10
Template: j:\rockware\logplot2001\logfiles\64414\auger_well2.ldf
Date: 9/14/01

Date Start/Finish: 06/11/2001 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** 560158.58 **Easting:** 13305417.44 **Casing Elevation:** 728.85 **Borehole Depth:** 24' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-09-11 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730 / 0												
	1	0-2	- 8 3 3	11	1.2	0.0	-	SP		Concrete.	SAND	Cement pad with 9" diam. flush-mount cover.
										Gray brown (10YR 5/2) subangular to subrounded fine to coarse aplastic SAND, some Silt, some Clay, no odor, moderately dense, dry.		
								ML		Yellow brown (10YR 5/4) aplastic SILT, some Clay, little fine subangular Sand, no odor, dense, damp.		Grout 0.8-1' bgs.
	2	2-4	2 4 4 5	8	1.6	0.0	-	CL		Brown (10YR 4/3) soft CLAY, some Silt, little fine to medium (predominantly fine) subangular Sand, no odor, damp, soft, locally oxidized, increased silt locally, black mottling at 2.7'-3.4' bgs.		Bentonite seal 1-2' bgs.
725								ML		Brown (10YR 4/3) aplastic SILT, some fine to medium (predominantly fine) subriunded to subangular Sand, no odor, damp, moderately dense.		2" ID Sch. 40 PVC riser 0.2-4' bgs.
5	3	4-6	2 2 4 3	6	2.0	17.6	-	CL		Gray (10YR 5/1) soft CLAY with yellow brown (10YR 5/4) mottling/oxidation, some Silt, little fine to medium subrounded to subangular Sand, few fine to coarse subrounded to subangular Gravel, oily (?), odor, soft, moist, 1"-3" silt lenses throughout, saturated at 5.3' bgs, becomes to brown (10YR 5/3) thoughout, oily, odor, damp.	SILT and CLAY	
	4	6-8	2 2 8 12	10	2.0	27.4	+					Global filter sand pack 2-14' bgs.
720	5	8-10	8 11 17 21	28	1.8	16.1	+					
10	6	10-12	5 12 17 22	29	1.8	25.2	-			Yellow brown (10YR 5/2) aplastic SILT, some to little Clay, little fine fine subangular Sand, oily (?), odor, dense, damp, clay lenses upto 3" wide, saturated at 10.7' bgs, damp at 11.4' bgs, saturated at 12.4'-13.0' bgs, local reduction, blueish-gray mottling, damp, saturated again at 14.5' bgs, sand and gravel increased to little, clay decreased to little, grades to gray (10YR 6/1) fine to coarse subangular SAND and subangualr GRAVEL, saturated, odor (alluvial/river deposits).		2" ID Sch. 40 PVC 0.010" slotted screen 4-14' bgs.
	7	12-14	9 16 20 22	36	2.0	9.9	+	ML				
715												
15	8	14-16	11 11 12 13	23	1.5	1.0	_					

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Remarks: bgs = below ground surface;
+ = Positive Test Result
NA=Not Available/Not Applicable;
Soil samples collected from 0.5-2.5' and 2.5-4.5'.

Water Level Data

Date	Depth	Elev.
6/11/01	5.3	
6/11/01	10.7	
6/11/01	12.4	
6/11/01	14.5	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-09-11

Borehole Depth: 24' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	11 13 15 18	28	1.8	0.0	-	ML		Yellow brown (10YR 5/2) aplastic SILT, some to little Clay, little fine fine subangular Sand, oily (?), odor, dense, damp, clay lenses upto 3" wide, saturated at 10.7' bgs, damp at 11.4' bgs, saturated at 12.4'-13.0' bgs, local reduction, blueish-gray mottling, damp, saturated again at 14.5' bgs, sand and gravel increased to little, clay decreased to little, grades to gray (10YR 6/1) fine to coarse subangular SAND and subangualr GRAVEL, saturated, odor (alluvial/river deposits).	SILT and CLAY	
710	10	18-20	15 42 50/ 5"	92	1.7	0.0	-	SP		Gray (10YR 5/1) fine to coarse subangular SAND, little to some fine to medium subrounded to subangular Gravel, little Silt, trace Clay, moderately dense, no odor to slight odor, saturated.	SAND	
20								CL		Gray (10YR 5/1) CLAY, some Silt, little fine to medium subangular to subrounded Sand, few fine to coarse subrounded to rounded Gravel, no odor, dry, hard.		
	11	20-22	15 17 28 33	45	1.6	0.0	-	SC		Alternating units of hard CLAY (as above) upto 8" wide and SAND (as 17.7-19.8) upto 3" wide, saturated, no odor, gravel lenses (10 YR 5/1, medium to coarse, subangular).	CLAY and SAND	Bentonite holeplug 16-24' bgs.
705	12	22-24	40 50/ 5" -	NA	1.1	0.3	-	CL		Hard CLAY as 19.8'-20.0' bgs. Clay Till.	CLAY	
25												
700												
30												
695												
35												

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Remarks: bgs = below ground surface;
+ = Positive Test Result
NA=Not Available/Not Applicable;
Soil samples collected from 0.5-2.5' and 2.5-4.5'.

Water Level Data

Date	Depth	Elev.
6/11/01	5.3	
6/11/01	10.7	
6/11/01	12.4	
6/11/01	14.5	

Project: 644.10.023 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-09-11.dat Date: 11/19/01

Date Start/Finish: 06/11/2001 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** **Rig Type:**	**Northing:** 560112.01 **Easting:** 13305293.65 **Casing Elevation:** 729.77 **Borehole Depth:** 14' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-09-12 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	730											
0									FL	Concrete.	FILL	
		1	0-2	- 8 7 7	15	1.1	0.0	-	ML	Dark yellow brown (10YR 4/6) SILT, mottled with very dark brown and black (10 YR 3/2 + 2/1) Silt, some Clay, some fine to coarse Sand, little subangular to subrounded Gravel, damp, no odor, moderately loose to moderately dense.	SILT	
		2	2-4	3 4 4 5	8	1.6	0.0	-	CL	Light olive brown (10YR 5/3) Silty CLAY, some fine to coarse subangular Sand, few fine to medium subangular to subrounded Gravel, possible slag, locally oxidized, damp, moist to wet at 3.8' bgs,	CLAY	Bentonite Seal 1-4' bgs
	725									Concrete.	FILL	
5		3	4-6	9 9 13 16	22	2.0	0.3	-	FL			2" ID Sch. 40 PVC riser 0.2-6' bgs.
		4	6-8	6 11 20 17	31	1.7	0.0	-	CL	Yellow brown (10YR 5/6) CLAY, some Silt, little fine to coarse subangular to subrounded Sand, trace subrounded Gravel, locally oxidized, dry, dense, no odor, color turns to gray (10YR 5/1) at 7.8' bgs.	CLAY	Global filter sand pack 4-14' bgs.
	720	5	8-10	6 8 11 12	19	1.7	0.0	-				2" ID Sch. 40 PVC 0.010" slotted screen 6-11' bgs.
10									SP	Light brown gray fine to coarse subangular SAND, some Silt, no odor, moderately loose, saturated.		
									ML	Gray (10YR 5/1) SILT, little fine subangular Sand, saturated, dense, no odor.	SILT	
		6	10-12	15 40 50/5 -	90	1.4	0.0	-	CL	Gray CLAY (stiff), trace fine to medium subangular Sand, some Silt, dry to damp.	CLAY	
		7	12-14		-	-	-					
	715											
15												

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Remarks: bgs = below ground surface;
PID background = 0.0 ppm
NA=Not Available
Samples collected 0.6-2.6 and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
06/11/01	9.3	

Date Start/Finish: 09/13/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: 560089.51
Easting: 13305722.09
Casing Elevation: NA

Borehole Depth: 18' bgs
Surface Elevation: 725.09

Descriptions By: SM Duly

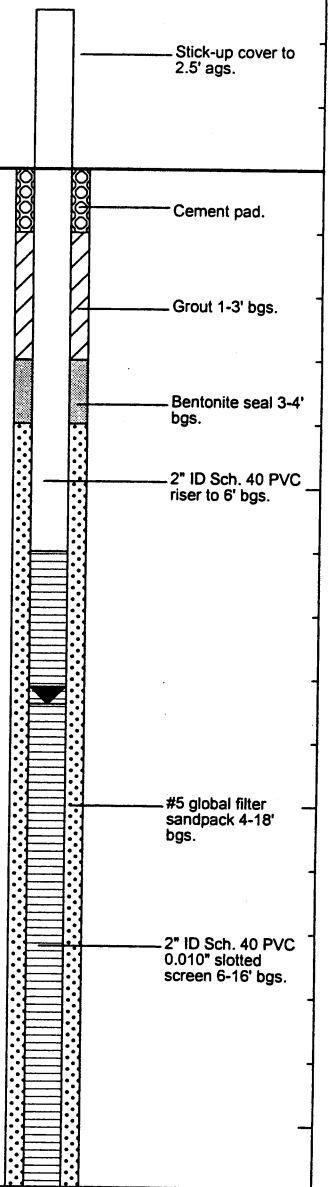
Boring ID: RFI-09-13

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0	725	1	0-2	2 2 24 16	26	1.7	7.4	-	ML		Dark grayish brown (10 YR 4/2) SILT, little fine to coarse subrounded Sand, little Clay; aplastic, moderately dense, dry, earthy odor. Vegetation and roots present. Topsoil.	SILT
									FL		Brick debris.	FILL
		2	2-4	10 10 14 15	24	1.8	9.9	-	ML		Brown (10 YR 4/3) SILT, some fine to coarse subangular to subrounded Sand, few Clay; aplastic, dry, dense, no odor. Concrete and brick debris present. Fill.	SILT
									SM		Yellowish brown (10 YR 5/9) Silty SAND, fine to coarse subrounded to subangular Sand, few Clay, few fine subangular Gravel; dry, dense, no odor. Fill.	
5	720	3	4-6	4 5 5 5	10	2.0	10.5	-	CL		Grayish brown (10 YR 5/1) with yellowish brown (10 YR 5/6) mottling and oxidation Silty CLAY, few fine to coarse subrounded Sand, stiff, weakly plastic, dry, no odor. Occasional silt lenses up to 3" thick throughout. Clay Till.	SILTY CLAY
		4	6-8	4 6 6 8	12	1.8	3.3	-			Increasing moisture content to moist, especially in silt lenses.	
		5	8-10	2 3 5 6	8	2.0	5.0	-			Saturated.	
10	715	6	10-12	1 2 3 3	5	1.9	2.1	-				
		7	12-14	53 33 17 17	50	1.2	11.2	-				
15	710	8	14-16	16 16 9 11	25	1.5	10.5	-	SP		Gray (10 YR 5/1) fine to coarse subrounded to subangular SAND, some fine to coarse subrounded Gravel (decreasing Gravel content with depth), few Silt (increasing Silt content with depth), few Clay (increasing Clay content with depth); moderately dense to dense, saturated, weak odor. Glacial-alluvial.	SAND

Boring Construction



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Remarks: a/bgs = above/below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2', 4-6' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
09/13/01	8.4 bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-09-13.dat Date: 9/25/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-09-13

Borehole Depth: 18' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	12 14 39 50/3"	53	1.8	6.9	-	CL		Gray (10 YR 5/1) Silty CLAY, little fine to coarse subrounded Sand, trace fine to coarse rounded Gravel; hard, dry, weakly plastic, no odor. Clay Till.	SILTY CLAY	#5 global filter sandpack 4-18' bgs.
20 705												
25 700												
30 695												
35 690												

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Remarks: a/bgs = above/below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2', 4-6' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
09/13/01	8.4 bgs	

Project: 64410.022
Data File:RFI-09-13.dat
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 9/25/01

Date Start/Finish: 09/13/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** 559982.95 **Easting:** 13305726.37 **Casing Elevation:** NA **Borehole Depth:** 18' bgs **Surface Elevation:** 724.44 **Descriptions By:** SM Duly	**Boring ID:** RFI-09-14 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
725 / 0											
	1	0-2	1 1 2 10	3	1.7	1.5	-	ML		Dark grayish brown (10 YR 4/2) SILT, little fine to coarse subrounded Sand, little Clay; aplastic, moderately dense, dry, earthy odor. Vegetation and roots present. Topsoil.	SILT
	2	2-4	4 6 6 8	12	1.8	746	-	SW		Yellowish-brown (10 YR 5/6) fine to medium subangular to subrounded SAND, little Silt, few Clay; aplastic, moderately dense, damp to dry, no odor. Concrete and brick debris and old root structure present, Little fine to coarse subrounded to subangular Gravel present at 2' bgs. At 3.2' bgs, very dark grayish brown (10 YR 3.2), increased density.	SAND
720 / 5	3	4-6	2 5 5 4	10	2.0	289	-	CL		Gray (10 YR 5/1) with brown (10 YR 5/3) mottling Silty CLAY, little fine to medium subangular to subrounded Sand; plastic, stiff to very stiff, dry to damp, moderate odor. Clay Till.	SILTY CLAY
	4	6-8	4 4 5 6	9	1.8	1.4	-			Increased moisture to moist to wet; occasional Silt lenses up to 3" thick throughout, especially from 7' bgs to lower contact.	
715 / 10	5	8-10	2 3 5 10	8	2.0	2.1	-			Saturated.	
	6	10-12	9 10 13 14	23	1.9	0.0	-	SP		Gray (10 YR 5/1) fine to coarse subrounded to subangular SAND, some fine to medium subangular to subrounded Gravel, few Clay, little Silt; aplastic, moderately loose to increasingly dense with depth, no odor. Glacial-alluvial.	SAND
	7	12-14	5 9 10 15	19	1.2	3.6	-				
710 / 15	8	14-16	9 9 13 24	22	1.5	0.9	-	CL		Gray (10 YR 5/1) Silty CLAY.	

Boring Construction

- Stick-up cover to 2.5' ags.
- Cement pad.
- Grout 1-3' bgs.
- Bentonite seal 3-4' bgs.
- 2" ID Sch. 40 PVC riser to 6' bgs.
- #5 Global filter sandpack 4-18' bgs.
- 2" ID Sch. 40 PVC 0.010" slotted screen 6-16' bgs.

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Remarks: a/bgs = above/below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2', 2-4' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
9/13/01	8.8' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-09-14.dat Date: 9/25/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-09-14

Borehole Depth: 18' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	12 18 20 30	38	1.8	0.0	-	CL		Gray (10 YR 5/1) Silty CLAY, little fine to coarse subangular to subrounded Sand, trace fine to coarse subrounded to rounded Gravel; hard to weakly plastic, dry, no odor.	SILTY CLAY	#5 Global filter sandpack 4-18' bgs.
705 20												
700 25												
695 30												
690 35												

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Remarks: a/bgs = above/below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2', 2-4' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
9/13/01	8.8' bgs	

Date Start/Finish: 09/04/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 559621.47 **Easting:** 13305499.89 **Casing Elevation:** NA **Borehole Depth:** 3.9' bgs **Surface Elevation:** 726.27 **Descriptions By:** SM Duly	**Boring ID:** RFI-09-15 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 725	1	0-2	6 9 NA NA	NA	0.7	13.8	+	ML		Asphalt. Very dark gray-brown to black (10 YR 2/1) SILT, little fine to coarse subangular Sand, few fine to medium rounded to subrounded Gravel, no odor, aplastic, dry, dense. Concrete. Very dark gray-brown SILT as at 0.5-1.5' bgs. Slag also present. Fill. Refusal encountered at 3.9'.	FILL SILT FILL SILT →	Borehole tremie grouted.
	2	2-3.9	7 8 NA NA	NA	1.0	12.5	+					
5 720												
10 715												
15												

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Remarks: bgs = below ground surface; + = Positive Test Result;
NA = Not Applicable/Not Available;
Samples collected 0.5-1.5 and 1.9-3.9' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.023
Data File:RFI-09-15
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 09/18/01

Date Start/Finish: 09/04/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 559625.65 **Easting:** 13305521.07 **Casing Elevation:** NA **Borehole Depth:** 3.5' bgs **Surface Elevation:** 725.55 **Descriptions By:** SM Duly	**Boring ID:** RFI-09-16 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 725	1		4 4 6 5	10	1.8	0.0	-	ML		Asphalt. Dark gray-brown to black (10 YR 2/1) SILT, little fine to medium subrounded to rounded Sand, little Clay, trace fine to coarse rounded to subrounded Gravel, no odor, aplastic, dense, damp. Fill	FILL SILT	Borehole tremie grouted.
	2	2.5-3.5	3 3	NA	1.0	0.0	-					
5 720												
10 715												
15 710												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Sample collected 1-3' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 09/04/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 3.2' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-09-18 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0												
	1	0.2-2.2	9 13 13 12	26	1.7	0.0	-	ML		Asphalt. Very dark gray-brown SILT, little fine to coarse angular to subangular Sand, little Clay, few fine to coarse subrounded Gravel, no odor, dense, aplastic, dry.	SILT	
	2	2.2-3.2	8 8	NA	0.5	0.0	-	SM		Yellow-brown (10 YR 5/6) Silty fine to medium poorly graded subangular SAND, little Clay, no odor, dense, dry.	SILTY SAND	Borehole tremie grouted.
5 5												
10 10												
15 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Sample collected 1-3' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 09/04/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 559447.28 **Easting:** 13305473.81 **Casing Elevation:** 726.11 **Borehole Depth:** 2.5' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-09-19 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 725	1	0.5-2.5	8 10 12 12	22	1.8	0.0	-	ML-SM		Asphalt. Very dark gray-brown SILT, little fine to coarse subangular Sand, few fine to medium subrounded Gravel, little Clay, no odor, dense, aplastic, dry. Yellow-brown (10 YR 5/6) Silty fine poorly graded subangular SAND, little Clay, no odor, dense, aplastic, damp.	FILL SILT	Borehole tremie grouted.
5 720												
10 715												
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Sample collected 0.5-2.5' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.023 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-09-19.dat Date: 11/19/01

Date Start/Finish: 09/04/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 559426.31 **Easting:** 13305469.68 **Casing Elevation:** NA **Borehole Depth:** 2.5' bgs **Surface Elevation:** 726.00 **Descriptions By:** SM Duly	**Boring ID:** RFI-09-20 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 725	1	0.5-2.5	6 8 8 10	16	1.6	0.0	-	ML		Asphalt. Very dark gray-brown SILT, little fine to coarse angular to subangular Sand, little Clay, trace fine to medium subangular Gravel, no odor, dense, aplastic, dry. Little fine to coarse black Sand with vitreous luster debris.	← SILT →	Borehole tremie grouted.
5 720												
10 715												
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Sample collected 0.5-2.5' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.023 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-09-20.dat Date: 09/18/01

Date Start/Finish: 09/04/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 559436.76 **Easting:** 13305461.00 **Casing Elevation:** NA **Borehole Depth:** 2.5' bgs **Surface Elevation:** 726.15 **Descriptions By:** SM Duly	**Boring ID:** RFI-09-21 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0										Asphalt.		
	1	0.5-2.5	16 17 14 13	31	1.6	0.0	-	ML-SM		Very dark gray-brown SILT, little fine to coarse subangular Sand, little Clay, few fine to medium subrounded Gravel, no odor, dense, aplastic, dry. Brick debris also present - Fill.	← SILT →	Borehole tremie grouted.
										Yellow-brown (10 YR 5/6) Silty fine subangular SAND, little Clay, no odor, dense, aplastic, dry.		
5 5												
10 10												
15 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Sample collected 0.5-2.5' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 09/04/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 559272.99 **Easting:** 13305437.78 **Casing Elevation:** NA **Borehole Depth:** 4' bgs **Surface Elevation:** 725.43 **Descriptions By:** SM Duly	**Boring ID:** RFI-09-22 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	725	1	0-2	9 17 24 13	41	1.3	19.1	-	ML		Pale gray to gray (10 YR 6/1) SILT, some fine to coarse angular Sand, little fine to coarse angular Gravel, few Clay, no odor, dense, aplastic, dry. Fill and aggregate.	SILT	
		2	2-4	15 15 13 15	28	1.0	23.5	-	SM		Yellow-brown (10 YR 5/6) Silty fine to medium poorly graded subangular to subrounded SAND, little Clay, no odor, dense, aplastic, dry. More oxidized, few fine to coarse subangular Gravel. Fill	SILTY SAND →	Borehole tremie grouted.
5	720												
10	715												
15	710												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples collected 0-2' and 2-4' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 09/04/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 2 1/4"
Rig Type: CME 55

Northing: 559177.78
Easting: 13305404.71
Casing Elevation: NA

Borehole Depth: 4' bgs
Surface Elevation: 725.93

Descriptions By: SM Duly

Boring ID: RFI-09-23

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 725	1	0-2	28, 29, 49, 20	78	1.7	18.1	-	ML		Pale gray to gray (10 YR 6/1) SILT, some fine to coarse angular Sand, some fine to coarse angular Gravel, little Clay, no odor, dense, aplastic, dry. Fill and aggregate.	SILT	
	2	2-4	12, 15, 16, 11	31	1.2	22.6	+			Black (10 YR 2/1) SILT, some fine to medium subangular to subrounded Sand, little Clay, moderate "oily" odor, dense, aplastic, dry. Fill.		Borehole tremie grouted.
5 / 720												
10 / 715												
15 / 710												

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Remarks: bgs = below ground surface; + = Positive Shake Test
NA = Not Applicable/Not Available.
Samples collected 0-2' and 2-4' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-09-23.dat Date: 09/18/01

Date Start/Finish: 09/04/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 559227.43 **Easting:** 13305409.17 **Casing Elevation:** NA **Borehole Depth:** 4.0 ft. **Surface Elevation:** 725.95 **Descriptions By:** SM Duly	**Boring ID:** RFI-09-24 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0												
	1	0-2	12 14 17 19	31	1.2	0.0	-	ML		Pale gray SILT, little Clay, little fine to coarse angular Sand, little to some fine to coarse angular Gravel, no odor, dense, aplastic, dry. Crushed and whole aggregate fill and concrete rubble. Very dark brown SILT, little fine to medium subangular Sand, some Clay, no odor, dense, aplastic, dry. Glassy and metallic angular fine to coarse sand-sized debris present. Fill	SILT	Borehole tremie grouted.
	2	2-4	12 22 26 29	48	1.5	0.0	-	SM		Yellow-brown (10 YR 6/4) SILTY fine to medium poorly graded subangular SAND, little Clay, no odor, dense, aplastic, damp. Glacial-alluvial. at 3.5': 1" thick silt lenses present.		
5 5												
10 10												
15 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples collected 0-2' and 2-4' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-09-24.dat Date: 11/19/01

Date Start/Finish: 09/04/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 559199.45 **Easting:** 13305374.93 **Casing Elevation:** NA **Borehole Depth:** 4' bgs **Surface Elevation:** 726.25 **Descriptions By:** SM Duly	**Boring ID:** RFI-09-25 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 725	1	0-2	12 23 14 20	37	1.4	22.9	-	ML		Pale gray to gray (10 YR 6/1) SILT, some fine to coarse angular Sand, little to some fine to coarse angular Gravel, little Clay, no odor, dense, aplastic, dry. Fill and aggregate.	SILT	
								SP		Reddish-brown fine to coarse angular well graded SAND, no odor, moderately loose, dry. Foundry sand.	SAND	
	2	2-4	23 24 19 14	43	1.0	27.6	-	ML		Black (10 YR 2/1) SILT, little fine to coarse angular foundry Sand, some Clay, occasional brick and glass shards, no odor, dense, aplastic, dry.	← SILT →	Borehole tremie grouted.
								SM		Yellow-brown Silty fine to medium poorly graded subangular SAND, little Clay, no odor, dense, aplastic, damp to dry. Glacial-alluvial.		
5 720												
10 715												
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samles collected 0-2' and 2-4' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-09-25.dat Date: 11/19/01

Date Start/Finish: 09/05/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 559772.46 **Easting:** 13305255.39 **Casing Elevation:** NA **Borehole Depth:** 2.7' bgs **Surface Elevation:** 730.72 **Descriptions By:** SM Duly	**Boring ID:** RFI-09-26 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 730								FL		Asphalt. Concrete.	FILL	
	1	0.7-2.7	2 4 4 3	8	1.6	0.0	-	ML		Dark yellow-brown (10 YR 4/6) SILT, some Clay, little fine to coarse subangular Sand; cement/concrete fragments, damp, moderately dense, aplastic, heavily oxidized, no odor. FILL	SILT	Bentonite (0.0 to 2.7' bgs)
										Yellow-brown (10 YR 5/6) SILT, little Clay, some fine to medium subangular to subrounded Sand; aplastic, no odor, moderately dense, damp.		
5 725												
10 720												
15 715												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Sample collected 0.7-2.7' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-09-26.dat Date: 9/25/01

Date Start/Finish: 09/04/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 559748.69 **Easting:** 13305282.44 **Casing Elevation:** NA **Borehole Depth:** 3' bgs **Surface Elevation:** 730.45 **Descriptions By:** SM Duly	**Boring ID:** RFI-09-27 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 730										Asphalt.	FILL	
	1	0.7-2.7	7 13 14 14	27	1.0	7.9	-	ML		Dark brown SILT, little fine to coarse subangular Sand, few fine to medium subangular to angular Gravel, few Clay, no odor, moderately dense to dense, aplastic, dry.	SILT	Borehole tremie grouted.
5 725												
10 720												
15 715												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Sample collected 0.7-2.7' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-09-27.dat Date: 09/18/01

Date Start/Finish: 09/05/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID HSA **Rig Type:** CME 55	**Northing:** 559722.39 **Easting:** 13305256.90 **Casing Elevation:** NA **Borehole Depth:** 2.5' bgs **Surface Elevation:** 730.90 **Descriptions By:** SM Duly	**Boring ID:** RFI-09-28 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								FL		Asphalt.	FILL	
	1	0.5-2.5	8 8 7 9	15	1.8	7.8	+	ML		Brown (10 YR 5/3) to yellow-brown (10 YR 5/6) SILT (ML), some Clay, little fine to coarse subangular to subrounded Sand, trace rounded fine Gravel; metallic ash and brick debris present, aplastic, damp, dense, no odor. Fill.	SILT	Bentonite (0.0 to 2.5' bgs)
5 5												
10 10												
15 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0.5-2.5' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 09/05/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID HSA **Rig Type:** CME 55	**Northing:** 559749.14 **Easting:** 13305231.08 **Casing Elevation:** NA **Borehole Depth:** 1.7' bgs **Surface Elevation:** 732.62 **Descriptions By:** SM Duly	**Boring ID:** RFI-09-29 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0												
	1	0-2	9 10 50/ 4"	NA	1.0	7.9	-	FL ML		Asphalt Black (10 YR 2/1) SILT, little fine to coarse subrounded Sand, few Clay; aplastic, dry, moderately dense, no odor. Fill with metallic and brick debris. . Refusal.	SILT	Bentonite (0.0 to 2.5' bgs)
5 5												
10 10												
15 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Sample collected 03.-1.7' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-09-29.dat Date: 11/19/01

Date Start/Finish: 7/26/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 4 1/4" **Rig Type:** CME 55	**Northing:** 566673.26 **Easting:** 13306446.66 **Casing Elevation:** NA **Borehole Depth:** 17' bgs **Surface Elevation:** 749.11 **Descriptions By:** S Kerr	**Boring ID:** RFI-10-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
750 / 0		NA	NA	NA	NA	NA	NA	FILL		Concrete.	Fill	Cement pad with 9" diam. flush-mount cover.
	1	1-3	7 9 10 12	19	0.0	2.5	-			Dark gray (10 YR 4/1) SILT, little fine to coarse Sand, little Clay, trace fine Gravel, aplastic, damp to moist, no odor, moderately loose.		Grout 1-2' bgs.
745	2	3-5	5 6 7 6	13	1.4	2.2	+					Bentonite seal 2-4' bgs.
5	3	5-7	4 4 5 5	9	1.4	2.3	+	ML			SILT	2" ID Sch. 40 PVC riser 0.2-6' bgs.
	4	7-9	2 2 1 2	3	2.0	11.7	+			Gray (10 YR 6/1) SILT, trace fine Sand, dense, moist, slight odor. SILT, as at 1-7.3' bgs, increased Sand to some, fine to coarse Gravel, moist to wet. at 8.2': Saturated, various color sand varves, olive brown, red, gray.		
740												Global #5 sandpack 4-17' bgs.
10	5	9-11	2 2 2 3	4	1.3	4.2	+	CL		Light olive brown (10 YR 5/3) SILTY CLAY, trace fine Sand, saturated, no odor.		
								ML		SILT, as at 7.5-9.7' bgs. Light olive brown (10 YR 5/3) SILT, trace fine Sand, moderately loose, saturated, no odor. Changes to gray (10 YR 4/1) at 10.9' bgs.	SILT	2" ID Sch. 40 PVC 0.010" slotted screen 6-16' bgs.
	6	11-13	2 4 6 7	10	1.7	2.5	-					
								SM		Gray (10 YR 5/1) fine SAND, some Silt, moderately dense, saturated, no odor.	SAND	
735	7	13-15	3 5 6 7	11	1.2	0.6	-					
15								ML		Gray (10 YR 5/1) SILT, trace fine Sand, dense, saturated, slight odor.	SILT	
	8	15-17	2 4	9	1.5	0.0	-					

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Remarks: bgs = below ground surface;
NA = Not Available; + = Positive Test Results;
Samples collected 1-3', 5-7' and 9-11' bgs.
A boring was previously installed at this location on 7/20/01.

Water Level Data

Date	Depth	Elev.
7/26/01	8.2'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-10-01

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	15-17	5 6	9	1.5	0.0	-	ML		Gray (10 YR 5/1) SILT, trace fine Sand, dense, saturated, slight odor.	SILT	Global #5 sandpack 4-17' bgs.

730
20
725
25
720
30
715
35

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Remarks: bgs = below ground surface;
NA = Not Available; + = Positive Test Results;
Samples collected 1-3', 5-7' and 9-11' bgs.
A boring was previously installed at this location on 7/20/01.

Water Level Data

Date	Depth	Elev.
7/26/01	8.2'	

Date Start/Finish: 6/27/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** 566361.12 **Easting:** 13306621.08 **Casing Elevation:** NA **Borehole Depth:** 19' bgs **Surface Elevation:** 750.54 **Descriptions By:** SM Duly	**Boring ID:** RFI-10-02 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	750								FL		Concrete.	FILL	Cement pad with flush-mount cover.
		1	0.8-2.8	30 31 50/5	81	1.2	9553	+			Ligth olive brown (2.5 Y 5/4) fine to medium SAND. Dry, dense, slight odor.		
											Black (10 YR 2/1) SILT. Trace Clay. Little fine to medium Sand. Trace subrounded to subangular Gravel. Dry, dense, slight odor.	SAND and SILT	Cement/bentonite grout 1.0-3.0' bgs.
		2	2.8-4.8	16 17 17 10	34	1.5	>9999	+	SP		SAND as above (0.8'-2.0' bgs) with some fine to coarse Gravel, little Clay, concrete rubble.		
											Black (10 YR 2/1) SILT, trace Clay, little fine Sand. Dense, moist, slight odor.		Bentonite chip seal 3.0-5.0' bgs.
5	745	3	4.8-6.8	9 6 6 5	12	1.5	>9999	+	ML				
									CL		Grey CLAY (10 YR 5/1) with black staining throughout. Some Silt. Little fine Sand. Stiff, slight odor, moist, low plasticity.		2" ID PVC riser to 7.0' bgs.
		4	6.8-8.8	5 6 8 10	14	1.3	>9999	-			Greyish brown (10 YR 5/2) SILT. Little Clay. Some fine Sand. Aplastic, moist, dense, slight odor. Wet with some oxidation at 8.8' bgs.		#5 Global sandpack 5.0-19.0' bgs.
10	740	5	8.8-10	3 3 4 5	7	1.5	>9999	-			No more clay. Decrease in sand content to trace and moderately dense.	SILT	2" ID PVC Sch. 40 0.010" slotted screen 7.0-17.0' bgs.
		6	10.8-1	1 1 1 4	2	1.2	>9999	-	ML				
		7	12.8-1	4 5 8 9	13	1.4	>9999	-					
15	735	8	14.8-1	3 6 6	12	1.3	299	-					

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Remarks: bgs = below ground surface;
NA = non available
+ = Positive Test Result
Samples collected 0.8-2.8' and 6.8-8.8' bgs.

Water Level Data

Date	Depth	Elev.
6/27/01	9.95'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-10-02

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	14.8-1(	9	12	1.3	299	-	ML		SILT as above (6.4' -16' bgs).	SILT	2" ID PVC Sch. 40 0.010" slotted screen 7.0-17.0' bgs.
			1									
			2									
	9	16.8-1(	7	9	1.7	32.7	-	CL		Grey CLAY (10 YR 5/1) . 1/2" Silt seams. Soft.	CLAY	#5 Global sandpack 5.0-19.0' bgs.
			4									
20 / 730												
25 / 725												
30 / 720												
35 / 715												

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Remarks: bgs = below ground surface;
NA = non available
+ = Positive Test Result
Samples collected 0.8-2.8' and 6.8-8.8' bgs.

Water Level Data

Date	Depth	Elev.
6/27/01	9.95'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well.ldf
Data File:RFI-10-02.dat Date: 9/14/01

Date Start/Finish: 6/27/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** 566190.41 **Easting:** 13306666.7 **Casing Elevation:** NA **Borehole Depth:** 19' bgs **Surface Elevation:** 751.79 **Descriptions By:** S. Kerr	**Boring ID:** RFI-10-03 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0									FL	Concrete.	FILL
	750	1	0.6-2.6	n/a n/a 2 3	n/a	0.7	>9999	-	CL	Yellow brown (10 YR 5/6) CLAY with mottling (10 YR 6/1) . Trace fine to medium subangular Sand. Stiff, dry, no odor, At 5.0' bgs. Silt seams up to 3" thick, moist. pp= 3.5	CLAY
		2	2.6-4.6	1 2 4 5	6	1.5	>9999	-			
5		3	4.6-6.6	2 3 4 4	7	1.5	>9999	-		Yellow brown (10 YR 5/6) SILTY CLAY. Trace fine to medium subangular Sand. Moist, no odor, highly plastic. Local oxidation.	
	745	4	6.6-8.6	4 4 5 5	9	1.6	>9999	-	ML	Yellow brown (10 YR 5/6) SILT. Some fine subangular Sand. Moist, moderately loose.	SILT
		5	8.6-10	2 2 2 2	4	1.4	>9999	-	SP	Yellow brown (10 YR 5/6) predominantly fine to medium SAND. Some Silt. Loose, damp, no odor. saturated.	SAND
10	740	6	10.6-1	1 WO WO 1	n/a	1.5	>9999	-		Become coarser at 12.2' bgs.	
		7	12.6-1	2 3 3 4	6	1.3	>9999	-			
15		8	14.6-1	1 2 3	5	0.8	>9999	-	ML	Gray (10 YR 5/1) SILT. Saturated, no odor, loose, aplastic. Glacial-alluvial.	SILT

Boring Construction

- Cement pad with 9" flush-mount cover.
- Cement/bentonite grout 1-4' bgs.
- 2" ID PVC riser to 8' bgs.
- Bentonite chip seal 4-6' bgs.
- #5 Global filter pack sandpack 6-19' bgs.
- 2" ID PVC 0.010" slotted screen 8-18' bgs.

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Remarks: bgs = below ground surface;
WOH = Weight of Hammer.
NA = Not Applicable/Not Available
Samples collected 0.6-2.6' and 6.6-8.6' bgs.

Water Level Data

Date	Depth	Elev.
06/27/01	9.6' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-10-03

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	8	14.6-1	4	5	0.8	>9999	-	ML		Gray (10 YR 5/1) SILT. Saturated, no odor, loose, aplastic. Glacial-alluvial.	SILT	2" ID PVC 0.010" slotted screen 8-18' bgs.
			1									
			2									
	9	16.6-1	5	5	1.1	>9999	-					#5 Global filter pack sandpack 6-19' bgs.
			4									
								CL		Gray (10 YR 5/1) CLAY. Soft (pp= 1.5), highly plastic, saturated, no odor. Glacial clay.	CLAY	
20												
730												
25												
725												
30												
720												
35												

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Remarks: bgs = below ground surface;
WOH = Weight of Hammer.
NA = Not Applicable/Not Available
Samples collected 0.6-2.6' and 6.6-8.6' bgs.

Water Level Data

Date	Depth	Elev.
06/27/01	9.6' bgs	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-10-03.dat Date: 9/14/01

Date Start/Finish: 7/19/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 566212.9 **Easting:** 13306751.79 **Casing Elevation:** NA **Borehole Depth:** 17' bgs **Surface Elevation:** 750.64 **Descriptions By:** SM Duly	**Boring ID:** RFI-10-04 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0												
	750		NA	NA	NA	NA	NA	NA	FILL		Brown (10 YR 4/3) fine to coarse subangular SAND, little to some Silt, some coarse Gravel to Cobble-size Fill, trace roots, loose, no odor, dry. Black (10 YR 2/1), some Silt.	FILL
		1	3-5	1 2 3 4	5	1.8	792	-	CL		Yellow-brown (10 YR 5/6) Silty CLAY, little fine to medium Sand, trace fine to medium Gravel, moderately to medium stiff, no odor, dry to moist. Clay Till.	Silty CLAY
5									ML		Yellow-brown (10 YR 5/4) SILT, some fine subangular to subrounded Sand, aplastic, loose, no odor, moist. Saturated at 4.7' bgs.	SILT
	745	2	5-7	2 2 3 5	5	0.8	4159	-			Yellow-brown (10 YR 5/6) Silty fine subangular to subrounded SAND, aplastic, loose to moderately loose, no odor, moist.	SILTY SAND
		3	7-9	4 4 4 5	8	0.0	NA	NA				
10									SM		Saturated.	
	740	4	9-11	2 2 4 3	6	1.6	306	-				
		5	11-13	1 1 1 1	2	1.7	1792	-				
		6	13-15	1 3 4 4	7	1.5	138	-			Increased density with depth. at 14.4': Heavily oxidized to lower contact.	
15									ML		Gray (10 YR 6/1) SILT, trace fine subangular Sand, little Clay, aplastic, moderately dense, no odor, saturated.	SILT
	735	7	15-17	2 3	6	1.7	327	-				

Boring Construction

- Cement pad with 9" diam. flush-mount cover.
- Cement/bentonite grout 1-2' bgs.
- Bentonite seal 2-4' bgs.
- 2" ID Sch. 40 PVC riser 0.2-5' bgs.
- #5 Global filter sandpack 4-17' bgs.
- 2" ID Sch. 40 PVC 0.010" slotted screen 5-15' bgs.

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Remarks: bgs = below ground surface;
WOH = Weight of Hammer.
NA = Not Applicable/Not Available
Sample collected 3-4.7' bgs.

Water Level Data

Date	Depth	Elev.
7/19/01	4.7', 9.0' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-10-04

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	7	15-17	3 4	6	1.7	327	-	ML		Gray (10 YR 6/1) SILT, trace fine subangular Sand, little Clay, aplastic, moderately dense, no odor, saturated.	SILT	#5 Global filter sandpack 4-17' bgs.
20 730												
25 725												
30 720												
35 715												

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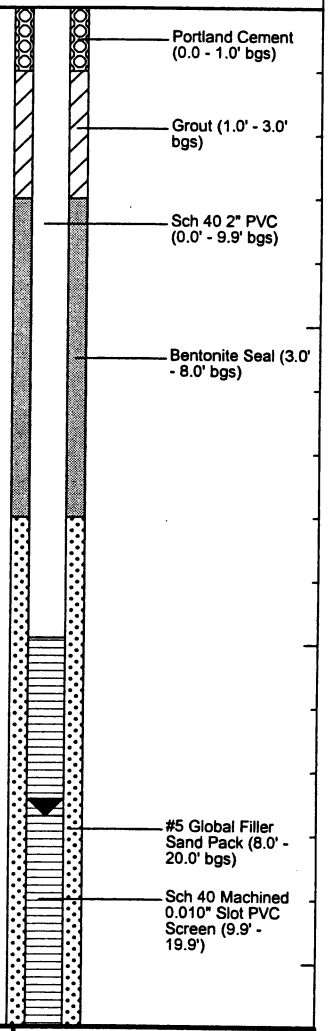
Remarks: bgs = below ground surface;
WOH = Weight of Hammer.
NA = Not Applicable/Not Available
Sample collected 3-4.7' bgs.

Water Level Data

Date	Depth	Elev.
7/19/01	4.7', 9.0' bgs	

Date Start/Finish: 08/27/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 566145.66 **Easting:** 13307019.13 **Casing Elevation:** NA **Borehole Depth:** 20' bgs **Surface Elevation:** 751.59 **Descriptions By:** SM Duly	**Boring ID:** RFI-10-05 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0												
	750	1	0-2	4 7 7 7	14	1.7	0.0	-	ML		Dark grayish brown (10 YR 4/2) SILT, little to some fine to coarse rounded to subrounded Sand, little Clay; aplastic, dry, loose to moderately loose, no odor. Organic matter (roots and vegetation) present.	SILT
		2	2-4	7 9 12 12	21	1.8	0.0	-	CL		Brown (10 YR 5/3) Silty lean CLAY, few fine to coarse subrounded Sand, heavily oxidized, hard to very stiff, dry, no odor. Old root structures present, Paleo-Topsoil horizon.	SILTY CLAY
5		3	4-6	9 15 16 12	31	2.0	0.0	-	ML		Brownish-yellow (10 YR 6/5) SILT, little Clay, trace fine rounded to subangular Sand; aplastic, dry, dense, no odor. Till.	SILT
									CL		Yellowish-brown (10 YR 6/8) Silty lean CLAY as at 0.5-3.6' bgs, but hard, friable, heavily oxidized. Till.	silty clay
	745	4	6-8	3 4 3 3	7	1.8	0.0	-	SM		Yellowish-brown (10 YR 5/8) Silty fine subrounded to subangular poorly graded SAND, dense to moderately dense, damp. Occasionally varved with darker varves of increased clay and silt content. Glacial-alluvial.	SILTY SAND
		5	8-10	2 3 5 5	8	2.0	0.0	-				
10		6	10-12	2 2 3 2	5	1.9	0.0	-			Increased Clay content to few, decreasing density.	
	740	7	12-14	1 1 1 1	2	1.2	0.0	-			Increased moisture content to moist, yellowish-brown (10 YR 5/4)	
15		8	14-16	4 7 10 15	17	1.5	0.0	-			Saturated, heavily oxidized to lower contact	
									ML		Gray (10 YR 5/1) SILT, little Clay; moderately dense, saturated, no odor. Glacial-alluvial.	SILT



Boring Construction

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
08/27/01	12.7' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-10-05

Borehole Depth: 20' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	9	16-18	10 12 15 8	27	1.8	0.0	-	ML		Gray (10 YR 5/1) SILT, little Clay; moderately dense, aplastic, saturated, no odor. Glacial-alluvial.	← SILT →	Sch 40 Machined 0.010" Slot PVC Screen (9.9' - 19.9')
								CL		Gray (10 YR 5/1) Silty lean CLAY, soft to moderately stiff, moist, no odor. Glacial Clay.		#5 Global Filler Sand Pack (8.0' - 20.0' bgs)
	10	18-20	2 3 7 4	10	NA	0.0	-	ML		Gray (10 YR 5/1) SILT as at 15.4-17.9' bgs, saturated.	SILT	
20								CL		Gray (10YR 5/1) Silty lean CLAY as at 17.9-18.6' bgs.		PVC CAP
730												
25												
725												
30												
720												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
08/27/01	12.7' bgs	

Project: 64410.022
Data File:RFI-10-05.dat
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 11/19/01

Date Start/Finish: 7/20/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 566532.11 **Easting:** 13306847.14 **Casing Elevation:** NA **Borehole Depth:** 17' bgs **Surface Elevation:** 752.17 **Descriptions By:** SM Duly	**Boring ID:** RFI-10-06 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	755												
0													
	750	NA	0-4	NA	NA	NA	NA	NA	FILL		Coarse angular gravel- to cobble-sized FILL, composed of granite, limestone, siltstone, and sandstone.	Fill	Cement pad with 9" diam. flush-mount cover.
													Grout 1-2' bgs.
													Bentonite seal 2-5' bgs.
5		1	4-6	4 5 5 5	10	1.7	683	-	CL		Brown (10 YR 4/3) Silty CLAY, little fine subangular Sand, few fine rounded Gravel, medium stiff, moderate odor, damp to dry. Heavily oxidized and mottled to reddish-brown throughout. Clay Till.	silty clay	
									SM		Yellow-brown (10 YR 5/4) Silty fine subangular to subrounded SAND, aplastic, moderately loose to moderately dense, no odor, dry to damp.		2" ID Sch. 40 PVC riser 0.2-7' bgs.
									CL		Silty CLAY as above, but no odor.		
	745	2	6-8	2 5 7 7	12	1.3	1299	-			Silty SAND, as above, but brown-yellow (10 YR 6/6).	SILTY SAND	
		3	8-10	3 5 5 6	10	2.0	113	-			Moist.		#5 Global filter sandpack 5-17' bgs.
10		4	10-12	2 4 6 6	10	1.8	611	-	SM		Saturated.		2" ID Sch. 40 PVC 0.010" slotted screen 7-17' bgs.
	740	5	12-14	3 4 4 5	8	1.5	511	-			Increasingly fine with depth, gray-brown (10 YR 5/2), with very dark gray varves, increased Clay to few. Glacial-alluvial.		
15		6	14-17	2 4 4 5	8	1.2	0.0	-					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 4-6' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
7/20/01	9.6' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-10-06

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	6	14-17	NA	NA	1.2	0.0	-	SM		Silty SAND, as above, but gray-brown (10 YR 5/2), with very dark gray varves, increased Clay to few, saturated.	silty sand	#5 Global filter sandpack 5-17' bgs. 2" ID Sch. 40 PVC 0.010" slotted screen 7-17' bgs.

735
20
730
25
725
30
720
35

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 4-6' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
7/20/01	9.6' bgs	

Date Start/Finish: 11/9/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 566450.04 **Easting:** 13306666.25 **Casing Elevation:** NA **Borehole Depth:** 17' below grade **Surface Elevation:** 751.33 **Descriptions By:** SM Duly	**Boring ID:** RFI-10-07 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	NA	0-1	NA	NA	NA	NA	NA			CONCRETE.	FILL	Cement pad with 9" diam. cast-iron flush-mount cover
	1	1-3	4 7 9 10	16	1.2	0.0	-	FILL		Black (10YR 2/1) Silty coarse to medium SAND, little Clay, FILL mixed with garbage, no odor, dense, dry.		Grout 1 - 3' bgs
	2	3-5	4 5 6 6	11	1.7	0.0	-			Color change to yellow-brown (10YR 5/4) at 2.8' bgs.		Bentonite seal 3 - 5' bgs
5 5	3	5-7	1 2 1 1	3	1.3	0.0	-			Occasional large Slag fragments, rumbly drilling to 5.0' bgs, damp.	SILTY SAND	2" ID Sch. 40 PVC riser 0.2' - 7' bgs
	4	7-9	1 1 1 1	2	1.6	0.0	-					#5 Global filter sandpack 5-17' bgs
10 10	5	9-11	3 5 7 6	12	1.3	0.0	-	SM		Dark brown (10YR 3/3), saturated at 9.0' bgs.		2" ID Sch. 40 PVC 0.010" slotted screen 7-17' bgs
	6	11-13	1 1 1 12	12	1.6	0.0	-					
	7	13-15	5 7 7 6	14	1.6	0.0	-					
15 15	8	15-17	5 6	15	1.5	0.0	-					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.
11/19/01	9.0' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-10-07

Borehole Depth: 17' below grade

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	15-17	8 7	15	1.5	0.0	-	SM		Black (10YR 2/1) Silty coarse to medium SAND, little Clay, FILL mixed with garbage, no odor, dense, dry.		#5 Global filter sandpack 5-17' bgs 2" ID Sch. 40 PVC 0.010" slotted screen 7-17' bgs
20 20												
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.
11/19/01	9.0' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-10-07.dat Date: 5/20/02

Date Start/Finish: 6/28/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" ID **Rig Type:** CME 55	**Northing:** 566531.77 **Easting:** 13306575.36 **Casing Elevation:** NA **Borehole Depth:** 19' bgs **Surface Elevation:** 750.79 **Descriptions By:** SC Kerr	**Boring ID:** RFI-10-08 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0 / 750			N/A N/A	N/A	N/A			ML	Dark grayish brown (10YR 4/2) SILT, little fine to coarse Sand, trace Clay, trace fine to coarse subangular Gravel, roots/plants, damp, loose.	SILT
	1	1-3	8 14 26 15	40	1.6	1491	-	SP	Dark brown (10YR 3/3) fine to coarse SAND, some Silt, trace fine to medium subangular Gravel, dry, loose, no odor.	SAND
								ML	Yellow brown (10YR 5/4) SILT, some Clay, little fine Sand, moist, dense, no odor.	
	2	3-5	7 12 15 14	27	1.0	601	-	SP	Yellow brown (10YR 5/4) fine to predominantly coarse SAND, some Silt, little fine to medium subangular to subrounded Gravel and Clay, dry, no odor.	
5								ML	Yellow brown (10YR 5/6) SILT, some fine to medium Sand, moist, dense, no odor.	SILT and CLAY
745	3	5-7	2 4 3 -	7	1.4	1015	-	CL	Gray (10YR 5/1) Silty CLAY, few fine Sand, moist, soft, low palstic, no odor.	
	4	7-9	2 2 4 4	6	1.6	226	-	SM	Grayish brown (2SY 5/2) fine to coarse subangular Silty SAND, trace subangular to subrounded Gravel, little Clay, moist to wet at 8.5' bgs, no odor.	SILTY SAND
10										
740	5	9-11	2 1 2 3	3	1.4	1071	-	ML	Light brownish gray (10YR 6/2) SILT, some fine Sand, saturated, moderately dense, loose at 12' bgs, changes to gray (10YR 5/1) at 14.2' bgs.	SILT
	6	11-13	2 3 3 4	6	1.0	351	-			
	7	13-15	2 3 4 5	7	1.2	155	-			
15										
735	8	15-17	4 3	6	1.8	128	-			

Boring Construction

- Cement pad with 9" diam. flush-mount cover.
- Grout 1-4' bgs.
- Bentonite seal 4-6' bgs.
- 2" ID Sch. 40 PVC riser to 8' bgs.
- #5 Global filter sandpack 6-19' bgs.
- 2" ID Sch. 40 PVC 0.010" slotted screen 8-18' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2' and 6-8', Sampled 0-1' from auger.

Water Level Data

Date	Depth	Elev.
06/28/01	9.6' bgs	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-10-08.dat Date: 8/8/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-10-08

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	15-17	3 4	6	1.8	128	-	ML		Light brownish gray (10YR 6/2) SILT, some fine Sand, saturated, moderately dense, loose at 12' bgs, changes to gray (10YR 5/1) at 14.2' bgs.	SILT	#5 Global filter sandpack 6-19' bgs. 2" ID Sch. 40 PVC 0.010" slotted screen 8-18' bgs.
	9	17-19	4 4 4 4	8	1.2	81.6	-					
20 / 730												
25 / 725												
30 / 720												
35 / 715												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2' and 6-8', Sampled 0-1' from auger.

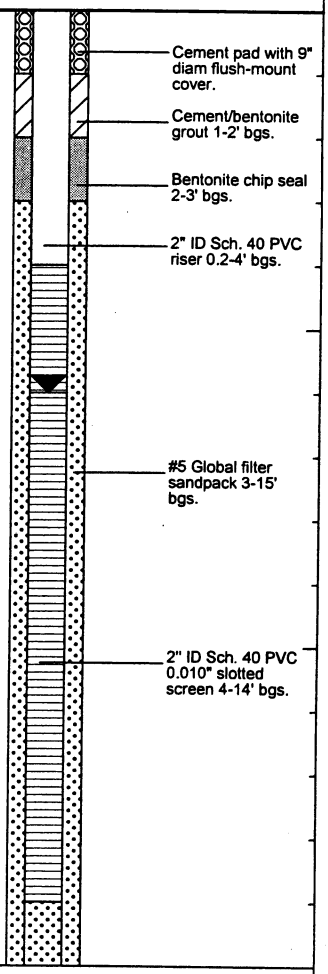
Water Level Data

Date	Depth	Elev.
06/28/01	9.6' bgs	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-10-08.dat Date: 8/8/01

Date Start/Finish: 7/19/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" ID **Rig Type:** CME 55	**Northing:** 565770.49 **Easting:** 13306696.85 **Casing Elevation:** NA **Borehole Depth:** 15' bgs **Surface Elevation:** 746.14 **Descriptions By:** SM Duly	**Boring ID:** RFI-10-11 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0	745		NA	NA	NA	NA	NA	NA	FILL		Coarse angular Gravel to Pebble/Cobble-sized FILL, trace Silt and roots. (Topsoil)	FILL
5	740	1	3-5	4 5 6 7	11	1.6	1279	-	SM		Light yellow-brown (10 YR 6/4) Silty fine subangular SAND, moderately dense, no odor, dry to damp.	SILTY SAND
		2	5-7	3 5 5 8	10	1.8	589	-			Yellow-brown (10 YR 5/6), wet.	
		3	7-9	5 5 5 5	10	1.8	457	-				
10	735	4	9-11	woh 1 1 1	2	1.6	664	-			loose	
		5	11-13	1 2 3 5	5	1.9	>9999	-			at 12.2': Heavily oxidized to reddish-brown, fine to medium subangular Sand, increased coarseness downward.	
									ML		Gray (10 YR 6/1) SILT, trace to little fine subangular Sand, little Clay, aplastic, moderately loose, no odor, wet. Denser with depth.	SILT
15		6	13-15	2 4 4 5	8	2.0	>9999	-	CL		Gray (10 YR 6/1) Silty CLAY, trace fine subangular to subrounded Sand, trace fine Gravel, moderately stiff, no odor, moist. Glacial clay till.	SILTY CLAY



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Remarks: bgs = below ground surface;
WOH = Weight of Hammer.
NA = Not Applicable/Not Available
Sample collected 3-5' bgs.

Water Level Data

Date	Depth	Elev.
7/19/01	6.0' bgs	

Date Start/Finish: 6/27/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 2 1/4" ID
Rig Type: CME 55

Northing: 566365.98
Easting: 13306551.84
Casing Elevation: NA

Borehole Depth: 19' bgs
Surface Elevation: 750.35

Descriptions By: S. Kerr

Boring ID: RFI-10-12

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	750								FL		Concrete.	FILL	Cement pad with 9" diam. flush-mount cover.
		1	0.8-2.8	2 3 5 7	8	1.5	>9999	-	SP		Brown (10 YR 5/3) fine SAND, some Silt and Clay, trace subangular to subrounded coarse Gravel, aplastic, loose, dry.	SAND	
		2	2.8-4.8	7 7 5 5	12	1.5	>9999	-			Black (10 YR 2/1) SILT, little Clay, some fine to coarse Sand, concrete rubbles and slag, aplastic, loose, dry, slight odor, dense a t 4.0'-4.6' bgs and damp at 4.4' bgs. FILL.	SILT	Cement/bentonite grout 1.0-3.0' bgs.
5	745	3	4.8-6.8	2 3 3 4	6	1.4	>9999	-	ML		Dark gray (10 YR 4/1) SILT, little Clay and fine Sand, trace fine to medium Gravel, dense, aplastic, slight odor, damp. No more Clay at 5.3' bgs and moist to wet at 6.0' bgs.		2" ID PVC riser to 8.0' bgs.
		4	6.8-8.8	3 3 4 4	7	1.6	>9999	+					Bentonite chip seal 4.0-6.0' bgs.
10	740	5	8.8-10.	1 2 2 1	4	1.7	>9999	+	SP		Dark gray (10 YR 4/1) fine to medium SAND, loose, strong odor, wet, some black stains.	SAND	#5 Glocal filter pack sandpack 6.0-18.0' bgs.
		6	10.8-12	NA NA NA 1	NA	1.3	>9999	+					2" ID PVC 0.010" slotted screen 8' - 18' bgs.
		7	12.8-14	1 1 2 1	3	1.5	>9999	+	ML		Greyish brown (10 YR 5/2) SILT, some fine Sand, moderately loose, saturated, slight odor, some black staining. Visible sheen in water.	SILT	
15	735	8	14.8-16	3 3	7	n/a	>9999	-			Gray (10 YR 5/2) SILT, little Clay, trace fine Sand, saturated, no odor, moderately dense.		

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Remarks: bgs = below ground surface;
+ = Positive Test Result
NA = Not Applicable/Not Available

Water Level Data

Date	Depth	Elev.
06/27/01	9.8' bgs	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-10-12.dat Date: 07/09/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-10-12

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	14.8-16	4 6	7	n/a	>9999	-	ML		Gray (10 YR 5/2) SILT, little Clay, trace fine Sand, saturated, no odor, moderately dense.	SILT	2" ID PVC 0.010" slotted screen 8' - 18' bgs.
	9	16.8-18	3 4 5 5	7	n/a	>9999	-					#5 Glocal filter pack sandpack 6.0-18.0' bgs.
								CL		Gray (10 YR 5/1) CLAY, little Silt, soft.	CLA	
20 / 730												
25 / 725												
30 / 720												
35 / 715												

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+ = Positive Test Result
NA = Not Applicable/Not Available

Water Level Data

Date	Depth	Elev.
06/27/01	9.8' bgs	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-10-12.dat Date: 07/09/01

Date Start/Finish: 7/24/01 **Drilling Company:** Rau Drilling **Driller's Name:** Alan Rau **Drilling Method:** Direct Push **Sampler Size:** 2' x 2" ID **Auger Size:** **Rig Type:** Geoprobe	**Northing:** 566239.95 **Easting:** 13306551.65 **Casing Elevation:** NA **Borehole Depth:** 14' bgs **Surface Elevation:** 753.01 **Descriptions By:** S. Kerr	**Boring ID:** RFI-10-13 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	755										
0							FILL		CONCRETE.		
		1	0-2	1.3	3.2	NA	SP		Brown (10 YR 5/3) fine SAND, some Clay, little Silt, trace coarse Gravel, moderately dense, no odor, moist. FILL.	FILL	
							ML		Dark gray (10 YR 4/1) SILT, some fine Sand, trace Clay, no odor, damp.	SAND	Borehole backfilled with bentonite to grade.
	750	2	2-4	1.1	4.8	NA			Grayish-brown (10 YR 5/2) Silty CLAY, some fine to medium Sand, trace coarse Gravel, local oxidation, stiff, no odor, dry.	SILTY CLAY	
5		3	4-6	.4	3.1	NA	CL		Becomes soft, decreased Silt.		
		4	6-8	2.0	3.1	NA			Yellow-brown (10 YR 5/8) SILT, little fine Sand, moderately dense, damp.	SILT	
	745								Increased fine Sand.		
		5	8-10	1.8	6.5	NA	ML		Moist.		
10									Wet.		
		6	10-12	1.2	0.4	NA			Yellow-brown (10 YR 5/6) fine to medium SAND, little Silt, moderately loose, saturated.	SAND	
	740	7	12-14	1.5	0.0	NA	SP		Becomes dark gray (10 YR 4/1). Glacial-alluvial.		
15											

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.7-2.7' and 8.7-10.7' bgs.

Water Level Data

Date	Depth	Elev.
7/24/01	10.8' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-10-13.dat Date: 8/30/01

Date Start/Finish: 6/27/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" ID **Rig Type:** CME 55	**Northing:** 566265.33 **Easting:** 13306671.3 **Casing Elevation:** NA **Borehole Depth:** 19' bgs **Surface Elevation:** 751.94 **Descriptions By:** S. Kerr	**Boring ID:** RFI-10-14 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0												
750	1	0.9-2.9	9 14 26 11	40	1.5	>9999	+	FL		Concrete.	FILL	
								ML		Black (10 YR 2/1) SILT, some fine to coarse Sand, little Clay, dry, dense, slight indeterminate odor. Fill.	SILT	
	2	2.9-4.9	8 10 12 16	22	1.5	>9999	-	CL		Grayish brown (10 YR 5/2) CLAY, little Silt and fine to coarse subangular to subrounded Sand, hard, stiff, dry, slight odor. Turns yellow brown (10 YR 5/6) at 3.6' bgs. Clay Till.	CLAY	Borehole backfilled with Bentonite Chips to grade.
5	3	4.9-6.9	4 4 4 4	8	1.4	>9999	-			Yellow brown (10 YR 5/6) SILTY CLAY, trace fine to medium Sand and subangular Gravel, dense, moist, no odor, low plasticity, local oxidation. Clay Till.		
								ML		Yellow brown (10 YR 5/6) SILT, some fine Sand, moderately loose, moist, no odor.		
745	4	6.9-8.9	6 5 4 4	9	1.3	>9999	-	SP		Yellow brown (10 YR 5/6) fine to medium SAND, some Silt, aplastic, loose, damp, no odor. Wet at 8.3' bgs. Fill.	SAND	
	5	8.9-10	5 3 1 1	4	1.5	>9999	-			Some oxidation		
10	6	10.9-12	n/a n/a	n/a	1.	>9999	-	ML		Yellow brown (10 YR 5/4) SILT, some fine Sand, moderately loose, aplastic, saturated, no odor.	SILT	
740	7	12.9-14	1 n/a n/a 1	n/a	1.2	>9999	-	SP		Yellow brown (10 YR 5/4) predominantly fine to medium SAND, some Silt, moderately loose, aplastic, saturated, no odor, increase in Silt content to Silty Sand at 16.7' bgs, some oxidation present at 18.3-18.5' bgs.	SAND	
15	8	14.9-16	n/a 1 3	1	1.4	>9999	-					

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Remarks: bgs = below ground surface;
+ = Positive Test Result
NA = Not Applicable/Not Available
Samples collected 0.9-2.9' and 6.9-8.9' bgs.

Water Level Data

Date	Depth	Elev.
06/27/01	9.4' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-10-14

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	9		4 4 6 8	10	1.5	>9999	-	SP		Yellow brown predominantly fine to medium SAND, some Silt, moderately loose, aplastic, saturated, no odor, increase in Silt content to Silty Sand at 16.7' bgs, some oxidation present at 18.5-19.0'.	SAND	Borehole backfilled with Bentonite Chips to grade.
								CL		Gray (10 YR 5/1) CLAY, some Silt, soft, saturated, highly plastic, no odor.		
20												
730												
25												
725												
30												
720												
35												

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+ = Positive Test Result
NA = Not Applicable/Not Available
Samples collected 0.9-2.9' and 6.9-8.9' bgs.

Water Level Data

Date	Depth	Elev.
06/27/01	9.4' bgs	

Project: 644.10.011
Data File:RFI-10-14.dat
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 07/09/01

Date Start/Finish: 08/27/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 566373.2 **Easting:** 13307055.55 **Casing Elevation:** NA **Borehole Depth:** 18' bgs **Surface Elevation:** 751.25 **Descriptions By:** SM Duly	**Boring ID:** RFI-10-15 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0											
	750	1	0-2	4 8 9 8	17	2.0	0.0	-	ML	Dark grayish-brown (10 YR 4/2) SILT, little to some fine to coarse rounded to subrounded Sand, little to some Clay; aplastic, loose to medium loose, no odor. Organic matter present such as roots and vegetation. Topsoil	SILT
		2	2-4	7 9 8 8	17	2.8	0.0	-	CL	Brown (10 YR 5/3) Silty lean CLAY, few fine to coarse subrounded Sand, friable to very stiff, dry, heavily oxidized silt lenses up to 1" wide throughout, no odor. Old root structures present. Paleo-topsoil horizon.	SILTY CLAY
5		3	4-6	6 3 4 4	7	2.0	0.0	-	ML	Brownish-yellow (10 YR 6/8) SILT, little Clay, trace fine subangular Sand, aplastic, dry to damp, dense to moderately dense, no odor. Local patches of increased Clay content. Weathered and oxidized Glacial till.	SILT
	745	4	6-8	2 3 3 3	6	2.0	0.0	-	SM	Yellowish brown (10 YR 6/8) Silty fine subangular to subrounded poorly graded SAND, few to little Clay, moderately loose, damp, no odor. Glacial-alluvial.	SILTY SAND
		5	8-10	2 1 2 2	3	2.0	0.0	-		Moist.	
10										Wet, dark yellow-brown (10 YR 4/6).	
	740	6	10-12	2 4 5 7	9	1.7	0.0	-		Saturated.	
		7	12-14	4 6 8 7	14	1.7	0.0	-		Yellow-brown (10 YR 5/6) Heavily oxidized throughout to lower contact.	
15		8	14-16	6 5 3 2	8	2.0	0.0	-	ML	Gray (10 YR 5/1) SILT, little fine subangular to subrounded Sand (predominantly close to upper contact to 14.6' bgs), some to little Clay, aplastic, saturated, dense, no odor. Glacial-alluvial.	SILT

Boring Construction

- Portland Cement 0-1' bgs
- Grout 1-3' bgs
- Bentonite Seal 3-6' bgs
- 2" Sch 40 PVC Riser 0-7.9' bgs
- #5 Global Filter Sand Pack 6-18' bgs
- Sch 40 machined PVC 0.010" Slot Screen 7.9-17.9' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.
08/27/01	10.5' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-10-15

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	9	16-18	NA	NA	NA	NA	NA	ML		Gray (10 YR 5/1) SILT, little fine subangular to subrounded Sand (predominantly close to upper contact to 14.6' bgs), some to little Clay, aplastic, saturated, dense, no odor. Glacial-alluvial.	SILT	Sch 40 machined PVC 0.010" Slot Screen 7.9-17.9' bgs; #5 Global Filter Sand Pack 6-18' bgs; PVC Cap
20 / 730												
25 / 725												
30 / 720												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.
08/27/01	10.5' bgs	

Project: 64410.022
Data File:RFI-10-15.dat
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 11/19/01

Date Start/Finish: 12/11/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 3 1/4" ID
Rig Type: Skid Rig CME 45

Northing: 566698.4
Easting: 13306445.19
Casing Elevation: NA

Borehole Depth: 6' bgs
Surface Elevation: 749.38

Descriptions By: SM Duly

Boring ID: RFI-10-16

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	750												
0			NA	NA	NA	NA	NA	NA	FL		CONCRETE.	FILL	
		1	2-4	5 7 7 5	14	1.1	NA	NA	SM		Black 10YR 2/1 Silty SAND (SM), poorly graded, fine to medium grained, subangular Sand, predominantly fine grained, few Clay, no odor, dense, aplastic, damp. Wood debris at the top 3" of upper contact. Fill.	SILTY SAND	Borehole backfilled with bentonite to grade.
5	745	2	4-6	8 6 9 10	15	2.0	NA	NA			Gray (10YR 5/1). Black (10YR 2/1) to 5.5' bgs. Fill/Foundry Sand.		
									ML		Yellow-brown 10YR 5/4 SILT (ML), some fine subangular Sand, few Clay, no odor, dense, aplastic, damp. Fill.	SILT	
10	740										Borehole terminated at 6'.		
15	735												

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 1.9-3.9' and 3.9-5.9' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.101 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-10-16.dat Date: 1/16/02

Date Start/Finish: 11/30/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID SS
Rig Type: CME 55

Northing: 566671.73
Easting: 13306423.07
Casing Elevation: NA

Borehole Depth: 5' bgs
Surface Elevation: 749.64

Descriptions By: SM Duly

Boring ID: RFI-10-17

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
750 / 0								FL		Concrete.	FILL	
	1	1-3	10 14 17 17	31	1.3	NA	NA	ML		Dark brown (10YR 3/3) to brown (10YR 5/3) SILT, little fine to medium subangular Sand, little Clay, no odor, dense, aplastic, dry. 1.2' - 2.8': Thick lens of wood debris. Becomes lighter in color with less Sand.	SILT	Borehole backfilled with bentonite to grade.
745 / 5	2	3-5	7 9 14 14	23	1.7	NA	NA	SM		Black (10YR 2/1) fine subangular Silty SAND, little Clay, poorly graded, no odor, dense, aplastic, dry. Fill-Foundry Sand.	Silty SAND	
740 / 10												
735 / 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3' and 3-5' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.039
Data File:RFI-10-17.dat
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 1/16/02

Date Start/Finish: 11/30/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 566674.4 **Easting:** 13306469.01 **Casing Elevation:** NA **Borehole Depth:** 5.5' bgs **Surface Elevation:** 750.08 **Descriptions By:** SM Duly	**Boring ID:** RFI-10-18 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	750								FL		Concrete.	FILL	
		1	1.3-3.3	7 8 9 13	17	1.3	3.4	+	ML		Dark gray (10YR 4/1) SILT, little fine subangular Sand, little Clay, moderate odor, dense, aplastic, dry. Fill.	SILT	Borehole backfilled with bentonite to grade.
5	745	2	3.3-5.5	4 10 11 12	21	1.8	6.6	+			Becomes varied with light gray (10YR 7/1) lenses, strong to moderate odor.		
10	740												
15	735												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
+ = Positive Test Result.
Samples collected1.3-3.3' and 3.3-5.3' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 11/29/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: 566649.14
Easting: 13306448.13
Casing Elevation: NA

Borehole Depth: 6' bgs
Surface Elevation: 750.12

Descriptions By: SM Duly

Boring ID: RFI-10-19

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	750								FL		CONCRETE.	FILL	
											PVC and CONCRETE debris. Old conduit? No water, odor present. Attempted spoon - no recovery.		
		1	2-4	2 4 6 6	10	1.5	NA	NA	SM		Brown (10YR 4/3) with black (10YR 2/1) and yellow-brown (10YR 5/4) oxidation fine to medium angular to subangular Silty SAND, little fine angular Gravel, few Clay, well graded, no odor, dense, aplastic, dry. Foundry Sand and Slag.	SILTY SAND	Borehole backfilled with bentonite to grade.
5	745	2	4-6	7 9 7 10	16	1.6	NA	NA					
									FL SM		Old weathered CONCRETE.		
											Very dark brown (10YR) fine to medium angular to subangular Silty SAND, little fine angular Gravel, few Clay, well graded, no odor, dense, aplastic, dry. Fill, Slag, and Foundry Sand.		
10	740												
15	735												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 2-4' and 4-6' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.039
Data File:RFI-10-19.dat
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 1/16/02

Date Start/Finish: 11/29/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 2 1/4" ID SS
Rig Type: CME 55

Northing: 566550.56
Easting: 13306574.29
Casing Elevation: NA

Borehole Depth: 2' bgs
Surface Elevation: 750.21

Descriptions By: SM Duly

Boring ID: RFI-10-20

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	750	1	0-2	2 2 3 4	5	1.6	NA	NA	ML		Black (10YR 3/1) SILT, little fine subangular yellow-brown (10YR 5/4) Sand in patches, some to little Clay, no odor, moderately dense, aplastic. Vegetation and plant roots throughout first foot (topsoil). Topsoil above Fill.	← SILT →	Borehole backfilled with bentonite to grade.
5	745												
10	740												
15	735												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0-2' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.039 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-10-20.dat Date: 1/16/02

Date Start/Finish: 11/29/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" ID SS **Rig Type:** CME 55	**Northing:** 566540.98 **Easting:** 13306627.95 **Casing Elevation:** NA **Borehole Depth:** 2' bgs **Surface Elevation:** 751.26 **Descriptions By:** SM Duly	**Boring ID:** RFI-10-21 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 750	1	0-2	11 12 18 22	30	1.2	NA	NA	FL		Coarse grained sand to cobble-sized angular large AGGREGATE. Fill. Black (10YR 2/1) ASH and CINDERS/SLAG, Silt to coarse angular sand-sized fragments, no odor, dense, aplastic, damp with rainfall. Ash/Slag/Fill.	FILL	Borehole backfilled with bentonite to grade.
5 745												
10 740												
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0-2' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 11/29/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" ID SS **Rig Type:** CME 55	**Northing:** 566478.46 **Easting:** 13306574.54 **Casing Elevation:** NA **Borehole Depth:** 2' bgs **Surface Elevation:** 751.08 **Descriptions By:** SM Duly	**Boring ID:** RFI-10-22 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0													
	750	1	0-2	5 10 12 16	22	1.7	NA	NA	ML		Very dark brown (10YR 2/2) SILT, some Clay, little fine subangular Sand, no odor, dense, aplastic, damp with rainfall. Topsoil (first foot) indicated by presence of roots and vegetation. Topsoil/Fill.	SILT	Borehole backfilled with bentonite to grade.
									SP		Yellow-brown (10YR 5/4) fine poorly-graded subangular SAND, little Silt, trace Clay, no odor, dense, aplastic, dry. Fill.		
5	745												
10	740												
15													

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0-2' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 11/30/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 2 1/4" ID
Rig Type: CME 55

Northing: 566259.56
Easting: 13306721.26
Casing Elevation: NA

Borehole Depth: 5' bgs
Surface Elevation: 751.11

Descriptions By: SM Duly

Boring ID: RFI-10-23

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 750	1	1-3	NA	NA	NA	NA	NA	ML		Dark gray-brown (10YR) SILT with fine to cobble-sized angular predominantly large aggregate, no odor, dense, aplastic, damp with rain. Aggregate-Fill. Sampled by shovel due to large quantity of aggregate.	SILT	Borehole backfilled with bentonite (0-5' bgs).
5 / 745	2	3-5	7 7 13 14	20	NA	NA	NA	SM		Black (10YR 2/1) Silty SAND with fine, poorly graded subangular Sand, no odor, moderately dense, aplastic, saturated. Foundry Sand.		
								ML		Gray (10YR) SILT, some Clay, little fine to coarse subangular to subrounded Sand, no odor, dense, aplastic, dry. Till.	SILT	
10 / 740												
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0-2' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.039
Data File:RFI-10-23.dat
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 1/16/02

Date Start/Finish: 1/23/02
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55 ATV

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 18' bgs
Surface Elevation: NA

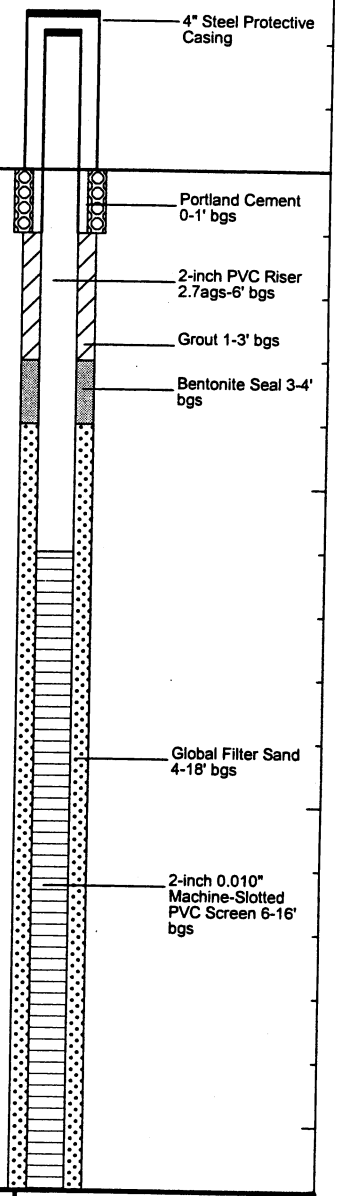
Descriptions By: SM Duly

Boring ID: RFI-10-24

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0 0	1	0-2	2 3 1 2	4	1.4	0.0	-	ML		Very dark gray-brown (10YR 3/2) SILT, little Clay, no odor, moist, moderately dense, organic matter such as Roots present, aplastic. Topsoil. Becomes brown (10YR 4/3), increasing dense, increased Sand content to few fine to coarse subrounded.	SILT
	2	2-4	20 10 5 3	15	0.8	0.0	-				
								Con.		Weathered CONCRETE.	FILL
5 5	3	4-6	2 3 2 2	5	1.5	0.0	-	ML		Yellow-brown (10YR 5/4) SILT, little Clay, few fine subangular Sand, no odor, dense, damp, aplastic.	SILT
	4	6-8	1 1 2 3	3	1.6	0.0	-			Coarsens downward with increased Sand content.	
	5	8-10	2 2 1 1	3	1.8	0.0	-	SM		Yellow-brown (10YR 5/4) fine to medium poorly sorted subangular to subrounded Silty SAND, little Clay, moist, loose to moderately dese, aplastic. Saturated.	SILTY SAND
10 10	6	10-12	1 1 2 3	3	1.5	0.0	-				
	7	12-14	3 4 4 5	8	1.1	0.0	-			Faintly varved.	
15 15	8	14-16	1 2 4 5	6	2.0	0.0	-	CH/ CL		Gray (10YR 6/1) Silty Fat to lean CLAY, soft, highly plastic, no odor, soft, moist.	SILTY CLAY



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
1/23/02	8.9' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-10-24.dat Date: 01/23/02

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-10-24

Borehole Depth: 18' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	3 3 3 3	6	2.0	0.0	-	CH/ CL		Gray (10YR 6/1) Silty Fat to lean CLAY, soft, highly plastic, no odor, soft, becomes dry with depth. Becomes a Lean Clay, moderately plastic.	SILTY CLAY	Global Filter Sand 4-18' bgs PVC Cap

20 20

25 25

30 30

35 35

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
1/23/02	8.9' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-10-24.dat Date: 01/23/02

Date Start/Finish: 1/23/02
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55 ATV

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 18' bgs
Surface Elevation: NA

Descriptions By: SM Duly

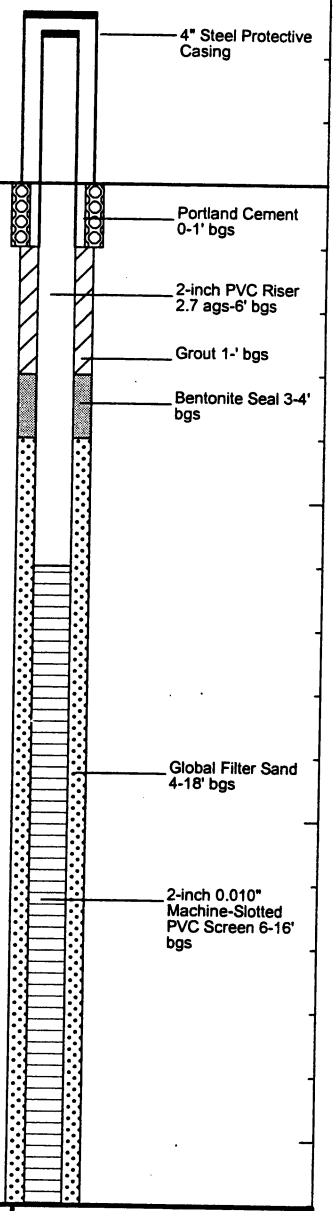
Boring ID: RFI-10-25

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0 0	1	0-2	2 3 3 2	6	1.6	0.0	-	ML		Very dark gray-brown (10YR 3/2) SILT (ML), some Clay, few fine to coarse grained subrounded to rounded Sand, no odor, damp, moderately dense, aplastic, organic matter such as roots present. Topsoil.	SILT
	2	2-4	4 4 6 7	10	1.4	0.0	-	CL		Yellow-brown (10YR 5/4) with black (10YR 2/1) mottling, Lean CLAY (CL), some Silt, few fine to coarse grained subrounded to rounded Sand, weakly plastic, stiff, no odor, dry, Native Till used as backfill.	CLAY
								ML		Yellow-brown (10YR 5/4) SILT (ML), little Clay, few fine subangular Sand, no odor, Root structures present, damp, dense, aplastic. Fill with old topsoil.	SILT
5 5	3	4-6	2 3 3 3	6	1.8	0.0	-			Brown (10YR 4/3) SILT (ML), little Clay, no odor, aplastic, dense, damp, coarsens downward. Very dark gray-brown (10YR 3/2), Root structures present and Old Topsoil from 3.6' - 3.8' bgs.	SILT
	4	6-8	2 3 5 4	8	1.3	0.0	-	SP		Yellow-brown (10YR 5/8) poorly graded subangular SAND (SP) with Silt, few Clay, no odor, damp, becomong wet with depth, moderately dense to loose. Moist.	SAND
	5	8-10	4 6 6 5	12	2.0	0.0	-			Saturated, increased Silt content.	
10 10	6	10-12	2 3 3 3	6	1.8	0.0	-				
	7	12-14	1 1/ 18"	-	1.7	0.0	-			Faint varves present.	
15 15	8	14-16	2 3 3 3	6	1.3	0.0	-	CH/ CL		Gray (10YR 6/1) Silty fat CLAY (CH), increaded stiffness and decreased moisture with depth, highly plastic, no odor, saturated with decreased moisture with depth, no odor.	SILTY CLAY

Boring Construction



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
1/23/02	8.5' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-10-25.dat Date: 01/23/02

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-10-25

Borehole Depth: 18' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	2 3 2 5	5	0.9	0.0	-	CH/ CL		Gray (10YR 6/1) Silty fat CLAY to Lean CLAY (CH/CL), increaded stiffness and decreased moisture with depth, highly plastic, no odor, saturated with decreased moisture with depth, no odor. 17.2': Lean CLAY (CL), moderately plastic, stiff, moist.	SILTY CLAY	Global Filter Sand 4-18' bgs PVC Cap

20 20

25 25

30 30

35 35

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
1/23/02	8.5' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-10-25.dat Date: 01/23/02

Date Start/Finish: 1/12/02 **Drilling Company:** Rau Drilling **Driller's Name:** Rod Camperon **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 75	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 16' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-10-26 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0										Cobble-sized to pebble-sized angular, predominantly fossiliferous, limestone GRAVEL, loose, dry, no odor. Aggregate.	Aggregate	Cement pad 0-0.8' bgs. Grout 0.8-3' bgs.
								Fill				Bentonite seal 3-4' bgs.
5 5	1	4-6	2 5 5 5	10	1.5	NA	-			Light yellow-brown (10 YR 6/4) Silty fine poorly graded SAND, trace Clay, aplastic, no odor, moderately dense, damp. Fill sand.	SILTY SAND	2" ID Sch. 40 PVC riser to 5' bgs.
	2	6-8	4 4 3 2	7	1.8	NA	-			Yellow-brown (10 YR 5/4), moist. Saturated.		
	3	8-10	3 2 2 1	4	1.5	NA	-			Silt with Sand (ML), occasionally varved.		Sandpack 4-16' bgs.
10 10	4	10-12	2 2 3 3	5	1.4	NA	-	SM		Silty Sand (SM).		
	5	12-14	3 7 5 5	12	1.6	NA	-			Trace fine to coarse subangular Gravel, few coarse subangular Sand.		2" ID Sch. 40 PVC 0.01" slotted screen 5-15' bgs.
15 15	6	14-16	woh 2 2 3	4	1.8	NA	-					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
woh = Weight of Hammer.
Sample collected 4-6' bgs.

Water Level Data

Date	Depth	Elev.
1/12/02	7.6'	

Date Start/Finish: 1/15/02 **Drilling Company:** Rau Drilling **Driller's Name:** Rod Camperon **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 75	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 19' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-10-27 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								Fill		Mixed Asphalt and Concrete.	FILL	Borehole backfilled with bentonite to grade.
	1	1-3	4 5 5 8	10	1.0	NA	-	SP		Very dark brown (10 YR 2/2) fine to medium, predominantly fine, SAND, some Silt, few Clay, aplastic, no odor, moderately dense, dry. Fill/Foundry sand.		
	2	3-5	7 5 4 3	9	1.2	NA	-			Black (10 YR 2/1) with yellow-brown (10 YR 5/4) mottling, fine to medium, predominantly fine, subangular SAND, poorly graded, little to some Silt, few Clay, Slag and metallic debris present and increasing with depth, no odor, dry, moderately dense. Slag and Foundry sand.		
5 5	3	5-7	3 2 2 2	4	1.8	NA	-					
	4	7-9	2 2 3 5	5	0.8	NA	-	CL		Dark brown (10 YR 3/3) Silty CLAY, little to some fine subangular Sand, plastic to very plastic, no odor, moist, soft. Clay backfill.		
10 10	5	9-11	3 5 6 6	11	1.8	NA	-	SM		Yellow-brown (10 YR 5/4) Silty fine subangular poorly graded SAND, few Clay, local silt seams up to 2" wide, aplastic, no odor, damp, moderately dense to dense. Moist.	SILTY SAND	
	6	11-13	5 6 8 10	14	1.7	NA	+			Saturated.		
	7	13-15	5 9 12 12	21	1.9	NA	+					
15 15	8	15-17	3 4	11	1.9	NA	+					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3', 7-9', and 9-11' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
1/15/02	11.0'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-10-27

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	15-17	7 8	11	1.9	NA	+	SM		Gray (10 YR 6/1) Silty fine subangular poorly graded SAND, few Clay, local silt seams up to 2" wide, aplastic, no odor, damp, moderately dense to dense. Glacial-alluvial.	SILTY SAND	Borehole backfilled with bentonite to grade.
	9	17-19	3 4 5 5	9	1.5	NA	+			Fining downward to lower contact.		
20 20												
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3', 7-9', and 9-11' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
1/15/02	11.0'	

Project: 64410.101 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-10-27.dat Date: 2/7/02

Date Start/Finish: 5/14/01 **Drilling Company:** Rau Drilling **Driller's Name:** Craig Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 562634.75 **Easting:** 13305120.81 **Casing Elevation:** NA **Borehole Depth:** 12' bgs **Surface Elevation:** 742.52 **Descriptions By:** SM Duly	**Boring ID:** RFI-12-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
745 / 0												
	1	0-2	NA NA NA 4	NA	0.8	3.2	-	FL		CONCRETE.	FILL	
740 / 5	2	2-4	1 1 1 1	2	1.2	3.8	-	SP		Yellow-brown (10YR 6/4) fine to medium subangular SAND, some Silt, trace to few Clay, aplastic, no odor, dry, loose. Fill.	SAND	Borehole backfilled with Bentonite to grade.
	3	4-6	1/12 1 2	2	0.6	1.6	-					
	4	6-8	3 4 4 5	8	1.7	1.4	+	ML		Dark brown (10YR 3/3) SILT, little fine subangular Sand, few to trace Clay, no odor, aplastic, dry, loose.	SILT	
735 / 10	5	8-10	4 4 7 7	11	1.3	2.5	-	SP		Yellow-brown (10YR 5/4) fine to coarse subangular SAND, little fine to coarse subangular Gravel, little Silt, aplastic, no odor, dry, loose to moderately loose, local mottling to very dark gray (10YR 3/1). Decreased Gravel to trace, no mottling after 8.8' bgs.	SAND	
	6	10-12	2 2 4 6	6	2.9	2.9	-	ML		Yellow-brown (10YR 5/4) SILT, little fine subangular Sand, little Clay, aplastic, no odor, moist, dense. Increased Sand content to some, decreased Clay content to few, wet (saturated Clay).	SILT	
								CL		Dark gray (10YR 4/1) hard CLAY, some Silt, little fine to medium subangular to subrounded Sand, trace to few fine to coarse rounded Gravel, no odor, dry, homogeneous. (pp>4.5 tons/ sq. feet). Clay Till.		
730 / 15												

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Remarks: bgs = below ground surface; + = Positive Test Result; NA = Not Applicable/Not Available;pp=pocket penetrometer. Temporary Well screen set from 7'-12' bgs with Sand to 5' bgs. Sample collected 1.2-2' bgs.

Water Level Data

Date	Depth	Elev.
5/15/01	9.9'	NA

Date Start/Finish: 5/14/01
Drilling Company: Rau Drilling
Driller's Name: Craig Compeau
Drilling Method: HSA
Sampler Size: NA
Auger Size: 4 1/4"
Rig Type: CME 55

Northing: 562633.23
Easting: 13305135.77
Casing Elevation: NA

Borehole Depth: 15.1' bgs
Surface Elevation: 741.98

Descriptions By: SM Duly

Boring ID: RFI-12-01R

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	0	NA	NA	NA	NA	NA	NA		No Samples Taken. See log for RFI-12-01 for sampling information.		Portland Cement 0-0.5' bgs; Grout 0.5-2' bgs; Bentonite Seal 2-3' bgs; 2-inch PVC Riser 0.2-5' bgs; Global Filter Sand 3-15.1' bgs; 2-inch 0.010" machine-slotted PVC Screen 5-15' bgs; PVC Cap
5	5										
10	10										
15	15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.

Project: 644.10.101 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-12-01R.dat Date: 4/26/02

Date Start/Finish: 7/25/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 3 1/4"
Rig Type: CME 55

Northing: 562501.75
Easting: 13305465.71
Casing Elevation: NA

Borehole Depth: 20' bgs
Surface Elevation: 742.41

Descriptions By: SM Duly

Boring ID: RFI-12-02

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
745										
0			NA					FL	CONCRETE.	NCRE
	1	0-2	14 16 14	30	1.3	1.6	-		Yellow-brown (10YR 5/4) fine to medium subangular SAND, some Silt, trace to few Clay, aplastic, slight odor, damp, moderately loose to locally dense. Fill	SAND
740	2	2-4	15 16 29 14	45	1.2	2.5	-	SP	Increased Silt content, to SAND with SILT (SM), increased density to dense.	
	3	4-6	13/ 6"	NA	0.3	1.8	-	ML	Very dark gray-brown (10YR 3/2) SILT, little to some fine to coarse subangular Sand, little to few fine to coarse subangular to subrounded Gravel, aplastic, slight odor, damp, moderately dense. Fill.	CONCRETE
5								FL	CONCRETE.	
	4	6-8	5 7 5 10	12	1.5	63.3	-		Very dark gray (10 YR 3/1) Silty CLAY, little fine to medium subangular Sand, strong odor, very stiff, damp. (pp = 3 tons/square ft). Till.	SILTY CLAY
735	5	8-10	2 3 4 4	7	2.0	45.9	+		Dark gray (10 YR 4/1) plastic CLAY, some Silt with local patches of Silty Clay with increased Silt content, little fine to coarse subangular to subrounded Sand, few subrounded to rounded fine to coarse Gravel, moderate odor, damp, hard to locally soft. (pp = 4-4.5 tons/sq. feet). Till.	CLAY
10	6	10-12	2 3 4 5	7	1.8	50	+	CL	Increased moisture to moist, increased odor to moderate to strong, decreased stiffness to soft, increased Gravel to little.	
730	7	12-14	2 4 6 8	10	2.0	32.2	+			
	8	14-15	3 18	NA	NA	75.4	+	ML	Dark gray-brown (10 YR 4/1) SILT, some Clay, little to some fine to coarse subangular Sand, little to few fine to coarse rounded Gravel, aplastic, moderate to slight odor, dense, wet to moist, oily sheen.	SILT
15	9	15-17	3 7	15	1.5	592	+	CL	Dark gray CLAY as above at 8.5'-13.9' bgs.	
									Gray-brown (10 YR 5/2) Silty CLAY.	

Boring Construction

- Cement pad with 7" diam. flush-mount cover.
- Cement/bentonite grout 1-2' bgs.
- Hydrated bentonite seal 2-8' bgs.
- 2" ID Sch. 40 PVC riser 0.2-10' bgs.
- #5 Global filter sandpack 8-20' bgs.
- 2" ID Sch. 40 PVC 0.010" slotted screen 10-20' bgs.

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available
Redrilled to set permanent well. Geologic descriptions from 0-15' bgs are from the previous boring installed on 5/15/01.

Water Level Data

Date	Depth	Elev.
7/25/01	17.5'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-12-02perm.dat Date: 8/9/01

Client: General Motors

Site Location: GM Flint, Flint, Michigan

Boring ID: RFI-12-02

Borehole Depth: 20' bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
		9	15-17	8 10	15	1.5	592	+	CL		Gray-brown (10 YR 5/2) Silty CLAY, little fine to medium subangular to subrounded Sand, trace rounded to subrounded Gravel, stiff, weak odor, dry. Till. @17', moist.	SILTY CLAY	2" ID Sch. 40 PVC 0.010" slotted screen 10-20' bgs.
725		10	17-19	5 12 17 17	29	1.8	1392	+	ML		Gray (10 YR 5/1) SILT, some to little Clay, few fine subrounded Sand, aplastic, dense, moderate odor, saturated. Till.	SILT	
											Dark gray CLAY, as at 8.5' - 13.9' bgs except hard (pp>4.5' tons/sq. feet bgs), locally oxidized along fractures to yellow-brown (10YR 5/2) for first 6-inches. Homogeneous dark gray at 19.5' bgs. Till.	CLAY	#5 Global filter sandpack 8-20' bgs.
		11	19-20	37 50/5"	NA	1.0	973	+	CL				
20													
720													
25													
715													
30													
710													
35													

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available
Redrilled to set permanent well. Geologic descriptions from 0-15' bgs are from the previous boring installed on 5/15/01.

Water Level Data

Date	Depth	Elev.
7/25/01	17.5'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-12-02perm.gpj Date: 8/9/01

Date Start/Finish: 5/23/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 2 1/4" ID
Rig Type: CME 55

Northing: 562447.58
Easting: 13305595.85
Casing Elevation: NA

Borehole Depth: 14' bgs
Surface Elevation: 739.3

Descriptions By: SM Duly

Boring ID: RFI-12-03

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	740												
0		1	0-2	NA 11 13	NA	0.7	12.8	-	ML		Brown (10YR 5/3) to very dark gray-brown (10YR 3/2) aplastic SILT, some fine to coarse subangular Sand, trace Clay, little fine to coarse limestone Gravel Fill, weak intermittent odor, dry to damp, loose.	SILT	
									FL		WOOD, possibly pine, strong odor.		Borehole backfilled with Bentonite Chips to grade.
		2	2-4	NA	NA	NA	NA	NA	GP		Coarse angular limestone GRAVEL and PEBBLES (Fill). No split spoon sample collected. Rubbly drilling.	GRAVEL	
	735												
5		3	4-6	2 2 3 4	5	1.2	5.6	-	ML		Black (10YR 2/1) aplastic SILT, little yellow-brown (10YR 5/4) fine Sand, few Clay, moderate odor, loose to moderately dense, moist. Locally oxidized to dark yellow-brown (10YR 5/6).	SILT	
		4	6-8	3 4 4 6	8	1.3	1.3	-					
	730	5	8-10	2 2 5 3	7	1.6	5.3	-			Gray-brown (10YR 5/2) CLAY, moderately stiff, some Silt, little fine to medium subrounded to subangular Sand, trace fine to coarse subrounded Gravel, no odor, dry to damp, (pp=2-2.5 tons/sq. feet). Locally mottled with light olive-brown and/or oxidized to yellow-brown (10YR 5/8).	CLAY	
10		6	10-12	2 5 7 6	12	1.6	5.7	-	CL		Dark gray-brown (10YR 4/2) Sandy CLAY, some Silt, fine to coarse subangular Sand, few fine subangular to subrounded Gravel, trace weak odor, wet, loose to very soft.		
		7	12-14	5 9 17 10	26	2.0	2.9	-			CLAY, as above, but hard (pp=4.5 tons/sq. feet). Lenses of Silt (up to 1" thick) throughout, locally oxidized and mottled yellow-brown (10YR 5/4).	CLAY	
	725												
15													

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Temporary well screen placed 1.5 to 11.5' bgs.
Sample collected 4-5.1' bgs.

Water Level Data

Date	Depth	Elev.
5/23/01	5.1' and 10.6'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-12-03.dat Date: 8/2/01

Date Start/Finish: 5/15/01
Drilling Company: Rau Drilling
Driller's Name: Allen Rau
Drilling Method: HSA/SS
Sampler Size: 2" cont. acetate sleeve
Auger Size: 2 1/4"
Rig Type: 66 DT Advance Geoprobe

Northing: 562604.64
Easting: 13305591.13
Casing Elevation: NA

Borehole Depth: 14' bgs
Surface Elevation: 739.3

Descriptions By: S. Kerr

Boring ID: RFI-12-04

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	740										
0							SP		Dark yellow-brown (10YR 4/6) SAND, trace subangular fine to medium Gravel, some Roots, loose.		
									Dark grayish-brown (10YR 4/2) SAND, trace Silt and Clay, trace angular Gravel, medium dense, dry, no odor. Fill.		
		1	0-2	1.7	0.0	-	FL		CONCRETE fragments, some medium Sand, loose, dry, no odor. Fill.		
		2	2-4	1.7	0.0	-					Borehole backfilled with Bentonite to grade.
									Black fine to medium SAND, trace Silt and Clay, trace angular Gravel, Cement fragments, moist. Fill.		
	735								Yellowish-brown fine SAND, trace Silt and Clay, aplastic, no odor, moist. Fill.		
5		3	4-6	1.6	0.0	-	SP		Brown (10YR 5/3) fine SAND, little Silt, dense, no odor, moist.	SAND	
		4	6-8	2.0	0.0	-	ML		Black (10YR 2/1) SILT, trace Clay, dense, no odor, moist.	SILT and CLAY	
							CL		Dark gray Silty CLAY, plastic, no odor, moist.		
							ML		Grayish-brown SILT, mottled with gray, dense, no odor, moist.		
	730	5	8-10	2.0	0.0	-	SP		Yellowish-brown 10YR 5/4 fine Silty SAND, no odor, wet.	SILT SAND and SAND	
10		6	10-12	2.0	0.0	-			(10.0-10.8) Very dark gray fine Silty SAND, trace angular Gravel, no odor, loose, saturated.		
									(10.8-11.8) Pale brown 10YR 6/3 Silty SAND, dense, no odor, saturated.		
							ML		SILT, as at 8.3-9.3' bgs.		
							SP		Light brown fine to medium SAND, medium dense, no odor, wet.		
		7	12-14	2.0	0.0	-	ML		Brownish-gray SILT, trace coarse Gravel, oxidation throughout, hard, dense, no odor, wet.	SILT	
	725										
15											

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Temporary Well set at 14' bgs. Samples taken from 0-2' and 8'-10'.

Water Level Data

Date	Depth	Elev.
5/15/01	10'	NA

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-12-04.dat Date: 5/30/01

Date Start/Finish: 5/15/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2 1/2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 562989.47 **Easting:** 13305027.73 **Casing Elevation:** NA **Borehole Depth:** 8' bgs **Surface Elevation:** 742.4 **Descriptions By:** SM Duly	**Boring ID:** RFI-12-05 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
745 / 0												
	1	0-2	NA	NA	0.0	NA	NA	FL		CONCRETE.	FILL	
740	2	2-4	1 1 1 1	2	0.6	2.8	+	SP		Light yellow-brown (10YR 6/4) fine to coarse (predominantly fine to medium) subangular SAND, some to little Silt, little to few fine to coarse subrounded to rounded Gravel, trace Clay, locally mottled to dark brown (10YR 3/3), weak odor, loose, damp.	SAND	Borehole backfilled with Bentonite Chips to grade.
5	3	4-6	1 1 1 1	2	0.5	2.5	+			Black free product, moderate to strong odor, coalesces with exposure to air.		
735	4	6-8	1 1 2 2	3	1.8	2.9	+			CONCRETE. Spoon refusal.		
10												
730												
15												

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Remarks: bgs = below ground surface; + = Positive Test Result;
NA = Not Applicable/Not Available
Set temporary well at 8' bgs with 5' screen.
Sample collected 2-4' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 5/24/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 2 1/4" ID
Rig Type: CME 55

Northing: 563021.34
Easting: 13305163.85
Casing Elevation: NA

Borehole Depth: 15' bgs
Surface Elevation: 742.77

Descriptions By: SM Duly

Boring ID: RFI-12-06

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
745												
0		0-1.2	NA	NA	NA	NA	NA	FL		CONCRETE.	FILL	
	1	1.2-3.2	25 50 50 56	100	1.8	4.7	-			Very dark gray-brown (10YR 3/2) aplastic SILT with fine to medium subangular SAND, trace fine to coarse angular Gravel, trace Clay, damp, no odor, very dense, locally semi-lithified.	SILT & SAND	Borehole backfilled with Bentonite Chips to grade.
740	2	3.2-5	36 50/ 4"	NA	1.0	6.0	-			Increased clay content to few.		
5	3	5-7	60/ 6"	NA	0.7	6.3	-					
735	4	7-9	50/ 3"	NA	0.6	6.8	-	ML/SP		Increased moisture content to moist.		
10	5	9-11	10 41 50/ 3"	NA	1.2	1.2	-					
	6	11-13	70/ 3"	NA	0.2	0.7	-					
730	7	13-15	29 50/ 3"	NA	NA	1.0	-					
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Temporary well screen placed 8 to 13' bgs.
Samples collected 1.2-3.2' and 7.2-9.2' bgs.

Water Level Data

Date	Depth	Elev.
5/24/01	9.0' bgs	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-12-06.dat Date: 8/2/01

Date Start/Finish: 5/10/01
Drilling Company: Rau Drilling
Driller's Name: Allen Rau
Drilling Method: Direct push
Sampler Size: 2 ft cont. acetate sleeve
Auger Size: NA
Rig Type: 66 DT Advance Geoprobe

Northing: 562441.23
Easting: 13305312.07
Casing Elevation: NA

Borehole Depth: 19.7' bgs
Surface Elevation: 742.43

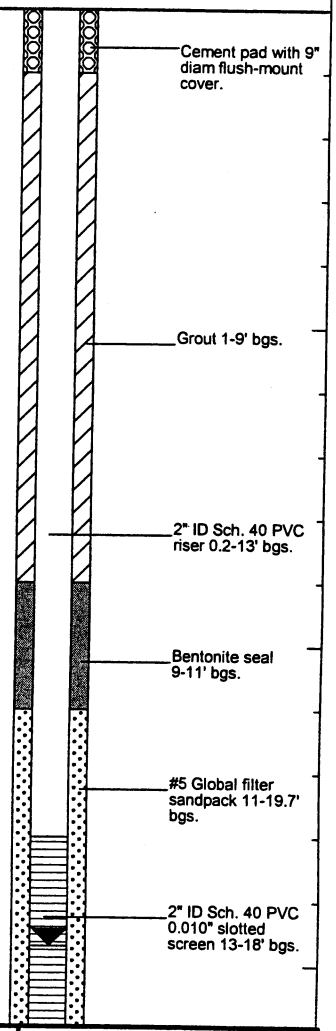
Descriptions By: Shawn Kerr

Boring ID: RFI-12-07

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
745								
0								
	1	0-2	1.7	9.8	NA	FILL	CONCRETE.	FILL
							Black (10 YR 2/1) Silty fine SAND, trace Clay, trace coarse Sand, aplastic, dense, no odor, dry. (Fill - foundry sand)	
740	2	2-4	2.0	13.5	NA			
	3	4-6	2.0	19.5	NA			
5	4	6-8	1.8	24.5	NA			SILTY SAND
735	5	8-10	2.0	24.4	NA	SW		
10	6	10-12	2.0	14.2	NA			
730	7	12-14	1.4	4.0	NA		Grayish-brown (10 YR 5/2) SAND, angular, aplastic, medium dense, no odor, dry.	
							Black Silty SAND, same as 0.9-12.7' bgs.	
							Grayish-brown SAND, as at 12.7-13.1' bgs.	SILTY SAND
15	8	14-16	1.7	8.0	NA		Black Silty SAND, same as 0.9-12.7, wet, saturated aat 14.7' bgs.	



Boring Construction

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available

Water Level Data

Date	Depth	Elev.
5/10/01	14.7'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-12-07

Borehole Depth: 19.7' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
						SW		Black Silty SAND, same as 0.9-12.7, wet.		2" ID Sch. 40 PVC 0.010" slotted screen 13-18' bgs.
725	9	16-18	2.0	24.8	NA	CL		Dark gray (10 YR 4/1) Silty CLAY, trace angular Gravel, moderately plastic, dense, moist.		
						SM		Dark gray (10 YR 4/1) Silty fine SAND, dense, no odor, saturated. Loose at 18' bgs.	SILTY SAND	#5 Global filter sandpack 11-19.7' bgs.
	10	18-20	2.0	35.1	NA			Dense, wet.		
20						ML		Dark gray fine Sandy SILT, trace subrounded Gravel, very dense, hard, (pp=>4.5 tons/sq. ft.), no odor, dry. Dark gray Clayey Silt in tip of tube, trace fine Gravel, very stiff.		
720										
25										
715										
30										
710										
35										

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available

Water Level Data

Date	Depth	Elev.
5/10/01	14.7'	

Project: 644.10.011
Data File:RFI-12-07.dat
Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Date: 8/7/01

Date Start/Finish: **Drilling Company:** Rau Drilling **Driller's Name:** Craig Compeau **Drilling Method:** HSA **Sampler Size:** NA **Auger Size:** 3-1/4" ID HSA **Rig Type:**	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 20.1' bgs. **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-12-07R **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	NA	NA	NA	NA	NA	NA		No Samples Taken. See log for RFI-12-07 for sampling information.		
5 5										
10 10										
15 15										

Portland Cement 0-0.5' bgs
2-inch PVC Riser 0.2-10' bgs
Grout 0.5-6' bgs
Bentonite Seal 6-8' bgs
Global Filter Sand 8-20.1' bgs
2-inch 0.010" machine-slotted PVC Screen 10-20' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-12-07R

Borehole Depth: 20.1' bgs.

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
20 20	NA	NA	NA	NA	NA	NA		No Samples Taken. See log for RFI-12-07 for sampling information.		Global Filter Sand 8-20.1' bgs; 2-inch 0.010" machine-slotted PVC Screen 10-20' bgs; PVC Cap
25 25										
30 30										
35 35										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 5/11/01 **Drilling Company:** Rau Drilling **Driller's Name:** Alan Rau **Drilling Method:** Direct Push **Sampler Size:** 2" ID cont. acetate sleeve **Auger Size:** 2 1/4" **Rig Type:** 66 DT Advance Geoprobe	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 22' bgs **Surface Elevation:** NA **Descriptions By:** S. Kerr	**Boring ID:** RFI-12-08 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0										
						FL		CONCRETE.	Fill	
	1	0-2	1.0	9.7	-	SP		Yellowish-brown (10YR 5/4) fine SAND, trace Clay and Silt, aplastic, no odor, dry. Fill.	SAND	
								1.5:Black (10YR 2/1) SAND, trace rounded Gravel, aplastic, no odor, dry. Fill, Foundary Sand.		Borehole backfilled with Bentonite to grade.
	2	2-4	2.0	5.6	-			SAND, as at 0.9-1.5' bgs, more dense, trace angular to subangular Gravel.		
								3.5: Dark grayish-brown (10YR 4/2) fine SAND, trace Silt and Clay, dry, no odor.		
5 5	3	4-6	2.0	7.5	NA			SAND, as at 2-3.5' bgs.		
								4.3: Grayish-brown (10YR 5/2) fine SAND, trace Silt and Clay, aplastic, dense, no odor.		
								5.6: Black SAND, as at 1.5-2' bgs.		
	4	6-8	2.0	51.5	-			6.0: Grayish-brown SAND, as at 4.3'-5.6' bgs.		
								7.5: Dark gray fine SAND, some Silt, moderately dense, odor, dry. FILL.		
	5	8-10	2.02.	9.7	-	CL		Gray Silty CLAY, moderately plastic, dry, no odor, very stiff. Clay Till.	SILTY CLAY	
10 10										
	6	10-12	2.0	11.2	NA					
						SP		Dark gray (10YR 4/1) fine Silty SAND, little Clay, trace subangular Gravel, odor, loose. Glacial Alluvial.		
	7	12-14	2.0	20.9	NA	CL		Dark gray (10YR 4/1) Silty CLAY, mottled with dark brown, slight odor, somewhat plastic, dry. Clay Till.	SILTY CLAY	
						SP		Dark grayish-brown (10YR 4/2) fine SAND, trace Silt and Clay and angular Gravel, dense, odor, dry.	SAND	
15 15	8	14-16	2.0	26.7	NA			14.8:As at 0.9-1.5' bgs, but with odor.		
						CL		Gray Silty CLAY, as at 12.7', no odor. Turns to SILT (ML) from 15.9-16'.		

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Remarks: bgs = below ground surface; pp=pocket penetrometer
NA = Not Applicable/Not Available
Set 1" temporary well at 21.8' bgs.
Samples collected 0-2', 6-8', 8-10', and 16-18' bgs.

Water Level Data

Date	Depth	Elev.
05/11/01	18.3'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-12-08

Borehole Depth: 22' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
						SP		Yellow-brown SAND, as at 14.8'-15.1' bgs.	SILT and SAND	
						ML		Gray Clayey SILT, plastic, no odor, moist.		
	9	16-18	2.0	16.2	NA	SP		Light gray medium SAND, odor, moist.		
								SAND, as at 16-16.4' bgs, trace Clay, no odor.		
						ML		Gray Clayey SILT, as at 16.4-16.9' bgs.		
						SP		Grayish-brown (10YR 5/2) Clayey SILT, trace fine Sand, medium dense, saturated at 18.3' bgs.		
						ML		Grayish-brown fine to medium Silty SAND, loose, saturated, no odor.		
								Clayey SILT, as at 18'-18.5' bgs.		
20 20						SP		Grayish-brown medium to coarse subangular to subrounded SAND, trace subangular Gravel, saturated, no odor.		
								Grayish-brown fine SAND, medium dense, no odor, saturated.		
						ML		Grayish-brown Clayey SILT, trace angular Gravel, very stiff, no odor, dry, (pp = >4.5 tons/sq. ft.).		
25 25										
30 30										
35 35										

Borehole backfilled with Bentonite to grade.

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Remarks: bgs = below ground surface; pp=pocket penetrometer
NA = Not Applicable/Not Available
Set 1" temporary well at 21.8' bgs.
Samples collected 0-2', 6-8', 8-10', and 16-18' bgs.

Water Level Data

Date	Depth	Elev.
05/11/01	18.3'	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-12-08.dat Date: 5/29/01

Date Start/Finish: 5/11/01 **Drilling Company:** Rau Drilling **Driller's Name:** Alan Rau **Drilling Method:** Direct Push **Sampler Size:** 2" ID cont. acetate sleeve **Auger Size:** 2 1/4" **Rig Type:** 66 DT Advance Geoprobe	**Northing:** 562526.75 **Easting:** 13305129.84 **Casing Elevation:** NA **Borehole Depth:** 22' bgs **Surface Elevation:** 742.61 **Descriptions By:** SC Kerr	**Boring ID:** RFI-12-08R **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
745										
0						FL		CONCRETE.	FILL	Portland Cement 0-0.5' bgs
	1	0-2	1.0	9.7	-	SP		Yellowish-brown (10YR 5/4) fine SAND, trace Clay and Silt, moderately dense, aplastic, no odor, dry. Fill.	SAND	2-inch PVC Riser 0.2-10' bgs
740	2	2-4	2.0	5.6	-			3.5: Dark grayish-brown (10YR 4/2) fine SAND, trace Silt and Clay, dry, no odor.		Grout 0.5-6' bgs
5	3	4-6	2.0	7.5	NA			SAND, as at 2-3.5' bgs. 4.3: Grayish-brown (10YR 5/2) fine SAND, trace Silt and Clay, aplastic, dense, no odor.		
	4	6-8	2.0	51.5	-			5.6: Black SAND, as at 1.5-2' bgs. 6.0: Grayish-brown SAND, as at 4.3'-5.6' bgs. 7.5: Dark gray fine SAND, some Silt, moderately dense, odor, dry. FILL.		Bentonite Seal 6-8' bgs
735										
	5	8-10	2.02	9.7	-	CL		Gray Silty CLAY, moderately plastic, dry, no odor, very stiff. Clay Till.	SILTY CLAY	
10	6	10-12	2.0	11.2	NA					Global Filter Sand 8-20.1' bgs
730	7	12-14	2.0	20.9	NA	SP		Dark gray (10YR 4/1) fine Silty SAND, little Clay, trace subangular Gravel, odor, loose. Glacial Allucial.		2-inch 0.010" machine-slotted PVC Screen 10-20' bgs
						CL		Dark gray (10YR 4/1) Silty CLAY, pale brown mottling, slight odor, somewhat plastic, dry. Clay Till.	S-CLAY	
15	8	14-16	2.0	26.7	NA	SP		Dark grayish-brown (10YR 4/2) fine SAND, trace Silt and Clay, trace angular Gravel, dense, odor, dry. 14.8:As at 0.9-1.5' bgs, but with odor.	SAND	
						CL		Gray Silty CLAY, as at 12.7', no odor. Turns to SILT from 15.9'-16'.Till.		

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Remarks: bgs = below ground surface; pp=pocket penetrometer
NA = Not Applicable/Not Available
Replaced temporary well.
Sampling information and stratigraphy from RFI-12-08.

Water Level Data

Date	Depth	Elev.
5/11/01	18.3'	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-12-08R.dat
Date: 9/13/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-12-08R

Borehole Depth: 22' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
725	9	16-18	2.0	16.2	NA	SP-ML		(16.0-20.6) Alternating glacio-alluvial sequence.	SAND AND SILT	Global Filter Sand 8-20.1' bgs
	10	18-20	2.0	5.0	NA					2-inch 0.010" machine-slotted PVC Screen 10-20' bgs
20	11	20-22	1.7	3.9	NA	ML-CL		Grayish-brown Clayey SILT, trace angular Gravel, stiff, no odor, dry, pp = >4.5. Till.	SILT	PVC Cap
720										
25										
715										
30										
710										
35										

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Remarks: bgs = below ground surface; pp=pocket penetrometer
NA = Not Applicable/Not Available
Replaced temporary well.
Sampling information and stratigraphy from RFI-12-08.

Water Level Data

Date	Depth	Elev.
5/11/01	18.3'	

Date Start/Finish: 7/26/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** 562968.87 **Easting:** 13305074.93 **Casing Elevation:** NA **Borehole Depth:** 18' bgs **Surface Elevation:** 742.68 **Descriptions By:** SM Duly	**Boring ID:** RFI-12-09 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
745 / 0											
	1	0-2	NA	NA	NA	NA	+	FILL		CONCRETE.	FILL
740	2	2-4	NA	NA	NA	NA	NA				
5	3	4-6	NA	NA	NA	NA	NA				
	4	6-8	NA	NA	NA	NA	NA				
735	5	8-10	2 2 3 3	5	NA	16.1	NA	ML		Dark brown SILT, little fine to medium subangular to angular Sand, saturated with water, oil, and solvents, odor, moderately loose to moderately dense.	SILT
10	6	10-12	1 1 1 1	2	1.5	>10000	+	SM		Black (10 YR 2/1) oily fine subangular Silty SAND, few Clay, trace fine rounded Gravel, aplastic, moderate to strong odor, loose, saturated.	SILTY SAND
730	7	12-14	1 2 3 4	5	1.2	>10000	+				
15	8	14-16	4 6 8 13	14	1.6	3,777	+	CL		Gray (10 YR 5/1) Silty CLAY, little to few fine subangular to subrounded Sand, trace fine to medium rounded Gravel, moderate to weak odor, soft, damp to moist, silt lenses up to 1" wide throughout.	SILTY CLAY

Boring Construction

- Cement pad with 7" diam. flush-mount cover.
- Grout 1-2' bgs.
- Bentonite seal 2-5' bgs.
- 2" ID Sch. 40 PVC riser 0.2-7' bgs.
- #5 Global filter sandpack 5-18' bgs.
- 2" ID Sch. 40 PVC 0.020" slotted screen 7-17' bgs.

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Remarks: bgs = below ground surface;
+ = Positive Test Result
NA = Not Applicable/Not Available
Redrilled to set well. Geologic descriptions from 0-10' bgs are from the previous boring installed on 5/23/01.

Water Level Data

Date	Depth	Elev.
7/26/01	10'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-12-09

Borehole Depth: 18' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
725	9	16-18	4 6 7 9	13	NA	482	NA	ML/ CL		Gray (10 YR 5/1) SILT with CLAY, few fine subangular to subrounded Sand, moderate to weak odor, aplastic, moist.	SILT w/CLAY	2" ID Sch. 40 PVC 0.020" slotted screen 7-17' bgs. #5 Global filter sandpack 5-18' bgs.
20												
720												
25												
715												
30												
710												
35												

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Remarks: bgs = below ground surface;
+ = Positive Test Result
NA = Not Applicable/Not Available
Redrilled to set well. Geologic descriptions from 0-10' bgs are from the previous boring installed on 5/23/01.

Water Level Data

Date	Depth	Elev.
7/26/01	10'	

Date Start/Finish: 5/25/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" ID **Rig Type:** CME 55	**Northing:** 562490.19 **Easting:** 13305534.6 **Casing Elevation:** NA **Borehole Depth:** 14' bgs **Surface Elevation:** 738.84 **Descriptions By:** SM Duly	**Boring ID:** RFI-12-10 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	740												
0		1	0-2	NA		2	NA	NA	FILL		CONCRETE. WOOD (old railroad ties).	FILL	
											GRAVEL, dry, loose, no odor.	GRAVEL	
		2	2-4	NA	NA	2	NA	NA			CONCRETE.		
	735										GRAVEL, dry, loose, no odor. Fill.		
5		3	4-6	50/5" - -	NA	0.3	12.1	+			Dark brown SILT, some fine to medium subangular Sand, little Clay, trace Wood debris, moderate solvent odor, damp, moderately loose to moderately dense. CONCRETE.	SILT CONCRETE	
		4	6-8	4 6 7 9	13	1.5	15.2	+			Brown-black mottled CLAY, some Silt, little fine to medium subrounded to subangular Sand and fine to coarse Gravel, moderately oily, odor, damp.	CLAY	
	730	5	8-10	6 8 8 10	16	2.0	16.5	+	CL				
10		6	10-12	4 7 13 10	20	1.8	14.7	+					
			12-14	7 8 29 50	37	NA	13.1	+					
	725												
15													

Borehole backfilled with Bentonite Chips to grade.

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Remarks: bgs = below ground surface; + = Positive Test Result; NA = Not Applicable/Not Available
Samples collected 4-6' and 6-8' bgs.
Temporary well screen placed 6.5 to 11.5' bgs.

Water Level Data

Date	Depth	Elev.
5/25/01	9.0'	

Date Start/Finish: 6/6/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** 562945.44 **Easting:** 13305110.88 **Casing Elevation:** 742.17 **Borehole Depth:** 14.5' bgs **Surface Elevation:** NA **Descriptions By:** S. M. Duly	**Boring ID:** RFI-12-11S **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	745												
0											Drilled to 14.5' bgs without sampling to install permanent well. See RFI-12-11D for geologic description.		
	740												Bentonite seal.
5													2" ID Sch. 40 PVC 0.020" slotted screen (4.5-14.5' bgs).
	735		NA	NA	NA	NA	NA	NA	NA				
10													Sand pack.
	730												
15													

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
See RFI-12-11D for geology.

Water Level Data

Date	Depth	Elev.
NA		

Date Start/Finish: 6/5/01 - 6/6/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** 562942.46 **Easting:** 13305110.91 **Casing Elevation:** 742.09 **Borehole Depth:** 25.1' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly/ SC Kerr	**Boring ID:** RFI-12-11D **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
745										
0								FL	Concrete.	FILL
740	1	1.1-3.1	9 8 13 12	21	1.5	1.6	-	ML	Very dark brown (10YR2/2) SILT, little fine to coarse subangular Sand, trace Clay, aplastic, no odor, dry, dense, metallic and glassy debris, black and grey mottling. From 3' to 3.9' bgs, increase in Clay content to little. Dry to damp.	SILT
	2	3.1-5.1	5 8 5 4	13	1.7	3.7	-		Moist	
5	3	5.1-7.1	4 4 3 3	7	1.5	3.7	-			
735	4	7.1-9.1	8 8 5	13	1.6	5.5	-		Dark yellow-brown (10 YR 4/4) mottling.	
								SP	Dark grayish-brownish SILT, some fine to medium Sand, some Clay, slight odor, damp, dense.	
10	5	9.1-11.	3 5 6 6	11	1.8	25.8	+		Gray (10 YR 5/1) CLAY, brown (10 YR 5/3) oxidation throughout, oily sheen, strong odor, some SILT, stiff, moist.	CLAY
730	6	11.1-1	3 3 4 10	7	1.3	54.3	+		Local increase in SILT content. as seams up to 0.5 ".	
	7	13.1-1	4 5 6 8	11	1.7	24.8	+	CL	Saturated 14.3'-14.7' bgs, increase in silt content to Silty Clay.	
15	8	15.1-1	3 4	10	2.0	65.7	+		No more Silt seams.	

Boring Construction

- Cement pad with 7" diam. flush-mount cover.
- 2" ID Sch. 40 PVC riser 0.2-18' bgs.
- Grout 1-14' bgs.
- Bentonite seal 14-16' bgs.

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Remarks: bgs = below ground surface; + = Positive Test Result; NA = Not Applicable/Not Available
Samples collected 1.1-3.1' and 5.1-7.1' bgs.

Water Level Data

Date	Depth	Elev.
06/05/01	7.1' bgs.	

Project: 644.10.023 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-12-11D.dat Date: 9/14/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-12-11D

Borehole Depth: 25.1' bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
		8	15.1-17	6 7	10	2.0	65.7	+	CL		CLAY as above 10-15' bgs.	CLAY
	725	9	17.1-19	4 6 11 19	17	1.6	62.2	+			Silt seams again at 18.4' to 18.7' bgs.	
20		10	19.1-21	14 15 15 10	30	1.6	112	+	ML		Gray (10YR 5/1) Silt, little Clay. Little to few subangular Sand. Saturated, odor, dense.	SILT
	720	11	21.1-23	9 21 35 30	56	1.6	50.1	+	SP		Grey fine to coarse subangular SAND. Trace subrounded Gravel. Saturated, strong odor, visible oil. At 22.2-22.8' bgs, alternating lenses of sand as at 20.7-22.2 ' bgs and silt as at 19.4-20.7' bgs.	SAND
25		12	23.1-25	13 20 21 25	41	1.7	18.6	-	CL		Dark grey CLAY. Stiff, hard. Some Silt. Little fine to coarse rounded Gravel. Little fine to medium Sand. Slight odor, dry. Clay Till.	CLAY
	715											
30												
	710											
35												

Boring Construction

- 2" ID Sch. 40 PVC riser 0.2-18' bgs.
- 2" ID Sch. 40 PVC 0.020" slotted screen 18-23' bgs.
- #5 Global filter sandpack 16-25' bgs.
- 2" ID Sch. 40 PVC sump 23-25' bgs.

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Remarks: bgs = below ground surface; + = Positive Test Result; NA = Not Applicable/Not Available
Samples collected 1.1-3.1' and 5.1-7.1' bgs.

Water Level Data

Date	Depth	Elev.
06/05/01	7.1' bgs.	

Date Start/Finish: 6/6/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 3 1/4" ID
Rig Type: CME 55

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 14.5' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: RFI-12-12S

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								FILL		Concrete.	FILL	Cement pad with 7" diam. flush-mount cover.
												Grout 0.8-1' bgs.
										Very dark brown (10YR2/2) SILT, little fine to coarse subangular Sand, trace Clay, aplastic, no odor, dry, dense, metallic and glossy debris, black grey mottling. From 3-3.9' bgs, increase in Clay content to little, dry to damp, moist at 5.1'. At 8.5' - 8.6' bgs, dark yellowish mottling (10YR 4/5).		Bentonite seal 1-2.5' bgs.
												2" ID Sch. 40 PVC riser 0.2-4.3' bgs.
5 5		NA	NA	NA	NA	NA	NA	ML			SILT	
										Dark greyish-brownish SILT, some fine to medium Sand and Clay, slight odor, damp, dense.		
10 10										Grey (10 YR 5/1) CLAY, brown (10 YR 5/3) oxidation throughout. oily sheen, strong odor, some SILT, stiff, moist. At 12.7' bgs, local increase in SILT content as seams up to 0.5 ", saturated at 13.3' bgs. 14.3-14.7' bgs, increase in silt content to Silty Clay.		#5 Global filter sandpack 2.5-14.5' bgs.
								CL			CLAY	2" ID Sch. 40 PVC 0.020" slotted screen 4.3-14.3' bgs.
15 15												

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Geologic description form RFI-12-11, located ~3' to north.
Blind drilled to 14.5' bgs.

Water Level Data

Date	Depth	Elev.
6/6/01	9.95' bgs.	

Project: 644.10.023 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-12-12S.dat
Date: 8/8/01

Date Start/Finish: 5/22/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau / Tom Rau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4"
Rig Type: CME 55

Northing: 562852.98
Easting: 13305089.4
Casing Elevation: 742.15

Borehole Depth: 25' bgs
Surface Elevation: NA

Descriptions By: SM Duly / SC Kerr

Boring ID: RFI-12-14

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
	745											
0											Concrete.	Concrete
	740		1-3	NA	NA	NA	NA	NA	FL			
			3-5	NA	NA	NA	NA	NA				
5			5-7	10 9 8 6	17	NA	NA	NA			No recovery.	
	735	1	7-9	2 2 1 2	3	1.6	27.3	-	ML		Black (10 YR 2/1) SILT, little fine subangular Sand, trace Clay, damp, no odor, aplastic. Fill.	SILT
10		2	9-11	1 2 1 2	3	1.6	63.8	-			Very pale brown (10 YR 7/3) fine subangular SAND, some Silt, aplastic, loose, damp, no odor. Fill.	SAND
	730	3	11-13	1 1 2 2	3	1	67.5	-	SP		Color change to dark grayish brown (10 YR 4/2).	
		4	13-15	3 3 4 4	7	1.6	134.0	+			Gray CLAY (10 YR 5/1),some Silt and fine to medium subangular Sand, few fine to coarse subangular Gravel, weak indeterminate odor, damp, stiff, moist to wet at 16.0' bgs with Silt lenses up to 3" wide and sand lenses up to 4" wide, oil sheen, moderate odor. At 18.0', silt lenses up to 6" wide. Clay Till.	CLAY
15		5	15-17	4 6	12	1.4	148.0	+	CL			

Boring Construction

- Cement pad with 7" diam. flush-mount cover.
- Bentonite seal 1-9' bgs.
- 2" ID Sch. 40 PVC riser 0.2-9' bgs.
- #5 Global filter sandpack 9-25' bgs.
- 2" ID Sch. 40 PVC 0.020" slotted screen 12.5-22.5' bgs.

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available.
Samples collected 7-9' and 9-11' bgs.

Water Level Data

Date	Depth	Elev.
06/06/01	12.9'	

Project: 644.10.023 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-12-14.dat Date: 8/6/01

Client:
General Motors

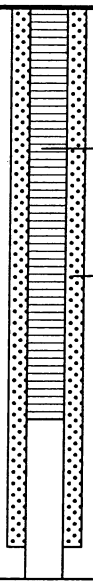
Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-12-14

Borehole Depth: 25' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
	5	15-17	6 8	12	1.4	148.0	+			Gray CLAY as above (13.7'-16' bgs).	CLAY
725	6	17-19	4 6 7 13	13	1.4	229.0	+	CL			
	7	19-21	11 19 31 33	50	1.7	337.0	+	SP		Gray fine to medium subangular to subrounded SAND, some Silt, few fine to coarse well rounded Gravel, moderate odor. Fines downward to a silt on the last 3". Glacial-alluvial.	SAND
20								CL		CLAY as above (13.7'-19' bgs) but hard. Clay Till.	CLAY
	8	21-23	10 16 28 31	44	2	240.0	+	SP		SAND as above (19'-20.2' bgs). Glacial-alluvial.	SAND
720	9	23-25	16 25 33 36	58	1.8	619.0	-	CL		Gray CLAY as at 13.7'-14' but very hard and dry. Weak odor. Clay Till.	CLAY
25											
715											
30											
710											
35											

Boring Construction



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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available.
Samples collected 7-9' and 9-11' bgs.

Water Level Data

Date	Depth	Elev.
06/06/01	12.9'	

Project: 644.10.023 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-12-14.dat Date: 8/6/01

Date Start/Finish: 06/08/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 562407.81 **Easting:** 13305499.84 **Casing Elevation:** 742.13 **Borehole Depth:** 19' bgs **Surface Elevation:** NA **Descriptions By:** S. Kerr & S.M. Duly	**Boring ID:** RFI-12-15 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
745												
0	1	0-2	NA 12 8 6	20	1.5	1608	-	FL		Concrete.		
740	2	2-4	4 5 4 3	9	1.3	1377	-	SP		Yellowish brown (10 YR 5/6) fine to medium SAND, some Silt, damp, dense, no odor. Fill.	SAND	
5	3	4-6	3 4 5 7	9	NA	NA	-			Concrete. At 12.0' bgs, Cinderblock?	CONCRETE	
735	4	6-8	2 3 4 5	7	NA	NA	+					
	5	8-10	3 5 4 3	9	NA	NA	+					
10	6	10-12	9 18 50/ 0.1'	68	NA	NA	+	FL				
730	7	12-14	NA	NA	NA	NA	NA					
15	8	14-16	NA	NA	NA	NA	NA					

Cement pad with 7" diam. flush-mount cover.
Grout 1-1.5' bgs.
Bentonite seal 1.5-5' bgs.
2" ID Sch. 40 PVC riser 0.2-7.8' bgs.
#5 Global filter sandpack 5-19' bgs.
2" ID Sch. 40 PVC 0.020" slotted screen 7.8-17.8' bgs.

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available.
Sample collected 1-3' bgs.

Water Level Data

Date	Depth	Elev.
6/8/01	17.5' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-12-15

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
725	9	16-18	NA	NA	1.8	1145	NA	FL		Concrete. At 12.0' bgs, Cinderblock?	CONCRETE	2" ID Sch. 40 PVC 0.020" slotted screen 7.8-17.8' bgs.
	10	18-19	NA	NA	NA	NA	NA	CL		Gray CLAY, some Silt and Silt lenses up to 2" wide, trace subangular Gravel and fine to medium Sand, dense, dry to damp, hard, no odor. Saturated at 17.5'. Local oxidation after 18.0' bgs.	← CLAY →	#5 Global filter sandpack 5-19' bgs.
20												
720												
25												
715												
30												
710												
35												

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available.
Sample collected 1-3' bgs.

Water Level Data

Date	Depth	Elev.
6/8/01	17.5' bgs	

Date Start/Finish: 09/10/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" ID **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 10' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-12-16 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								FL		CONCRETE.	CONCRETE	Borehole backfilled with Bentonite to grade.
	1	1-3	5 11 12 11	23	1.5	0.0	-	SM		Light yellowish-brown (10 YR 6/4) Silty SAND, fine to medium (predominantly fine) subangular SAND; few Clay; aplastic, moderately dense, dry, no odor. Fill.	SILTY SAND	
	2	3-5	4 8 8 8	16	1.2	0.0	-			Silt to coarse pebble-sized angular SLAG(?) fragments; aplastic, dry, loose, no odor.	FILL	
5 5								FL		CONCRETE.	CONCRETE	
	3	6-8	7 17 16 24	33	1.2	0.0	+	SP		Brown (10 YR 4/3) angular fine to coarse SAND, some Silt, trace Clay, few fine to coarse subangular Gravel and Pebbles; dry, loose, no odor. Backfill and building debris mixed. Rubbly drilling	SAND	
	4	8-10	36 50/ 3"	NA	NA	0.0	+			at 9.8': Mixed with black (10 YR 2/1) Silty CLAY (CL); soft, damp.		
10 10												
15 15												

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Remarks: bgs = below ground surface; + = Positive Test Result; NA = Not Available; Not Applicable
Samples collected 1-3', 6-8' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 9/7/01 - 9/10/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID; 2" ID acetate sleeve **Auger Size:** 3 1/4" ID **Rig Type:** Mule-mounted Geoprobe	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 10' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-12-17 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0												
								FL		CONCRETE.		
	1	0-3	NA	NA	2.5	0.0	-	SM		Yellowish-brown (10 YR 5/4) Silty fine to medium subangular to subrounded SAND (SM), few Clay, trace fine to coarse rounded to subrounded Gravel, moderately dense, damp, no odor. Backfill.	SILTY SAND	Borehole backfilled with Bentonite to grade.
5 5	2	3-6	NA	NA	3.0	0.0	-					
								FL		Black 10YR 5/1 very fine to coarse angular Sand- to Gravel-sized SLAG (?) fragments, no odor, dry, moderately loose, aplastic.	FILL	
	3	6-8	3 4 4 5	8	2.0	0.0	+	ML		Black 10YR 2/1 SILT (ML), some Clay, little fine to coarse subangular Sand, trace fine to medium subrounded Gravel, no odor, damp, moderately dense, Slag also present. Backfill mixed with Slag.	SILT	
	4	8-10	4 4 6 6	10	1.5	0.0	+			Gray 10YR 5/1, moderate odor. Oily sheen in material in shoe.		
10 10												
15 15												

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Remarks: bgs = below ground surface;
NA = Not Available; Not Applicable
Samples collected 1-3', 6-8' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well.ldf
Data File:RFI-12-17.dat Date: 11/16/01

Date Start/Finish: 09/10/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 10.0' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-12-18 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								FL		Concrete.		
	1	1-3	9 13 17 22	30	1.2	0.0	-	ML		Yellow-brown (10YR 5/6) SILT, some fine to medium subangular Sand, few Clay, trace fine rounded Gravel; aplastic, no odor, dense, dry. Backfill.	SILT	
	2	3-5	27 50/ 3" NA	NA	0.9	0.0	-					
5 5								FL		Concrete.	CONCRETE	Borehole backfilled with Bentonite to grade.
	3	6-8	17 12 10 9	22	1.0	0.0	+	ML		Dark gray-brown (10YR 4/2) SILT, some Clay, little fine to coarse subangular Sand, aplastic, moderate odor, damp, moderately dense to dense. Slag and cement debris also present. Backfill.	SILT	
	4	8-10	2 3 4 6	7	1.5	0.0	+					
10 10								CL		Gray (10YR 5/1) Silty CLAY, little fine to coarse subrounded Sand, trace fine rounded Gravel, soft, moderate odor, damp.		
15 15												

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Remarks: bgs = below ground surface; + = Positive Test Result; NA = Not Available; Not Applicable
Samples collected 1-3', 6-8' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.023 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-12-18.dat Date: 09/26/01

Date Start/Finish: 09/11/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 5' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-12-20 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	NA	NA	NA	NA	NA	NA	NA	FL		Concrete (reinforced).	FILL	Borehole backfilled with Bentonite to grade.
								SP		Yellow-brown (10YR 5/4) Silty fine to medium subangular SAND, aplastic, no odor, damp, moderately dense.		
										Concrete (reinforced).		
								FL		Large diameter rebar to 5' bgs.		
5 5										End of boring: refusal.		
10 10												
15 15												

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Remarks: bgs = below ground surface;
NA = Not Available; Not Applicable

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 11/27/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 21.0' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: RFI-12-21

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0 0								FL	Concrete (reinforced).	CONCRETE
	1	1-3	3 3 3 3	6	1.6	0.0	-	SM	Brown (10YR 3/3) Silty SAND, poorly graded fine subangular Sand, few Clay, no odor, moderately dense, aplastic, moist. Fill.	SILTY SAND
	2	3-5	3 4 5	8	1.7	0.0	-		1" thick saturated lens. Perched.	
5 5	3	5-7	3 3 4 6	7	1.0	0.0	-		1.5" thick saturated lens. Perched.	
	4	7-9	4 6 8 13	14	1.0	0.0	-			
10 10	5	9-11	4 6 6 10	12	2.0	0.0	-	CL	Gray-brown (10YR) to gray (10YR 5/1) lean Silty CLAY, little to few fine to medium subangular to subrounded Sand, trace fine rounded Gravel, no odor, very stiff to stiff, weakly plastic, dry. Clay Till. Becomes gray (10YR 5/1) with occasional Silt lenses up to 1" thick, moist.	SILTY CLAY
	6	11-13	3 4 4 4	8	2.0	0.0	-		Becoming increasingly softer and moist.	
	7	13-15	WH 2 4 4	6	1.5	0.0	-		Saturated SILT lenses approximately 2-3" thick throughout with moist, soft to moderately stiff fat Silty CLAY lenses in between.	
15 15	8	15-17	2 4	10	2.0	0.0	-			

Boring Construction

- Cement pad with 9" diam. flush-mount cover.
- Grout 1-5.5' bgs.
- Bentonite seal 5.5-7.5' bgs.
- 2" ID Sch. 40 PVC riser 0.2-9.5' bgs.
- Global #5 sand pack 7.5-21' bgs.
- 2" ID Sch. 40 PVC 0.010" slotted screen 9.5-19.5' bgs.

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Remarks: bgs = below ground surface;
NA = Not Available; Not Applicable
WH=Weight of Hammer.
Samples collected 1-3' and 9-11' bgs.

Water Level Data

Date	Depth	Elev.
11/27/01	12.8' bgs	

Project: 644.10.039
Data File:RFI-12-21.dat
Template: j:\rockware\logplot2001\logfiles\64410\auger_well.ldf
Date: 12/26/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-12-21

Borehole Depth: 21.0' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	15-17	6 7	10	2.0	0.0	-	CL		Gray-brown (10YR) to gray (10YR 5/1) lean Silty CLAY, little to few fine to medium subangular to subrounded Sand, trace fine rounded Gravel, no odor, very stiff to stiff, weakly plastic, dry. Clay Till. Becomes gray (10YR 5/1) with occasional Silt lenses up to 1" thick, moist.	SILTY SAND	
	9	17-19	10 11 16 14	27	1.6	0.0	-	SM		Gray (10YR 5/1) fine subrounded poorly graded Silty SAND, little Clay, no odor, moderately dense, aplastic, saturated. Glacial-alluvial. Coarsens downward.		
20 20	10	19-21	9 11 27 38	38	1.8	0.0	-	SW		Fine to coarse subangular to subrounded well-graded SAND, little Silt, few fine to coarse rounded Gravel with increased roundness associated with increased grain size, no odor, moderately dense, wet (saturated). Glacial-alluvial.	SAND	Global #5 sand pack 7.5-21' bgs.
								CL		Lean Silty CLAY, hard, weakly plastic, dry, as at 8.5 - 16.7' bgs. Clay Till.		
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Available; Not Applicable
WH=Weight of Hammer.
Samples collected 1-3' and 9-11' bgs.

Water Level Data

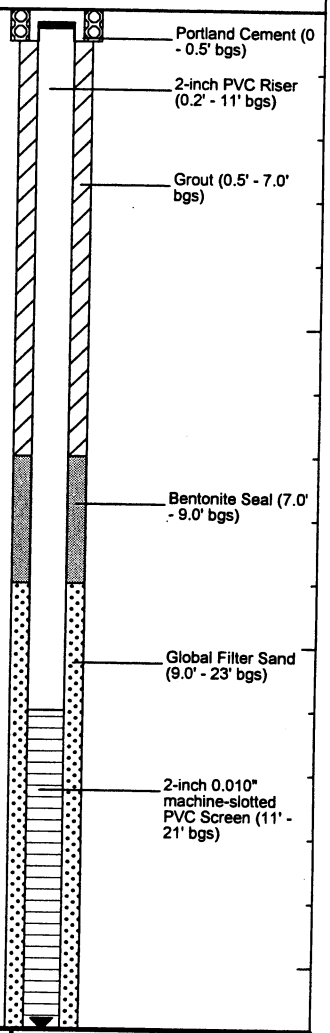
Date	Depth	Elev.
11/27/01	12.8' bgs	

Project: 644.10.039 Template: j:\rockware\logplot2001\logfiles\64410\auger_well.ldf
Data File:RFI-12-21.dat Date: 12/26/01

Date Start/Finish: 1/30/02 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3-1/4" ID HSA **Rig Type:** CME 55	**Northing:** 562618.64 **Easting:** 13305312.82 **Casing Elevation:** NA **Borehole Depth:** 23' below grade **Surface Elevation:** 742.06 **Descriptions By:** SM Duly	**Boring ID:** RFI-12-22 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0 0	NA	0-1	NA	NA	NA	NA	NA	FL	CONCRETE.	FILL
	1	1-3	27 50/ 5"	NA	1.0	0.0	-	SM	Very dark brown (10YR) Silty fine to coarse subangular SAND, few Clay, few fine to coarse subrounded Gravel, Slag present, aplastic, well-graded, no odor, dry, moderately dense. Foundry Sand mixed with Slag.	SILTY SAND
	2	3-5	17 19 21 24	43	1.6	0.0	-			
5 5	3	5-7	8 8 8 9	16	1.7	0.0	-		Yellow-brown (10YR 5/1) Silty fine to medium subangular SAND (SM), few Clay, aplastic, poorly graded, no odor, dense, dry. Fill Sand.	
	4	7-9	3 7 12 14	19	1.1	0.0	-	ML	Very dark brown (10YR) SILT, little fine to coarse subangular Sand and Slag, little Clay, aplastic, no odor, dense, damp. Fill.	SILT
10 10	5	9-11	3 4 5 5	9	1.0	0.0	-		Dark brown (10YR) Silty CLAY (CL) lense, lean, plastic, stiff, no odor, dry from 8.3' - 8.5' bgs.	
	6	11-13	4 7 11 13	18	2.0	0.0	-	CL	Gray (10YR 5/1) with yellow-brown (10YR 6/4) mottling, Silty lean CLAY, few fine to coarse subrounded Sand, no odor, plastic, stiff, dry. Clay Till.	SILTY SAND
	7	13-15	2 6 8 12	14	2.0	0.0	-		Yellow-brown (10YR 6/4) occasional Silt lenses up to 2" wide throughout, damp, homogenous.	
15 15	8	15-17	2 2	5	1.5	0.0	-		Gray (10YR 5/1) Silt semas up to 4" thick, saturated, homogenous.	

Boring Construction



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collecte 1.1-3.1' and 13.1-15.1' bgs.
+ = Positive Test Result.

Water Level Data

Date	Depth	Elev.
1/30/02	16'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-12-22

Borehole Depth: 23' below grade

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	15-17	3 5	5	1.5	0.0	-	CL		Gray (10YR 5/1) with yellow-brown (10YR 6/4) mottling, Silty lean CLAY, few fine to coarse subrounded Sand, no odor, plastic, stiff, dry. Clay Till.	SILTY SAND	
	9	17-19	3 5 11 19	16	1.8	0.0	+	ML		Gray (10YR 5/1) SILT, few fine to coarse rounded to subrounded Sand, aplastic, homogenous, saturated, weak to moderate odor, dense. Glacio-alluvial coarsens downward. 18.6': Black, oily material present, moderate odor.	SILT	Global Filter Sand (9.0' - 23' bgs) 2-inch 0.010" machine-slotted PVC Screen (11' - 21' bgs)
20 20	10	19-21	21 37 50/3 -	87	1.5	0.0	+	SW		Brown (10YR 5/3) fine to coarse subangular SAND, little Silt, trace Clay, aplastic, weak odor, dense, saturated. Glacio-alluvial. Occasional lenses of very stiff Silty lean Clay throughout up to 5" wide, dry.	SAND	
	11	21-23	86 50/5 - -	NA	0.0	NA	NA			No Recovery.		PVC Cap
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collecte 1.1-3.1' and 13.1-15.1' bgs.
+ = Positive Test Result.

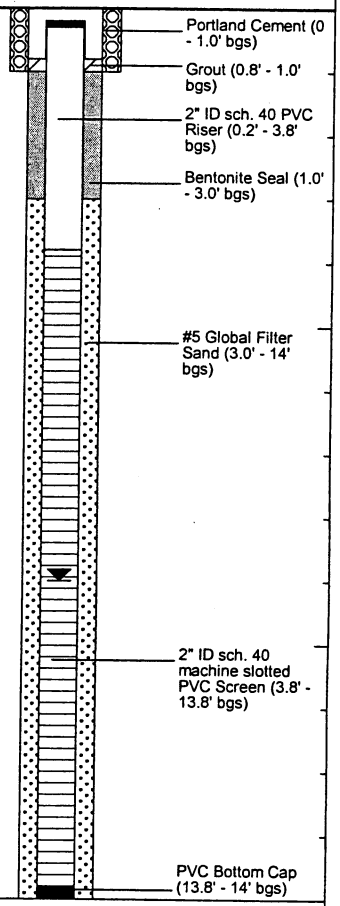
Water Level Data

Date	Depth	Elev.
1/30/02	16'	

Date Start/Finish: 5/31/01 - 6/01/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" HSA **Rig Type:** CME 55	**Northing:** 561228.46 **Easting:** 13305510.63 **Casing Elevation:** 736.10 **Borehole Depth:** 6' bgs **Surface Elevation:** 736.40 **Descriptions By:** SM Duly	**Boring ID:** RFI-16-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0											
	735	1	SS	11 7 11 11	18	1.3	16.5	-	FL	CONCRETE.	FILL
									ML	Yellow-brown (10YR 5/6) SILT, little fine to medium Sand, trace Clay, aplastic, moderate "moth ball" odor", damp to dry, moderate dense to moderate loose. Fill.	SILT
		2	SS	10 10 8 6	18	1.4	8.3	-		Weak "moth ball" odor at 3.0' bgs.	
5		3	SS	8 8 5 6	13	1.3	25.1	-		Moderate "moth ball" odor at 5.0' bgs.	
	730	4	SS	2 2 2 3	4	1.2	5.7	+		CONCRETE, Fill up to 1/2" above Concrete, Electrical or phone cable and "Ree-Bar" also present, saturated.	FILL
		5	SS	2 2 3 4	5	1.6	14.2	+	CL	Gray-brown (10YR 5/2) Silty CLAY, some fine to coarse subangular Sand, little fine subangular Gravel, no odor, moist, moderately loose to loose.	CLAY
10										Gray (10YR 5/1) oxidized locally and mottled to dark yellow-brown (10YR 4/4) CLAY, some Silt, little fine to medium subrounded to subangular Sand, increases in Silt to a moderately stiff Silty CLAY in 1" wide lenses throughout, no odor, stiff, dry.	
	725	6	SS	- - 17 25	17	1.6	7.3	+			
									SP	Dark gray-brown (10YR 4/2) fine to coarse subangular SAND, some Silt, little Clay, aplastic, weak oily hydrocarbon odor, wet to saturated, loose.	
		7	SS	NA	NA	NA	NA	NA	CL	Gray (10YR 5/1) CLAY as above from 9.1' - 11.9' bgs.	CLAY
										1" wide SAND (SP) seam at 13' bgs.	
15											

Boring Construction



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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available; +=Positive Result.
Samples collected 1-3', 5-7' and 8-10' bgs.
Redrilled previous boring to set well.

Water Level Data

Date	Depth	Elev.
5/31/01	9.0'	

Date Start/Finish: 5/14/01
Drilling Company: Rau Drilling
Driller's Name: Alan Rau
Drilling Method: Direct Push
Sampler Size: 2' cont. acetate sleeve
Auger Size: 2 1/4"
Rig Type: 66 DT Advance Geoprobe

Northing: 561752.94
Easting: 13305488.1
Casing Elevation: NA

Borehole Depth: 24' bgs
Surface Elevation: 740.11

Descriptions By: S. Kerr

Boring ID: RFI-16-02

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	740						FILL		CONCRETE.		
		1	0-2	1.6	52.8	-	SW		Black (10 YR 2/1) fine SAND, trace Clay, aplastic, moderately dense, no odor, dry. (Fill, foundry sand)	SAND	
							FILL		Concrete fragments, loose.	FILL	
		2	2-4	1.3	49.5	-	SP		Yellowish-brown (10 YR 5/4-1) SAND, some concrete rubble and subangular Gravel, loose, no odor, dry. (Fill)	SAND	
5	735	3	4-6	2.0	33.8	-	SW		Yellowish-brown (10 YR 5/6) fine SAND, medium dense, no odor, dry. (Fill)		
									Black SAND, as at 0.4-1.7' bgs.		
		4	6-8	2.0	24.0	-	ML		Yellowish-brown (10 YR 5/4) Clayey SILT, with gray mottling, aplastic, dense, no odor, moist. Till.	CLAYEY SILT	
		5	8-10	2.0	13.0	-					
10	730	6	10-12	2.0	27.1	-	SP		Brown fine SAND, trace Silt, little Clay, trace subangular Gravel, dense, no odor, dry.	SAND	
							CL		Yellowish-brown Silty CLAY, somewhat plastic (pp=3 tons/sq. ft.), dry.		
		7	12-14	2.0	26.0	-	SP		Dark grayish-brown fine to medium SAND, little Clay, trace subrounded Gravel, dense, no odor, moist.	SAND	
							ML		Grayish-brown (10 YR 5/2) Clayey SILT, trace subrounded Gravel, dense, no odor, dry.	Clayey SILT	
15	725	8	14-16	2.0	6.3	NA	SP		Dark grayish-brown fine SAND, little Clay, dense, no odor, wet.	SAND	
							SP		Black SAND, as at 0.4-1.7' bgs, moist.		
							ML		Grayish-brown fine to medium SAND, trace Gravel, moderately dense, no odor, moist.		

Borehole backfilled with Bentonite to grade.

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Remarks: bgs = below ground surface;
NA=Not Applicable/Not Available.
Samples collected 0.4-2', 8-10, and 14-16' bgs; pp=pocket penetrometer; 1" temporary 5' 0.01" slot well set 21' bgs.
Encountered obstruction @ 14.5' bgs, moved 3' from original.

Water Level Data

Date	Depth	Elev.
5/14/01	17, 23.5'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-16-02

Borehole Depth: 24' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
								no odor, moist. Yellowish-brown (10 YR 5/6) fine SAND, trace Clay, dense, no odor, moist.		
	9	16-18	2.0	13.4	NA	ML		Gray (10 YR 5/1) SILT, trace Clay, aplastic, dense, no odor, dry. Moist at 18' bgs. Glacial Till.	SILT	
	10	18-20	2.0	17.9	NA			Black SAND, as at 0.4-1.7' bgs. Gray (10 YR 6/1) SILT, aplastic, dense, no odor, dry. Glacial Till.		
20 720	11	20-22	2.0	39.3	-	ML		Moist @ 20' bgs.	SILT	Borehole backfilled with Bentonite to grade.
	12	22-24	2.0	23.2	-					
25 715										
30 710										
35 705										

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Remarks: bgs = below ground surface;
NA=Not Applicable/Not Available.
Samples collected 0.4-2', 8-10, and 14-16' bgs; pp=pocket penetrometer; 1" temporary 5' 0.01" slot well set 21' bgs.
Encountered obstruction @ 14.5' bgs, moved 3' from original.

Water Level Data

Date	Depth	Elev.
5/14/01	17, 23.5'	

Project: 644.10.022
Data File:RFI-16-02.dat
Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Date: 8/9/01

Date Start/Finish: 5/15/01 **Drilling Company:** Rau Drilling **Driller's Name:** Allen Rau **Drilling Method:** Direct Push **Sampler Size:** 2' cont. acetate sleeve **Auger Size:** 2 1/4" **Rig Type:** 66 DT Advanced Geoprobe	**Northing:** 560842.32 **Easting:** 13305648.93 **Casing Elevation:** NA **Borehole Depth:** 12' bgs **Surface Elevation:** 731.35 **Descriptions By:** S. Kerr	**Boring ID:** RFI-16-03 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0											
							FL		ASPHALT.		
					30.5		SP		Yellowish-brown (10YR 5/6) fine SAND, some angular Gravel, loose, no odor, aplastic, dry.	Fill	
	730	1	0-2	1.2	1.2	+	CL		Dark yellowish-brown (10YR 5/6) Silty CLAY, dense, somewhat plastic. Till.	CLAY	
		2	2-4	1.5	29.6 2.3	+	SP		Dark brown fine to medium SAND, trace Clay, some oxidation, loose, dry. From 2.4-3.8' bgs-Dark yellowish-brown (10YR 4/4) fine SAND, little Clay, trace angular Gravel, medium dense.	SAND	Borehole backfilled with Bentonite to grade.
5		3	4-6	1.7	26.8 2.8	+			Yellowish-brown (10YR 4/6) fine to medium SAND, moderately dense, aplastic, no odor, moist. SAND, as at 2-2.4' bgs, trace Silt and coarse Sand. Grayish-brown (10YR 5/2) fine to medium SAND, dark gray at bottom, medium dense, slight odor, moist to wet.		
	725	4	6-8	2.0	NA	+	ML		Gray (10YR 5/1) SILT, trace Clay and subangular to subrounded Gravel, slight odor, moist.	SILT	
		5	8-10	2.0	NA	+	SP		Dark gray (10YR 4/1) fine SAND, strong odor, loose, saturated.	SAND	
10							ML		SILT, as at 7' - 8' bgs.	SILT	
	720	6	10-12	2.0	NA	+	SP		Dark gray (10YR 4/1) fine SAND, dense, odor, moist.	SAND	
							ML		SILT, as at 7' - 8' bgs.	SILT	
15											

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available
Samples collect from 0.5-2' and 4-6' bgs.
1" ID 10-ft 0.01" slot screen temporary well set at 12' bgs.

Water Level Data

Date	Depth	Elev.
5/15/01	8'	NA

Date Start/Finish: 5/18/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 561093.41 **Easting:** 13305687.53 **Casing Elevation:** 732.27 **Borehole Depth:** 12' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-16-04 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735												
0								FL		CONCRETE.	FILL	Cement pad with 9" diam. flush-mount cover.
	1	0-2	NA	NA	2.0	1.8	-	SP		Yellowish-brown (10YR 5/6) fine SAND, trace Clay, aplastic, medium dense, no odor, dry. Fill.	SAND	Grout 1-2.8' bgs.
730	2	2-4	NA	NA	NA	1.9	+					Bentonite hole plug 2.8-4.8' bgs.
	3	4-6	NA	NA	NA	2.9	+	ML		Brown (10YR 4/3) Clayey SILT, trace fine Sand, no odor, moist.	SILT	
5								SP-M		SAND as at 0.7-3' bgs with Clayey Silt as at 4.3-5.1'.		2" ID Sch. 40 PVC riser 0.2-6.8' bgs.
	4	6-8	NA	NA	NA	NA	NA			No Recovery.		
725	5	8-10	woh/ 18" 32	NA	1.4	214	+	ML		Very dark gray (10 YR 3/1) SILT,some Clay, little fine to coarse subangular to subrounded Gravel, few fine rounded Gravel, moderate odor, wet, moderately dense.	SILT	#5 Global filter sandpack 4.8-12' bgs.
10										Pine wood debris.		
	6	10-12	woh/ 24"	NA	0.0	NA	+	FL		No recovery.		2" ID Sch. 40 PVC 0.010" slotted screen 6.8-11.8' bgs.
720										Concrete.		
15												

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available; WOH=Weight of Hammer.
Redrilled to set well. Geologic descriptions from 0-10' bgs are from the previous boring installed on 5/15/01.

Water Level Data

Date	Depth	Elev.
5/18/01	8.0' bgs	

Date Start/Finish: 5/15/01 **Drilling Company:** Rau Drilling **Driller's Name:** Allen Rau **Drilling Method:** Direct Push **Sampler Size:** 2' cont. acetate sleeve **Auger Size:** 2 1/4" **Rig Type:** 66 DT Advance Geoprobe	**Northing:** 561395.15 **Easting:** 13305680.85 **Casing Elevation:** NA **Borehole Depth:** 10' bgs **Surface Elevation:** 734.58 **Descriptions By:** S. Kerr	**Boring ID:** RFI-16-05 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	735										
		1	0-2	1.2	12.9	-	FL		CONCRETE.	FILL	
							SP		Black (10YR 2/1) fine SAND, dense, no odor, moist.		
							FL		Brown (10YR 4/3) fine to medium SAND, dense, no odor, moist.		
							SP		Yellowish-brown (10YR 5/4) fine to medium SAND, little rounded to subrounded Gravel, dense, no odor, moist.		
									CONCRETE fragments.		
									SAND as at 0.3-1.1' bgs.		
		2	2-4	1.7	16.8	-	ML-CL		Very dark gray (10YR 3/1) Silty CLAY, highly plastic, soft, no odor, moist.	SILT and CLAY	Borehole backfilled with Bentonite to grade.
							CL-ML		Dark yellowish-brown Clayey SILT, gray mottles, no odor, moist.		
									Very dark gray Clayey SILT, trace fine Sand, loose, no odor, wet, saturated at 4.2' bgs.		
5	730	3	4-6	1.8	64	-	SP		Brown (10YR 4/3) coarse SAND, little fine to medium Sand, loose, saturated.	SAND	
		4	6-8	1.7	109	-	ML		SILT as at 3.4' - 4' bgs.	SILT	
		5	8-10	2.0	52.7	-			6.6': Gray (10YR 6/1) and yellowish-brown (10YR 5/6) SILT, mottled, aplastic, no odor, dry, moist 8-10' bgs, some oxidation from 9-10' bgs.		
10	725										
15	720										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collect from 0.5-2' and 2-4' bgs.
1" Temporary Well set at 8' bgs.

Water Level Data

Date	Depth	Elev.
5/15/01	4.2'	NA

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-16-05.dat
Date: 5/31/01

Date Start/Finish: 5/14/01 **Drilling Company:** Rau Drilling **Driller's Name:** Alan Rau **Drilling Method:** Direct Push **Sampler Size:** NA **Auger Size:** NA **Rig Type:**	**Northing:** 561541.01 **Easting:** 13305430.88 **Casing Elevation:** NA **Borehole Depth:** 12' bgs **Surface Elevation:** 737.64 **Descriptions By:** S. Kerr	**Boring ID:** RFI-16-06 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
740										
0						FL		CONCRETE.	INCRE	
	1	0-2	1.5	63.2	-			Dark yellowish-brown (10YR 4/4) fine to medium-grained SAND, trace Clay, medium dense, dry, aplastic, no odor. Fill.		
								Very dark brown fine SAND, medium dense, dry, no odor. Fill		
735	2	2-4	1.9	54	-	SW		Dark yellowish-brown (10YR 4/4) fine to medium SAND, trace Clay, medium dense, dry, aplastic, no odor. Fill.	SAND	
5	3	4-6	2.0	41.5	-	ML		Yellowish-brown Clayey SILT, dense, dry, no odor.		
								SAND as at 0.7' to 1.7' bgs.		
						CL		Gray-brown (10YR 6/1) and (4/3) CLAY, dry dense, low plasticity, no odor, hard (pp >4.5).		Borehole backfilled with bentonite to grade.
	4	6-8	2.0	13.8	-	SW		SAND as at 0.7-1.7' bgs.		
730						CL		CLAY, as at 5.6-6.7' bgs.		
	5	8-10	NA	40.6	-	SW		SAND as at 0.7-1.7' bgs, saturated.	SAND and CLAY	
10						CL		CLAY, as at 5.6-6.7' bgs, with some reddish Clay and less gray.		
	6	10-12	NA	47.0	-	SW		SAND, as at 8.0-9.3' bgs.		
						CL		Dark gray CLAY, highly plastic, odor present, moist (pp=2 tons/sq. ft.). Clay Till.		
725										
15										

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0.7-2' and 4-6' bgs.

1" ID 5-ft 0.01" slot screen temporary well set at 12' bgs.

Water Level Data

Date	Depth	Elev.
5/14/01	6.3'	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-16-06.dat
Date: 8/9/01

Date Start/Finish: 6/6/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 561118.6 **Easting:** 13305644.63 **Casing Elevation:** 733.26 **Borehole Depth:** 11.5' bgs **Surface Elevation:** NA **Descriptions By:** S. Kerr & S.M. Duly	**Boring ID:** RFI-16-07 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	735												
0				NA					FL		ASPHALT.	Fill	
		1	0-2	12 8 6	20	1.5	129.0	-			Dark yellowish-brown (10 YR 4/6) SILT, some fine to coarse Sand (mostly fine), little to some Clay, damp, moderately dense to moderately loose. Fill.		
	730	2	2-4	4 5 4 3	9	1.0	160.0	-			Black (10 YR 2/1) SILT, some fine to medium Sand, trace Clay, no odor, damp, moderately dense to moderately loose. Fill.		Permanent well installed 1.4-11.4' bgs.
5		3	4-6	3 4 5 7	9	1.8	141.0	-			Moist.	SILT	
		4	6-8	2 3 4 5	7	1.5	115.0	+	ML		Wet.		
	725	5	8-10	3 5 4 3	9	1.7	131.0	+			Oily sheen and odor present		
10		6	10-12	9 18 50/ 0.1'	68	1.0	106.0	+			Concrete.		
	720												
15													

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Remarks: bgs = below ground surface; + = Positive Test Result.
NA = Not Applicable/Not Available.
Set 2" temporary well at 11.4' bgs, 0.020" screen 1.4-11.4'.
Samples collected 0.5-2.5' and 4.5-6.5' bgs.

Water Level Data

Date	Depth	Elev.
6/6/01	6.5' bgs	

Date Start/Finish: 6/7/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau / Tom Rau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 3 1/4" ID
Rig Type: CME 55

Northing: 561183.32
Easting: 13305663.08
Casing Elevation: 733.18

Borehole Depth: 13.5' bgs
Surface Elevation: NA

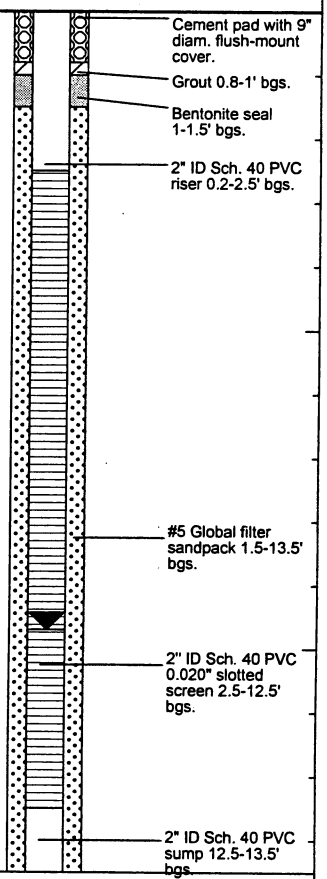
Descriptions By: SM Duly/ SC Kerr

Boring ID: RFI-16-08

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
735 / 0								FL		Concrete.	Fill
730	1	1.5-3.5	NA 9 10 7	19	0.4	827	-	ML		Very dark brown (10YR 2/2) SILT, little fine to medium Sand and Clay, trace subrounded Gravel, loose, damp, no odor. Fill.	SILT
	2	3.5-5.5	9 8 9 9	17	1.8	377	-			Yellowish (10 YR 5/4) SILT, little fine to medium Sand, trace Clay and subangular Gravel, moderately dense, damp. Mottled with very dark brown at 3.7' bgs. Increase in Clay content at 4.5' bgs to some.	
5	3	5.5-7.5	2 3 4 4	7	1.3	300	+	CL		Dark yellow brown (10 YR 4/4) CLAY, some Silt, little fine to medium subangular Sand, trace to few subrounded fine to medium Gravel, hard to medium stiff, no odor, damp, extensive oxidation. Clay Till. At 7.0' bgs, black oily product present : very strong odor and Clay is now brown black (10 YR2/1). At 8.7' bgs, increase in Silt content and decrease in stiffness.	CLAY
725	4	7.5-9.5	2 3 3 4	6	1.3	619	+	ML		Dark grey brown (10 YR 4/2) SILT, little Clay and fine to coarse subrounded to subangular Sand, few suburounded fine to medium Gravel. Strong odor, moderately loose, damp.	SILT
10	5	9.5-11	3 5 12 7	17	1.5	2780	+	SP		Grey (10 YR 5/1) fine to coarse subangular SAND, some Silt, trace Clay, few fine to medium subrounded to subangular Gravel. Wet (saturated), strong odor, oily sheens, loose.	SAND
720	6	11.5-13.5	10 15 20 21	35	NA	547	+	CL		CLAY as above 5.7-8.9' bgs. (pp>4.5 tons/ sq. ft.), no odor, dry. Clay Till.	CLAY
15											



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Remarks: bgs = below ground surface; + = Positive Test Result;
NA = Not Applicable/Not Available;
Samples collected 1.5-3.5' and 7.5-9.5' bgs.

Water Level Data

Date	Depth	Elev.
06/07/01	9.7'	

Project: 644.10.023
Data File:RFI-16-08
Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Date: 8/9/01

Date Start/Finish: 06/07/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau / Tom Rau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4"
Rig Type: CME 55

Northing: 561223.26
Easting: 13305657.68
Casing Elevation: 733.39

Borehole Depth: 13' bgs
Surface Elevation: NA

Descriptions By: SM Duly / SC Kerr

Boring ID: RFI-16-09

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735 / 0												
								FL		Concrete.	Fill	Cement pad with 9" diam. flush-mount cover.
	1	0.7-2.7	8 10 9 17	19	1.7	1547	-	ML		Yellowish brown (10 YR 5/6) SILT, some fine to coarse Sand, aplastic, dense, no odor. Fill.	SILT	Grout 0.8-1' bgs.
730 / 5	2	2.7-4.7	5 7 9 9	16	1.8	72.9	-			Sand content increases to a Sandy Silt.		Bentonite holeplug seal 1-3' bgs.
	3	4.7-6.7	4 2 1 1	3	1.6	105	-	SP		Yellowish brown (10 YR 5/6) fine to coarse subangular SAND, some SILT, few fine to medium subangular and subrounded Gravel, wet, moderately dense to moderately loose, no odor, saturated and weak odor at 6.6' bgs. Old concrete found at 8.3' bgs.	SAND	2" ID Sch. 40 PVC riser 0.2-4.5' bgs.
	4	6.7-8.7	2 2 2 3	4	1.5	98.7	-			SAND as above but black and oily with strong odor.		#5 Global filter sandpack 3-9.7' bgs.
725 / 10	5	8.7-10	12 7 9 11	16	1.4	311	+	CL		Gray (10 YR5/1) CLAY, some Silt, little fine to medium subangular Sand, little fine to medium Gravel, hard, stiff, moderate odor, dry to damp. Clay Till.	CLAY	2" ID Sch. 40 PVC 0.020" slotted screen 4.5-9.5' bgs.
	6	10.7-1	8 17 20 21	37	1.3	93.9	-					Hole plug backfill 9.7-11' bgs.
720 / 15												Hole plug 11-13' bgs.

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Remarks: bgs = below ground surface; + = Positive Test Result; NA = Not Applicable/Not Available.
Samples collected 0.7-2.7' and 4.7-6.6' bgs.

Water Level Data

Date	Depth	Elev.
06/06/01	6.6'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-16-09.dat Date: 9/14/01

Date Start/Finish: 06/08/01
Drilling Company: Rau Drilling
Driller's Name: Rod Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4"
Rig Type: CME 55

Northing: 561230.1
Easting: 13305627.49
Casing Elevation: 736.09

Borehole Depth: 15' bgs
Surface Elevation: NA

Descriptions By: S. Kerr & S.M. Duly

Boring ID: RFI-16-10

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	735								FL		Concrete.	Concrete	
		1	1.2-3.2	8 11 12 14	23	1.5	487	-	ML		Yellow brown (10 YR 5/6) SILT, some fine Sand, trace Clay, aplastic, damp, no odor, moderately dense. Fill.	Silt	
		2	3.2-5.2	15 16 23 25	39	0.9	602	-					Borehole backfilled with Bentonite to grade.
5	730										Concrete.		
		3	5.2-7.2	5 6 6 4	12	1.4	981	-			Dark grayish (10 YR 4/2) SILT, little Clay and medium to coarse rounded to subangular Gravel, few fine to medium Sand, loose to dense at 5.9' bgs, damp but wet 5.9'-6.2' bgs, some oxidation.		
		4	7.2-9.2	6 6 4 5	10	1	776	+	CL		Yellowish brown (2.5 Y 4/3) CLAY, some Silt, little fine subrounded to subangular Sand, moderately plastic, slight odor (stronger at 8.0' bgs), damp, black Staining , 7.5'-8.0' bgs. At 6.5' bgs, old concrete.	Clay	
									SP		Grayish brown (10 YR 5/2) fine to coarse (predominantly fine) subangular SAND, some Silt, oily sheen, moderately dense to moderately loose, wet, strong odor.	Sand	2" ID temporary Sch. 40 PVC 0.020" slotted screen 4-14' bgs.
10	725	5	9.2-11	3 3 4 4	7	1.8	555	+	ML-CL		SILT and CLAY lenses as at 6.2'-8.7' bgs up to 4" wide. Gray (10 YR 5/1) Silt up to 3" wide, little to some Clay, moderately dense, damp, strong odor throughout. Increase in moisture content and in softness at 11.5'.	Clay and Silt	
		6	11.2-1	6 9 17 25	26	NA	654	+	SP		SAND as above 8.7-9.5' bgs.	Sand	
15		7	13.2-1	12 20 31 37	51	1.8	164	-	CL		Dark gray (10 YR 4/1) CLAY, some Silt, trace fine to coarse subangular Sand and coarse subangular Gravel, hard (pp>4.5) , dry, odor. Clay Till.	Clay	#5 Global filter sandpack

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available.
PID background = 17.0 ppm

Water Level Data

Date	Depth	Elev.
6/8/01	5.9' bgs	

Project: 644.10.023 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-16-10.dat Date: 9/14/01

Date Start/Finish: 06/12/2001 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** 561276.36 **Easting:** 13305579.26 **Casing Elevation:** 736.49 **Borehole Depth:** 15' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-16-11 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0													
	735	1	0-2	8 9 Ref -	N/A	0.8	0.0	-	ML		Concrete. Black (10YR 2/1) aplastic SILT, some to little fine to medium (predominantly fine) subangular Sand, no odor, loose, dry.	SILT	
		2	2-4	6 Ref - -	N/A	0.5	0.0	-	FL		Concrete.		Grout 0-3'
5		3	4-6	5 6 6 5	12	1.3	0.0	-	ML FL		Black (10YR 2/1) aplastic SILT, some to little fine to medium (predominantly fine) subangular Sand, no odor, loose, dry. Concrete.	SILT	
	730	4	6-8	5 Ref - -	N/A	0.5	0.1	-	ML		Black (10YR 2/1) aplastic SILT, locally oxidized to dark yellow brown (10YR 4/4), damp, moist at 6.8' bgs, saturated at 7.3' bgs.	SILT	Sand pack 3.0'-15.0' bgs.
									FL		Concrete.		
10		5	8-10	3 5 6 8	11	1.6	0.0	-	CL		Brown (10YR 5/3) to (5/1) moderately stiff CLAY, some Silt, little fine to medium subangular to subrounded Sand, trace fine to medium rounded to subrounded Gravel, no odor, damp, locally oxidized and mottled to brown (10YR 5/3). Till.	CLAY and SILT	0.010" slot PVC screen installed 5-15' bgs.
	725	6	10-12	3 3 3 3	6	1.8	0.0	-	ML		Yellow brown (10YR 5/4) aplastic SILT, some fine subangular Sand, no odor, saturated, moderately dense.		
									CL		Brown (10YR 5/3) to (5/1) moderately stiff CLAY. Yellow brown (10YR 5/4) Sandy CLAY, some Silt and fine to medium subrounded to subangular Sand, no odor, saturated, soft, increased coarseness and more gray with depth.		
		7	12-14	12 13 17 28	30	2.0	0.0	-					
15		8	14-15	N/A N/A	N/A	N/A	N/A	N/A			Brown (10YR 5/3) to (5/1) moderately stiff CLAY, no odor, dry.		

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Remarks: bgs = below ground surface;
PID background = 0.0 ppm
NA=Not Available
Samples collected 1-3' and 5-7' bgs.

Water Level Data

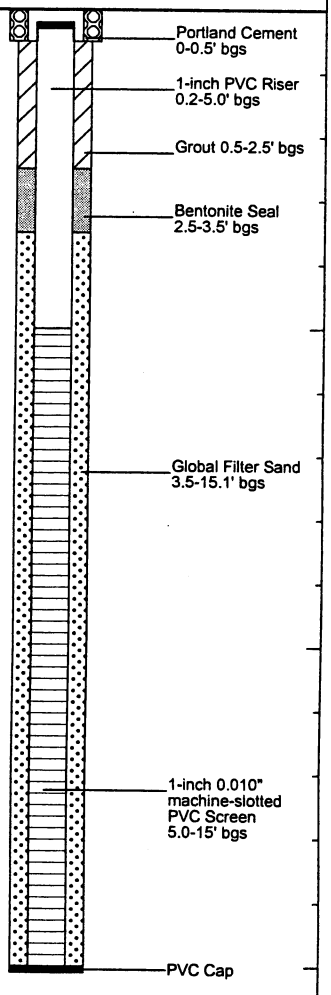
Date	Depth	Elev.
06/12/01	7.3(?)	

Project: 644.10.013 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:RFI-16-11.dat Date: 07/18/01

Date Start/Finish: 1/31/02 **Drilling Company:** Rau Drilling **Driller's Name:** Glen Rau **Drilling Method:** Geoprobe **Sampler Size:** NA **Auger Size:** NA **Rig Type:** Truck-Mounted Geoprobe	**Northing:** 561130.69 **Easting:** 13305740.14 **Casing Elevation:** NA **Borehole Depth:** 16' bgs **Surface Elevation:** 735.58 **Descriptions By:** SM Duly	**Boring ID:** RFI-16-12 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0 0						FL		CONCRETE.	FILL
				0.0	+	SM		Very dark brown (10YR) fine to coarse subangula well-graded SAND, little Silt, few Clay, aplastic, weak odor, dry, dense. Foundry Sand.	SAND
	1	0-4	2.5			CL		Brown (10YR 5/3) Silty Lean CLAY, few fine to coarse subangular to subrounded Sand, very stiff, weakly plastic, weak odor, dry. Clay Till.	ILTY CLA
				378	+	FL		Weathered CONCRETE.	
						CL		Silty Lean CLAY as above from 1.9' - 3.1' bgs, but more plastic, moist, and dark brown (10YR), moderate odor.	SILTY CLAY
5 5				432	+				
	2	4-8	3.3			ML		Dark yellow-brown (10YR) SILT, little fine to coarse subrounded Sand, little Clay, aplastic, moderate odor, dense, moist to damp. Strong odor, oily material present at 6.0' - 6.5' bgs.	SILT
				563	+				
						SM		Gray (10YR 5/1) fine to coarse subangular Silty well-graded SAND, few Clay, wet to moist, loose, moderate odor, fines downward.	
				967	+	CL		Brown (10YR 5/2) to gray (10YR 5/1) Silty Lean CLAY as above from 3.5' - 5.4' bgs, moderate odor, dry to damp. Glacial Till.	SILTY CLAY
10 10	3	8-12	4.0						
				1753	+				
				1862	+	SM		Silty SAND as above from 8.3' - 9.0' bgs. Saturated, oil present.	SILTY SAND
	4	12-16	4.0						
15 15				1973	+	CL		Gray (10YR 5/1) Silty Lean CLAY as above from 3.5' - 5.4' bgs, very stiff.	SILTY CLAY

Boring Construction



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.9-2.9' and 8.9-10.9' bgs.
+ = Positive Test Result.

Water Level Data

Date	Depth	Elev.

Project: 644.10.101 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-16-12.dat
Date: 5/21/02

Date Start/Finish: 12/04/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS Shive **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" ID **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 11' bgs. **Surface Elevation:** NA **Descriptions By:** S. Kerr	**Boring ID:** RFI-16-13 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								FL		Concrete.	FILL	
	1	1-3	9 11 13 12	24	1.3	NA	NA	ML		Black (10YR 2/1) SILT, trace Clay, little fine Sand, no odor, loose, dry. Fill. Yellow-brown (10YR 5/6) fine SAND lenses.	SILT	
	2	3-5	10 14 16 11	30	1.2	NA	NA			2.8-3.0' bgs: trace fine to medium Gravel.		
5 5	3	5-7	6 6 9 7	15	1.5	NA	NA			Becomes moderately dense.		Borehole backfilled with bentonite to grade.
		NA	NA	NA	NA	NA	NA	FL		Concrete.	FILL	
										Aggregate.		
10 10	4	9-11	3 3 4 3	7	1.3	NA	NA	CH		Grayish brown (10YR 5/2) to yellow-brown (10YR 5/6) mottled fat CLAY, trace fine Sand, trace Silt, no odor, soft, moist.	CLAY	
15 15												

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Remarks: bgs = below ground surface;
NA = not available
Samples collected 1-3' and 9-11' bgs.
Drilled with Shive.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 10/31/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compau/D. Emery **Drilling Method:** Geoprobe **Sampler Size:** NA **Auger Size:** **Rig Type:** Truck-Mounted Geoprobe	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 12' bgs **Surface Elevation:** NA **Descriptions By:** BTL	**Boring ID:** RFI-16-14 **Client:** General Motors **Location:** Tank 113/114/115 Investigation Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	NA	NA	NA	NA	NA	Fill		CONCRETE.	Fill	Boring backfilled with bentonite to grade.
								Yellow-brown SILT, some fine Sand, trace Clay, no odor, moderately dense, dry. Fill.		
5 5						ML		Dark grayish-brown (10YR 1/2) SILT, little Clay, little rounded to subrounded medium to coarse Gravel, few fine to medium Sand, loosr to dense, dry.	SILT	
						SP		Yellow-brown fine to medium SAND, trace Silt, moderately dense, moist.	SAND	
10 10								As above with Silt and trace Clay.		
								Grayish-brown medium to coarse SAND, saturated, very strong hydrocarbon odor, oily, sheen.	SAND	
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
No samples collected for analysis.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 10/31/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compau/D. Emery **Drilling Method:** Geoprobe **Sampler Size:** NA **Auger Size:** **Rig Type:** Truck-Mounted Geoprobe	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 12' bgs **Surface Elevation:** NA **Descriptions By:** BTL	**Boring ID:** RFI-16-15 **Client:** General Motors **Location:** Tank 113/114/115 Investigation Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	NA	NA	NA	NA	NA	Fill		CONCRETE. Yellow-brown fine SAND, medium density. CONCRETE. Black Sandy FILL with Cinder and Brick fragments.	SAND and FILL	Temporary 1" diam. PVC 0.010" slot screen installed from 7-12' bgs.
5 5								VOID.		
						SP		Brown fine SAND with Silt. Light brown fine SAND with Silt, moist to wet. As above, with rounded Gravel, wet to saturated.	SAND	
10 10						ML		Light brown Sandy SILT to Clay. Brown SILT, with trace fine Sand, stiff.	SAND & SILT SILT	
15 15										

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Remarks: Installed a 1-inch temporary PVC Well from 7' - 12' bgs.
bgs = below ground surface;
NA = Not Applicable/Not Available.
No water sample collected, dry.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 10/31/01 **Drilling Company:** Rau Drilling **Driller's Name:** **Drilling Method:** Geoprobe **Sampler Size:** NA **Auger Size:** **Rig Type:** Truck-Mounted Geoprobe	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 7.5' bgs **Surface Elevation:** NA **Descriptions By:** BTL	**Boring ID:** RFI-16-16 **Client:** General Motors **Location:** Tank 113/114/115 Investigation Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	NA	NA	NA	NA	NA	Fill		CONCRETE.	FILL	Boring backfilled with bentonite to grade.
								VOID. Physical observation: Open space under Concrete.		
5 5								Yellowish-brown SAND with Silt, trace Clay, trace subrounded to subangular Gravel. Fill.	SAND	
								Black Coal CINDER.		
								Yellowish-brown SAND with Silt, trace Clay, trace subrounded to subangular Gravel. Fill.		
10 10								Concrete obstruction/Refusal at 7.5' bgs. Possible former basement/tunnel.		
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
No soil samples collected

Water Level Data

Date	Depth	Elev.

Project: 644.10.101 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-16-16.dat Date: 4/26/02

Date Start/Finish: 10/31/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compau/D. Emery **Drilling Method:** Geoprobe **Sampler Size:** NA **Auger Size:** **Rig Type:** Truck-Mounted Geoprobe	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 12' bgs **Surface Elevation:** NA **Descriptions By:** BTL	**Boring ID:** RFI-16-17 **Client:** General Motors **Location:** Tank 113/114/115 Investigation Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	NA	NA	NA	NA	NA			CONCRETE.	FILL	
								Yellow-brown fine to medium SAND, some Silt. [FILL]	SAND	
5 5						SM		Dark brown Silty SAND, with subangular Gravel.	SILTY SAND	Boring backfilled with bentonite to grade.
						CL		Brown CLAY, with Sand and Silt, trace subangular to subrounded Gravel, no odor.	CLAY	
						SM CL		As above from 4.0' - 5.6' bgs. As above from 5.6' - 6.4' bgs.		
								As above from 4.0' - 5.6' bgs.		
10 10						SM		Brown Silty SAND, soft, moist to wet.	SILTY SAND	
15 15										

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Remarks: Installed a 1-inch PVC Temporary well from 7' - 12' bgs.
bgs = below ground surface;
NA = Not Applicable/Not Available.
No water sample collected, dry.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 10/31/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compau/D. Emery
Drilling Method: Geoprobe
Sampler Size: NA
Auger Size:
Rig Type: Truck-Mounted Geoprobe

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 7.3' bgs
Surface Elevation: NA

Descriptions By: BTL

Boring ID: RFI-16-18

Client: General Motors

Location: Tank 115 Investigation
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	NA	NA	NA	NA	NA	Fill		ASPHALT.	FILL	Boring backfilled with bentonite to grade
								Red CINDER.		
								CONCRETE.		
						SP		Yellow-brown SAND, to Clay, medium dense, dry, no odor.	SAND and FILL	
						ML		Brown Clayey SILT, trace fine Sand, no odor.		
	1	1.2-4.0	2.0	NA	NA	SP		Dark brown fine to medium SAND, trace Silt.		
								Brown fine to medium SAND, trace subangular to subrounded Gravel, moist.		
								WOOD.		
5 5								Dark brown fine to medium SAND with Silt, trace subangular to subrounded Gravel, moist to wet.		
	2	4.0-7.3	3.0	NA	NA	SM		Dark gray-brown Silty SAND, with subangular Gravel, wet.	SILTY SAND	
								Refusal at 7.3' bgs.		
10 10										
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.

Project: 644.10.101
Data File:RFI-16-18.dat
Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Date: 4/29/02

Date Start/Finish: 10/31/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compau/D. Emery **Drilling Method:** Geoprobe **Sampler Size:** NA **Auger Size:** **Rig Type:** Truck-Mounted Geoprobe	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 10' bgs **Surface Elevation:** NA **Descriptions By:** BTL	**Boring ID:** RFI-16-19 **Client:** General Motors **Location:** Tank 115 Investigation Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	NA	NA	NA	NA	NA	Fill		ASPHALT. CONCRETE. Dark brown Silty SAND with large subrounded Gravel. Fill.	Fill	
5 5						SP		Yellow-brown fine SAND, medium dense, dry.	SAND	Boring backfilled with bentonite to grade
						CL		Yellow-brown Sandy CLAY to subrounded to subangular Gravel, moist.		
						ML		Gray-brown SILT with yellow-brown Sand mottles, trace rounded Gravel.	SILT	
						CL		As above from 6.0' - 6.3' bgs.		
					+	ML		Brown-gray SILT with 0.5' subangular Gravel, very dense, very strong hydrocarbon odor.	SILT	
10 10										
15 15										

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Remarks: + = Positive Test Result;
bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/04/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" ID **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 12' bgs. **Surface Elevation:** NA **Descriptions By:** S. Kerr	**Boring ID:** RFI-16-20 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0		NA	NA	NA	NA	NA	NA	FL		CONCRETE.	Fill	Concrete (0-1' bgs)
										Aggregate FILL.		
	1	1-3	2 3 3 11	6	1.3	NA	NA	SW		Very dark grayish brown (10YR 3/2) SAND, predominantly fine to coarse, some Silt, trace Clay, no odor, loose, damp. Fill.		Grout (1-2' bgs)
								CH		Dark grayish brown (10YR 4/2) fat CLAY, trace Silt, fine Sand, no odor, soft, moist.		
								SP		Very dark grayish brown (10YR 3/2) SAND, predominantly medium, poorly graded, some Silt, trace Clay, no odor, loose, damp. Fill.		Bentonite (2-4' bgs)
		NA	NA	NA	NA	NA	NA	FL		CONCRETE.		
5 5	2	4-6	3 3 3 3	6	1.6	NA	NA	ML		Yellow-brown (10YR 5/6) SILT, some fine to medium Sand, no odor, loose, moist.	Silt	2" ID PVC Riser (0-6' bgs)
	3	6-8	1 2 2 1	4	0.8	NA	NA			Saturated. 7.8-8.0: Some coarse subangular Gravel.		Sand Pack (4-12' bgs)
	4	8-10	1 2 1 1	3	1.5	NA	NA			Some medium grained Sand and fine to medium subrounded Gravel.		2" ID PVC 0.010" Slotted Screen (6-11' bgs)
10 10	5	10-12	1 1 1 1	2	0.9	NA	NA					PVC Cap (11.0-11.2' bgs)
								CH		Brown (10YR 5/3) Silty fat Clay, some fine to medium subrounded to subangular Sand, no odor, soft, moderate plasticity, saturated.	Clay	
15 15												

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Remarks: bgs = below ground surface;
NA = not available
Samples collected 1-3' and 4-6' bgs.

Water Level Data

Date	Depth	Elev.
12/04/01	7.6'	

Project: 644.10.039 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-16-20.dat Date: 12/26/01

Date Start/Finish: 12/04/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 3.5' bgs **Surface Elevation:** NA **Descriptions By:** S. Kerr	**Boring ID:** RFI-16-21 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0		NA	NA	NA	NA	NA	NA	FL		CONCRETE.	Fill	
										Aggregate, FILL.		
	1	1-3	NA	NA	NA	NA	NA			CONCRETE (spoon refusal at 1.0' bgs).		Borehole backfilled with bentonite to grade.
		NA	NA	NA	NA	NA	NA					
5 5												
10 10												
15 15												

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Remarks: bgs = below ground surface;
NA = not available

Water Level Data

Date	Depth	Elev.

Project: 644.10.039 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-16-21.dat Date: 12/26/01

Date Start/Finish: 10/31/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compau/D. Emery **Drilling Method:** Geoprobe **Sampler Size:** NA **Auger Size:** **Rig Type:** Truck-Mounted Geoprobe	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 12' bgs **Surface Elevation:** NA **Descriptions By:** BTL	**Boring ID:** RFI-16-22 **Client:** General Motors **Location:** Tank 113/114/115 Investigation Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	NA	NA	NA	NA	NA	Fill		CONCRETE.	FILL	Boring backfilled with bentonite to grade
								Yellowish-brown fine to medium SAND, medium density, no odor.	SAND	
5 5								Grayish-brown SILT, trace Clay to Sand, trace subrounded to subangular Gravel.		
								Black CINDER, with Sand and Silt, some subrounded Gravel.		
						ML/CL		Dark brown to black SILT and CLAY, some subangular Gravel, dense, moist.		
						CL		Brown CLAY with gray mottles throughout, trace fine Sand, trace subrounded Gravel, stiff. No mottles from 9.0' - 12' bgs.	CLAY	
10 10										
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Temp well installed, but no water sample collected, dry.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 10/31/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compau/D. Emery
Drilling Method: Geoprobe
Sampler Size: NA
Auger Size:
Rig Type: Truck-Mounted Geoprobe

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 12' bgs
Surface Elevation: NA

Descriptions By: BTL

Boring ID: RFI-16-23

Client: General Motors

Location: Tank 113/114/115 Investigation
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	NA	NA	NA	NA	NA	NA	NA	Fill		CONCRETE.	FILL	Boring backfilled with bentonite to grade.
										Yellow-brown Silty SAND, trace Clay, no odor, moderately dense. Fill.	SILTY SAND	
										Brown Silty SAND, with angular Gravel, trace Clay, loose.		
5 5										Dark brown to black CINDER, very loose.	FILL	
								ML		Black SILT, trace Sand, trace rounded Gravel.	SILT	
								CL		Dark gray to black CLAY with Silt, trace Sand and subrounded to subangular Gravel, stiff.	CLAY	
10 10												
15 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.

Project: 644.10.101 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-16-23.dat Date: 4/26/02

Date Start/Finish: 5/16/01 **Drilling Company:** Rau Drilling **Driller's Name:** Allen Rau **Drilling Method:** Direct Push **Sampler Size:** 2' cont acetate sleeve **Auger Size:** 2 1/4" **Rig Type:** 66 DT Advance Geoprobe	**Northing:** 560809.81 **Easting:** 13306491.7 **Casing Elevation:** NA **Borehole Depth:** 14' bgs **Surface Elevation:** 721.2 **Descriptions By:** S. Kerr	**Boring ID:** RFI-17-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0											
	720	1	0-2	1.1	12.9	-	FL		ASPHALT.	FILL	
									CONCRETE.		
									Black (10YR 2/1) fine Silty SAND, trace Clay, trace rounded subangular and angular Gravel, dense, no odor, moist. Fill.	SILTY SAND	
		2	2-4	1.6	34.7	-	SP				Borehole backfilled with Bentonite to grade.
							SM		Very dark grayish-brown fine to medium Silty SAND, trace shiny black fragments, dense, moist. Fill.		
5		3	4-6	1.7	20.7	-			Yellowish-brown (10YR 5/4) SILT, little Clay, trace Brick-like fragments, dense, no odor, moist. Fill.	SILT	
									Brown (10YR 4/3) SILT, trace fine Sand and brick-like fragments, dense, no odor, moist. Fill.		
	715								Brown (10YR 4/3) Sandy SILT, medium to coarse Sand, trace Clay, moderate dense, no odor, saturated at 5.8' bgs.		
		4	6-8	2.0	20.3	-			Yellowish-brown (10YR 5/4) SILT, trace Clay and subrounded to subangular Gravel, aplastic, dense, no odor.	SILT	
		5	8-10	2.0	32.7	-	ML				
10									Dark gray (10YR 4/1) SILT, hard, dense, no odor, moist.		
	710	6	10-12	2.0	44.9	-					
		7	12-14	1.0	36.3	-					
15											

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.7-2' and 2-4' bgs.
1" Temporary Well set at 10' bgs.

Water Level Data

Date	Depth	Elev.
5/16/01	5.8'	NA

Date Start/Finish: 5/14/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID SS **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 560485.56 **Easting:** 13306346.96 **Casing Elevation:** 720.27 **Borehole Depth:** 14' bgs **Surface Elevation:** NA **Descriptions By:** S.M. Duly	**Boring ID:** RFI-17-02 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0	720								FL		CONCRETE/ASPHALT.	
		1	0-2	- 6 7 7	13	1.0	3.0	-	ML		Very dark gray-brown (10YR 2/2) SILT, some fine to coarse subangular SAND, little fine to coarse angular to subangular Gravel, aplastic, no odor, dry, loose.	SILT
		2	2-4	5 5 3 7	8	0.0	NA	NA			No Recovery, pebble- to cobble-sized fragments in shoe.	
5	715	3	4-6	4 2 8 5	10	1.8	2.9	-	CL		Brown (10YR 5/3) Silty CLAY, little fine to medium subangular Sand, no odor, damp, medium stiff to soft. (pp = 1 - 3.5 ton/square ft).	SILTY CLAY
		4	6-8	3 2 2 1	4	1.8	2.4	-	SP		Brown-yellow (10YR 6/6) fine to coarse subangular SAND, little to some Silt, few Clay and fine to coarse subrounded Gravel, no odor, moist, moderately loose, saturated at 7.3' bgs.	SAND, fINE
		5	8-10	1 2 2 1	4	1.0	2.3	-				
10	710	6	10-12	1/ 12" 1/6" 1	NA	1.0	4.5	-				
		7	12-14	1 1 1 1	2	0.8	0.8	-				
15	705											

Boring Construction

- Cement pad with 9" diam. flush-mount cover.
- Grout 0.7-1' bgs.
- Bentonite holeplug seal 1-2' bgs.
- 2" ID Sch. 40 PVC riser 0.3-4' bgs.
- #5 Global filter sandpack 2-14' bgs.
- 2" ID Sch. 40 PVC 0.010" slotted screen 4-14' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
pp=pocket penetrometer.
Samples collected 0.3-2' and 4-6' bgs.

Water Level Data

Date	Depth	Elev.
5/14/01	7.3'	

Date Start/Finish: 06-25-01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 563862.36 **Easting:** 13305829.93 **Casing Elevation:** NA **Borehole Depth:** 19' bgs **Surface Elevation:** 744.46 **Descriptions By:** SC Kerr	**Boring ID:** RFI-21-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
745 / 0												
	1	0-2	14 50/3 N/A N/A	NA	0.8	>9999	-	FL		Concrete	FILL	
								SP		Yellow brown (10YR 5/4) fine to medium SAND, trace Clay, few Silt, loose, dry, no odor.	SAND	
	2	2-4	13 13 3 9	16	1.4	329	-	ML		Black (10YR 2/1) SILT, some Clay and fine to medium Sand, moist, slag, no odor.	SILT	
										Very dark grayish brown (10YR 4/2) SILT, some fine to medium Sand, Clay, and concrete rubbles and slag, moderately loose, no odor.		
740 / 5								SP		Yellow brown (10YR 5/6) fine to medium SAND, some Silt, little Clay, loose to moderate dense, moist, no odor.		
	3	4-6	8 5 5 3	10	1.5	>9999	-	ML		Blac(k10YR 2/1) clayey SILT, little fine to coarse Sand, loose, moist, no odor.		Borehole backfilled with bentonite chips to grade.
	4	6-8	2 2 3 4	5	1.5	1336	-			Very dark grayish brown (10YR 3/2) SILT, little fine to medium Sand, trace coarse Gravel, moderate dense, moist, no odor. Dark yellow brown (10YR 4/6) SILT, some fine to medium Sand, trace subangular to subrounded coarse Sand, moderate dense, moist, no odor. From 8.2' bgs, sand decreases to little and some clay, dense, wet at 8.5' bgs.		
735 / 10	5	8-10	3 3 5 5	8	1.3	1454	-					
	6	10-12	2 5 7 8	12	1.2	97.8	-	SP		Yellow brown (10YR 5/6) fine to medium SAND, wet, loose, no odor, saturated at 10.4' bgs.	SAND	Temporary well screen set at 9' - 19' bgs.
	7	12-14	5 7 8 14	15	1.4	197	-					
730 / 15	9	14-16	4 4 6 7	10	1.6	81.6	-					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.9-2.9' and 6.9-8.9' bgs.

Water Level Data

Date	Depth	Elev.
06/25/01	10.4	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-21-01.dat Date: 07/06/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-21-01

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	10	16-18	14 24 50/5	NA	2	1123	-	SP		Yellow brown (10YR 5/6) fine to medium SAND, wet, loose, no odor, saturated at 10.4' bgs.	SAND	Sand backfill from 9' to 19' bgs.
								ML		Yellow brown (10YR 5/6) SILT, some fine Sand, dense, saturated, no odor.	SILT	

725
20
720
25
715
30
710
35

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.9-2.9' and 6.9-8.9' bgs.

Water Level Data

Date	Depth	Elev.
06/25/01	10.4	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-21-01.dat Date: 07/06/01

Date Start/Finish: 06-25-01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 563730.77 **Easting:** 13305844.54 **Casing Elevation:** NA **Borehole Depth:** 13' bgs **Surface Elevation:** 745.26 **Descriptions By:** SC Kerr	**Boring ID:** RFI-21-02 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	745												
				6					FL		Concrete	FILL	
		1	0-2	14 16 13	30	1.5	94.8	-	ML		Black (10YR 2/1) SILT, some Clay, some fine to medium Sand, rubbles and slag, dense, moist, no odor. Fill.	SILT	
		2	2-4	12 50/ 0.4 -	50	0.7	2116	-					
5	740	3	4-6	14 12 6 3	18	1.3	>9999	-					
		4	6-8	2 5 3 3	6	1.6	>9999	-	SM		Yellow brown (10YR 5/4) fine to coarse SAND (predominantly fine grained), some Silt, rubble and slag, little Clay, moderately loose, moist, no odor.	SAND	
									ML		Brown (10YR 4/3) SILT, some fine Sand, moist to wet, dense, no odor.	SILT	
		5	8-10	3 4 4 5	8	NA	1109	-	SP		Yellow brown (10YR 5/4) fine to coarse SAND, no rubble or slag, moist to wet, predominantly coarse SAND from 8.6' downward, trace coarse Gravel, saturated at 9.4', less coarse sand, fine to medium sand predominated.	SAND	
10	735	6	10-12	5 2 4 7	6	1.8	1522	-					
		7	12-13	NA	NA	NA	NA	NA	CL		Grayish brown CLAY, stiff, (pp>4.5 tons/sq. ft.), trace fine to coarse subangular Sand, little Silt.	CLAY	
15	730												

Temporary 1" well screen set at 7' to 12' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.7-2.7' and 6.7-8.7' bgs.
pp = pocket penetrometer

Water Level Data

Date	Depth	Elev.
6/25/01	9.4'	

Date Start/Finish: 06/21/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2x2" ID **Auger Size:** 2 1/4" ID **Rig Type:** CME 55	**Northing:** 563730.47 **Easting:** 13305910.02 **Casing Elevation:** NA **Borehole Depth:** 21' bgs **Surface Elevation:** 744.99 **Descriptions By:** S. Kerr	**Boring ID:** RFI-21-03 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 744.5	1	0-2	1.5 n/a n/a n/a	NA	0.5	70.5	-	FL	Asphalt	FILL	
								ML	Very dark gray brown SILT. Some fine to coarse subangular Sand. Little Clay and Gravel. Loose, dry, slight odor. Fill.		
	2	2-4	20 29 50/ 3"	NA	1.2	340	+				Borehole backfilled with Bentonite to grade.
5 740	3	4-6	5 8 9 6	17	1.9	195	+		Dark yellow SILT with some black staining. Little Clay. Trace fine Sand. Loose, no odor. Becomes damp at 5.9' bgs and denser at 6.2' bgs.	SILT	
	4	6-8	3 2 2 2	4	1.6	63.3	-				
	5	8-10	6 3 2 1	5	1.0	187	-		Grayish brown (10 YR 5/2) fine to medium subangular SAND. Trace rubble and wood debris. Loose, damp, no odor.		
									Dark grayish brown (10 YR 4/2) SILT. Some fine Sand. Little Clay. Trace Gravel. Damp, no odor. Local oxidation at 10' bgs. Increase in Clay content at 10.8'.		
10 735	6	10-12	3 4 8 11	12	5	118	-				
	7	12-14	3 8 11 14	19	1.3	114	-	SM	Yellow brown (10 YR 5/6) fine SAND. Some Silt. Moderately dense, saturated, no odor. Increase in Silt content at 14.0' (up to SILTY SAND). Local oxidation at 14.8' bgs. Some Silt at 14.9' bgs. Trace Silt at 16.4' bgs to some.	SAND	Screen from 10' to 20' bgs.
15 730	8	14-16	6 8 11 13	19	1.2	165	-				

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Remarks: bgs = below ground surface; + = Positive Test Result;
NA = Not Applicable/Not Available
PID Background : 0.0 ppm
Samples collected 1-3' and 9-11' bgs.

Water Level Data

Date	Depth	Elev.
06/21/01	11.7'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-21-03

Borehole Depth: 21' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	4 4 8 10	12	1.4	118	-	SM		Sand as above (12'-16' bgs).	SAND	Screen from 10' to 20' bgs.
	10	18-20	7 9 17 20	28	2.0	98.1	NA					
20 725	11	20-21	NA	NA	NA	NA	NA	ML		Gray (10 YR 6/1)SILT. Dense, saturated, no odor.	SILT	
25 720												
30 715												
35 710												

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Remarks: bgs = below ground surface; + = Positive Test Result;
NA = Not Applicable/Not Available
PID Background : 0.0 ppm
Samples collected 1-3' and 9-11' bgs.

Water Level Data

Date	Depth	Elev.
06/21/01	11.7'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File: RFI-21-03.dat Date: 6/29/01

Date Start/Finish: 11/6/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2x2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 563671.83 **Easting:** 13305910.03 **Casing Elevation:** NA **Borehole Depth:** 19' bgs **Surface Elevation:** 746.1 **Descriptions By:** S. Kerr	**Boring ID:** RFI-21-04 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0									FL		Asphalt	FILL
	745	1	1-3	8 32 50/ 8"	NA	1	2.1	NA	ML		Black (10YR 2/1) SILT, trace fine Sand, trace Clay, no odor, loose, dry. Fill.	
		2	3-5	6 8 8 9	16	1.5	0.0	NA			Concrete fragments to 3' bgs.	
5	740	3	5-7	4 5 5 5	10	1.4	0.0	NA			Damp.	
		4	7-9	4 5 11 16	16	1.2	0.0	NA			Some Slag, metallic-type fragments and debris (some oxidized), plaster-like debris.	
10		5	9-11	1 2 2 1	4	1.4	0.0	NA			Moist.	
	735	6	11-13	2 3 7 9	10	1.5	0.0	NA	CL		Gray (10YR 5/1) Silty lean CLAY, trace fine Sand, no odor, loose, low plasticity, saturated.	SILTY CLAY
		7	13-15	4 6 6 7	12	1.5	0.0	NA			Gray (10YR 5/1) and yellow-brown (10YR 5/4) mottled lean CLAY, no odor, stiff, dry.	CLAY
15		8	15-17	2 2 2	4	1.3	0.0	NA	SP		Light brownish gray (10YR 6/2) predominantly fine to medium poorly graded SAND, trace Silt, no odor, loose, saturated. 14': Yellow-brown (10YR 5/4) fine SAND (SW), some Silt, no odor, loose, saturated.	SAND

Boring Construction

- Portland Cement 0-1' bgs
- Grout 1-4' bgs
- Bentonite Seal 4-6' bgs
- 2' ID PVC Well Casing 0-8' bgs
- #5 Global Filter Pack 8-19' bgs
- Slot 0.010 Machined PVC 8-18' bgs

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
PID Background : 0.8 ppm
Samples collected 0.7-2.7', 6.7-8.7' and 10.7-12.7' bgs.

Water Level Data

Date	Depth	Elev.
11/6/01	9.8'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-21-04

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730	8	15-17	4	4	1.3	0.0	NA	CH		Yellow-brown (10YR 5/4) fat CLAY seams, soft, plastic, saturated.	SAND	#5 Global Filter Pack 8-19' bgs
	9	17-19	5 5 6 7	11	1.4	0.0	NA	SP		Yellow-brown (10YR 5/4) predominantly medium SAND, some coarse Sand.		Slot 0.010 Machined PVC 8-18' bgs
										Yellow-brown (10YR 5/4) predominantly fine SAND, some Silt.		PVC Cap 18-18.2' bgs
20												
725												
25												
720												
30												
715												
35												

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
PID Background : 0.8 ppm
Samples collected 0.7-2.7', 6.7-8.7' and 10.7-12.7' bgs.

Water Level Data

Date	Depth	Elev.
11/6/01	9.8'	

Date Start/Finish: 5/22/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 13305476.15 **Easting:** 563013.36 **Casing Elevation:** 742.19 **Borehole Depth:** 18' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-23-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy	Boring Construction
745											
0	1	0-2	1 2 1 1	3	1.0	2.5	+	SW	Yellow-brown (10 YR 5/4) fine subangular SAND, little to some Silt, few Clay, aplastic, earthy odor present, moist from rainfall, moderately loose. Organic matter such as roots present - topsoil mixed with fill.	SAND	Cement pad with 9" diam. flush-mount cover.
									As above, black (10 YR 2/1).		Grout 0.8-1' bgs.
740	2	2-4	11 2 2 1	4	0.7	2.6	-	FL	Concrete rubble.	FILL	Bentonite holeplug 1-2' bgs.
5	3	4-6	4 4 5 5	9	0.8	2.9	-	CL ML SP CL	Yellow-brown (10 YR 5/4) Silty CLAY, little fine to medium subangular Sand, no odor, moist, soft (pp=0.5 tons/sq. feet). Yellow-brown (10 YR 5/4) SILT, little Clay, little fine to medium subangular Sand, aplastic, no odor, wet, dense. Brown (10 YR 4/3) fine to coarse subangular SAND, little to some Silt, aplastic, no odor, wet, moderately loose.		2" ID Sch. 40 PVC riser 0.2-4' bgs.
735	4	6-8	4 5 5 7	10	1.8	3.2	-	SP	Silty CLAY, as at 4.7-5.1' bgs. SAND, as at 5.1-5.5' bgs.	SAND	#5 Global filter sand pack 2-18' bgs.
10	5	8-10	2 3 6 7	9	1.5	1.9	-	CL	Yellow-brown (10 YR 5/4) CLAY, some Silt, little fine to medium subrounded to subangular Sand, few fine to coarse rounded Gravel, no odor, dry to damp, moderately stiff (pp=2.5 tons/sq. feet). Clay Till. At 8.5': dark gray (10 YR 4/1), with decreased oxidation, (pp=2.5 tons/sq. feet).	CLAY	
	6	10-12	2 3 4 4	7	2.0	3.4	-	SP	SAND seam as at 5.1-5.5' bgs, wet, clay on selvages to 2" is locally oxidized.		2" ID Sch. 40 PVC 0.010" slotted screen 4-14' bgs.
730	7	12-14	2 3 5 5	8	2.0	2.9	-	CL	Homogeneous gray CLAY, as above, stiff (pp=3.0 tons/sq. feet). Clay Till. Local increases in silt to a Silty CLAY, in intermittent lenses up to 1" wide.	CLAY	
15	8	14-16	4 7 13 17	20	2.0	4.2	-		Gray (10 YR 5/1) fine to coarse subangular Sandy CLAY to Sand with CLAY, some Silt, few fine to coarse subangular Gravel, no odor, wet, very soft (pp=0 tons/sq. feet). Glacial Till. Gray (10 YR 5/1) Silty CLAY, little fine to medium subangular Sand, few fine to coarse subangular Gravel,		

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Remarks: bgs = below ground surface; + = Positive Test Result;
NA = Not Applicable/Not Available.
Samples collected 0-2' and 2-4' bgs.
pp = pocket penetrometer

Water Level Data

Date	Depth	Elev.
5/22/01	4.7', 10.3', 14.2'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-23-01.dat Date: 9/14/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-23-01

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
725	9	16-18	13 31 50/ 5"	81	NA	3.6	-	CL		no odor, dry, very stiff (pp=3.5 tons/sq. feet). Glacial Clay Till Homogeneous dark gray (10 YR 4/1) CLAY, some to little Silt, little fine to medium subrounded to subangular Sand, few rounded to subrounded Gravel, no odor, dry, very hard (pp=>4.5 tons/sq. feet). Clay Till.	CLAY	#5 Global filter sand pack 2-18' bgs.
20												
720												
25												
715												
30												
710												
35												

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Remarks: bgs = below ground surface; + = Positive Test Result;
NA = Not Applicable/Not Available.
Samples collected 0-2' and 2-4' bgs.
pp = pocket penetrometer

Water Level Data

Date	Depth	Elev.
5/22/01	4.7', 10.3', 14.2'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-23-01.dat Date: 9/14/01

Date Start/Finish: 5/22/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4"
Rig Type: CME 55

Northing: 562895.87
Easting: 13305606.46
Casing Elevation: 740.37

Borehole Depth: 18' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: RFI-23-02

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0	740	1	0-2	NA	NA	NA	3.0	-	FL	Coarse angular limestone PEBBLES and GRAVEL, with gray-brown (10 YR 5/2) Silty fine to medium subangular SAND, no odor, moist with rainfall, loose, metallic debris also present. FILL.	FILL
		2	2-4	3 2 2 2	4	1.0	2.6	-	ML	Black (10 YR 2/1) SILT, little fine dark yellow-brown (10 YR 4/6) subangular Sand, little to locally some Clay, aplastic, no odor, moist, dense.	SILT and CLAY
									CL	Dark yellow-brown (10 YR 4/4) Silty CLAY, little fine subangular Sand, no odor, wet, very soft (pp=0.5 tons/sq. feet).	
5	735	3	4-6	1 4 3 7	7	1.7	4.1	-	ML CL ML	Yellow-brown (10 YR 5/6) SILT, little Clay, few fine to medium subangular Sand, aplastic, no odor, wet, moderately dense.	
		4	6-8	4 5 6 6	11	2.0	4.2	-	SP ML	Yellow-brown (10 YR 5/6) CLAY, heavily oxidized, some Silt, little fine to medium subangular to subrounded Sand, trace fine to coarse rounded to subrounded Gravel, no odor, moist, medium stiff (pp=2.75 tons/sq. feet). Clay Till.	
										Yellow-brown SILT, as at 5-5.3' bgs.	
		5	8-10	2 3 4 6	7	2.0	2.5	-		Brown (10 YR 5/3) fine to coarse (mostly fine to medium) subangular SAND, some Silt, little Clay, aplastic, no odor, wet, loose.	
										Gray (10 YR 5/1) SILT, as at 5-5.3' bgs, with mottled oxidation.	
10	730	6	10-12	2 3 5 6	8	2.0	5.2	-	CL	Gray (10 YR 5/1) Silty CLAY, few fine to medium subangular Sand, trace fine to coarse subrounded Gravel, no odor, moist, medium stiff (pp=2.0 tons/sq. feet). Clay Till. At 11.5':pp=2.5 tons/sq. feet, local decreases to Clay with Silt.	
		7	12-14	7 10 12 14	22	1.8	5.0	-	SP	Gray (10 YR 5/1) fine to coarse (mostly medium to coarse) subangular SAND, with Clay, some Silt, aplastic, no odor, wet, loose.	SILT SAND
									ML	Gray (10 YR 5/1) SILT, as at 6.2-6.7' bgs, no mottling, with sandy areas, moist to damp.	
15	725	8	14-16	7 13 20 25	33	1.1	3.2	-	CL	Homogeneous dark gray (10 YR 4/1) CLAY, some Silt, little fine to medium subangular to subrounded Sand, few fine to coarse rounded to subrounded Gravel, no odor, dry, very hard (pp>=4.5 tons/sq. feet). Clay Till.	CLAY

Boring Construction

- Cement pad with 9" diam. flush-mount cover.
- Grout 1-2' bgs.
- Bentonite seal 2-3' bgs.
- 2" ID Sch. 40 PVC riser 0.2-3.3' bgs.
- #5 Global filter sand pack 3-18' bgs.
- 2" ID Sch. 40 PVC 0.010" slotted screen 3.3-13.3' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Sample collected 3-3.8' bgs.
pp = pocket penetrometer

Water Level Data

Date	Depth	Elev.
5/22/01	3.8', 12.5'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-23-02.dat Date: 8/6/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-23-02

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	25 50/ 4"	NA	1.0	3.6	-	CL		Homogeneous dark gray (10 YR 4/1) CLAY, some Silt, little fine to medium subangular to subrounded Sand, few fine to coarse rounded to subrounded Gravel, no odor, dry, very hard (pp>=4.5 tons/sq. feet). Clay Till.	← CLAY →	#5 Global filter sand pack 3-18' bgs.
20 / 720												
25 / 715												
30 / 710												
35 / 705												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Sample collected 3-3.8' bgs.
pp = pocket penetrometer

Water Level Data

Date	Depth	Elev.
5/22/01	3.8', 12.5'	

Date Start/Finish: 5/15/01 **Drilling Company:** Rau Drilling **Driller's Name:** Allen Rau **Drilling Method:** Direct Push **Sampler Size:** 2' cont. acetate sleeve **Auger Size:** 2 1/4" **Rig Type:** 66 DT Advance Geoprobe	**Northing:** 562975.63 **Easting:** 13305297.24 **Casing Elevation:** NA **Borehole Depth:** 10' bgs **Surface Elevation:** 743.25 **Descriptions By:** S. Kerr	**Boring ID:** RFI-29-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
745										
0						FL		CONCRETE.	FILL	
						SP		Black (10YR 2/1) fine to medium SAND, trace Silt and Clay, trace subrounded Gravel, medium dense, no odor, dry.		
	1	0-2	1.3	2.1	-			Very dark grayish-brown (10YR 3/2) Silty SAND, trace Clay, no odor, moist.		
								Yellowish-brown (10YR 5/4) fine SAND, trace Clay and subrounded to subangular Gravel, dense, no odor.		Borehole backfilled with Bentonite to grade.
740	2	2-4	1.6	2.8	-	SM			SAND	
5	3	4-6	2.0	2.6	-			Yellowish-brown (10YR 5/4) Silty SAND, trace Clay, dense, no odor, moist, saturated at 5.7' bgs.		
	4	6-8	2.0	6.4	-	ML		Black (10YR 2/1) SILT, dense, no odor, moist.	SILT	
								Dark yellowish-brown SILT, little fine Sand, dense, no odor, moist.		
735	5	8-10	2.0	6.2	-	CL		Gray to yellow (10YR 6/1 and 5/6) CLAY, gray mottled, plastic (pp=2 tons/sq. ft.).	CLAY	
10										
730										
15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collect from 0.6-2' and 2-4' bgs.
1" Temporary Well set at 9' bgs.

Water Level Data

Date	Depth	Elev.
5/15/01	5.7'	NA

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-29-01.dat
Date: 5/31/01

Date Start/Finish: 09/05/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' + 2" ID
Auger Size: 4 1/4" ID HSA
Rig Type: CME 55

Northing: 563002.23
Easting: 13305295.82
Casing Elevation: NA

Borehole Depth: 3' bgs
Surface Elevation: 743.52

Descriptions By: SM Duly

Boring ID: RFI-29-02

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								FL		Concrete.	FILL	
	1	1-3	5 5 6 7	11	1.9	0.0	-	ML		Very dark gray-brown (10YR 3/2) SILT, little fine to coarse subrounded Sand, little Clay aplastic, no odor, moderately dense, dry. Concrete, Metallic debris, and Ash present. Fill.	SILT	Borehole backfilled with Bentonite to grade.
										Yellow-brown (10YR 5/4) SILT, some Clay, little fine to medium subangular to subrounded Sand; aplastic, no odor, dense to moderately dense, damp. Backfill.		
5 5												
10 10												
15 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Sample collected 1-3' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-29-02.dat Date: 9/26/01

Date Start/Finish: 09/05/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: 562982.39
Easting: 13305315.69
Casing Elevation: NA

Borehole Depth: 3' bgs
Surface Elevation: 743.16

Descriptions By: SM Duly

Boring ID: RFI-29-03

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0										Concrete.	FILL	
	1	1-3	3 4 4 5	8	1.2	1.8	-	ML		Yellow-brown (10YR 5/4) SILT, some Clay, little fine to medium subrounded Sand, aplastic, no odor, moderately dense to dense, dry. Heavily oxidized. Ash and Concrete debris present. Fill.	SILT	Borehole backfilled with Bentonite to grade.
5 5												
10 10												
15 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Sample collected 1-3' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-29-03.dat Date: 9/28/01

Date Start/Finish: 08/21/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 568558.92 **Easting:** 13306027.27 **Casing Elevation:** 756.63 **Borehole Depth:** 26' bgs **Surface Elevation:** 757.11 **Descriptions By:** SM Duly	**Boring ID:** RFI-36-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 755	1	0-2	NA 4 7 8	11	1.5	0.0	-	FL	ASPHALT	FILL	Cement pad with 9" diam. flush-mount cover.
								CL	Dark yellow brown (10YR 4/4) Silty CLAY, little fine to medium subangular to subrounded Sand, few fine to coarse rounded to subrounded Gravel. No odor, damp stiff. Heavy oxidized. Clay till.	SILTY CLAY	
	2	2-4	7 8 10 11	18	1.5	0.0	-		Becomes yellow brown (10YR 5/4).		
5	3	4-6	4 7 8 10	15	2.0	0.0	-				Grout 1-10' bgs.
750	4	6-8	4 6 10 10	16	2.0	0.0	-		Decreased sand to few, damp to moist.		2" ID Sch. 40 PVC riser 0.2-15.1' bgs.
	5	8-10	3 4 8 9	12	2.0	0.0	-		Heavily oxidized. 3" thick seam of dark reddish brown, moist to wet SILT, no odor, dense, aplastic. at 8.5': becomes brown (10YR 5/3), rapidly decreasing oxidation, becoming grayer.		
10									Gray (10 YR 5/1), stiff.		
	6	10-12	5 7 9 12	16	2.0	0.0	-		at 10.1': Moist to wet, 1-2" wide gray (10YR 5/1) SILT lenses/seams throughout, heavily oxidized lens contact.		
745								ML	Yellow brown (10YR 5/6) aplastic SILT, moist, no odor, dense.	SILTY SAND	Bentonite seal 10-13.1' bgs.
	7	12-14	7 11 15 30	26	1.4	0.0	-		Light yellow brown (10YR 6/4) Silty fine subrounded to subangular SAND, trace Clay, no odor, damp to moist, dense to very dense. Occasional darker yellow brown (10YR 5/4) silt varves @ 13-14' bgs. Glacial-alluvial.		
15	8	14-16	12 20 26 30	46	1.4	0.0	-	SM	No more silt varves.		#5 Global filter sandpack 13.1-26' bgs. 2" ID Sch. 40 PVC 0.010" slotted screen 15.1-25.1'

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.5-2.5', 8.5-10.5 and 12.5-14.5' bgs

Water Level Data

Date	Depth	Elev.
08/21/01	16.3'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-01

Borehole Depth: 26' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
740	9	16-18	9 7 8 16	15	2.0	0.0	-	SM	at 16.3': Yellow brown (10YR 5/4) SILT, few fine subangular to subrounded Sand, no odor, moderately dense, saturated . At 16.6': Silty SAND as above, moist to wet.	SILT
								CL	Homogeneous gray (10YR 5/1) Silty CLAY, few to trace fine subangular to subrounded Sand, intermittent saturated silt lenses and seams up to 4" thick thoughout, stiff, no odor, damp. Clay Till.	CLAY
	10	18-20	4 7 7 8	14	2.0	0.0	-	SP	Brown (10YR 5/3) fine to coarse subangular to angular Sand, few to little Silt, no odor, saturated, moderately dense. Glacial-alluvial	SAND
								ML	Gray (10YR 5/1) aplastic SILT, little Clay, no odor, dense, saturated. Glacial-alluvial	SILT
20	11	20-22	4 7 7 7	14	1.8	0.0	-	SP	SAND as at 18.1'-18.8' bgs. Glacial-alluvial	SAND
735	12	22-24	2 5 9 9	14	1.5	0.0	-			
25	13	24-26	2 3 4 5	7	2.0	0.0	-	ML	Gray (10 YR 5/1) saturated SILT as at 18.8' - 20.0'. Glacial-alluvial	SILT
								SP	SAND as at 20.0' - 25.1' bgs. Glacial-alluvial	
730										
30										
725										
35										

Boring Construction

bgs.

#5 Global filter sandpack 13.1-26' bgs.

2" ID Sch. 40 PVC 0.010" slotted screen 15.1-25.1' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.5-2.5', 8.5-10.5 and 12.5-14.5' bgs

Water Level Data

Date	Depth	Elev.
08/21/01	16.3'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-36-01.dat Date: 09/13/01

Date Start/Finish: 08/21/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 568558.92 **Easting:** 13306027.27 **Casing Elevation:** 756.63 **Borehole Depth:** 42.5 ft. **Surface Elevation:** 757.11 **Descriptions By:** SM Duly	**Boring ID:** RFI-36-01 (Geotech) **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0										Refer to RFI-36-01 for complete soil descriptions. Blind drilled to 18.0' bgs.		
5 5												Borehole tremie grouted.
10 10												
15 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Sh = Shelby Tubes collected 20-22' and 40-40.5' bgs;
Geotech samples collected 22.2-23', 23-24', and 41-42' bgs.

Water Level Data

Date	Depth	Elev.
8/21/01	42.0'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-01 (Geotech)

Borehole Depth: 42.5 ft.

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
										Refer to RFI-36-01 for complete soil descriptions. Blind drilled to 18.0' bgs.		
	1	18'-20'	7 8 10 9	18	1.8	0.0	-	ML-CL		Brown (10 YR 5/3), aplastic, SILT, some to little Clay, no odor, saturated, dense. Glacial-alluvial		
										Brown (10 YR 5/3), aplastic, fine to medium subangular to subrounded SAND, few Silt, no odor, saturated, moderately dense.		
20 20										SILT, as at 18-18.6' bgs, coarsens downward to SAND, as at 18.6-18.7' bgs, saturated. Glacial-alluvial		
										Gray (10 YR 5/1) Silty CLAY, very stiff to stiff, no odor, damp. Glacial clay		
	1 Sh	20'-22'	NA	NA	0.5	NA	NA			SILT, as at 18-18.6' bgs, but gray-brown (10 YR 5/2), saturated.		
								SP		Brown (10 YR 5/3), fine to coarse subangular to angular SAND, few to little Silt, no odor, saturated, moderately dense. Glacial-alluvial	SAND	Borehole tremie grouted.
	2	22'-24'	2 3 4 8	7	1.8	NA	-					
25 25	2 Sh	24'-26'	NA	NA	0.0	NA	NA			Shelby tube, no recovery.		
										Blind drilled to 34.5' bgs.		
30 30												
35 35	3	34'-36'	3 4 4 6	8	2.0	0.0	-	CL		Gray (10 YR 5/1) Silty CLAY, little to few fine to coarse subrounded Sand, trace fine rounded Gravel, soft to medium stiff, no odor, damp, very plastic. Clay Till. Occasional silt lenses up to 1" wide throughout.	LAY and SIL	

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Sh = Shelby Tubes collected 20-22' and 40-40.5' bgs;
Geotech samples collected 22.2-23', 23-24', and 41-42' bgs.

Water Level Data

Date	Depth	Elev.
8/21/01	42.0'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-01 (Geotech)

Borehole Depth: 42.5 ft.

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
										Gray (10 YR 5/1) Silty CLAY, little to few fine to coarse subrounded Sand, trace fine rounded Gravel, soft to medium stiff, no odor, damp, very plastic. Occasional silt lenses up to 1" wide throughout. Clay Till.	CLAY and SILT	
	4	38'-40'	13 31 52/.(0	83	2.0	0.0	NA	CL		Hard.		Borehole tremie grouted.
40 40	3 Sh	40'-40.	NA	NA	0.5	NA	NA			Increase in Gravel to few fine to coarse subrounded to rounded, and increased Sand to little.		
	5	40.5'-4	13 19 32 42	51	1.5	0.0	-					
								SP		Gray (10 YR 5/1) fine to coarse subangular SAND, little to some Silt, little fine to coarse subrounded to subangular Gravel, few Clay, aplastic. Fines downward with decreased gravel and sand content to a silty sand at 42.5' bgs.		
45 45												
50 50												
55 55												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Sh = Shelby Tubes collected 20-22' and 40-40.5' bgs;
Geotech samples collected 22.2-23', 23-24', and 41-42' bgs.

Water Level Data

Date	Depth	Elev.
8/21/01	42.0'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-36-01(Geotech).dat Date: 9/14/01

Date Start/Finish: 09/17/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 4 1/4" ID HSA **Rig Type:** CME 55	**Northing:** 568615.89 **Easting:** 13307007.02 **Casing Elevation:** NA **Borehole Depth:** 23 bgs **Surface Elevation:** 751.96 **Descriptions By:** SM Duly	**Boring ID:** RFI-36-02 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 750	1	1-3	4 5 7 9	12	1.1	5.8	-	FL	ASPHALT.	FILL	Cement pad with 9" diameter flushmount cover
								SM	Yellow-brown (10YR 5/6) Silty fine to coarse subangular to subrounded SAND, little Clay; aplastic, no odor, dry, moderately dense. Fill.		
	2	3-5	5 4 2 2	6	1.2	4.1	+				
5 / 745	3	5-7	2 2 5 2	7	1.0	4.8	-		Silty SAND as above, but black (10 YR 2/1) , trace fine to medium subrounded Gravel. Fill. Silty SAND as at 1-4.9' bgs, but with lenses of Clay up to 2" wide throughout, Slag at upper contact. Fill.		
	4	7-9	2 2 3 4	5	NA	6.6	-				Grout 1-11' bgs.
								ML	Yellow-brown (10YR 5/4) SILT, little fine subangular to subrounded Sand, few Clay; aplastic, no odor, damp with increased moisture content with depth, moderately dense to moderately loose.		
10	5	9-11	2 2 2 4	4	1.3	6.7	+			SILTY SAND	2" ID Sch. 40 PVC riser 0-13' bgs.
								SM	Light yellow-brown (10YR 6/4) Silty fine to medium subangular SAND, trace Clay; aplastic, no odor, damp, moderately dense to moderately loose, locally oxidized. Glacial-alluvial.		
740	6	11-13	2 2 2 3	4	1.5	5.0	+				
	7	13-15	2 2 3 2	5	1.5	4.1	+		Damp to moist.		Global filter sand pack 11-23' bgs.
15	8	15-17	2 2	6	1.6	2.4	-		at 15.4': Saturated. Becomes gray-brown (10YR 5/2) medium to fine graded, no Clay.		

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Remarks: bgs = below ground surface; + = Positive Shake Test
NA = Not Applicable/Not Available.
Set 13' - 23' screened well.
Samples collected 1-3', 7-9' 9-11', and 13-15' bgs.

Water Level Data

Date	Depth	Elev.
09/17/01	15.4'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-02

Borehole Depth: 23 bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	8	15-17	4 6	6	1.6	2.4	-	SM		Light yellow-brown (10YR 6/4) Silty fine to medium subangular SAND, trace Clay; aplastic, no odor, damp, moderately dense to moderately loose, locally oxidized. Glacial-alluvial.	SILTY SAND	
	9	17-19	3 3 6 6	9	1.8	1.5	-			at 17.0'bgs: Decreased density with depth.		
20	10	19-21	2 2 1 3	3	1.2	1.8	-					2" ID Sch. 40 PVC 0.010" slotted screen 13-23' bgs.
730	11	21-23	1 2 3 3	5	1.6	0.0	-					
25												
725												
30												
720												
35												

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Remarks: bgs = below ground surface; + = Positive Shake Test
NA = Not Applicable/Not Available.
Set 13' - 23' screened well.
Samples collected 1-3', 7-9' 9-11', and 13-15' bgs.

Water Level Data

Date	Depth	Elev.
09/17/01	15.4'	

Date Start/Finish: 12/20/00
Drilling Company: Mateco
Driller's Name: John Pitch, Roy Hoin
Drilling Method: Driven, temporary casing
Bit Size:
Auger Size:
Rig Type: CME 45, skid mount
Sampling Method: 2" diam.
Hammer Weight: 140 lbs., 30" fall

Northing: 567969.80
Easting: 13307091.08
Casing Elevation: NA

Borehole Depth: 20' bgs
Surface Elevation: 751.31

Geologist: Brian Loomis

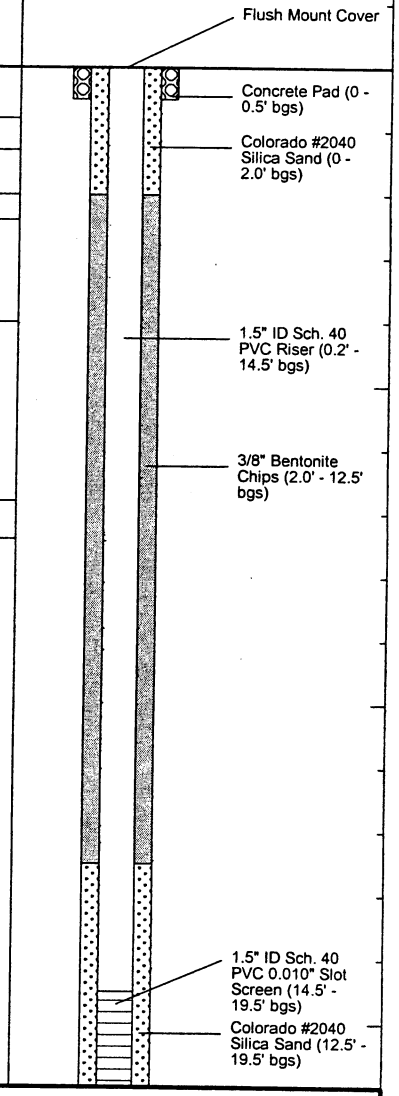
Well/Boring ID: RFI-36-03

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0		1	0-0.8	0.8	NA	0.0			CONCRETE.
	750	2	0.8-2	2.0	NA	0.0			Brown and gray fine SAND.
									Dark brown fine SAND.
									Brown fine SAND.
		3	2-4	2.0	NA	0.0			Dark brown Silty CLAY, trace fine Sand, trace Gravel.
5		4	4-6	2.0	NA	0.0			Brown CLAY with gray mottles, trace Sand, trace Silt.
	745	5	6-8	2.0	NA	0.0			Brown CLAY, some fine brown Sand.
									Brown fine SAND, moist-wet @15.4'-16'.
		7	8-10	1.4	NA	0.0			
10									
	740	8	10-12	1.6	NA	0.0			
		9	12-14	1.8	NA	0.0			
15		10	14-16	2.0	NA	0.0			

Well/Boring Construction



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Remarks: Samples collected 0.8-2', 8-10' and 14-16' bgs.
RFI-36-DUP-2 collected between 14'-16' below grade.

Client:
General Motors

Site Location:
GM-Flint - Focused RFI
Factory 36, Building 36

Well/Boring ID: RFI-36-03

Borehole Depth: 20' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
735	11	16-18	1.7	NA	0.0			Brown fine SAND, saturated.	Colorado #2040 Silica Sand (12.5' - 19.5' bgs)
	12	18-20	2.0	NA	0.0				1.5" ID Sch. 40 PVC 0.010" Slot Screen (14.5' - 19.5' bgs)
20									
730									
25									
725									
30									
720									
35									

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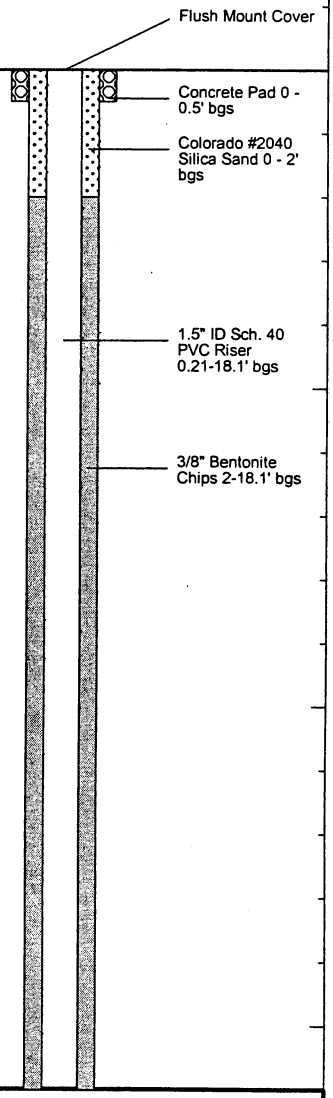
Remarks: Samples collected 0.8-2', 8-10' and 14-16' bgs.
RFI-36-DUP-2 collected between 14'-16' below grade.

Date Start/Finish: 12/19/00 **Drilling Company:** Mateco **Driller's Name:** John Pitch, Roy Hoin **Drilling Method:** Driven, temporary casing **Bit Size:** **Auger Size:** **Rig Type:** CME 45, skid mount on tracks **Sampling Method:** 2' x 2" **Hammer Weight:** 140 lbs.	**Northing:** 568413.93 **Easting:** 13306802.24 **Casing Elevation:** NA **Borehole Depth:** 24' bgs **Surface Elevation:** 756.14 **Geologist:** B Loomis	**Well/Boring ID:** RFI-36-04 **Client:** General Motors **Location:** GM-Flint - Focused RFI Factory 36, Building 36

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0		1	0-0.6	0.6	NA	0.0			CONCRETE.
									Brown fine SAND, trace Silt.
	755	2	0.6-2	1.1	NA	0.0			Dark brown fine SAND, trace Silt, trace Gravel.
									Brown firm CLAY, trace to some fine Sand.
		3	2-4	1.5	NA	0.0			Brown fine SAND.
									Dark brown fine SAND.
									Brown Sandy CLAY.
5		4	4-6	2.0	NA	0.0			Dark brown fine to medium SAND.
	750								
		5	6-8	1.5	NA	0.0			Fine to medium SAND with Brick fragments, some Clay, some Silt, trace angular Gravel. FILL.
		7	8-10	1.8	NA	0.0			Brown fine to medium SAND.
10									Brown Silty fine SAND.
	745	8	10-12	1.5	NA	0.0			Brown fine SAND.
		9	12-14	1.7	NA	0.0			
15		10	14-16	1.6	NA	0.2			

Well/Boring Construction



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Remarks: Samples collected 0.6-2', 8-10' and 18-20' bgs.
RFI-36-DUP-1 collected 18-20' bgs.
Rinse Blank RFI 36 RB-1 collected12/19/00 from split spoon

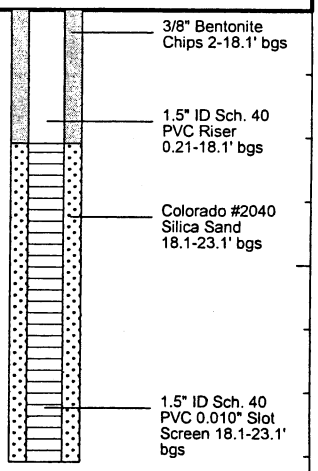
Client:
General Motors

Site Location:
GM-Flint - Focused RFI
Factory 36, Building 36

Well/Boring ID: RFI-36-04

Borehole Depth: 24' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
740	11	16-18	2.0	NA	0.0			Brown fine SAND, wet @ 21.5', saturated 22'-24'.	3/8" Bentonite Chips 2-18.1' bgs
	12	18-20	1.2	NA					1.5" ID Sch. 40 PVC Riser 0.21-18.1' bgs
20									Colorado #2040 Silica Sand 18.1-23.1' bgs
735	13	20-22	1.5	NA	0.0				
	14	22-24	2.0	NA					1.5" ID Sch. 40 PVC 0.010" Slot Screen 18.1-23.1' bgs
25									
730									
30									
725									
35									



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Remarks: Samples collected 0.6-2', 8-10' and 18-20' bgs.
RFI-36-DUP-1 collected 18-20' bgs.
Rinse Blank RFI 36 RB-1 collected12/19/00 from split spoon

Date Start/Finish: 12/18/00
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Bit Size:
Auger Size:
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" diam. + disposable liner
Hammer Weight:

Northing: 568046.67
Easting: 13306972.1
Casing Elevation: NA

Borehole Depth: 22' bgs
Surface Elevation: 755.07

Geologist: Ron Kuhn

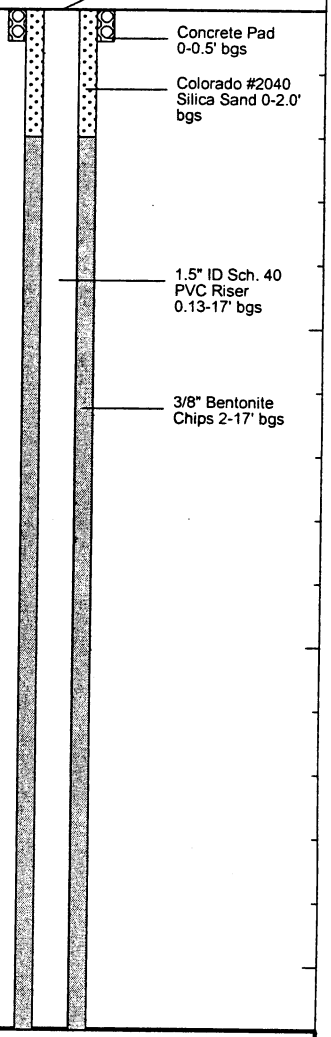
Well/Boring ID: RFI-36-05

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	755	1	0-0.8	0.8	NA	0.0			CONCRETE.
		2	0.8-2	1.0	NA	0.0			Light brown to gray-black fine SAND, trace Silt, trace fine Gravel, damp, loose.
		3	2-4	0.8	NA	0.0			Light brown fine SAND, trace Silt, damp, loose.
5	750	4	4-6	0.8	NA	0.0			
		5	6-8	1.6	NA	0.0			Olive-brown to orange-brown Clayey SILT, trace fine Sand, damp.
		7	8-10	2.0	NA	0.0			Light brown very fine SAND, loose, damp, slight odor at 12-13.5 feet bgs.
10	745	8	10-12	2.0	NA	0.0			
		9	12-14	1.5	NA	0.0			
		10	14-16	1.6	NA	0.2			Light brown very fine SAND, loose, damp.
15	740								

Well/Boring Construction



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Remarks: Samples collected 0.8-2', 8-10' and 16-18' bgs.

Client:
General Motors

Site Location:
GM-Flint - Focused RFI
Factory 36, Building 36

Well/Boring ID: RFI-36-05

Borehole Depth: 22' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	11	16-19	3.0	NA	0.0			Light brown fine SAND, loose, saturated @ 18 feet.	3/8" Bentonite Chips 2-17' bgs 1.5" ID Sch. 40 PVC Riser 0.13-17' bgs Colorado #2040 Silica Sand 17-22' bgs
20 735	12	19-22	1.9	-	0.0				1.5" ID Sch. 40 PVC 0.010" Slot Screen 17-22' bgs
25 730									
30 725									
35 720									

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Remarks: Samples collected 0.8-2', 8-10' and 16-18' bgs.

Date Start/Finish: 12/19/00
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Bit Size:
Auger Size:
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" diam. + disposable liner
Hammer Weight:

Northing: 568045.87
Easting: 13306577.76
Casing Elevation: NA

Borehole Depth: 21' bgs
Surface Elevation: 755.29

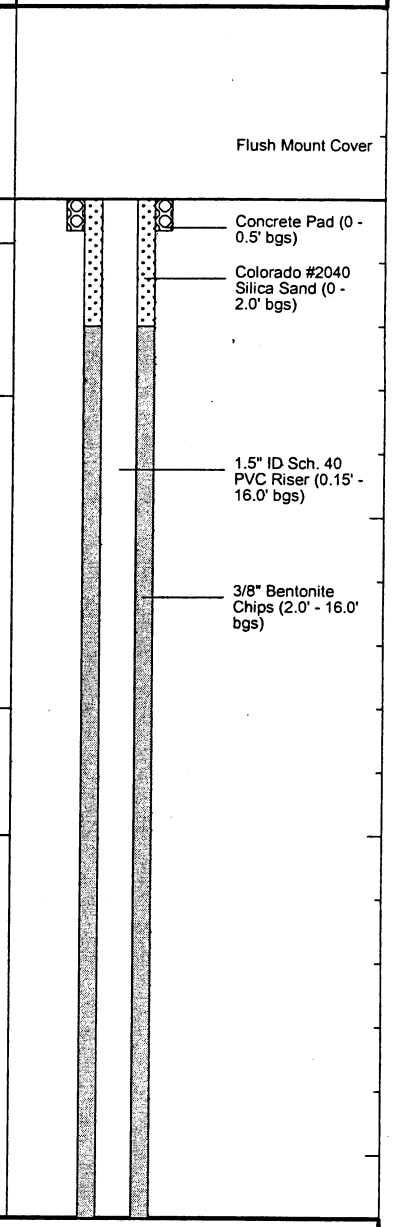
Geologist: Ron Kuhn

Well/Boring ID: RFI-36-06

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	755	1	0-0.7	0.7					CONCRETE.
		2	0.7-2	1.0	-	0.8			Dark brown to gray-brown very fine SAND, little Silt, damp, slight odor.
		3	2-4	2.0	NA	0.0			Olive-brown to orange-brown Clayey SILT, trace very fine Sand, damp.
5	750	4	4-6	1.6	NA	0.0			
		5	6-8	1.6	NA	0.0			
		6	8-10	0.0	NA				No Recovery.
10	745	7	10-12	1.6	NA	0.0			Light brown to orange-brown very fine SAND, damp, loose.
		8	12-14	1.6	NA	0.0			
15	740	9	14-16	2.0	NA	0.2			



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Remarks: Samples collected 0.7-2', 6-8' and 16-17' bgs.
+ = Positive Test Result

Client:
General Motors

Site Location:
GM-Flint - Focused RFI
Factory 36, Building 36

Well/Boring ID: RFI-36-06

Borehole Depth: 21' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	10	16-18	2.0	+	0.0			Light gray to gray fine SAND, loose, saturated @ 17 feet, slight odor, Jar test for NAPL, NAPL is clear.	
20 / 735	11	18-21	3.0	+	7.5			Gray fine SAND, loose, saturated, slight odor. Jar test (sheen present).	Colorado #2040 Silica Sand (16.0' - 21.0' bgs); 1.5" ID Sch. 40 PVC 0.010" Slot Screen (16.0' - 21.0' bgs)
25 / 730									
30 / 725									
35 / 720									

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Remarks: Samples collected 0.7-2', 6-8' and 16-17' bgs.
+ = Positive Test Result

Date Start/Finish: 12/20/00
Drilling Company: Mateco
Driller's Name: John Pitch, Roy Hoin
Drilling Method: Driven, temporary casing
Bit Size: NA
Auger Size: NA
Rig Type: CME 45, skid mount
Sampling Method: 2" diam.
Hammer Weight: 140 lbs, 30" fall

Northing: 567646.52
Easting: 13306735.24
Casing Elevation: NA

Borehole Depth: 20' bgs
Surface Elevation: 753.99

Geologist: Brian Loomis

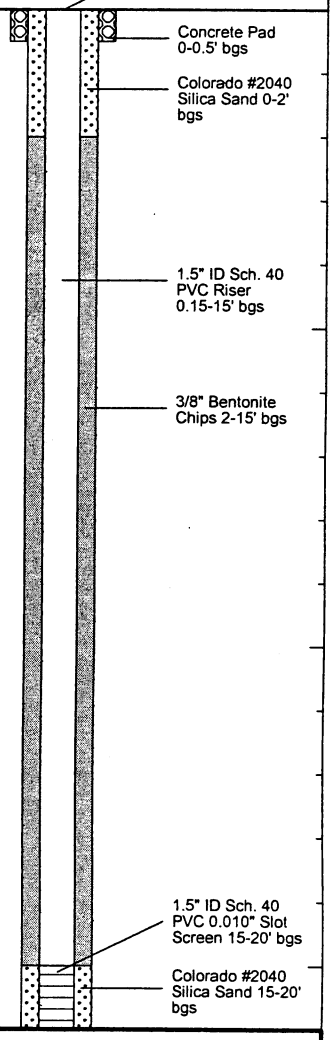
Well/Boring ID: RFI-36-07

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
	755								
0		1	0-0.8						CONCRETE.
		2	0.8-2	1.2	NA	14.6			Brown and gray fine SAND, hydrocarbon odor.
		3	2-4	0.1	NA	18.2			Same as above, strong hydrocarbon odor.
	750								
5		4	4-6	1.5	NA	7.9			Dark brown SAND and CLAY, trace Gravel, strong odor, product @ 4.6'.
									Brown fine SAND, odor, product present.
		5	6-8	1.4	NA	16.8			Brown fine SAND, product @ ~13.8'.
	745	7	8-10	2.0	NA	20.3			
10		8	10-12	2.0	NA	19.7			
		9	12-14	2.0	NA	17.6			
	740								
15		10	14-16	2.0	NA	13.6			Brown fine SAND, slight hydrocarbon odor, saturated.

Well/Boring Construction



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Remarks: Samples collected 0.8-2', 8-10' and 12-14' bgs.
Rinse Blank RFI 36 RB-2 collected12/20/00 from split spoon.
NA=Not Available/Not Applicable

Client:
General Motors

Site Location:
GM-Flint - Focused RFI
Factory 36, Building 36

Well/Boring ID: RFI-36-07

Borehole Depth: 20' bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		11	16-18	2.0	NA	12.5			Brown fine SAND, slight hydrocarbon odor, saturated. Brown Sandy CLAY, stiff, saturated.	Colorado #2040 Silica Sand 15-20' bgs
	735	12	18-20	2.0	NA	13.2			Brown fine SAND, saturated. Brown CLAY, stiff, saturated	1.5" ID Sch. 40 PVC 0.010" Slot Screen 15-20' bgs
20										
	730									
25										
	725									
30										
	720									
35										

BBL
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Remarks: Samples collected 0.8-2', 8-10' and 12-14' bgs.
Rinse Blank RFI 36 RB-2 collected12/20/00 from split spoon.
NA=Not Available/Not Applicable

Date Start/Finish: 7/17/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2" ID x 2' **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 567312.98 **Easting:** 13306891.18 **Casing Elevation:** NA **Borehole Depth:** 17' bgs **Surface Elevation:** 749.29 **Descriptions By:** SM Duly	**Boring ID:** RFI-36-08 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
750 / 0								FILL		Concrete.	FILL	Grout 1-2' bgs.
	1	1-3	3 4 4 5	8	1.1	1889	-	ML		Very dark gray-brown (10 YR 3/2) SILT, little fine subangular to angular light brown-gray (10 YR 6/2) Sand, trace Clay, aplastic, moderately dense, no odor, damp. Fill.		Bentonite seal 2-4' bgs.
745	2	3-5	3 4 4 4	8	1.0	3288	+					
5	3	5-7	12 20 6 4	26	0.3	2756	-	FILL		Pebble-sized subangular very dark gray (10 YR 3/1) SLAG (?) and limestone Gravel, loose, weak odor, moist. Fill. Rubbly Drilling.		2" ID Sch. 40 PVC riser 0.2-6' bgs.
	4	7-9	9 7 9 12	16	1.8	>10,000	+	ML		SILT, as above, but moist, no sand. Becomes gray-brown (10 YR 3/2), moderate odor. Saturated.	SILT	#5 Global filter sandpack 4-17' bgs.
740	5	9-11	3 4 9 9	13	1.1	1581	+					
10	6	11-13	9 9 9 10	18	1.6	1493	-			Local mottling to very dark gray (10 YR 3/1), weak odor.		2" ID Sch. 40 PVC 0.010" slotted screen 6-16' bgs.
735	7	13-15	2 4 4 4	8	1.7	708	-			No odor, little fine subangular Sand, gray (10 YR 6/1).		
15	8	15-17	3 4	8	1.8	444	-					

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available
Soil samples taken 1-3' and 6.5-8.5' bgs.

Water Level Data

Date	Depth	Elev.
7/17/01	8.5' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-08

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	15-17	4 3	8	1.8	444	-	ML		Gray (10 YR 6/1) SILT, little fine subangular Sand, no odor, saturated.	SILT	#5 Global filter sandpack 4-17' bgs.
730 / 20												
725 / 25												
720 / 30												
715 / 35												

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available
Soil samples taken 1-3' and 6.5-8.5' bgs.

Water Level Data

Date	Depth	Elev.
7/17/01	8.5' bgs	

Date Start/Finish: 7/17/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: 567182.91
Easting: 13306893.14
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 750.78

Descriptions By: SM Duly

Boring ID: RFI-36-09

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0	750								FILL		Concrete.	FILL
		1	1-3	4 12 11 9	23	1.2	>10,000	+	ML		Very dark gray-brown (10 YR 3/2) SILT, some fine subangular light brown-gray (10 YR 6/2) Sand, few subangular dark gray particles (slag?), aplastic, dense, no odor, moist. Fill.	SILT
		2	3-5	1 5 4 4	9	1.2	>10,000	+				
5	745	3	5-7	2 2 2 2	4	2.0	431	-	SM/ ML		Yellow-brown (10 YR 5/6) Silty SAND to SILT, some fine subangular Sand, moderately dense, no odor, damp. Increasing moisture to 7' bgs.	SILTY SAND & SILT
		4	7-9	2 2 2 2	4	1.7	147	-				
10	740	5	9-11	2 2 2 2	4	1.7	0.0	-			Saturated, local thin lenses of oxidation up to 1/4" thick; decreased sand to little.	
		6	11-13	3 3 4 4	7	1.8	0.0	NA			Silt.	
15	735	7	13-15	2 2 4 4	6	1.9	0.0	NA			Increased clay to little to few, color changes to gray (10 YR 6/1), little fine to coarse subangular Sand, alluvial.	
		8	15-16	NA	NA	NA	NA	NA				

Boring Construction

- Cement pad with 9" diam. flush-mount cover
- Grout 1-2' bgs.
- Bentonite seal 2-4' bgs.
- 2" ID Sch. 40 PVC riser 0.2-6' bgs.
- #5 Global filter sandpack 4-16' bgs.
- 2" ID Sch. 40 PVC 0.010" slotted screen 6-16' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3' and 5-7' bgs.

Water Level Data

Date	Depth	Elev.
7/17/01	8.5' bgs	

Date Start/Finish: 7/18/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: 567178.02
Easting: 13306800.38
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 750.21

Descriptions By: SM Duly

Boring ID: RFI-36-10

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0	750								FILL		Concrete.	FILL
		1	1-3	3 4 6 7	10	1.5	3422	-	SM		Brown-yellow (10 YR 6/6) Silty fine to medium subangular SAND, trace rounded fine Gravel, aplastic, moderately dense, no odor, dry to damp. Fill.	SILTY SAND
		2	3-5	6 5 3 2	8	0.1	2276	-				
5	745	3	5-7	2 2 2 2	4	1.2	2397	-	ML		Yellow-brown (10 YR 5/6) fine subangular Sandy SILT, locally mottled to very dark gray (10 YR 2/2), aplastic, moderately loose to moderately dense, no odor, dry to damp. No more mottling.	SANDY SILT
		4	7-9	2 1 1 1	2	1.2	3590	-				
		5	9-11	2 2 4 6	6	1.6	1767	-	SM		Yellow-brown (10 YR 5/6) Silty fine to medium subangular to subrounded SAND, aplastic, moderately loose to loose, no odor, moist. Saturated, fine subangular sandy Gravel lens.	SILTY SAND
10	740	6	11-13	2 2 3 6	5	NA	1603	-	ML		Yellow-brown (10 YR 5/4) SILT, little fine subangular Sand, aplastic, moderately dense to dense, no odor, saturated. Locally oxidized as varves of yellow-brown (10 YR 4/6). Color change to gray (10 YR 5/1), trace Clay and increased density with depth. Glacial-alluvial.	SILT
		7	13-15	2 3 4 6	7	NA	516	-				
15	735	8	15-16	NA	NA	NA	NA	NA				

Boring Construction

- Cement pad with 9" diam. flush-mount cover
- Cement/bentonite grout 1-2' bgs
- Bentonite chip seal 2-4' bgs
- 2" ID Sch. 40 PVC riser 0.2-6' bgs
- #5 Global filter sand pack 4-16.2' bgs
- 2" ID Sch. 40 PVC 0.010" slotted screen 6-16' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3' and 7-9' bgs.

Water Level Data

Date	Depth	Elev.
7/18/01	9.0' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-36-10.dat Date: 8/1/01

Date Start/Finish: 12/21/00
Drilling Company: Mateco
Driller's Name: Gary Swift, Dennis Powney
Drilling Method: Direct Push
Bit Size:
Auger Size:
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" diam. + disposable liner
Hammer Weight:

Northing: 567241.0
Easting: 13306735.5
Casing Elevation: NA

Borehole Depth: 18' bgs
Surface Elevation: 752.89

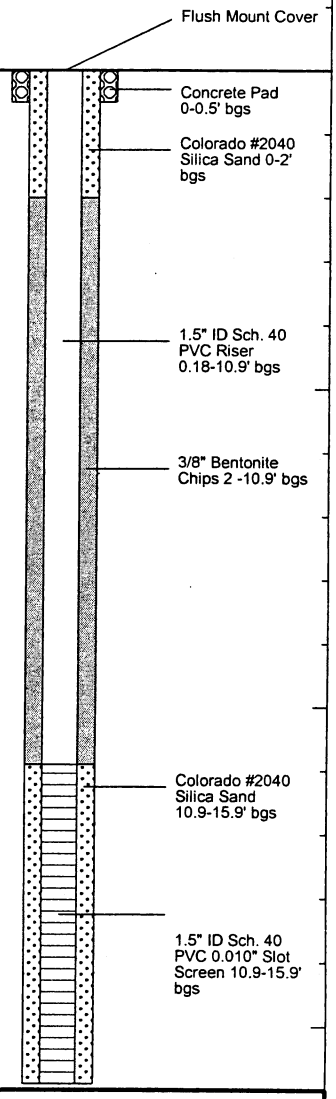
Geologist: Ron Kuhn

Well/Boring ID: RFI-36-11

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
755								
0	1	0-0.8	0.8	NA				CONCRETE.
								Black fine SAND, trace Silt, loose, damp.
	2	0.8-2.0	1.2	NA	0.0			Black fine foundry SAND, little Silt, loose, damp.
750	3	2.0-4.0	2.0	NA	0.0			Orange-brown Clayey SILT, mottled, trace fine Sand, stiff, damp.
5	4	4.0-6.0	2.0	NA	0.3			
	5	6.0-8.0	1.6	NA	0.0			Light Brown to orange-brown fine SAND, loose, wet at ~10'.
745	6	8.0-10.	1.5	NA	0.0			
10	7	10.0-12	1.4	NA	0.0			Orange-brown grading to gray-brown, very fine SAND, loose, wet.
								Gray-brown very fine SAND, saturated.
740	8	12.0-14	1.5	NA	0.0			
15	9	14.0-16	2.0	NA				



Well/Boring Construction

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Remarks: Samples collected 0.8-2', 8-10' and 10-12' bgs.
NA=Not Available/Not Applicable.

Client:
General Motors

Site Location:
GM-Flint - Focused RFI
Factory 36, Building 36

Well/Boring ID: RFI-36-11

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
735	10	16.0-18	2.0	NA				Gray-brown very fine SAND, saturated.	
20									
730									
25									
725									
30									
720									
35									

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Remarks: Samples collected 0.8-2', 8-10' and 10-12' bgs.
NA=Not Available/Not Applicable.

Date Start/Finish: 12/20/00
Drilling Company: Mateco
Driller's Name: Gary Swift, Dennis Powney
Drilling Method: Direct Push
Bit Size:
Auger Size:
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" diam. + disposable liner
Hammer Weight:

Northing: 567422.03
Easting: 13306396.35
Casing Elevation: NA

Borehole Depth: 14' bgs
Surface Elevation: 753.52

Geologist: Ron Kuhn, Shawn Kerr

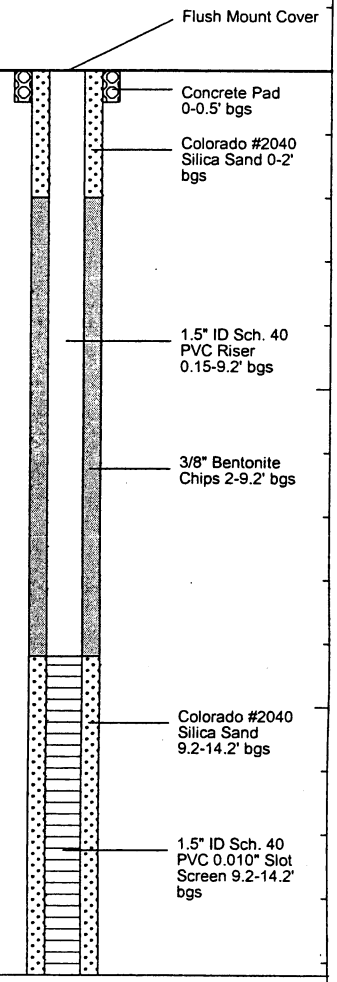
Well/Boring ID: RFI-36-12

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
755								
0	1	0-0.8	0.8	NA				CONCRETE.
	2	0.8-2	1.0	NA	0.0			Black fine foundry SAND, trace Silt, damp.
	3	2-4	2.0	NA	0.0			Brown fine SAND, trace SILT, loose, damp.
750								
5	4	4-6	1.6	NA	0.3			Black foundry SAND, trace Silt, damp.
	5	6-8	1.7	NA	0.0			Orange-brown fine SAND, loose, damp.
745								
10	6	8-10	1.5	NA	0.0			Orange-brown very fine SAND and SILT, saturated at 10'.
	7	10-12	1.6	NA	0.0			
740	8	12-14	1.7	NA	0.0			
15								

Well/Boring Construction



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Remarks: Samples collected 0.8-2' and 8-10' bgs.
NA=Not Available/Not Applicable.

Date Start/Finish: 07/27/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID HSA
Rig Type: CME 55

Northing: 566953.89
Easting: 13306632.24
Casing Elevation: NA

Borehole Depth: 19' bgs
Surface Elevation: 751.81

Descriptions By: SM Duly

Boring ID: RFI-36-13

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0									FL		ASPHALT.	PHA
	750	1	1-3	4 4 7 12	11	2.0	>10,000	-	SM		Black (10YR 2/1) Silty fine to coarse subrounded to subangular SAND and aggregate Gravel, few Clay, aplastic, no odor, loose, damp to dry. Fill mixed with Aggregate. Silty SAND as above but no aggregate, damp, moderately loose. Foundry Sand. Fill.	SILTY SAND
		2	3-5	7 11 13 14	24	0.8	>10,000	-	CL		Gray-brown (10YR 5/2) Silty CLAY, some to little fine to medium subangular to subrounded Gravel, few to trace fine to medium rounded Gravel; no odor, damp, soft. Glacial Till.	SILTY CLAY
5									SM		Yellow-brown (10YR 5/6) Silty fine subangular to subrounded SAND, trace Clay, aplastic, no odor, moderately dense, damp. Fill.	SILTY SAND
		3	5-7	3 1 1 1	2	1.7	>10,000	-	ML		Gray to dark gray (10YR 5/1 - 4/1) SILT, black (10YR 2/1) mottling, little fine subangular to subrounded Sand, few Clay, aplastic, no odor, moist, loose.	SILT
	745	4	7-9	2 2 1/ 12"	3	2.0	>10,000	-			Wet.	
10		5	9-11	4 7 9 11	16	2.0	>10,000	-			Becoming yellow-brown (10YR 5/6) to lower contact; decreased Clay to trace.	
	740	6	11-13	5 5 3 8	8	1.5	4,437	-			Saturated.	
		7	13-15	3 5 5 5	10	1.5	785	-				
15		8	15-17	5 5	11	1.2	474	-			Becomes gray (10YR 6/1); decreased Sand to few, still saturated.	

Boring Construction

- Cement pad with 9" diam. flush-mount cover
- Hydrated Bentonite Seal (1.0' - 6.5' bgs)
- 2" ID Sch. 40 PVC Riser (0.0 - 9.0' bgs)
- #5 Global Filter Sand Pack (6.5' - 19' bgs)
- 2" ID Sch. 40 PVC 0.010" Slot Screen (9.0' - 19' bgs)

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3', 5-7' and 9-11' bgs.

Water Level Data

Date	Depth	Elev.
07/27/01	11.0' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-13

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	8	15-17	6 5	11	1.2	474	-	ML		Gray to dark gray (10YR 5/1 - 4/1) SILT, black (10YR 2/1) mottling, little fine subangular to subrounded Sand, few Clay, aplastic, no odor, moist, loose.	SILT	#5 Global Filter Sand Pack (6.5' - 19' bgs) 2" ID Sch. 40 PVC 0.010" Slot Screen (9.0' - 19' bgs) PVC Cap
	9	17-19	3 3 4 4	7	1.2	278	-			Increased density, increased Clay to few (tighter).		
20												
730												
25												
725												
30												
720												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3', 5-7' and 9-11' bgs.

Water Level Data

Date	Depth	Elev.
07/27/01	11.0' bgs	

Date Start/Finish: 7/16/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 566905.12 **Easting:** 13306892.51 **Casing Elevation:** NA **Borehole Depth:** 18' bgs **Surface Elevation:** 750.0 **Descriptions By:** SM Duly	**Boring ID:** RFI-36-14 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 750	1	0-2	8 6 4 3	10	1.1	0.0	-	ML		Dark gray-brown (10 YR 4/2) SILT, little fine to medium subangular Sand, little coarse to pebble-sized angular Gravel, roots present, aplastic, loose, no odor, dry. Topsoil and fill.	SILT	Cement pad with 9" flush-mount cover
	2	2-4	3 4 6 10	10	1.1	0.0	-	CL		Gray (10 YR 6/1) CLAY, some Silt, little to few fine to medium subangular to subrounded Sand and Gravel, dark gray-brown (10 YR 4/2) mottling, medium stiff, no odor, dry to moist. Becomes oxidized to (10 YR 5/6) to lower contact.	CLAY	Grout 1-2' bgs. Bentonite seal 2-4' bgs.
5 745	3	4-6	4 5 5 7	10	1.6	0.0	-	SM		Brown-yellow (10 YR 6/6) Silty fine subangular SAND, aplastic, dense, no odor, moist to dry.	SILTY SAND	2" ID Sch. 40 PVC riser 0.2-6' bgs.
	4	6-8	3 4 5 6	9	1.6	2.1	-			Becomes moist to wet, color change to dark yellow-brown (10 YR 4/6), increased moisture with depth.		#5 Global filter sandpack 4-18' bgs.
	5	8-10	1 1 3 5	4	1.5	3.0	-			Saturated.		
10 740	6	10-12	6 9 9 10	18	1.6	0.9	-					2" ID Sch. 40 PVC 0.010" slotted screen 6-16' bgs.
	7	12-14	2 2 2 3	4	1.0	0.0	-	ML		Gray (10 YR 6/1) SILT, some to little fine subangular Sand, aplastic, dense to moderately dense, no odor, saturated. Little Clay present.	SILT	
15 735	8	14-16	5 5 4 5	9	1.3	0.2	-					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0-2' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
7/16/01	8.5' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-14

Borehole Depth: 18' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	3 6 6 10	12	1.6	2.1	-	ML		Gray (10 YR 6/1) SILT, some to little fine subangular Sand, little Clay, aplastic, dense to moderately dense, no odor, saturated.	← SILT →	#5 Global filter sandpack 4-18' bgs.
20 730												
25 725												
30 720												
35 715												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0-2' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
7/16/01	8.5' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-36-14.dat Date: 8/30/01

Date Start/Finish: 12/20/00
Drilling Company: Mateco
Driller's Name: Gary Swift, Dennis Powney
Drilling Method: Direct Push
Bit Size:
Auger Size:
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" diam. + disposable liner
Hammer Weight:

Northing: 567876.79
Easting: 13306374.8
Casing Elevation: NA

Borehole Depth: 20' bgs
Surface Elevation: 754.47

Geologist: Ron Kuhn, Shawn Kerr

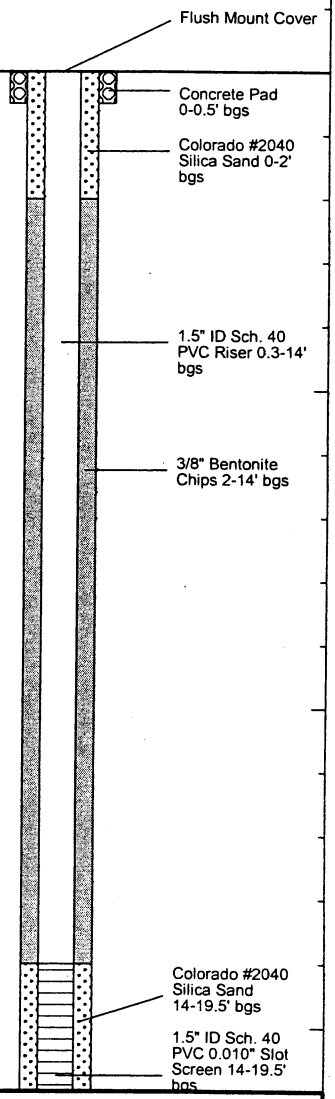
Well/Boring ID: RFI-36-15

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
	755								
0		1	0-0.8	0.8					CONCRETE.
		2	0.8-2	1.2		0.0			Orange-brown to dark brown fine SAND, little Silt.
									Orange-brown mottled Clayey SILT, stiff, moist.
		3	2-4	2.0		0.0			As above with trace fine Sand.
	750	4	4-6	2.0		0.0			
5		5	6-8	2.0		0.0			
		6	8-10	2.0		0.0			Orange-brown fine SAND, trace Silt, loose, damp.
	745								
10		7	10-12	1.5		0.0			
		8	12-14	1.8		0.0			
	740								Orange-brown to gray-brown fine SAND, loose, wet, clear NAPL present.
15		9	14-16	1.6		0.0			

Well/Boring Construction



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Remarks: Samples collected 0.8-2', 8-10' and 14-16' bgs.
MS/MSD collected between 14'-16'
CN = clear NAPL

Client:
General Motors

Site Location:
GM-Flint - Focused RFI
Factory 36, Building 36

Well/Boring ID: RFI-36-15

Borehole Depth: 20' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	10	16-18	2.0	+ CN	0.0			Gray-brown very fine SAND, saturated, loose.	bgs Colorado #2040 Silica Sand 14-19.5' bgs
735 20	11	18-20	2.0	+ CN	0.0			Gray-brown very fine SAND and SILT, saturated, loose.	1.5" ID Sch. 40 PVC 0.010" Slot Screen 14'-19.5' bgs
730 25									
725 30									
720 35									

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Remarks: Samples collected 0.8-2', 8-10' and 14-16' bgs.
MS/MSD collected between 14'-16'.
CN = clear NAPL

Date Start/Finish: 12/19-20/00
Drilling Company: Mateco
Driller's Name: Gary Swift, Dennis Powney
Drilling Method: Direct Push
Bit Size: NA
Auger Size: NA
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" diam. + disposable liner
Hammer Weight:

Northing: 567963.9
Easting: 13306554.15
Casing Elevation: NA

Borehole Depth: 24' bgs
Surface Elevation: 754.87

Geologist: Ron Kuhn

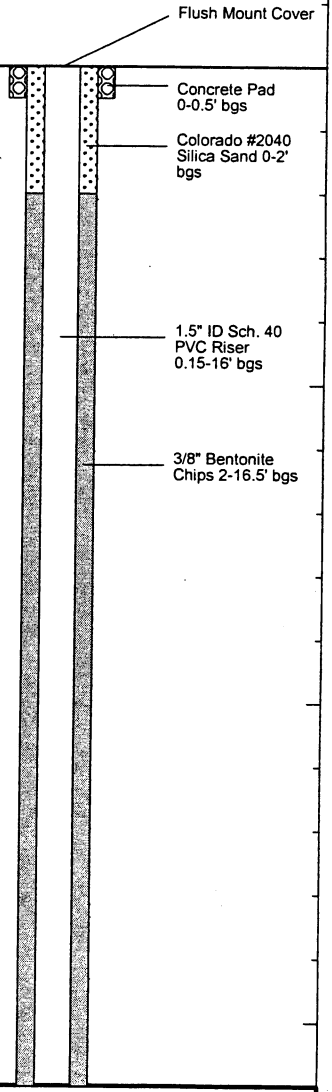
Well/Boring ID: RFI-36-16

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	755	1	0-0.9	0.9		0.0			CONCRETE.
		2	0.9-2	1.0	-	0.0			Dark gray to black foundry fine Sand, trace Silt, slight odor, loose, damp.
		3	2-4	2.0		0.0			Olive-brown to orange-brown Clayey SILT, trace very fine Sand, damp.
5	750	4	4-6	2.0		0.0			
		5	6-8	2.0		0.0			
		6	8-10	2.0		0.0			Light brown fine SAND, trace Silt, loose, damp.
10	745	7	10-12	1.6		0.0			
		8	12-14	1.6	+ CN	0.5			Same as above with slight odor, trace of clear NAPL.
15	740	9	14-16	2.0	+ CN	0.0			Gray-brown very fine SAND, trace Silt, slight odor, loose, trace clear NAPL, damp.

Well/Boring Construction



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Remarks: Samples collected 0.9-2', 8-10' and 18-20' bgs.
CN = Clear NAPL; + = Positive Test Result.

Client:
General Motors

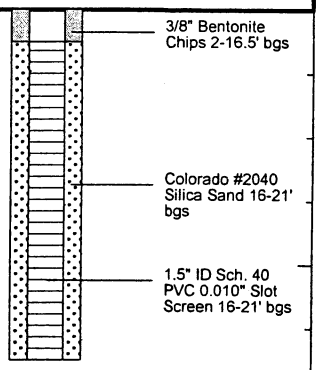
Site Location:
GM-Flint - Focused RFI
Factory 36, Building 36

Well/Boring ID: RFI-36-16

Borehole Depth: 24' bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
		10	16-18	2.0	+ CN	0.0			Gray-brown very fine SAND and SILT grading to gray-brown Clayey SILT@17'.
		11	18-20	2.0	+ CN	0.0			Same as above @ 17'.
20	735								Gray-brown fine SAND, saturated @ 19.5'
		12	20-22	2.0	+ CN	0.0			Gray-brown very fine SAND and SILT, saturated.
		13	22-24	2.0	+ CN	0.0			
25	730								
30	725								
35	720								

Well/Boring Construction



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Remarks: Samples collected 0.9-2', 8-10' and 18-20' bgs.
CN = Clear NAPL; + = Positive Test Result.

Date Start/Finish: 08/29/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 568281.97 **Easting:** 13307453.17 **Casing Elevation:** NA **Borehole Depth:** 22' bgs **Surface Elevation:** 753.93 **Descriptions By:** SM Duly	**Boring ID:** RFI-36-17 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy	Boring Construction
755											4" Steel Protective Casing 3.2' ags-1.8' bgs
0	1	0-2	6 9 10 12	19	1.5	0.0	-	ML	Dark gray-brown (10YR 4/2) SILT, little Clay and fine to coarse subrounded to subangular Sand, few fine to coarse rounded Gravel, coarse large angular Gravel and Cobbles (Fill), aplastic , organic matter such as vegetation and roots present, earth odor, damp to dry, moderately loose to moderately dense. Topsoil.	SILT	Portland Cement 0-1' bgs
	2	2-4	4 8 10 12	18	1.2	0.0	-		Pale brown (10YR 6/3) SILT, some Clay, few fine to coarse subangular to subrounded Sand, trace fine rounded to subrounded Gravel; aplastic, heavily oxidized and bleached, no odor, dense, dry, friable. Glacial Till.		
750											Grout 1-7' bgs
5	3	4-6	4 4 5 5	9	1.4	0.0	-		Light yellow-brown (10YR 6/4) SILT, little to locally some Clay in patches, some to little fine subangular Sand; aplastic, no odor, damp, moderately dense. Glacial-alluvial.		
	4	6-8	2 4 4 4	8	2.0	0.0	-	SP	Pale brown (10YR 6/3) fine to medium subrounded to subangular SAND, locally a Silty Sand (SM), some Silt, few to trace Clay; aplastic, no odor, damp, moderately loose. Glacial-alluvial.	SAND	2" ID Sch. 40 PVC Riser 2.6' ags-12' bgs
745	5	8-10	2 4 4 3	8	1.4	0.0	-				Bentonite seal 7-10' bgs
10	6	10-12	2 4 5 5	9	1.8	0.0	-		Moist with increasing moisture with depth.		#5 Global Filter Sand Pack 10-22' bgs
	7	12-14	5 6 5 5	11	1.6	0.0	-		Fining downward and becoming gray.		2" ID Sch. 40 PVC 0.010" Slot Screen 12-22' bgs
740									Saturated. Yellow-brown (10YR 5/4).		
15	8	14-16	5 7 8 6	15	2.0	0.0	-				

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Remarks: a/bgs = above/below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10' and 12-14' bgs.

Water Level Data

Date	Depth	Elev.
08/29/01	14.0' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-17

Borehole Depth: 22' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	2 5 7 8	12	1.7	0.0	-	SP		Pale brown (10YR 6/3) fine to medium subrounded to subangular SAND, locally a Silty Sand (SM), some Silt, few to trace Clay; aplastic, no odor, damp, moderately loose. Glacial-alluvial.	SAND	#5 Global Filter Sand Pack 10-22' bgs
735	10	18-20	3 4 5 6	9	1.8	0.0	-					2" ID Sch. 40 PVC 0.010" Slot Screen 12-22' bgs
20										Gray (10YR 6/1) SILT, little fine subangular Sand, little Clay; aplastic, no odor, moderately loose to moderately dense, saturated. Glacial-alluvial.	SILT	PVC Cap
	11	20-22	2 3 2 2	5		0.0	-	ML				
730												
25												
725												
30												
720												
35												

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Remarks: a/bgs = above/below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10' and 12-14' bgs.

Water Level Data

Date	Depth	Elev.
08/29/01	14.0' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-36-17.dat Date: 11/16/01

Date Start/Finish: 8/30/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4" ID
Rig Type: CME 55

Northing: 567949.67
Easting: 13307448.28
Casing Elevation: NA

Borehole Depth: 24' bgs
Surface Elevation: 753.12

Descriptions By: SM Duly

Boring ID: RFI-36-18

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	755												
0		1	0-2	4 6 10 12	16	1.8	0.0	-	ML		Light yellow-brown (10 YR 6/4) SILT, some Clay, little fine to coarse subangular to subrounded Sand, trace fine subrounded Gravel, aplastic, dense, friable, no odor, dry. Organic matter and root structures present to 1' bgs. Topsoil	SILT	Cement pad with 9" diam. flush-mount cover.
	750	2	2-4	4 7 9 11	16	1.6	0.0	-			Yellow-brown (10 YR 6/4) SILT, as at 0-1.0' bgs, aplastic, heavily oxidized and weathered glacial till.		Grout 1-10' bgs
5		3	4-6	3 6 9 9	15	1.4	0.0	-			Yellow-brown (10 YR 5/6) SILT, some to little fine subangular Sand, few Clay, aplastic, moderately dense to dense, no odor, damp. Glacial-alluvial.		2" ID Sch. 40 PVC riser 0.2-14' bgs.
		4	6-8	4 5 7 8	12	1.6	0.0	-			Light yellow-brown (10 YR 6/4) Silty fine to medium subangular SAND, few Clay, aplastic, no odor, moderately dense, damp. Glacial-alluvial. Occasional silt lenses up to 4" wide throughout.	SILTY SAND	
	745	5	8-10	2 3 2 3	5	1.4	0.0	-					Bentonite seal 10-12' bgs
10		6	10-12	1 3 2 3	5	1.4	0.0	-	SM				
	740	7	12-14	2 2 5 8	7	1.6	0.0	-			Increasing moisture with depth, decreased clay to none to trace.		Global #5 sandpack 12-24' bgs.
15		8	14-16	1 2 2 4	4	1.4	0.0	-			Saturated.		2" ID Sch. 40 PVC 0.010" slotted screen 14-24' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0-2', 8-10' and 12-14' bgs.

Water Level Data

Date	Depth	Elev.
8/30/01	14.0'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-36-18.dat Date: 11/16/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-18

Borehole Depth: 24' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	4 4 3 4	7	1.4	1.4	-			Light yellow-brown (10 YR 6/4) Silty fine to medium subangular SAND, few Clay, aplastic, no odor, moderately dense, damp. Glacial-alluvial.	SILTY SAND	Global #5 sandpack 12-24' bgs.
735												
	10	18-20	1 2 3 4	5	1.5	1.5	-	SM		Becomes gray-brown (10 YR 5/2), fine subangular to subrounded Sand, trace Clay.		
20												2" ID Sch. 40 PVC 0.010" slotted screen 14-24' bgs
	11	20-22	1 1 1 6	2	1.7	1.7	-			Fining downward to lower contact.		
										Gray (10 YR 5/1) SILT, some Clay, little fine to medium subangular to subrounded Sand, no odor, moderately dense, saturated. Glacial-alluvial.	SILT	
730	12	22-24	3 3 3 3	6	1.3	1.3	-	ML				
25												
725												
30												
720												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0-2', 8-10' and 12-14' bgs.

Water Level Data

Date	Depth	Elev.
8/30/01	14.0'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-36-18.dat Date: 11/16/01

Date Start/Finish: 8/28/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 4 1/4" ID HSA
Rig Type: CME 55

Northing: 567519.98
Easting: 13307356.55
Casing Elevation: NA

Borehole Depth: 22' bgs
Surface Elevation: 753.31

Descriptions By: SM Duly

Boring ID: RFI-36-19

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
755											
0								ML		Light brownish-green (10YR 6/2) SILT, some fine to coarse subangular to subrounded Sand, little Clay, aplastic, no odor, dry, loose. Vegetation and roots present. Topsoil mixed with coarse angular aggregate. Fill.	SILT
										Dark yellow-brown (10YR 4/6) SILT, little fine to medium subangular to subrounded Sand, some Clay, aplastic, no odor, moderately loose, dry. Heavily oxidized. Weathered Glacial Till.	
750	NA	NA	NA	NA	NA	NA	NA	CL		Dark yellow-brown (10YR 4/6) Silty CLAY, little fine to medium subangular to subrounded Sand, few fine to coarse subrounded to rounded Gravel, very stiff, no odor, dry to damp, heavily oxidized. Weathered Glacial Clay Till.	SILTY CLAY
5											
745	1	8-10	4 7 12 14	19	1.4	0.0	-	SM		Yellow-brown (10YR 5/2) Silty fine to medium subrounded to subangular SAND, few Clay with increases of Clay content to little in patches, moderately dense, dry, heavily oxidized. Glacial-alluvial.	SILTY SAND
10	2	10-12	4 7 14 13	21	1.4	0.0	-			Light yellow-brown (10YR 6.2), decreased Clay content to trace. Damp, increased moisture.	
740	3	12-14	2 4 7 8	11	1.6	0.0	-	ML		Yellow-brown (10YR 5/4) SILT, some Clay; aplastic, moist, no odor, dense to moderately dense. Glacial-alluvial. Saturated at 13.1' bgs.	SILT
15	4	14-16	4 6 6 7	12	1.8	0.0	-	SM		Yellow-brown (10YR 6/4) Silty fine to medium subrounded to subangular SAND, trace Clay; moderately dense, moist, heavily oxidized. Occasional shell fragments. Alluvial.	SILTY SAND

Boring Construction

- Portland cement 0-1' bgs
- Grout 1-6' bgs
- 2" ID Sch. 40 PVC Riser 0.2-11.5' bgs
- Bentonite Seal 6-9' bgs
- #5 Global Filter Sand Pack 9-22' bgs
- 2" Sch. 40 PVC 0.010" Slot Screen 11.5-21.5' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
8/28/01	13.1	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-36-19.dat Date: 11/16/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-19

Borehole Depth: 22' bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
		5	16-18	6 7 7 6	14	1.5	0.0	-	SM		Yellow-brown (10YR 6/4) Silty SAND, fine to medium subrounded to subangular Sand, trace Clay; moderately dense, moist, heavily oxidized. Alluvial. Occasional shell (?) fragments.	SILTY SAND	2" Sch. 40 PVC 0.010" Slot Screen 11.5-21.5' bgs
	735	6	18-20	4 7 7 8	14	1.7	0.0	-			Yellow-brown (10YR 5/4).		#5 Global Filter Sand Pack 9-22' bgs
20		7	20-22	6 6 8 9	14	1.6	0.0	-			Becoming gray (10YR 5/1) and fining downwards.		PVC Cap
	730												
25													
	725												
30													
	720												
35													

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
8/28/01	13.1	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-36-19.dat Date: 11/16/01

Date Start/Finish: 08/28/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: 567365.48
Easting: 13307195.23
Casing Elevation: NA

Borehole Depth: 24' bgs
Surface Elevation: 757.01

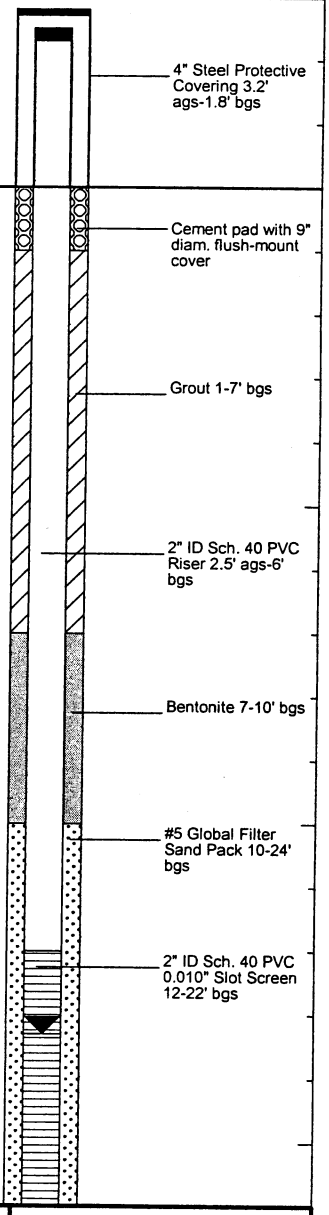
Descriptions By: SM Duly

Boring ID: RFI-36-20

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
760										
0										
	1	0-2	10 12 15 16	27	1.3	12.8	-	ML	Brown (10YR 4/3) SILT, some fine to coarse subangular to subrounded Sand, little Clay, few fine to coarse subrounded to rounded Gravel, aplastic, earthy odor, moderately loose, damp with rainfall. Organic matter such as roots and vegetation present. Topsoil.	SILT
755	2	2-4	7 9 11 12	20	1.2	4.4	-		Pale brown (10YR 6/3) SILT, some Clay, few fine to coarse subrounded to subangular Sand, trace fine rounded Gravel, aplastic, no odor, dense, dry, friable. Heavily oxidized and bleached throughout. Weathered Glacial Till.	
5	3	4-6	4 5 3 4	8	1.5	0.0	-		Becomes damp, yellow-brown (10YR 5/4).	
	4	6-8	2 3 4 5	7	1.9	0.0	-	CL	Yellow-brown (10YR 5/4) Silty CLAY, little fine to coarse subangular to subrounded Sand, trace fine rounded to subrounded Gravel; soft to medium stiff, no odor, damp, heavily oxidized. Glacial Clay Till.	SILTY CLAY
750	5	8-10	2 4 5 5	9	1.8	0.0	-	SM	Brown-yellow (10YR 6/8) Silty SAND, fine subangular Sand, few Clay; aplastic, no odor, damp, moderately dense, local patches of increased Clay content to little. Glacial-alluvial.	SILTY SAND
10	6	10-12	2 4 6 7	10	1.5	0.0	-		Becomes light yellow-brown (10YR 6/4) at 8.0' bgs.	
745	7	12-14	4 6 9 10	17	1.6	0.0	-		Moist.	
	8	14-16	2 3 3 3	6	1.7	0.0	-	ML	Saturated.	
15									Gray (10YR) 5/1 SILT, heavily oxidized at upper contact to yellow-brown (10YR 5/6) little Clay; aplastic, no odor, saturated, dense. Glacial-alluvial.	SILT



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Remarks: a/bgs = above/below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
08/28/01	13.3' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-36-20.dat Date: 11/16/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-20

Borehole Depth: 24' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
740	9	16-18	6 6 7 7	13	1.6	0.0	-	ML		Gray (10YR 5/1) SILT, heavily oxidized at upper contact to yellow-brown (10YR 5/6) little Clay; aplastic, no odor, saturated, dense. Glacial-alluvial.	SIL	
	10	18-20	1 3 4 6	7	1.3	0.0	-			Dark yellow-brown (10YR 6/4) fine to medium subangular to subrounded SAND, some to little Silt; aplastic, no odor, saturated, moderately dense, shell fragments (?) present. Alluvial from moderately high energy environment of deposition. Fining downwards after 22.5' bgs to lower contact.	SAND	#5 Global Filter Sand Pack 10-24' bgs
20								SP				
	11	20-22	1 3 5 9	8	1.6	0.0	-					2" ID Sch. 40 PVC 0.010" Slot Screen 12-22' bgs
735	12	22-24	4 5 5 4	10	2.0	0.0	-	SM		Gray (10YR 5/1) SILT, few fine subangular to subrounded Sand, little Clay; aplastic, no odor, saturated, dense. Glacial-alluvial.	SILT	PVC CAP
25												
730												
30												
725												
35												

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Remarks: a/bgs = above/below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
08/28/01	13.3' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-36-20.dat Date: 11/16/01

Date Start/Finish: 3/27/01 - 3/27/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Sampler Size: 2 ft cont. acetate sleeve
Auger Size:
Rig Type: 66 DT Advance Geoprobe

Northing: 567883.06
Easting: 13306850.34
Casing Elevation: NA

Borehole Depth: 19' bgs
Surface Elevation: 754.64

Descriptions By: SM Duly

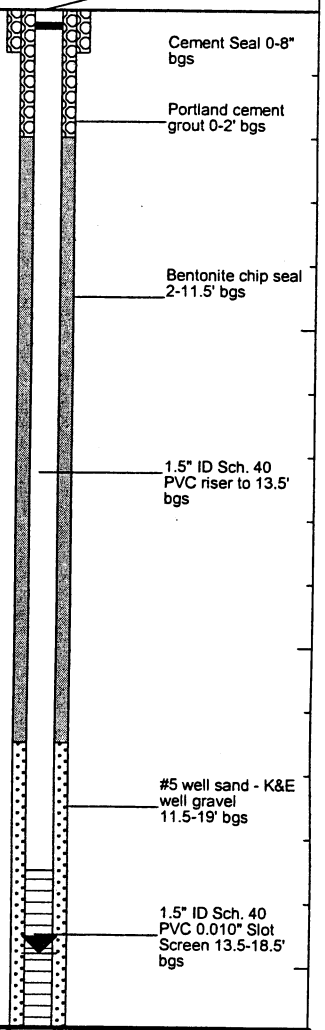
Boring ID: RFI-36-21

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0	755									
							FL		Concrete.	FILL
		1	0-2	1.4	8.8	-			Black (10 YR 2/1) SILT, little fine to medium subangular Sand, few Clay, aplastic, no odor, dry to damp, moderately dense.	
		2	2-4	2.0	50.3	-			Brown (10 YR 5/3) SILT, some Clay, little fine to medium subangular Sand, trace fine to medium subrounded Gravel, no odor, dry, dense, local increases in clay to a silty clay.	SILT
5	750	3	4-6	2.0	20.8	-	ML/CL			
		4	6-8	2.0	38.6	-			1" wide black Silt lens.	
		5	8-10	1.4	55.9	-			Brown (10 YR 5/3) SILT and very fine SAND, little fine to medium subangular Sand, few Clay, aplastic, no odor, dry, moderately dense to moderately loose.	SILT & SAND
10	745	6	10-12	1.6	23.7	-	ML/SP			
		7	12-14	1.5	19.2	-				
15	740	8	14-17	2.6	20.7	+	SP		Gray-brown (10 YR 5/2) fine to medium subangular SAND, little Silt, little Clay, aplastic, moderate to weak odor, moderately dense to moderately loose, saturated.	SILT
							ML			

Boring Construction



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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
+ = Positive Shake Test
Samples collected 6-8', 8-10', 10-12', and 12-14' bgs.

Water Level Data

Date	Depth	Elev.
3/27/01	14.8	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-21

Borehole Depth: 19' bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
		8	14-17	2.6	20.7	+	ML ML		SILT, as above at 3.1 to 7.8', wet, moderate to weak odor.	SILT	#5 well sand - K&E well gravel 11.5-19' bgs
		9	17-19	1.9	35.3	+	SP		SAND, as above at 14.8 to 15.3'.	SAND	1.5" ID Sch. 40 PVC 0.010" Slot Screen 13.5-18.5' bgs 1.5" ID Sch. 40 PVC bottom cap
20	735										
25	730										
30	725										
35	720										

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
+ = Positive Shake Test
Samples collected 6-8', 8-10', 10-12', and 12-14' bgs.

Water Level Data

Date	Depth	Elev.
3/27/01	14.8	

Date Start/Finish: 3/27/01 - 3/27/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Sampler Size: 2 ft cont. acetate sleeve
Auger Size:
Rig Type: 66 DT Advance Geoprobe

Northing: 567808.88
Easting: 13306655.18
Casing Elevation: NA

Borehole Depth: 18' bgs
Surface Elevation: 754.37

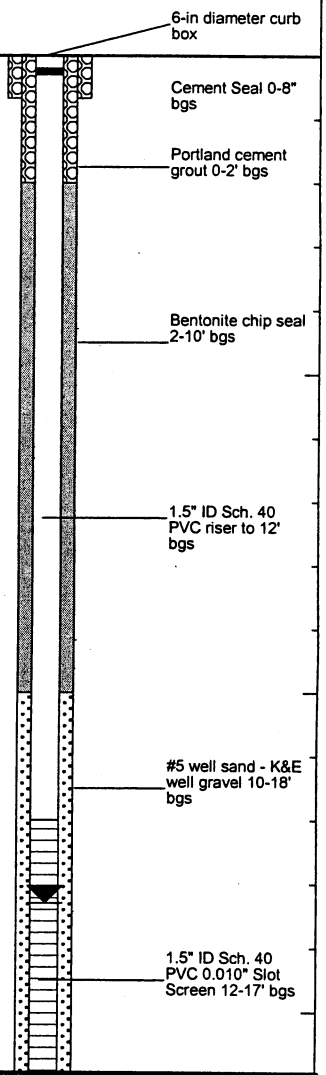
Descriptions By: S. Duly

Boring ID: RFI-36-22

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
	755									
0							FL		Concrete.	FILL
		1	0-2	1.4	9.6	-			Yellow-brown (10 YR 5/4) SILT, some fine to medium subangular Sand, little to few Clay, aplastic, no odor, dry to damp, moderately loose to moderately dense.	
									Black (10 YR 2/1) SILT, few to little Clay, no odor, dry, moderately dense to dense.	
		2	2-4	2.0	12.1	-			Brown (10 YR 5/3) SILT, little fine to medium subangular Sand, some Clay, aplastic, dry to damp, dense, brittle. Locally becoming a silty clay with increased clay content.	SILT
	750									
5		3	4-6	2.0	11.2	-	ML/CL			
		4	6-8	2.0	11.8	-				
		5	8-10	1.8	399	-			SILT, as above, with little to few Clay, some fine to medium subangular Sand.	
	745									
10		6	10-12	1.7	67.4	-			Brown SAND and SILT, little Clay, very fine to medium Sand, aplastic, no odor, dry to damp, moderately dense.	SAND and SILT
		7	12-14	1.8	40.8	+			Increased clay to little, moderate odor.	
	740						SP/ML			
15		8	14-16	1.7	29.0	-				



Boring Construction

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Remarks: bgs=below ground surface
+ = Positive Shake Test
NA=Not Applicable/Not Available
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
3/27/01	13.3	

Project: 64410.011 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-36-22.dat Date: 8/10/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-22

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	2.0	10.3	-	SP/ML		Brown SAND and SILT, little Clay, very fine to medium Sand, aplastic, no odor, dry to damp, moderately dense.	SAND and SILT	#5 well sand - K&E well gravel 10-18' bgs 1.5" ID Sch. 40 PVC bottom cap
735 / 20										
730 / 25										
725 / 30										
720 / 35										

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Remarks: bgs=below ground surface
+ = Positive Shake Test
NA=Not Applicable/Not Available
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
3/27/01	13.3	

Project: 64410.011 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-36-22.dat Date: 8/10/01

Date Start/Finish: 3/27/01 - 3/27/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Sampler Size: 2 ft cont. acetate sleeve
Auger Size:
Rig Type: 66 DT Advance Geoprobe

Northing: 567761.27
Easting: 13306516.24
Casing Elevation: NA

Borehole Depth: 18' bgs
Surface Elevation: 754.2

Descriptions By: S. Duly

Boring ID: RFI-36-23

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
755 / 0						FL	Concrete.	FILL
	1	0-2	1.2	15.2	+	SP	Brown (10 YR 4/3) fine to medium subangular SAND, some Silt, little to locally some Clay, aplastic, no odor, damp to dry, moderately dense.	SAND
						ML	Very dark gray-brown (10 YR 3/2) SILT, some Clay, little to some fine to medium subangular Sand, no odor, dry, dense.	
	2	2-4	1.5	15.7	-	CL	Brown (10 YR 4/3) Silty CLAY, little to some fine to medium subangular Sand, plastic, no odor, moist, soft.	
750 / 5	3	4-6	1.5	26.8	-		SAND, as above at 0.6 to 1.8'. Black (10 YR 2/1) SILT, little Clay, trace fine to medium subangular Sand, no odor, dry, moderately dense to loose.	SILT & CLAY
	4	6-8	1.6	63.0	+			
745 / 10	5	8-10	1.5	14.1	-		Yellow-brown (10 YR 5/4) SILT, some to little Clay, little fine to medium Sand, moderate odor, damp, moderately dense.	
	6	10-12	2.0	118.5	-	ML	10-10.5': Silt alternating with black silt and silty clay lenses up to 1" wide.	
	7	12-14	1.6	66.7	+		No odor, saturated.	
740 / 15	8	14-16	1.6	18.3	-		Weak odor.	

Boring Construction

- 6-in diameter curb box
- Cement Seal 0-8" bgs
- Portland cement grout 0-2' bgs
- Bentonite chip seal 2-10' bgs
- 1.5" ID Sch. 40 PVC riser to 12' bgs
- #5 well sand - K&E well gravel 10-18' bgs
- 1.5" ID Sch. 40 PVC 0.010" Slot Screen 12-17' bgs

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
+ = Positive Test Result
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
3/27/01	13.0	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-23

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	2.0	210	+	ML		Yellow-brown (10 YR 5/4) SILT, some to little Clay, little fine to medium Sand, moderate odor, damp, moderately dense.	SILT & CLAY	#5 well sand - K&E well gravel 10-18' bgs 1.5" ID Sch. 40 PVC bottom cap
735 / 20										
730 / 25										
725 / 30										
720 / 35										

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
+ = Positive Test Result
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
3/27/01	13.0	

Date Start/Finish: 3/26/01 - 3/26/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Sampler Size: 2 ft cont. acetate sleeve
Auger Size:
Rig Type: 66 DT Advance Geoprobe

Northing: 567686.05
Easting: 13306390.25
Casing Elevation: NA

Borehole Depth: 17' bgs
Surface Elevation: 754.05

Descriptions By: S. Duly

Boring ID: RFI-36-24

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
755 / 0									
						FL		Concrete.	FILL
	1	0-2	1.8	8.0	-			Black (10 YR 2/1) to very dark gray-brown (10 YR 3/2) SILT, some fine to medium subangular Sand, little to few Clay, trace fine to coarse rounded Gravel, aplastic, no odor, dry to damp, moderately dense to dense.	SILT
	2	2-4	1.0	6.0	+	ML			
750 / 5	3	4-6	0.8	5.2	+				
	4	6-8	1.1	358	-	SP		Gray (10 YR 5/1) fine subangular SAND, some Silt, little Clay, aplastic, dry, moderately dense.	SAND
								SILT, as above, but with some Clay, dry to damp.	SILT
745 / 10	5	8-10	2.0	72.2	-				
	6	10-12	1.9	101	-	ML		10.3-10.4': As above, but black (10 YR 2/1).	
	7	12-14	1.8	52.9	+			Gray-brown (10 YR 5/2) SAND, some Silt, little Clay, trace fine to coarse rounded Gravel, weak odor, wet, moderately dense. 12.9'-Collapse, water and product detected prior to collapse	SAND
740 / 15	8	14-17	3.0	NA	+	SP			

Boring Construction

- 6-in diameter curb box
- Cement Seal 0-8" bgs
- Portland cement grout 0-2' bgs
- Bentonite chip seal 2-9.5' bgs
- 1.5" ID Sch. 40 PVC riser to 11' bgs
- #5 well sand - K&E well gravel 9.5'-17' bgs
- 1.5" ID Sch. 40 PVC 0.010" Slot Screen 11-16' bgs

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Remarks: bgs = below ground surface;
NA=Not Applicable/Not Available
Samples collected 0-2', 6-8', 8-10' and 10-12' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
3/26/01	12.4	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-24

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	14-17	3.0	NA	+	SP		Gray-brown (10 YR 5/2) SAND, some Silt, little Clay, trace fine to coarse rounded Gravel, weak odor, wet, moderately dense.		1.5" ID Sch. 40 PVC bottom cap; #5 well sand - K&E well gravel 9.5'-17' bgs
735 / 20										
730 / 25										
725 / 30										
720 / 35										

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Remarks: bgs = below ground surface;
NA=Not Applicable/Not Available
Samples collected 0-2', 6-8', 8-10' and 10-12' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
3/26/01	12.4	

Project: 64410.011
Data File:RFI-36-24.dat
Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Date: 8/10/01

Date Start/Finish: 3/27/01 **Drilling Company:** Mateco **Driller's Name:** NA **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 45 Truck-mount	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 18' bgs **Surface Elevation:** NA **Descriptions By:** B. Loomis	**Boring ID:** RFI-36-25 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	1	0-2	NA NA 2 2	2	1.3	9.5	-	FL SW		ASPHALT Dark brown SAND and rounded GRAVEL, trace Silt and Clay. Gray SAND and rounded GRAVEL, trace Silt and Clay.	CLAY	Borehole backfilled with bentonite to grade.
	2	2-4	5 6 7 8	13	1.7	9.0	-	CL		Brown stiff CLAY, trace Sand, gray mottling. Brown firm CLAY, trace rounded Pebbles, some Sand.		
5 5	3	4-6	5 6 9 11	15	1.8	5.5	-	SW CL		Dark brown fine SAND with brown Clay and rounded Gravel. Brown firm CLAY with rounded Gravel, trace red mottling.	CLAY	
	4	6-8	4 4 5 5	9	1.8	5.6	-			Brown fine to medium SAND.	SAND	
	5	8-10	2 3 4 7	7	1.6	1.1	-			Light brown fine to medium SAND.		
10 10	6	10-12	10 11 19 15	30	1.6	2.3	-	SP		Brown fine SAND with Silt. Gray-brown fine SAND with Silt.		
	7	12-14	9 12 14 10	26	2.0	1.4	-			Gray-brown fine SAND, little Silt. Gray fine SAND, moist to wet.		
15 15	8	14-16	6 4 4 7	8	2.0	5.9	-			Saturated.		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
3/27/01	14.0'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-25

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	NA	NA	NA	NA	-	SP		Gray fine SAND, saturated.	SAND	Borehole backfilled with bentonite to grade.
20 20												
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
3/27/01	14.0'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-36-25.dat Date: 9/18/01

Date Start/Finish: 12/15/01 **Drilling Company:** Rau Drilling **Driller's Name:** Rick Rau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" ID HSA **Rig Type:** CME 45 Skid Rig	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 19.5' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-36-25R **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								FL		Reinforced CONCRETE.	Fill	Flush Mount Well
	1	1-3	8 8 11 13	19	1.4	0.0	-	ML		Black 10YR 2/1 SILT (ML), some fine to medium subangular Sand, few Clay, no odor, dense, aplastic, dry, locally lithified. Fill.		
	2	3-5	8 12 19 22	31	1.8	0.0	-	CL		Gray-brown, 10YR 5/2 Silty Lean CLAY (CL), few fine to coarse, subrounded to subangular Sand, few fine to medium subrounded Gravel, no odor, very stiff, weakly plastic, dry. Native Clay Till used as backfill. Occasional grey 10 YR 5/1 mottling.		2" diameter PVC riser 0'-9.5'
5 5	3	5-7	3 7 9 12	16	2.0	0.0	-			Becomes light yellow-brown 10 YR 6/4, with localized areas of bleaching to very pale brown 10YR 8/2.		Bentonite Grout (2'-6' bgs)
	4	7-9	6 10 12 15	22	2.0	0.0	-			Becomes yellow-brown 10 YR 5/6. Weakly to moderately plastic, damp.		Bentonite Seal (6'-8' bgs)
10 10	5	9-11	6 5 12 13	17	1.3	0.0	-					
	6	11-13	11 20 22 37	42	1.6	6.0	-	SM		Yellow-brown 10 YR 5/6 fine, poorly graded, subangular, Silty SAND (SM), few Clay, no odor, dense, aplastic, damp. Glacial alluvial.	Silty Sand	
	7	13-15	15 14 14 16	28	1.5	0.0	-	ML		Gray-brown 10YR 5/2 SILT with Sand (ML), moist.	Silt	Sand Pack (8'-19.5' bgs)
15 15								SM		Gray 10YR 5/1 Silty SAND (SM) as above, saturated. Glacial-alluvial.	Silty Sand	2" Diameter Slot 0.010 PVC Screen (9.5'-19.5')
		NA	NA	NA	NA	NA	NA					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 1-3', 7-9' and 11-13' bgs.

Water Level Data

Date	Depth	Elev.
12/15/01	13.5' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-25R

Borehole Depth: 19.5' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
		NA	NA	NA	NA	NA	NA	SM		Gray 10YR 5/1 Silty SAND (SM) as above, saturated. Glacial-alluvial.	Silty Sand	Sand Pack (8'-19.5' bgs); 2" Diameter Slot 0.010 PVC Screen (9.5'-19.5')
20 20										End of borehole.		
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 1-3', 7-9' and 11-13' bgs.

Water Level Data

Date	Depth	Elev.
12/15/01	13.5' bgs	

Date Start/Finish: 3/26/01 - 3/27/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Sampler Size: 2 ft cont. acetate sleeve
Auger Size:
Rig Type: 66 DT Advance Geoprobe

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 18' bgs
Surface Elevation: NA

Descriptions By: S. Duly

Boring ID: RFI-36-26

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0										
						FL		Concrete.	FILL	
	1	0-2	1.6	6.6	-	SP		Dark gray-brown (10 YR 4/3) fine to medium subangular SAND, some Silt, few Clay, aplastic, no odor, dry to damp, dense to loose.		
								Black (10 YR 2/1) SILT, little fine to medium subangular Sand, few Clay, no odor, dry, dense.	SILT	
	2	2-4	1.4	118	-	ML				Borehole backfilled with Bentonite Pellets.
5 5	3	4-6	1.7	11.5	-	ML		Dark gray-brown (10 YR 4/2) SILT, some Clay, aplastic, weak odor, moist to wet, dense.		
						SP		SAND, as above but brown (10 YR 5/3) and dry.	SAND	
						ML		Black SILT, as above.		
						SP		SILT, as above at 5 to 5.5'.		
	4	6-8	1.9	98.2	-			SAND, as above at 0.6 to 1.0', but with some Silt, some Clay, and few to trace subangular to subrounded Gravel.		
						ML		SILT, as above at 5 to 5.5', locally a Silty Clay.	SILT	
	5	8-10	2.0	87.2	-			Brown (10 YR 5/3) fine subangular SAND, little Clay, some Silt, no odor, dry, moderately dense.		
10 10								10-10.8': Sand as above, but mixed with layers of black silt and sand.		
	6	10-12	2.0	24.9	+	SP			SAND	
	7	12-14	2.0	29.7	+					
								SILT, as above at 5 to 5.5', but wet, moderate odor.		
15 15	8	14-16	2.0	83.3	+	ML		14.2-14.5': Lens of dark yellow-brown (10 YR 4/4) Clay (CL), some Silt, plastic, moderately stiff to stiff, moderate odor, wet. 14.6': Increased clay content locally to a silty clay.	SILT	

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2', 2-4', 8-10' and 10-12' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
3/27/01	13.3' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-26

Borehole Depth: 18' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	1.8	20.7	+	ML		SILT, as above at 5 to 5.5', but wet, moderate odor.	SILT	Borehole backfilled with Bentonite Pellets.
						SP		Brown (10 YR 4/3) quartz-rich fine subangular SAND, some Silt, few Clay, moderate to strong odor, moderately dense.	SAND	
20 20										
25 25										
30 30										
35 35										

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2', 2-4', 8-10' and 10-12' bgs.
+ = Positive Test Result

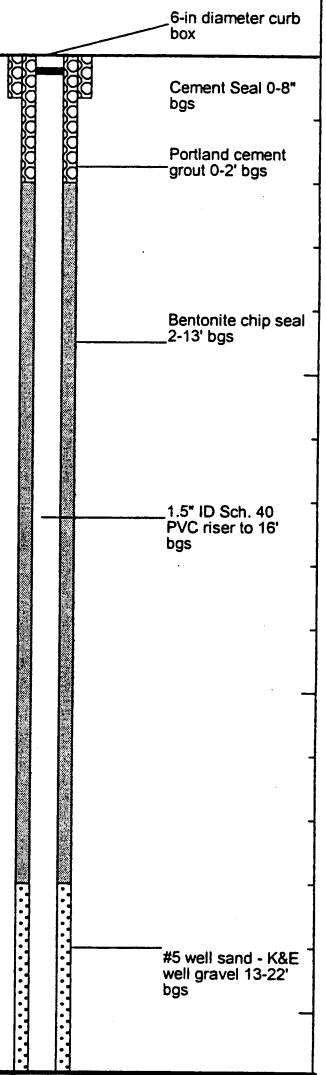
Water Level Data

Date	Depth	Elev.
3/27/01	13.3' bgs	

Date Start/Finish: 3/26/01 - 3/26/01 **Drilling Company:** Mateco **Driller's Name:** Gary Swift **Drilling Method:** Direct Push **Sampler Size:** 2 ft cont. acetate sleeve **Auger Size:** **Rig Type:** 66 DT Advance Geoprobe	**Northing:** 568220.29 **Easting:** 13306562.62 **Casing Elevation:** NA **Borehole Depth:** 22' bgs **Surface Elevation:** 755.46 **Descriptions By:** S. Duly	**Boring ID:** RFI-36-27 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0	755								
							FI	Concrete.	FILL
		1	0-2	1.2	1.2	-	SP	Gray-brown (10 YR 5/2) SAND, some Silt, little Clay, aplastic, no odor, dry to damp, moderately dense.	
		2	2-4	0.5	2.5	-	ML	Light brown-gray (10 YR 6/2) SILT, initially black at upper contact, little Clay, some to little fine to medium Sand, aplastic, no odor, dry, dense.	SILT
5	750	3	4-6	2.0	9.6	-	ML	Brown (10 YR 4/3) SILT, some Clay, little fine to medium subangular Sand, few fine to coarse rounded Gravel, aplastic, no odor, dry, dense.	
		4	6-8	2.0	5.5	-		As above but damp, increased clay locally to a silty clay in patches.	
		5	8-10	2.0	7.5	-	CL	Dark yellow-brown (10 YR 4/4) CLAY, some Silt, little fine to medium subangular Sand, few fine to coarse rounded Gravel, plastic, no odor, dry, soft.	CLAY
							SP	Damp, dark gray (10 YR 4/1) SAND, as above at 0.8 to 1.2'.	SAND
10	745	6	10-12	2.0	38.8	-	CL	CLAY, as above at 8.1 to 9.1'.	
								SAND, as above at 0.8 to 1.2'.	
		7	12-14	1.9	127	-	SP		
15	740	8	14-16	1.7	28	+	ML	SILT, as above at 4.3 to 8.1', but damp to moist, color changed to dark gray-brown (10 YR 4/2), and moderate odor.	SILT
							SP	SAND, as above at 0.8 to 1.2'.	SAND

Boring Construction



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Remarks: bgs = below ground surface;
NA=Not Applicable/Not Available;
+ = Positive Test Result.
Samples collected 0-2', 8-10', 12-14' and 14-16' bgs.

Water Level Data

Date	Depth	Elev.
3/26/01	17.2	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-27

Borehole Depth: 22' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	2.0	38.8	+	SP		SAND, as above at 0.8 to 1.2'. Becomes darker gray-brown (10 YR 3/2), saturated, moderate odor.	SAND	#5 well sand - K&E well gravel 13-22' bgs
	10	18-20	1.8	38.3	+					1.5" ID Sch. 40 PVC 0.010" Slot Screen 16-22' bgs
20 / 735	11	20-22	1.0	332	+					1.5" ID Sch. 40 PVC bottom cap
25 / 730										
30 / 725										
35 / 720										

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Remarks: bgs = below ground surface;
NA=Not Applicable/Not Available;
+ = Positive Test Result.
Samples collected 0-2', 8-10', 12-14' and 14-16' bgs.

Water Level Data

Date	Depth	Elev.
3/26/01	17.2	

Project: 64410.011 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-36-27.dat
Date: 8/10/01

Date Start/Finish: 3/26/01 - 3/29/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Sampler Size: 2 ft cont. acetate sleeve
Auger Size:
Rig Type: 66 DT Advance Geoprobe

Northing: 568184.49
Easting: 13306867.00
Casing Elevation: NA

Borehole Depth: 22' bgs
Surface Elevation: 755.58

Descriptions By: S. Duly

Boring ID: RFI-36-28

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 755						FI		Concrete.	FILL	
	1	0-2	1.0	5.2	-	SP		Yellow-brown (10 YR 5/4) SAND, some Silt, little Clay, aplastic, moderately dense, no odor, damp.	SAND	
	2	2-4	1.2	5.6	+					Borehole backfilled with Bentonite Pellets.
5 / 750	3	4-6	1.8	3.6	-	ML		Black (10 YR 2/1) SILT, little to some fine to medium subangular Sand, little Clay, few to trace subrounded fine to coarse Gravel, aplastic, moderately dense, weak odor, damp, "greasy".	SILT & CLAY	
	4	6-8	2.0	4.3	-	ML/CL		Gray (10 YR 4/1) SILTY CLAY, little fine to medium subangular Sand, trace rounded Gravel, plastic, weak to moderate odor, damp, moderately stiff to moderately soft.		
	5	8-10	2.0	6.1	+	SP		SAND, as above at 0.6 to 3.5'.		
						ML/CL		SILTY CLAY, as above at 4.7 to 8.4'.		
10 / 745						ML		Yellow-brown (10 YR 5/4) SILT, some fine to medium Sand, little Clay, aplastic, moderately dense, moderate odor, damp.		
	6	10-12	1.1	8.3	+	SP		Yellow-brown (10 YR 5/4) fine to medium subangular SAND, some Silt, little to few Clay, moderately dense to moderately loose, weak odor, damp to dry.	SAND	
	7	12-14	1.3	4.3	+					
15 / 740	8	14-16	1.2	5.7	+					

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Remarks: bgs = below ground surface; NA=Not Applicable/Not Available
Samples collected 0-2', 8-10', 10-12' and 14-16' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
3/29/01	17.6' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-28

Borehole Depth: 22' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
20 / 735	9	16-18	1.4	45.2	+	SP		Yellow-brown (10 YR 5/4) fine to medium subangular SAND, some Silt, little to few Clay, moderately dense to moderately loose, weak odor, damp to dry.	SAND	Borehole backfilled with Bentonite Pellets.
	10	18-20	2.0	4.8	+					
	11	20-22	2.0	4.8	+					
25 / 730										
30 / 725										
35 / 720										

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Remarks: bgs = below ground surface; NA=Not Applicable/Not Available
Samples collected 0-2', 8-10', 10-12' and 14-16' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
3/29/01	17.6' bgs	

Project: 64410.011 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-36-28.dat
Date: 8/10/01

Date Start/Finish: 3/28/01 - 3/28/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Sampler Size: 2 ft cont. acetate sleeve
Auger Size:
Rig Type: 66 DT Advance Geoprobe

Northing: 567634.3
Easting: 13306850.93
Casing Elevation: NA

Borehole Depth: 16.5' bgs
Surface Elevation: 753.86

Descriptions By: S. Duly

Boring ID: RFI-36-29

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
755 / 0									
	1	0-2	1.5	89.2	+	FL		Concrete.	FILL
						ML		Yellow-brown (10 YR 5/4) fine to medium subangular SAND, little Clay, some Silt, aplastic, no odor, damp to dry, moderately loose.	SILT
								Black (10 YR 2/1) SILT, little Clay, some fine to medium subangular Sand, aplastic, no odor, dry to damp, moderately dense. Increased clay content last inch to lower contact.	
	2	2-4	2.0	230	+	CL		Dark gray-brown (10 YR 4/2) CLAY, some Silt, little fine to medium subangular Sand, trace fine to medium subrounded Gravel, plastic, moderate odor, dry, soft to moderately stiff.	CLAY
750 / 5	3	4-6	2.0	165	+	ML		SILT, as above at 0.8 to 1.6', but very dark gray-brown (10 YR 3/2), some Clay, weak to moderate odor.	SILT
	4	6-8	2.0	161	-	SP/ML		Gray-brown (10 YR 5/2) very fine to medium SAND and SILT, little to few Clay, no odor, dry to damp, moderately dense.	SAND & SILT
745 / 10	5	8-10	1.8	245	-			Brown (10 YR 5/3).	
	6	10-12	1.9	106	+	SP		Dark gray (10 YR 2/1) fine to medium subangular SAND, some Silt, little to few Clay, dry, moderately loose.	SAND
	7	12-14	1.7	75.8	+			Saturated, weak odor.	
740 / 15	8	14-16.	2.0	12.9	-				

Boring Construction

- 6-in diameter curb box
- Cement Seal (0 - 8" bgs)
- Portland cement grout (0 - 2.0' bgs)
- Bentonite chip seal (2.0' - 10.0' bgs)
- 1.5" ID Sch. 40 PVC riser (to 11.5' bgs)
- #5 well sand - K&E well gravel (10.0' - 16.5' bgs)
- 1.5" ID Sch. 40 PVC 0.010" Slot Screen (11.5' - 16.5' bgs)

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10' and 10-12' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
3/28/01	13.0	

Project: 64410.011 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-36-29.dat
Date: 8/10/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-29

Borehole Depth: 16.5' bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
		8	14-16.	2.0	12.9	-	SP		Dark gray (10 YR 2/1) fine to medium subangular SAND, some Silt, little to few Clay, dry, moderately loose.	sand	#5 well sand - K&E well gravel (10.0' - 16.5' bgs); 1.5" ID Sch. 40 PVC 0.010" Slot Screen (11.5' - 16.5' bgs); 1.5" ID Sch. 40 PVC bottom cap
	735										
20											
	730										
25											
	725										
30											
	720										
35											

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10' and 10-12' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
3/28/01	13.0	

Date Start/Finish: 12/15/01 **Drilling Company:** Rau Drilling **Driller's Name:** Rick Rau **Drilling Method:** HSA **Sampler Size:** NA **Auger Size:** 3 1/4" ID HSA **Rig Type:** CME 45 Skid Rig	**Northing:** 567621.36 **Easting:** 13306850.62 **Casing Elevation:** NA **Borehole Depth:** 22' bgs **Surface Elevation:** 753.72 **Descriptions By:** SM Duly	**Boring ID:** RFI-36-29R **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0 0	NA	NA	NA	NA	NA	NA	NA	FL	Concrete.	FILL
								ML	Yellow-brown (10 YR 5/4) fine to medium subangular SAND, little Clay, some Silt, aplastic, no odor, damp to dry, moderately loose.	SILT
								CL	Black (10 YR 2/1) SILT, little Clay, some fine to medium subangular Sand, aplastic, no odor, dry to damp, moderately dense. Increased clay content last inch to lower contact.	CLAY
									Dark gray-brown (10 YR 4/2) CLAY, some Silt, little fine to medium subangular Sand, trace fine to medium subrounded Gravel, plastic, moderate odor, dry, soft to moderately stiff.	
5 5								ML	SILT, as above at 0.8 to 1.6', but very dark gray-brown (10 YR 3/2), some Clay, weak to moderate odor.	SILT
								SP/ ML	Gray-brown (10 YR 5/2) very fine to medium SAND and SILT, little to few Clay, no odor, dry to damp, moderately dense.	SAND & SILT
									Brown (10 YR 5/3).	
10 10								SP	Dark gray (10 YR 2/1) fine to medium subangular SAND, some Silt, little to few Clay, dry, moderately loose.	SAND
									Saturated, weak odor.	
15 15										

Boring Construction
Flush Mount Well
2" Diameter PVC Riser 0-11' bgs
Bentonite Grout 0-6' bgs
Bentonite Seal 6-8' bgs
Sand Pack 8-22' bgs
2" Diameter Slot 0.010 PVC Screen 11-21' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Stratigraphic Description from original log for RFI-36-29.

Water Level Data

Date	Depth	Elev.

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-29R

Borehole Depth: 22' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
20 20	NA	NA	NA	NA	NA	NA	NA	SP		Dark gray (10 YR 2/1) fine to medium subangular SAND, some Silt, little to few Clay, dry, moderately loose. Blind drilled from 16.5 to 22' bgs to set well. No sampling conducted.	sand	Sand Pack 8-22' bgs; 2" Diameter Slot 0.010 PVC Screen 11-21' bgs
										End of borehole at 22.0'.		
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Stratigraphic Description from original log for RFI-36-29.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 3/28/01 - 3/28/01 **Drilling Company:** Mateco **Driller's Name:** Gary Swift **Drilling Method:** Direct Push **Sampler Size:** 2 ft cont. acetate sleeve **Auger Size:** **Rig Type:** 66 DT Advance Geoprobe	**Northing:** 567440.66 **Easting:** 13306881.86 **Casing Elevation:** NA **Borehole Depth:** 16' bgs **Surface Elevation:** 753.51 **Descriptions By:** SM Duly	**Boring ID:** RFI-36-30 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	755										
0							FL		Concrete.	FILL	
		1	0-2	1.2	215	-	SP		Brown (10 YR 5/3) fine to medium subangular SAND, little to some Silt, little Clay, aplastic, no odor, dry to damp, moderately dense to loose.		
							ML		Black (10 YR 2/1) SILT, little to some fine to medium subangular Sand, little Clay, aplastic, no odor, dry to damp, moderately dense.	SILT	
							SP		SAND, as above at 0.6 to 1.2'.		
	750	2	2-4	2.0	324	-			Very dark gray (10 YR 3/1) CLAY, some Silt, little fine to medium subangular Sand, plastic, weak odor, damp, soft to moderately stiff. Local increases of silt to a silty clay.	CLAY	Borehole backfilled with Bentonite Pellets.
5		3	4-6	2.0	206	-	CL				
		4	6-8	1.8	970	-					
							ML		Brown (10 YR 5/4) SILT, little Clay, little fine to medium subangular Sand, aplastic, moderate odor, dry, dense.		
	745	5	8-10	1.8	1331	+			Yellow-brown (10 YR 5/4) very fine to medium SAND and SILT, little Clay, aplastic, moderate to strong odor, dry to damp, moderately dense. Dark gray-brown (10YR 4/2) 8-9.5' bgs.	SAND & SILT	
10		6	10-12	1.7	3351	-					
							SP/ML				
	740	7	12-14	2.0	3994	+			Saturated.		
15		8	14-16	2.0	1282	-					

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available
Hole collapsed at 12.8' - no well installed.
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
3/28/01	12.9'	

Date Start/Finish: 3/28/01 - 3/28/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: 66 DT Advance Geoprobe
Sampler Size: 2 ft cont. acetate sleeve
Auger Size:
Rig Type:

Northing: 567556.16
Easting: 13306670.89
Casing Elevation: NA

Borehole Depth: 16.5' bgs
Surface Elevation: 753.51

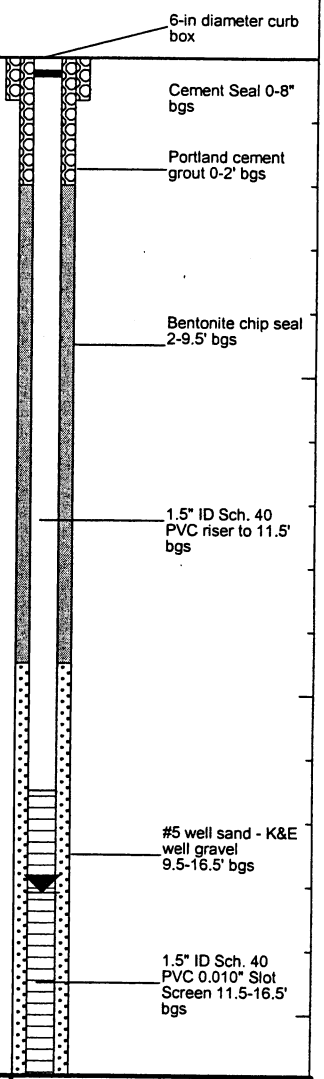
Descriptions By: SM Duly

Boring ID: RFI-36-31

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
755 / 0									
						FL		Concrete.	FILL
	1	0-2	0.8	5.0	-			Black SILT, little Clay, some to little fine to medium Sand, dry to moist, moderately dense.	SILT
750	2	2-4	2.0	11.8	-	ML		Brown SILT, some Clay, little fine to medium Sand, weak odor, dry, dense.	
5	3	4-6	2.0	6.6	-				
	4	6-8	1.3	41.6	-	CL		Dark yellow-brown CLAY, some Silt, little fine to medium Sand, plastic, dry to damp, soft to moderately stiff.	CLAY
745	5	8-10	1.7	223	+	ML		SILT, as above at 0.6 - 3.1'.	SILT
10	6	10-12	1.2	89.4	+	SP/ML		Brown very fine to fine SAND and SILT, trace to little Clay, dry, moderately dense.	SAND & SILT
740	7	12-14	1.5	114	+				
15	8	14-16.	1.8	165	-				



Boring Construction

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10' and 10-12' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
3/28/01	13.1	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-31

Borehole Depth: 16.5' bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
		8	14-16	1.8	165	-	SP/ML		Brown very fine to fine SAND and SILT, trace to little Clay, dry, moderately dense.		#5 well sand - K&E well gravel 9.5-16.5' bgs; 1.5" ID Sch. 40 PVC 0.010" Slot Screen 11.5-16.5' bgs; 1.5" ID Sch. 40 PVC bottom cap
20	735										
25	730										
30	725										
35	720										

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10' and 10-12' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
3/28/01	13.1	

Date Start/Finish: 3/28/01 - 3/28/01 **Drilling Company:** Mateco **Driller's Name:** Gary Swift **Drilling Method:** 66 DT Advance Geoprobe **Sampler Size:** 2 ft cont. acetate sleeve **Auger Size:** **Rig Type:**	**Northing:** 568531.05 **Easting:** 13306648.95 **Casing Elevation:** NA **Borehole Depth:** 22.5' bgs **Surface Elevation:** 756.28 **Descriptions By:** SM Duly	**Boring ID:** RFI-36-32 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0											6-in diameter curb box
							FL		Concrete.	FILL	
							SP		Dark yellow-brown fine to medium SAND, some Silt, little Clay, dry to moist, moderately dense.		Cement Seal 0-8" bgs
	755	1	0-2	1.4	23.2	-	ML		Black SILT, some fine to medium Sand, little Clay, dry, moderately dense to dense.	SILT	
		2	2-4	1.6	7.9	-			Yellow-brown SILT, little fine to medium Sand, some Clay, dry, dense.		Portland cement grout 0-2' bgs
									SILT, as above at 0.9 to 2.4'.		
5		3	4-6	1.8	6.4	-	CL		Brown SILTY CLAY, little to some fine to medium Sand, trace fine to coarse Gravel, plastic, dry, dense.	SILTY CLAY	Bentonite chip seal 2-15' bgs
	750	4	6-8	2.0	11.7	-					
		5	8-10	2.0	10.9	-	ML		Yellow-brown SILT, little to some Clay, little fine to medium Sand, moist, moderately dense to dense.	SILT	1.5" ID Sch. 40 PVC riser to 17.5' bgs
10											
	745	6	10-12	1.4	24.7	-	CL		Brown CLAY, similar to Silty Clay from 4.1 to 7.5' bgs, but no gravel; some to little Silt, trace to little Sand.		
		7	12-14	1.4	27.3	-	SP		Dark gray-brown fine to medium SAND, some Silt, little Clay, dry to moist, moderately dense to moderately loose.	SAND	
15		8	14-16	1.4	13.6	-					#5 well sand - K&E well gravel 15-22.5' bgs

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10',12-14' and 16-18' bgs.

Water Level Data

Date	Depth	Elev.
3/28/01	18.8	

Project: 64410.011 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-36-32.dat Date: 5/21/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-32

Borehole Depth: 22.5' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
740	9	16-18	1.5	24.7	-	SP		Dark gray-brown fine to medium SAND, some Silt, little Clay, dry to moist, moderately dense to moderately loose.	SAND	#5 well sand - K&E well gravel 15-22.5' bgs
	10	18-20.	2.5	15.9	-					1.5" ID Sch. 40 PVC 0.010" Slot Screen 17.5-22.5' bgs
20										
735	11	20.5-2	NA	NA	NA					1.5" ID Sch. 40 PVC bottom cap
25										
730										
30										
725										
35										

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10',12-14' and 16-18' bgs.

Water Level Data

Date	Depth	Elev.
3/28/01	18.8	

Date Start/Finish: 3/29/01 - 3/29/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: 66 DT Advance Geoprobe
Sampler Size: 2 ft cont. acetate sleeve
Auger Size:
Rig Type:

Northing: 568537.9
Easting: 13306391.96
Casing Elevation: NA

Borehole Depth: 20' bgs
Surface Elevation: 756.53

Descriptions By: SM Duly

Boring ID: RFI-36-33

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0							FL		Concrete.	FILL
	755	1	0-2	1.4	4.4	-	SP		Yellow-brown fine to medium SAND, little Clay, some Silt, dry to moist, moderately dense.	SAND
		2	2-4	2.0	7.3	-	ML		Very dark brown SILT, some Clay, little fine to medium Sand, dry, dense.	SILT
5		3	4-6	1.8	4.7	-	ML/CL		Brown SILT and CLAY, little fine to medium Sand, trace fine to medium Gravel, locally plastic, dry, moderately soft to moderately stiff, dense.	SILT & CLAY
	750	4	6-8	2.0	5.6	-				
		5	8-10	2.0	4.9	-				
10		6	10-12	1.6	7.9	-	ML		Brown SILT, little to some Clay, little to some fine to medium Sand, dry, moderately dense.	SILT
	745	7	12-14	1.4	10.0	-	SP/ML		Light yellow-brown very fine to fine SAND and SILT, little Clay, dry to moist, moderately dense.	SAND & SILT
15		8	14-16	1.4	12.4	-				

Boring Construction

Borehole backfilled with Bentonite Pellets.

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10' and 16-18' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
3/29/01	18.1' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-33

Borehole Depth: 20' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
740	9	16-18	1.5	62.0	+	SP/ML		Light yellow-brown very fine to fine SAND and SILT, little Clay, dry to moist, moderately dense.	SAND & SILT	Borehole backfilled with Bentonite Pellets.
20	10	18-20	2.0	13.6	+					
735										
25										
730										
30										
725										
35										

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10' and 16-18' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
3/29/01	18.1' bgs	

Date Start/Finish: 06/28/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4"
Rig Type: CME 55

Northing: 567467.53
Easting: 13307029
Casing Elevation: NA

Borehole Depth: 15' bgs
Surface Elevation: 750.26

Descriptions By: SC Kerr

Boring ID: RFI-36-34

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	750	1	0-2	3 2 3 2	5	1.3	>9999	+	FL		Concrete.	FILL	
									SP		Yellow brown 10 YR 5/6 fine to medium SAND, some Silt, moist, loose, no odor.	SAND	
		2	2-4	2 4 4 2	8	1.3	N/A	+	CL		Yellow brown 10 YR 5/4 Silty CLAY, few fine to medium Sand, stiff, pp=4.0, low plastic, damp, no odor, soften at 3.9' bgs and more plastic.	CLAY and SILT	
5	745	3	4-6	3 4 4 4	8	1.5	888	+	ML		Yellow brown 10 YR 5/6 aplastic SILT, little fine Sand, little Clay, moist, moderately dense, no odor.		
		4	6-8	1 4 6 6	10	1.3	69.7	+	SP		Gray 10 YR 5/1 fine SAND, some Silt, clay seams 0.5" to 2", little balck staining, moist to wet, hydrocarbon (?) odor, becomes no staining at 8.6' bgs.	SAND	
		5	8-10	6 10 8 8	18	1.5	128	-					
10	740	6	10-12	1 2 3 4	5	1.4	26.4	-	ML		Yellow brown 10 YR 5/4 aplastic SILT, little fine Sand, saturated, moderately dense, no odor, color changes to gray 10 YR 5/1 at 11.8' bgs.	CLAY and SILT	
		7	12-14	1 3 6 7	9	1.7	0	+	CL		Gray 10 YR 5/1 CLAY, mottling, highly plastic, pp=1.5, no odor.		
		8	14-15						SP		Yellow brown 10 YR 5/4 fine to coarse subangular SAND (predominantly medium), saturated, loose, no odor, gray clay in tip at 18.0' bgs, pp>2.0.	SAND	
15	735												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available; PID Background:0.0 ppm
+ = Positive Test Result
Samples collected 0.9-2.9' and 6.9-8.9' bgs.

Water Level Data

Date	Depth	Elev.
6/28/01	9.5	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-36-34.dat Date: 07/13/01

Date Start/Finish: 3/27/01 **Drilling Company:** Mateco **Driller's Name:** NA **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 45 Truck-mount	**Northing:** 567564.86 **Easting:** 13307039.45 **Casing Elevation:** 750.05 **Borehole Depth:** 26' bgs **Surface Elevation:** 750.05 **Descriptions By:** B. Loomis	**Boring ID:** RFI-36-35 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 750	1	0-2	NA 2 3 3	5	1.0	5.4	-	FILL	CONCRETE.	FILL	8" diameter steel flushmount with cement pad 0-1' bgs.
								SP	Brown medium SAND.	alternating sand and clay	
								CL	Dark brown-black SANDY CLAY.		
								SP	Brown medium SAND.		
	2	2-4	3 3 4 4	7	1.8	2.0	-	SP	Dark gray-brown SANDY CLAY.		
								CL	Brown medium SAND.		
								SP	Brown soft, plastic CLAY with brown and black medium Sand.		
								CL	Brown and black medium SAND.		
								SP	Brown medium SAND.		
5 745	3	4-6	3 3 5 4	8	2.0	6.5	-	CL	Brown highly plastic CLAY.		Bentonite seal 2-12' bgs.
								SP	Brown fine to medium SAND.		
								CL	Dark brown SANDY CLAY, trace Silt.		
	4	6-8	2 2 2 3	4	2.0	7.7	-	SP	Brown SANDY CLAY, trace Silt, rounded Gravel @ 5.0' bgs.		
								CL	Dark brown SANDY CLAY.		
									Brown fine to medium SAND.		
									Dark brown and black SANDY CLAY with Silt.		
	5	8-10	2 3 5 6	8	2.0	3.0	-		Brown fine to medium SAND.		2" ID Sch. 40 PVC riser to 15' bgs.
10 740	6	10-12	5 6 4 10	10	1.5	3.3	-	SP	Light brown-gray fine to medium SAND. Brown/light brown fine to medium SAND.	SAND	
	7	12-14	7 8 7 7	15	1.5	8.5	-		Moist to wet.		Sand pack 12 to 26' bgs.
15 735	8	14-16	3 3 4 3	7	1.5	7.0	-		Saturated.		2" ID Sch. 40 PVC 0.010" slotted screen 15-25' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0-2' 8-10' and 12-14' bgs.

Water Level Data

Date	Depth	Elev.
3/27/01	14.0'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-35

Borehole Depth: 26' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	3 3 5 4	8	1.2	1.0	-			Brown/light brown fine to medium SAND, saturated.	SAND	2" ID Sch. 40 PVC 0.010" slotted screen 15-25' bgs.
	10	18-20	2 3 5 6	8	1.3	0.0	-	SP				
20 730	11	20-22	2 3 5 5	8	2.0	NA	NA					Sand pack 12 to 26' bgs.
	12	22-24	3 4 4 5	8	2.0	NA	NA	SP/SM		Gray-brown very fine SAND with Silt.	sand with silt	
25 725	13	24-26	4 4 3 4	7	1.8	0.0	-	CL/ML		Gray firm plastic CLAY and SILT. Glacial clay till.	clay and silt	
30 720												
35 715												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0-2' 8-10' and 12-14' bgs.

Water Level Data

Date	Depth	Elev.
3/27/01	14.0'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-36-25.dat Date: 2/22/02

Date Start/Finish: 6/29/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: 567713.93
Easting: 13307072.25
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 750.19

Descriptions By: SM Duly

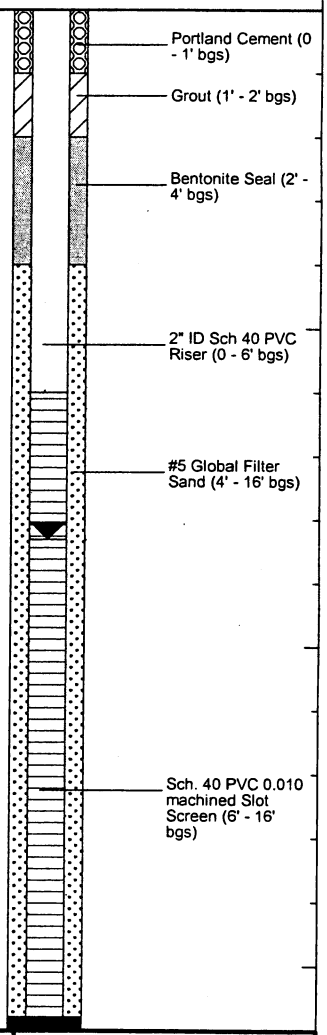
Boring ID: RFI-36-36

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0 / 750								FL		CONCRETE.	FILL
	1	0-2	5, 4, 6, 7	10	1.6	>10,000	+	SM		Yellow-brown (10YR 5/4) Silty SAND, fine to medium subrounded to subangular Sand, aplastic, moderate dense to moderate loose, Fill.	FILL
	2	2-4	5, 4, 3, 3	7	1.8	>10,000	+	CL		Black (10YR 2/1) Silty CLAY, little fine to medium subangular Sand, trace subrounded fine to medium Gravel, moderately stiff to stiff, no odor, dry to damp.	FILL
								SP	× ×	White (10YR 1/1) semi-lithified SAND, fine to coarse angular Sand-sized fragments of unknown Fill material, no odor, dense, dry.	FILL
								ML		Black (10YR 2/1) SILT, little fine to medium subangular to subrounded Sand, few Clay, aplastic, no odor, damp, dense, old Roots present, also former topsoil horizon.	SILT
5 / 745	3	4-6	3, 3, 2, 3	5	1.5	>10,000	+	CL		Gray (10YR 5/1) CLAY, some Silt with local lenses of Silt up to 1" wide throughout, little fine to medium subangular to subrounded Sand, trace fine to medium subrounded Gravel, no odor, damp, moderately stiff, extensively oxidized to dark yellow-brown (10YR 2/4) throughout. at 6.0': soft.	CLAY
	4	6-8	1, 4, 6, 7	10	2.0	>10,000	+	ML		Yellow-brown (10YR 5/4) SILT, some fine subangular Sand, aplastic, no odor, damp to moist, moderately dense to dense.	SILT
	5	8-10	4, 7, 9, 11	16	1.7	324	-	SP		Yellow-brown (10YR 5/6) subangular fine to medium SAND, some Silt, no odor, moist to wet, moderately dense to dense. at 8.3': saturated.	SAND
10 / 740	6	10-12	5, 5, 7, 8	12	2.0	4,061	-	ML		Gray-brown (10YR 5/2) SILT, little fine subangular Sand, few Clay, no odor, aplastic, dense, saturated. Glacial-alluvial. Becomes gray (10YR 5/1), decreased Sand to few to trace.	SILT
	7	12-14	7, 4, 6, 6	10	NA	830	-	CL		Homogeneous gray (10YR 5/1) Silty CLAY, little fine to medium subrounded Sand, no odor, very stiff, moist to damp. Clay Till. at 13': Intermittant silt lenses up to 1" wide throughout.	SILTY CLAY
15 / 735	8	14-16	NA	NA	NA	NA	NA	SP		Gray (10YR 6/1) subangular fine to medium SAND, some to little Silt, aplastic, no odor, wet (saturated), dense. Alluvial/riverine deposit.	SAND

Boring Construction



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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Background PID = 0.0 ppm; + = Positive Test Result.
Samples collected 1-3' and 5-7' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 11/29/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 2 1/4" ID
Rig Type: CME 55

Northing: 567570.92
Easting: 13307040.51
Casing Elevation: NA

Borehole Depth: 3' bgs
Surface Elevation: 750.46

Descriptions By: SM Duly

Boring ID: RFI-36-36R

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	750		NA	NA	NA	NA	NA	NA	FL		CONCRETE.	FILL	
		1	1-3	7 10 9 7	19	1.3	NA	NA	SM		Yellow-brown (10YR 5/4) Silty SAND, fine poorly graded subangular Sand, few Clay, no odor, dense, aplastic, dry. Fill.	Silty SAND	Borehole backfilled with bentonite (0-3' bgs).
									FL		Black (10YR 2/1) silt- to sand-sized angular fragments of ASH/CINDERS/SLAG, no odor, dense, aplastic, dry. Fill.	SILT	
5	745												
10	740												
15	735												

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Sample collected 1-3' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 09/04/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4" ID HSA
Rig Type: CME 55

Northing: 567755.54
Easting: 13307195.18
Casing Elevation: NA

Borehole Depth: 24' bgs
Surface Elevation: 757.15

Descriptions By: SM Duly

Boring ID: RFI-36-37

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	760												
0		1	0-2	2 4 7 8	11	1.6	12.4	-			Gray-brown (10 YR 5/2) SILT, little fine to coarse subrounded to subangular Sand, little Clay, organic matter such as roots and vegetation present, no odor, moderately dense to loose, aplastic, dry. Topsoil		
	755	2	2-4	9 11 12 14	23	1.0	14.5	-	ML		SILT as above, but brown, trace fine to coarse rounded Gravel, dense, weathered and oxidized. Glacial till.	SILT	
5		3	4-6	8 10 12 12	22	2.0	19.2	-			Color change to yellow-brown (10 YR 5/6).		
	750	4	6-8	3 3 4 3	7	2.0	24.7	-			Yellow-brown (10 YR 6/4) fine to medium subangular poorly graded SAND, some to little Silt, few Clay, no odor, moderately dense, aplastic, damp. Glacial-alluvial.		
		5	8-10	2 3 3 5	6	1.4	0.0	-			Occasional Silt lenses up to 1-2" thick throughout.		
10		6	10-12	2 3 4 6	7	1.5	0.0	-	SP			SAND	Borehole tremie grouted.
	745	7	12-14	5 8 8 9	16	1.7	6.5	-			Increased moisture to moist, decreased silt to few to little.		
15		8	14-16	3 3 4 4	7	1.3	0.0	-			Trace Clay, moist to wet.		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0-2', 6-8' 8-10' and 14-16' bgs.

Water Level Data

Date	Depth	Elev.
09/04/01	16.0'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-37

Borehole Depth: 24' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
740	9	16-18	1 2 5 6	7	1.2	0.0	-	SP		Yellow-brown (10 YR 6/4) fine to medium poorly graded subangular SAND, some to little Silt, few Clay, no odor, moderately dense, aplastic, saturated. Glacial-alluvial.	SAND	
	10	18-20	3 4 6 11	10	1.4	0.0	-					
20	11	20-22	3 5 5 7	10	1.4	0.0	-			Becomes gray (10 YR 5/1), little to some Silt, fining downwards.		
735	12	22-24	4 3 5 6	8	1.7	0.0	-	ML		Gray (10 YR 5/1) SILT, some Clay, few fine subangular Sand, no odor, moderately dense, aplastic, saturated. Glacial-alluvial.	SILT	Borehole tremie grouted.
25												
730												
30												
725												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0-2', 6-8' 8-10' and 14-16' bgs.

Water Level Data

Date	Depth	Elev.
09/04/01	16.0'	

Date Start/Finish: 12/16/01 **Drilling Company:** Rau Drilling **Driller's Name:** Rod Chaperon **Drilling Method:** Direct Push **Sampler Size:** Macro 4' x 2" OD **Auger Size:** NA **Rig Type:** Mule-mounted Geoprobe	**Northing:** 567711.49 **Easting:** 13306674.10 **Casing Elevation:** NA **Borehole Depth:** 16' bgs **Surface Elevation:** 754.26 **Descriptions By:** SM Duly	**Boring ID:** RFI-36-38 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0						FL		CONCRETE.	FILL	
	1	0-4	3.5	0.0	-	SM		Yellow-brown (10YR 5/4) Silty SAND, fine to medium poorly graded subangular Sand, few Clay, no odor, dense, aplastic, dry. Fill Sand.	SILTY SAND	
				0.0	-			Black (10YR 2/1) fine to coarse subangular to angular well-graded Silty SAND, few Clay, debris and glassy fragments present, no odor, dense, aplastic, dry. Foundry Sand		
								4.2-4.5 CONCRETE debris.		
5 5	2	4-8	4.0	0.0	-	CL		Yellow-brown (10YR 5/4) Silty Lean CLAY, few fine to coarse subangular to subrounded Sand, trace fine to medium subrounded Gravel, stiff, weakly plastic, dry, occasional patches and lenses of increased Silt up to 2" thick.	SILTY CLAY	
				0.0	-					
	3	8-10	NA	0.0	-	SM		Yellow-brown (10YR 5/4) Silty SAND, fine to medium poorly graded subangular Sand, few Clay, no odor, dense, aplastic, dry. Fill/Foundry Sand.	SILTY SAND	Borehold backfilled with sand and cement to ground surface.
10 10								Light yellow-brown (10YR 6/4) fine to medium poorly graded subangular Silty SAND, few Clay, no odor, dense, aplastic, dry. Glacial alluvial.		
	4	10-12	NA	0.0	-			Becomes damp.		
	5	12-14	NA	0.0	-			Becomes moist.		
								Saturated, becomes gray (10YR 5/1).		
15 15	6	14-16	NA	0.0	-					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.5-2.5', 8.5-10.5' and 10.5-12.5' bgs.

Water Level Data

Date	Depth	Elev.
12/16/01	14.0' bgs	

Project: 644.10.101 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-36-38.dat
Date: 1/9/02

Date Start/Finish: 12/16/01 **Drilling Company:** Rau Drilling **Driller's Name:** Rod Chaperon **Drilling Method:** Direct Push **Sampler Size:** Macro 4' x 2" OD Acetate Sleeve **Auger Size:** NA **Rig Type:** Mule-mounted Geoprobe	**Northing:** 567644.21 **Easting:** 13306660.64 **Casing Elevation:** NA **Borehole Depth:** 16' bgs **Surface Elevation:** 754.03 **Descriptions By:** SM Duly	**Boring ID:** RFI-36-39 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0						FL		CONCRETE.	FILL	
				0.0	-	SM		Yellow-brown (10YR 5/4) fine to medium poorly graded subangular Silty SAND, few Clay, no odor, dense, aplastic, dry. Fill Sand.		
	1	0-4	3.5			SW		Black (10YR 2/1) fine to coarse angular to subangular well-graded SAND, some Silt, few Clay, no odor, dense, aplastic, dry. Foundry Sand.	SAND	
				0.0	-					
5 5				0.0	-	CL		Light yellow-brown (10YR 6/4) Silty Lean CLAY, few fine to coarse grained subangular to subrounded Sand, trace fine to medium rounded Gravel, no odor, stiff, weakly plastic, dry.	SILTY CLAY	
	2	4-8	NA					4.5': Local patches of oxidation.		
				0.0	-					
						FL		CEMENT Debris.	FILL	
						SW		Black (10YR 2/1) fine to coarse angular to subangular well-graded SAND (SW), some Silt, few Clay, no odor, dense, aplastic, dry. Foundry Sand.	SAND	
				0.0	-					
10 10	3	8-12	4.0					Yellow-brown (10YR 5/4) fine to medium poorly graded predominantly fine subangular Silty SAND, few Clay, no odor, dense, aplastic, dry. Glacial alluvial.	SILTY SAND	
				0.0	-			Damp.		
						SM		Moist.		
				0.0	-					
	4	12-16	3.7					Saturated.		
15 15				0.0	-					

Borehold backfilled with sand and cement to ground surface (0-16' bgs).

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.5-2.5', 8.5-10.5' and 10.5-12.5' bgs.

Water Level Data

Date	Depth	Elev.
12/16/01	14.0' bgs	

Project: 644.10.101 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-36-39.dat Date: 1/9/02

Date Start/Finish: 12/16/01 **Drilling Company:** Rau Drilling **Driller's Name:** Rod Chaperon **Drilling Method:** Direct Push **Sampler Size:** Macro 4' x 2" OD Acetate Sleeve **Auger Size:** NA **Rig Type:** Mule-mounted Geoprobe	**Northing:** 567579.52 **Easting:** 13306740.58 **Casing Elevation:** NA **Borehole Depth:** 16' bgs **Surface Elevation:** 753.92 **Descriptions By:** SM Duly	**Boring ID:** RFI-36-40 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	0						FL		CONCRETE.	FILL	
					0.0	-	SM		Dark yellow-brown (10YR 4/6) fine to medium poorly graded subangular Silty SAND, little Clay, no odor, dense, aplastic, dry. Fill Sand.	SILTY SAND	
		1	0-4	2.5							
					0.0	-	SW		Black (10YR 2/1) fine to coarse subangular well graded SAND, some Silt, trace Clay, no odor, dense, aplastic, damp to moist. Foundry Sand.	SAND	
5	5				0.0	-	CL		Light yellow-brown (10YR 6/4) Silty Lean CLAY, few fine to coarse subangular to subrounded Sand, trace fine to medium subrounded Gravel, no odor, stiff, weakly plastic, dry.	SILTY CLAY	
		2	4-8	4.0					Becomes Gray (10YR 5/1).		
					0.0	-					
					0.0	-	SM		Pale brown (10YR 6/3) fine to medium subangular poorly graded Silty SAND, few Clay, no odor, dense, aplastic, damp.	SILTY SAND	Borehold backfilled with sand and cement to ground surface.
10	10	3	8-12	NA					Cement debris.		
									Becoming increasingly gray. Moist.		
					0.0	-			11.1-11.5: Varved.		
					0.0	-					
		4	12-16	NA							
15	15				0.0	-			Saturated.		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.5-2.5', 8.5-10.5' and 12.5-14.5' bgs.

Water Level Data

Date	Depth	Elev.
12/16/01	15.2' bgs	

Date Start/Finish: 11/29/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 2 1/4" ID
Rig Type: CME 55

Northing: 567617.88
Easting: 13307049.37
Casing Elevation: NA

Borehole Depth: 3' bgs
Surface Elevation: 750.56

Descriptions By: SM Duly

Boring ID: RFI-36-41

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 750		NA	NA	NA	NA	NA	NA	FL		CONCRETE.	FILL	
								SM		Yellow-brown (10YR 5/4) Silty SAND, fine poorly graded subangular Sand, few Clay, no odor, moderately dense, aplastic, dry. Fill.		Borehole backfilled with bentonite to grade.
	1	1-3	7 7 9 11	16	1.3	NA	NA	CL		Gray (10YR 5/1) lean Silty CLAY, little fine to medium subangular Sand, few fine rounded to subrounded Gravel, no odor, stiff, weakly plastic, dry.	SILTY CLAY	
5 / 745												
10 / 740												
15 / 735												

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Sample collected 1-3' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 11/29/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 2 1/4" ID
Rig Type: CME 55

Northing: 567569.09
Easting: 13307008.78
Casing Elevation: NA

Borehole Depth: 3' bgs
Surface Elevation: 749.99

Descriptions By: SM Duly

Boring ID: RFI-36-42

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 750												
			6					FL		CONCRETE.	FILL	
	1	0-2	60/ 1"	NA	0.2	NA	NA	SM		Yellow-brown (10YR 5/4) fine poorly graded Silty SAND, few Clay, no odor, moderately dense, dry. Fill.	TY SA	Borehole backfilled with bentonite to grade.
										CONCRETE (refusal -- spoon).		
		NA	NA	NA	NA	NA	NA	FL			FILL	
5 745												
10 740												
15 735												

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Sample collected 0.1-1.5' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/15/01 **Drilling Company:** RAU Drilling **Driller's Name:** Rick Rau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4"; 8" hole **Rig Type:** CME 45 Skid Rig	**Northing:** 567440.01 **Easting:** 13306888.25 **Casing Elevation:** NA **Borehole Depth:** 21' bgs **Surface Elevation:** 753.26 **Descriptions By:** SM Duly	**Boring ID:** RFI-36-43 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								FL		CONCRETE- pre-cored.	FILL	Concrete 0-1' bgs
	1	0.9-2.9	5 10 24 15	34	1.2	0.0	NA	SP		Dark yellow-brown (10YR 4/4) fine to medium subangular SAND, poorly graded, predominantly medium, little Silt, trace Clay, no odor, very dense, aplastic, damp becoming drier and less dense by 2.8' bgs. Fill Sand.	SAND	
	2	2.9-4.9	21 34 39 38	73	1.5	0.0	NA					Grout 1-5.5' bgs
5 5								SW FL		Black (10YR 2/1) well graded fine to coarse subangular SAND, some to little Silt, few fine to medium subrounded Gravel, few Clay, no odor, moderately dense, dry, Fill Sand and Gravel.		
	3	4.9-6.9	8 9 11 14	20	1.6	0.0	NA			CEMENT debris.		2" ID PVC Riser 0-10' bgs
								CL		Yellow-brown (10YR 5/4) Silty Lean CLAY, little fine to coarse subangular to subrounded Sand, few fine to medium subrounded Gravel, no odor, stiff, moderately plastic, damp.	SILTY CLAY	Bentonite 5.5-7.5' bgs
	4	6.9-8.9	7 10 10 11	20	1.4	0.0	-			Yellow-brown (10YR 5/8) fine poorly graded subangular Silty SAND, little to few Clay, no odor, dense, aplastic, dry.		
10 10	5	8.9-10	6 8 8 9	16	1.4	0.0	-			Becomes Gray (10YR 5/2), decreasing moisture content.		Sand Pack 7.5-21' bgs
	6	10.9-1	6 6 7 7	13	1.4	0.0	-	SM		Glacial alluvial. Gray (10YR 5/1), moderate odor, moist to wet.	SILTY SAND	
	7	12.9-1	6 11 16 16	27	NA	0.0	-			Weak odor (dissipates in air), saturated.		
15 15		NA	NA	NA	NA	NA	NA					0.010 Slot PVC Screen 10-20' bgs

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0.9-2.9', 6.9-8.9' and 10.9-12.9' bgs.

Water Level Data

Date	Depth	Elev.

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-43

Borehole Depth: 21' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
20 20		NA	NA	NA	NA	NA	NA	SM		Yellow-brown (10YR 5/8) fine poorly graded subangular Silty SAND, little to few Clay, no odor, dense, aplastic, dry. Glacial alluvial.	SILTY SAND	Sand Pack 7.5-21' bgs; 0.010 Slot PVC Screen 10-20' bgs
25 25												
30 30												
35 35												

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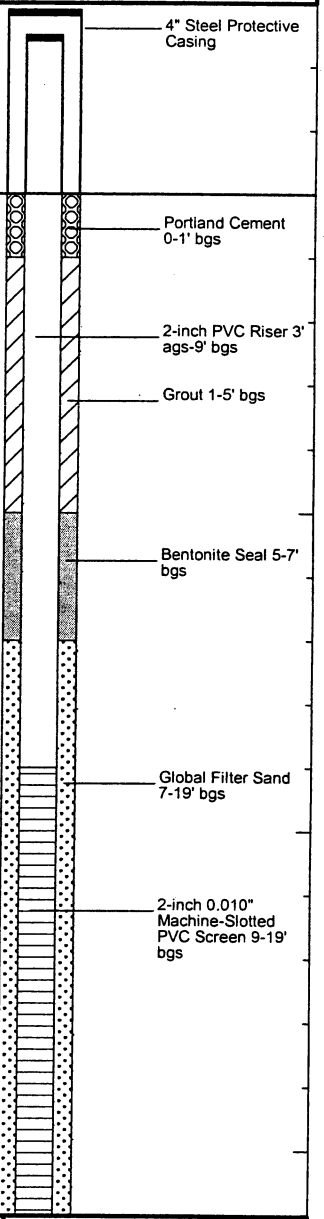
Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0.9-2.9', 6.9-8.9' and 10.9-12.9' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 1/25/02 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 4-1/4" ID HSA **Rig Type:** CME 55 ATV	**Northing:** 568048.47 **Easting:** 13307267.54 **Casing Elevation:** NA **Borehole Depth:** 19' bgs **Surface Elevation:** 752.45 **Descriptions By:** SM Duly	**Boring ID:** RFI-36-44 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0 0	1	0-2	5 5 5 5	10	1.5	0.0	-	GP		Coarse angular poorly-graded GRAVEL, aggregate.	GRAVEL
								ML		Very dark brown (10YR 2/2) SILT, some Clay, few fine to medium subangular to subrounded Sand, old roots present, aplastic, no odor, dense, former topsoil horizon.	SILT
	2	2-4	2 3 3 3	6	1.5	0.0	-			Yellow-brown (10YR 5/4) SILT, some Clay, few fine to medium subrounded to subangular Sand, apistic, no odor, dense, damp.	SILT
5 5	3	4-6	3 3 3 3	6	1.3	0.0	-	SP		Yellow-brown (10YR 5/4) poorly graded fine to medium SAND, some Silt, few Clay, no odor, aplastic, dry, dense, occasional lines of Silt up to 2" wide throughout.	SAND
	4	6-8	4 4 4 3	8	1.6	0.0	-			Damp.	
	5	8-10	2 2 3 2	5	1.6	0.0	-			Moist.	
10 10	6	10-12	2 3 4 5	7	1.8	0.0	-			Wet to moist.	
	7	12-14	3 3 4 4	7	1.4	0.0	-			Saturated, increased coarsens with increased amount of medium Sand, trace Clay, little Silt.	
15 15	8	14-16	2 5 5 6	10	1.6	0.0	-			Increased in gray tones.	



Boring Construction

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3', 7-9' and 9-11' bgs.

Water Level Data

Date	Depth	Elev.
1/24/02	11.5' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-44

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	3 3 2 2	5	1.8	0.0	-	SP		Yellow-brown (10YR 5/4) poorly graded fine to medium SAND, some Silt, few Clay, no odor, aplastic, dry, dense, occasional lines of Silt up to 2" wide throughout. Increased oxidation, dark yellow-brown (10YR 4/6). Gray (10YR 6/1), fining downwards.	SAND	Global Filter Sand 7-19' bgs 2-inch 0.010" Machine-Slotted PVC Screen 9-19' bgs PVC Cap
								ML		Gray (10YR 6/1) SILT, little fine subangular to subrounded Sand, decreasing Sand content with depth, few Clay, no odor, saturated, aplastic, moderately dense.	SILT	
20 20												
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3', 7-9' and 9-11' bgs.

Water Level Data

Date	Depth	Elev.
1/24/02	11.5' bgs	

Date Start/Finish: 1/24/02
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 4-1/4" ID
Rig Type: CME 55 ATV

Northing: 568336.98
Easting: 13307301.33
Casing Elevation: NA

Borehole Depth: 20' bgs
Surface Elevation: 752.83

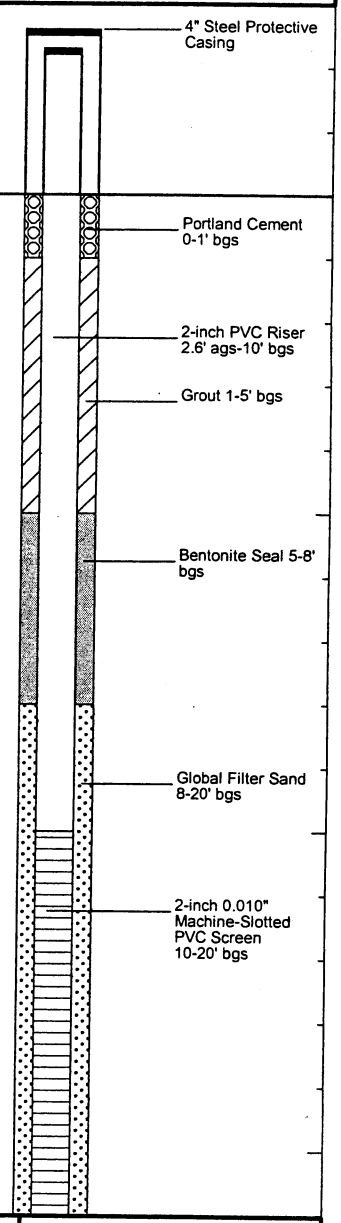
Descriptions By: SM Duly

Boring ID: RFI-36-45

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
755 / 0											
	1	0-2	2 2 2 2	4	1.4	0.0	-	CH		Dark brown (10YR 2/2) Fat Silty CLAY, little to few fine to medium subangular to subrounded Sand, trace coarse angular Gravel, no odor, moist, very plastic, soft, Organic matter such as Roots present. Topsoil.	SILTY CLAY
										Dark yellow-brown (10YR 4/4) Fat Silty CLAY as above.	
750	2	2-4	2 3 3 3	6	0.8	0.0	-			Dark brown (10YR 2/2) Fat Silty CLAY, as above from 0 - 1.1' bgs, old Root structures present, old Topsoil. Becomes lighter in color.	
5	3	4-6	3 6 7 8	13	0.7	0.0	-	SM		Yellow-brown (10YR 5/6) poorly graded fine to medium subangular to subrounded Silty SAND, little Clay, trace coarse subrounded to rounded Gravel, no odor, dense, damp.	SILTY SAND
	4	6-8	3 3 4 4	7	1.5	0.0	-			Increased coarseness with more medium grained sands, decreased Clay to few. Moist, decreased density.	
745	5	8-10	2 2 2 2	4	1.1	0.0	-			Wet to moist.	
10	6	10-12	2 2 2 1	4	1.2	0.0	-				
740	7	12-14	1 1 1 1	2	1.7	0.0	-			Saturated.	
15	8	14-16	1 1 1 2	2	1.2	0.0	-				



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
1/24/02	13.6' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-36-45.dat Date: 01/24/02

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-45

Borehole Depth: 20' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	9	16-18	1 1 1 1	2	1.3	0.0	-	SM		Yellow-brown (10YR 5/6) poorly graded fine to medium subangular to subrounded Silty SAND, little Clay, trace coarse subrounded to rounded Gravel, no odor, dense, damp.	SILTY SAND	Global Filter Sand 8-20' bgs 2-inch 0.010" Machine-Slotted PVC Screen 10-20' bgs
20	10	18-20	1 2 3 3	5	2.0	0.0	-			Gray (10YR 6/1), fining downwards, decreased medium Sand content.		PVC Cap
730												
25												
725												
30												
720												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
1/24/02	13.6' bgs	

Date Start/Finish: 1/10/02 **Drilling Company:** Rau Drilling **Driller's Name:** Alan Rau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" **Rig Type:** CME 75	**Northing:** 568470.07 **Easting:** 13307128.61 **Casing Elevation:** NA **Borehole Depth:** 20' bgs **Surface Elevation:** 750.13 **Descriptions By:** SM Duly	**Boring ID:** RFI-36-46 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	750	1	0-2	2 3 5 6	8	1.8	NA	-	Fill SW		Coarse gravel- to pebble-sized angular Aggregate. Brown (10 YR 5/3) to dark yellow-brown (10 YR 4/4) well-graded fine to coarse subangular SAND, little Silt, few Clay, few fine to coarse angular Gravel (aggregate), aplastic, no odor, damp, dense.	SAND	Cement pad.
		2	2-4	4 4 5 6	9	1.8	NA	-	CL		Gray-brown (10 YR 5/2) CLAY, some Silt, little fine to coarse subrounded Sand, trace fine to medium rounded to subrounded Gravel, weakly to moderately plastic, no odor, damp, moderately stiff. Native Glacial clay till used as backfill. No recovery 4-6' bgs, stone in shoe.	CLAY	
5	745	3	4-6	5 5 4 5	9	0.0	NA	-					Grout 1-6' bgs.
		4	6-8	3 6 6 15	12	1.5	NA	-					Bentonite seal 6-8' bgs.
		5	8-10	6 7 7 8	14	2.0	NA	-	SP		Brown (10 YR 5/3) to yellow-brown (10 YR 5/4) poorly graded fine to medium subrounded to subangular SAND, some to little Silt, few clay, aplastic, no odor, damp, dense. at 8.3': Fine to medium SAND, increased silt content with depth, better sorted. Moist.	SAND	2" ID Sch. 40 PVC riser 0.3-10' bgs. #5 Global filter sandpack 8-20' bgs.
10	740	6	10-12	4 4 5 6	9	1.8	NA	-					
		7	12-14	2 2 3 3	5	1.6	NA	-			Saturated, decreased density with depth, little Silt. Glacial-alluvial.		2" ID Sch. 40 PVC 0.010" slotted screen 10-20' bgs.
15	735	8	14-16	1 1 1 3	2	1.2	NA	-			at 15.6': Some silt, increased density, decreased sand coarseness. Fining downward to lower contact. More gray in color.		

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
1/10/02	12.5'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-36-46

Borehole Depth: 20' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	2 4 5 7	9	1.7	NA	-	SP		Brown (10 YR 5/3) to yellow-brown (10 YR 5/4) poorly graded fine to medium subrounded to subangular SAND, some to little Silt, few clay, aplastic, no odor, saturated, dense.	SAND	#5 Global filter sandpack 8-20' bgs.
	10	18-20	1 4 5 7	9	NA	NA	-					2" ID Sch. 40 PVC 0.010" slotted screen 10-20' bgs.
20 730												
25 725												
30 720												
35 715												

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
1/10/02	12.5'	

Project: 64410.101 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-36-46.dat Date: 2/7/02

Date Start/Finish: 7/23/01 **Drilling Company:** Rau Drilling **Driller's Name:** Alan Rau **Drilling Method:** Direct Push **Sampler Size:** NA **Auger Size:** NA **Rig Type:** Geoprobe	**Northing:** 569630.3 **Easting:** 13307170.15 **Casing Elevation:** NA **Borehole Depth:** 22' bgs **Surface Elevation:** 752.41 **Descriptions By:** S. Kerr	**Boring ID:** RFI-38-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
755								
0						FL	CONCRETE.	FILL
	1	0-2	1.5	16.9	+	SM	Yellowish-brown (10YR 5/8) SAND, some Silt, trace Clay, moderately loose, dry, slight odor.	SAND
						ML SM	Dark yellow-brown (10YR 4/4) SILT, some fine to coarse Sand, trace fine Gravel, trace Clay, dry, no odor.	
750							SAND as above from 0.5' - 1.3' bgs.	
	2	2-4	2.0	26.5	-	ML	SILT as above at 1.3' - 1.6' bgs. Very dark gray (10YR 2/1) SILT, some fine to medium Sand, trace fine to coarse subangular Gravel and Clay, moderately dense, slight odor, dry.	SILT
5	3	4-6	1.9	2.8	NA	CL	Gray (10YR 5/1) CLAY, some Silt and fine to coarse Sand, dry, stiff, low plasticity, oxidized, no odor.	CLAY
	4	6-8	1.7	10.8	NA	ML	Very dark gray-brown 10YR 3/1 SILT, as at 2' - 3.9' bgs, no odor.	SILT
745								
	5	8-10	1.6	0.0	NA	SM	SAND as above from 0.5' - 1.3' bgs.	SAND
10	6	10-12	1.5	0.0	NA	ML	Yellow-brown (10YR 5/6) SILT, some fine Sand, trace Clay, moderately loose, dense, no odor.	SILT
						SM	SAND as above from 0.5' - 1.3' bgs.	SAND
						ML	SILT as above at 10.6' - 11.2' bgs.	SILT
740	7	12-14	1.4	2.0	NA	SM	SAND as above from 0.5' - 1.3' bgs. Damp to moist.	SAND
15	8	14-16	1.7	1.5	NA			

Boring Construction: Borehole backfilled with Bentonite to grade.

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
+ = Positive Test Result
Samples collected 0.5-2.5', 8.5-10.5' and 18.5-20.5' bgs.

Water Level Data

Date	Depth	Elev.
7/23/01	20.5'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-38-01

Borehole Depth: 22' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	9	16-18	2.0	0.0	NA	SM		SAND as above from 0.5' - 1.3' bgs. Sand coarsens - fine to medium.	SAND	Borehole backfilled with Bentonite to grade.
20	10	18-20	1.5	0.4	NA			Wet. Saturated.		
	11	20-22	2.0	4.3	-	SP		Gray (10YR 8/1) fine to medium SAND, moderately dense, saturated, no odor.		
730										
25										
725										
30										
720										
35										

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
+ = Positive Test Result
Samples collected 0.5-2.5', 8.5-10.5' and 18.5-20.5' bgs.

Water Level Data

Date	Depth	Elev.
7/23/01	20.5'	

Date Start/Finish: 7/19/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 3 1/4" ID
Rig Type: CME 55

Northing: 569623.43
Easting: 13306952.68
Casing Elevation: NA

Borehole Depth: 19' bgs
Surface Elevation: 752.37

Descriptions By: SM Duly

Boring ID: RFI-38-02

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
755										
0	1	0-2	7 12 13 15	25	1.7	7759	-		CONCRETE.	FILL
								ML	Yellow-brown (10 YR 5/6) SILT, some Sand, aplastic, moderately dense, no odor.	SILT
750	2	2-4	8 14 14 17	28	1.6	2436	-		Thin lenses/varves of oxidation.	
									Black SILT, weak odor.	
	3	4-6	3 7 4 5	11	1.4	769	-		Concrete rubble and coarse Gravel and Pebbles, angular, aplastic.	
5								ML	Dark brown-yellow (10 YR 4/6) SILT, little fine subangular to subrounded Sand, little to trace Clay, hard, dry, no odor. At 5.6': Some Clay, trace fine rounded Gravel and fine to coarse Sand. At 6.2': 2" wide area of black (10 YR 2/1) coloration.	SILT
	4	6-8	NA	NA	1.6	0.0	-			
745	5	8-10	7 7 6 7	13	1.2	0.0	-	CL	Grades to dark brown-yellow (10 YR 4/4) Silty CLAY, little fine to coarse subrounded Sand, trace fine to medium rounded Gravel, medium stiff, no odor, dry.	SILTY CLAY
10	6	10-12	NA	NA	1.3	0.0	-		Brown-yellow (10 YR 6/6) Silty fine subangular SAND, aplastic, moderately loose, no odor, dry. Moist and oxidized at tip of spoon.	SILTY SAND
740	7	12-14	7 8 8 10	16	1.2	0.0	-	SM	Damp to dry. Dry.	
15	8	14-16	4 4 5 4	9	2.0	0.0	-			

Boring Construction

Borehole backfilled with Bentonite Chips to grade.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3', 5-7', 9-11' and 17-19' bgs.

Water Level Data

Date	Depth	Elev.
7/19/01	18.8' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-38-02.dat Date: 8/1/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-38-02

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	9	16-18	NA	NA	1.5	0.0	-	SM		Brown-yellow (10 YR 6/6) Silty fine subangular SAND, aplastic, moderately loose, no odor, dry. Moist.	SILTY SAND	Borehole backfilled with Bentonite Chips to grade.
	10	18-19	NA	NA	NA	NA	NA			Gray (10 YR 6/1), moist to wet. Wet.		
20												
730												
25												
725												
30												
720												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3', 5-7', 9-11' and 17-19' bgs.

Water Level Data

Date	Depth	Elev.
7/19/01	18.8' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-38-02.dat Date: 8/1/01

Date Start/Finish: 7/19/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 3 1/4" ID
Rig Type: CME 55

Northing: 569496.24
Easting: 13306946.6
Casing Elevation: NA

Borehole Depth: 21' bgs
Surface Elevation: 752.4

Descriptions By: SM Duly

Boring ID: RFI-38-03

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
755												
0										CONCRETE.	FILL	
750	1	1-3	9 12 15 16	27	1.1	>9999	-	ML		Yellow-brown (10YR 5/6) SILT, little fine subangular to subrounded Sand, aplastic, dense, no odor, dry.	SILT	Borehole backfilled with Bentonite Chips to grade.
	2	3-5	7 11 14 16	25	1.5	>9999	-			3" wide layer of dark brown (10 YR 3/3) SILT, trace Clay, trace fine rounded Gravel, loose, no odor, dry.		
5	3	5-7	5 4 3 3	7	1.6	>9999	-			1" wide layer of Silt, same as at 4.0' bgs.		
745	4	7-9	5 5 4 5	9	1.8	858	-			Very dark gray-brown (10 YR 3/2) SILT, little to some fine subangular to subrounded Sand, trace Clay, aplastic, dense, no odor, damp.		
										SILT, as at 1.0-7.9' bgs, damp.		
10	5	9-11	4 8 10 12	18	1.7	448	-			SILT, as at 7.9-8.7' bgs, but dark brown (10 YR 3/3).		
740	6	11-13	5 7 9 11	16	1.5	1307	-			Pale brown (10 YR 6/3) fine subangular Sandy SILT, aplastic, dense, no odor, damp.	SANDY SILT	
	7	13-15	7 11 14 16	25	1.2	170	-			Color change to yellow-brown (10 YR 5/4).		
15	8	15-17	7 8	17	1.6	156	-			Brown-yellow (10 YR 6/6) Silty fine subrounded to subangular SAND, aplastic, dense, no odor, damp to dry.		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3', 5-7', 9-11' and 17-19' bgs.

Water Level Data

Date	Depth	Elev.
7/18/01	19.5' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-38-03

Borehole Depth: 21' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	8	15-17	9 10	17	1.6	156	-	ML		Brown-yellow (10 YR 6/6) Silty fine subrounded to subangular SAND, aplastic, dense, no odor, damp to dry.	SILTY SAND	Borehole backfilled with Bentonite Chips to grade.
	9	17-19	5 7 11 13	18	1.4	282	-			Moist.		
20	10	19-21	2 5 6 8	11	NA	0.0	-	SM		Saturated. Color change to gray (10 YR 5/1) to end of boring.		
730												
25												
725												
30												
720												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3', 5-7', 9-11' and 17-19' bgs.

Water Level Data

Date	Depth	Elev.
7/18/01	19.5' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-38-03.dat Date: 8/1/01

Date Start/Finish: 08/22/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 4 1/4" **Rig Type:** CME 55	**Northing:** 569654.09 **Easting:** 13307320.08 **Casing Elevation:** NA **Borehole Depth:** 26' bgs **Surface Elevation:** 751.58 **Descriptions By:** SM Duly	**Boring ID:** RFI-38-04 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0													
		1	0-2	1,2,2,1	4	1.5	0.0	-	SM		Asphalt		Cement pad with 9" diam. flush-mount cover.
	750								CL		Dark yellow-brown (10 YR 4/4) Silty fine subangular to subrounded SAND, few Clay, no odor, aplastic, damp, moderately dense.	SILTY SAND and CLAY	
		2	2-4	3,2,2,1	4	1.0	0.0	-	SM		Dark brown (10 YR 3/3) Silty CLAY, some to little fine to medium subangular to subrounded Sand, trace medium to coarse rounded Gravel, no odor, plastic, damp, stiff to soft.		
											Dark yellow-brown (10 YR 4/4) Silty SAND as at 0.2-1.1' bgs.		
5		3	4-6	1,1,1,1	2	1.2	0.0	-			Moist.		Grout 1-10' bgs.
											Increased Clay to little.		
									CL		Dark brown (10 YR 3/3) Silty CLAY as at 1.1-1.5' bgs.		
	745	4	6-8	2,3,3,2	6	1.3	0.0	-	SM		Yellow-brown (10 YR 5/6) Silty fine subangular SAND, few Clay, no odor, aplastic, damp, moderately loose.		2" ID Sch. 40 PVC riser 0.2-15' bgs.
											Local decreases in Silt to some.		
		5	8-10	2,3,4,2	7	1.3	0.0	-					
10											Yellow-brown (10 YR 5/6) SAND, some Silt, trace Clay, no odor, aplastic, moderately dense to dense, damp.	SAND	
		6	10-12	1,2,2,2	4	1.2	0.0	-	SW				Bentonite seal 10-13' bgs.
	740												
		7	12-14	3,5,7,7	12	1.3	0.0	-			Yellow-brown (10 YR 5/4), SILT, some fine subangular Sand, few to trace Clay, no odor, aplastic, dense, damp.	SILT	#5 Global filter sandpack 13-26' bgs.
									SM				
15		8	14-16	4,5,5,7	10	1.5	0.0	-	SW		Silty SAND as at 5.5-9' bgs, but brown-yellow (10 YR 6/6) and dense.	SILTY SAN	2" ID Sch. 40 PVC 0.010" slotted screen 15-25' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.2-2.2', 8.2-10.2' and 16.2-18.2' bgs.

Water Level Data

Date	Depth	Elev.
08/22/01	18.5'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-38-04

Borehole Depth: 26' bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	735	9	16-18	6 7 9 11	16	1.4	0.0	-			Light yellow-brown (10 YR 6/4) SAND as at 9-12.9' bgs, aplastic, moist.		
		10	18-20	3 5 5 9	10	1.7	0.0	-	SW		Saturated.		
20		11	20-22	2 4 6 6	10	1.3	0.0	-			Becomes fine to medium and poorly sorted Sand.	SAND	2" ID Sch. 40 PVC 0.010" slotted screen 15-25' bgs.
	730										Becomes fine grained with some Silt and well-sorted.		#5 Global filter sandpack 13-26' bgs.
		12	22-24	5 7 7 5	14	1.5	0.0	-					
25		13	24-26	2 4 4 4	8	2.0	0.0	-	SP		Light brown-gray (10 YR 6/2), fine to coarse subangular SAND, little Silt, trace Clay with increased clay and silt content last 2" to lower contact, no odor, aplastic, saturated, moderately loose to moderately dense. Glacial-alluvial		
									CL		Gray (10 YR 5/1) Silty CLAY, few fine to medium subrounded to subangular Sand, no odor, soft, very plastic, moist to damp.		
	725												
30													
	720												
35													

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.2-2.2', 8.2-10.2' and 16.2-18.2' bgs.

Water Level Data

Date	Depth	Elev.
08/22/01	18.5'	

Date Start/Finish: 8/24/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 4 1/4" **Rig Type:** CME 55	**Northing:** 569661.75 **Easting:** 13307100.13 **Casing Elevation:** NA **Borehole Depth:** 26' bgs **Surface Elevation:** 750.79 **Descriptions By:** S. Kerr	**Boring ID:** RFI-38-05 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	750	1	0-2	-- 5 8 9	13	1.7	NA	-	FL		Asphalt Aggregate Grayish brown (10YR 5/2) SILT, some Clay, some fine Sand, trace Gravel, damp, slight odor, moderately loose.	FILL	Portland cement 0-1' bgs
		2	2-4	9 9 10 4	19	1.0	NA	-	ML		at 1.9': Dark gray wood in tip of shoe at 1.0' bgs.	SILT	
5	745	3	4-6	2 2 3 2	5	1.4	NA	-			Yellowish brown (10YR 5/6) SILT, some fine to medium Sand, trace Clay and Gravel, loose, damp, no odor.		
		4	6-8	4 5 7 9	12	1.4	NA	-			Yellow-brown (10YR 5/6) predominantly fine to medium SAND, some Silt, loose, no odor, damp.		Grout 1-10' bgs
		5	8-10	4 4 4 4	8	1.6	NA	-					2" ID Sch. 40 PVC Riser 0-15' bgs
10	740	6	10-12	0 4 4 4	8	1.4	NA	-	SP		Moist.	SAND	Bentonite 10-13' bgs
		7	12-14	2 2 6 2	5	1.4	NA	-			Moist to wet.		#5 Global Filter Sand Pack 13-26' bgs
15	735	8	14-16	2 6 2 2	5	1.5	NA	-					2" Sch. 40 PVC 0.010" Slot Screen 15-25' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.6-2.6', 8.6-10.6' and 14.6-16.6' bgs.

Water Level Data

Date	Depth	Elev.
8/24/01	17.2' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-38-05

Borehole Depth: 26' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	2 3 4 6	7	1.5	NA	-	SP		Yellow-brown (10YR 5/6) predominantly fine to medium SAND, some Silt, loose, no odor, damp. Saturated. Predominantly medium, no Silt.	SAND	2" Sch. 40 PVC 0.010" Slot Screen 15-25' bgs
	10	18-20	2 3 4 4	7	1.5	NA	-					
20 730	11	20-22	1 2 2 2	4	1.5	NA	-					
	12	22-24	1 2 3 4	5	1.8	NA	-			Grayish brown (10 YR 5/2) fine to coarse SAND, predominantly medium, loose, no odor, saturated.		
25 725	13	24-26	3 3 2 1	5	1.6	NA	-	ML		Gray (10YR 5/1) SILT, trace fine Sand and Clay, aplastic, moderately dense, saturated, no odor. Glacial-alluvial.	SILT	#5 Global Filter Sand Pack 13-26' bgs
								CL		Gray (10YR 5/1) CLAY, trace Silt, soft, saturated, no odor, highly pastic. Glacial clay.	CLAY	PVC Cap
30 720												
35 715												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.6-2.6', 8.6-10.6' and 14.6-16.6' bgs.

Water Level Data

Date	Depth	Elev.
8/24/01	17.2' bgs	

Date Start/Finish: 8/24/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 4 1/4"
Rig Type: CME 55

Northing: 569667.01
Easting: 13306861.61
Casing Elevation: NA

Borehole Depth: 22' bgs
Surface Elevation: 749.43

Descriptions By: S. Kerr

Boring ID: RFI-38-06

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	750												
0		1	0-2	-- 9 8 7	17	1.5	NA	NA	FL		Asphalt		Cement pad with 9" diam. flushmount cover
											Grayish brown (10YR 5/2) SILT, some Clay and fine to medium Sand, little Gravel and Concrete, moderately loose, damp, no odor.	FILL	
		2	2-4	7 9 6 5	15	0.7	NA	NA	ML				Grout 2-10' bgs
5	745										Yellowish brown (10YR 5/6) SILT, little Clay and fine Sand, trace Gravel, moist, moderately dense, no odor.	SILT	
		3	4-6	2 1 1 8	2	1.1	NA	NA	CL		Yellow-brown (10YR 5/4) Silty CLAY, little fine Sand, trace coarse angular Gravel, moist, highly plastic, soft, no odor.	SILTY CLAY	
		4	6-8	1 1 2 2	3	NA	NA	NA	ML		Yellow-brown (10YR 5/6) SILT, trace fine to coarse Sand, little Clay; moist, loose, no odor.	silt	2" ID Sch. 40 PVC riser 0.2-12' bgs
10	740	5	8-10	2 3 2 3	5	1.3	NA	NA	SP		Light yellowish brown fine to medium SAND, little Silt, aplastic, loose, damp, no odor.	SAND	Bentonite seal 8-10' bgs
		6	10-12	2 3 2 4	5	1.5	NA	NA					
		7	12-14	2 3 5 7	8	1.5	NA	NA					#5 Global filter sand pack 10-22' bgs
15	735	8	14-16	2 3 6 7	9	1.4	NA	NA			Pale brown (10YR 6/3) predominantly fine to medium SAND, loose, damp, no odor, little oxidation. Saturated, increased coarseness to predominantly medium, gray (10YR 5/1).		2" ID Sch. 40 PVC 0.010" slotted screen 12-22' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.5-2.5', 8.5-10.5' and 12.5-14.5' bgs.

Water Level Data

Date	Depth	Elev.
8/24/01	14.6' bgs	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-38-06.dat Date: 11/16/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-38-06

Borehole Depth: 22' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	2 4 6 6	10	1.4	NA	NA	SP		Pale brown (10YR 6/3) predominantly medium SAND, loose, damp, no odor, little oxidation.	SAND	#5 Global filter sand pack 10-22' bgs
730 20	10	18-20	1 1 2 2	3	1.4	NA	NA					2" ID Sch. 40 PVC 0.010" slotted screen 12-22' bgs
	11	20-22	1 1 3 4	4	1.8	NA	NA	ML		Gray (10YR 5/1) SILT, little fine Sand, trace Clay, aplastic, saturated, moderately dense, no odor.	SILT	
725 25												
720 30												
715 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.5-2.5', 8.5-10.5' and 12.5-14.5' bgs.

Water Level Data

Date	Depth	Elev.
8/24/01	14.6' bgs	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-38-06.dat Date: 11/16/01

Date Start/Finish: 5/24/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 2 1/4" ID
Rig Type: CME 55

Northing: 561695.16
Easting: 13305947.21
Casing Elevation: 733.43

Borehole Depth: 10' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: RFI-40-01

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	735												
0													
				-					FL		Asphalt.		
		1	0-2	5	10	1.5	5.2	-			Black (10 YR 2/1) to very dark grayish-brown (10 YR 3/2) aplastic SILT, some fine to coarse angular sand-sized black Slag (?) and Sand, little fine to coarse subangular to subrounded Gravel, moderate to weak odor, damp, loose.	SILT	
				2					ML		Yellow-brown (10 YR 5/4) aplastic SILT, some fine subangular Sand, damp, dense, no odor.		
		2	2-4	3	4	1.2	5.7	-					Borehole backfilled with Bentonite Chips to grade.
	730			2									
				1					SP		Gray-brown (10 YR 5/2) fine to coarse angular to subangular SAND, some Clay and Silt, trace fine angular to subangular Gravel, weak odor, wet, loose.	SAND	
5				4							Yellow-brown (10 YR 5/4) CLAY, some Silt, little fine to medium subrounded to subangular Sand, trace fine to coarse rounded to subrounded Gravel, heavily oxidized with patches of original gray (10YR5/1) color, no odor, dry to damp, very stiff to hard (pp=4.0 to 4.5 tons/sq. feet).		
		3	4-6	4	10	2.0	7.2	-					
				6									
				8									
				4									
		4	6-8	7	17	2.0	7.8	-	CL			CLAY	
				10									
				13									
	725			3							pp >= 4.5 tons/sq. feet, friable.		
		5	8-10	7	17	2.0	8.5	-					
10				10									
				12									
	720												
15													

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Remarks: bgs = below ground surface;
NA=Not Applicable/Not Available.
Temporary well screen placed 2 to 7' bgs.
Samples collected 0.3 - 2.3' bgs.
pp=pocket penetrometer measurement

Water Level Data

Date	Depth	Elev.
5/24/01	3.3' bgs	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-40-01.dat Date: 8/2/01

Date Start/Finish: 1/25/02
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 3-1/4" ID HSA
Rig Type: CME 55

Northing: 561517.49
Easting: 13305773.70
Casing Elevation: NA

Borehole Depth: 20.1' bgs
Surface Elevation: 735.35

Descriptions By: SM Duly

Boring ID: RFI-40-02

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	735						FL		CONCRETE.	FILL	Portland Cement 0-0.5' bgs
		1	0-4	2.8	6.9	-	CL		Yellow-brown (10YR 5/4) Silty lean CLAY, few medium to coarse subrounded to subangular Sand, trace fine rounded Gravel, plastic, stiff, no odor, stiff.	SILTY CLAY	2-inch PVC Riser 0.2-10' bgs
					1.4	-					Grout 0.5-6' bgs
5	730	2	4-8	3.8	6.7	-	SM		Brown-gray (10YR 5/2) Silty fine subangular poorly-graded SAND, aplastic, weak to moderate odor, moderately dense, moist, oily sheen (pale brown oil).		
					5.0	+	CL		Silty lean CLAY as above from 0.9' - 4.5' bgs, locally soft and moist in patches, Brown (10YR 5/3) Silt lenses up to 6" thick throughout, moist.		Bentonite Seal 6-8' bgs
10	725	3	8-12	4.0	9.0	+					Global Filter Sand 8-20.1' bgs
					4.4	+			Gray-brown (10YR 5/2), hard, homogenous.	SILTY CLAY	2-inch 0.010" machine-slotted PVC Screen 10-20' bgs
		4	12-16	2.0	6.2	+					
15	720				7.1	+			Gray (10YR 5/1) occasional moist to wet Silt lenses up to 2" thick througout.		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.9-2.9 and 8.9-10.9' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
1/25/02	15.5	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-40-02

Borehole Depth: 20.1' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
20 / 715								Silty lean CLAY as above from 0.9' - 4.5' bgs, locally soft and moist in patches, Brown (10YR 5/3) Silt lenses up to 6" thick throughout, moist.		Global Filter Sand 8-20.1' bgs; 2-inch 0.010" machine-slotted PVC Screen 10-20' bgs; PVC Cap
25 / 710										
30 / 705										
35 / 700										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.9-2.9 and 8.9-10.9' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
1/25/02	15.5	

Project: 644.10.101 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-40-02.dat
Date: 5/20/02

Date Start/Finish: 1/30/02
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: Direct Push
Sampler Size: NA
Auger Size: NA
Rig Type: Truck-mounted Geoprobe

Northing: 561334.28
Easting: 13305776.41
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 735.33

Descriptions By: SM Duly

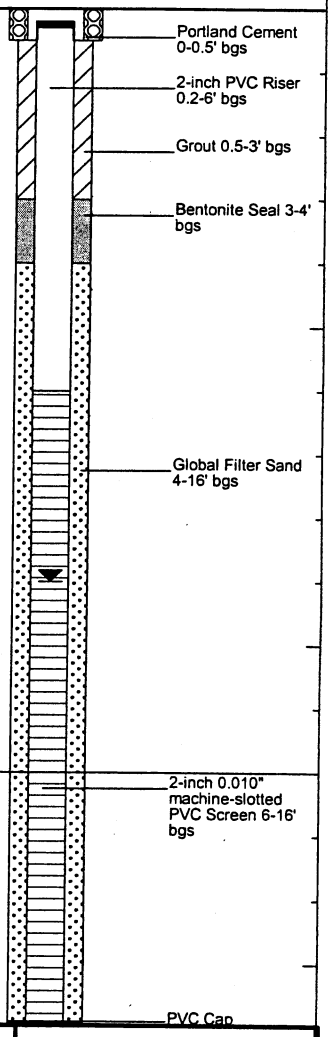
Boring ID: RFI-40-03R

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0	735						FL		CONCRETE.	FILL
		1	0-4	3.8	0.0	-	SW		Yellow-brown (10YR 6/4) fine to coarse subangular well-graded SAND, little Silt, few Clay, no odor, dense, dry. Fill Sand.	SAND
					0.0	-	CL		Yellow-brown (10YR 5/4) Silty lean CLAY (CL), few fine to coarse subrounded Sand, trace fine rounded Gravel, no odor, dry, stiff, weakly plastic, 3" of Slag at top of unit. Glacial Clay Till.	CLAY
5	730	2	4-8	3.5	0.0	-	SW		Yellow-brown (10YR 6/4) fine to coarse well-graded SAND as above from 0.7-3' bgs, aplastic.	SAND
					0.0	-			Fines downward, moist.	
					6.7	+			Saturated, moderate odor.	
10	725	3	8-12	2.9	985	+	ML		Brown (10YR 5/2) SILT, little Clay, weak odor, saturated, dense, aplastic.	SILT
15	720									

Boring Construction



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.7-2.7' and 6.7-8.7' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
9.0	1/30/02	

Project: 644.10.101 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-40-03.dat
Date: 5/20/02

Date Start/Finish: 1/15/02
Drilling Company: Rau Drilling
Driller's Name: Alan Rau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 75

Northing: 561788.64
Easting: 13305745.70
Casing Elevation: 738.17

Borehole Depth: 33' bgs
Surface Elevation: 738.44

Descriptions By: SM Duly

Boring ID: RFI-40-04

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
740 / 0										
0			-					FL	Asphalt.	FILL
	1	0-2	9 7 8	16	1.8	NA	-	SW	Brown (10 YR 5/3) fine to coarse angular well-graded SAND, some to little Silt, few fine to medium angular Gravel, aplastic, no odor, damp, dense.	SILTY SAND
	2	2-4	5 6 9 11	15	1.4	NA	-	SM	Black (10 YR 5/1) Silty fine subangular poorly-graded SAND, little Clay, aplastic, no odor, damp, dense. Foundry sand.	SILTY SAND
735								SW	Yellow-brown (10 YR 5/4) fine to coarse subrounded to subangular well-graded SAND, little Silt, few fine to coarse rounded Gravel and Clay, aplastic, no odor, moist, dense.	SAND
5	3	4-6	6 7 9 10	16	1.6	NA	-	CL	Gray (10 YR 5/1) Silty CLAY, little fine to coarse subangular to subrounded Sand, few fine to coarse rounded Gravel, weakly plastic, no odor, dry, very stiff to hard. Clay Till.	SILTY CLAY
	4	6-8	4 8 9 12	17	2.0	NA	-			
730	5	8-10	3 6 9 11	15	2.0	NA	-		Damp.	
10	6	10-12	4 14 15 19	29	2.0	NA	-			
	7	12-14	7 13 20 23	33	1.8	NA	-		Dry.	
725										
15	8	14-16	6 11 17 24	28	2.0	NA	-	ML	Gray (10 YR 5/1) SILT, some Clay, aplastic, no odor, damp, dense. Glacial till.	SILT

Boring Construction

- Cement pad.
- 2" ID Sch. 40 PVC riser to 23' bgs
- Grout 1-19' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.5-2.5', 8.5-10.5' and 22.5-24.5' bgs.

Water Level Data

Date	Depth	Elev.
1/15/02	26' bgs	

Project: 64410.101 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-40-04.dat Date: 2/8/02

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-40-04

Borehole Depth: 33' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	6 15 21 26	36	2.0	NA	-	ML		Gray (10 YR 5/1) SILT, some Clay, rare fine rounded Gravel, aplastic, no odor, damp, dense. Glacial till.	SILT	Grout 1-19' bgs.
720	10	18-20	7 19 29 34	48	2.0	NA	-					2" ID Sch. 40 PVC riser to 23' bgs
20	11	20-22	12 29 33 34	62	2.0	NA	-			Rare fine to coarse rounded Sand.		Bentonite seal 19 - 21' bgs.
	12	22-24	8 23 28 25	51	2.0	NA	-			Damp.		
715	13	24-26	8 25 25 30	50	2.0	NA	-			Moist.		Sand pack 21-33' bgs.
25	14	26-28	9 25 26 30	51	2.0	NA	-			2" wide saturated silt seam.		
710	15	28-30	8 28 31 50/5"	59	1.8	NA	-	SW		Gray (10 YR 5/1) fine to coarse subangular well-graded SAND, little Silt, some fine to coarse rounded Gravel, few Clay, aplastic, no odor, saturated, dense. Coarsens downward to lower contact. Glacial-alluvial.	SAND	2" ID Sch. 40 PVC 0.01" slotted screen 23-33' bgs.
30	16	30-33	13 50/5"	NA	0.8	NA	-			Occasional silt lenses up to 8" wide throughout.		
705												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.5-2.5', 8.5-10.5' and 22.5-24.5' bgs.

Water Level Data

Date	Depth	Elev.
1/15/02	26' bgs	

Date Start/Finish: 1/17/02
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 75

Northing: 561565.67
Easting: 13305995.90
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 732.04

Descriptions By: SM Duly

Boring ID: RFI-40-05

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								FL		Concrete.	FILL	
	1	0-2	2 5 2 4	7	1.6	0.0	-	SM		Yellow-brown (10 YR 5/4) Silty fine to coarse subangular well-graded SAND, little Clay, aplastic, no odor, moist, moderately dense. Very dark brown (10 YR).	SILTY SAND	
	2	2-4	2 4 4 3	8	1.3	0.0	-			Yellow-brown (10 YR 5/4), finer grained.		
5 5	3	4-6	4 4 6 10	10	1.5	0.0	-	CL		Yellow-brown (10 YR 5/4) Silty CLAY, little fine to medium subangular to subrounded Sand, occasional fine to coarse rounded Gravel, moderately plastic, no odor, moist, soft, becoming stiff with depth. Clay Till. Dry at 4.8' bgs.	SILTY CLAY	Borehole backfilled with bentonite to grade.
	4	6-8	5 12 14 23	26	1.7	0.0	-			Local gray (10 YR 6/1) mottling throughout.		
	5	8-10	7 12 16 14	28	2.0	5.5	+			8-9.3' bgs: Black oily material present, moderate odor, oily sheen.		
10 10	6	10-12	5 10 13 16	23	2.0	0.0	+	ML		Yellow-brown SILT, little to some Clay, few fine to medium rounded to subrounded Sand, occasional fine rounded Gravel, aplastic, weak odor, dry, dense. Gray (10 YR 5/1) glacial till (?) at 10' bgs.	SILT	
	7	12-14	6 11 14 16	25	1.8	352	+			Wet.		
15 15	8	14-16	4 9 11 11	20	1.3	715	+	SW		Black (10 YR 2/1) fine to coarse subangular to subrounded well-graded SAND, little Silt, trace Clay, moderate odor, oily sheen, saturated, moderately dense.	SAND	

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.8-2.8', 8.8-10.8' and 10.8-12.8' bgs.
+ = Positive Test Result

Water Level Data

Date	Depth	Elev.
1/17/02	13.8' bgs	

Project: 64410.101 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-40-05.dat Date: 2/8/02

Date Start/Finish: 1/17/02
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 75

Northing: 561540.10
Easting: 13306087.63
Casing Elevation: NA

Borehole Depth: 19' bgs
Surface Elevation: 732.98

Descriptions By: SM Duly

Boring ID: RFI-40-06

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								FL		Concrete.	FILL	
	1	1-3	46 50/ 3"	NA	0.8	0.0	+	SW		Brown (10 YR 5/3) fine to coarse subrounded to subangular well-graded SAND, little fine to medium rounded Gravel, few to little Silt, aplastic, no odor, dry, moderately loose. Slag and cement debris present.	SAND	
	2	3-5	5 6 4 4	10	1.4	0.0	+	SM		Black (10 YR 2/1) Silty fine to coarse subrounded to subangular SAND, little Clay, aplastic, moderate odor, oily sheen, damp to moist, moderately dense. Fill.	SILTY SAND	
5 5	3	5-7	3 5 7 7	12	2.0	0.4	+	CL		Dark gray-brown (10 YR) Silty CLAY, little fine to coarse subangular Sand, plastic, moderate odor, oily sheen, moist, soft. Gray (10 YR 5/1) with brown (10 YR 4/3) mottling. Dry, moderate odor, increasing stiffness with depth. Till.	SILTY CLAY	Borehole backfilled with bentonite to grade.
	4	7-9	6 8 13 15	21	1.8	0.0	+			Gray (10 YR 6/1) with yellow-brown (10 YR 5/4), black oily sheen absent, no odor, dry.		
10 10	5	9-11	3 5 8 11	13	2.0	0.0	+	ML		Brown (10 YR 5/3) SILT, little Clay, few fine to coarse rounded Sand, aplastic, moderate odor, light brown oily sheen, damp to moist, dense. Possible native till.	SILT	
	6	11-13	8 10 14 17	24	2.0	1.3	+			Gray (10 YR 5/1), weak odor. Till.		
	7	13-15	9 19 25 28	44	1.8	0.0	+					
15 15	8	15-17	7 13	32	2.0	0.0	+			Gray (10 YR 6/1) homogeneous, no odor, dry.		

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available
Samples collected 1-3', 9-11', 11-13' and 15-17' bgs.

Water Level Data

Date	Depth	Elev.
1/17/02	17.3' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-40-06

Borehole Depth: 19' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	15-17	19 14	32	2.0	0.0	+	ML		Gray (10 YR 6/1) SILT, little Clay, few fine to coarse rounded Sand, aplastic, no odor, dry.	SILT	
	9	17-19	8 11 11 8	22	1.0	1852	+	SW		Dark brown (10 YR 3/3) to black (10 YR 2/1) to brown (10 YR 5/3) mottled fine to medium subangular to subrounded well-graded SAND, little Silt, strong odor, oily medium brown to black sheen, moderately dense. Glacial-alluvial.	SAND	Borehole backfilled with bentonite to grade.
20 20												
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available
Samples collected 1-3', 9-11', 11-13' and 15-17' bgs.

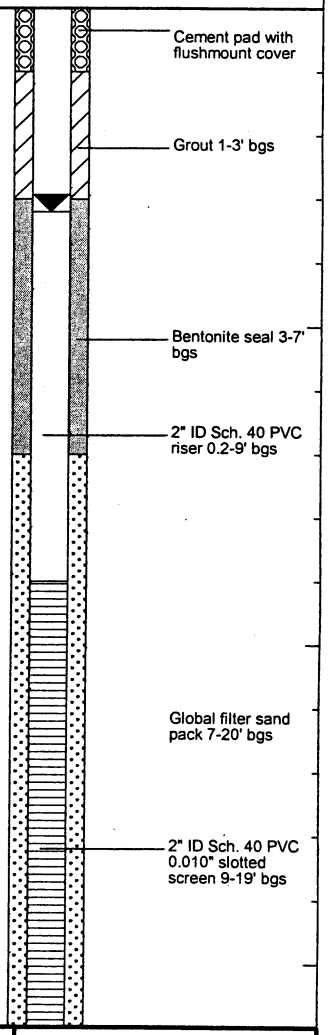
Water Level Data

Date	Depth	Elev.
1/17/02	17.3' bgs	

Project: 64410.101 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-40-06.dat Date: 2/8/02

Date Start/Finish: 1/18/02 - 1/22/02 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 75	**Northing:** 561505.40 **Easting:** 13306168.50 **Casing Elevation:** NA **Borehole Depth:** 19' bgs **Surface Elevation:** 729.35 **Descriptions By:** SM Duly	**Boring ID:** RFI-40-07 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
730 / 0								FL	Concrete.	FILL
	1	0-2	- - 3 3	3	1.0	0.0	-	SP	Yellow-brown (10 YR 5/4) fine subangular poorly-graded SAND, little Silt, aplastic, no odor, damp, moderately loose.	SAND
	2	2-4	2 2 3 7	5	1.2	0.0	-	SM	Yellow-brown (10 YR 5/4) Silty fine subangular poorly graded SAND, few Clay, aplastic, no odor, saturated to wet, loose to moderately dense.	
725 / 5	3	4-6	2 4 4 6	8	1.8	0.0	NA	CL	Gray (10 YR 6/1), with extensive yellow-brown (10 YR 5/4) mottling (possible oxidation), Silty CLAY, little fine to coarse subangular to subrounded Sand, trace fine rounded Gravel, plastic, no odor, moist to damp, becomes stiffer and drier with depth. Glacial Till.	SILTY CLAY
	4	6-8	6 9 11 12	20	2.0	0.0	-	ML	Yellow-brown (10 YR 5/4) SILT, some Clay, few fine to medium rounded Gravel, aplastic, no odor, moist, dense.	SILT
720 / 10	5	8-10	3 7 9 12	16	1.5	0.0	-	CL	Silty CLAY, as at 4.3-7.2' bgs, but yellow-brown (10 YR 5/4) throughout.	SILTY CLAY
	6	10-12	6 9 18 24	27	2.0	0.0	-		Color change to dark gray-brown (10 YR 4/2), dry, hard. Clay till to 16' bgs.	
	7	12-14	7 11 24 31	35	2.0	0.0	-		Homogeneous gray (10 YR 5/1).	
715 / 15	8	14-16	9 14 19 18	33	NA	0.0	-		14.3-14.5': fine to coarse subangular sand lens, moist, loose.	



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0.7-2.7' bgs.

Water Level Data

Date	Depth	Elev.
1/18/02	3.2' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-40-07

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	7 14 24 31	38	2.0	0.0	-	ML		Gray (10 YR 5/1) SILT, little Clay, few fine to coarse subrounded to rounded Sand, rare medium rounded Gravel, aplastic, no odor, dry, dense. Glacial till.	SILT	2" ID Sch. 40 PVC 0.010" slotted screen 9-19' bgs
710	10	18-20	8 19 23 27	42	NA	0.0	-					Global filter sand pack 7-20' bgs
20												
705												
25												
700												
30												
695												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0.7-2.7' bgs.

Water Level Data

Date	Depth	Elev.
1/18/02	3.2' bgs	

Project: 64410.101 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-40-07.dat Date: 2/21/02

Date Start/Finish: 1/25/02 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4-1/4" ID HSA **Rig Type:** CME 55 ATV	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 19' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-40-08 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	1	0-2	2 2 2 2	4	1.2	0.0	-	GP		Coarse grained poorly graded angular GRAVEL (GP), little coarse grained angular Pebbles, aggregate.	Asphalt	
										ASPHALT and Concrete rubble.		
										Dark brown (10YR 3/3) to dark yellow-brown (10YR 4/4) Silty CLAY (CL), soft, highly plastic, little fine to medium subangular to subrounded Sand, no odor, moist.	Silty Clay	
	2	2-4	2 2 3 4	5	0.8	0.0	-	CL				
5 5	3	4-6	3 4 5 7	9	1.7	0.0	-	SW		Yellow-brown (10YR 5/4) angular, well-graded SAND (SW), some Silt, little fine to coarse grained angular Gravel, no odor, saturated, moderately dense, aplastic.	F. Sand	Boring backfilled with bentonite to grade.
	4	6-8	4 7 13 18	20	1.8	0.0	-	CL		Gray (10YR 5/1) with dark yellow-brown (10YR 4/4) lean Silty CLAY (CL), few fine to coarse grained subangular to subrounded Sand, trace fine to medium rounded Gravel, weakly plastic, no odor, dry.	Silty Clay	
										Moist, homogeneous, yellow-brown (10YR 5/4), trace Sand, no Gravel, stiff.		
	5	8-10	5 10 14 18	24	2.0	0.0	-			Increase in gray color (10YR 5/2), increased stiffness to very stiff, dry, little Sand and trace Gravel as above.		
10 10	6	10-12	3 4 7 8	11	2.0	0.0	-			Homogeneous, gray (10YR 5/1). Yellow-brown (10YR 5/4), oxidized. Increased moisture, decreased stiffness.		
	7	12-14	3 8 9 10	17	2.0	0.0	-					
15 15	8	14-16	4 5 7 10	12	1.8	0.0	-					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available

Water Level Data

Date	Depth	Elev.
1/24/02	4.7' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-40-08

Borehole Depth: 19' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	1 1 1 1	2	1.0	0.0	-	ML		Gray (10YR 5/1) SILT (ML), some to little Clay, aplastic, no odor, dense, saturated.	Silt	
								SP		Gray (10YR 5/1) fine to medium subrounded to subangular poorly graded SAND (SP), little Silt, trace Clay, aplastic, no odor, saturated, loose.	F. Sand	
20 20												
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available

Water Level Data

Date	Depth	Elev.
1/24/02	4.7' bgs	

Date Start/Finish: 1/25/02 **Drilling Company:** RAU **Driller's Name:** Greg Compeau **Drilling Method:** HSA - split spoon **Sampler Size:** 2"x2" ID split spoon **Auger Size:** 4-1/4" ID HSA **Rig Type:** CME 55 ATV	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 19' **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-40-09 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	NA	0-0.7	NA	NA	NA	NA	NA			CONCRETE.	Concrete	Portland Concrete (0 - 1.5' bgs)
	1	0.7-2.7	4 6 7 9	13	1.6	0.0	-	SW		Black (10YR 2/1) fine to coarse grained subangular to subrounded SAND (SW), well graded, some Silt, few fine to coarse grained subrounded Gravel, no odor, moist, dense. Becomes more brown.	Sand	2-inch PVC Riser (0 - 9.0' bgs)
	2	2.7-4.7	4 4 7 10	11	1.8	0.0	-	CL		Yellow-brown (10YR 5/4) with gray 10YR 6/1 mottling, Silty lean CLAY (CL), few fine to coarse subrounded Sand, trace fine to medium subrounded to rounded Gravel, weakly plastic, stiff, no odor, damp becoming dry with depth. Becomes mottled with gray (10YR 6/1).	Silty Clay	
5 5	3	4.7-6.7	4 6 9 9	15	2.0	25.5	+			Moderate odor, oily sheen, oil in voids of Clay. Black mottling/varves present.		Grout (1.5' - 7.0' bgs)
	4	6.7-8.7	4 7 7 9	14	2.0	22.3	+			Occasional Silt lense up to 2" wide. Decrease in odor, decrease in oil residue.		Bentonite Seal (7.0' - 9.0' bgs)
10 10	5	8.7-10.	4 6 7 9	13	2.0	0.0	-			Becomes gray (10YR 6/1), homogeneous, no odor, no oil, dry.		
	6	10.7-12	4 5 7 8	15	1.8	0.0	-	ML		Gray (10YR 5/1) SILT (ML), little Clay, no odor, dense, aplastic, moist, becomes saturated at 12' bgs.	Silt	Global Filter Sand (9.0' - 19' bgs)
	7	12.7-14	6 9 10 13	19	1.6	697	+	SW		Gray (10YR 5/1), fine to coarse grained subrounded to rounded SAND (SW), well graded, little Silt, saturated, moderate odor, aplastic.	Sand	2-inch 0.010" machine-slotted PVC Screen (9.0' - 19' bgs)
15 15	8	14.7-16	5 9	20	1.5	1086	+			Fining downwards, fine to medium grained, trace coarse grained Sand.		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available

Water Level Data

Date	Depth	Elev.
1/25/02	12' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-40-09

Borehole Depth: 19'

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	14.7-16	11 11	20	1.5	1086	+	SW		Gray (10YR 5/1), fine to coarse grained subrounded to rounded SAND (SW), well graded, little Silt, saturated, moderate odor, aplastic.	Sand	Global Filter Sand (9.0' - 19' bgs) 2-inch 0.010" machine-slotted PVC Screen (9.0' - 19' bgs) PVC Cap
	9	16.7-19	3 5 5 6	10	2.0	973	+					
20 20												
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available

Water Level Data

Date	Depth	Elev.
1/25/02	12' bgs	

Date Start/Finish: 1/30/02 **Drilling Company:** RAU **Driller's Name:** Greg Compeau **Drilling Method:** Geoprobe **Sampler Size:** NA **Auger Size:** NA **Rig Type:** Truck-Mounted Geoprobe	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 12' below grade **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-40-10 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0						FL		CONCRETE.	Fill	
	1	0-4	3.6	0.0	-	SP		Yellow-brown (10YR 5/4) fine to medium poorly-graded subangular SAND (SP), trace coarse subrounded Sand, little Silt, aplastic, no odor, dense, dry.	Sand	2" diameter PVC Riser (0 - 7.0' bgs)
				0.0	-			Occasional patches of black Slag and foundry Sand at 2.5' bgs.		
5 5	2	4-8	2.0	0.0	-			Increased Clay content to little at 3.8' bgs.		
								Silty Sand, wet from 6.0' - 6.6' bgs.		
				0.0	-	CL		Yellow-brown (10YR 6/4) Silty Lean CLAY (CL), few fine to coarse subrounded Sand, trace fine to medium rounded Gravel, weakly plastic, stiff, no odor, dry. Native Glacial Clay Till.	Clay	
10 10	3	8-12	2.0	0.0	-	SM		Yellow-brown (10YR 5/4) well-graded Silty fine to coarse subrounded SAND (SM), little to few Clay, aplastic, saturated, loose, no odor.	Silty Sand	2" diameter PVC Screen (7.0' - 12' bgs)
				0.0	-	CL		Silty Lean CLAY (CL), as above from 6.8' - 8.0' bgs with gray (10YR 6/1) Silt lenses.	Silty Clay	
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.
1/30/02	8.0'	

Date Start/Finish: 5/17/01 **Drilling Company:** RAU **Driller's Name:** Greg Campeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 560810.62 **Easting:** 13305509.82 **Casing Elevation:** NA **Borehole Depth:** 10' bgs **Surface Elevation:** 731.26 **Descriptions By:** SM Duly	**Boring ID:** RFI-44-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 730	1	0-2	NA 4 18 11	22	1.3	9.1	+	FL		CONCRETE	Fill	Borehole backfilled with Bentonite to grade.
								SP		Yellow-brown (10 YR 5/4) aplastic fine to medium subrounded to subangular SAND, some Silt, little to few Clay, moderately loose, no odor, damp.	Sand	
	2	2-4	NA	NA	NA	NA	NA	ML FL		Black (10 YR 2/1) SILT, little to few Clay, aplastic, moderate odor, moderately dense, damp. Slag and Foundry Sand mix. CONCRETE	Fill	
5 725	3	4-6	10 17 20 18	37	1.7	7.8	-	SP		Dark yellow-brown (10 YR 4/4) fine to medium subangular aplastic SAND, some Silt, trace Clay, aplastic, no odor, loose, dry. (4.5-6.4) Yellow-brown 10 YR 5/8 fine to coarse subangular SAND, some fine to coarse subrounded to subangular Gravel, little Silt, moderately dense to locally loose, no odor, damp to moist, saturated at 6' bgs.	Sand Sand	
	4	6-8	7 12 13 13	25	2.0	7.6	-	CL		Gray (10 YR 5/1) homogeneous CLAY, some Silt, little fine to medium subangular to subrounded Sand, trace to few fine to coarse rounded Gravel, occasional lenses of increased Silt up to 2" wide, no odor, hard (pp>4.5 tons/sq. ft.) Clay Till.	Clay	
	5	8-10	12 20 21 25	41	2.0	5.7	-					
10 720												
15												

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Remarks: bgs = below ground surface;
pp=pocket penetrometer reading;
NA = Not Applicable/Not Available.
Set temp well screened 5.0'-10.0' bgs.
Samples collected 0.7-2' and 4-6' bgs.

Water Level Data

Date	Depth	Elev.
5/17/01	6' bgs	NA

Date Start/Finish: 5/17/01 **Drilling Company:** RAU **Driller's Name:** Greg Campeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID SS **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 560635.41 **Easting:** 13305509.87 **Casing Elevation:** NA **Borehole Depth:** 14' below grade **Surface Elevation:** 733.0 **Descriptions By:** S. Kerr	**Boring ID:** RFI-44-02 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735											
0											
	1	0-2	NA 4 5 4	9	1.2	1.8	-	FL	CONCRETE.	Fill	
								SP	Yellow-brown (10YR 5/4) fine to medium subangular SAND, some Silt, little rounded fine to coarse Gravel, fine to medium Fill, no odor, loose, dry.	Sand	
								ML	Black (10YR 2/1) SILT, few Clay, few fine to medium subangular Sand, medium loose, no odor, dry.	Silt	
730	2	2-4	4 4 3 4	7	1.5	4.5	+				Borehole backfilled with Bentonite to grade.
								SP	SILT as above, but red (10YR 4/6).	Sand	
								ML	Layered lenses of dark yellow-brown (10YR 4/4) fine to medium subangular SAND, little to few Silt, layered with black to dark brown (10YR 3/3) SILT as above, no odor, dense, damp.	Silt	
5	3	4-6	4 NA NA NA	NA	0.5	8.4	+		Black (10YR 2/1) SILT as above, locally oxidized to dark yellow-brown (10YR 4/4) fine to coarse sand to gravel-sized angular Slag.		
								FL	CONCRETE.	Fill	
	4	6-8	NA	NA	NA	NA	NA				
725											
	5	8-10	5 5 5 8	10	1.6	12.3	-	ML	Gray (10YR 5/1) SILT, some Clay, locally increased to a Clayey Silt, few fine subangular Sand, no odor, dense, moist. Brown 10YR 5/3, no odor, saturated.	Silt	
								CL	Dark gray (10YR 4/1) CLAY, some Silt, little fine to medium subangular to subrounded Sand, few rounded fine to coarse Gravel, hard (pp>4.5 tons/sq. ft.), homogeneous, no odor, dry.	Clay	
10	6	10-12	2 4 4 7	8	1.8	6.9	-	ML	SILT, as from 8' - 9.5' bgs, saturated.	Silt	
	7	12-14	4 5 5 6	10	1.7	4.6	-	CL	Gray (10YR 4/1) CLAY, as from 9.5' - 10' bgs.	Clay	
720											
15											

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available.
Temporary well set 8-13' bgs; pp=pocket penetrometer reading
Samples collected 0.7-2', 2-4' and 4-6' bgs.

Water Level Data

Date	Depth	Elev.
5/17/01	8.7'	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\Augerwell.ldf
Data File:RFI-44-02.dat Date: 6/5/01

Date Start/Finish: 5/17/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 560500.35 **Easting:** 13305478.46 **Casing Elevation:** NA **Borehole Depth:** 12' bgs **Surface Elevation:** 733.31 **Descriptions By:** SM Duly	**Boring ID:** RFI-44-03 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735 / 0												
	1	0-2	NA 3 4 5	7	1.0	8.7	-	FL		ASPHALT.	Fill	
								SP		Light yellow-brown (10 YR 6/4) fine to medium subangular poorly graded SAND, mostly fine-grained, some Silt, trace Clay, aplastic, no odor, dry, loose. (Fill)	SAND	
730 / 5	2	2-4	1 1 1 1	2	1.5	6.0	-			As above, dense.		Borehole backfilled with Bentonite to grade.
	3	4-6	1 1 1 1	2	0.2	3.4	-			Damp.		
	4	6-8	1 11 2 1	3	0.4	4.0	-					
725 / 10	5	8-10	3 2 2 1	4	2.0	4.6	-			Wet.		
	6	10-12	2 1 2 4	3	NA	3.5	-	CL		Dark gray-brown (10 YR 4/2) aplastic SILT with CLAY, little fine to coarse subangular Sand, no odor, wet, dense. Localized increases in gravel to some in lenses up to 1-2" wide.	SILT and CLAY	
										Homogeneous dark gray (10 YR 4/1) lean CLAY, some Silt, little fine to medium subangular to subrounded Sand, few fine to coarse rounded Gravel, no odor, dry, hard (pp>=4.5 tons/sq. feet). Clay Till.		
720 / 15												

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Remarks: bgs = below ground surface; pp=pocket penetrometer
NA = Not Applicable/Not Available.
Temporary well screen from 7-12' bgs.
Samples collected 0.9-2' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
5/17/01	9.5' bgs	

Date Start/Finish: 5/16/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 560450.3 **Easting:** 13305379.74 **Casing Elevation:** 731.89 **Borehole Depth:** 10' bgs **Surface Elevation:** NA **Descriptions By:** S.M. Duly	**Boring ID:** RFI-44-04 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 730	1	0-2	- 4 4 5	8	1.0	3.0	+			ASPHALT.	Fill	Cement pad with 9" diam. flush-mount cover
								ML		Yellow-brown (10YR 5/4) SILT, little fine to medium subangular Sand, little Clay, aplastic, moderately dense, no odor, dry.	SILT	Grout 0.7-1' bgs
	2	2-4	12 11 6 5	17	1.4	4.6	+	SP		Light brown-gray (10YR 6/2) fine to coarse subangular SAND, quartz-rich, aplastic, no odor, loose, dry.	SAND	Bentonite seal 1-1.5' bgs
								ML		Black (10YR 2/1) SILT, little dark yellow-brown (10YR 4/6) fine to medium subangular SAND, trace Clay, aplastic, dense, no odor, dry.	SILT	2" ID Sch. 40 PVC riser 0.2-2.8' bgs
5	3	4-6	1 2 4 7	6	1.2	11.8	-	SP		Yellow-brown (10YR 5/4) fine to coarse subrounded to subangular SAND, some to little Silt, little fine to coarse subrounded to subangular Gravel, density increasing with Silt content locally, weak odor, moderatly loose to dense, wet (saturated).	SAND	2" ID Sch. 40 PVC 0.010" slotted screen 2.8-7.8' bgs
725	4	6-8	2 4 7 5	12	1.9	5.8	-	CL		Gray (10YR 6/1) CLAY, with yellow-brown (10YR 5/6) oxidation along fractures with mottling, little to some Silt, few to little fine to medium subangular to subrounded Sand, trace to few rounded Gravel, hard, no odor, dry. (pp > 4.5 tons/sq. feet). Clay Till.	CLAY	
	5	8-10	10 10 9 20	19	2.0	6.2	-			CLAY, as above but homogeneous, dark gray (10YR 4/1) from 9.8' bgs downwards. Till.		#5 Global filter sand pack 1.5-10' bgs
10 / 720												
15												

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available
Step out of 2.5' from original due to obstruction at 4' bgs.
Samples collected 0.9-2' and 2-4' bgs.

Water Level Data

Date	Depth	Elev.
5/16/01	5.0'	NA

Date Start/Finish: 5/16/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4"
Rig Type: CME 55

Northing: 560396.21
Easting: 13305289.67
Casing Elevation: 731.97

Borehole Depth: 18' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: RFI-44-05

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0												
730	1	0-2	- 6 6 7	12	1.1	1.5	-	FL / ML / SP / CL / SP		CONCRETE.	Fill	Cement pad with 9" diam. flush-mount cover.
										Yellow-brown (10 YR 5/6) aplastic SILT, few fine to medium subangular Sand, little Clay, moderately dense, no odor, dry.		
	2	2-4	4 4 6 7	10	1.3	1.2	-			Dark yellow-brown (10YR 3/4) fine to coarse angular SAND, little fine to coarse subangular Gravel, little Silt, aplastic, loose, no odor, dry.		Grout 1-4' bgs.
										Light yellow-brown (10YR 6/4) CLAY, little Silt, little fine to medium subangular Sand, few fine to coarse subrounded Gravel, hard to very stiff, no odor, dry (pp = 3.5 to 4.0 tons/sq. feet).		
										SAND, as at 1.1-1.5' bgs.		
5	3	4-6	4 3 8 10	11	1.6	1.9	-			Light yellow-brown (10YR 6/4) CLAY, little Silt, little fine to medium subangular Sand, few fine to coarse subrounded Gravel, hard to very stiff, no odor, dry with gray (10YR 5/1) fine to medium aplastic SAND from 11.3-11.5' bgs, some Silt, little Clay, trace fine to medium Gravel, moderately dense, moist. Gray-brown (10YR 6/1) with yellow-brown (10YR 5/4) local oxidation along fractures with pale brown (10YR 6/3) fracture salvages resulting in mottling, some Silt at 5' bgs.	Clay	Bentonite holeplug 4-6' bgs.
725	4	6-8	6 10 23 15	33	2.0	2.2	-	CL				2" ID Sch. 40 PVC riser 0.2-8' bgs.
	5	8-10	16 26 36 24	62	2.0	1.3	-			1-2" yellow-brown SILT lense, some Clay, aplastic, no odor, dense, damp at 6.5' bgs.		
10	6	10-12	4 11 50/6	-	1.8	1.4	-	SP		Becomes homogeneous gray hard Clay, no oxidation/mottling. Clay Till.		#5 Global filter sandpack 6-18' bgs.
720								CL			Clay	
	7	12-14	10 13 13 12	26	2.0	1.1	-	ML		SILT lense as at 11.3-11.5' bgs, wet, oxidized to brown, some fine to coarse angular Sand and Gravel.	Silt	2" ID Sch. 40 PVC 0.010" slotted screen 8-18' bgs.
								CL		Hard gray CLAY as at 9.8-11.3' bgs.	Clay	
15	8	14-16	11 29 35 39	64	1.9	3.4	-	ML		SILT as at 12.5-13.1' bgs, saturated, few fine to coarse rounded to subrounded Gravel.	Silt	
										Gray (10YR 5/1) subangular to subrounded fine to coarse SAND, some fine to coarse subangular to subrounded Gravel, little Silt, no odor, loose, wet.		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
pp=pocket penetrometer
Samples collected 0.9-2', 2-4', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
5/16/01	13.9'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-44-05

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
715	9	16-18	18 21 22 24	43	2.0	0.8	-	ML		SILT as at 12.5-13.1' bgs, saturated, few fine to coarse rounded to subrounded Gravel.	← Silt →	2" ID Sch. 40 PVC 0.010" slotted screen 8-18' bgs. #5 Global filter sandpack 6-18' bgs.
20												
710												
25												
705												
30												
700												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
pp=pocket penetrometer
Samples collected 0.9-2', 2-4', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
5/16/01	13.9'	

Date Start/Finish: 9/05/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 16' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-44-06 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	1	0-2	5 20 22 28	42	1.6	11.7	-	FL		CONCRETE.	FILL	Borehole backfilled with Bentonite to grade.
								ML		Dark yellow-brown (10YR 4/4) SILT, little Clay, little fine to coarse subrounded to subangular Sand, few fine to medium subrounded Gravel, aplastic, no odor, dense, dry.		
	2	2-4	4 8 8 6	16	1.8	8.3	-	SM		Yellow-brown (10YR 5/6) Silty fine to medium subangular SAND, few Clay, aplastic, no odor, moderately dense, dry. Occasional lenses of Silt up to 2" thick.		
5 5	3	4-6	8 10 13 15	23	1.6	0.6	-					
								ML		Brown (10YR 4/3) SILT as at 1.3-2.0' bgs, aplastic.		
	4	6-8	3 7 10 12	17	1.7	0.0	-	SP		Pale brown (10YR 6/3) fine to medium subangular SAND, little Silt, trace fine to medium rounded Gravel, no odor, moderately dense, dry.		
								CL		Yellow-brown (10YR 5/4) Silty CLAY, little fine to medium subrounded to subangular Sand, trace fine to coarse subrounded to rounded Gravel, stiff, no odor, dry, heavily oxidized. Clay Till. Hard at 9' bgs. Wet at 10' bgs.	SILTY CLAY	
	5	8-10	7 14 17 13	31	1.9	0.0	-					
10 10										at 7.5': homogenous gray (10YR 5/1). Occasionally Silt lenses up to 1" thick.		
	6	10-12	10 13 20 52	33	2.0	1.6	-					
	7	12-14	5 12 19 36	31	2.0	0.0	-					
								ML		Gray 10YR 5/1 SILT, some Clay, few fine subangular Sand, aplastic, no odor, dense, damp. Glacial Till.	SILT	
15 15	8	14-16	12 23 32 34	55	2.0	0.0	-			Occasional fine to medium gray-brown (10YR 5/2) Silty Sand lenses, moist.		

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Remarks: Set temporary well from 5' - 15' bgs.
bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1.3-3.3', 5.3-7.3' and 7.3-9.3' bgs.

Water Level Data

Date	Depth	Elev.
09/05/01	10.0'	
09/12/01	14.5'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\augerwell.ldf
Data File:RFI-44-06.dat Date: 11/16/01

Date Start/Finish: 9/05/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 2.7' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-44-07 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	NA	0-0.7	NA	NA	NA	NA	NA	FL		ASPHALT	FILL	Borehole backfilled with Bentonite to grade.
	1	0.7-2.7	4 4 4 3	8	2.0	0.0	-	ML		Dark brown (10YR 3/3) SILT, little fine to coarse subrounded to rounded Sand, little Clay, trace fine rounded Gravel, aplastic, no odor, moderately dense, dry. Slag also present. Fill.		
5 5												
10 10												
15 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0.7-2.7' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\augerwell.ldf
Data File:RFI-44-07.dat Date: 9/28/01

Date Start/Finish: 11/21/01 **Drilling Company:** Rau Drilling **Driller's Name:** Rod Chaperon **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 560396.29 **Easting:** 13305240.55 **Casing Elevation:** NA **Borehole Depth:** 2.9' bgs **Surface Elevation:** 732.22 **Descriptions By:** SM Duly	**Boring ID:** RFI-44-09 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735												
0	NA	NA	NA	NA	NA	NA	NA	FL		Reinforced CONCRETE.	FILL	
730	1	0.9-2.9	6 7 7 7	14	1.8	NA	NA	ML		Yellow-brown (10YR 5/4) SILT, some subangular Gravel, few Clay, no odor, dense, aplastic, damp. Fill.	SILT	Borehole backfilled with Bentonite to grade.
5												
725												
10												
720												
15												

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Remarks: Second attempt of boring installation.
bgs = below ground surface
Sample collected 0.9-2.9' bgs.
Initial boring installed on 9/5/01. Redrilled to collect additional sample.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 08/03/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: 567143.10
Easting: 13306021.62
Casing Elevation: NA

Borehole Depth: 17' bgs
Surface Elevation: 751.85

Descriptions By: SM Duly

Boring ID: RFI-55-01

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0									FL		ASPHALT.		Portland Cement 0 - 1' bgs
									ML		Dark gray-brown 10YR 4/2 SILT, some fine to coarse subrounded to subangular Sand, little Clay and coarse gravel- to pebble-sized angular large Gravel, aplastic, no odor, damp, moderately loose. Fill.	SILTY CLAY	Grout 1' - 2' bgs
	750	1	1-3	2 2 3 4	5	1.5	>10,000	+			Gray (10YR 5/1) Silty CLAY, few fine to coarse subrounded Sand, extensive yellow-brown (10YR 5/4) mottling, no odor, damp, soft. Clay Till.		
		2	3-5	2 4 6 10	10	1.5	>10,000	-	CL		Increasing stiffness with depth. Patches of localized heavy oxidation.		2" ID PVC Sch. 40 PVC Riser 0 - 6' bgs
5		3	5-7	3 4 5 5	9	1.5	>10,000	-			Silt lens 6.4-6.5' bgs, increasing moisture with depth.		Hydrated Bentonite Seal 2 - 4.5' bgs
	745	4	7-9	2 5 7 10	12	1.4	>10,000	-	ML		Yellow-brown (10YR 5/6) SILT, some to little Clay, aplastic, no odor, saturated, moderately dense.		#5 Global Filter Sand 4.5 - 17' bgs
											Yellow-brown (10YR 5/6) Silty fine subangular to subrounded SAND, aplastic, no odor, saturated, moderately dense.	SILTY SAND	
10		5	9-11	3 5 6 7	11	1.3	>10,000	-					
	740	6	11-13	2 4 5 6	9	1.2	2,338	-	SM		Gray (10 YR 6/1), trace Clay. Glacial-alluvial.		2" ID Sch 40 0.010" Slot PVC Screen 6' - 16' bgs
		7	13-15	3 3 3 5	6	1.6	3,475	-					
15		8	15-17	2 5	8	NA	4,869	-	ML		Gray (10YR 6/1) SILT, little fine subangular to subrounded Sand, few Clay, aplastic, no odor, saturated, moderately dense. Glacial-alluvial.	SILT	

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
+ = Positive Test Result
Samples collected 1-3' and 5-7' bgs.

Water Level Data

Date	Depth	Elev.
08/03/01	7.9'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-55-01

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735	8	15-17	3 4	8	NA	4,869	-	ML		Gray (10YR 6/1) SILT, little fine subangular to subrounded Sand, few Clay, aplastic, no odor, saturated, moderately dense. Glacial-alluvial.	SILT	PVC Cap #5 Global Filter Sand 4.5' - 17' bgs
20												
730												
25												
725												
30												
720												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
+ = Positive Test Result
Samples collected 1-3' and 5-7' bgs.

Water Level Data

Date	Depth	Elev.
08/03/01	7.9'	

Date Start/Finish: 08/03/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: 567143.10
Easting: 13306021.62
Casing Elevation: NA

Borehole Depth: 38' bgs
Surface Elevation: 751.85

Descriptions By: SM Duly

Boring ID: RFI-55-01Geotech

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0										See RFI-55-01 for stratigraphic description 0-17' bgs.		
5 5												Borehole backfilled with bentonite to grade.
10 10										Shelby tube collected.		
										Unable to keep sand in tube - no recovery. (heaving sands)		
	1	12.5-14	2 4 5 4	9	1.8	0.0	NA			Split spoon sample collected.		
15 15												

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Remarks: bgs = below ground surface;
NA=Not Available/Applicable. See RFI-55-01 for descriptions.
Geotech samples collected 8.5-10.5', 12.5-14.5', 35-36' and and 36-37' bgs

Water Level Data

Date	Depth	Elev.
8/3/01	33.5' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-55-01Geotech

Borehole Depth: 38' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
										See RFI-55-01 for stratigraphic description 0-17' bgs.		
										Gray (10 YR 6/1) SILT, little to few fine subangular to subrounded Sand, little Clay with increasing clay content with depth, aplastic, moderately dense to dense, no odor, saturated. Glacial-alluvial.	SILT	
20 20	2	19-21	2 3 2 3	5	1.8	NA	NA	ML				Borehole backfilled with bentonite to grade.
	3	23-25	2 3 3 3	6	2.0	NA	NA			Gray (10 YR 6/1) Silty CLAY, few to little fine to medium subangular to subrounded Sand, trace rounded fine to medium Gravel, soft, no odor, damp. Local saturated silt and/or silty sand lenses up to 2.5" thick throughout. Increasing stiffness and decreasing moisture with depth to lower contact. Till.	SILTY CLAY	
25 25												
	4	28-30	3 4 5 5	9	2.0	NA	NA	CL				
30 30	5	30-32	WO 3 6 6	9	2.0	NA	NA			30-31': Gray (10 YR 6/1) SILT as at 17-23.5' bgs.		
	6	32-34	2 4 6 9	10	2.0	NA	NA			32.7-33.5': SILT as above.		
								SP		Gray (10 YR 5/1) fine to coarse rounded to subrounded SAND, some to little Silt, little fine to medium subrounded to rounded Gravel, trace Clay, no odor, saturated, loose. Alluvial/riverine sand and gravel.	SAND	
35 35	7	34-36	54 67/ 5"	NA	1.2	NA	NA	CL		Gray (10 YR 5/1) Silty CLAY as at 23.5-33.5, dry, hard. Till.	silty clay	

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Remarks: bgs = below ground surface;
NA=Not Available/Applicable. See RFI-55-01 for descriptions.
Geotech samples collected 8.5-10.5', 12.5-14.5', 35-36' and and 36-37' bgs

Water Level Data

Date	Depth	Elev.
8/3/01	33.5' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-55-01Geotech

Borehole Depth: 38' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	36-38	32 50/ 5"	NA	0.1	NA	NA	CL		Gray (10 YR 5/1) Silty CLAY as at 23.5-33.5, dry, hard. Till. At 36', Shelby Tube attempted - only 2" recovered, used split-spoon sample.	SILTY CLAY	Borehole backfilled with bentonite to grade.
40 40												
45 45												
50 50												
55 55												

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Remarks: bgs = below ground surface;
NA=Not Available/Applicable. See RFI-55-01 for descriptions.
Geotech samples collected 8.5-10.5', 12.5-14.5', 35-36' and and 36-37' bgs

Water Level Data

Date	Depth	Elev.
8/3/01	33.5' bgs	

Date Start/Finish: 7/27/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 566939.37 **Easting:** 13306185.99 **Casing Elevation:** NA **Borehole Depth:** 20' bgs **Surface Elevation:** 752.88 **Descriptions By:** SM Duly	**Boring ID:** RFI-55-02 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
755 / 0												
								FL		ASPHALT	FILL	Cement pad with 9" diam. flush-mount cover.
								GP		Coarse angular aggregate GRAVEL and black (10YR 2/1) Silty fine to coarse subrounded to subangular SAND, trace Clay; no odor, loose, damp. Foundry Sand mixed with aggregate Fill.		
								CL		Yellow-brown (10YR 5/4) Silty CLAY, little fine to medium subangular to subrounded Sand, trace rounded fine to medium Gravel, soft, no odor, damp to dry. Clay Till.		Grout 1-5' bgs.
	1	1-3	4 7 7 10	14	1.7	>10,000	-					
750										Black (10YR 2/1) Silty SAND as at 0.5-1' bgs, but no gravel aggregate. Foundry sand.	SILTY SAND	
5		HSA	NA	NA	NA	NA	NA	SM				2" ID Sch. 40 PVC riser 0.2-9' bgs.
												Bentonite seal 5-7' bgs.
745												
	2	8-10	3 5 8 8	13	2.0	>10,000	-	CL		Yellow-brown Silty CLAY as at 1-1.5' bgs, but very stiff, damp.		
10										Yellow-brown (10YR 5/6) Silty fine subangular to subrounded SAND, few Clay, no odor, moist, moderately loose to moderately dense.	SILTY SAND	Global #5 sandpack 7-20' bgs.
	3	10-12	4 5 6 7	11	11	>10,000	-					2" ID Sch. 40 PVC 0.010" slotted screen 9-19' bgs.
740								SM				
		HSA	NA	NA	NA	NA	NA					
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3' and 8-10' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.
7/27/01	11.8' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-55-02

Borehole Depth: 20' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
735		HSA	NA	NA	NA	NA	NA	ML		Gray (10 YR 5/1) SILT with fine subangular to subrounded Sand, saturated. Glacial-alluvial.	SILT	Global #5 sandpack 7-20' bgs. 2" ID Sch. 40 PVC 0.010" slotted screen 9-19' bgs.
20												
730												
25												
725												
30												
720												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3' and 8-10' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.
7/27/01	11.8' bgs	

Date Start/Finish: 7/26/01
Drilling Company: Rau Drilling
Driller's Name: Alan Rau
Drilling Method: Hand Auger
Sampler Size: NA
Auger Size: 3" ID
Rig Type: NA

Northing: 566904.45
Easting: 13306083.8
Casing Elevation: NA

Borehole Depth: 3' bgs
Surface Elevation: 753.52

Descriptions By: S. Duly

Boring ID: RFI-55-03

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
755 / 0										
	1	0-3	3.0	>10000	-	ML		Gray-brown 10YR 5/2 SILT, some to little fine to medium subangular to subrounded Sand, trace to few Clay, aplastic, no odor, loose, dry. Vegetation and Roots present, Topsoil mixed with large angular Gravel Fill.	SILT	Borehole backfilled with Bentonite Pellets.
								Black 10YR 2/1 SILT, some fine subangular to subrounded Sand, loose, dry, no odor, aplastic. Fill/Foundry Silt/Sand.		
								Yellow-brown 10YR 5/4 SILT, few Clay, aplastic, moderately dense, damp, no odor. Fill.		
750 / 5										
745 / 10										
740 / 15										

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Obstruction encountered at 3.0' bgs.
Sample collected 0-2' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-55-03.dat Date: 9/10/01

Date Start/Finish: 7/26/01
Drilling Company: Rau Drilling
Driller's Name: Alan Rau
Drilling Method: Hand Auger
Sampler Size: NA
Auger Size: 3" ID
Rig Type: NA

Northing: 567044.75
Easting: 13305963.59
Casing Elevation: NA

Borehole Depth: 10' bgs
Surface Elevation: 753.59

Descriptions By: S. Duly

Boring ID: RFI-55-04

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
755										
0						FL		Coarse angular Gravel. Fill.		
	1	0-2	2.0	>10000	-			Black (10YR 2/1) SILT, few to little fine subangular to subrounded Sand, trace to few Clay, aplastic, no odor, loose, dry. Foundry Fill.		
	2	2-4	2.0	NA	NA					
750										Borehole backfilled with Bentonite Pellets.
5	3	4-6	2.0	NA	NA	ML			SILT	
	4	6-8	2.0	0.0	-			Brown (10YR 3/3) SILT, some Clay, little fine to medium subangular to subrounded Sand, trace fine rounded Gravel, aplastic, no odor, moderately dense, damp. Till.		
745	5	8-10	2.0	NA	NA			Saturated.		
10										
740										
15										

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2' and 6-8' bgs.
- = Negative Test Result

Water Level Data

Date	Depth	Elev.
7/26/01	8.0'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-55-04.dat Date: 9/10/01

Date Start/Finish: 7/26/01
Drilling Company: Rau Drilling
Driller's Name: Alan Rau
Drilling Method: Hand Auger
Sampler Size: NA
Auger Size: 3" ID
Rig Type: NA

Northing: 566820.33
Easting: 13305734.56
Casing Elevation: 753.94

Borehole Depth: 10' bgs
Surface Elevation: 753.99

Descriptions By: S. Duly

Boring ID: RFI-55-05

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
755 / 0										
	1	0-2	2.0	>10000	-	SM		Subangular to subrounded fine Silty SAND, predominately FILL SAND, trace Clay, aplastic, few organic matter such as Roots present, no odor, loose, damp to dry.	SAND	Borehole backfilled with Bentonite Pellets.
	2	2-4	2.0	NA	NA					
750 / 5	3	4-6	2.0	NA	NA	CL		Dark brown (10YR) Silty CLAY, little to few fine to medium subangular to subrounded Sand, trace to few fine to medium subrounded to rounded Gravel, soft to medium stiff, moderately plastic, no odor, damp to dry. Clay Till. at 4.5': mixed with slag and metallic debris.	SILTY CLAY	
	4	6-8	2.0	>10000	NA					
745 / 10	5	8-10	2.0	NA	-	ML		Black (10YR 2/1) SILT, little fine to medium subrounded to subangular Sand, trace to little Clay, aplastic, no odor, moderately loose to moderately dense, damp.	SILT	
740 / 15										

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0-2' and 8-10' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-55-05.dat Date: 9/10/01

Date Start/Finish: 7/26/01 **Drilling Company:** Rau Drilling **Driller's Name:** Alan Rau **Drilling Method:** Hand Auger **Sampler Size:** NA **Auger Size:** 3" ID **Rig Type:** NA	**Northing:** 566873.02 **Easting:** 13305900.09 **Casing Elevation:** NA **Borehole Depth:** 3.5' bgs **Surface Elevation:** 753.91 **Descriptions By:** S. Duly	**Boring ID:** RFI-55-06 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
755										
0	1	0-3.5	3.5	>10000	-	SM		Brown 10YR 3/3 SILTY SAND, fine subangular to subrounded Sand, few fine to medium subrounded to rounded Gravel, some coarse grained angular Gravel (Fill), no odor, dry, loose, Organic Matter such as Roots present. Topsoil mixed with Fill.	SILTY SAND	Borehole backfilled with Bentonite Pellets.
						CL		Yellow-brown 10YR 5/6 Silty CLAY, little fine to medium subangular to subrounded Sand, trace fine to medium rounded Gravel, no odor, soft to medium stiff, damp to dry. Native Clay Till used as Backfill, Glass and metalic debris also present.	SILTY CLAY	
750								at 3.5': pipe with fill sand on top.		
5										
745										
10										
740										
15										

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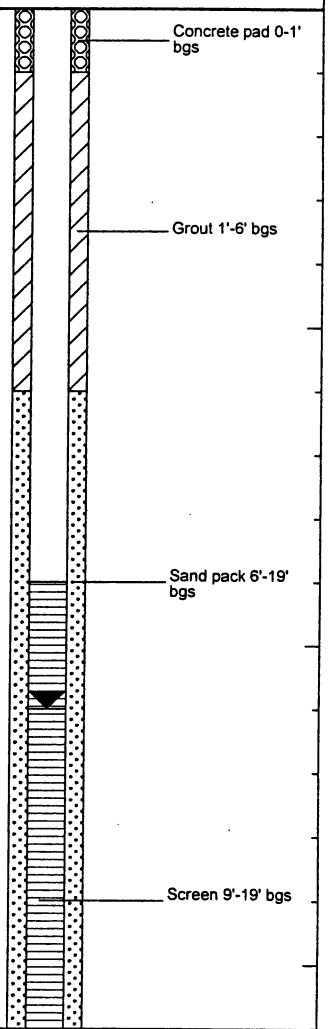
Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Sample collected 0-2' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 06/27/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2"x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 566762.73 **Easting:** 13305786.95 **Casing Elevation:** NA **Borehole Depth:** 21' bgs **Surface Elevation:** 753.75 **Descriptions By:** SM Dully	**Boring ID:** RFI-55-09 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
755										
0	1	0-2	7, 10, 8, 8	18	1.0	1334	-	GP	Coarse angular fossilferous limestone GRAVEL and PEBBLES, no odor, dry, loose. Fill.	GRAVEL
	2	2-4	6, 6, 5, 6	11	2.0	>9999	-	ML	Dark gray brown (10YR 3/2) aplastic SILT, little fine to coarse subangular Sand and fine to coarse subangular predominantly limestone Gravel, no odor, dry, loose to moderate dense (former topsoil mixed with fill).	SILT
750								SM	Yellow brown (10YR 5/6) Silty SAND, fine subangular Sand, trace to no Clay, no odor, damp, moderate dense. Fill.	SILTY SAND
5	3	4-6	3, 4, 5, 5	9	2.0	3085	-	CL	Dark yellow brown (10YR 4/6) Silty CLAY to CLAY with some Silt, little fine to medium subangular to subrounded Sand, trace fine to medium subrounded Gravel, no odor, moist, soft to moderate stiff.	CLAY and SILT
	4	6-8	3, 2, 3, 5	5	1.7	1287	-	ML	Yellow brown (10YR 5/4) aplastic SILT, some to little Clay, little fine to medium subangular to subrounded Sand, trace fine to medium rounded Gravel, damp, dense, no odor, local patches of increased clay content to Silty CLAY, water at 4.6'-5.1' bgs.	
								CL	Dark yellow brown Silty CLAY to CLAY with some Silt, moist at 8' bgs, locally oxidized to yellow brown (10YR-5/8).	
745	5	8-10	2, 3, 2, 3	5	2.0	1205	-	SM	Dark yellow brown (10YR 4/6 to 5/6) Silty SAND, few Clay, fine subangular Sand, no odor, damp to moist, moderate dense to dense. At 11' bgs with increased coarseness, decreased Silt, fine to medium Sand (predominantly fine subanguair Sand).	SILTY SAND
10	6	10-12	3, 4, 5, 6	9	1.5	284	-			
	7	12-14	2, 2, 3, 3	5	2.0	1281	-			
740	8	14-16	2, 2, 3, 7	5	1.6	526	-	ML	Gray (10YR 5/1) aplastic SILT, some fine subangular Sand, trace to no Clay, no odor, saturated, moderate dense. Alluvial.	SILT
15								SM	Gray (10YR 5/1) aplastic Silty SAND, fine subangular Sand, no odor, saturated, moderate dense to moderate loose (alluvial or river sands). From 18.5'-19.0' bgs: decreased	



Boring Construction

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3' and 9-11' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.
6/27/01	11'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-55-09

Borehole Depth: 21' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	3 3 5 6	8	NA	227	-	SM		sand and increased silt to Silt with SAND. From 19.0' bgs with increased sand and decreased silt to Silty SAND.	SILTY SAND	Screen 9'-19' bgs Sand pack 6'-19' bgs
735	10	18-20	NA	NA	NA	434	-					
20	11	20-21	NA	NA	NA	NA	-					
730												
25												
725												
30												
720												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3' and 9-11' bgs.
- = Negative Test Result.

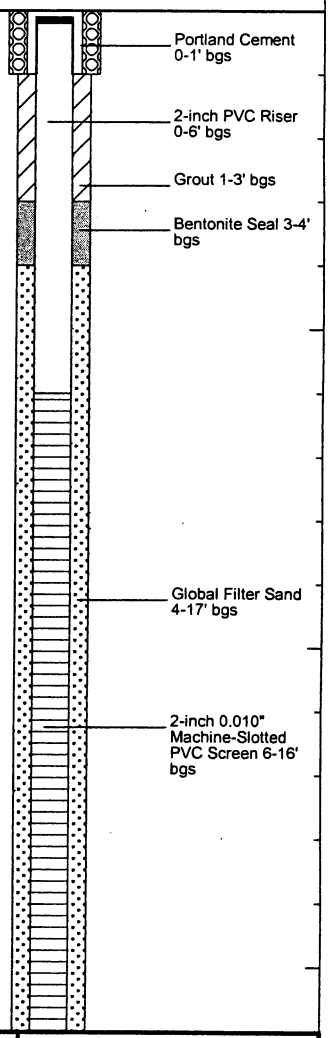
Water Level Data

Date	Depth	Elev.
6/27/01	11'	

Date Start/Finish: 1/23/02 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4-1/4" ID **Rig Type:** CME 55 ATV	**Northing:** 566762.73 **Easting:** 13305786.95 **Casing Elevation:** 753.75 **Borehole Depth:** 17' bgs **Surface Elevation:** 754.10 **Descriptions By:** SM Duly	**Boring ID:** RFI-55-10 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0 0									ASPHALT.	FILL
									Coarse grained angular Pebbles, aggregate.	
	1	0-2	4 8 9 11	17	1.6	0.0	-	SM	Very dark brown (10YR 2/2) fine subrounded to subangular poorly sorted Silty SAND, little Clay, no odor, damp, dense, local patches of oxidation to dark red-brown Foundry Sand.	SILTY SAND
	2	2-4	9 11 12 13	23	1.0	0.0	-		Moist to wet.	
5 5	3	4-6	2 3 5 8	8	1.6	0.0	-	ML	Dark gray (10YR 4/1) SILT, little fine subrounded to subangular Sand and Clay, no odor, dense, moist. Becomes brown (10YR 4/3), increased Clay content to some, increased coarseness of Sand to fine to coarse.	SILT
	4	6-8	3 7 9 9	16	1.1	0.0	-	SP	Gray-brown (10YR 5/2) fine to coarse subrounded to subangular poorly graded SAND, some Silt, few Clay, no odor, damp, dense, Fill Sand. Some fine to medium subangular to angular Gravel.	SAND
	5	8-10	3 5 7 8	12	1.4	0.0	-		Becomes moist, decreased Silt to little.	
10 10	6	10-12	3 6 8 9	14	1.0	0.0	-		Saturated.	
	7	12-14	4 5 6 7	11	1.8	0.0	-		Fining downwards, Glacio-alluvial.	
15 15	8	14-16	2 3 4 7	7	1.3	0.0	-	ML	Brown (10YR 5/3) SILT, little fine subrounded to subangular Sand, few Clay, no odor, saturated, dense, aplastic, Glacio-alluvial.	SILT

Boring Construction



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3' and 7-9' bgs.
- = Negative Test Result

Water Level Data

Date	Depth	Elev.
1/23/02	9.9' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-55-10

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
								ML		Brown (10YR 5/3) SILT, little fine subrounded to subangular Sand, few Clay, no odor, saturated, dense, aplastic, Glacio-alluvial.	SILT	Global Filter Sand 4-17' bgs; PVC Cap
20 20												
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1-3' and 7-9' bgs.
- = Negative Test Result

Water Level Data

Date	Depth	Elev.
1/23/02	9.9' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: j:\rockware\logplot2001\logfiles\64410\RFI-55-10.dat Date: 01/23/02

Date Start/Finish: 7/27/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID HSA **Rig Type:** CME 45B	**Northing:** 564791.64 **Easting:** 13305423.84 **Casing Elevation:** 742.82 **Borehole Depth:** 15' bgs **Surface Elevation:** 743.32 **Descriptions By:** S. Kerr	**Boring ID:** RFI-65-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy	Boring Construction
745											
0								FL	CONCRETE.		Cement pad with 9" diam. flush-mount cover.
	1	1-3	12 17 10 11	27	1.3	0.0	-	SP	Dark yellowish-brown (10 YR 4/6) fine to coarse SAND, little Silt, trace Clay, trace coarse Gravel, aplastic, loose, no odor, damp. Fill	SAND	Grout 1- 1.5' bgs.
740								ML	Very dark brown (10 YR 2/2) SILT, little fine Sand, trace Clay, dense, no odor, damp. Fill	SILT	Bentonite seal 1.5-3' bgs.
	2	3-5	8 10 12 16	22	1.6	0.0	-	SM	Yellowish-brown (10 YR 5/8) fine SAND, some Silt, trace Clay, moderately loose, damp. Moist.	SAND	2" ID Sch. 40 PVC riser to 5' bgs.
5	3	5-7	4 8 8 9	16	1.6	0.0	-		Wet.		
735	4	7-9	7 7 9 12	16	1.6	1.3	-		Saturated.		#5 Global filter sandpack.
	5	9-11	7 7 9 10	16	1.3	0.0	-	ML	Increased Silt to a Sandy SILT.	SANDY SILT	
10									Gray (10 YR 6/1) SILT, dense, no odor, saturated.		
	6	11-13	4 2 3 3	5	1.7	0.0	NA	CL	Gray (10 YR 5/1) CLAY, trace Silt, silt seams up to 3" wide, soft, highly plastic, no odor, saturated.	CLAY	2" ID Sch. 40 PVC 0.010" slotted screen 5-15' bgs.
730	7	13-15	2 1 2 4	3	2.0	0.0	NA				
15											

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0.7-2.7' and 4.7-6.7' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.
7/27/01	7.4'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-65-01a.dat Date: 10/19/01

Date Start/Finish: 8/5/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3'/4" ID **Rig Type:** CME 55	**Northing:** 564409.43 **Easting:** 13305813.97 **Casing Elevation:** NA **Borehole Depth:** 7.5 **Surface Elevation:** 746.17 **Descriptions By:** SM Duly	**Boring ID:** RFI-81-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 745	NA	NA	NA	NA	NA	NA	-	FL		Concrete (reinforced).	FILL	
	1	2.5-4.5	6 11 9 10	20	1.6	0.0	-	ML		Black (10YR 2/1) SILT, little fine subangular Sand, few Clay, trace fine to medium subrounded Gravel, metallic Debris and Slag present, aplastic, no odor, dry, moderately dense.	SILT	Borehole backfilled with Bentonite to grade.
	NA	NA	NA	NA	NA	NA	-					
5 740	2	5-7	4 7 9 9	16	1.5	0.0	-					
	NA	NA	NA	NA	NA	NA	-					
										End of boring--obstruction. Unknown obstruction: possibly a pipe or concrete.		
10 735												
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 2.5-4.5' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well.ldf
Data File:RFI-81-01.dat Date: 11/16/01

Date Start/Finish: 09/09/01
Drilling Company: Rau Drillling
Driller's Name: Greg Compeau
Drilling Method: HSA - split spoon w/shive
Sampler Size: 2'x2" ID
Auger Size: 3 1/4" ID
Rig Type: CME 55

Northing: 564271.5
Easting: 13305806.91
Casing Elevation: NA

Borehole Depth: 22'
Surface Elevation: 745.92

Descriptions By: SM Duly

Boring ID: RFI-81-02

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 745								FILL		CONCRETE	FILL	Cement pad with 9" diam. flush-mount cover.
												Grout 1-8' bgs.
5 / 740	1	4-6	3 10 10 50/5"	20	1.7	0.0	-			Black (10 YR 2/1) SILT, little Clay, little fine to coarse subangular to subrounded Sand, trace fine to medium subrounded Gravel, aplastic, no odor, dry, dense. Mixed with gray slag. Backfill.		2" ID Sch. 40 PVC riser 0.2-12' bgs.
	2	6-8	27 50/2"	NA	0.3	0.0	-			Rubbly drilling - steel/metallic debris present.		
	3	8-10	6 10 19 20	29	0.8	0.0	+					Bentonite seal 8-10' bgs.
10 / 735	4	10-12	7 29 30 11	59	1.9	0.0	+	ML			SILT	Global #5 sand pack 10-22' bgs.
	5	12-14	5 14 12 14	26	1.3	NA	-			Yellow-brown (10 YR 5/4) SILT, little Clay, aplastic, no odor, dense, damp.		
15 / 730	6	14-16	4 7 11 15	18	NA	NA	-			Little fine subangular Sand, saturated.		2" ID Sch. 40 PVC 0.010" slotted screen 12-22' bgs.

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available
Samples collected 4-6', 8-10', and 12-14' bgs.

Water Level Data

Date	Depth	Elev.
09/09/01	14' bgs	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: RFI-81-02.dat Date: 11/16/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-81-02

Borehole Depth: 22'

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
20 / 725		16-22	NA	NA	NA	NA	NA	ML		Yellow-brown (10 YR 5/4) SILT, little Clay, little fine subangular Sand, aplastic, no odor, dense, damp.	SILT	2" ID Sch. 40 PVC 0.010" slotted screen 12-22' bgs.; Global #5 sand pack 10-22' bgs.
25 / 720												
30 / 715												
35 / 710												

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available
Samples collected 4-6', 8-10', and 12-14' bgs.

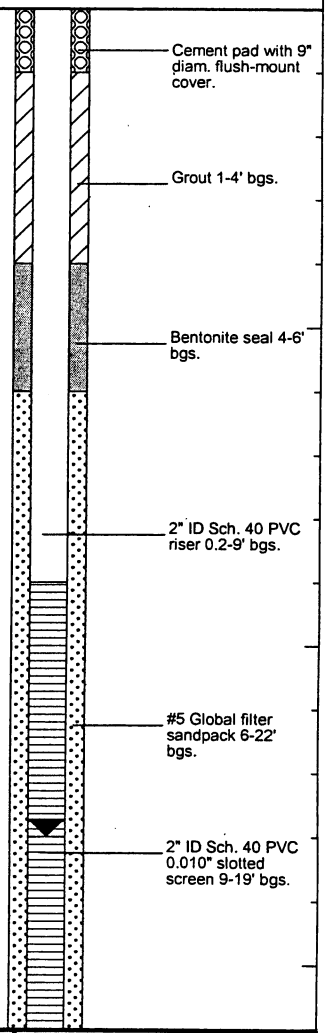
Water Level Data

Date	Depth	Elev.
09/09/01	14' bgs	

Date Start/Finish: 06/21/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Campeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" 10 HSA **Rig Type:** CME 45B	**Northing:** 564182.56 **Easting:** 13306289.85 **Casing Elevation:** NA **Borehole Depth:** 22' bgs **Surface Elevation:** 745.7 **Descriptions By:** S. Kerr	**Boring ID:** RFI-81-03 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0 / 745	1	0-2	4 5 7 5	12	1.6	28.2	-	ML	Brown (10 YR 4/3) aplastic SILT, little fine to medium subrounded Sand, little to some Clay, earthy odor, damp, moderately loose. Vegetation and organic matter (roots) present. Top soil.	SILT
	2	2-4	7 14 16 22	30	1	123	-	SP	Black (10 YR 2/1) to dark brown (10 YR 3/1) fine to coarse aplastic SAND, some Silt, no odor, damp, dense. Fill foundary sand with slag. At 3.0' bgs, little Clay.	SAND
5 / 740	3	4-6	5 8 11 13	19	1.7	106	-	ML	Black (10 YR 2/1) to dark brown (10 YR3/1) aplastic SILT, some fine to coarse subrounded to subangular Sand, no odor, dense, damp, local oxidation and mottling to dark yellow brown (10 YR 4/6) , lenses of black fine to coarse sand to gravel size fragments of slag. Fill foundary Sand and slag. At 7.0'bgs, occurence of clay lenses up to 1" in width thoughout.	SILT
	4	6-8	6 8 10 6	18	1.2	157	-			
	5	8-10	7 22 22 9	44	1.9	321	-			
10 / 735	6	10-12	7 10 5 6	15	1.6	107	-	SP	Yellow brown (10 YR 5/6) with dark gray brown (10 YR 3/2) to brown (10 YR 2/1) aplastic fine to medium SAND, some Silt, no odor, damp to locally moist, dense, slag still present. Foundary/Fill Sand.	SAND
	7	12-14	11 26 30 11	56	2	903	-		Fine to medium gravel size aplastic SLAG, no odor, moist, dense to very dense.	GRAVEL
15 / 730	8	14-16	4 3 3 4	6	1.2	83.0	+	ML	Brown aplastic SILT, little to some fine to medium Sand, little to some Clay, weak hydrocarbon-like odor, saturated, dense to locally very dense.	SILT
								CL	Gray (10 YR 5/1) SILTY CLAY, some to little fine to medium Sand, no odor, saturated, soft to very soft, local lenses of Silt up to 1" wide throughout.	CLAY

Boring Construction



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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
+/- = Positive/Negative Test Result.
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
06/21/01	13.0'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-81-03

Borehole Depth: 22' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	7 13 18 24	31	1.8	77.1	-	CL		Gray (10 YR 5/1) SILTY CLAY, some to little fine to medium Sand, no odor, saturated, soft to very soft, local lenses of Silt up to 1" wide throughout.	CLAY	2" ID Sch. 40 PVC 0.010" slotted screen 9-19' bgs.
	10	18-20	10 22 24 16	46	2	65.7	-			Gray (10 YR 6/1) CLAY, some Silt, little fine to medium subrounded Sand, trace fine to medium subangular to subrounded Gravel, no odor, dry, hard. Extensively bleached to 10 YR 8/1) throughout and oxidized to yellow brown (10 YR 5/4). Clay Till.		
20 725	11	20-22	3 2 8 11	15	2	48.2	-			Damp and very stiff.		#5 Global filter sandpack 6-22' bgs.
25 720												
30 715												
35 710												

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
+/- = Positive/Negative Test Result.
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
06/21/01	13.0'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well2.ldf
Data File: RFI-81-03.dat Date: 8/8/01

Date Start/Finish: 1/25/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Bit Size:
Auger Size:
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" diam. + disposable liner
Hammer Weight:

Northing: 564801.44
Easting: 13306136.75
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 745.83

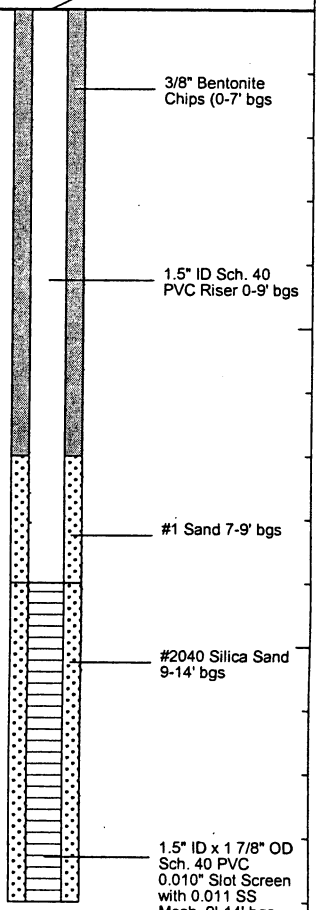
Geologist: Shawn Kerr

Well/Boring ID: RFI-81-04

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0 / 745	1	0-1	-	NA	NA			CONCRETE.
	2	1-2	0.0	NA	NA			No Recovery.
	3	2-4	0.3	NA	NA			
5 / 740	4	4-6	1.3	NA	NA			Dark gray-black fine to medium SAND with small to large rounded and angular GRAVEL. Brown fine SAND. Black fine SAND with large angular Rock.
	5	6-8	1.1	NA	NA			Brown fine to medium SAND, black staining at 6.4' and 6.9' bgs.
10 / 735	6	8-10	1.0	NA	NA	✸		Brown medium to coarse SAND and GRAVEL. Black foundry SAND with Slag.
	7	10-12	1.2	NA	NA			Black SAND, FILL material, and Metal Chunks. Saturated at 10.4' bgs.
	8	12-14	1.5	NA	NA			Dark gray-black Sandy CLAY. Gray fine SAND, trace Clay, angular Gravel.
15 / 730	9	14-16	2.0	NA	NA			Brownish-gray CLAY, stiff.



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Remarks: Sample collected 8-10' bgs.
PID not functional.
Sample collected 8-10' bgs.

Date Start/Finish: 8/4/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" **Auger Size:** 3 1/4" ID HSA **Rig Type:** CME 55	**Northing:** 564503.21 **Easting:** 13306079.71 **Casing Elevation:** NA **Borehole Depth:** 17' bgs **Surface Elevation:** 746.08 **Descriptions By:** SM Duly	**Boring ID:** RFI-81-05 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	745								FILL		Concrete.	FILL	
											Void.		
											Concrete.	FILL	
		1	3-5	3 5 6 7	11	2.0	>10,000	-			Black (10 YR 2/1) fine subangular SAND, some Silt, no odor, moderately loose, dry. Foundry sand. Fill.		Borehole backfilled with bentonite to grade.
5	740	2	5-7	4 4 6 2	10	1.0	>10,000	-			Becomes very dark gray (10 YR 3/1) mixed with medium to coarse angular gravel-sized pieces of concrete and gravel.		
		3	7-9	2 2 3 2	5	2.0	>10,000	-	SW		Black (10 YR 2/1) damp, with increased moisture with depth.	SAND	
10		4	9-11	2 3 3 2	6	2.0	>10,000	-					
	735										Moist, few clay.		
		5	11-13	1 2 3 3	5	1.8	>10,000	-			Saturated.		
		6	13-15	3 5 4 3	9	1.2	>10,000	NA					
15		7	15-17	1 3	7	1.8	9978	NA	CL		Dark gray (10 YR 4/1) Silty CLAY, little fine to medium subangular to subrounded Sand, trace fine to medium rounded Gravel, soft, no odor, damp.		

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Remarks: bgs = below ground surface;
NA=Not Available/Not Applicable.
Refusal at 4', 1st attempt. Boring/Temporary Well relocated.
Samples collected 3-5' and 9-11' bgs.
Set temporary well screen at 10-15' bgs.

Water Level Data

Date	Depth	Elev.

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-81-05

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730	7	15-17	4 5	7	1.8	9978	NA	CL		Gray (10 YR 5/1) Silty CLAY, little fine to medium subangular to subrounded Sand, trace fine to medium rounded Gravel, very stiff, no odor, damp.	LTY CLA	Borehole backfilled with bentonite to grade.
20												
725												
25												
720												
30												
715												
35												

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Remarks: bgs = below ground surface;
NA=Not Available/Not Applicable.
Refusal at 4', 1st attempt. Boring/Temporary Well relocated.
Samples collected 3-5' and 9-11' bgs.
Set temporary well screen at 10-15' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 8/4/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Campeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** 564069.09 **Easting:** 13306188.66 **Casing Elevation:** NA **Borehole Depth:** 18' bgs **Surface Elevation:** 745.74 **Descriptions By:** SM Duly	**Boring ID:** RFI-81-06 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 745	1	0-2	- 5 6 7	11	1.2	1177	-	FILL		Concrete.	FILL	
										Yellow-brown (10 YR 5/6) Silty fine to coarse subangular to subrounded SAND, trace Clay, few fine to coarse subrounded to rounded Gravel, no odor, moderately dense. Fill.		
	2	2-4	7 14 14 19	28	1.0	>10,000	-			Becomes black (10 YR 2/1) and damp, no gravel.		
5 / 740	3	4-6	10 6 3 2	9	1.0	4228	-			Becoming loose, damp, sand is predominantly fine grained. Foundry sand/Fill.		Borehole backfilled with bentonite to grade.
	4	6-8	3 3 3 4	6	1.2	9194	-					
	5	8-10	2 3 2 3	5	1.5	1073	-	SM		Moist.	SILTY SAND	
10 / 735	6	10-12	5 5 5 6	10	1.6	662	-			Yellow-brown (10 YR 5/6) mottling, fine to medium Silty SAND. Moderately dense.		
	7	12-14	4 4 3 3	7	1.7	60.2	-			1" wide yellow-brown (10 YR 5/6) lens, otherwise black. 1" wide yellow-brown (10 YR 5/6) lens, otherwise black.		
15 / 730	8	14-16	3 5 6 7	11	1.2	0.0	-			Saturated at 16.1' bgs.		

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Remarks: bgs = below ground surface; - = Negative Test Result
NA = Not Applicable/Not Available
Set temporary well screen 7-17' bgs.
Samples collected 0.8-2.8', 2.8-4.8', 8.8-10.8' and 12.8-14'

Water Level Data

Date	Depth	Elev.

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-81-06

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	3 4 4 6	8	2.0	0.0	-	CL		Gray (10 YR 5/1) Silty CLAY, little fine to medium subangular to subrounded Sand, very stiff to hard (pp=4 tons/sq. ft.), no odor, dry. Clay Till.	SILTY CLAY	Borehole backfilled with bentonite to grade.
20 725												
25 720												
30 715												
35 710												

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Remarks: bgs = below ground surface; - = Negative Test Resul
NA = Not Applicable/Not Available
Set temporary well screen 7-17' bgs.
Samples collected 0.8-2.8', 2.8-4.8', 8.8-10.8' and 12.8-14'

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 7/27/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 45B	**Northing:** 563842.42 **Easting:** 13306209.01 **Casing Elevation:** NA **Borehole Depth:** 14' bgs **Surface Elevation:** 741.31 **Descriptions By:** S Kerr	**Boring ID:** RFI-81-07 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0													
				-					Fill		Asphalt.		
				3					SW		Yellow brown (10 Y 5/4) aplastic fine SAND, loose, damp, no odor. Fill.		
	740	1	0-2	5	8	1.4	0.0	-			Very dark brown (10 YR 2/2) fine to medium SAND, some Silt, little Clay, trace fine to coarse Gravel, aplastic, damp to moist, moderately dense, no odor, little coal, dry. Fill.		
				18									
				23									
		2	2-4	24	38	1.4	0.0	-			Dense, dry.		
				14									
				28									
5				2									
				2									
		3	4-6	1	3	0.7	0.0	-			Wet.		Borehole backfilled with bentonite to grade.
				2									
	735			3									
		4	6-8	3	6	0.9	0.0	-	SP			SAND	
				3									
				6									
				11									
		5	8-10	9	17	1.2	0.0	-			Saturated.		
				8									
10				7							Very dark gray (10 YR 3/1) fine to medium SAND, aplastic, moderately dense, saturated, no odor.		
				3									
	730	6	10-12	7	15	1.5	0.0	-					
				8									
				11									
				6									
				12									
		7	12-14	14	26	1.5	0.0	-					
				12									
									CL		Gray (10 YR 5/1) CLAY, little Silt, trace fine to medium Sand, aplastic, pp>4.5, stiff, dry. Glacial clay till.	CLAY	
15													

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Remarks: bgs = below ground surface; pp=pocket penetrometer
NA = Not Applicable/Not Available; - = Negative Test Result.
1" temporary well screen set 4-14' bgs.
Samples collected 0.3-2.3' and 4.3-6.3' bgs.

Water Level Data

Date	Depth	Elev.
7/27/01	8.8'	

Date Start/Finish: 06/21/01
Drilling Company: Rau Drilling
Driller's Name: Rod Camperon
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4" ID
Rig Type: CME 45B

Northing: 563966.87
Easting: 13306353.9
Casing Elevation: NA

Borehole Depth: 18' bgs
Surface Elevation: 741.43

Descriptions By: SM Duly

Boring ID: RFI-81-08

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0												
	740	1	0-2	7 6 7 9	13	1.6	241	-	ML		Brown SILT(10 YR 5/3), little fine to coarse subrounded Sand, earthy odor, damp to dry, loose, aplastic, vegetation and organic matter such as roots present. Top soil.	SILT
									SP		Yellow brown (10 Y 5/4) aplastic fine to medium SAND. Some Silt, no odor, damp, dense. Fill.	SAND
		2	2-4	24 55/2"	n/a	0.5	189	-			Wood. Black, moist, odor present. REFUSAL : Moved hole over @ 2'. No sample.	
5		3	4-6	8 7 4 3	11	1.2	369	+	SP		Yellow brown aplastic fine to medium SAND. Some Silt, trace to little rounded Gravel, no odor, damp, dense. Fill.	SAND
	735	4	6-8	3 4 5 7	9	1.5	839	-	ML-CL		Brown (10 YR 5/3) with black (10 YR 2/1) mottling, some Silt, some fine to coarse angular Sand/slag fragments heavily oxidized and discolored, soft to medium stiff, moist. Fill. Dark yellow brown aplastic SILT, some fine to medium Sand, no odor, moist, dense to moderately dense. Mixed with fine to coarse oxidized gray brown slag. CLAY as at 5.5'-5.9' bgs, no slag. SILT as at 5.9' to 6.8' bgs, very dark grey brown (10 YR 3/2).	SILT and CLAY
		5	8-10	1 2 3 4	5	1.0	527	-			CLAY as at 5.5'-5.9' bgs, no slag. Dark brown (10 YR 4/2) aplastic SILT with Clay, little fine to medium subangular Sand, no odor, saturated, dense. Clayey Sand at 9.8' bgs.	
10	730	6	10-12	2 3 3 5	6	1.5	427	-	CL		Dark gray CLAYwith black motting, some Silt. little fine to medium Sand, trace fine to medium Gravel, no odor, moist to damp, soft. Clay Till. Stiffness increases with depth and black mottling decreases with depth. Oxidation to yellow brown along fractures. At 15.6' bgs, 3" wide light gray brown silt lenses are observed.	CLAY
		7	12-14	4 6 6 6	12	1.8	275	-				
15		9	14-16	6 5 8 8	13	2.0	663	-				

Boring Construction

- Cement pad with 9" diam. flush-mount cover.
- Grout 1-3' bgs.
- Bentonite seal 3-5' bgs.
- 2" ID Sch. 40 PVC riser 0.2-7' bgs.
- #5 Global filter sandpack 5-18' bgs.
- 2" ID Sch. 40 PVC 0.010" slotted screen 7-17' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
PID background = 0.0 ppm;+/- = Positive/Negative Test Result
Samples collected 0-2' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
06/21/01	8.3'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-81-08

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
725		16-18	11 14 23 40	37	n/a	464	-	CL		Dark gray (10 YR 4/1) CLAY with black motting, iron gray (10 YR 6/1) with oxidation to yellow brown (10 YR 4/4), some Silt. Little fine to medium Sand, trace fine to medium Gravel, no odor, moist to damp, soft. Clay till. Stiffness increases with depth and black mottling decreases with depth. Oxidation to yellow brown along fractures. At 15.6' bgs, 3" wide light gray brown silt lenses are observed. At 16.2' bgs, hard and dry to damp.	← CLAY →	2" ID Sch. 40 PVC 0.010" slotted screen 7-17' bgs. #5 Global filter sandpack 5-18' bgs.
20												
720												
25												
715												
30												
710												
35												

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NA = Not Applicable/Not Available
PID background = 0.0 ppm;+/- = Positive/Negative Test Result
Samples collected 0-2' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.
06/21/01	8.3'	

Date Start/Finish: 6/25/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 45B	**Northing:** 563857.46 **Easting:** 13306001.94 **Casing Elevation:** NA **Borehole Depth:** 18' bgs **Surface Elevation:** 745.89 **Descriptions By:** SC Kerr	**Boring ID:** RFI-81-09 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0													
0	745	1	0-2	1 1 2 3	3	0.7	>9999	-	ML		Very dark grayish brown (10YR 2/2) SILT, some Clay, little fine Sand, roots and woods, loose, earthy odor, moist to damp (topsoil).	SILT	Cement pad with 9" diam. flush-mount cover.
		2	2-4	4 4 5 5	9	1.3	>9999	-			Trace medium Gravel and metallic debris, clay decreases to little, dry.		Cement/bentonite grout 1-7' bgs.
5	740	3	4-6	2 2 4 5	6	1.0	50.5	-					2" ID PVC riser to 11' bgs.
		4	6-8	5 7 8 9	15	1.3	>9999	-					Bentonite chip seal 7-9' bgs.
		5	8-10	4 5 5 7	10	1.3	187	-					#5 Global filter sandpack 9-22' bgs.
10	735	6	10-12	4 4 6 7	10	1.5	>9999	-			Moist.		
		7	12-14	6 6 7 9	13	1.6	175	-			Yellow brown (10YR 5/6) SILT, some Clay, little fine to medium Sand, loose, moist, no odor.		
15	730	8	14-16	4 6 6 8	12	1.6	118	-	SM		Yellow brown (10YR 5/6) fine to medium Silty SAND (predominantly fine grained), wet, loose to moderately dense, saturated at 13.7' bgs, from 14.4' bgs downward silt decreases.	SILTY SAND	2" ID PVC 0.010" slotted screen 11-21' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
PID background = 0.0 ppm; - = Negative Test Result.
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
06/25/01	13.7	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-81-09

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	6 9 12 14	21	2.0	23.4	-	SM		Yellow brown (10YR 5/6) fine to medium Silty SAND (predominantly fine grained), wet, loose to moderately dense, saturated at 13.7' bgs, from 14.4' bgs downward silt decreases.	SILTY SAND	2" ID PVC 0.010" slotted screen 11-21' bgs.
	10	18-20	2 2 4 6	6	1.3	225	-					
20 725	11	20-22	5 7 9 14	16	1.5	42.3	-	ML		Yellow brown (10YR 5/6) SILT, little fine Sand, locally oxidized, dense, saturated, no odor.	SILT	#5 Global filter sandpack 9-22' bgs.
25 720												
30 715												
35 710												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
PID background = 0.0 ppm; - = Negative Test Result.
Samples collected 0-2', 8-10' and 10-12' bgs.

Water Level Data

Date	Depth	Elev.
06/25/01	13.7	

Date Start/Finish: 06/21/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 563669.29 **Easting:** 13306036.8 **Casing Elevation:** NA **Borehole Depth:** 24' bgs **Surface Elevation:** 746.22 **Descriptions By:** S.C. Kerr	**Boring ID:** RFI-81-10 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0													
				n'a					FL		Asphalt		
	745	1	0-2	14 16 20	30	1.1	391	-			Brown (10 YR 5/6) fine aplastic SAND, some Silt, little Clay, trace Gravel, moderately loose, some black staining, dry, no odor, some concrete rubble.		
		2	2-4	15 15 11 30	26	1.5	492	+			Very dark gray, with local oxidation, damp, no more Clay.		
5		3	4-6	18 50/3"	NA	0.8	412	+					Borehole backfilled with bentonite chips to grade.
	740	4	6-8	8 7 1 3	8	0.9	264	-			Brown (10 YR 5/6) SAND. Some Silt. Loose, dry, no odor.	SAND	
		5	8-10	3 3 3 3	6	n/a	95	-	SP				
10													
	735	6	10-12	3 4 3 4	7	1.2	253	-					
		7	12-14	5 6 6 5	12	1.7	109	-			Saturated		Temporary well screen set at 10' - 20' bgs.
15		9	14-16	6 8 9 11	17	1.4	142	NA			Fine to medium and gray (10 YR 5/6).		

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NA = Not Applicable/Not Available
+/- = Positive/Negative Test Result
Samples collected 0.3-2.3', 8.3-10.3' and 10.3-12.3' bgs.

Water Level Data

Date	Depth	Elev.
06/21/01	12.3'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-81-10

Borehole Depth: 24' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730	10	16-18	18 9 17 20	26	1.9	124	NA	SP		Brown (10 YR 5/6) SAND. Some Silt. Loose, dry, no odor.	SAND	Temporary well screen set at 10' - 20' bgs.
20	11	18-20	6 6 8 9	14	2	95.6	NA					
725	12	20-22	5 7 8 9	15	2	93.4	NA					
		22-24	12 13 15 20	28	n/a	174	NA					
25												
720												
30												
715												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
+/- = Positive/Negative Test Result
Samples collected 0.3-2.3', 8.3-10.3' and 10.3-12.3' bgs.

Water Level Data

Date	Depth	Elev.
06/21/01	12.3'	

Date Start/Finish: 6/20/01 **Drilling Company:** Rau Drilling **Driller's Name:** Rod Champeron **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 45B	**Northing:** 563897.5 **Easting:** 13306339.36 **Casing Elevation:** NA **Borehole Depth:** 14' bgs **Surface Elevation:** 740.34 **Descriptions By:** SM Duly	**Boring ID:** RFI-81-11 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 740	1	0-2	2 5 4 25	9	2	10,500	-	ML		Very dark gray brown SILT, little subangular Sand and Clay, aplastic, no odor, damp, moderately loose, organic matter,roots present. Top soil.	SILT	Cement pad with 9" diam. flush-mount cover
								SM		Yellow brown (10 YR 5/6) Silty SAND, little fine to medium Sand, aplastic, no odor, damp, dense.	SILTY SAND	Grout 0.8-1' bgs
	2	2-4	10 20 22 15	42	1.2	10,000	+			WOOD. Possible a railroad tie. No odor, dry, but odor present when drilling.	WOOD	Bentonite seal 1-2.5' bgs
								SP		Fine to coarse SAND. Little Silt, few Clay and fine to coarse Gravel, weak odor, aplastic, damp, dense, increasing density with depth.	SAND	2" ID Sch. 40 PVC riser 0.2-4' bgs
5 735	3	4-6	7 5 7 10	12	1.3	10,000	+			Dark gray (10 YR 5/1) to black (10 YR 2/1) fine to coarse SLAG, some silt, damp, dense.		
								ML		Very dark brown (10 YR 2/2) SILT, little fine subangular Sand, weak odor, moist to wet, dense, aplastic		
	4	6-8	3 5 6 7	11	1.6	249	+	SP		Very dark brown (10 YR 2/2) fine to medium subangular SAND, some Silt, trace Clay, moderate odor, aplastic, wet (saturated), moderately dense to dense, oily sheen.		
	5	8-10	18/ 5"	-	0.5	1975	+	FL		CONCRETE, mixed with silt to coarse gravel sized fragments of slag and anthracite coal.		
								SP		Sand as above (6.0'-8.5' bgs).		
10 730	6	10-12	3 3 5 6	8	1.0	474	-					#5 Global filter sand pack 2.5-14' bgs
		12-14	3 3 5 7	8	2.0	69.5	-	CL		Gray (10 YR 5/1) CLAY with oxidation and mottling to dark yellow brown (10 YR 4/4) and leaching to light gray (10 YR 7/1), some Silt, little fine to medium subangular to subrounded Sand, trace to few fine to medium subrounded to rounded Gravel, no odor, damp, very stiff to stiff.	CLAY	2" ID Sch. 40 PVC 0.010" slotted screen 4-14' bgs
										Increase in stiffness with depth at 12' bgs and decrease in mottling with depth. No bleaching below 12.0' bgs.		
15 725												

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NA = Not Applicable/Not Available.
+/- = Positive/Negative Test Result;
Samples collected 0-2', 2-4' and 4-6' bgs.

Water Level Data

Date	Depth	Elev.
06/20/01	5.7'	

Date Start/Finish: 06/15/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 20' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-81-12 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0		0-2	n/a n/a	n/a	n/a	n/a	NA	GP		Coarse angular to subangular GRAVEL, no odor, dry, loose. Fill mixed with cobble sized black fragments of anthracite coal. Also mixed with top soil, little Silt and occasional vegetation and roots.	GRAVEL	
		2-4	n/a n/a	n/a	n/a	n/a	NA			Wood.	WOOD	
5 5	1	4-6	4 2 8 12	10	2	4891	+	SP		Black (10 YR 2/1) anthracite coal with angular SAND, little Silt and fine to medium angular Gravel, all predominantly anthracite coal fragments, no odor, moderately dense, damp to moist.	SAND	Borehole backfilled with bentonite chips to grade.
	2	6-8	4 3 3 4	6	2	6414	-			Gray CLAY (10YR5/1) with dark yellow brown (10 YR5/1) oxidation, some Silt, little fine subangular to subrounded Sand, few fine to medium subrounded Gravel, moderately stiff, no odor, moist. Black at 7.2' bgs.	CLAY	
	3	8-10	1 1 3 4	4	1.6	2349	-			Lense of silt to medium gravel sized ANTHRACITE COAL fragments. Wet (saturated) .		
10 10										Gray CLAY as above (8.6'-8.8' bgs)		
										Saturated SILT lense.		
	4	10-12	2 2 6 8	8	1.3	1683	-	CL		Gray CLAY as above (8.8'-9.3' bgs). Decrease in mottling at 10.0' bgs; predominantly grey (10YR 5/1). At 11.0'bgs, 1" wide lense of anthracite coal as at 8.6-8.8' bgs. Increase of the level of oxidation along fractures and selvages to yellow brown (10 YR 5/4). Moderately stiff to stiff. Decrease in moisture content (damp).	CLAY	Temporary well screen installed at 18'-8' bgs.
	5	12-14	4 5 9 10	14	1.8	24.7	-			Gray CLAY as above (8.8'-9.3' bgs) but no oxidation present, stiff, damp.		
15 15	6	14-16	3 4 6 7	10	1.5	160	-			Gray CLAY as above (8.8'-9.3' bgs) but with intermittent saturated Silt lenses at 15.5', 15.9' and 16.6' bgs. Stiff to		

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NA = Not Applicable/Not Available;
+/- = Positive/Negative Test Result
Well Decommissioned.

Water Level Data

Date	Depth	Elev.
06/15/01	6.0'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-81-12

Borehole Depth: 20' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	7	16-18	3 5 7 8	12	1.5	202	-	CL		moderately stiff.	CLAY	Temporary well screen installed at 18'-8' bgs.
	8	18-20	3 5 6 5	11	1.5	394	-	ML		Gray (10 YR 5/1) SILT, little Clay, no odor, saturated, moderately dense, aplastic.	SILT	
20 20												
25 25												
30 30												
35 35												

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NA = Not Applicable/Not Available;
+/- = Positive/Negative Test Result
Well Decommissioned.

Water Level Data

Date	Depth	Elev.
06/15/01	6.0'	

Date Start/Finish: 11/28/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 563494.2 **Easting:** 13306419.8 **Casing Elevation:** NA **Borehole Depth:** 18' bgs **Surface Elevation:** 737.0 **Descriptions By:** SM Duly	**Boring ID:** RFI-81-12R **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
740												
0										Coarse grained angular sand- to cobble-sized anthracite COAL fragments. Aggregate - fill.		Cement pad with 9" diam. flush-mount cover.
735										Blind drilling without sampling to 18' bgs. Allowed augers to sit; greater than 1' of water in augers. Saturated cuttings emerged during the drilling of the last 5' (10-15' bgs).	See original borings logs for RFI-81-12.	Grout 1-4' bgs. Bentonite seal 4-6' bgs.
5												2" ID Sch. 40 PVC riser 0.2-8' bgs.
730	NA	NA	NA	NA	NA	NA	NA					Global #5 sand pack 6-18' bgs.
10												2" ID Sch. 40 PVC 0.010" slotted screen 8-18' bgs.
725												
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
See original boring logs for RFI-81-12.
Set 2" diameter permanent well, screened 8-18' bgs.

Water Level Data

Date	Depth	Elev.

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-81-12R

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
720										Blind drilling without sampling to 18' bgs. Allowed augers to sit; greater than 1' of water in augers. Saturated cuttings emerged during the drilling of the last 5' (10-15' bgs).		Global #5 sand pack 6-18' bgs.
20												
715												
25												
710												
30												
705												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
See original boring logs for RFI-81-12.
Set 2" diameter permanent well, screened 8-18' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 6/27/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: 564497.9
Easting: 13306302.47
Casing Elevation: NA

Borehole Depth: 18' bgs
Surface Elevation: 744.61

Descriptions By: S Kerr / SM Duly

Boring ID: RFI-81-13

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
745 / 0											
	1	0-2	9 25 12 14	37	1.2	4.0	-	ML		Very dark brown (10 YR 2/2) SILT, some fine to medium Sand, trace Clay, trace fine to coarse Gravel, roots and organic matter (topsoil), loose, dry, earthy odor.	SILT
	2	2-4	15 24 50/ 4"	NA	1.2	2.8	-			Dense, damp.	
								FILL		Concrete fragments.	FILL
740 / 5	3	4-6	1 2 3 4	5	0.8	0.0	-	ML		Dark brown (10 YR 3/3) SILT, some fine to coarse subangular to subrounded Sand, few Clay, aplastic, no odor, moderately dense, damp to moist.	SILT
	4	6-8	5 2 4 12	6	1.3	0.0	-				
								FILL		Concrete, rubbly drilling, spoon refusal.	FILL
	5	8-10	50/ 0"	NA	0.0	0.4	-	ML		SILT, as at 3.8-8' bgs, mixed with large cobble- to pebble-sized angular concrete fragments.	SILT
735 / 10	6	10-12	2 4 4 6	8	0.3	0.0	-				
	7	12-14	3 3 2 2	5	1.8	0.2	-			SILT, as at 3.8-8' bgs, but no concrete, few fine to coarse subrounded Gravel, brown (10 YR 2/1), saturated, increased clay content last three inches.	
730 / 15	8	14-16	2 5 5 4	10	1.2	0.0	-				

Boring Construction

- Cement pad with 9" diam. flush-mount cover
- Grout 1-3' bgs
- 2" ID Sch. 40 PVC riser 0.2-11' bgs
- Bentonite seal 3-8' bgs
- #5 Global filter sand pack 8-18' bgs
- 2" ID Sch. 40 PVC 0.010" slotted screen 11-16' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2', 6-8' and 10-12' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.
8/27/01	12.0'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-81-13

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	NA	NA	NA	NA	NA	CL		Dark gray (10 YR 4/1) Silty CLAY, little fine to coarse subangular to subrounded Sand, few fine subrounded Gravel, very stiff, no odor, damp. Clay Till. at 16.5': Gray (10 YR 5/1) with yellow-brown (10 YR 5/4) mottling throughout, local patches of increased silt to a SILT with CLAY, dry.	SILTY CLAY	#5 Global filter sand pack 8-18' bgs
725 / 20												
720 / 25												
715 / 30												
710 / 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0-2', 6-8' and 10-12' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.
8/27/01	12.0'	

Date Start/Finish: 9/17/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: hand auger
Sampler Size: NA
Auger Size: 3" bucket
Rig Type: NA

Northing: 565290.66
Easting: 13306456.9
Casing Elevation: NA

Borehole Depth: 2' bgs
Surface Elevation: 742.81

Descriptions By: SM Duly

Boring ID: RFI-81-19

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
745 / 0										
	1	0-2	100%	4.5	-	SP		Black (10 YR 2/1) fine to coarse angular SAND, some Silt, few fine to coarse angular Gravel, Slag, no odor, loose, dry. Large aggregate gravel fill first three inches of upper contact.	SLAG/FILL	Borehole backfilled with bentonite to grade.
740 / 5										
735 / 10										
730 / 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Sample collected 0-2' bgs;
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-81-19.dat Date: 11/16/01

Date Start/Finish: 8/4/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** 564732.24 **Easting:** 13305914.45 **Casing Elevation:** NA **Borehole Depth:** 15' bgs **Surface Elevation:** 745.86 **Descriptions By:** SM Duly	**Boring ID:** RFI-81-20 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	745								FILL		Concrete.	FILL	
		1	1-3	3 4 5 6	9	1.3	4461	+			Yellow-brown (10 YR 5/6) to dark gray-brown (10 YR 4/2) (mottled) fine to medium subangular SAND, some Silt, few to little fine to coarse gravel-sized lightweight debris, aplastic, no odor, dry, loose, little fine to medium subangular gravel-sized concrete pieces. Fill/Foundry sand.		
		2	3-5	6 5 4 4	9	1.2	>10,000	+					
5	740	3	5-7	3 4 6 7	10	1.3	4992	-	SP		Becomes dark yellow-brown (10 YR 4/4), no gravel, occasional dark brown to black varves.	SAND	
		4	7-9	6 7 13 15	20	1.6	>10,000	-			More dense, black (10 YR 2/1), trace Clay. Moist.		
10	735	5	9-11	4 6 8 8	14	1.7	>10,000	-	ML		Dark gray-brown (10 YR 4/2) SILT, some Clay, few fine to medium subangular to subrounded Sand, occasional fine to medium subrounded Gravel, aplastic, no odor, dense, moist.	SILT	
									SM		Brown (10 YR 4/3) SILTY SAND, trace Clay, plastic, no odor, saturated, moderately dense to dense.	SAND	
		6	11-13	2 5 7 11	12	2.0	787	-	CL		Gray (10 YR 6/1) CLAY, occasional silt lenses up to 4" wide but predominantly 1-2" wide throughout, moist.	CLAY	
15	730	7	13-15	5 9 11 18	20	1.9	>10,000	-			Damp to dry, gray (10 YR 5/1), very stiff, increasing stiffness and dryness with depth.		Borehole backfilled with bentonite to grade.

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Remarks: bgs=below ground surface;
+/- = Positive/Negative Test Result;
NA = Not Applicable/Not Available.
Samples collected 1-3', 3-5' and 7-9' bgs.
Set temporary well screen 7-12' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 9/17/01
Drilling Company: Rau Drilling
Driller's Name: Dennis Emery
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 3 1/4" ID
Rig Type: CME 55

Northing: 565334.47
Easting: 13306865.57
Casing Elevation: NA

Borehole Depth: 20' bgs
Surface Elevation: 753.8

Descriptions By: SM Duly

Boring ID: RFI-81-21

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
755 / 0												
	1	0-2	5 13 16 19	29	2.0	0.0	-			Dark yellow-brown (10 YR 4/6) SILT, some fine to coarse subrounded Sand, little Clay, few fine to coarse subrounded to rounded Gravel, aplastic, earthy odor, dry, dense to moderately dense, vegetation and roots present. Topsoil.		
	2	2-4	14 10 12 13	22	2.0	0.0	-	ML		Yellow-brown (10 YR 5/6) SILT, little fine to coarse subrounded Sand, some Clay, trace fine to coarse subrounded to rounded Gravel, aplastic, no odor, dry, locally heavily oxidized, dense. Till.	SILT	
750	3	4-6	7 8 8 7	16	1.8	0.0	-			Damp.		
5	4	6-8	2 3 3 3	6	1.9	0.0	-			Light yellow-brown (10 YR 6/4) Silty fine subangular SAND, trace to few Clay, aplastic, no odor, moderately loose, damp. Glacial-alluvial.		
745	5	8-10	2 3 4 8	7	NA	0.0	-	SM		Moist, occasional silty clay lenses up to 1" thick throughout.	SILTY SAND	
10	6	10-12	5 9 12 12	21	2.0	0.0	-			Saturated.		
	7	12-14	3 5 7 10	12	1.5	0.0	-	SP		Pale brown (10 YR 6/3) fine to medium subangular SAND, little to some Silt, trace Clay, aplastic, no odor, dense, moist. Glacial-alluvial.	SAND	
740										Occasional silt lenses up to 3" thick throughout.		
15	8	14-16	4 6 7 8	13	1.6	1.6	-			Saturated, becomes gray in color.		

Boring Construction:
- Cement pad with 9" diam. flushmount cover
- Grout 1-5' bgs
- Bentonite seal 5-7' bgs
- 1" ID Sch. 40 PVC riser 0.2-9' bgs
- #5 Global filter sand pack 7-19' bgs
- 1" ID Sch. 40 PVC 0.010" slotted screen 9-19' bgs

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Remarks: bgs=below ground surface;
+/- = Positive/Negative Test Result;
NA = Not Applicable/Not Available.
Samples collected 0-2' and 8-10' bgs;
Set 1" diameter well screen 9-19' bgs.

Water Level Data

Date	Depth	Elev.
9/17/01	10.0, 14.0'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-81-21

Borehole Depth: 20' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	4 7 6 5	13	1.7	0.0	-	SP		Gray fine to medium subangular SAND, little to some Silt, trace Clay, aplastic, no odor, dense, saturated. Glacial-alluvial.	SAND	1" ID Sch. 40 PVC 0.010" slotted screen 9-19' bgs #5 Global filter sand pack 7-19' bgs
735	10	18-20	1 3 8 12	11	NA	0.0	-					
20												
730												
25												
725												
30												
720												
35												

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Remarks: bgs=below ground surface;
+/- = Positive/Negative Test Result;
NA = Not Applicable/Not Available.
Samples collected 0-2' and 8-10' bgs;
Set 1" diameter well screen 9-19' bgs.

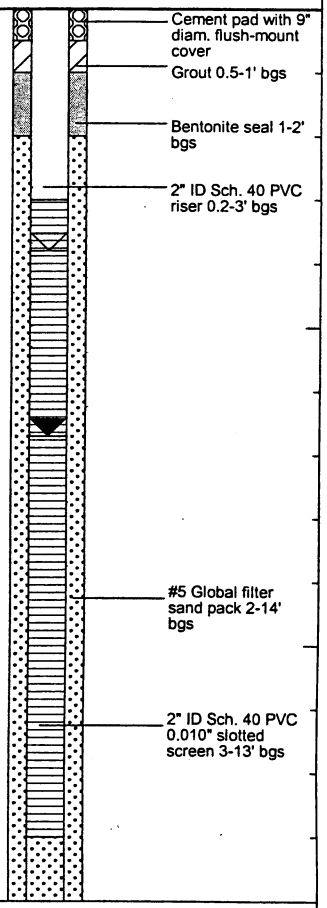
Water Level Data

Date	Depth	Elev.
9/17/01	10.0, 14.0'	

Date Start/Finish: 6/22/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3'/4" ID **Rig Type:** CME 45B	**Northing:** 564732.56 **Easting:** 13306473.82 **Casing Elevation:** NA **Borehole Depth:** 14' bgs **Surface Elevation:** 742.58 **Descriptions By:** SM Duly	**Boring ID:** RFI-81-22 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
745											
0	1	0-2	3, 10, 14, 12	24	1.8	211	-	ML		Very dark gray-brown (10 YR 3/2) SILT, little fine to medium subangular to subrounded Sand, few to little Clay, aplastic, earthy odor, damp with rainfall, moderately loose. Vegetation and organic matter such as roots present. Topsoil, mixed with little to some coarse subangulargravel aggregate.	FILL
										Black (10 YR 2/1) silt to coarse gravel-sized angular SLAG, no odor, moderately dense to dense, dry.	
740	2	2-4	6, 7, 7, 6	14	1.5	283	-	CL		Gray (10 YR 4/1) Silty CLAY, little fine to medium subangular to subrounded Sand, moderately stiff, no odor, damp.	CLAY
								ML		Brown (10 YR 5/3) SILT, some fine subangular Sand, aplastic, dense, no odor, moist. Saturated at 3.8'.	SILT
5	3	4-6	3, 1, 3, 3	4	1.3	245	-	CL		Silty CLAY as above at 2-3' bgs, but soft, saturated.	
								ML		SILT, as at 3-4.8' bgs, but with black (10 YR 2/1) mottling, wood debris at upper contact, increased Sand to some.	SILT
	4	6-8	3, 3, 3, 9	6	NA	67.4	-	CL		Silty CLAY as at 2-3' bgs, but soft, saturated.	CLAY
735	5	8-10	3, 3, 5, 8	8	1.4	90.3	-	SP		Gray (10 YR 5/1) subangular fine to medium (predominantly fine) SAND, aome Silt, aplastic, moderatele dense, no odor, saturated. Locally oxidized to yellow-brown (10 YR 5/4). Possibly alluvial/riverine sand.	SAND
10	6	10-12	4, 7, 9, 7	16	2.0	82.8	-				
730	7	12-14	5, 9, 15, 18	24	1.5	68.3	-	CL		Gray (10 YR 5/1) CLAY, heavily oxidized to yellow-brown (10 YR 5/6) first 2", little fine to medium subangular to subrounded Sand, trace to few fine to medium subrounded to rounded Gravel, moderately stiff to hard with depth, no odor, damp, becoming dry with depth. Clay Till.	CLAY
15											

Boring Construction



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Sample collected 0-2' bgs;
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.
6/22/01	3.8', 6.7'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: RFI-81-22.dat Date: 1/16/02

Date Start/Finish: 9/7/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** Direct Push **Sampler Size:** 2" ID acetate sleeve **Auger Size:** NA **Rig Type:** Mule-mounted Geoprobe	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 7' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-81-23 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0						FILL		Concrete.	FILL	Borehole backfilled with bentonite to grade.
	1	1-4	3.0	51.8 24.6	+ +	ML		Dark gray (10 YR 4/1) SILT, little fine subangular Sand, little Clay, rare coarse rounded Gravel, aplastic, weak odor, moist, moderately dense. Saturated at 1.7' bgs. Brown (10 YR 5/3).	SILT	
5 5	2	4-7	3.0	4.6 10.2	- -			Moist.		
								Moist to damp.		
10 10										
15 15										

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Remarks: bgs=below ground surface;
+/- =Positive/Negative Test Result;
NA = Not Applicable/Not Available;
Set temporary well screen 1-6' bgs;
Sample collected 0.9-1.7' bgs.

Water Level Data

Date	Depth	Elev.
9/7/01	1.7'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-81-23.dat Date: 10/4/01

Date Start/Finish: 9/7/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** Direct Push **Sampler Size:** 2" ID acetate sleeve **Auger Size:** NA **Rig Type:** Mule-mounted Geoprobe	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 7' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-81-24 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0						FILL		Concrete.	FILL	Borehole backfilled with bentonite to grade.
	1	1-4	2.0	0.0	-	ML		Dark gray (10 YR 4/1) SILT, little fine subrounded to subangular Sand, little Clay,aplastic, no odor, moist to saturated (at 1.5' bgs), moderately dense. Fill at 2': Black (10 YR 2/1) mottling. Wood debris, black (10 YR 2/1).	SILT	
5 5	2	4-7	NA	0.0	-	SP		Very dark gray (10 YR 3/1) fine to medium subangular to subrounded SAND, little to some Silt with increased silt with depth, trace Clay, no odor, saturated.	SAND	
				0.0	-	MI		Gray (10 YR 5/1) SILT, as at 1.3-5' bgs.	SILT	
10 10										
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Set temporary well screen 1-6' bgs.

Water Level Data

Date	Depth	Elev.
9/7/01	1.5'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-81-24.dat
Date: 10/4/01

Date Start/Finish: 12/03/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" OD **Auger Size:** 2 1/4" ID HSA **Rig Type:** CME55	**Northing:** 564072.88 **Easting:** 13305810.69 **Casing Elevation:** NA **Borehole Depth:** 10' bgs **Surface Elevation:** 743.95 **Descriptions By:** SM Duly	**Boring ID:** RFI-81-25 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	745												
0			NA	NA	NA	NA	NA	NA			Concrete.		
											Yellow-brown 10YR 5/4 fine subangular SAND, little Silt, trace Clay, poorly graded, no odor, dense, aplastic, damp.	SAND	
		1	0.8-2.8	9 17 28 46	45	1.3	NA	NA	FL		Black 10YR 2/1 angular fine to coarse sand-sized ASH and CINDERS, some silt-sized, few gravel-sized, no odor, dense, aplastic, damp.		
		2	2.8-4	50/ 5"	NA	0.2	NA	NA			CONCRETE and SLAG RUBBLE mixed with angular fine to coarse grained sand-sized Ash and Cinders, some silt-sized, few gravel-sized, no odor, dense, aplastic, damp.	RUBBLE	
	740										In-situ CONCRETE slab (12").	FILL	
5		3	4-6	50/ 1"	NA	NA	NA	NA			Very dark brown 10YR fine to medium grained Silty SAND, little Clay, little fine to coarse subangular Gravel, mostly poorly graded, no odor, moderately dense becoming increasingly dense with depth, damp. Fill/Foundry Sand.	SILTY SAND	Borehole backfilled with bentonite to grade.
			NA	NA	NA	NA	NA	NA	SM				
	735	4	8-10	5 4 2 1	6	1.2	NA	NA					
10													
	730												
15													

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.8-2.8' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/12/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: Direct Push
Sampler Size: 2" ID acetate sleeve
Auger Size: NA
Rig Type: Truck Mounted Geoprobe

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 2' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: RFI-81-26

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0		NA	NA	NA	NA	FL		Concrete (reinforced).	Concrete	Borehole backfilled with bentonite to grade.
								Refusal at 1.2' bgs. Unable to go farther with concrete bits on truck-mounted geobprobe. No sample.		
5 5										
10 10										
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
No samples collected.

Water Level Data

Date	Depth	Elev.

Project: 64410.101 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-81-26.dat
Date: 12/21/01

Date Start/Finish: 12/12/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: Direct Push
Sampler Size: 4' x 2" ID acetate sleeve
Auger Size: NA
Rig Type: Truck-mounted Geoprobe

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 2' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: RFI-81-27

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0		NA	NA	NA	NA	FL		Reinforced CONCRETE.	Fill	Borehole backfilled with bentonite to grade.
								End of Boring. Can no longer drive bit further. No sample.		
5 5										
10 10										
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Refusal in concrete. No samples collected.

Water Level Data

Date	Depth	Elev.

Project: 64410.101 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-81-27.dat
Date: 1/10/02

Date Start/Finish: 12/12/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: Direct Push
Sampler Size: 4' x 2" ID Acetate Sleeve
Auger Size: NA
Rig Type: Truck-mounted Geoprobe

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 2.5' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: RFI-81-28

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0						FL		Concrete.		
	1	0.5-2.5	1	NA	NA	SM		Yellow-brown, (10YR 5/4) Silty SAND, poorly graded fine to coarse subangular Sand, predominantly fine to medium, no odor, moderately dense, aplastic, dry. Fill. 2.0-2.5 Black (10YR 2/1) Silty SAND, poorly graded fine to medium subangular to angular Sand, few Clay, no odor, dense, aplastic, dry. Fill/Foundry Sand.	SILTY SAND	Borehole backfilled with bentonite to grade (0-2.5' bgs).
								End of boring. CONCRETE.		
5 5										
10 10										
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0.5-2.5' bgs.

Water Level Data

Date	Depth	Elev.

Project: 64410.101 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-81-28.dat Date: 1/10/02

Date Start/Finish: 12/13/01
Drilling Company: Rau Drilling
Driller's Name: Greg Campeau
Drilling Method: Direct Push
Sampler Size: 2" ID x 4' Acetate Sleeve
Auger Size: NA
Rig Type: Mule-mounted Geoprobe

Northing: 564756.52
Easting: 13305913.82
Casing Elevation: NA

Borehole Depth: 1.1' bgs
Surface Elevation: 745.95

Descriptions By: SM Duly

Boring ID: RFI-81-29

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 745		NA	NA	NA	NA	FL		Reinforced CONCRETE.	FILL	Borehole backfilled with bentonite to grade.
								End of boring. No samples.		
5 / 740										
10 / 735										
15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.

Project: 64410.101 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-81-29.dat Date: 1/10/02

Date Start/Finish: 12/13/01
Drilling Company: Rau Drilling
Driller's Name: Greg Campeau
Drilling Method: Direct Push
Sampler Size: 4' x 2" Acetate Sleeve
Auger Size: NA
Rig Type: Mule-mounted Geoprobe

Northing: 564706.99
Easting: 13305912.99
Casing Elevation: NA

Borehole Depth: 5.2' bgs
Surface Elevation: 746.02

Descriptions By: SM Duly

Boring ID: RFI-81-30

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								Concrete.	FILL	
	1	1.2-5.2	3.2	NA	NA	SM		Dark yellow-brown (10YR) subrounded to subangular poorly graded Silty SAND, fine to medium Sand, few Clay, no odor, dense, aplastic, dry. Fill/Foundry Sand.	SILTY SAND	Borehole backfilled with bentonite to grade (0-5.2' bgs).
						SW		Yellow brown (10YR 5/4) angular, fine to coarse, well graded SAND, few Silt, no odor, very dense to semi-lithified, aplastic, dry.		
						SM		Dark yellow-brown (10YR) subrounded to subangular poorly graded Silty SAND, fine to medium Sand, few Clay, no odor, dense, aplastic, dry. Fill/Foundry Sand.		
5 5						SW		Yellow brown 910YR 5/40 angular, fine to coarse, well graded SAND, few Silt, no odor, very dense to semi-lithified, aplastic, dry.		
								Borehole terminated at 5.2'.		
10 10										
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1.2-3.2' and 3.2-5.2' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/13/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Campeau **Drilling Method:** Direct Push **Sampler Size:** 2" ID acetate sleeve **Auger Size:** NA **Rig Type:** Mule-mounted Geoprobe	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 5' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-81-31 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0						FL		Concrete.		
	1	1-5	2.3	NA	NA	SW		Very dark brown (10 YR 2/2) well graded angular SAND, little Silt, few fine to coarse angular Gravel, trace Clay, no odor, moderately dense, aplastic, dry. Fill/Foundry Sand.	SAND	Borehole backfilled with bentonite to grade.
5 5								Borehole terminated at 5' bgs.		
10 10										
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/13/01
Drilling Company: Rau Drilling
Driller's Name: Greg Campeau
Drilling Method: Direct Push
Sampler Size: 2" ID acetate sleeve
Auger Size: NA
Rig Type: Mule-mounted Geoprobe

Northing: 564729.44
Easting: 13305891.27
Casing Elevation: NA

Borehole Depth: 5' bgs
Surface Elevation: 746.01

Descriptions By: SM Duly

Boring ID: RFI-81-32

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0						FL		Reinforced CONCRETE.		
	1	1-5	2.3	NA	NA	SW		Very dark brown (10YR 2/2) well graded angular SAND, little Silt, few fine to coarse angular Gravel, trace Clay, no odor, moderately dense, aplastic, dry. Fill/Foundry Sand.	SAND	Borehole backfilled with bentonite to grade.
5 5								Borehole terminated at 5' bgs.		
10 10										
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples collected 1-3' and 3-5' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 1/18/02
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 75

Northing: 566145.82
Easting: 13307019.25
Casing Elevation: 751.64

Borehole Depth: 15' bgs
Surface Elevation: 751.74

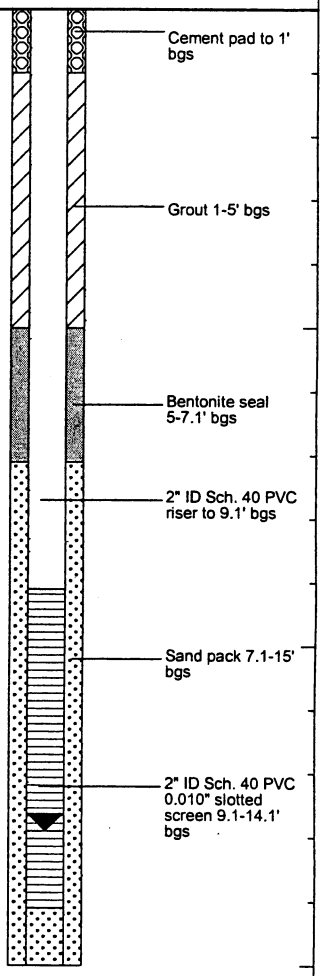
Descriptions By: SM Duly

Boring ID: RFI-81-33

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0 0	1	0-2	10, 17, 15, 10	32	1.5	0.0	-	ML	Black (10 YR 2/1) SILT, some fine to coarse angular fragments of anthracite Coal, aplastic, no odor, dry, dense.	SILT
								Fill	Coarse gravel- to pebble-sized rounded to subrounded AGGREGATE, no odor, dry, loose. No recovery 2-4' bgs.	GRAVEL
	2	2-4	10, 11, 10, 11	21	0.0	NA	NA	SP	Dark yellow-brown (10 YR 4/4) medium poorly graded subangular to angular SAND, little Silt, aplastic, no odor, damp, loose. Foundry sand.	SAND
								CL	Brown (10 YR 4/3) Silty CLAY, little fine to medium subangular Sand, weakly plastic, no odor, hard to very stiff, dry.	
5 5	3	4-6	17, 18, 22, 25	40	2.0	0.0	-	SM	Black (10 YR 2/1) Silty fine to medium subangular to subrounded SAND, little Clay, aplastic, no odor, damp, dense. Foundry sand. at 5.2': Moist.	SILTY SAND
	4	6-8	5, 15, 11, 9	26	2.0	0.0	-	CL	Brown (10 YR 5/3) Silty CLAY, little fine to coarse subangular to subrounded Sand, few fine to medium rounded Gravel, weakly plastic, no odor, damp, stiff. Few pebbles at first inch of upper contact. Clay Till.	SILTY CLAY
	5	8-10	5, 7, 6, 8	13	2.0	0.0	-			
10 10									Gray-brown (10 YR 5/2). Very dark brown (10 YR 2/2). at 10.8': Pebbles and cobbles to lower contact.	
	6	10-12	3, 3, 5, 4	8	1.8	0.0	-	SP	Gray-brown (10 YR 5/2) fine subangular poorly-graded SAND, some Silt, few Clay, aplastic, no odor, wet, moderately dense.	SILTY CLAY
	7	12-14	4, 4, 6, 10	10	1.7	0.0	-	CL	Silty CLAY, as at 6.9-11' bgs, but gray (10 YR 5/1) with yellow-brown (10 YR 5/4) mottling (possible oxidation) and occasional possible bleaching to white (10 YR 8/1), very stiff to hard with increasing depth. Clay Till. at 12.9': Saturated silt seams/lenses throughout up to 3" wide. Soft, moist clay in between.	
15 15	8	14-16	27, 50/4"	NA	0.9	0.0	-	SM	Brown (10 YR 3/3) Silty fine subangular well-graded SAND, few Clay, aplastic, no odor, saturated, loose.	
								CL	Gray (10 YR 6/1) Silty CLAY, few fine subrounded Sand, trace fine rounded Gravel, homogeneous, weakly plastic, no odor, dry, hard. Oxidation along cracks for upper 3 inches. Clay Till.	



Boring Construction

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples collected 0-2', 8-10' and 10-12' bgs;
- = Negative Shake Test.

Water Level Data

Date	Depth	Elev.
1/18/02	12.9' bgs	

Project: 64410.101 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-81-33.dat Date: 2/8/02

Date Start/Finish: 1/14/02 **Drilling Company:** Rau Drilling **Driller's Name:** Rod Camperon **Drilling Method:** HSA/SS **Sampler Size:** 2" ID x 2' **Auger Size:** 4 1/4" ID **Rig Type:** CME 75	**Northing:** 563853.43 **Easting:** 13306495.59 **Casing Elevation:** NA **Borehole Depth:** 12.5' bgs **Surface Elevation:** 736.94 **Descriptions By:** SM Duly	**Boring ID:** RFI-81-34 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	1	0-2	- - 1 2	1	0.6	NA	-	Fill		Reinforced concrete.	FILL	
								SM		Very dark brown (10 YR 2/2) Silty fine subangular poorly-graded SAND, little to few Clay, aplastic, no odor, dry to damp, moderately dense. Foundry sand.	SILTY SAND	
	2	2-4	3 2 3 3	5	1.5	NA	-					
5 5		4-6	NA	NA	1.0	NA	NA			Concrete.	FILL	Borehole backfilled with bentonite to grade.
	3	6-8	4 4 3 2	7	1.2	NA	-	Fill		Dark yellow-brown (10 YR 3/6) fine to coarse subangular to subrounded sand-sized CINDERS and SLAG, few rounded fine to coarse gravel-sized dark gray metallic debris and slag, no odor, dry, moderately loose.	SAND	
	4	8-10	4 8 18 11	26	1.8	NA	-			Black (10 YR 2/1) Coal fragments.		
10 10	5	10-12	4 4 7 7	11	1.5	NA	+	SM		Dark brown (10 YR 3/3) to black (10 YR 2/1) mottled Silty fine subangular poorly-graded SAND, little Clay, local patches of fine to coarse angular slag or cinders debris, aplastic, no odor, moist, moderately dense. Foundry sand with slag. Saturated at 10.9' bgs.	SILTY SAND	
	6	12-12.5	4 50/ 3"	NA	0.5	NA	NA			Refusal in concrete at 12.5' bgs.		
15 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Borehole moved 1.5' from original location;
+/- = Positive/Negative Shake Test.

Water Level Data

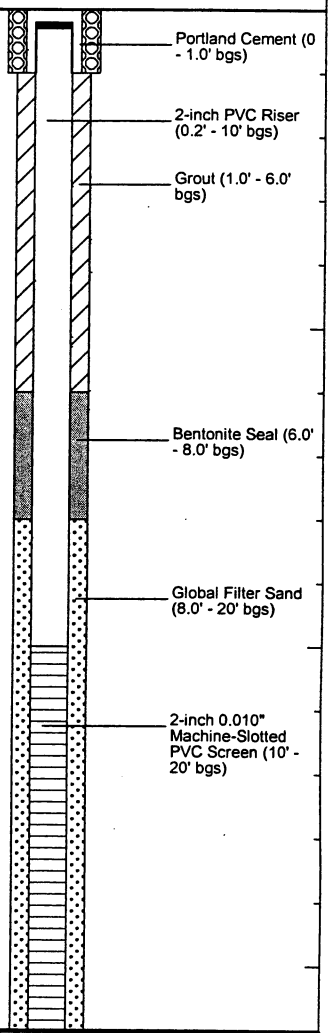
Date	Depth	Elev.
1/14/02	10.9' bgs	

Project: 64410.101 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-81-34.dat Date: 2/8/02

Date Start/Finish: 1/18/02 **Drilling Company:** RAU **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2" ID x 2' **Auger Size:** **Rig Type:**	**Northing:** 564091.81 **Easting:** 13305961.93 **Casing Elevation:** NA **Borehole Depth:** 20' bgs **Surface Elevation:** 743.23 **Descriptions By:** SM Duly	**Boring ID:** RFI-81-35 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0 0	1	SS	3 6 8 8	14	1.3	0.0	-	FL		Reinforced CONCRETE.	FILL
								SM		Yellow-brown (10YR 5/4) well-graded fine to medium subrounded to subangular SAND, some Silt, few Clay, no odor, dry, dense. Fill with metallic debris and Slag throughout.	SAND
	2	SS	10 12 16 27	28	2.0	21.6	-			Brown (10YR 4/3), Slag and metallic debris present at 2.2' bgs. Light yellow-brown (10YR 6/4), no Slag or debris present from 3.0' - 4.6' bgs.	
5 5	3	SS	50/2"	-	0.0	NA	NA			Dark brown (10YR 3/3), Slag and metallic debris present.	
	4	SS	3 5 5 4	10	1.5	42.5	-				
	5	SS	NA	NA	2.0	NA	NA			Color change to light yellow-brown (10YR 6/4). Dark gray shinny metallic debris.	
10 10	6	SS	4 5 3 2	8	1.8	9.0	-				
	7	SS	10 11 8 44	19	0.8	5.7	+	ML		Dark brown (10YR 2/2) SILT, little Clay and fine to coarse subangular Sand, aplastic, no odor, damp, moderately dense. Color change to black (10YR 2/1), weak odor, moist.	SILT
15 15	8	SS	11 10 9 7	19	2.0	0.0	+	SP		Gray-brown (10YR 5/2) fine to medium poorly-graded SAND, little Silt, aplastic, weak odor, moderately dense, saturated.	SAND

Boring Construction



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples collected 0.8-2.8', 8-10' and 12-14' bgs;
+/- = Positive/Negative Test Result.

Water Level Data

Date	Depth	Elev.
1/18/02	14'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-81-35

Borehole Depth: 20' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
20 20	NA	NA	NA	NA	NA	NA	NA	SP		Gray-brown (10YR 5/2) fine to medium poorly-graded SAND, little Silt, aplastic, weak odor, moderately dense, saturated.	SAND	Global Filter Sand (8.0' - 20' bgs); 2-inch 0.010" Machine-Slotted PVC Screen (10' - 20' bgs); PVC Cap
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples collected 0.8-2.8', 8-10' and 12-14' bgs;
+/- = Positive/Negative Test Result.

Water Level Data

Date	Depth	Elev.
1/18/02	14'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:j:\rockware\logplot2001\logfiles\64410\RFI-81-35.dat Date:

Date Start/Finish: 06/18/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4"
Rig Type: CME 55

Northing: 563161.47
Easting: 13305595.65
Casing Elevation: NA

Borehole Depth: 12' bgs
Surface Elevation: 741.34

Descriptions By: SM Duly

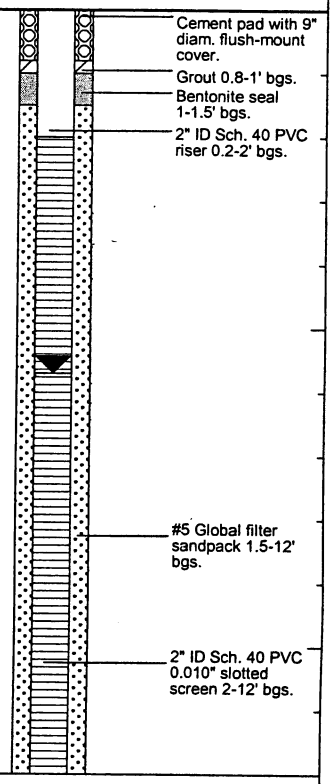
Boring ID: RFI-83/84-01

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0												
	740	1	0-2	NA NA NA NA	NA	1.3	4781	-	GW		Angular GRAVEL, loose, no odor, dry. Spoon refusal.	GRAVEL
		2	2-4	2 3 3 4	6	1	652	-	SP / CL		Coarse subrounded to subangular brown (10 YR 3/3) poorly graded Sand, little Silt, few medium rounded Gravel, dry to damp, no odor, loose. Fill. Brown (10 YR 5/3) Silty lean CLAY, little to some fine to medium subangular Sand, no odor, damp, moderately stiff.	SAND
5		3	4-6	2 2 4 5	6	1.6	98.4	-	SP		Sand as above (2.0'-2.7' bgs) but predominantly fine to medium, few fine to medium rounded to subrounded Gravel, locally mottled to black (10 YR 2/1). Fill. At 5.0' bgs, becomes dark brown (10 YR 4/5) and no more gravel. At 6.8' bgs, black (10 YR 2/1) to lower contact.	
	735	4	6-8	2 4 6 6	10	1.2	10.9	-				
		5	8-10	2 2 4 6	6	1.8	10.0	-	CL		Gray (10 YR 4/1) lean CLAY, some Silt, little fine to medium subrounded Sand, no odor, moderately stiff, damp, no oxidation present. Glacial till. At 9.0' bgs, decrease in the sand content (few) and local in increase in Silt to a Silty Clay. Becomes stiff after 10.0' bgs.	CLAY
10												
	730	6	10-12	3 6 7 9	13	NA	n/a	NA			CLAY as above 7.5-10' bgs but increase Sand to little and decrease Silt to some.	
15												

Boring Construction



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
- = Negative Test Result;
Collected sample 2-3.7' bgs.

Water Level Data

Date	Depth	Elev.
06/18/01	5.7'	

Date Start/Finish: 6/18/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 563529.77 **Easting:** 13305585.27 **Casing Elevation:** NA **Borehole Depth:** 14' bgs **Surface Elevation:** 741.59 **Descriptions By:** SM Duly	**Boring ID:** RFI-83/84-02 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0													
	740	1	0-2	NA NA NA NA	NA	NA	NA	NA	GW		Coarse angular GRAVEL. No odor, dry, loose. Fill.	GRAVEL	Cement pad with 9" diam. flush-mount cover. Grout 0.8-1' bgs.
		2	2-4	2 4 6 6	10	1.7	440	-	ML CL		Very dark gray brown SILT, little fine to medium Sand, few Clay, no odor, damp, loose, aplastic. Mixed with Gravel. Fill. Yellow brown (10 YR 5/6) Silty lean CLAY, little fine to medium subangular Sand, trace to few fine to medium Gravel, no odor, damp, stiff, heavily oxidized throughout, intermittant patches and lenses of Silt up to 1" wide throughout.	FILL SILTY CLAY	Bentonite seal 1-3' bgs. 2" ID Sch. 40 PVC riser 0.2-4' bgs.
5		3	4-6	4 5 6 7	11	1.6	151	-					
	735	4	6-8	3 2 2 2	4	1.3	221	-	SP		Yellow brown (10 YR 5/6) fine to medium subangular poorly graded SAND (predominantly fine below 6' bgs), some Silt, trace Clay, aplastic, no odor, moist, moderately dense. Fill. Gray at 5.6' bgs to lower contact.	SAND	
		5	8-10	3 3 2 3	5	NA	26.9	-					
10		6	10-12	3 3 2 9	5	1.5	56.9	-	CL		Gray (10 YR 4/1) lean CLAY, some Silt, little to few fine to medium subangular Sand, trace fine to medium rounded to subrounded Gravel, intermittant patches and lenses of Silt, stiff to moderately stiff, no oxidation, no odor, damp. Clay till. Increased stiffness at 11.5' bgs.	CLAY	#5 Global filter sandpack 3-14' bgs. 2" ID Sch. 40 PVC 0.010" slotted screen 4-14' bgs.
	730		12-14	3 5 5 5	10	2	18.0	-					
15													

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Remarks: bgs = below ground surface;
- = Negative Test Result; NA = Not Applicable/Not Available.
PID background level = 0.0
Samples collected 2-4' and 4-6' bgs.

Water Level Data

Date	Depth	Elev.
06/18/01	6.0'	

Date Start/Finish: 1/29/01 **Drilling Company:** Mateco **Driller's Name:** Gary Swift **Drilling Method:** Direct Push **Bit Size:** **Auger Size:** **Rig Type:** Geoprobe 66 DT Track Rig **Sampling Method:** 2" diam. + disposable liner **Hammer Weight:**	**Northing:** 563647.26 **Easting:** 13305304.38 **Casing Elevation:** NA **Borehole Depth:** 14' bgs **Surface Elevation:** 745.85 **Geologist:** Shawn Kerr	**Well/Boring ID:** RFI-83/84-03 **Client:** General Motors **Location:** GM-Flint - Focused RFI Factory 36, Building 36 NA=Not Available/Not Applicable.

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 0	1	0-0.5	-	NA	NA			CONCRETE.	Backfilled with Bentonite to grade
	2	0.5-2	1.0	NA	NA	✸		Brown fine to medium SAND.	
	3	2-4	1.4	NA	NA			Light brown fine SAND, moist from 5.7' to 5.9' bgs.	
5 5	4	4-6	1.9	NA	NA				
	5	6-8	1.9	-	NA			Brown fine to medium SAND.	
	6	8-10	1.9	-	NA	✸		Dark brown fine to medium SAND, strong odor. Black fine to medium SAND, wet, odor.	
10 10	7	10-12	2.0	-	NA	✸		Gray CLAY with fine SAND. Black fine to medium SAND, wet.	
	8	12-14	1.9	NA	NA			Gray CLAY, wet. Black fine to medium SAND, saturated. Gray CLAY.	
15 15				NA	NA				

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Remarks: Samples collected 0-2', 8-10' and 10-12' bgs;
- = Negative Test Result;

PID not functional.

Date Start/Finish: 1/29/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Bit Size: NA
Auger Size: NA
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" acetate sleeve
Hammer Weight: NA

Northing: 564054.78
Easting: 13305401.44
Casing Elevation: NA

Borehole Depth: 18' bgs
Surface Elevation: 745.65

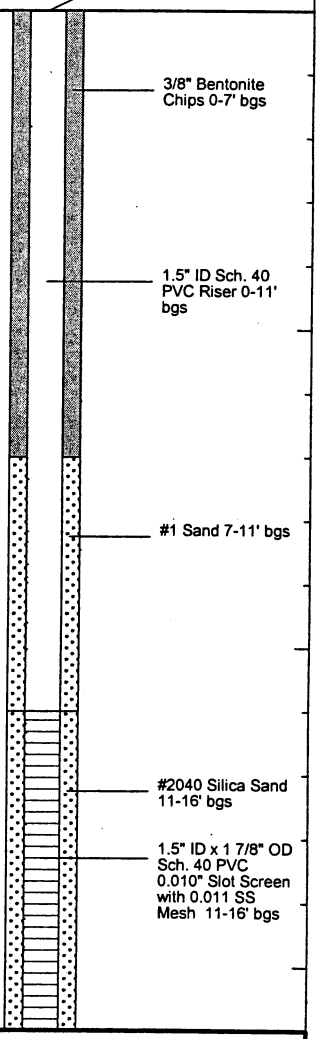
Geologist: Shawn Kerr

Well/Boring ID: RFI-83/84-04

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	745	1	0-0.7	-	-				CONCRETE.
		2	0.7-2	1.3	-				
		3	2-4	0.5	-				Brown medium to coarse SAND, some green stuff.
5	740	4	4-6	1.3	+				Dark brown fine SAND, moist. Dark brown coarse SAND with angular chunks. Gray fine SAND, slight odor, moist.
		5	6-8	1.5	+				Gray fine SAND, trace Clay, moist, odor.
		6	8-10	1.8	-				Gray CLAY, trace brown Sand, moist. Dark gray SAND with gray CLAY. Gray CLAY.
10	735	7	10-12	1.6	-				Gray and brown mottled CLAY and SAND. Gray CLAY with SAND, moist. Gray CLAY with fine SAND, saturated.
		8	12-14	1.8	-				Gray CLAY.
15	730	9	14-16	1.6	-				Brown fine SAND with CLAY, saturated. Brown-gray mottled CLAY, saturated.



Well/Boring Construction

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Remarks: Samples collected 0-2', 8-10' and 12-14' bgs.
PID not functional.
+/- = Positive/Negative Test Result

Client:
General Motors

Site Location:
GM-Flint - Focused RFI
Factory 36, Building 36

Well/Boring ID: RFI-83/84-04

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
								Gray-brown CLAY, saturated.	
	10	16-18	1.9	-				Gray CLAY.	
20 / 725									
25 / 720									
30 / 715									
35 / 710									

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Remarks: Samples collected 0-2', 8-10' and 12-14' bgs.
PID not functional.
+/- = Positive/Negative Test Result

Date Start/Finish: 7/24/01
Drilling Company: Rau Drilling
Driller's Name: Alan Rau
Drilling Method: Direct Push
Sampler Size: 4' Macrocore w/Acetate sleeves
Auger Size: NA
Rig Type: Geoprobe

Northing: 563395.78
Easting: 13305127.82
Casing Elevation: NA

Borehole Depth: 12' bgs
Surface Elevation: 745.93

Descriptions By: S Kerr

Boring ID: RFI-83/84-05

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 745						Fill		CONCRETE.	FILL	Borehole backfilled with Bentonite to grade.
	1	0-2	1.1	5.3	NA			Dark yellowish-brown (10 YR 4/4) SILT, some fine to medium Sand, little fine to medium Gravel, trace Clay, moderately loose, dry, no odor.	SILT	
	2	2-4	2.0	3.4	NA	ML		Black (10 YR 2/1) SILT, some fine to coarse Sand, trace Clay, trace fine to coarse Gravel, trace metal fragments, moderately loose, dry, no odor. Fill.		
								Olive-yellow (25 Y 6/8) SILT, some Clay to 3.7' bgs, then trace Clay, little fine Sand, moderately loose, dry, no odor.	SILT	
5 / 740	3	4-6	1.6	19.3	NA			Yellow-brown (10 YR 5/6) fine to medium SAND, some Silt, trace Clay, loose, damp, no odor.	SAND	
	4	6-8	1.5	1.9	NA	SM				
	5	8-10	1.7	10.2	NA			Becomes brown (10 YR 5/3), no clay, wet.		
10 / 735	6	10-12	2.0	0.1	NA	CL		Gray (10 YR 5/1) CLAY, medium stiff, highly plastic, damp, no odor.	CLAY	
15 / 730										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Temporary well set at 11' bgs, screened 6-11' bgs.
Samples collected 0.7-2.7' and 6.7-8.7' bgs.

Water Level Data

Date	Depth	Elev.
7/24/01	9.3' bgs	

Date Start/Finish: 9/12/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 3 1/4" ID
Rig Type: CME 55

Northing: 564119.47
Easting: 13305455.03
Casing Elevation: NA

Borehole Depth: 17' bgs
Surface Elevation: 745.58

Descriptions By: SM Duly

Boring ID: RFI-83/84-06

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0	745								Fill	Reinforced CONCRETE with 1/2 - 3/4" OD rebar.	FILL
									SM	Brown (10 YR 5/3) SILTY fine subangular to subrounded SAND, trace Clay, aplastic, no odor, moderately dense, dry. Fill	
		1	1-3	3 3 2 2	5	1.4	110.8	+	ML	Brown (10 YR 2/1) SILT, little fine to coarse subangular Sand, trace coarse angular Gravel, some to little Clay, aplastic, no odor, moderately dense to dense, damp, metallic debris and slag also present. Fill.	SILT
		2	3-5	4 4 6 7	10	1.6	237	+			
5	740	3	5-7	4 4 6 6	10	0.9	1554	+			
		4	7-9	13 26 23 16	49	1.2	2332	+		Damp, moderate odor.	
10	735	5	9-11	2 2 2 2	4	1.8	2498	+	CL	Dark gray (10 YR 4/1) Silty CLAY, little fine to coarse subrounded Sand, trace fine rounded to subrounded Gravel, soft, weak odor, moist.	SAND
									ML	Black (10 YR 2/1) SILT, as at 1.9-9.7' bgs.	SILT
		6	11-13	19 20 13 12	33	1.6	1956	+	SP	Gray-brown (10 YR 5/3) fine to medium subrounded SAND, little Silt, aplastic, strong odor, oily sheen, moderately dense, saturated.	SAND
		7	13-15	4 5 7 9	12	1.7	1823	+			
15	730	8	15-17	1 2	5	2.0	754	+	ML SP	Yellow-brown (10 YR 5/4) SILT, few fine subangular Sand, little Clay, aplastic, moderate odor, moderately dense to dense, saturated.	

Boring Construction

- Cement pad with 9" diam. flushmount cover
- Grout 1-3' bgs
- 2" ID Sch. 40 PVC riser 0.2-7' bgs
- Bentonite seal 3-5' bgs
- Global filter sand pacdk 5-17' bgs
- 2" ID Sch. 40 PVC 0.010" slotted screen 7-17' bgs

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available.
Permanent well installed 7-17' bgs
Samples collected 1-3', 7-9' and 9-11' bgs.

Water Level Data

Date	Depth	Elev.
9/12/01	11.3' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-83/84-06

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	15-17	3 3	5	2.0	754	+	SP		Gray-brown (10 YR 5/2) SAND, as at 11.3-15' bgs. Glacial-alluvial.		2" ID Sch. 40 PVC 0.010" slotted screen 7-17' bgs
								CL		Gray (10 YR 5/1) Silty CLAY, few fine to medium subangular to subrounded Sand, trace fine rounded to subrounded Gravel, stiff, plastic, no odor, damp.		
20 / 725												
25 / 720												
30 / 715												
35 / 710												

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Remarks: bgs = below ground surface; + = Positive Test Result
NA = Not Applicable/Not Available.
Permanent well installed 7-17' bgs
Samples collected 1-3', 7-9' and 9-11' bgs.

Water Level Data

Date	Depth	Elev.
9/12/01	11.3' bgs	

Date Start/Finish: 7/25/01 - 8/1/01
Drilling Company: Rau Drilling
Driller's Name: Alan Rau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 3 1/4" ID
Rig Type: CME 45B

Northing: 564580.43
Easting: 13305269.82
Casing Elevation: NA

Borehole Depth: 19' bgs
Surface Elevation: 746.56

Descriptions By: S Kerr

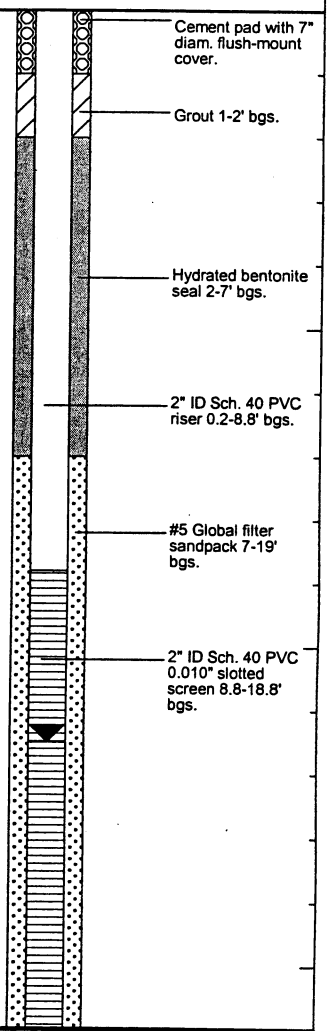
Boring ID: RFI-83/84-07

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
0								Fill	CONCRETE	FILL
745	1	1-3	1 3 5 6	8	1.1	4.0	-	SP	Pale brown (10 YR 6/3) SAND, some Silt, aplastic, loose, dry, no odor. Fill Dark brown (10 YR 3/3) 2.3-2.8' bgs.	SAND
	2	3-5	3 9 8 10	17	1.0	16.4	-		Dark brown (10 YR 3/3) 4-4.3' bgs. Very dark gray-brown (10 YR 3/2) fine to medium SAND, some Silt, trace Clay, trace fine to coarse angular to subangular Gravel, trace Slag, some oxidation, aplastic, loose, dry, no odor. Fill	
5	3	5-7	7 9 16 19	25	1.5	10.4	+			
740	4	7-9	7 5 4 8	9	1.6	7.9	+	ML	Very dark gray-brown (10 YR 3/2) SILT, some to trace Clay, some fine to coarse Sand, little fine to coarse Gravel and Slag, aplastic, moderately loose, dry, no odor. Fill Yellow-brown (10 YR 5/6) SILT, little Clay, trace fine Sand, aplastic, moderately dense, no odor, damp. Very dark gray (10 YR 3/1), trace coarse subangular to subrounded Gravel from 8-8.7' bgs.	SILT SILT
10	5	9-11	4 10 8 10	18	1.4	11.1	+	SP	Yellow-brown (10 YR 5/6) fine to medium SAND, some Silt, trace Clay, aplastic, moderately loose, moist, no odor.	SAND
735	6	11-13	7 11 14 14	25	1.5	3.6	+	SW	Gray-brown (10 YR 5/2) fine to medium SAND, loose, moderate odor, oily appearance, saturated. at 11.8': All fine SAND, little Silt, some black staining, moderately dense.	
	7	13-15	7 8 10 12	18	1.6	0.0	+	ML	Gray (10 YR 5/1) SILT, moderately dense, no odor, saturated.	SILT
15	8	15-17	8 9	19	1.7	0.0	NA			

Boring Construction



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Remarks: bgs=below ground surface;
+/- =Positive/Negative Test Result;
NA = Not Applicable/Not Available;
Samples collected 0.9-2.9' and 8.9-10.9' bgs.

Water Level Data

Date	Depth	Elev.
7/25/01	11.5' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-83/84-07

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730	8	15-17	10 12	19	1.7	0.0	NA	ML		Gray (10 YR 5/1) SILT, moderately dense, no odor, saturated.	SILT	#5 Global filter sandpack 7-19' bgs. 2" ID Sch. 40 PVC 0.010" slotted screen 8.8-18.8' bgs.
	9	17-19	11 14 24 26	38	1.6	0.0	NA					
20												
725												
25												
720												
30												
715												
35												

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Remarks: bgs=below ground surface;
+/- =Positive/Negative Test Result;
NA = Not Applicable/Not Available;
Samples collected 0.9-2.9' and 8.9-10.9' bgs.

Water Level Data

Date	Depth	Elev.
7/25/01	11.5' bgs	

Date Start/Finish: 7/24/01
Drilling Company: Rau Drilling
Driller's Name: Alan Rau
Drilling Method: Direct Push
Sampler Size: 4' Macrocore w/Acetate sleeves
Auger Size:
Rig Type: Geoprobe

Northing: 564688.86
Easting: 13305203.22
Casing Elevation: NA

Borehole Depth: 20' bgs
Surface Elevation: 746.73

Descriptions By: S Kerr

Boring ID: RFI-83/84-08

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0										
0						Fill		CONCRETE.	FILL	
745	1	0-2	0.5	2.0	-	ML		Black (10 YR 2/1) SILT, some fine Sand, trace Clay, loose, dry, no odor. (Fill - foundry sand)	SILT	Borehole backfilled with Bentonite to grade.
	2	2-4	1.1	14.2	-					
5	3	4-6	2.0	6.8	-	SP		Brown (10 YR 4/3) fine to medium SAND, trace Clay and wood debris, moderately loose, dry, slight odor.	SAND	
740	4	6-8	1.8	14.5	-	ML		Silt, as at 0.7-4.3' bgs, with increased Clay content and little fine to coarse Gravel.	SILT	
	5	8-10	1.6	15.0	-	CL		Dark grayish-brown (10 YR 4/2) CLAY, little Silt, trace fine to coarse Sand, stiff, slight odor, dry. Increased Silt content.	CLAY	
10	6	10-12	1.5	9.0	-	CL		Grayish-brown (10 YR 5/3) fine to coarse Sandy CLAY, moist, no odor.		
735	7	12-14	2.0	4.9	-	SP		Grayish-brown (10 YR 5/2) fine to medium SAND, little Silt, wet, no odor.	SAND	
15	8	14-16	2.0	0.2	-	ML		Gray (10 YR 5/1) SILT, trace Clay, trace fine Sand, dense, wet, no odor.	SILT	

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Remarks: bgs = below ground surface; - = Negative Test Result;
NA = Not Applicable/Not Available;
Temporary well set at 19' bgs, screened 9-19' bgs;
Samples collected 0.7-2.7' and 8.7-10.7' bgs.

Water Level Data

Date	Depth	Elev.
7/24/01	12' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-83/84-08

Borehole Depth: 20' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730	9	16-18	1.6	4.2	-	ML		Gray (10 YR 5/1) SILT, trace Clay, trace fine Sand, dense, wet, no odor.	SILT	Borehole backfilled with Bentonite to grade.
20	10	18-20	1.8	9.2	-			Auger refusal in dense silt.		
725										
25										
720										
30										
715										
35										

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Remarks: bgs = below ground surface; - = Negative Test Result;
NA = Not Applicable/Not Available;
Temporary well set at 19' bgs, screened 9-19' bgs;
Samples collected 0.7-2.7' and 8.7-10.7' bgs.

Water Level Data

Date	Depth	Elev.
7/24/01	12' bgs	

Date Start/Finish: 7/23/01 **Drilling Company:** Rau Drilling **Driller's Name:** Alan Rau **Drilling Method:** Direct Push **Sampler Size:** 4' Macrocore w/Acetate sleeves **Auger Size:** NA **Rig Type:** Truck-mounted Geoprobe	**Northing:** 564185.83 **Easting:** 13305103.89 **Casing Elevation:** NA **Borehole Depth:** 19' bgs **Surface Elevation:** 746.87 **Descriptions By:** S Kerr	**Boring ID:** RFI-83/84-09 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0						Fill	CONCRETE.	FILL	
745	1	1-3	1.3	2.7	+	ML	Brown (10 YR 5/3) SILT, some fine to medium Sand, trace Clay, loose, dry, no odor.	SILT	Borehole backfilled with Bentonite to grade.
	2	3-5	2.0	8.5	+	CL	Gray (10 YR 5/1) CLAY, mottled with 10 YR 5/2, trace Silt, little fine to medium Sand, soft, plastic, slight odor. At 3.7': some Sand, moist.	CLAY	
5						SP	Light brown-gray (10 YR 6/2) fine to medium SAND, loose, moist, slight odor.		
	3	5-7	2.0	11.8	+	ML	Light brown-gray (10 YR 6/7) SILT, trace fine Sand, moderately loose, moist, slight odor.	SILT	
740	4	7-9	2.0	5.4	+	CL	Gray (10 YR 5/1) CLAY, some fine to medium Sand, some Silt, plastic, strong odor, wet.	CLAY	
10	5	9-11	1.5	5.4	+	SP	Gray (10 YR 5/1) fine to coarse SAND, loose, saturated, slight odor.		
						SP	Gray (10 YR 5/1) CLAY (CL), medium stiff, plastic, slight odor.		
							SAND, as at 9.9-10.1' bgs.		
						CL	CLAY, as at 10.1-10.3' bgs.	CLAY	
735	6	11-13	2.0	5.7	+	ML	Gray (10 YR 5/1) SILT, some fine Sand, slight odor, saturated.		
						SP	Gray (10 YR 5/1) fine to coarse SAND, some oxidation, loose, slight odor, saturated.	SAND	
	7	13-15	1.4	2.5	+		Gray (10 YR 5/6) to yellow-brown SAND.		
15	8	15-17	NA	3.7	-				

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Remarks: bgs=below ground surface;
+/- =Positive/Negative Test Result;
NA = Not Applicable/Not Available;
Temporary well screened 8-18' bgs;
Samples collected 0.8-2.8' and 6.8-8.8' bgs.

Water Level Data

Date	Depth	Elev.
7/23/01	9.9' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-83/84-09

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730	8	15-17	NA	3.7	-	SP		Gray (10 YR 5/6) to yellow-brown SAND.	SAND	
	9	17-19	NA	0.0	+	CL		Sample liner stuck: Gray (10 YR 5/1) CLAY, trace Silt, soft, highly plastic, no odor.	← CLAY →	Borehole backfilled with Bentonite to grade.
20										
725										
25										
720										
30										
715										
35										

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Remarks: bgs=below ground surface;
+/- =Positive/Negative Test Result;
NA = Not Applicable/Not Available;
Temporary well screened 8-18' bgs;
Samples collected 0.8-2.8' and 6.8-8.8' bgs.

Water Level Data

Date	Depth	Elev.
7/23/01	9.9' bgs	

Date Start/Finish: 1/29/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Bit Size:
Auger Size:
Rig Type: Geoprobe 66 DT Track Rig
Sampling Method: 2" diam. + disposable liner
Hammer Weight:

Northing: 564026.81
Easting: 13305237.73
Casing Elevation: NA

Borehole Depth: 14' bgs
Surface Elevation: 745.82

Geologist: Shawn Kerr

Well/Boring ID: RFI-83/84-10

Client: General Motors

Location: GM-Flint - Focused RFI
Factory 36, Building 36

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Oil/Water Shake Test	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	745	1	0-0.5	-	-	NA			CONCRETE.	Backfilled with Bentonite to grade
		2	0.5-2	0.9	-	NA	*		Brown fine to medium SAND. Dark brown fine to medium SAND, trace Clay and large Gravel.	
		3	2-4	1.4	-	NA			Dark brown medium SAND with GRAVEL and BRICK chunks. Brown fine to medium SAND.	
5	740	4	4-6	1.8	-	NA			Light brown fine SAND. Gray CLAY with brown fine to medium SAND, moist from 5.1' to 5.3' bgs.	
		5	6-8	1.6	-	NA			Brown fine SAND, trace Clay. BRICK chunks. Light brown fine to medium SAND. Gray CLAY with light brown fine to medium SAND.	
		6	8-10	1.2	-	NA	*		Brown fine to medium SAND. BRICK chunks. Light brown fine to medium SAND. Gray fine to medium SAND, odor, moist.	
10	735	7	10-12	2.0	-	NA	*		As above, trace coarse Sand, moist. Brown fine to medium SAND, moist.	
		8	12-14	1.4	-	NA			Brown fine SAND, saturated. Gray CLAY.	
15	730	9			-	NA				

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Remarks: Samples collected 0-2', 8-10' and 10-12' bgs.
PID not functional.
- = Negative Test Result.

Date Start/Finish: 6/25/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 3 1/4"
Rig Type: CME 45B

Northing: 564480.05
Easting: 13305564.35
Casing Elevation: NA

Borehole Depth: 22' bgs
Surface Elevation: 741.61

Descriptions By: SM Dully

Boring ID: RFI-83/84-11

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code
0								
740	1	0-2	4 8 7 20	15	1.0	363	-	ML / SP / FL
	2	2-4	6 5 3 3	8	1.8	87.2	-	SP / ML
5	3	4-6	4 5 7 9	12	2.0	1039	-	SM
735	4	6-8	3 4 4 4	8	1.5	2090	+	SM
	5	8-10	3 4 5 8	9	2.0	941	+	SM
10	6	10-12	3 4 7 7	11	2.0	148	+	SM
730	7	12-14	3 4 7 8	11	1.8	22.7	+	SM
15	8	14-16	3 4 7 9	11	1.5	3.3	+	SM

Stratigraphic Description

Dark grayish brown (10YR 1/2) aplastic SILT, little fine to coarse subangular Sand with increased roundness, little fine to coarse angular rubble predominated fossilferous limestone Gravel, trace Clay, roots, damp, moderate loose, earthy odor (Topsoil and Fill).

Brown (10YR 4/3) aplastic fine to coarse subangular to subrounded SAND, little fine to medium rounded to subrounded Gravel, little Silt, damp, moderate dense, no odor.

Concrete rubbles.

Brown (10YR 4/3) aplastic fine to coarse subangular to subrounded SAND.

Dark yellow brown (10YR 1/6) SILT and fine to medium subangular to subrounded Silty SAND (predominantly fine grained and subangular), trace Clay, 2" wide lense of black (10YR 2/1) angular slag at 2.5' bgs, damp, moderately dense, no odor. Fill.

Yellow brown (10YR 5/6) aplastic Silty SAND abd fine subangular SAND, damp, dense, locally oxidized dark yellow brown (10YR 5/6) at 7.5' bgs, no odor, moist to wet at 6.5' bgs, saturated at 7' bgs, faint hydrocarbon odor and light oily sheen from 7.6' to 10.5' bgs, color turns to dark gray (10YR 4/1) at 10.5' bgs and to gray (10YR 5/1) at 13.5' bgs.

Hydrostratigraphy: SILT / SAND FILL / SAND / SILT / SILTY SAND

Boring Construction

- Cement pad with 9" diam. flush-mount cover.
- Grout 1-1.5' bgs.
- Bentonite seal 1.5-3' bgs.
- 2" ID Sch. 40 PVC riser 0.2-5' bgs.
- #5 Global filter sandpack 3-15.5' bgs.
- 2" ID Sch. 40 PVC 0.010" slotted screen 5-15' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
+/- = Positive/Negative Test Result.
Samples collected 0-2' and 4-6' bgs.

Water Level Data

Date	Depth	Elev.
06/25/01	7.0	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-83/84-11

Borehole Depth: 22' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
725	9	16-18	3 4 6 7	10	1.5	7.3	-	SM		Yellow brown (10YR 5/6) aplastic Silty SAND abd fine subangular SAND, damp, dense, locally oxidized dark yellow brown (10YR 5/6) at 7.5' bgs, no odor, moist to wet at 6.5' bgs, saturated at 7' bgs, faint hydrocarbon odor and light oily sheen from 7.6' to 10.5' bgs, color turns to dark gray (10YR 4/1) at 10.5' bgs and to gray (10YR 5/1) at 13.5' bgs.	SILTY SAND	Natural collapse 15.5-22' bgs.
	10	18-20	4 6 4 8	10	1.5	8.4	-	ML		Gray (10YR 5/1) aplastic SILT, little to few Clay, saturated, no odor, dense (alluvial/river silt).	SILT	
20 720	11	20-22	4 6 9 7	15	1.6	2.8	-					
25 715												
30 710												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
+/- = Positive/Negative Test Result.
Samples collected 0-2' and 4-6' bgs.

Water Level Data

Date	Depth	Elev.
06/25/01	7.0	

Date Start/Finish: 12/17/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: Direct Push
Sampler Size: 4' x 2" ID Acetate Sleeve
Auger Size: NA
Rig Type: Mule-mounted Geoprobe

Northing: 564079.83
Easting: 13305401.47
Casing Elevation: NA

Borehole Depth: 4.7' bgs
Surface Elevation: 745.80

Descriptions By: SM Dully

Boring ID: RFI-83/84-12

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	745						FL		Reinforced CONCRETE.	Fill	
		1	0.7-2.7	3.6	0.0	+	SM		Black (10YR 2/1) Silty fine to coarse subangular to angular SAND, little Clay, well graded, weak odor, moderately dense, aplastic, damp. Fill/Foundry Sand.		Borehole backfilled with bentonite to grade.
		2	2.7-4.7	NA	0.0	+					
5	740										
10	735										
15	730										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.7-2.7' and 2.7-4.7' bgs.
+ = Positive Test Result.

Water Level Data

Date	Depth	Elev.

Project: 64410.101 Template: j:\rockware\logplot2001\logfiles\64410\Geoprobe.ldf
Data File:RFI-83_84-12.dat Date: 1/15/01

Date Start/Finish: 12/07/01
Drilling Company: Rau Drilling
Driller's Name: Greg Campeau
Drilling Method: Direct Push
Sampler Size: 4'x2" ID acetate sleeve
Auger Size: NA
Rig Type: Mule Mounted Geoprobe

Northing: 564055.89
Easting: 13305429.74
Casing Elevation: NA

Borehole Depth: 7' bgs
Surface Elevation: 745.72

Descriptions By: SM Duly

Boring ID: RFI-83/84-13

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 745						FL		Concrete.	FILL	Borehole backfilled with bentonite to grade.
	1	1-3	2	0.0	-	SM		Brown (10 YR 2/1) aplastic, subangular, Silty fine to medium, poorly graded SAND, little clay, no odor, dry, moderately dense. Foundry Sand.		
						SW		Yellow brown, (10 YR 5/4) aplastic, well graded subangular SAND, little Silt, locally semi-lithified, dry, dense, no odor. Fill.	SAND	
						SM		Reddish-brown, aplastic well graded, subangular to angular SAND, little Silt, little Clay, semi-lithified, no odor, dry, dense. Fill.		
	2	3-5	1.3	0.0	-	SM		Yellow brown (10 YR 5/4) aplastic, poorly graded subangular Silty SAND, few Clay, no odor, dense, damp.		
								Concrete		
5 / 740								Brown (10YR 4/3) aplastic Silty subangular to subrounded well graded, SAND, little Clay, moist to damp, dense, no odor, Slag framents present. Fill.	SILTY SAND	
	3	5-7	NA	NA	-	FL		Concrete debris	FILL	
						SM		Brown (10YR 4/3) aplastic Silty subangular to subrounded well graded, SAND, little Clay, moist to damp, dense, no odor, Slag framents present. Fill.		
10 / 735								Borehole terminated at 7.0'		
15 / 730										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available; - = Negative Test Result;
Set temporary well screen 1-6' bgs.
Sample collected 0.8-1' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/10/01
Drilling Company: RAU
Driller's Name: Tom Rau
Drilling Method: Direct Push
Sampler Size: 4' x 2" ID Acetate Sleeves
Auger Size: NA
Rig Type: Mule-mounted Geoprobe

Northing: 564039.91
Easting: 13305401.46
Casing Elevation: NA

Borehole Depth: 2' bgs
Surface Elevation: 745.74

Descriptions By: SM Duly

Boring ID: RFI-83/84-14

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0						FL		Reinforced CONCRETE.	Fill	Borehole backfilled with bentonite to grade.
	1	0.8-2.0	0.0	NA	NA	SM FL	× × × × × ×	Black (10YR2/1) Silty SAND, fine to coarse subangular Sand, few Clay, few fine to medium angular Gravel, no odor, loose, aplastic, dry. Fill/Foundry Sand. Black Wood debris. Refusal.		
5 5										
10 10										
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0.8-1' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/10/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: Direct Push
Sampler Size: 4' x 2" ID Acetate Sleeves
Auger Size:
Rig Type: Mule-mounted Geoprobe

Northing: 564051.79
Easting: 13305369.15
Casing Elevation: NA

Borehole Depth: 3' bgs
Surface Elevation: 745.72

Descriptions By: SM Duly

Boring ID: RFI-83/84-15

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 745						FL		Reinforced CONCRETE.	FILL	Borehole backfilled with bentonite to grade.
	1	1.2-3.0	NA	NA	NA	SM		Black 10YR2/1 Silty fine to coarsesubangular well graded SAND, few Clay, few medium to coarse angular Gravel, no odor, moderately dense to loose, aplastic, dry. Fill/Foundry Sand.	SILTY SAND	
5 / 740										
10 / 735										
15 / 730										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 1.2-3' bgs.
NA

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/10/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: Direct Push
Sampler Size: 4' x 2" ID Acetate Sleeves
Auger Size: NA
Rig Type: Mule-mounted Geoprobe

Northing: 563424.53
Easting: 13305126.79
Casing Elevation: NA

Borehole Depth: 4.8' bgs
Surface Elevation: 745.69

Descriptions By: SM Duly

Boring ID: RFI-83/84-16

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 745								FL		Reinforced CONCRETE.		
	1	0.8-2.8	NA	NA	NA	NA	NA	SW		Yellow-brown 10YR 5/4 well graded fine to coarse subangular to angular SAND, little Silt, trace Clay, no odor, dense, aplastic, dry, locally semi-lithified.	SAND	Borehole backfilled with bentonite to grade.
										Black (10YR 2/1) well graded fine to coarse subangular SAND and possible SLAG, some Silt, no odor, dense, aplastic, dry.		
		2.8-4.8	NA	NA	NA	NA	NA	ML		Yellow-brown (10YR 5/4) SILT, little fine to medium subrounded to rounded Sand, with decreasing Sand content with depth, little to some Clay, no odor, dense, aplastic, damp. Fill.	SILT	
5 / 740												
10 / 735												
15 / 730												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0.8-2.8' and 2.8-4.8' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/10/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: Direct Push
Sampler Size: 4' x 2" ID Acetate Sleeves
Auger Size:
Rig Type: Mule-mounted Geoprobe

Northing: 563395.73
Easting: 13305151.83
Casing Elevation: NA

Borehole Depth: 1.4' bgs
Surface Elevation: 745.56

Descriptions By: SM Duly

Boring ID: RFI-83/84-17

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 745		NA	NA	NA	NA	NA	NA	FL		Reinforced CONCRETE.	Fill	Borehole backfilled with bentonite to grade.
5 740												
10 735												
15 730												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/10/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: Direct Push
Sampler Size: 4' x 2" ID Acetate Sleeves
Auger Size:
Rig Type: Mule-mounted Geoprobe

Northing: 563368.86
Easting: 13305129.14
Casing Elevation: NA

Borehole Depth: 4.8' bgs
Surface Elevation: 745.61

Descriptions By: SM Duly

Boring ID: RFI-83/84-18

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 745								FL		Reinforced CONCRETE.		
	1	0.8-2.8	NA	NA	1.6	NA	NA	ML		Brown-yellow (10YR 6/6) SILT, some fine poorly graded subangular Sand, few fine to coarse angular Gravel and rubble, no odor, dense, aplastic, dry. Fill.	SILT	Borehole backfilled with bentonite (0-4.8' bgs).
		NA	NA	NA	NA	NA	NA	SM		Black (10YR 2/1) Silty SAND, fine to coarse subangular well graded Sand, few fine to coarse angular Gravel, few Clay, no odor, dense, aplastic, dry. Locally semi-lithified. Fill/Foundry Sand.		
								ML		Brown-yellow (10YR 6/6) SILT, some fine poorly graded subangular Sand, few fine to coarse angular Gravel and rubble, no odor, dense, aplastic, dry. Fill.	SILT	
5 / 740												
10 / 735												
15 / 730												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 0.8-2.8' and 2.8-4.8' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/10/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: Direct Push
Sampler Size: 4' x 2" ID Acetate Sleeves
Auger Size: NA
Rig Type: Mule-mounted Geoprobe

Northing: 563397.98
Easting: 13305103.94
Casing Elevation: NA

Borehole Depth: 3.4' bgs
Surface Elevation: 745.70

Descriptions By: SM Duly

Boring ID: RFI-83/84-19

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 745								FL		Reinforced CONCRETE.		
	1	0.8-2.8	NA	NA	1.6	NA	NA	SM		Brown (10YR 5/3) Silty SAND, fine to medium subangular to subrounded, well graded Sand, few Clay, no odor, dense, aplastic, dry. Fill.	SILTY SAND	Borehole backfilled with bentonite to grade.
										Black (10YR 2/1) poorly graded fine subangular Silty SAND, few Clay, no odor, dense, aplastic, dry. Fill.		
										Silty SAND as at 0.8' bgs.		
										Refusal at 3.4' bgs.		
5 / 740												
10 / 735												
15 / 730												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.8-2.8' and 2.8-3.4' bgs.

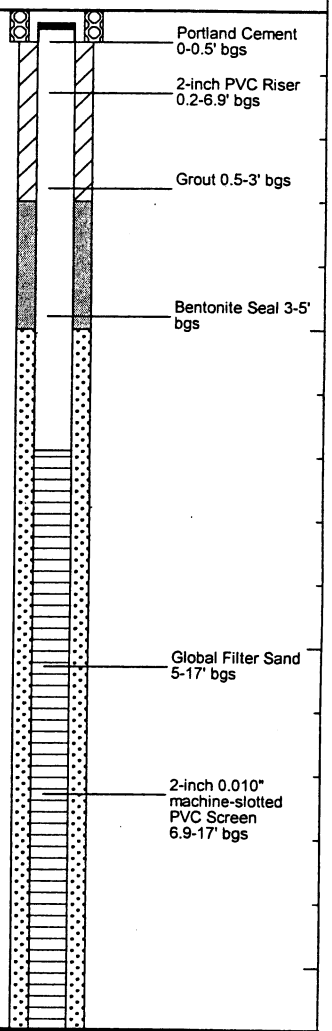
Water Level Data

Date	Depth	Elev.

Date Start/Finish: 1/28/02 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** **Auger Size:** 4' x 4" ID **Rig Type:** CME 45B	**Northing:** 563395.99 **Easting:** 13305127.17 **Casing Elevation:** NA **Borehole Depth:** 17' bgs **Surface Elevation:** 745.24 **Descriptions By:** SM Duly	**Boring ID:** RFI-83/84-20 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0	745											
		1	0-2	NA	NA	1.1	5.3	NA	Fill		CONCRETE.	FILL
											Dark yellowish-brown (10 YR 4/4) SILT, some fine to medium Sand, little fine to medium Gravel, trace Clay, moderately loose, dry, no odor. Fill.	
		2	2-4	NA	NA	2.0	3.4	NA	ML		Black (10 YR 2/1) SILT, some fine to coarse Sand, trace Clay, trace fine to coarse Gravel, trace metal fragments, moderately loose, dry, no odor. Fill.	SILT
											Olive-yellow (25 Y 6/8) SILT, some Clay to 3.7' bgs, then trace Clay, little fine Sand, moderately loose, dry, no odor.	
5	740	3	4-6	NA	NA	1.6	19.3	NA			Yellow-brown (10 YR 5/6) fine to medium SAND, some Silt, trace Clay, loose, damp, no odor.	SAND
		4	6-8	NA	NA	1.5	1.9	NA	SM			
		5	8-10	NA	NA	1.7	10.2	NA			Becomes brown (10 YR 5/3), no clay, wet.	
10	735	6	10-12	NA	NA	2.0	0.1	NA	CL		Gray (10 YR 5/1) CLAY, medium stiff, highly plastic, damp, no odor.	CLAY
											Blind drilled to 17' bgs. Cuttings have no odor and are negative for shake test.	
		NA	12-17	NA	NA	NA	NA	-	NA			
15	730											

Boring Construction



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Remarks: bgs = below ground surface; - = Negative Test Result
NA = Not Applicable/Not Available.
Boring was blind drilled to target depth. Stratigraphy and sampling information to 12' bgs from RFI-83/84-05.

Water Level Data

Date	Depth	Elev.

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-83/84-20

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	NA	12-17	NA	NA	NA	NA	-	NA		Blind drilled to 17' bgs. Cuttings have no odor and are negative for shake test.		PVC Cap
20 725												
25 720												
30 715												
35 710												

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Remarks: bgs = below ground surface; - = Negative Test Result
NA = Not Applicable/Not Available.
Boring was blind drilled to target depth. Stratigraphy and sampling information to 12' bgs from RFI-83/84-05.

Water Level Data

Date	Depth	Elev.

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-83/84-20.dat Date: 3/18/02

Date Start/Finish: 12/10/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: Direct Push
Sampler Size: 4' x 2" ID Acetate Sleeves
Auger Size: NA
Rig Type: Mule-mounted Geoprobe

Northing: 564147.11
Easting: 13305455.07
Casing Elevation: NA

Borehole Depth: 10' bgs
Surface Elevation: 746.01

Descriptions By: SM Duly

Boring ID: RFI-83/84-21

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								FL		Reinforced CONCRETE.	FO:::	
	1	0.7-2.7	NA	NA	1.2	7.0	-	ML		Black (10YR 2/1) SILT, some fine poorly graded subangular Sand, few Clay, no odor, moderately dense, aplastic, dry. Foundry Silt/Sand.	SILT	Borehole backfilled with bentonite to grade.
	2	2.7-4.7	NA	NA	NA	0.0	-	CL		Black (10YR 2/1) Silty Lean CLAY, little fine to coarse subangular Sand, no odor, moderately stiff, aplastic to moderately plastic, dry.	CLAY	
5 5	3	4.7-6.7	NA	NA	0.6	0.0	+					
	4	6.7-8.7	NA	NA	1.0	40.5	+	SM		Black (10YR 2/1) Silty SAND, fine to coarse angular to subangular well graded Sand, occasional Concrete debris, no odor, moderately dense, aplastic, dry. Foundry Sand.	SILTY SAND	
	5	8.7-10	NA	NA	NA	170	+	ML		Black (10YR 2/1) becoming dark gray-brown (10YR 4/2) at 9.5' bgs SILT, some Clay, little fine to medium subangular Sand, moderate odor, dense, aplastic, damp.	SILT	
10 10												
15 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples collected 0.7-2.7' and 6.7-8.7' bgs.
+/-=Positive/Negative Test Result.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/10/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: Direct Push
Sampler Size: 4' x 2" ID Acetate Sleeves
Auger Size: NA
Rig Type: Mule-mounted Geoprobe

Northing: 564090.50
Easting: 13305457.06
Casing Elevation: NA

Borehole Depth: 10' bgs
Surface Elevation: 745.79

Descriptions By: SM Duly

Boring ID: RFI-83/84-22

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 745								FL		Reinforced CONCRETE.	FILL	Borehole backfilled with bentonite to grade.
	1	1-3	NA	NA	1.8	98.8	-	SM		Black (10YR 2/1) Silty SAND, fine to coarse predominantly fine subangular well graded Sand, little Clay, occasional Concrete debris from 1 to 4' bgs, no odor, moderately dense to dense, aplastic, dry. Foundry Sand/Fill.	SILTY SAND	
	2	3-5	NA	NA	1.5	92.4	-			Occasional lenses and patches of yellow-brown (10YR 5/4) fine Sand (SP), up to 2" thick.		
5 / 740	3	5-7	NA	NA	NA	19.3	-			Yellow-brown (10YR 5/4) Silty SAND, fine subangular poorly graded Sand, few Clay, no odor, dense, aplastic, dry. Fill Sand.		
	4	7-9	NA	NA	1.8	80.5	+	ML		Black (10YR 2/1) SILT, little to some Clay, few fine subangular Sand, no odor, dense, aplastic, damp. Concrete debris in the first 1" at upper contact. Fill/Backfill.	SILT	
	5	9-10	NA	NA	NA	62.7	+			Gray (10YR 5/1) SILT, some Clay, few fine subangular Sand, moderate odor, dense, aplastic, damp, oily sheen present.		
10 / 735												
15 / 730												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples collected 1.1-3.1', 3.1-5.1' and 7.1-9.1' bgs.
+/- = Positive/Negative Shake Test.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/10/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: Direct Push
Sampler Size: 2' x 2" ID
Auger Size: NA
Rig Type: Mule-mounted Geoprobe

Northing: 564119.74
Easting: 13305478.14
Casing Elevation: NA

Borehole Depth: 7.2' bgs
Surface Elevation: 745.93

Descriptions By: SM Duly

Boring ID: RFI-83/84-23

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 / 745								FL		Reinforced CONCRETE.		
	1	1-3	NA	NA	2	4.3	-	SP		Pale brown (10YR 6/3) poorly graded fine subangular SAND, some Silt, few to trace Clay, occasionally varved with black Silt (especially 1-2' bgs), no odor, moderately dense, aplastic, dry. Fill.	SAND	Borehole backfilled with bentonite to grade.
	2	3-5	NA	NA	1.5	2.5	-	SM		Black (10YR 2/1) Silty SAND, well graded fine to coarse subangular to angular Sand, little Clay, no odor, moderately dense to dense, aplastic, damp. Fill/Foundry Sand.	SILTY SAND	
5 / 740	3	5-7	NA	NA	NA	30.3	+					
	4	7-7.2	NA	NA	0.1	8.2	+			Becomes moist with an oily sheen and moderate odor present.		
										Subsurface concrete.		
10 / 735												
15 / 730												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples collected 1-3' and 5-7' bgs.
+/- = Positive/Negative Test Result.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/10/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** Direct Push **Sampler Size:** 4 x 2" ID Acetate Sleeves **Auger Size:** NA **Rig Type:** Mule-mounted Geoprobe	**Northing:** 564119.65 **Easting:** 13305431.49 **Casing Elevation:** NA **Borehole Depth:** 10' bgs **Surface Elevation:** 745.94 **Descriptions By:** SM Duly	**Boring ID:** RFI-83/84-24 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	745								FL		Reinforced CONCRETE.	FILL	
		1	0.8-2.8	NA	NA	1.9	18.6	-	SW		Yellow-brown (10YR 5/4) fine to medium subangular well graded SAND, some to little Silt, no odor, dense, dry. Fill Sand.	SAND	Borehole backfilled with bentonite to grade.
		2	2.8-4.8	NA	NA	NA	117	+	SM		Black (10YR 2/1) Silty SAND, fine to coarse well graded subangular to angular Sand, little to some Clay, no odor, moderately dense, aplastic, dry. Foundry Sand.	SILTY CLAY	
									CL		Black (10YR 2/1) Silty Lean CLAY, little fine to medium subangular Sand, no odor, moderately stiff to stiff, moderately plastic, dry. Clay Till.		
5	740	3	4.8-6.8	NA	NA	1.9	228	+	SW		Yellow-brown (10YR 5/4) fine to medium subangular well graded SAND, some to little Silt, no odor, dense, dry. Fill Sand.	SILTY SAND	
									FL		Cement DEBRIS.		
									SM		Black (10YR 2/1) Silty SAND, fine to coarse well graded subangular to angular Sand, little to some Clay, no odor, moderately dense, aplastic, dry. Foundry Sand.		
		4	6.8-8.8	NA	NA	1.6	155	+	SW		Yellow-brown (10YR 5/4) fine to medium subangular well graded SAND, some to little Silt, no odor, dense, dry. Fill Sand.		
									SM		Black (10YR 2/1) Silty SAND, fine to coarse well graded subangular to angular Sand, little to some Clay, no odor, moderately dense, aplastic, dry. Foundry Sand.		
									CL		Black (10YR 2/1) Silty Lean CLAY, little fine to medium subangular Sand, no odor, moderately stiff to stiff, moderately plastic, dry. Clay Till.		
		5	8.8-10	NA	NA	NA	182	+	ML		Gray-brown (10YR 5/2) SILT, some fine subangular poorly graded Sand, little Clay, moderate to weak odor, dense, aplastic, damp. Fill.	SILT	
10	735												
15	730												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected at 0.8-2.8', 4.8-6.8', and 6.8-8.8' bgs.
+/- = Positive/Negative Test Result.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/05/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 4 1/4" ID
Rig Type: CME55

Northing: 564104.84
Easting: 13305504.31
Casing Elevation: NA

Borehole Depth: 20' bgs
Surface Elevation: 745.83

Descriptions By: SM Duly

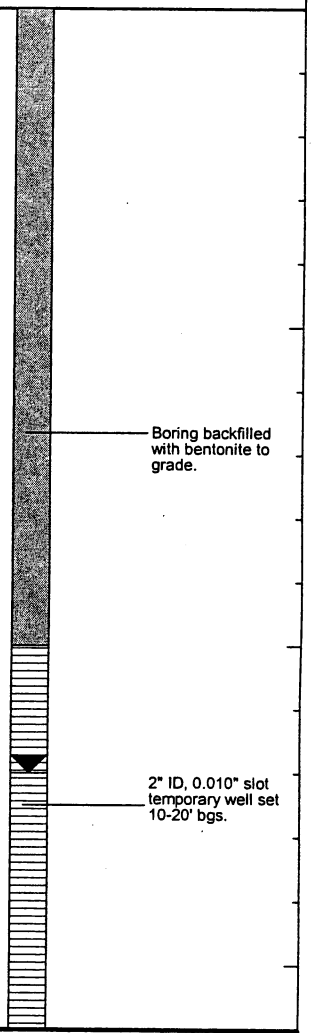
Boring ID: RFI-83/84-25

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0 0											
			4					FL		CONCRETE.	FILL
	1	0-2	5 6 7	11	1.3	0.0	-			Black (10YR 2/1) fine to medium subangular Silty SAND, little to few Clay, poorly graded, no odor, moderately dense, aplastic, dry. Foundry Sand/Fill.	SILTY SAND
	2	2-4	4 5 7 7	12	1.2	0.0	-	SM			
5 5	3	4-6	2 3 2 2	5	1.2	0.0	-				
	4	6-8	5 11 7 9	18	1.5	0.0	-			Becomes very dark gray-brown (10YR 3/2). Fine to coarse gravel-size Slag present.	
								ML		Dark yellow-brown (10YR 4/4) SILT, some to little Clay, few fine subangular Sand, rare coarse rounded Gravel, no odor, dense, aplastic, dry. Till.	SILT
	5	8-10	4 6 9 10	15	2.0	0.0	-	SM		Yellow-brown (10YR 5/4) fine subangular Silty SAND, trace to few Clay, poorly graded, no odor, dense, aplastic, dry.	SILTY SAND
10 10	6	10-12	3 10 10 10	20	1.6	0.0	-			Damp. Moist to wet. Saturated.	
	7	12-14	10 16 16 15	32	1.7	0.0	-				
15 15	8	14-16	9 10 13 12	23	1.4	0.0	-	ML		Gray (10YR 5/1) SILT, little Clay, no odor, dense, aplastic, saturated. Glacial-alluvial.	SILT

Boring Construction



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available; - = Negative Test Result;
2" ID, 0.010" slot temporary well set 10-20' bgs.
Samples collected 0.7-2.7', 8.7-10.7' and 10.7-12.7' bgs.

Water Level Data

Date	Depth	Elev.
12/05/01	12.0' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-83/84-25

Borehole Depth: 20' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	16 29 28 23	57	NA	0.0	-	ML		Gray (10YR 5/1) SILT, little Clay, no odor, dense, aplastic, saturated. Glacial-alluvial.	SILT	
	10	18-20	NA	NA	NA	NA	-			Unable to spoon due to increased slough in hole and shortened mast.		2" ID, 0.010" slot temporary well set 10-20' bgs.
20 20												
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available; - = Negative Test Result;
2" ID, 0.010" slot temporary well set 10-20' bgs.
Samples collected 0.7-2.7', 8.7-10.7' and 10.7-12.7' bgs.

Water Level Data

Date	Depth	Elev.
12/05/01	12.0' bgs	

Date Start/Finish: 12/07/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: Direct Push
Sampler Size: 4' x 2" ID Acetate Sleeves
Auger Size: NA
Rig Type: Mule-mounted Geoprobe

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 10' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: RFI-83/84-26

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								FL		Reinforced CONCRETE.		
	1	0.8-2.8	NA	NA	1.6	0.0	-	ML		Yellow-brown (10YR 5/4) aplastic SILT, some Clay, little fine to coarse subangular Sand, occasional concrete, gravel-sized Debris, no odor, moderately dense to dense, aplastic, dry. Till.	SILT	Borehole backfilled with bentonite to grade.
	2	2.8-4.8	NA	NA	2.0	0.0	-	FL/ SM		Interbedded layers of 2" wide CONCRETE and black 10YR 2/1 Silty SAND (SM) (Foundry Sand) layers up to 3" wide. Black (10YR 2/1) Silty SAND, fine to coarse subangular Sand, few Clay, no odor, moderately dense to dense, aplastic, dry. Fill.	SILTY SAND	
5 5	3	4.8-6.8	NA	NA	NA	0.0	+	ML		Yellow-brown (10YR 5/4) aplastic SILT, some Clay, little fine to coarse subangular Sand, occasional concrete, gravel-sized Debris, no odor, moderately dense to dense, aplastic, dry. Till.	SILT	
	4	6.8-8.8	NA	NA	1.7	0.0	+	SM		Black (10YR 2/1) Silty SAND, well graded fine to coarse subangular Sand, few Clay, no odor, moderately dense to dense, aplastic, dry. Becomes saturated to wet with oily sheen and moderate odor at 7' bgs.	SILTY SAND	
10 10	5	8.8-10	NA	NA	NA	0.4	+	ML		Brown (10YR 4/3) SILT, some fine subangular Sand, little Clay, weak odor, moderately dense.	SILT	
15 15												

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NA = Not Applicable/Not Available;
+/- = Positive/Negative Test Result.
Samples collected 0.8-2.8' and 6.8-8.8' bgs.

Water Level Data

Date	Depth	Elev.
12/07/01	7' bgs	product-?

Date Start/Finish: 12/13/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: Direct Push
Sampler Size: 4' x 2" ID Acetate Sleeves
Auger Size: NA
Rig Type: Mule-mounted Geoprobe

Northing: 564105.89
Easting: 13305559.29
Casing Elevation: NA

Borehole Depth: 10' bgs
Surface Elevation: 741.92

Descriptions By: SM Duly

Boring ID: RFI-83/84-27

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0								FL		Reinforced CONCRETE.		
740	1	0.7-2.7	NA	NA	3.6	2.3	-	SM		Yellow-brown (10YR 5/4) subangular fine poorly graded Silty SAND, few Clay, no odor, dense, aplastic, dry. Fill	SILTY SAND	Borehole backfilled with bentonite to grade.
	2	2.7-4.7	NA	NA		3.8	-			Black (10YR 2/1) subangular fine poorly graded Silty SAND, few Clay, few fine to coarse grained angular sand-sized Slag, no odor, dense, aplastic, dry to damp. Fill/Foundry Sand.		
5	3	4.7-6.7	NA	NA	4.0	4.0	-					
735	4	6.7-8.7	NA	NA		5.6	-			1" Cement debris.		
10	5	8.7-10	NA	NA	3.0	4.1	-			Damp.		
730	6	10.7-1	NA	NA	1.2	2.4	-					
	7	12.7-1	NA	NA		5.5	-	CH		Gray (10YR 2/1) Silty Fat CLAY, few to little fine to coarse subangular Sand, trace fine to medium subangular Gravel, no odor, soft, very plastic, wet to moist (nearly saturated).		
15										13.2' bgs: Obstruction, end of boring.		

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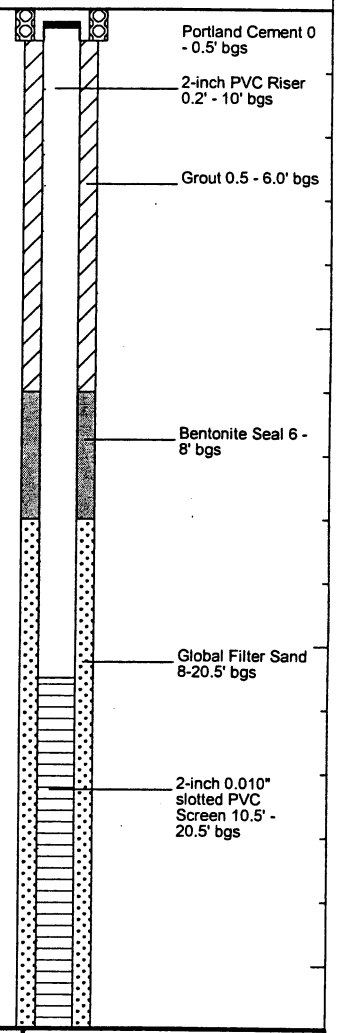
Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples collected 0.7-2.7', 6.7-8.7, and 8.7-10.7' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: **Drilling Company:** Rau Drilling **Driller's Name:** Alan Rau **Drilling Method:** HSA **Sampler Size:** NA **Auger Size:** **Rig Type:**	**Northing:** 564167.60 **Easting:** 13305485.99 **Casing Elevation:** NA **Borehole Depth:** 20.5' bgs **Surface Elevation:** 745.84 **Descriptions By:** SM Duly	**Boring ID:** RFI-83/84-27R **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 745	NA	NA	NA	NA	NA	NA	NA	NA		No Samples Taken. See log for RFI-83_84-27 for sampling information.		
5 740												
10 735												
15 730												



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-83/84-27R

Borehole Depth: 20.5' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
20	NA	NA	NA	NA	NA	NA	NA	NA		No Samples Taken. See log for RFI-83_84-27 for sampling information.		Global Filter Sand 8-20.5' bgs; 2-inch 0.010" slotted PVC Screen 10.5' - 20.5' bgs; PVC Cap
725												
25												
720												
30												
715												
35												
710												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 12/13/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: Direct Push
Sampler Size: 4 x 2" ID Acetate Sleeves
Auger Size: NA
Rig Type: Mule-mounted Geoprobe

Northing: 564058.00
Easting: 13305551.20
Casing Elevation: NA

Borehole Depth: 8' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: RFI-83/84-28

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								FL		Large coarse sand- to pebble-sized predominantly large GRAVEL/AGGREGATE.	FILL	
								SM		Brown (10YR 5/3) well graded fine to medium subangular Silty SAND, little large Gravel/Aggregate, no odor, dense, aplastic, damp. Fill, Aggregate, and former Topsoil.	FILL	
	1	0.7-2.7	NA	NA	2.5'	3.4	-	FL		Large coarse sand- to pebble-sized predominantly large GRAVEL/AGGREGATE.		Borehole backfilled with bentonite to grade.
	2	2.7-4.7	NA	NA	4.0'	21.3	+	ML		Yellow-brown (10YR 5/4) SILT, little fine subangular Sand, little Clay, weak odor, dense, aplastic, damp to moist.	SILT	
								CH		Gray (10YR 5/1) Silty Fat CLAY, moderate odor, soft, aplastic, moist. Wood Debris also present. Fill.		
5 5	3	4.7-6.7	NA	NA	NA	3.9	+	ML		Yellow-brown (10YR 5/4) with local lenses of black (10YR 2/1) SILT, little to some Clay, little fine subangular Sand, moderate odor, oily sheen, dense, aplastic, saturated.	SILT	
	4	6.7-8.0	NA	NA	NA	1.3	+					
10 10												
15 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
+/- = Positive/Negative Test Result
Samples collected 0.7-2.7', 6.7-8.7' and 8.7-10.7' bgs.

Water Level Data

Date	Depth	Elev.
12/13/01	5.0'	

Date Start/Finish: 1/17/02 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2" ID x 2' **Auger Size:** 4 1/4" ID **Rig Type:** CME 75	**Northing:** 564070.89 **Easting:** 13305621.53 **Casing Elevation:** NA **Borehole Depth:** 19' bgs **Surface Elevation:** 742.76 **Descriptions By:** SM Duly	**Boring ID:** RFI-83/84-29 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
745 / 0								FL	Concrete.	FILL
	1	1-3	3 6 6 5	12	1.5	0.0	-	SP	Yellow-brown (10 YR 5/4) fine to medium poorly-graded subangular SAND, some to little Silt, trace Clay, no odor, dry, dense to moderately dense. Fill.	SAND
								FL	Black (10 YR 2/1) fine to coarse sand-sized angular Slag and Cinders, no odor, dry, loose.	
740	2	3-5	4 4 4 4	8	1.0	0.0	-	SP	Yellow-brown (10 YR 5/4) fine to medium subangular poorly-graded SAND, little Silt, trace Clay, some Slag/Cinders as above, aplastic, no odor, dry, dense.	SAND
5	3	5-7	3 4 4 4	8	1.7	0.0	-	ML	Yellow-brown (10 YR 5/4) SILT, little fine subangular Sand, little Clay, aplastic, no odor, damp, dense. Black mottling throughout. Slag/cinders mixed in. 3" wide fine to coarse subrounded to subangular sand lens.	SILT
735	4	7-9	4 5 4 4	9	NA	0.0	-		Slag/cinders no longer present. Coarsening downwards with increased sand size and increased moisture. at 8.9': Moist.	
10	5	9-11	1 1 3 6	4	1.6	0.0	-		Black (10 YR 2/1) organic SILT, some Clay, few fine to medium subrounded Sand, old roots and root structures present upper 6 inches, aplastic, "earthy" odor, moist, very dense. Possible paleo-topsoil.	
	6	11-13	5 6 12 12	18	1.4	0.0	-	SW	Gray (10 YR 6/1) to brown (10 YR 5/3) fine to coarse, predominantly fine, poorly-graded subangular SAND, little Silt, aplastic, no odor, moist, dense. Glacial-alluvial. at 12.5': Saturated.	SAND, FINE
730	7	13-15	3 5 12 15	17	1.3	0.0	-			
15	8	15-17	3 4	9	1.8	0.0	-			

Boring Construction

- Cement pad
- Grout 1-3.5' bgs
- Bentonite seal 3.5-5' bgs
- 2" ID Sch. 40 PVC riser to 7' bgs
- Sand pack 5-19' bgs
- 2" ID Sch. 40 PVC 0.01" slotted screen 7-17' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples collected 1-3' and 9-11' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.
1/17/02	12.5' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-83/84-29

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	15-17	5 8	9	1.8	0.0	-	SW		Gray (10 YR 6/1) to brown (10 YR 5/3) fine to coarse, predominantly fine, poorly-graded subangular SAND, little Silt, aplastic, no odor, saturated, dense. Glacial-alluvial.		2" ID Sch. 40 PVC 0.01" slotted screen 7-17' bgs
725	9	17-19	1 6 7 9	13	1.0	0.0	-	CL		Yellow-brown (10 YR 5/4) Silty CLAY, few fine to medium subrounded Sand, rare medium rounded Gravel, plastic, no odor, dry, soft with increasing stiffness with depth. Clay Till. At 18': Homogeneous gray (10 YR 5/1), very stiff.	SILTY CLAY	Sand pack 5-19' bgs
20												
720												
25												
715												
30												
710												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples collected 1-3' and 9-11' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.
1/17/02	12.5' bgs	

Date Start/Finish: **Drilling Company:** Rau Drilling **Driller's Name:** Allen Rau **Drilling Method:** Direct Push **Sampler Size:** 2 ft cont. acetate sleeve **Auger Size:** 2 1/4" **Rig Type:** 66 DT Advance Geoprobe	**Northing:** 560559.08 **Easting:** 13306168.33 **Casing Elevation:** NA **Borehole Depth:** 19' bgs **Surface Elevation:** 727.64 **Descriptions By:** Brian Loomis	**Boring ID:** RFI-84-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730										
0	1	0-0.5	N/A	NA	-	FL		CONCRETE.		
	2	0.5-2	N/A	0.0	-			Very dark gray (YR 3/1) subangular SAND with some Gravel, trace Clay.	SAND	
725	3	2-4	1.0	0.0	-					Borehole backfilled with Bentonite to grade.
	4	4-6	1.2	NA	-	SP				
5	5	6-8	2.0	NA	-			Dark yellowish-brown brown (10YR 4/6) fine rounded to subrounded SAND, trace rounded Gravel, moist.		
720	6	8-10	1.3	3.5	-			Dark yellowish-brown (10YR) CLAY, trace rounded Gravel, very stiff.	CLAY	
						CL		(10.0-11.0) Brownish-yellow 10YR 6/8 CLAY, gray mottles, very stiff.		
10	7	10-12	2.0	0.1	-	SP		Brownish-yellow (10YR 6/8) subrounded SAND, trace subangular Gravel.		
						CL		Brownish-yellow (10YR 6/8) CLAY, very stiff.		
						SP		Brownish-yellow (10YR 6/8) subrounded fine SAND, wet to saturated.		
715	8	12-14	2.0	NA	-	GW		Very dark gray medium to coarse (5Y 3/1) subrounded to subangular GRAVEL, moist.		
						CL		Brown (10YR 5/3) CLAY, little Silt, few fine to coarse subrounded to subangular Sand and fine to medium-grained Gravel, stiff to very stiff, no odor, dry. Clay Till.		
15	9	14-16	2.0	NA	-					

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Remarks: bgs = below ground surface;
Samples collected 0.5-2', 8-10' and 16-17.5' bgs.
- = Negative Test Result; NA=Not Available/Not Applicable.
1" ID 5-ft 0.01" slot screen temporary well set at 19' bgs.

Water Level Data

Date	Depth	Elev.
05/08/01	18.0'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-84-01

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	10	16-17	1.5	NA	-	CL		Brown (10YR 5/3) CLAY, little Silt, few fine to coarse subrounded to subangular Sand and fine to medium-grained Gravel, stiff to very stiff, no odor, dry. Clay Till.	CLAY	
710								(17.5-18.0) As above, increased Sand to some.		Borehole backfilled with Bentonite to grade.
	11	17-19	NA	NA	-	SP		Brown (10YR 5/3) fine to medium subangular to subrounded SAND, little to some Silt, trace fine to medium rounded Gravel, no odor, wet to saturated, moderately dense.	SAND	
						CL		Same as interval from 12.8' - 17.5' bgs.		
20										
705										
25										
700										
30										
695										
35										

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Remarks: bgs = below ground surface;
Samples collected 0.5-2', 8-10' and 16-17.5' bgs.
- = Negative Test Result; NA=Not Available/Not Applicable.
1" ID 5-ft 0.01" slot screen temporary well set at 19' bgs.

Water Level Data

Date	Depth	Elev.
05/08/01	18.0'	

Project: 64410.011
Data File:RFI-84-01.dat
Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Date: 5/22/01

Date Start/Finish: **Drilling Company:** Rau Drilling **Driller's Name:** Allen Rau **Drilling Method:** Direct Push **Sampler Size:** 2 ft cont. acetate sleeve **Auger Size:** 2 1/4" **Rig Type:** 66 DT Advance Geoprobe	**Northing:** 560667.09 **Easting:** 13306191.26 **Casing Elevation:** NA **Borehole Depth:** 15' bgs **Surface Elevation:** 727.68 **Descriptions By:** Brian Loomis	**Boring ID:** RFI-84-02 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730										
0	1	0-2	1.2	0.0	NA	FL		CONCRETE.	FILL	
								Yellow-brown (10YR 5/8) fine to medium subrounded SAND.	SAND	
								Dark brown (10YR 4/3) fine subangular SAND, some subrounded to subangular Gravel, little Clay.		
725	2	2-4	1.1	0.0	NA			Yellow-brown (10YR 5/6) fine subrounded SAND.		Borehole backfilled with Bentonite to grade.
								Dark brown (10YR 4/3) fine to medium rounded SAND, trace Silt.		
5	3	4-6	1.6	0.0	NA	SP		Yellow-brown (10YR 5/6) subrounded SAND, trace Silt.		
								Dark brown (10YR 5/6) fine to medium rounded SAND, trace Silt.		
								Dark yellowish-brown (10YR 3/4) fine rounded SAND.		
	4	6-8	1.5	0.0	NA			Yellowish-brown (10YR 6/8) fine rounded to subrounded SAND.		
720										
	5	8-10	1.5	0.0	NA			Brownish-yellow (10YR 6/8) fine subangular to angular SAND, moist.		
10								Brownish-yellow (10YR 6/8) CLAY, very stiff.	CLAY	
	6	10-12	1.0	0.0	NA	CL		Brownish-yellow (10YR 6/8) CLAY, soft, moist.		
715	7	12-15	NA	NA	NA	SM		Brownish-yellow (10YR 6/8) Silty SAND, soft, wet to saturated.	SILTY SAND	
15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Set 1" temporary well at 6-11' bgs;
Samples collected 0.8-2' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.
05/08/01	12.0'	

Date Start/Finish: 5/8/01
Drilling Company: Rau Drilling
Driller's Name: Allen Rau
Drilling Method: Direct Push
Sampler Size: 2 ft cont. acetate sleeve
Auger Size: 2 1/4"
Rig Type: 66 DT Advance Geoprobe

Northing: 560779.59
Easting: 13306211.33
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 727.69

Descriptions By: Brian Loomis

Boring ID: RFI-84-03

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Stratigraphic Description	Hydrostratigraphy
	730								
0							FL	CONCRETE.	FILL
		1	0-2	0.9	3.2	-	SP	Yellowish-brown (10YR 5/6) fine subrounded SAND.	SAND
								Yellowish-brown (10YR 5/4) very fine SAND to SILT, trace rounded Silt and Clay.	
								Very dark grayish-brown (10YR 3/2) fine to medium SAND with subrounded Gravel.	
	725	2	2-4	1.5	3.3	-		Yellowish-brown (10YR 5/4) very fine SAND to SILT, trace rounded Silt and Clay.	
								Very dark grayish-brown (10YR 3/2) fine to medium SAND with subrounded Gravel.	
								Dark brown (10YR 3/3) fine to medium subrounded SAND.	
5		3	4-6	1.4	7.5	-		Yellowish-brown (10YR 5/8) fine rounded SAND.	
		4	6-8	1.3	8.8	-	CL	Grayish-brown (10YR 5/2) CLAY, very stiff to hard. Clay Till.	CLAY
	720								
		5	8-10	2.0	9.1	-			
10								Dark yellowish-brown (10YR 4/6) CLAY, trace to little fine rounded Sand, stiff, elastic, moist to wet.	
		6	10-12	2.0	3.7	-			
	715	7	12-14	1.4	4.3	-	SP	Dark yellowish-brown (10YR 4/6) rounded to subrounded fine SAND, wet.	SAND
15		8	14-16	1.6	6.9	-		Grayish-brown (10YR 3/2) medium subrounded to subangular SAND, saturated.	

Boring Construction

Borehole backfilled with Bentonite to grade.

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Remarks: bgs=below ground surface;
NA = Not Applicable/Not Available
Set 1" temporary well at 17.5' bgs
Samples collected 0.8-2', 8-10' and 12-14' bgs.

Water Level Data

Date	Depth	Elev.
05/08/01	14.5'	

Date Start/Finish: 5/8/01
Drilling Company: Rau Drilling
Driller's Name: Allen Rau
Drilling Method: Direct Push
Sampler Size: 2 ft cont. acetate sleeve
Auger Size: 2 1/4"
Rig Type: 66 DT Advance Geoprobe

Northing: 561168.99
Easting: 13306085.98
Casing Elevation: 727.25

Borehole Depth: 14' bgs
Surface Elevation: NA

Descriptions By: Brian Loomis

Boring ID: RFI-84-04

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730										
0						Fill		CONCRETE.	FILL	
	1	0-2	1.2	NA	-			Very dark gray-brown fine SAND, little Silt and Gravel.		
								Very dark brown fine to medium SAND, some Gravel.		
								Red fine to medium SAND and FILL.		
725	2	2-4	1.6	NA	-			Brown fine to medium SAND, little Gravel, dry.		Borehole backfilled with Bentonite to grade.
						SP			SAND	
5	3	4-6	1.0	NA	-			Red fine to medium SAND and FILL.		
								Dark yellow-brown fine to medium SAND, little Slt and Gravel.		
720	4	6-8	1.5	NA	-					
	5	8-10	1.5	NA	-			Yellow-brown fine SAND and CLAY, trace Gravel.	CLAY	
10										
	6	10-12	2.0	NA	-	CL				
715	7	12-14	2.0	NA	-					
15										

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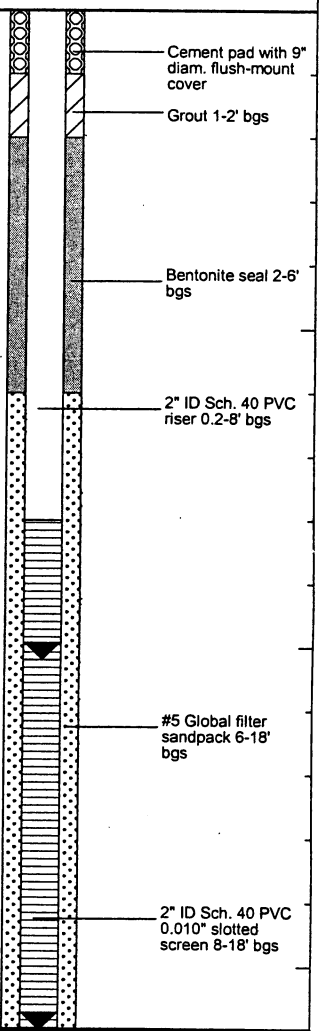
Remarks: bgs=below ground surface; - = Negative Test Result;
NA = Not Applicable/Not Available;
1" ID 5-ft 0.01" slot screen temporary well set at 14' bgs.
Samples collected 0.8-2', 8-10' and 12-14' bgs.

Water Level Data

Date	Depth	Elev.
	NA	

Date Start/Finish: 5/24/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2" x 2'ID **Auger Size:** 3 1/4" ID **Rig Type:**	**Northing:** 561223.46 **Easting:** 13306273.39 **Casing Elevation:** 726.63 **Borehole Depth:** 22' bgs **Surface Elevation:** NA **Descriptions By:** S. M. Duly	**Boring ID:** RFI-84-05 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0									FL		CONCRETE.	FILL	Cement pad with 9" diam. flush-mount cover
	725	1	0-2	- - 3 6	3	0.9	NA	-	ML		Black (10 YR 2/1) aplastic SILT, little to few Clay, few fine subangular yellow-brown (10 YR 5/4) Sand, damp, moderately dense, no odor.		Grout 1-2' bgs
		2	2-4	3 4 8 4	12	1.0	NA	-	SP		Yellow-brown (10 YR 5/4) fine to medium subangular quartz-rich SAND, some Silt, trace Clay, dry, moderately loose to moderately dense, no odor. At 3.7' bgs, 1/2" lense of black fine-grained subangular slag (?).		Bentonite seal 2-6' bgs
5		3	4-6	3 4 6 6	10	1.4	NA	-			Light brown-yellow (10 YR 6/4) fine to medium subangular to angular SAND, locally semi-lithified to a sandstone, some Silt, trace Clay, damp, moderately loose to moderately dense, no odor.	SAND	
	720	4	6-8	3 4 6 6	10	1.7	NA	-	CL		Gray (10 YR 5/1) CLAY, some Silt, little fine to medium subrounded to subangular Sand, trace fine to coarse subrounded to rounded Gravel, damp, moderately stiff to very stiff (pp=2.5 tons/sq. feet). Locally oxidized/mottled to yellow-brown (10 YR 5/6). Clay Till. at 6.5': Increased oxidation throughout and increased stiffness to hard yellow-brown (10YR 5/4) Clay (pp=4.5 tons/sq. feet).	CLAY	2" ID Sch. 40 PVC riser 0.2-8' bgs
		5	8-10	3 6 9 12	15	1.5	NA	-					
10	715	6	10-12	3 10 14 15	24	2.0	NA	-			Decreased oxidation.		#5 Global filter sandpack 6-18' bgs
		7	12-14	2 10 10 12	20	1.8	NA	-			No oxidation/mottling, homogeneous gray (10 YR 5/1) Clay. Clay Till. Dry, hard, with occasional oxidation along fractures <= 1 mm wide. Increases in silt lenses up to 1" wide, damp.		
15		8	14-16	2 4 4 7	8	1.9	NA	-					2" ID Sch. 40 PVC 0.010" slotted screen 8-18' bgs



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Remarks: bgs = below ground surface; pp=pocket penetromete
NA = Not Applicable/Not Available;- = Negative Result.
Water level rose to 10.2' overnight.
Samples collected 0.8-2.8' and 6.8-8.8' bgs.

Water Level Data

Date	Depth	Elev.

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-84-05.dat Date: 8/7/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-84-05

Borehole Depth: 22' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
710	9	16-18	2 5 6 7	11	2.0	NA	-	CL		Similar to above, but SILTY CLAY, moist to wet with increased moisture.	SILTY CLAY	2" ID Sch. 40 PVC 0.010" slotted screen 8-18' bgs; #5 Global filter sandpack 6-18' bgs
	10	18-20	2 3 4 5	7	1.6	NA	-			Gray (10 YR 5/1) SILT, few to little fine subangular Sand, some Clay, wet, dense, no odor.	SILT	Natural collapse 18-22' bgs
20	11	20-22	2 4 4 5	8	1.8	NA	-	ML				
705												
25												
700												
30												
695												
35												

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Remarks: bgs = below ground surface; pp=pocket penetrometer
NA = Not Applicable/Not Available;- = Negative Result.
Water level rose to 10.2' overnight.
Samples collected 0.8-2.8' and 6.8-8.8' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 5/21/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 560433.88 **Easting:** 13306117.84 **Casing Elevation:** 723.26 **Borehole Depth:** 12' bgs **Surface Elevation:** 723.37 **Descriptions By:** SM Duly	**Boring ID:** RFI-84-06 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
725 / 0												
			NA					FL		ASPHALT.	Fill	Cement pad with 9" diam. flush-mount cover.
										CONCRETE.		
	1	0-2	3 7 6	10	1.0	6.1	-	ML		Light gray (10 YR 7/1) SILT, some fine to medium subangular Sand (mostly fine), trace Clay, trace fine to coarse subangular Gravel, aplastic, no odor, dry, loose.	SILT	Grout 1-2' bgs.
								SP		Black (10 YR 2/1) SILT, few to little Clay, aplastic, no odor, moist to damp, very dense.	SILT	
720	2	2-4	9 7 7 6	14	1.5	2.5	-	ML		Brown (10 YR 4/3) fine to coarse subangular SAND, few fine to coarse subangular to subrounded Gravel, little Silt, aplastic, no odor, dry, loose.	SILT	Bentonite seal 2-4' bgs.
								SP		Black to dark brown (10 YR 6/2) SILT, as at 1.3-1.7' bgs, some fine to medium subangular Sand.	SILT	
								ML		SAND, as at 1.7-1.9' bgs, moist, increased Clay content toward lower contact.	SILT	
5	3	4-6	4 6 12 12	18	2.0	3.4	-	CL		Light brown-gray (10 YR 6/2) SILT, local oxidation to yellow-brown (10 YR 5/6), lenses up to 1" wide of fine to coarsesubangular Sand and Gravel, otherwise little fine to medium subangular Sand, little Clay, aplastic, no odor, moist, very dense.	CLAY	
	4	6-8	4 9 18 24	27	1.5	4.4	-			Gray (10 YR 5/1) CLAY with yellow-brown (10 YR 5/4) mottling/oxidation along fractures and selvages, some to little Silt, little fine to medium subrounded to subangular Sand, trace fine to coarse rounded to subrounded Gravel, no odor, dry, hard (pp>=4.5 tons/sq. feet). Clay Till.		2" ID Sch. 40 PVC riser 0.2-6.8' bgs.
								ML		SILT, as at 3.9-4.5' bgs.		
715	5	8-10	12 9 10 9	19	NA	4.5	-	SP		Dark yellow-brown (10 YR 4/4) fine to coarse subangular SAND, little Silt, little Clay, few fine to coarse subrounded Gravel, aplastic, no odor, wet, loose.	SAND	#5 Global filter sandpack 4-12' bgs.
10	6	10-12	5 11 14 15	25	NA	3.3	-	CL		Homogeneous dark gray (10 YR 4/1) CLAY, some Silt, little fine to medium subangular to subrounded Sand, few fine to coarse rounded to subrounded Gravel, no odor, dry, hard (pp>=4.5 tons/sq. feet). Clay Till.	CLAY	2" ID Sch. 40 PVC 0.010" slotted screen 6.8-11.8' bgs.
710												
15												

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Remarks: bgs = below ground surface; - = Negative Test Result
NA = Not Applicable/Not Available.
Samples collected 0.9-2' and 4-6' bgs.
pp=pocket penetrometer

Water Level Data

Date	Depth	Elev.
5/21/01	7.8' bgs	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-84-06.dat Date: 8/7/01

Date Start/Finish: 06/22/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 2 1/4"
Rig Type: CME 55

Northing: 563389.7
Easting: 13305984.92
Casing Elevation: NA

Borehole Depth: 17' bgs
Surface Elevation: 742.91

Descriptions By: S. Kerr

Boring ID: RFI-85-02

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
745 / 0												
	1	0-2	NA NA 4 5	4	0.3	84.6	-	FL		Concrete	FILL	
740	2	2-4	3 5 6 6	11	1.2	132	-	ML		Black (10 YR 3/1) SILT. Some fine Sand. Little Clay. Loose, dry, no odor. At 3.8' bgs, increase in Clay content, local oxidation and moist.	SILT	
5	3	4-6	3 4 5 6	9	1.7	147	-			Yellow brown (10 YR 5/6) fine aplastic SAND. Some Silt. Dense, no odor.		
										Very dark grayish-brown plastic SILT (10 YR3/2). Little Clay. Trace fine Sand. Dense, damp, no odor.	SILT	Borehole backfilled with bentonite chips to grade.
										Gray brown (2.5 Y 3/2) SILT. Some Clay. Little fine Sand. Dense, moist, no odor.		
	4	6-8	2 3 3 5	6	1.8	125	-	CL		Grayish brown (2.5 Y 3/7) CLAY. Silt lenses up to 3" wide. Trace of fine Sand. No odor. Local oxidation. Turns gray (10 YR 6/1) with 10 YR 5/4 mottling at 6.6' bgs. Saturated at 8.4' bgs.	CLAY	
735	5	8-10	3 4 6 8	10	1.5	84	-					
10	6	10-12	7 6 6 7	12	1.4	116	-	SP		Yellow brown (10 YR 5/6) fine to coarse SAND. Loose.	SAND	Temporary well screen installed at 17'-7' bgs.
730	7	12-14	2 4 5 7	9	1.4	78	-					
15	8	14-16	2 4 6 7	10	2	96	-					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1.3-3.3', 7.3-9.3' and 9.3-11.3' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.
06/22/01	11.8	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-85-02

Borehole Depth: 17' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
			NA	NA			-	SP		Yellow brown (10 YR 5/6) fine to coarse SAND. Loose.	↓	
								CL		Gray (10 YR 6/1) CLAY. Some Silt. Hard initially, soft at 16.8' bgs. Moist.		

725
20
720
25
715
30
710
35

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 1.3-3.3', 7.3-9.3' and 9.3-11.3' bgs.
- = Negative Test Result.

Water Level Data

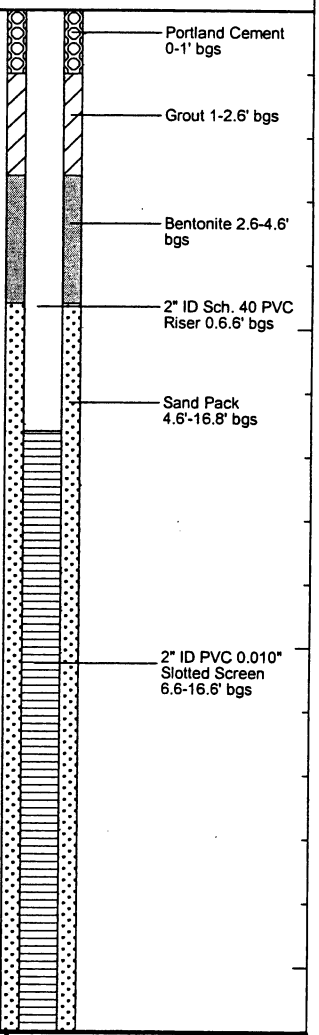
Date	Depth	Elev.
06/22/01	11.8	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: RFI-85-02.dat Date: 9/13/01

Date Start/Finish: 12/05/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 4 1/4" ID HSA **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 18' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-85-02R **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0 0											
										Redrilled. See original log for RFI-85-02.	
5 5		NA	NA	NA	NA	NA	NA				
10 10											
15 15	1	14-16	2 2 4 7	6	1.8	NA	NA	ML		Dark yellow-brown (10YR 4/6) fine to medium subangular SAND, predominantly medium, little Silt, poorly-graded, no odor, moderately dense to moderately loose, saturated. Glacial-alluvial.	SAND →

Boring Construction



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
For descriptions/data from 0 to 14' bgs, see RFI-85-02.

Water Level Data

Date	Depth	Elev.

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-85-02R

Borehole Depth: 18' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	2	16-18	2 3 4 5	7	1.8	NA	NA	ML CH CL		Dark yellow-brown (10YR 5/1) SILT, little to some Clay, no odor, moderately dense, aplastic, moist to wet. Increased gray tone with depth. Glacial-alluvial. Gray (10YR 5/1) Fat Silty CLAY becoming decreasingly plastic to a Lean Silty CLAY with depth, trace fine subangular SAND, no odor, moderately stiff becoming increasingly stiff with depth, moderately plastic, damp to moist with increasing moisture with depth. Glacial Clay Till.	SILT CLAY	Sand Pack 4.6'-16.8' bgs 2" ID PVC 0.010" Slotted Screen 6.6-16.6' bgs PVC Cap 16.6-16.8' bgs

20 20

25 25

30 30

35 35

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
For descriptions/data from 0 to 14' bgs, see RFI-85-02.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 6/20/01 **Drilling Company:** RauDrilling **Driller's Name:** Greg Campeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 563392.64 **Easting:** 13305888.89 **Casing Elevation:** NA **Borehole Depth:** 17' bgs **Surface Elevation:** 746.21 **Descriptions By:** S. Kerr	**Boring ID:** RFI-85-03 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0													
									FL		Asphalt. Concrete.	Fill	Cement pad with 9" diam. flushmount cover
	745	1	1-3	3 3 4 4	7	1.4	426	-			Brown (10 YR 4/3) fine to medium SAND with black staining throughout. Some Silt. Little Clay. Moderately dense to loose, no odor. Yellowish brown (10 YR 5/6) with oxidation and black staining at 4.0'bgs.	SAND	Grout 1-3' bgs
		2	3-5	2 4 7 9	11	0.9	2103	-					2" ID Sch. 40 PVC riser 0.2-7' bgs
5									SP		Light brownish grey fine to coarse subangular SAND.Trace Slag. Loose, aplastic, dry to damp.		Bentonite seal 3-5' bgs
	740	3	5-7	6 8 9 12	17	1.1	1296	-	SL		Yellow brown (10 YR 5/6) SILT. Little Clay and fine to medium Sand. Dry to damp at 6.8' bgs. Saturated at 8.0' bgs.	SILT	
		4	7-9	3 3 4 5	7	1.5	209	-					Global filter sand pack 5-17' bgs
									CL		Grey (10 YR 6/1) SILTY CLAY. Local oxidation. Trace fine subangular Sand. Soft, low plasticity, damp, no odor.		
10		5	9-11	1 2 2 1	4	1.2	256	-			Yellow brown (10 YR 5/6) fine to medium subangular SAND. Little Silt. Wet (saturated) no odor. Some Clay at 10.7' bgs. No more Clay and loose at 12.3' bgs.	SAND	2" ID Sch. 40 PVC 0.010" slotted screen 7-17' bgs
	735	6	11-13	1 2 2 2	4	1.4	156	-	SP				
		7	13-15	2 3 2 3	5	1.3	38.3	-					
15		8	15-17	2 3	7	1.7	74.7	-	CL		Grey (10 YR 5/1) CLAY. Soft, highly plastic, 1" Silt seams throughout.	CLAY	

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples colleced 1-3' and 5-7' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.
06/20/01	8.9'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-85-03

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730	8	15-17	4 2	7	1.7	74.7	-	CL		Grey (10 YR 5/1) CLAY. Soft, highly plastic, 1" Silt seams throughout.	CLAY	2" ID Sch. 40 PVC 0.010" slotted screen 7-17' bgs
20 / 725												
25 / 720												
30 / 715												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples colleced 1-3' and 5-7' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.
06/20/01	8.9'	

Date Start/Finish: 7/30/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2" ID x 2' **Auger Size:** 4 1/4" ID HSA **Rig Type:** CME 45C	**Northing:** 563158.23 **Easting:** 13305814.74 **Casing Elevation:** NA **Borehole Depth:** 18' bgs **Surface Elevation:** 746.0 **Descriptions By:** S Kerr	**Boring ID:** RFI-85-04 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0												
745	1	0-2	1 1 2 1	3	1.2	0.0	NA	FILL		CONCRETE	FILL	Portland Cement 0 - 1' bgs
										Yellow-brown (10 YR 5/6) fine to medium SAND, little Silt, aplastic, loose, dry, no odor. Fill		
	2	2-4	1 1 1 1	2	1.4	0.0	NA			Trace Clay, damp.		Well Grout 1 - 7' bgs
5	3	4-6	1 1 1 1	2	1.5	2.3	NA					
740	4	6-8	2 2 1 2	3	1.5	1.5	NA	SP		Moist.	SAND	2" PVC Riser 0.2 - 11' bgs
	5	8-10	1 2 2 3	4	2.0	0.0	NA					Bentonite Seal 7 - 9' bgs
10												
735	6	10-12	3 4 3 3	7	2.0	1.3	NA					#5 Global Filter Pack 9-18' bgs
	7	12-14	2 3 3 2	6	2.0	0.0	NA					2" 0.010 Slot machined PVC Screen 11-16' bgs
15	8	14-16	1 2 2 3	4	1.5	0.0	NA			Saturated.		
								CL		Gray (10 YR 5/1) CLAY, trace Silt, medium stiff, highly plastic, no odor, moist.	CLAY	

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0.5-2.5', 8.5-10.5' and 12.5-14.5' bgs.

Water Level Data

Date	Depth	Elev.
7/30/01	14.5'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-85-04

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730	9	16-18	2 2 2 7	4	1.8	0.0	NA	CL		Gray (10 YR 5/1) CLAY, trace Silt, medium stiff, highly plastic, no odor, moist.	← CLAY →	#5 Global Filter Pack 9-18' bgs
20 725												
25 720												
30 715												
35 710												

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0.5-2.5', 8.5-10.5' and 12.5-14.5' bgs.

Water Level Data

Date	Depth	Elev.
7/30/01	14.5'	

Date Start/Finish: 12/11/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3' 1/4" ID HSA **Rig Type:** CME 45 Skid Rig	**Northing:** 563158.2 **Easting:** 13305820.7 **Casing Elevation:** NA **Borehole Depth:** 26.5' bgs **Surface Elevation:** 745.95 **Descriptions By:** SM Duly	**Boring ID:** RFI-85-04R **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	745	NA	NA	NA	NA	NA	NA	NA	NA		Reinforced CONCRETE. See original boring log for RFI-85-04.	FILL See original boring log for RFI-85-04.	Portland Cement 0-1' bgs 2" PVC Riser 0.2-21.5' bgs Well Grout 1-17.5' bgs
5	740												
10	735												
15	730												

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
See original boring log for RFI 85-04.

Water Level Data

Date	Depth	Elev.

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-85-04R

Borehole Depth: 26.5' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
20 / 725	NA	NA	NA	NA	NA	NA	NA	NA		See original boring log for RFI-85-04.	See original boring log for RFI-85-04.	Well Grout 1-17.5' bgs; Bentonite Seal 17.5-19.5' bgs; 2" PVC Riser 0.2-21.5' bgs; #5 Global Filter Pack 19.5-26.5' bgs; 2" 0.010 Slot machined PVC Screen 21.5-26.5' bgs
25 / 720												
30 / 715												
35 / 710												

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
See original boring log for RFI 85-04.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 7/24/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2" ID x 2' **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 563157.04 **Easting:** 13305978.46 **Casing Elevation:** NA **Borehole Depth:** 24' bgs **Surface Elevation:** 745.95 **Descriptions By:** S. Duly	**Boring ID:** RFI-85-05 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0 745	1	0-2	4 4 5 5	9	1.8	1618	+	FL		CONCRETE	FILL
								SW		Yellow-brown (10YR 5/4) fine subangular to subrounded SAND, some Silt, aplastic, no odor, damp, loose. Fill.	SAND
	2	2-4	3 5 7 7	12	1.3	1534	+	ML		Black (10YR 2/1) SILT, some fine subangular to subrounded Sand, few Clay, aplastic, no odor, moderately loose to moderately dense. Damp.	SILT
5 740	3	4-6	3 3 4 3	7	1.2	2010	+			Increased Clay to little. Moist.	
	4	6-8	1 2 2 1	4	1.3	1895	+	SW		Yellow-brown (10YR 5/8) SAND, as above but moist and moderately loose, becoming less dense with depth and increased moisture.	SAND
	5	8-10	2 3 3 2	6	1.8	1342	-				
10 735	6	10-12	1 2 1 1	3	1.2	1601	-			Moist to wet.	
	7	12-14	2 3 4 7	7	1.2	793	-				
15	8	14-16	1 2 3 4	5	2.0	9702	-			Moist, Quartz-rich.	
730										Yellow-brown (10YR 5/2) Silty CLAY, some Silt, few fine to	

Boring Construction

- Portland Cement 0-1' bgs
- Well Grout 1-3' bgs
- 2" PVC Riser 0.2-19' bgs
- Bentonite Seal 3-17' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples collected 1-3', 5-7', 9-11' and 17-19' bgs.
+/- = Positive/Negative Test Result.

Water Level Data

Date	Depth	Elev.
7/24/01	20'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-85-05

Borehole Depth: 24' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	4 5 5 4	10	2.0	1103	-	ML/ CL		medium Sand and fine rounded Gravel, soft to medium stiff, no odor, damp, local oxidation along fractures. Homogeneous gray (10YR 5/1) local Silt lenses up to 2" wide throughout. Clay Till. Moderately stiff to stiff.	CLAY	Bentonite Seal 3-17' bgs
	10	18-20	2 4 3 4	7	2.0	1546	-					#5 Global Filter Pack 17-24' bgs 2" PVC Riser 0.2-19' bgs
20 725	11	20-22	4 7 9 11	16	1.5	155	-			at 20': Increased silt lenses and seams up to 6" thick, some Clay, little fine subangular to subrounded Sand, no odor, saturated, dense.	SILT	2" 0.010 Slot machined PVC Screen 19-24' bgs
								SP		Brown (10YR 3/3) subrounded to subangular fine to coarse SAND, little Silt, trace Clay, few fine to medium rounded Gravel, aplastic, no odor, saturated, loose. Glacial-alluvial.	SAND	
	12	22-24	NA	NA	NA	NA	NA	CL		Gray (10YR 5/1) Silty CLAY, little fine to medium subangular to subrounded Sand, few to trace fine to medium rounded Gravel, no odor, dry, very stiff to hard. Clay Till.	SILTY CLAY	
25 720												
30 715												
35 710												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
Samples collected 1-3', 5-7', 9-11' and 17-19' bgs.
+/- = Positive/Negative Test Result.

Water Level Data

Date	Depth	Elev.
7/24/01	20'	

Date Start/Finish: 06/22/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Campeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 563257.26 **Easting:** 13306085.31 **Casing Elevation:** NA **Borehole Depth:** 19' bgs **Surface Elevation:** 742.43 **Descriptions By:** S. Kerr	**Boring ID:** RFI-85-06 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
745 / 0												
	1	0-2	1 1 1 1	2	1.2	875	+	FILL		Concrete	FILL	Cement seal with 9" diam flush-mount cover.
								SP		Yellow brown (10 YR 5/6) SAND. Some Silt. Little Clay. Loose, aplastic, damp, no odor. Black (10 YR 2/1) at 1.9' bgs.	SAND	
740	2	2-4	2 2 2 2	4	1.5	546	+			Yellow brown (10 YR 5/6) fine to medium SAND as above but with increase in Clay content.		Cement/bentonite grout 1-5' bgs.
5	3	4-6	1 2 1 3	3	1.6	592	+	CL		Yellow brown (10 YR5/6) sandy CLAY. Some fine to medium Sand. Soft, plastic, damp, no odor. Local oxidation.	SANDY CLAY	2" ID PVC riser to 9' bgs.
	4	6-8	2 2 2 1	4	1.3	999	-			SAND as at 2.7'-4.4' bgs.	SAND	Bentonite grout seal 5-7' bgs.
735	5	8.7-10.	2 1 2 1	3	1.4	1096	+					#5 Global filter sandpack 7-19' bgs.
10	6	10.7-12	1 2 1 1	3	1.6	1562	+	SP		Becomes moist to wet and no more Clay. At 9.8' to 10.5', some Silt.		2" ID PVC 0.010" slotted screen 9-19' bgs.
730	7	12-14	1 1 2 3	3	1.7	1717	+			From 13.7'-14.5' bgs, black staining, oily sheens and odor.		
15	8	14-16	2 2 3 3	5	1.5	1325	+			No more stains at 14.5' bgs but odor and sheen still there.		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.7-2.7', 8.7-10.7' and 10.7-12.7' bgs.
+/- = Positive/Negative Test Result

Water Level Data

Date	Depth	Elev.
06/22/01	12.7'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: RFI-85-06.dat Date: 07/03/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-85-06

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
725	9	16-18	6 8 16 14	24	2	2445	+	SP		SAND, as above (6.3-16' bgs). No odor, no sheen.	SAND	2" ID PVC 0.010" slotted screen 9-19' bgs.
	10	18-19	NA	NA	NA	NA	NA	ML		Yellow brown (10 YR 5/6) SILT. Saturated, dense, no odor. Local oxidation. Gray (10 YR 6/1) silt in tip of shoe.	SILT	#5 Global filter sandpack 7-19' bgs.
20												
720												
25												
715												
30												
710												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.7-2.7', 8.7-10.7' and 10.7-12.7' bgs.
+/- = Positive/Negative Test Result

Water Level Data

Date	Depth	Elev.
06/22/01	12.7'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File:RFI-85-06.dat Date: 07/03/01

Date Start/Finish: 11/07/01
Drilling Company: Rau Drilling
Driller's Name: Greg Campeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: 563474.26
Easting: 13306042.61
Casing Elevation: NA

Borehole Depth: 21' bgs
Surface Elevation: 745.97

Descriptions By: SM Duly

Boring ID: RFI-85-07

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	745	1	0.5-2.5	5 7 7 10	14	1.3	0.0	-	FILL		ASPHALT.	FILL	Portland Cement (0-1' bgs).
											Black (10YR 2/1) to dark brown (10YR 3/3) SILT, some subangular to angular fine to coarse Sand (foundry), little to some fine to coarse sand-sized up to gravel-sized angular Slag, little to few Clay, no odor, moderately dense, aplastic, dry. Fill.		Bentonite Grout Seal (1-3' bgs).
		2	3-5	4 4 5 4	9	1.2	1.8	-			Increased Slag content and increased fine to medium subangular Sand content.		
5	740	3	5-7	2 3 3 4	6	1.2	0.0	-	ML		Local patches of yellow-brown 10YR 5/4 fine grained Sand. Trace Slag and increased Clay to little to some.	SILT	Bentonite Seal (3-8.5' bgs).
		4	7-9	2 2 2 2	4	0.8	2.0	-			Wood debris and Slag.		2" ID PVC Riser (0-11' bgs).
10	735	5	9-11	4 4 3 5	7	1.4	0.0	-			Yellow-brown (10YR 5/4) SILT, few to little Clay, no odor, moderately dense, aplastic, wet to moist.		#5 Global Filter Sandpack (8.5-21.0' bgs).
		6	11-13	4 7 7 9	14	1.66	485	+	CL		Yellow-brown (10YR 5/4) with gray (10YR 5/1) mottling Silty lean CLAY, few fine to medium subrounded to subangular Sand, no odor, very stiff to stiff, weakly plastic, moist. Clay Till.	SILTY CLAY	
		7	13-15	4 5 10 10	15	1.8	2091	+			Silt lens 4" wide as from 9.8-10.1' bgs, but strong odor from 12.5' to lower contact. Oily sheen also present.		
15	730	8	15-17	6 7	19	1.8	2050	+	CL/ ML		Saturated Silt lens 4" wide. Strong odor.		2" ID PVC 0.010" Slotted Screen (11.0-21.0' bgs).
											Saturated Silt lens 3" wide.		
											Alternating Gray (10YR 5/1) Silty CLAY lenses and SILT lenses up to 6" wide throughout to lower contact, strong odor, oily sheen, saturated. Glacial-alluvial		

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Remarks: bgs=below ground surface; *=Triple-checked
NA = Not Applicable/Not Available
+/- = Positive/Negative Test Result
Samples collected at 0.5-2.5'; 8-10'; 11-13' intervals.

Water Level Data

Date	Depth	Elev.
11/07/01	13.8' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-85-07

Borehole Depth: 21' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	8	15-17	12 4	19	1.8	2050	+	CL/ ML		Alternating Gray (10YR 5/1) Silty CLAY lenses and SILT lenses up to 6" wide throughout to lower contact, strong odor, oily sheen, saturated. Glacial-alluvial 16.5' bgs: Increased Sand content to little fine subrounded Sand. Black oil present.		#5 Global Filter Sandpack (8.5-21.0' bgs).
	9	17-19	4 7 9 11	16	1.8	0.0*	-	SW		Gray (10YR 5/1) becoming yellow-brown (10YR 3/4) at 18' bgs fine to coarse well graded subangular to subrounded SAND, some Silt, no odor, dense, saturated. Glacial-alluvial.	SAND	2" ID PVC 0.010" Slotted Screen (11.0-21.0' bgs).
20 725	10	19-21	7 9 14 15	23	1.5	0.0*	-			Fining downwards to a Silt.		
								ML		Gray (10YR 5/1) SILT, little Clay, no odor, moderately dense, aplastic, saturated. Glacial-alluvial		PVC Cap (21.0-21.2' bgs).
25 720												
30 715												
35 710												

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Remarks: bgs=below ground surface; *=Triple-checked
NA = Not Applicable/Not Available
+/- = Positive/Negative Test Result
Samples collected at 0.5-2.5'; 8-10'; 11-13' intervals.

Water Level Data

Date	Depth	Elev.
11/07/01	13.8' bgs	

Date Start/Finish: 5/23/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** 563482.98 **Easting:** 13306082.09 **Casing Elevation:** NA **Borehole Depth:** 24' bgs **Surface Elevation:** 743.2 **Descriptions By:** SM Duly	**Boring ID:** RFI-86-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	745												
0													
		1	0-2	NA 1 1 1	2	1.0	3.3	+	GP		Coarse angular limestone GRAVEL and PEBBLES (fill aggregate).	GRAVEL	Cement pad with 9" diam flush-mount cover.
											Very dark gray-brown (10YR 3/2) aplastic SILT, little fine to medium subangular Sand, few to some medium to coarse angular limestone Gravel and Pebbles, odor present, moist, loose, organic material (roots) present. Fill.		Grout 1-1.5' bgs.
	740	2	2-4	11 12 - -	NA	0.8	NA	NA	ML			SILT	
5		3	4-6	1 6 6 12	12	1.0	3.7	-			Yellow-brown (10YR 5/4) fine to medium subangular quartz-rich SAND, some Silt, trace Clay, few fine to coarse rounded Gravel, aplastic, dry, moderately loose, no odor. Fill.		Bentonite seal 1.5-7' bgs.
		4	6-8	4 5 7 9	12	1.5	3.2	-			At 6': Local oxidation to yellow-brown (10YR 5/8).		2" ID Sch. 40 PVC riser 0.2-9' bgs.
	735	5	8-10	5 7 50/ 5"	NA	1.4	3.0	-	SP			SAND	
10											Damp. 1/2" wide area of blackened sand, very dark brown (10YR 2/2).		
		6	10-12	100/ 6"	NA	0.5	4.6	-					#5 Global filter sandpack 7-22' bgs.
											Semi-lithified to a sandstone.		
	730	7	12-14	9 2 3 8	5	2.0	NA	-	CL		Gray (10YR 5/1) aplastic CLAY, some Silt, little fine to medium subangular Sand, trace fine to coarse rounded to subrounded Gravel, damp, moderately stiff, no odor, no oxidation present.		2" ID Sch. 40 PVC 0.010" slotted screen 9-19' bgs.
									ML		14.3-14.6: Gray (10YR 5/1) aplastic SILT, little to some Clay, few fine subangular Sand, wet, dense, no odor.		
15		9	14-16	2 3 3 4	6	2.0	NA	-	CL		14.6-16.0: Gray (10YR 2/1) CLAY, as above, but soft, moist to wet, lenses of Silt up to 1" wide throughout.		

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Remarks: bgs=below ground surface;
+/- =Positive/Negative Test Result;
NA = Not Applicable/Not Available;
Samples collected 0.5-2.5', 4.5-6.5' and 8.5-10.5' bgs.

Water Level Data

Date	Depth	Elev.
5/23/01	10.5', 14.3' and 23.3	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-86-01

Borehole Depth: 24' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	11	16-18	2 3 3 4	6	2.0	1.8	-			16.0-23.3: Gray (10YR 5/1) CLAY, as above, but soft, moist to wet, lenses of Silt up to 1" wide throughout.	CLAY	2" ID Sch. 40 PVC 0.010" slotted screen 9-19' bgs.
725	13	18-20	2 3 4 5	7	2.0	3.7	-	CL				#5 Global filter sandpack 7-22' bgs.
20	15	20-22	1 2 3 5	5	2.0	4.1	-					
720	17	22-24	2 6 8 8	14	NA	2.1	-	SP		Brown (10YR 5/3) fine to coarse subangular SAND, little Silt and fine to coarse rounded to subrounded Gravel, aplastic, wet, loose. (Riverine/alluvial sand)	SAND	Holeplug 22-24' bgs.
25												
715												
30												
710												
35												

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Remarks: bgs=below ground surface;
+/- =Positive/Negative Test Result;
NA = Not Applicable/Not Available;
Samples collected 0.5-2.5', 4.5-6.5' and 8.5-10.5' bgs.

Water Level Data

Date	Depth	Elev.
5/23/01	10.5', 14.3' and 23.3	

Date Start/Finish: 7/27/01 **Drilling Company:** Rau Drilling **Driller's Name:** Tom Rau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 45B	**Northing:** 563015.27 **Easting:** 13306187.56 **Casing Elevation:** NA **Borehole Depth:** 27' bgs **Surface Elevation:** 735.5 **Descriptions By:** SM Duly	**Boring ID:** RFI-86-01R **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0	735								GP		Coarse angular limestone GRAVEL and PEBBLES (fill aggregate).	FILL	Cement pad with 9" diam flush-mount cover.
									ML		Very dark gray-brown 10 YR 3/2 aplastic SILT, little fine to medium subangular Sand, few to some medium to coarse angular limestone Gravel and Pebbles, odor present, moist, loose, organic material (roots) present (Fill).		
5	730								SP		Yellow-brown 10 YR 5/4 fine to medium subangular quartz-rich SAND, some Silt, trace Clay, few fine to coarse rounded Gravel, aplastic, dry, moderately loose, no odor. (Fill) Local oxidation to yellow-brown 10 YR 5/8.		Grout 0.5-17.5' bgs.
10	725										Damp. 1/2" wide area of blackened sand, very dark brown 10 YR 2/2.		2" ID Sch. 40 PVC riser 0.1-19' bgs.
											Semi-lithified to a sandstone.		
									CL		Gray 10 YR 5/1 aplastic CLAY, some Silt, little fine to medium subangular Sand, trace fine to coarse rounded to subrounded Gravel, damp, moderately stiff, no odor, no oxidation present.	CLAY	
15	720								ML		(14.3-14.6) Gray 10 YR 5/1 aplastic SILT, little to some Clay, few fine subangular Sand, wet, dense, no odor.		
									CL		(14.6-16.0) Gray 10 YR 2/1 CLAY, as above, but soft, moist to wet, lenses of Silt up to 1" wide throughout.		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
See boring log RFI-86-01 for 0-20' sampling information.

Water Level Data

Date	Depth	Elev.
7/27/01	23.1'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-86-01R

Borehole Depth: 27' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
								CL		Gray 10 YR 5/1 CLAY, as above, but soft, moist to wet, lenses of Silt up to 1" wide throughout.	CLAY	Grout 0.5-17.5' bgs.
20 / 715	1	20-22	2 2 4 8	6	1.8	0.0	-			Gray (10 YR 5/1) SILTY CLAY, few fine subangular to subrounded Sand, medium stiff to stiff, moderately plastic, damp to moist, no odor. Intermittant gray (10 YR 5/1) wet to saturated silt seams up to 5" wide throughout.	SILTY CLAY	2" ID Sch. 40 PVC riser 0.1-19' bgs.
	2	22-24	3 5 2 6	12	1.7	0.0	-					Bentonite seal 17.5-19' bgs.
								SP		Dark yellow-brown (10 YR 5/6) fine to coarse subrounded SAND, little Clay, little Silt, fine to medium rounded Gravel, aplastic, loose, saturated, no odor. Alluvial-riverine.	SAND	#5 Global filter sandpack 19-27' bgs.
25 / 710	3	24-27	3 4 5 6	9	1.6	0.0	-			at 24': Gray (10 YR 6/1) fine to coarse rounded Gravel, decreased clay to few to trace, decreased silt to few, bits of shells present.		2" ID Sch. 40 PVC 0.010" slotted screen 21-26' bgs.
										Overdrilled to 27' bgs.		
30 / 705												
35 / 700												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
See boring log RFI-86-01 for 0-20' sampling information.

Water Level Data

Date	Depth	Elev.
7/27/01	23.1'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-86-01R.dat Date: 1/16/02

Date Start/Finish: 7/31/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 4 1/4" ID
Rig Type: CME 55

Northing: 563154.66
Easting: 13306221.18
Casing Elevation: NA

Borehole Depth: 17' bgs
Surface Elevation: 735.65

Descriptions By: SM Duly

Boring ID: RFI-86-02

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0 / 735	NA	0-3	NA	NA	NA	NA	NA	FILL		Coarse gravel- to cobble-size angular FILL, mixed with gray-brown Silty Sand. Topsoil.	FILL
5 / 730	1	3-5	6 13 18 15	28	1.3	2631	+	SM		Yellow-brown (10 YR 5/6) aplastic Silty fine subangular to subrounded SAND, trace Clay, no odor, dense, damp, locally varved. Fill.	SILTY SAND
	2	5-7	6 7 8 8	15	1.5	1673	+	SP		Yellow-brown (10 YR 5/4) aplastic fine to medium subangular to subrounded SAND, little to some Silt, trace fine to medium rounded Gravel, no odor, moderately dense, moist. Glacial-alluvial. at 7': Increased clay to trace, no gravel, weak odor.	SAND
	3	7-9	3 5 7 10	12	1.8	3319	+				
10 / 725	4	9-11	4 5 6 7	11	1.8	512	+			Color change to gray (10 YR 6/1) moderate odor, oily, saturated, sticky amber product observed throughout to 17' bgs.	
	5	11-13	3 5 9 6	14	1.8	30.1	+			Increased coarseness to fine to medium subrounded to subangular Sand, shell fragments.	
	6	13-15	3 5 5 6	10	1.2	212	+	ML		Brown (10 YR 5/3) with varved oxidation to yellow-brown (10 YR 5/6) aplastic SILT, trace to little fine subangular to subrounded Sand, moderate odor, damp to moist, dense. Saturated with water and oil, oily sheen with "peacock" coloration throughout.	SILT
15 / 720	7	15-17	2 2	5	1.8	0.0	+				

Boring Construction

- Cement pad with 9" diam flush-mount cover.
- Grout 1-2' bgs.
- Bentonite seal 2-5.8' bgs.
- 2" ID Sch. 40 PVC riser 0.2-6.8' bgs.
- #5 Global filter sandpack 5.8-17' bgs.
- 2" ID Sch. 40 PVC 0.010" slotted screen 6.8-16.8' bgs.

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Remarks: bgs = below ground surface; + = Positive Test Result;
NA = Not Applicable/Not Available.
Samples collected 1-3' and 7-9' bgs.
+/- = Positive/Negative Test Result.

Water Level Data

Date	Depth	Elev.
7/31/01	9.0'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-86-02

Borehole Depth: 17' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	7	15-17	3 6	5	1.8	0.0	+	ML		Increased clay to some, decreased moisture to moist to damp.	SILT	2" ID Sch. 40 PVC 0.010" slotted screen 6.8-16.8' bgs. #5 Global filter sandpack 5.8-17' bgs.
20 / 715												
25 / 710												
30 / 705												
35 / 700												

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Remarks: bgs = below ground surface; + = Positive Test Result;
NA = Not Applicable/Not Available.
Samples collected 1-3' and 7-9' bgs.
+/- = Positive/Negative Test Result.

Water Level Data

Date	Depth	Elev.
7/31/01	9.0'	

Project: 644.10.022 Template: j:\rockware\logplot2001\logfiles\64410\Auger_well.ldf
Data File:RFI-86-02.dat Date: 9/18/01

Date Start/Finish: 06/20/01
Drilling Company: Rau Drilling
Driller's Name: Greg Campeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4"
Rig Type: CME 55

Northing: 563314.49
Easting: 13306250.69
Casing Elevation: NA

Borehole Depth: 18' bgs
Surface Elevation: 736.62

Descriptions By: S. Kerr

Boring ID: RFI-86-03

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0												
	735	1	0-2	NA NA	NA	NA	NA	NA	GP		GRAVEL (fill).	GRAVEL
		2	2-4	2 4 4 6	8	1.4	4913	-	CL		Light brownish-gray (10 YR 6/3) CLAY, little Silt, trace fine Sand, hard, dense, local oxidation, highly plastic, no odor, dry to damp.	CLAY
5		3	4-6	9 16 30 26	36	1.6	1376	+			Some Silt and moist.	
	730	4	6-8	6 11 10 12	21	1.4	1511	+	SP		Light yellowish (10 YR 6/4) fine to medium SAND, little Silt, moderately dense, no odor, damp, oxidation throughout. Grayish brown fine to medium SAND. Trace Silt. No oxidation, saturated, loose, slight odor.	SAND
		5	8-10	3 4 5 9	9	1.2	8261	-			Yellowish brown (10 YR 5/6) fine to medium SAND, no odor.	
10		6	10-12	2 4 4 3	8	1.8	>9999	-				
	725	7	12-14	2 2 3 7	5	1.9	4040	-	ML		Yellowish brown (10 YR 5/6) SILT, little fine Sand, loose, saturated, no odor.	SILT
									CL		Light brownish gray (10 YR 6/2) Silty CLAY with Silt seams up to 2" thick throughout, some fine Sand, moderately dense, saturated, no odor, soft, local oxidation.	CLAY
									SP		Yellowish-brown fine to medium SAND, some Silt, loose, saturated, no odor.	SAND
15		8	14-16	2 2 2 3	4	1.5	>9999	-	CL		Gray CLAY (10 YR 5/1), little SILT, soft, moist, no odor. Clay Till.	CLAY

Boring Construction

- Cement pad and 9" diam. flush-mount cover.
- Bentonite seal 2-3' bgs.
- 2" ID SCh. 40 PVC riser 0.3-5' bgs.
- Global #5 sandpack 3-18' bgs.
- 2" ID Sch. 40 PVC 0.010" slotted screen 5-15' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
+/- = Positive/Negative Test Result.
Samples collected 2-4' and 4-6' bgs.

Water Level Data

Date	Depth	Elev.
06/20/01	6.3'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-86-03

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
720	9	16-18	2 2 3 4	5	1.8	4339	+	CL		Gray CLAY (10 YR 5/1), little SILT, soft, moist, no odor. Clay Till.	← CLAY →	Global #5 sandpack 3-18' bgs.
20												
715												
25												
710												
30												
705												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
+/- = Positive/Negative Test Result.
Samples collected 2-4' and 4-6' bgs.

Water Level Data

Date	Depth	Elev.
06/20/01	6.3'	

Date Start/Finish: 07/24/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2"x2" ID
Auger Size: 3 1/4"
Rig Type: CME 55

Northing: 563438.32
Easting: 13306266.08
Casing Elevation: NA

Borehole Depth: 15' bgs
Surface Elevation: 737.29

Descriptions By: SM Duly

Boring ID: RFI-86-04

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
740											
0		0-1	NA	NA	NA	NA	NA	SM (fill)		Dark gray-brown (10YR 4/2) plastic Silty SAND, fine to coarse subangular to subrounded Sand, trace to few Clay, some coarse grained, mostly Gravel (Fill), dry, no odor, moderately loose. Few roots and vegetation present. Aggregate Fill.	SILTY SAND
735	1	1-3	4 4 5 4	9	1.0	6941	-	SM		Yellow-brown (10YR 5/6) Silty SAND, fine subangular to subrounded Sand, moist to damp, no odor, moderately dense.	
	2	3-5	4 5 7 6	12	1.0	4461	-			Perched water.	
5								SP		Reddish aplastic fine to coarse subrounded to subangular SAND, some Silt, no odor, damp, moderately dense to moderately loose.	SILTY SAND
	3	5-7	4 5 6 6	11	1.7	1161	-	SM		Very pale brown (10YR 8/3) aplastic fine to coarse subangular SAND, some to little Silt, no odor, damp, loose.	
730										Brown (10YR 5/3) Silty SAND, fine to coarse (predominately fine) subangular to subrounded Sand, trace Clay, aplastic, no odor, moist, moderately loose to moderately dense.	
	4	7-9	5 5 5 5	10	NA	287	-	ML		Gray (10YR 5/1) aplastic SILT with fine subangular to subrounded Sand, no odor, moderately dense, saturated.	SILT
10										Yellow-brown (10YR 5/4) aplastic SILT, little subangular to subrounded Sand, few to trace Clay, locally oxidized to reddish-brown, no odor, moderately loose to moderately dense, saturated.	
	5	9-11	4 4 5 4	9	1.4	122	-				
725	6	11-13	2 2 3 2	5	2.0	191	-	CL		Gray (10YR 6/1) soft Silty CLAY, trace fine subangular to subrounded Sand, no odor, saturated, soft. Local Silt seams and lenses up to 2" wide throughout as at 8 - 11' bgs, but gray (10YR 6/1). Clay Till.	SILTY CLAY
	7	13-15	1 1 3 5	4	NA	0.0	-			Decrease in quantity and width of Silt lenses, moist to damp.	
15											

Boring Construction

- Cement pad with 9" diam flush-mount cover
- Grout 1-2' bgs
- Bentonite seal 2-4' bgs
- 2" ID Sch. 40 PVC riser 0.2-5' bgs
- #5 Global filter sandpack 4-15' bgs
- 2" ID Sch. 40 PVC 0.010" slotted screen 5-15' bgs

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Background PID = 0.0 ppm
Samples collected 1-3' and 3-5' bgs.

Water Level Data

Date	Depth	Elev.
7/24/01	6.3'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\auger_well2.ldf
Data File: RFI-86-04a Date: 09/12/01

Date Start/Finish: 06/20/01
Drilling Company: Rau Drillling
Driller's Name: Rod Champeron
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: NA
Rig Type: CME 45B

Northing: 563493.09
Easting: 13306103.53
Casing Elevation: NA

Borehole Depth: 19' bgs
Surface Elevation: 742.47

Descriptions By: SM Duly

Boring ID: RFI-86-05

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
745 / 0											
	1	0-2	8 9 9 15	18	1.2	252	+	FILL		Concrete	Fill
										Black (10 YR 2/1) fine to coarse sand sized SLAG. No odor, plastic, moderately dense, dry.	SILT
										Very dark brown (10 YR 2/2) SILT. Aplastic, no odor, dry to damp, moderately dense. Stained fill sand.	
740	2	2-4	3 3 2 3	5	0.5	483	-			SLAG as described at 0.9'-1.2 bgs.	SAND
	3	4-6	4 6 3 2	9	1.2	273	-	SM		Yellow brown (10 YR 5/6) mottled to dark brown (10 YR 3/3) fine to medium SILTY SAND. No odor, dry, dense to moderately loose. Fill. At 5.7' bgs, moist and glass shards present.	SILTY CLAY
5	4	6-8	2 2 4 6	6	NA	330	-	CL		Yellow brown (10 YR 5/4) SILTY CLAY. Little fine subangular Sand. No odor, soft, damp to moist. Fill.	
735	5	8-10	5 5 6 5	11	1.7	193	-			Gray (10 YR 6/1) CLAY. Some Silt. Little fine to medium subrounded to subangular Sand. Trace fine to medium subrounded Gravel. Soft to moderately stiff, damp. Local oxidation and mottled to yellow brown (10 YR 5/4). Native glacial till used as backfill.	SILT with CLAY Layers
10										Yellow brown (10 YR 5/4) SILT. Little fine subangular Sand. Aplastic, no odor, wet (saturated), moderately dense Fill.	
	6	10-12	5 10 12 12	22	1.8	101	-			CLAY as above (8.1'-8.6' bgs).	
										SILT as above (8.6'-10.1' bgs).	
										CLAY as above (8.1'-8.6' bgs), but damp. Moderately stiff to very stiff.	
730	7	12-14	3 7 14 19	21	1.8	190	-	ML		Pale brown SILT (10 YR 6/3) . Little fine subangular Sand. No odor, saturated, aplastic, dense. Alluvial/ Riverine deposit.	
										CLAY as above (8.1'-8.6' bgs). Damp and hard	
15	8	14-16	4 9 9 10	18	1.8	83.2	-			SILT as above (11.2'-13.4' bgs) but grey (10 YR 6/1) with mottling and oxidation to yellow brown (10 yr 6/4) until 17.0' bgs.	

Boring Construction

- Cement pad with 9" diam. flush-mount cover.
- Grout 1-2' bgs.
- Bentonite seal 2-4' bgs.
- 2" ID Sch. 40 PVC riser 0.2-6' bgs.
- #5 Global filter sandpack 4-19' bgs.
- 2" ID Sch. 40 PVC 0.010" slotted screen 6-16' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
+/- = Positive/Negative Test Result
Samples collected 1-3', 3-5' and 5-7' bgs.

Water Level Data

Date	Depth	Elev.
6/20/01	7.7', 8.6', 13.8'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-86-05

Borehole Depth: 19' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
725	9	16-18	6 7 14 12	21	NA	174	-	ML		SILT as above (11.2'-13.4' bgs) but grey (10 YR 6/1) with mottling and oxidation to yellow brown (10 yr 6/4) until 17.0' bgs.	SILT	#5 Global filter sandpack 4-19' bgs.
	10	18-19	NA	NA	NA	NA	NA					
20												
720												
25												
715												
30												
710												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
+/- = Positive/Negative Test Result
Samples collected 1-3', 3-5' and 5-7' bgs.

Water Level Data

Date	Depth	Elev.
6/20/01	7.7', 8.6', 13.8'	

Date Start/Finish: 6/15/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 3 1/4" **Rig Type:** CME 55	**Northing:** 563158.14 **Easting:** 13306355.29 **Casing Elevation:** NA **Borehole Depth:** 15' bgs **Surface Elevation:** 737.32 **Descriptions By:** SM DULY	**Boring ID:** RFI-86-06S **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
740												
0								GP		Coarse predominantly limestone subangular GRAVEL. Fill, dry, loose, no odor.	GRAVEL	Cement pad with 9" diam. flush-mount cover.
735								CL		Gray (10YR 6/1) soft CLAY, some Silt, little fine to medium subangular Sand, no odor, soft to medium stiff, damp to locally moist. 3.4-4.0': some silt-sized to medium gravel-sized fragments of anthracite coal. 5.2-5.7': Gravel as above (0-2.0' bgs).	CLAY	Grout 1-5' bgs. Bentonite seal 5-7' bgs.
5												
730		NA	NA	NA	NA	NA	NA	ML		Black (10YR 2/1) SILT, some fine subangular Sand, aplastic, no odor, damp, moderately loose to moderately dense. Foundry Sand and Fill - glass shards also present. Becomes grey brown at 8.0'bgs and pale brown at at 8.2'bgs. Clean Fill.	SILT	2" ID Sch. 40 PVC riser 0.2-9.5' bgs.
10								SM		Brown grey (10YR 6/2) fine to medium subangular Silty SAND, no odor, loose, aplastic, damp, moist at 11.5'bgs. Fill. Moist. Saturated, increased coarseness to medium-grained, color change to brown (10 YR 5/3).	SILTY SAND	#5 Global filter sandpack 7-15' bgs. 2" ID Sch. 40 PVC 0.010" slotted screen 9.5-14.5' bgs.
725								CL		CLAY, some Silt, soft, no odor, damp.	CLA	
15												

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Remarks: bgs = below ground surface;
NA = Not Available
Geologic description from RFI-86-06D, located 2.5' to west.
Blind drilled to 15' bgs.

Water Level Data

Date	Depth	Elev.
6/15/01	9.2', 12.4'	

Date Start/Finish: **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** 563158.06 **Easting:** 13306357.65 **Casing Elevation:** NA **Borehole Depth:** 26' bgs **Surface Elevation:** 737.21 **Descriptions By:** SM Duly / Sean Kerr	**Boring ID:** RFI-86-06 D **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
740												
0	1	0-2			NA	NA	NA	GP		Coarse predominantly limestone subangular GRAVEL. Fill, dry, loose, no odor.	GRAVEL	Cement pad with 9" diam. flush-mount cover.
735	2	2-4			1.5	129	-	CL		Grey (10 YR 6/1) soft CLAY, some Silt, little fine to medium subangular Sand, no odor, soft to medium stiff, damp to locally moist. Clay Till. 3.4-4.0': Some silt-sized to medium gravel-sized fragments of anthracite coal.	CLAY	
5	3	4-6			1.3	307	-			5.2-5.7': Gravel, as above (0-2.0' bgs).		2" ID Sch. 40 PVC riser 0.2-14.5' bgs.
730	4	6-8			1.8	15.0	-	ML		Black (10 YR 2/1) SILT, some fine subangular Sand, aplastic, no odor, damp, moderately loose to moderately dense. Foundry Sand. Fill - glass shards also present. Becomes grey brown at 8.0'bgs and pale brown at at 8.2'bgs. Clean Fill.	SILT	Grout 1.2-10.5' bgs.
	5	8-10			1.8	1276	-					
10	6	10-12			1.6	3465	-	SM		Brown gray (10 YR 6/2) fine to medium subangular Silty SAND, no odor, loose, aplastic, damp, moist at 11.5' bgs. Moist.	SILTY SAND	Bentonite seal 10.5-12.5' bgs.
725	7	12-14			1.5	1308	-			Saturated, increased coarseness to medium, color change to brown (10 YR 5/3).		#5 Global filter sandpack 12.5-26' bgs.
15	8	14-16			1.0	404	-	CL		CLAY, some Silt, soft, no odor, damp.	CLAY	2" ID Sch. 40 PVC 0.010" slotted screen 14.5-24.5'

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Remarks: bgs = below ground surface;
- = Negative Test Result.
NA=Not Available/Not Applicable.
Samples collected 2-4' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-86-06 D

Borehole Depth: 26' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
720	9	16-18			2	82.7	-	CL		CLAY, some Silt, soft, no odor, damp.		bgs
										SILT lens, saturated.		2" ID Sch. 40 PVC 0.010" slotted screen 14.5-24.5' bgs
	10	18-20			2	109	-			SILT as above (16.5'-16.7'), but with little fine to medium subrounded to subangular Sand, few coarse Gravel, moist. Clay Till. At 18.0' bgs, intermittent saturated Silt lenses up to 2" wide throughout.	SILT	#5 Global filter sandpack 12.5-26' bgs.
20	11	20-22			1.8	940	-	ML				
715										Grey (10 YR 6/1) SILT, some CLAY, no odor, saturated, moderately loose, locally oxidized to yellow brown at 22.9' bgs. Till.		
	12	22-24			1.6	121	-					
								SP		Grey brown fine to coarse subangular SAND, some to little Silt, no odor, saturated, loose. Alluvial deposit. High energy environment of deposition.	SAND	
25	13	24-26			1.5	123	-	CL		Grey (10 YR 5/1) CLAY, some Silt, little fine to medium subangular Sand, few fine to medium subrounded Gravel, no odor, dry, hard. Clay Till.	CLAY	
710												
30												
705												
35												

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Remarks: bgs = below ground surface;
- = Negative Test Result.
NA=Not Available/Not Applicable.
Samples collected 2-4' and 6-8' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 5/23/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 16' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-86-07 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0												
	1	0-2	- 3 8 11	11	1.0	3.1	-	FL		CONCRETE.	FILL	
								SP		Yellow-brown (10YR 5/8) fine to coarse (predominantly fine to medium) subangular SAND, some Silt, trace fine to medium rounded to subrounded Gravel, aplastic, dry, loose, no odor.		
	2	2-4	9 9 8 11	17	1.6	3.1	-	CL		Gray-brown (10 YR 5/2) CLAY, some Silt, little fine to coarse subangular black sand-sized Slag?, trace rounded Gravel, locally mottled and oxidized to yellow-brown (10YR 5/4), dry, soft to moderately stiff (pp=2 tons/sq. feet), no odor.	SAND	Borehole backfilled with Bentonite Chips to grade.
5 5	3	4-6	3 6 9 9	15	1.5	2.0	-	SP		Yellow-brown SAND, as above, little Clay, moderately loose to moderately dense. At 5.1': Decreased Clay content to few.		
	4	6-8	6 3 3 3	6	2.0	1.3	-	ML CL		Yellow-brown (10 YR 5/6) SILT, few fine to medium subangular Sand, little Clay, dry, very dense, aplastic, no odor. Gray (10 YR 5/1) CLAY, some Silt, little fine to medium subangular to subrounded Sand, trace fine to coarse rounded to subrounded Gravel, damp, moderately stiff, locally mottled to yellow-brown with oxidation. Till.	SILT & CLAY	
	5	8-10	2 3 5 6	8	2.0	2.4	-	SP CL		Yellow-brown (10 YR 5/6) SAND, as at 3.6'-6.3', some Clay, moist. Gray (10YR 5/1) CLAY, as above, very stiff to 9.6' bgs, then soft to lower contact. Minor oxidation between 8.8'-10.5' and increasing slightly at 10.5' bgs. At 10.7' bgs a 1" wide Sand (SP) seam as at 8'-8.5' bgs, some Silt.		
10 10	6	10-12	1 3 4 4	7	2.0	4.7	-	ML		Gray (10YR 5/1) aplastic SILT, some Clay and locally soft with patches of increased clay content, few fine subangular Sand, wet, dense, no odor. At 13.6': Increased Gravel and Sand content to little, fine to coarse subangular Sand and Gravel.	SILT & CLAY	
	7	12-14	19 50/ 3"	NA	1.0	3.2	-					
15 15	9	14-16	12 25 25 26	50	2.0	3.6	-	CL		Dark gray (10 YR 4/1) CLAY, some Silt, little fine to medium subangular to subrounded Sand, few fine to coarse rounded to subrounded Gravel, dry, hard, no odor. Clay Till.		

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Remarks: bgs = below ground surface; - = Negative Test Result
NA=Not Applicable/Not Available; pp=pocket penetrometer.
Temporary well screen placed 5 to 15' bgs.
Samples collected 0.7-2.7' and 8.7-10.7' bgs.

Water Level Data

Date	Depth	Elev.
5/23/01	11.0'	

Date Start/Finish: 7/20/01
Drilling Company: Rau Drilling
Driller's Name: Tom Rau
Drilling Method: Direct Push
Sampler Size: NA
Auger Size: NA
Rig Type: Geoprobe

Northing: 563359.12
Easting: 13306188.42
Casing Elevation: NA

Borehole Depth: 21' bgs
Surface Elevation: 743.54

Descriptions By: SM Duly

Boring ID: RFI-86-08

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	745										
0							FL		CONCRETE.		
		1	0-2	1.4	11.2	-	ML		Dark yellowish-brown (10YR 3/4) SILT, some fine to coarse Sand, trace clay, no odor, trace fine to coarse Gravel, trace Slag, loose, dry. Fill.	SILT	Borehole backfilled with Bentonite to grade.
	740	2	2-4	1.0	NA	-					
5		3	4-6	1.3	NA	-					
		4	6-8	1.3	NA	-	SM		Very pale brown (10YR 8/2) cemented fine SAND, some medium Sand, dry, no odor. Fill.	Layered SILT AND CLAY	
							CL		Light olive-brown (2.5Y 6/3) CLAY, some fine to medium Sand, Brick fragments, coarse Gravel in tip. Fill.		
	735						ML		Yellowish-brown (10YR 5/6) SILT, moderately loose, trace fine Sand, dry, no odor.		
		5	8-10	2.0	NA	-	CL		CLAY, as at 7.6' - 8.2' bgs.		
10							ML		SILT, as at 8.2' - 8.5' bgs, dense and moist.		
		6	10-12	1.5	NA	-	CL		Black (10YR 2/1) SILT, some fine to medium Sand, trace Clay, some Slag, trace fine to coarse Gravel, moderately dense, damp. Fill.		
							ML		Dark-grayish brown (10YR 4/2) CLAY, some fine to medium Sand, little Silt, moderately plastic, damp, no odor, oxidation throughout.		
							CL		Light olive-brown (5/4) SILT, trace Clay, trace fine Sand, trace coarse rounded Gravel, moist, no odor, oxidized, aplastic.		
		7	12-14	2.0	NA	+			Gray (10YR 5/1) CLAY, some fine to coarse Sand, Silt seams up to 2", moist, oxidized, no odor, stiff, low plasticity, saturated. Clay Till.		
	730						SM		Dark gray fine to medium SAND, some Silt, saturated, loose, slight odor. Glacial-alluvial.	SAND	
15		8	14-16	2.0	NA	+	CL		Grayish-brown (10YR 5/2) CLAY, some Silt, low plasticity, stiff, moist, no odor. Clay Till.		
							ML		Light olive-brown (2.5Y 5/3) SILT, trace fine Sand, moist to wet, dense,		

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Remarks: bgs=below ground surface;
+/- =Positive/Negative Test Result;
NA = Not Applicable/Not Available.
Temporary well set at 19' bgs, screened 9-19' bgs.
Samples collected 0.6-2.6', 8.6-10.6' and 10.6-12.6' bgs.

Water Level Data

Date	Depth	Elev.
7/20/01	13.7'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-86-08

Borehole Depth: 21' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
						ML		no odor. Light olive-brown (2.5Y 5/3) SILT, trace fine Sand, moist to wet, dense, no odor. Glacial-alluvial.	Layered SILT and CLAY	
	9	16-18	1.5	NA	+	CL		Gray (10YR 5/1) CLAY, Silt seams 1" to 1.5", stiff, damp, slight odor, saturated, moderately plastic. Clay Till.		Borehole backfilled with Bentonite to grade.
725										
20	10	18-21	2.0	NA	+	ML		Gray (10YR 5/1) SILT, trace fine Sand, moderately dense, saturated, slight odor. Glacial-alluvial.		
						CL		Gray (10YR 5/1) CLAY, plastic, soft, moist, no odor. Clay Till.		
						ML		Gray SILT as above from 19' - 20.2' bgs. Glacial-alluvial.		
720										
25										
715										
30										
710										
35										

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Remarks: bgs=below ground surface;
+/- =Positive/Negative Test Result;
NA = Not Applicable/Not Available.
Temporary well set at 19' bgs, screened 9-19' bgs.
Samples collected 0.6-2.6', 8.6-10.6' and 10.6-12.6' bgs.

Water Level Data

Date	Depth	Elev.
7/20/01	13.7'	

Date Start/Finish: 1/28/02 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** Hollow Stem Auger **Sampler Size:** NA **Auger Size:** 3-1/4" ID HSA **Rig Type:** CME 45B	**Northing:** 563359.15 **Easting:** 13306188.43 **Casing Elevation:** NA **Borehole Depth:** 20.5' bgs **Surface Elevation:** 743.58 **Descriptions By:** SM Duly	**Boring ID:** RFI-86-08R **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	NA	NA	NA	NA	NA	NA		No Samples Taken. See log for RFI-86-08 for sampling information.		Portland Cement 0-0.5' bgs 2-inch PVC Riser 0-10.3' bgs Grout 0.5-6' bgs Bentonite Seal 6-8' bgs Global Filter Sand 8-20.5' bgs 2-inch 0.010" machine-slotted PVC Screen 10.3-20.3' bgs
5 5										
10 10										
15 15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-86-08R

Borehole Depth: 20.5' bgs

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
20 20	NA	NA	NA	NA	NA	NA		No Samples Taken. See log for RFI-86-08 for sampling information.		Global Filter Sand 8-20.5' bgs; 2-inch 0.010" machine-slotted PVC Screen 10.3-20.3' bgs; PVC Cap
								End of boring at 20.5' bgs. Light oil sheen throughout and weak odor from cuttings.		
25 25										
30 30										
35 35										

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NA = Not Applicable/Not Available.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 11/21/01 **Drilling Company:** Rau Drilling **Driller's Name:** Rod Champeron **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 2 1/4" ID **Rig Type:**	**Northing:** 562991.00 **Easting:** 13306445.40 **Casing Elevation:** NA **Borehole Depth:** 8.5' below grade **Surface Elevation:** 718.05 **Descriptions By:** SM Duly	**Boring ID:** RFI-86-10 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0								GP		Coarse angular limestone GRAVEL and PEBBLES (fill aggregate).		
	NA	NA	NA	NA	NA	NA	NA	ML		Very dark gray-brown (10YR 3/2) aplastic SILT, little fine to medium subangular Sand, few to some medium to coarse angular limestone Gravel and Pebbles, odor present, moist, loose, organic material (roots) present. Fill.	SILT	Borehole backfilled with bentonite to grade.
5 5	1	6.5-8.5	5 4 8 9	12	1.3	NA	NA	SM		Yellow-brown (10YR 4/6) Silty SAND, fine subangular Sand, few Clay, poorly graded, no odor, dense, aplastic, dense.	Silty SAND	
10 10												
15 15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Sample collected 6.5-8.5' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 11/21/01
Drilling Company: Rau Drilling
Driller's Name: Rod Chaperon
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size: 2 1/4" ID
Rig Type: CME 55

Northing: 563007.09
Easting: 13306134.2
Casing Elevation: NA

Borehole Depth: 4.7'bgs
Surface Elevation: 737.1

Descriptions By: SM Duly

Boring ID: RFI-86-11

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
740												
0								FL		CONCRETE (Reinforced).	FILL	
735	1	0.7-3.5	3 6 8 7	14	1.4	NA	NA	SM		Yellow-brown (10YR 5/4) fine subangular Silty SAND, few Clay, poorly graded, no odor, dense, aplastic, damp. Highly oxidized.	← SILTY SAND →	Borehole backfilled with bentonite to grade.
	2	3.5-4.7	5 5 9 9	14	1.3	NA	NA	CL		Gray (10YR 5/1) lean Silty CLAY, few fine subangular Sand, no odor, very stiff, weakly plastic, dry.		
5								SM		Yellow-brown (10YR 5/4) fine subangular Silty SAND, few Clay, poorly graded, no odor, dense, aplastic, damp. Highly oxidized.		
730												
10												
725												
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.7-2.7' and 2.7-4.7' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 6/15/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 3 1/4" ID **Rig Type:** CME 55	**Northing:** NA **Easting:** 13306072.15 **Casing Elevation:** NA **Borehole Depth:** 20' bgs **Surface Elevation:** 738.11 **Descriptions By:** SM Duly	**Boring ID:** RFI-86-12 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
740												
0		0-4	NA	NA	NA	NA	NA	FL		Coarse subangular to angular GRAVEL, loose, no odor, dry (Fill) mixed with silt to cobble-sized angular black fragments of anthracite coal. Also mixed with little Silt and occasional vegetation and roots (topsoil).	FILL	Cement pad with 9" diam. flush-mount cover.
735										Wood - possible old railroad ties.		2" ID Sch. 40 PVC riser 0.2-10' bgs.
5	1	4-6	4 7 8 12	15	2.0	4891	+	SP		Black (10 YR 2/1) fine to coarse angular sand-sized anthracite COAL, little Silt, little fine to medium angular Gravel (predominantly coal), aplastic, moderately dense, no odor, damp to moist.		Grout 1-7' bgs.
	2	6-8	4 3 3 4	6	2.0	6464	-			Saturated.		
730	3	8-10	1 1 3 4	4	1.6	2349	-			Gray (10 YR 5/1) with dark yellow-brown (10 YR 4/4) oxidation and mottling CLAY, some Silt, little fine to medium subangular to subrounded Sand, few fine to medium subrounded Gravel, medium stiff, no odor, moist. 8.6-8.8': Lens of silt- to medium gravel-sized angular anthracite coal fragments, wet. 9.3-9.4': Saturated silt lens.	CLAY	Bentonite seal 7-9' bgs.
10	4	10-12	2 2 6 8	8	1.3	1683	-	CL		Decreased mottling, gray (10 YR 5/1). 1" wide lens of anthracite coal, moist. Increased oxidation along fractures and selvages to yellow-brown (10 YR 5/4), medium stiff to stiff, moist to damp.		#5 Global filter sandpack 9-20' bgs.
725	5	12-14	4 5 9 10	14	1.8	24.7	-			No oxidation present, stiff, damp.		2" ID Sch. 40 PVC 0.010" slotted screen 10-20' bgs.
15	6	14-16	3 4 6 7	10	1.5	160	-			Saturated silt lenses up to 1" wide, stiff to medium stiff.		

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
+/- = Positive/Negative Test Result.
Samples collected 0.8-2.8' and 2.8-4.8' bgs.

Water Level Data

Date	Depth	Elev.
6/15/01	6.0'	
6/15/01	9.3, 15.5'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-86-12

Borehole Depth: 20' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
720	7	16-18	3 5 7 8	12	1.5	202	-	CL		Gray (10 YR 5/1) CLAY, some Silt, stiff to medium stiff, no odor, damp. Saturated SILT lense at 16.6' bgs.	CLAY	#5 Global filter sandpack 9-20' bgs.
	8	18-20	3 5 6 5	11	1.5	394	-	ML		Gray (10 YR 5/1) SILT, little Clay, aplastic, moderately dense, no odor, saturated. Glacial-alluvial.	SILT	2" ID Sch. 40 PVC 0.010" slotted screen 10-20' bgs.
20												
715												
25												
710												
30												
705												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
+/- = Positive/Negative Test Result.
Samples collected 0.8-2.8' and 2.8-4.8' bgs.

Water Level Data

Date	Depth	Elev.
6/15/01	6.0'	
6/15/01	9.3, 15.5'	

Date Start/Finish: 11/21/01
Drilling Company: Rau Drilling
Driller's Name: Rod Chaperon
Drilling Method: HSA/SS
Sampler Size: 2' x 2" ID
Auger Size:
Rig Type: CME 55

Northing: 563008.59
Easting: 13306072.15
Casing Elevation: NA

Borehole Depth: 4.8' bgs
Surface Elevation: 738.11

Descriptions By: SM Duly

Boring ID: RFI-86-12R

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
740 / 0												
								FL		Reinforced CONCRETE.	FILL	
										Anthracite COAL fragments. Fill.		
	1	0.8-2.8	7 9 9 10	18	1.8	NA	NA			Yellow-brown (10YR 5/4) fine subangular Silty SAND, few Clay, poorly graded, no odor, dense, aplastic, damp. Heavily oxidized. Fill.	SILTY SAND	Borehole backfilled with bentonite.
735	2	2.8-4.8	7 6 6 5	12	NA	NA	NA	SM				
5												
730												
10												
725												
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 11/21/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Chaperon **Drilling Method:** HSA/SS **Sampler Size:** 2' x 2" ID **Auger Size:** 4 1/4" ID **Rig Type:** CME 55	**Northing:** 562971.81 **Easting:** 13306119.64 **Casing Elevation:** NA **Borehole Depth:** 4.8' bgs **Surface Elevation:** 737.0 **Descriptions By:** SM Duly	**Boring ID:** RFI-86-13 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
740												
0								FL		Reinforced CONCRETE.	FILL	
735	1	0.8-2.8	3 11 12 9	23	2.0	NA	NA	ML		Black (10YR 2/1) SILT, some fine subangular Sand, little Clay, no odor, dense, aplastic, increased Sand content to a Silty Sand (SM) in patches. Fill Wood debris 1" thick.	SILT	Borehole backfilled with bentonite.
	2	2.8-4.8	5 8 8 7	16	NA	NA	NA	CL		Brown (10YR 5/3) lean Silty CLAY, some fill with occasional Silt seams up to 2" thick, little fine subangular Sand with local decreases in Sand content to few, no odor, moderately stiff, moderately plastic, moist becoming wet at 4.6' bgs (Perched). Clay Till.	SILTY CLAY	
5												
730												
10												
725												
15												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
Samples collected 0.8-2.8' and 2.8-4.8' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 1/9/02
Drilling Company: Rau Drilling
Driller's Name: Rod Camperon
Drilling Method: HSA/SS
Sampler Size: 2" ID x 2'
Auger Size: 4 1/4" ID
Rig Type: CME 75

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 18' bgs
Surface Elevation: NA

Descriptions By: SM Duly

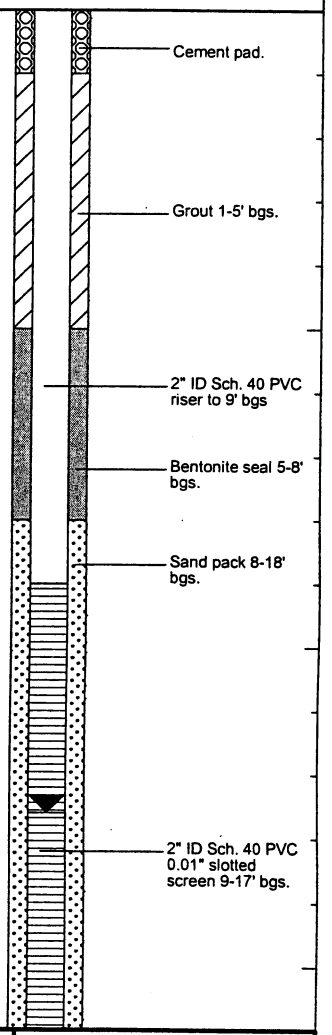
Boring ID: RFI-86-14

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
0 0								FL		Concrete.	FILL
	1	0-2	- 12 17 28	29	1.4	NA	-	SP		Yellow-brown (10 YR 5/4) fine to medium poorly-graded subangular SAND, some to little Silt, trace Clay, no odor, dry, dense to moderately dense.	
	2	2-4	10 22 12 9	34	1.2	NA	-				
5 5	3	4-6	5 10 17 20	27	1.8	NA	-	CL		Yellow-brown (10 YR 5/4) with gray (10 YR 5/1) mottling Silty CLAY, little fine to coarse subrounded to subangular Sand, few fine subrounded Gravel, weakly plastic, no odor, dry, hard to very stiff. Increase in gray mottling and overall gray in color. Clay Till.	SILTY CLAY
	4	6-8	5 8 11 12	19	1.5	NA	-	ML		Gray (10 YR 5/1) SILT, some Clay, aplastic, no odor, saturated, dense. Glacial-alluvial. Yellow-brown (10 YR 5/4) SILT, little Clay, aplastic, no odor, dry to damp, dense. Glacial-alluvial.	SILT
	5	8-10	4 9 9 9	18	1.5	NA	-			9.2-9.5': Wet.	
10 10	6	10-12	4 6 7 8	13	1.6	NA	-	SM		Pale brown (10 YR 6/3) to gray (10 YR 5/1) Silty fine poorly-sorted subangular SAND, aplastic, no odor, dry, moderately dense. Glacial-alluvial.	SILTY SAND
	7	12-14	4 5 5 8	10	1.5	NA	-			Damp to moist, becoming more gray. Saturated, gray (10 YR 5/1), increased silt to a silt with sand, faint black very thin varves.	
15 15	8	14-16	4 4 12 15	16	1.1	NA	-	SP		Gray (10 YR 5/1) fine to coarse SAND.	

Boring Construction



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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples colleced 0.5-2.5' and 4.5-6.5' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.
1/9/02	12.6' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-86-14

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	5 11 18 27	29	1.8	NA	-	SP		Gray (10 YR 5/1) fine to coarse poorly-sorted subangular to subrounded SAND, increased roundness with grain size, little Silt, few Clay, trace fine to coarse rounded to subrounded Gravel, aplastic, no odor, saturated, moderately dense. Glacial-alluvial.	SAND	2" ID Sch. 40 PVC 0.01" slotted screen 9-17' bgs.
								CL		Gray (10 YR 5/1) Silty CLAY, few fine to coarse subrounded Sand, trace fine to coarse rounded Gravel, weakly plastic, no odor, dry, hard. Native glacial clay till.		Sand pack 8-18' bgs.
20 20												
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
Samples colleced 0.5-2.5' and 4.5-6.5' bgs.
- = Negative Test Result.

Water Level Data

Date	Depth	Elev.
1/9/02	12.6' bgs	

Date Start/Finish: 1/12/02 **Drilling Company:** Rau Drilling **Driller's Name:** Rod Camperon **Drilling Method:** HSA/SS **Sampler Size:** 2" ID x 2' **Auger Size:** 4 1/4" ID **Rig Type:** CME 75	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 25' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-86-15 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	1	0-2	- 4 4 4	8	1.2	NA	-	FL		Concrete.		Cement pad.
								SM		Yellow-brown (10 YR 5/4) Silty fine to medium, predominantly fine, subangular SAND, little to few Clay confined to patches, aplastic, no odor, damp to moist, moderately dense. Fill.	SILTY SAND	
	2	2-4	4 50/ 3"	NA	0.5	NA	-	FL		Concrete, wet at 2.5'.	FILL	Grout 1-2.5' bgs.
5 5	3	4-6	NA NA 3 1	NA	NA	NA	-	SM		Brown (10 YR 5/3) Silty fine poorly-graded subangular SAND, trace Clay, aplastic, no odor, moist to saturated at 5.3' bgs, moderately dense to loose.	SILTY SAND	
	4	6-8	1 2 2 2	4	1.3	NA	-			Increased coarseness to fine to medium subrounded to subangular Sand.		2" ID Sch. 40 PVC riser to 9' bgs Bentonite seal 2.5-8.3' bgs.
	5	8-10	woh 5 4 4	9	1.3	NA	-			Becoming gray in color.		Sand pack 8.3-20' bgs.
10 10	6	10-12	2 2 2 2	4	1.2	NA	-			Gray-brown (10 YR 5/2) and fining downwards. Glacial-alluvial.		
	7	12-14	3 4 4 4	8	1.3	NA	-	ML		Gray (10 YR 5/1) SILT, some Clay, aplastic, no odor, saturated, moderately dense. Glacial-alluvial.	SILT	
15 15	8	14-16	3 4 6 10	10	1.5	NA	-	SW		Gray (10 YR 5/1) fine to medium well-graded subangular SAND, some Silt, few Clay, aplastic, no odor, saturated, moderately dense. Occasional black (10 YR 2/1) varves. Glacial-alluvial. at 14': Coarsening downwards to fine to coarse subrounded to subangular SAND, few fine to medium rounded Gravel, increased roundness with increased grain-size.	SAND	2" ID Sch. 40 PVC 0.01" slotted screen 10-20' bgs.

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
woh = Weight of Hammer; - = Negative Test Result.
Sample collected 0.3-2.3' bgs.

Water Level Data

Date	Depth	Elev.
1/12/02	5.3' bgs	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-86-15

Borehole Depth: 25' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	9	16-18	4 8 16 16	24	1.7	NA	-			Gray (10 YR 5/1) fine to coarse well-graded subangular SAND, some Silt, few Clay, few fine to medium rounded Gravel, aplastic, no odor, saturated, moderately dense. Occasional black (10 YR 2/1) varves. Glacial-alluvial.	SAND	2" ID Sch. 40 PVC 0.01" slotted screen 10-20' bgs.
	10	18-20	6 17 17 50/3"	34	2.0	NA	-			Gray (10 YR 5/1) fine to coarse well-graded subrounded to subangular SAND with fine to coarse rounded to subrounded GRAVEL, few Silt, aplastic, no odor, saturated, loose to moderately dense. Glacial-alluvial.	SAND & GRAVEL	Sand pack 8.3-20' bgs.
20 20								SW		Cobbles and pebbles - augered to 25' bgs.		
	NA	20-25	NA	NA	NA	NA	-					Natural collapse 20-25' bgs.
25 25												
30 30												
35 35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available
woh = Weight of Hammer; - = Negative Test Result.
Sample collected 0.3-2.3' bgs.

Water Level Data

Date	Depth	Elev.
1/12/02	5.3' bgs	

Date Start/Finish: 5/16/01 **Drilling Company:** Rau Drilling **Driller's Name:** Allen Rau **Drilling Method:** Direct Push **Sampler Size:** 2' cont acetate sleeve **Auger Size:** 2 1/4" **Rig Type:** 66 DT Advance Geoprobe	**Northing:** 561145.01 **Easting:** 13306640.4 **Casing Elevation:** NA **Borehole Depth:** 10' bgs **Surface Elevation:** 723.54 **Descriptions By:** SC Kerr	**Boring ID:** RFI-94-01 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
	725										
0							FL		CONCRETE.	FILL	
		1	0-2	1.0	9.5	-	SP		Yellowish-brown (10YR 5/6) fine SAND, trace Clay, trace medium Sand, aplastic, medium dense, no odor, dry, moist at 3.4' bgs, saturated at 3.8' bgs.	SAND	Borehole backfilled with Bentonite to grade.
	720	2	2-4	1.2	13.2	-					
5		3	4-6	1.6	14.6	-	ML		Dark gray (10YR 4/1) SILT, dense, no odor, wet.		
		4	6-8	1.8	29.6	-	SP		SAND, as at 0.5' - 5.5' bgs, saturated.	SAND	
							GW		Angular to subangular fine GRAVEL, little fine to medium Sand, no odor, saturated.		
	715						SP		Very dark brown fine SAND, dense, no odor, saturated.		
10		5	8-10	1.6	25.2	-	ML		Grayish-brown (10YR 5/2) SILT, dense, no odor, wet.	SILT	
	710										
15											

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Remarks: bgs = below ground surface; - = Negative Test Result
NA = Not Applicable/Not Available
Samples collect from 0.5'-2' and 2'-4' bgs.
1" Temporary Well set at 9' bgs.

Water Level Data

Date	Depth	Elev.
5/16/01	3.8'	

Date Start/Finish: 08/30/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 3 1/4"
Rig Type: CME 55

Northing: 561350.54
Easting: 13306860.52
Casing Elevation: NA

Borehole Depth: 20' bgs
Surface Elevation: 727.66

Descriptions By: SM Duly

Boring ID: RFI-94-02

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730 / 0												
	1	0-2	4 4 4 4	8	1.7	0.0	-	ML		Dark brown (10 YR 3/3) SILT, little Clay, little fine to medium subangular to subrounded Sand, earthy odor, moderately loose, aplastic, organic matter such as roots and vegetation present, damp. Topsoil	SILT	
										Color change to yellow-brown (10 YR 5/6), no organic matter, moist.		
725	2	2-4	2 3 4 6	7	1.7	0.0	-			Gray (10 YR 6/1) with heavy oxidation and mottling to yellow-brown (10 YR 5/6) lean CLAY, some Silt, few fine to coarse subangular to subrounded Sand, trace fine to medium subrounded Gravel, no odor, soft, plastic, moist. Local lenses of angular fine to coarse Sand and fine to medium Gravel up to 1" wide throughout first 1.5 feet. Native glacial clay till.	CLAY	
5	3	4-6	9 9 15 17	24	2.0	0.0	-					
										Increasing stiffness, dry.		
	4	6-8	7 14 21 36	35	2.0	0.0	-	CL				
720										Hard, decreased oxidation now confined to fractures and selvages, otherwise gray (10 YR 5/1).		
	5	8-10	6 13 19 22	32	1.6	0.0	-					
10												Borehole tremie grouted.
	6	10-12	4 13 19 23	32	1.7	0.0	-			No oxidation, homogeneous.		
715	7	12-14	12 20 24 26	44	2.0	0.0	-	ML		Gray (10 YR 5/1) SILT, some Clay, few fine subrounded Sand, trace fine subrounded Gravel, no odor, dense, aplastic, dry. Glacial till.	SILT	
15	8	14-16	11 33 27 27	60	1.8	0.0	-			Some fine to coarse subangular sand, moist.		
								SW		Gray-brown (10 YR 5/2) fine to coarse subangular well graded SAND, some Silt, little Clay, few fine to coarse	SAND	

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
- = Negative Test Result.
Sample collected 0-2', 8-10' and 12-14' bgs.

Water Level Data

Date	Depth	Elev.
08/30/01	15.2'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-94-02

Borehole Depth: 20' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
710	9	16-18	15 25 50/ 5"	NA	1.0	0.0	-	SW		Gray-brown (10 YR 5/2) fine to coarse subangular well graded SAND, some Silt, little Clay, few fine to coarse subrounded Gravel, no odor, moderately loose to moderately dense, aplastic, saturated. Glacial-alluvial.	SAND	
	10	18-20	39 50/ 5"	NA	1.0	0.0	-	CL		Homogeneous gray (10 YR 5/1) SILTY lean CLAY, little fine to coarse subrounded to subangular Sand, few fine to coarse subrounded Gravel, no odor, hard, aplastic, dry. Native glacial clay till.	← SILTY CLAY →	Borehole tremie grouted.
20												
705												
25												
700												
30												
695												
35												

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
- = Negative Test Result.
Sample collected 0-2', 8-10' and 12-14' bgs.

Water Level Data

Date	Depth	Elev.
08/30/01	15.2'	

Date Start/Finish: 5/8/01
Drilling Company: Rau Drilling
Driller's Name: Allen Rau
Drilling Method: Direct Push
Sampler Size: 2 ft cont. acetate sleeve
Auger Size: 2 1/4"
Rig Type: 66 DT Advance Geoprobe

Northing: 561443.72
Easting: 13306308.88
Casing Elevation: NA

Borehole Depth: 8' bgs
Surface Elevation: 727.8

Descriptions By: Brian Loomis

Boring ID: RFI-94-03

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730										
0										
				3.4		FL		CONCRETE.	FILL	
	1	0-2	2.0	3.6	NA			Very dark brown (10YR 2/2) fine rounded SAND, loose. Fill.		
								As above, wet, strong odor.		Borehole backfilled with Bentonite to grade.
725	2	2-4	1.4	3.2	NA					
						SP		As above, saturated, strong odor.	SAND	
5	3	4-6	2.0	NA	NA					
								As above, saturated, strong odor.		
720	4	6-8	NA	NA	NA					
10										
715										
15										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
1" ID 5-ft 0.01" slot screen temporary well set at 8' bgs.
Sample collected 0.8-2' and 2-4' bgs.

Water Level Data

Date	Depth	Elev.
5/8/01	4.0'	

Project: 64410.022 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-94-03.dat Date: 7/3/01

Par

Date Start/Finish: 5/23/01 **Drilling Company:** Rau Drilling **Driller's Name:** Allen Rau **Drilling Method:** Direct Push **Sampler Size:** 2 ft cont. acetate sleeve **Auger Size:** **Rig Type:** 66 DT Advance Geoprobe	**Northing:** 561295.98 **Easting:** 13306510.34 **Casing Elevation:** NA **Borehole Depth:** 23' bgs **Surface Elevation:** 727.84 **Descriptions By:** Brian Loomis	**Boring ID:** RFI-94-04 **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730										
0						Fill		CONCRETE.		
	1	0-2	1.4	13.6	NA	SP		Layered very dark brown (10YR 2/2) to yellow-brown (10YR 5/6) to black (10YR 2/1) fine to medium subrounded to subangular SAND, locally some subangular to subrounded Gravel.	SAND	
725	2	2-4	2.0	13.5	NA					Borehole backfilled with Bentonite to grade.
5	3	4-6	1.5	4.7	NA					
	4	6-8	1.2	9.1	NA	CL SP		Dark yellowish-brown (10YR 4/4) CLAY, trace fine subangular Sand, very stiff. Reddish fine to medium subangular to angular SAND, trace subrounded Gravel, moist.	SAND & GRAVEL	
720	5	8-10	2.0	5.8	NA	SP/GP		7.0-10.1: Yellowish-brown (10YR 5/4) fine rounded SAND and GRAVEL with Clay, firm. As above with red mottles throughout at 8.0' bgs.		
10	6	10-12	2.0	5.5	NA	CL		Gray (10YR 5/1) CLAY, with fine rounded Sand and Gravel, red mottle, firm. 11-14: Gray CLAY, very stiff.	CLAY	
715	7	12-14	2.0	3.1	NA					
15	8	14-16	0.5	4.4	NA	ML		Gray (10YR 5/1) SILT, trace fine Sand.	SILT	

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
1" ID 5-ft 0.01" slot screen temporary well set at 23' bgs.
Samples collected 0.4-2' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.
5/23/01	7.0'	

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-94-04

Borehole Depth: 23' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
710	9	16-18	2.0	2.4	NA	ML		Gray (10YR 5/1) SILT, trace fine Sand.	SILT	Borehole backfilled with Bentonite to grade.
20	10	18-20	2.0	2.0	NA					
	11	20-22	NA	2.0	NA					
705										
25										
700										
30										
695										
35										

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available;
1" ID 5-ft 0.01" slot screen temporary well set at 23' bgs.
Samples collected 0.4-2' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.
5/23/01	7.0'	

Date Start/Finish: 5/9/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: Direct Push
Sampler Size: 2 ft cont. acetate sleeve
Auger Size: 2 1/4" ID
Rig Type: 66 DT Advance Geoprobe

Northing: 561723.65
Easting: 13306393.62
Casing Elevation: 727.48

Borehole Depth: 22.5' bgs
Surface Elevation: NA

Descriptions By: Brian Loomis

Boring ID: RFI-94-05

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
730										
0										
						Fill		CONCRETE.	FILL	
	1	0-2	1.5	4.6	NA	SP		Very dark brown fine to medium SAND, trace Clay, dry, loose.	SAND	
725	2	2-4	2.0	4.7	NA			Yellowish-brown fine to medium SAND, some Silt, moist.		Borehole backfilled with Bentonite to grade.
5	3	4-6	2.0	3.0	NA			Brown SILT, little fine Sand, dry, stiff.	SILT	
	4	6-8	2.0	5.2	NA	ML				
720	5	8-10	2.0	12.1	NA					
10	6	10-12	2.0	2.7	NA			Dark gray SILT, trace medium Gravel, dry, dense.		
						CL		Dark gray CLAY, trace medium to coarse Gravel, dry.		
715	7	12-14	2.0	3.8	NA	ML		Dark gray SILT, trace medium Gravel, dry, dense.		
15	8	14-16	0.5	5.7	NA					

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0.5-2' 8-10' and 18-20' bgs.

Water Level Data

Date	Depth	Elev.
5/9/01	21.0	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-94-05.dat
Date: 5/23/01

Client:
General Motors

Site Location:
GM Flint
Flint, Michigan

Boring ID: RFI-94-05

Borehole Depth: 22.5' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
710	9	16-18	2.0	5.6	NA	ML		Dark gray SILT, trace medium Gravel, dry, dense.	SILT	Borehole backfilled with Bentonite to grade.
	10	18-20	2.0	2.5	NA			Gray SILT, some fine Sand, dry, loose.		
20	11	20-22	2.0	3.7	NA	CL		Dark gray CLAY, some Silt, little fine Sand, trace Gravel, dry.	SILTY CLAY	
						SP		Dark gray fine to medium SAND, some Silt, wet, dense.		
						ML		Gray SILT, some fine Sand, dry, loose.		
705	NA	22-22.	NA	NA	NA	SP		Dark gray fine to medium SAND, some Silt, wet, dense.		
25										
700										
30										
695										
35										

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Remarks: bgs = below ground surface
NA = Not Applicable/Not Available
Samples collected 0.5-2' 8-10' and 18-20' bgs.

Water Level Data

Date	Depth	Elev.
5/9/01	21.0	

Project: 644.10.011 Template: j:\rockware\logplot2001\logfiles\64410\geoprobe.ldf
Data File:RFI-94-05.dat Date: 5/23/01

Date Start/Finish: 05/09/01
Drilling Company: Mateco
Driller's Name: Gary Swift
Drilling Method: 66 DT Advance Geoprobe
Sampler Size: 2 ft cont. acetate sleeve

Northing: 561700.93
Easting: 13306020.23
Casing Elevation: NA

Borehole Depth: 10' below grade
Surface Elevation: 732.95

Descriptions By: Shawn Kerr

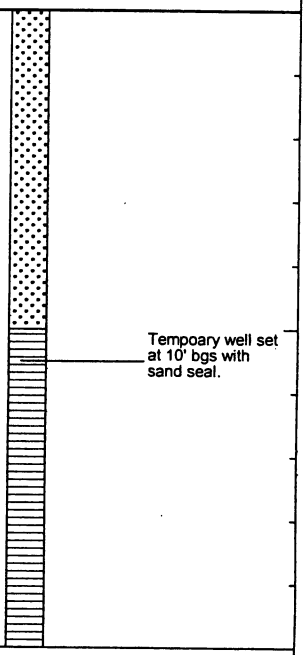
Boring ID: RFI-94-06

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy
735 / 0								
0					FL		1" ASPHALT and 7" CONCRETE.	FILL
	1	0-2	0.9	2.9	SP		Very dark brown fine to medium SAND, trace medium to coarse Gravel and Silt, aplastic, wet, no odor. Soil sample taken at 0-2' interval.	SAND
							Brown fine to medium SAND, little Silt, trace coarse Sand, aplastic, moderately dense, moist, no odor.	
730	2	2-4	1.8	3.4			As above but very loose.	
					ML		Brown SILT mottled with gray, trace rounded fine to coarse gravel, wet, no odor.	SILT
5	3	4-6	2.0	1.2	SP		SAND, as above at 2.4 to 2.8'.	SAND
	4	6-8	2.0	3.5	ML		SILT as at 2.8-4.0', but brown. Soil sample taken in 8-10' interval.	SILT
725	5	8-10	2.0	6.2	SP		Brown medium to coarse angular SAND, some subangular to subrounded Gravel, no odor, wet.	SAND
10					OL		Brown SILTY CLAY, little Gravel, trace medium to coarse Sand, dry, no odor.	
720								
15								

Boring Construction



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Remarks: bgs = below ground surface; - = Negative Test Result
NA = Not Applicable/Not Available;
1" ID 5-ft 0.01" slot screen temporary well set at 10' bgs.
Samples collected 0.8-2' and 8-10' bgs.

Water Level Data

Date	Depth	Elev.

Date Start/Finish: 08/17/01
Drilling Company: Rau Drilling
Driller's Name: Greg Compeau
Drilling Method: HSA/SS
Sampler Size: 2'x2" ID
Auger Size: 2 1/4"
Rig Type: CME 55

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: NA

Descriptions By: SM Duly

Boring ID: RFI-EP-94-02A

Client: General Motors

Location: GM Flint
Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0	1	0-2	NA 3 2 4	5	1.0	3.9	-			Asphalt	SAND FILL	
								SP		Brown (10 YR 4/3) fine to coarse subangular SAND, some to little Silt, few fine subrounded to subangular Gravel, few Clay, aplastic, no odor, moderately dense to moderately loose, moist.		
	2	2-4	4 7 7 9	14	1.2	4.5	-	ML		Yellow-brown (10 YR 5/6), SILT, some Clay, no odor, dense, moist, aplastic.	SILT	
5 5	3	4-6	9 13 17 19	30	2.0	3.6	-	CL		Yellow-brown (10 YR 5/4), Silty CLAY, little fine to coarse subangular to subrounded Sand, few fine to medium rounded to subrounded Gravel, no odor, dry, hard. at 4': Becomes gray (10 YR 5/1) with yellow-brown (10 YR 5/4) mottling and oxidation along fractures and selvages, dry.	SILTY CLAY	
	4	6-8	5 9 10 20	19	1.5	3.9	-			Becomes homogeneous gray (10YR 5/1), no oxidation.		Borehole tremie grouted.
								SM		Gray (10 YR 5/1) Silty fine to coarse subrounded to subangular SAND, few Clay, no odor, dense, moist to wet, aplastic. Glacial-alluvial.		
	5	8-10	7 8 10 12	18	2.0	8.6	-			Homogenous gray (10 YR 5/1) Silty CLAY, as at 6-7.7' bgs, very stiff, occasional Silty sand seams as at 7.7-8.3' bgs throughout, up to 1" thick. Till.		
10 10	6	10-12	3 7 11 19	18	1.7	3.9	-					
	7	12-14	3 7 10 16	17	1.4	2.8	-	CL		1" wide Silty Sand seam, saturated. 2" wide Silty Sand seam, saturated. Becomes hard, no more silty sand seams.		
15 15	8	14-16	7 14 20 18	34	NA	1.7	-					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
- = Negative Test Result.
Samples collected 2.5-4.5' and 4.5-6.5' bgs.

Water Level Data

Date	Depth	Elev.
08/17/01	12.0'	

Date Start/Finish: 08/17/01 **Drilling Company:** Rau Drilling **Driller's Name:** Greg Compeau **Drilling Method:** HSA/SS **Sampler Size:** 2'x2" ID **Auger Size:** 2 1/4" **Rig Type:** CME 55	**Northing:** NA **Easting:** NA **Casing Elevation:** NA **Borehole Depth:** 16' bgs **Surface Elevation:** NA **Descriptions By:** SM Duly	**Boring ID:** RFI-EP-94-02B **Client:** General Motors **Location:** GM Flint Flint, Michigan

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Blows / 6 Inches	N - Value	Recovery (feet)	PID Headspace (ppm)	Oil/Water Shake Test	USCS Code	Geologic Column	Stratigraphic Description	Hydrostratigraphy	Boring Construction
0 0												
			NA					FILL		Asphalt	FILL	
	1	0-2	5 6 5	11	1.2	0.0	-	SM		Yellow-brown (10YR 5/6) Silty fine to coarse subangular to subrounded SAND, few Clay, no odor, damp, moderately dense.	SILTY SAND	
	2	2-4	5 9 13 19	22	1.7	0.0	-	CL		Yellow-brown (10YR 5/4) Silty CLAY, few fine to medium subangular to subrounded Sand, trace coarse rounded Gravel, no odor, dry, very stiff. Becomes gray (10YR 5/1) with yellow-brown (10YR 5/4) oxidation confined to selvages and fractures after 3.2' bgs. Hard at 4' bgs.	SILTY CLAY	
5 5	3	4-6	7 14 16 20	30	1.8	0.0	-					
	4	6-8	6 9 11 13	20	2.0	0.0	-	SM		Gray (10YR 5/1), Silty fine to medium subrounded to subangular SAND, few Clay, aplastic, no odor, moderately loose, moist.		
										Homogeneous gray (10YR 5/1) Silty CLAY, no oxidation, few fine to medium rounded Gravel.		Borehole tremie grouted.
	5	8-10	4 9 15 16	24	1.7	0.0	-			Occasional Silty Sand seams as at 6.0' bgs, up to 1" thick throughout.		
10 10	6	10-12	4 10 15 20	25	1.7	0.0	-	CL			SILTY CLAY	
	7	12-14	7 11 21 23	32	1.8	2.1	-			Silty Sand seam/lens, saturated.		
15 15	8	14-16	4 10 16 23	26	2.0	0.0	-					

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Remarks: bgs = below ground surface;
NA = Not Applicable/Not Available.
- = Negative Test Result.
Samples collected 0.5-2.5' and 2.5-4.5' bgs.

Water Level Data

Date	Depth	Elev.
08/17/01	12.0'	

Date Start/Finish: 10/27/00 -10/27/00
Drilling Company: Rau Drilling
Driller's Name: Rod Chapbron/Ryan
Drilling Method: HSA/SS
Bit Size: NA
Auger Size: 3.75" ID
Rig Type: CME 45 B Truck Mounted Dill Rig
Sampling Method: 2' x 2" ID

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 18' bgs
Surface Elevation: 729.7'

Geologist: Raymond Wagner

Well/Boring ID: WL-B1

Client: General Motors

Location: GM-Flint - Phase II ESA
Former Waste Lagoon Site

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N-Values	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
730									
0	1	0-2	1.8	3, 9, 16, 19	25	0.0			Brown to black SILT, some fine to medium Sand and Cinders [FILL], moist to firm.
	2	2-4	0.2	7, 4, 9, 12	13	0.0			As above, [FILL], moist.
725 5	3	4-6	0.2	7, 13, 16, 13	29	4.0			Brown SILT, little medium to coarse Sand and fine Gravel, trace Clay, moist to compact.
	4	6-8	2.0	19, 16, 18, 24	34	6.3			As above, dry, compact.
720 10	5	8-10	2.0	10, 15, 16, 13	31	7.6	✸		Brown-gray mottled SILT, little medium to coarse Sand, trace fine Gravel, dry, compact.
	7	10-12	2.0	3, 7, 14, 17	21	2.1			Gray SILT, little medium to coarse Sand and fine Gravel, embedded, dry, firm.
	8	12-14	2.0	6, 16, 17, 23	33	0.0			As above, dry, compact [TILL].
715 15	9	14-16	2.0	15, 25, 18, 19	43	0.0			As above, dry, compact [TILL].

Well/Boring Construction: Borehole backfilled with Bentonite to grade

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Remarks: No temporary well installed, no water encountered.
Borehole terminated at 18'.
Sample collected 8-10' bgs.

Client:
General Motors

Site Location:
GM-Flint - Phase II ESA
Former Waste Lagoon Site

Well/Boring ID: WL-B1

Borehole Depth: 18' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	10	16-18	2.0	3 9 19 30	28	0.0			As above, dry, compact [TILL].	Borehole backfilled with Bentonite to grade
20 / 710										
25 / 705										
30 / 700										
35 / 695										

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Remarks: No temporary well installed, no water encountered.
Borehole terminated at 18'.
Sample collected 8-10' bgs.

Date Start/Finish: 10/27/00 -10/27/00
Drilling Company: Rau Drilling
Driller's Name: Rod Chapbron/Ryan
Drilling Method: HSA/SS
Bit Size: NA
Auger Size: 3.75" ID
Rig Type: CME 45 B Truck Mounted Dill Rig
Sampling Method: 2' x 2" ID

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 727.7'

Geologist: Raymond Wagner

Well/Boring ID: WL-B2

Client: General Motors
Location: GM-Flint - Phase II ESA
Former Waste Lagoon Site

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N-Values	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
730									
0	1	0-2	0.9	5 5 9 7	14	0.0			Brown SILT, some medium to coarse Sand, little fine Gravel and fine Sand, moist, firm.
725	2	2-4	1.4	9 11 10 7	21	4.2	✸		Dark brown SILT, some fine to coarse Sand, little Cinders and Brick fragments [FILL].
5	3	4-6	1.8	2 5 6 9	11	0.0			Brown SILT, some fine to medium Sand, little coarse Sand and fine Gravel, moist to wet, firm.
720	4	6-8	2.0	9 11 32 40	43	0.0			Brown mottled SILT, little fine to coarse Sand and fine Gravel, trace Clay, moist, compact.
	5	8-10	1.8	22 56 50/0. -	106	0.5			As above, moist, very compact. [TILL]
10	7	10-12	2.0	13 17 24 27	41	0.0			Gray mottled SILT, little medium to coarse Sand and fine Gravel embedded, dry, compact [TILL].
715	8	12-14	2.0	11 22 23 24	45	0.0			Gray SILT, little medium to coarse Sand and fine to coarse Gravel embedded, dry, compact [TILL].
15	9	14-16		9 16 18 19	34	0.0			As above, dry, compact. [TILL]

Well/Boring Construction: Borehole backfilled with Bentonite chips.

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Remarks: No temporary well installed, no water encountered.
Sample WL-B2 (2-4) submitted for VOC & Metals (Mich. 10) analysis. Borehole terminated at 16'.

Date Start/Finish: 10/30/00 -10/30/00
Drilling Company: Rau Drilling
Driller's Name: Rod Chapbron/Ryan
Drilling Method: HSA/SS
Bit Size: NA
Auger Size: 3.75" ID
Rig Type: CME 45 B Truck Mounted Dill Rig
Sampling Method: 2' x 2" ID

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 20' bgs
Surface Elevation: 729.5'

Geologist: Raymond Wagner

Well/Boring ID: WL-B3

Client: General Motors

Location: GM-Flint - Phase II ESA
Former Waste Lagoon Site

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N-Values	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
730 / 0	1	0-2	0.9	7, 17, 8, 7	25	0.0			Brown SILT, some Concrete and Brick fragments, little medium to coarse Sand, dry, compact.
	2	2-4	NA	- - - -	NA	NA			CONCRETE, No Sample taken.
725 / 5	3	4-6	0.2	50/0.	NA	0.0			Brown SILT, Concrete and Brick debris [FILL].
	4	6-8	0.6	33, 50/0.	NA	0.0			CONCRETE fragments, little Silt, and medium to coarse Sand [FILL].
720 / 10	5	8-10	0.5	50/0.	NA	0.0			Brown SILT, little medium to coarse Sand and fine Gravel embedded, dry.
	7	10-12	1.2	7, 19, 26, 25	45	0.0	✸		Gray SILT, little medium to coarse Sand and fine to coarse Gravel embedded, dry, very compact.
	8	12-14	2.0	22, 34, 37, 40	71	0.0			As above, dry, very compact [TILL].
715 / 15	9	14-16	2.0	16, 26, 28, 25	54	0.0			As above, dry, very compact [TILL].

Well/Boring Construction: Borehole backfilled with Bentonite to grade.

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Remarks: No temporary well installed, no water encountered.
Sample WL-B3 (10-12') submitted for VOC & Metals (Mich. 10) analysis.

Client:
General Motors

Site Location:
GM-Flint - Phase II ESA
Former Waste Lagoon Site

Well/Boring ID: WL-B3

Borehole Depth: 20' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	10	16-18	1.8	9 13 22 25	35	0.0			As above, dry, compact. [TILL]	Borehole backfilled with Bentonite to grade.
710 20	11	18-20	1.8	4 13 21 25	33	0.0			As above, dry, compact. [TILL]	
705 25										
700 30										
695 35										

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Remarks: No temporary well installed, no water encountered.
Sample WL-B3 (10-12') submitted for VOC & Metals (Mich. 10) analysis.

Date Start/Finish: 10/30/00 -10/30/00
Drilling Company: Rau Drilling
Driller's Name: Rod Chapbron/Ryan
Drilling Method: HSA/SS
Bit Size: NA
Auger Size: 3.75" ID
Rig Type: CME 45 B Truck Mounted Dill Rig
Sampling Method: 2' x 2" ID

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 20' bgs
Surface Elevation: 729.5'

Geologist: Raymond Wagner

Well/Boring ID: WL-B3

Client: General Motors

Location: GM-Flint - Phase II ESA
Former Waste Lagoon Site

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N-Values	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
730 / 0	1	0-2	0.9	7, 17, 8, 7	25	0.0			Brown SILT, some Concrete and Brick fragments, little medium to coarse Sand, dry, compact.	
	2	2-4	NA	- - - -	NA	NA			CONCRETE, No Sample taken.	
725 / 5	3	4-6	0.2	50/0.	NA	0.0			Brown SILT, Concrete and Brick debris [FILL].	Borehole backfilled with Bentonite to grade.
	4	6-8	0.6	33, 50/0.	NA	0.0			CONCRETE fragments, little Silt, and medium to coarse Sand [FILL].	
720 / 10	5	8-10	0.5	50/0.	NA	0.0			Brown SILT, little medium to coarse Sand and fine Gravel embedded, dry.	
	7	10-12	1.2	7, 19, 26, 25	45	0.0	✸		Gray SILT, little medium to coarse Sand and fine to coarse Gravel embedded, dry, very compact.	
	8	12-14	2.0	22, 34, 37, 40	71	0.0			As above, dry, very compact [TILL].	
715 / 15	9	14-16	2.0	16, 26, 28, 25	54	0.0			As above, dry, very compact [TILL].	

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Remarks: No temporary well installed, no water encountered.
Sample WL-B3 (10-12') submitted for VOC & Metals (Mich. 10) analysis.

Client:
General Motors

Site Location:
GM-Flint - Phase II ESA
Former Waste Lagoon Site

Well/Boring ID: WL-B3

Borehole Depth: 20' bgs

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	10	16-18	1.8	9 13 22 25	35	0.0			As above, dry, compact. [TILL]	Borehole backfilled with Bentonite to grade.
710 20	11	18-20	1.8	4 13 21 25	33	0.0			As above, dry, compact. [TILL]	
705 25										
700 30										
695 35										

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Remarks: No temporary well installed, no water encountered.
Sample WL-B3 (10-12') submitted for VOC & Metals (Mich. 10) analysis.

Date Start/Finish: 10/30/00 -10/30/00
Drilling Company: Rau Drilling
Driller's Name: Rod Chapbron/Ryan
Drilling Method: HSA/SS
Bit Size: NA
Auger Size: 3.75" ID
Rig Type: CME 45 B Truck Mounted Dill Rig
Sampling Method: 2' x 2" ID

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 724.9'

Geologist: Raymond Wagner

Well/Boring ID: WL-B4
WL-TW1

Client: General Motors

Location: GM-Flint - Phase II ESA
Former Waste Lagoon Site

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N-Values	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0 / 725	1	0-2	0.9	2 3 5 5	8	0.0			Dark brown SILT, some fine to medium Sand, little coarse Sand and fine Gravel, moist, loose.
	2	2-4	1.3	3 3 7 13	10	0.0	✸		Brown SILT, some medium to coarse Sand, little fine Gravel, moist, firm.
5 / 720	3	4-6	1.7	11 17 35 37	52	0.0			Brown mottled SILT, little medium to coarse Sand and fine Gravel embedded, dry, very compact.
	4	6-8	2.0	16 32 38 39	70	0.0			As above, dry, very compact [TILL].
	5	8-10	2.0	10 15 15 16	30	0.0			Gray SILT, little medium to coarse Sand and fine Gravel, trace fine Sand and Clay, dry, compact [TILL].
10 / 715	7	10-12	1.6	4 9 13 16	22	0.0			As above, firm, moist. [TILL]
	8	12-14	1.7	5 10 16 22	26	0.0			As above, firm, moist. [TILL]
15 / 710	9	14-16	1.6	4 10 17 21	27	0.0			As above, dry, firm [TILL].

Well/Boring Construction: Borehole backfilled with Bentonite chips.

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Remarks: Sample WL-B4 (2-4') submitted for VOC & Metals (Mich. 10) analysis. Borehole terminated at 16'. Temporary 2" diameter PVC well with 10 slot, 5' screen was set in soil boring. WL-TW1 sampled for VOCs, SVOCs, Metals, & PCBs.

Date Start/Finish: 10/30/00 -10/30/00
Drilling Company: RAU Drilling
Driller's Name: Rod Chapbron/Ryan
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 3.75" ID
Rig Type: CME 45 B Truck Mounted Dill Rig
Sampling Method: 2" Split-Spoon

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 723.1'

Geologist: Raymond Wagner

Well/Boring ID: WL-B5
WL-TW2

Client: General Motors

Location: GM-Flint - Phase II ESA
Former Waste Lagoon Site

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N-Values	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
725									
0	1	0-2	2.0	2 4 5 6	9	0.0			<Topsoil 6"> Brown SILT, some medium to coarse Sand and fine to coarse Gravel, moist, loose.
720	2	2-4	0.2	3 4 4 4	8	0.0			As above.
5	3	4-6	2.0	5 10 11 8	21	0.0			Brown fine SAND and SILT, moist to wet, firm.
	4	6-8	2.0	7 14 17 18	31	0.0			Gray-brown mottled SILT, some fine to coarse Sand, little fine to coarse Gravel, moist, compact.
715	5	8-10	1.9	6 11 14 16	25	0.0			Gray SILT, little medium to coarse Sand and fine to coarse Gravel embedded, trace Clay [TILL], moist, compact.
10	7	10-12	1.9	5 7 19 25	26	0.0	✱		Gray SILT and fine SAND, little medium to coarse Sand and fine Gravel, wet, firm.
710	8	12-14	1.7	8 12 16 21	28	0.0			Gray SILT, little fine to coarse Sand and fine Gravel, moist, compact.
15	9	14-16	2.0	15 24 27 33	51	0.0			As above, moist, very compact [TILL].

Well/Boring Construction: Borehole backfilled with Bentonite to grade.

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Remarks: Sample WL-B5 (10-12') submitted for VOC, SVOC, & Metals (Mich. 10) analysis. Borehole terminated at 16'. Temporary 2" diameter PVC well with 10 slot, 5' screen was set in soil boring and sampled for VOCs, Metals (Mich. 10), & PCBs.

Date Start/Finish: 10/31/00-10/31/00
Drilling Company: Rau Drilling
Driller's Name: Rod Chapbron/Ryan
Drilling Method: HSA/SS
Bit Size: NA
Auger Size: 3.75" ID
Rig Type: CME 45 B Truck Mounted Dill Rig
Sampling Method: 2' x 2" ID

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth: 16' bgs
Surface Elevation: 722.4'

Geologist: Raymond Wagner

Well/Boring ID: WL-B6
WL-TW3

Client: General Motors

Location: GM-Flint - Phase II ESA
Former Waste Lagoon Site

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N-Values	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
725									
0	1	0-2	0.5	4, 12, 16, 20	28	5.8			<Topsoil 6"> Dark brown SILT, little medium to coarse Sand and fine Gravel.
720	2	2-4	1.5	7, 14, 16, 21	30	7.6			Brown SILT and fine SAND, little medium to coarse Sand and fine Gravel, moist, firm.
5	3	4-6	1.3	4, 3, 6, 12	9	12			As above, with some Clay, wet, loose.
	4	6-8	1.7	5, 12, 18, 10	30	11.1			Brown-gray mottled SILT, little medium to coarse Sand and fine to coarse Gravel, trace Clay, moist .
715	5	8-10	1.6	7, 12, 14, 20	26	18.6			Gray SILT, little medium to coarse Sand and fine to coarse Gravel embedded, dry, firm [TILL].
10	7	10-12	1.5	8, 17, 23, 29	40	29.5	✸		As above, with fine Sand seam @ 10.7'-11.2', wet, compact.
710	8	12-14	1.6	9, 14, 20, 28	34	24.3			Gray SILT, little fine to coarse Sand and fine Gravel, moist to wet, compact.
15	9	14-16	1.8	10, 15, 21, 29	36	27.1			As above, moist to wet, compact [TILL].

Well/Boring Construction: Borehole backfilled with Bentonite to grade.

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: Sample WL-B6 (10-12') submitted for VOC, SVOC, & Metals (Mich. 10) analysis. Borehole terminated at 16'. Temporary 2" diameter PVC well with 10 slot, 5' screen was set in soil boring. Samples WL-TW3 and DUP-2 sampled for VOCs, SVOCs, Metals (Mich. 10), and PCBs.