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Prepared at General Motors
Counsel's Request

PARCEL B

PHASE II ENVIRONMENTAL SITE ASSESSMENT

GENERAL MOTORS CORPORATION
CLARK AVENUE FACILITY
DETROIT, MICHIGAN

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1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) was retained by General Motors Corporation (GM) to conduct a Phase II Environment Site Assessment (Phase II ESA) for a portion of the GM Clark Avenue Facility located at 2860 Clark Avenue in Detroit, Michigan. The Site is defined for redevelopment as Parcel B (Site). The Site location is presented on Figure 1.1. A Site plan is presented on Figure 1.2.

The purpose of the Phase II ESA was to confirm or deny a release at all potential areas of environmental concern (PAOCs) identified during the Phase I ESA of the Site, which was completed from September 1996 to December 1996. The Phase I ESA identified PAOCs for the Site through the following methods:

- i) review of available documentation for the Site;
- ii) re-evaluation of environmental areas of interest identified during historic Site investigations; and
- iii) inspection of environmental conditions during Site demolition and concrete slab removal.

Additional concrete slab removal activities were conducted in Parcel B in November and December 1997, after the completion of the Phase I ESA. Two PAOCs (PAOCs B-16 and B-17) were identified during this additional concrete slab removal, and were included in this Phase II ESA.

This document presents a summary of the Phase II ESA activities for the Site, in the following sections:

- 2.0 Scope of Work
- 3.0 Geology and Hydrogeology
- 4.0 Analytical Results
- 5.0 Conclusions

2.0 SCOPE OF WORK

CRA conducted a Phase II ESA at the Site during the period from September 6, 1996 through December 6, 1996. Additional Phase II ESA activities were conducted in December 1997. The Phase II ESA was designed to confirm or deny a release at the PAOCs identified.

2.1 SUMMARY OF PAOCS EVALUATED

Seventeen (17) PAOCs were identified during the Phase I ESA (CRA, February 1997) and during the additional concrete slab removal in late 1997. PAOC locations are presented on Figure 2.1. The 17 PAOCs were identified during demolition oversight activities and a review of historical environmental areas of interest.

For the purpose of this Phase II ESA, PAOCs are named according to their location and order of discovery. For example, PAOC B-1 was the first PAOC discovered during demolition oversight activities in Parcel B-1.

2.2 BREAKDOWN OF BOREHOLES BY LOCATION

A total of 92 investigative boreholes were completed during the Phase II ESA on Site. Figure 2.2 presents the borehole locations. Table 2.1 presents a summary of boreholes completed by PAOC location.

2.3 BOREHOLE INSTALLATION

2.3.1 DRILLING METHODS

Carlo Environmental Technologies (CET), of Clinton Township, Michigan, performed all Phase II ESA drilling activities at the Site from September 1996 through December 1996. Additional Phase II ESA drilling was conducted in December 1997.

Boreholes were advanced using a drill rig equipped with 4 1/4-inch hollow stem augers, approximately two feet into the clay layer which underlies the surficial fill material at the Site. Boreholes were advanced to approximately ten feet below ground surface (bgs), or until no adverse impact was observed, whichever was deeper.

Borehole stratigraphic logs are included in Appendix A.

2.3.2 SOIL SAMPLING METHODS

Soil samples were collected continuously using split spoon samplers. Two soil samples were collected from each boring, one from the fill material and one from the underlying clay for analysis. Soil samples were screened using a photoionization detector (PID) and visually examined for staining and/or odors. The soil sample collected from the fill material which exhibited the highest PID reading, or most significant staining/odors, was submitted for analysis. The sample collected from the last split spoon advanced into the clay layer was also submitted for analysis.

Soil samples were collected by split-spoon methods in accordance with ASTM Method 1586 using the following sampling protocols:

- i) soil samples were collected using a 24-inch long, 2-inch or 3-inch outside diameter carbon-steel split-spoon sampler (precleaned as described in Section 2.3.3). The split-spoon was attached to precleaned drill rods, and driven ahead of the hollow stem augers (HSAs) into the materials to be sampled using a 140-pound hammer, free falling 30 inches. The number of hammer blows were recorded for each 6-inch increment of penetration; and
- ii) all collected soil samples were described and visually classified according to the USCS System, placed in precleaned laboratory-supplied jars, and submitted to the analytical laboratory for chemical analyses.

2.3.3 DECONTAMINATION METHODS

Prior to mobilization of sampling equipment, and prior to the commencement of sampling activities, all sampling equipment was thoroughly steam-cleaned to remove oil, grease, mud and other foreign matter.

The drill rig and all downhole drilling and sampling equipment (such as augers, cutting bits, and associated equipment and tools), were cleaned using the following sequence:

- i) hot potable water high-pressure, low-volume wash and hand scrubbing, as necessary, supplemented by non-phosphate detergent (Alconox); and
- ii) hot potable water high-pressure, low-volume rinse.

The soil sampling equipment and tools were cleaned prior to the initial borehole, and in between each borehole installed.

Sampling equipment and tools, including split-spoons, were thoroughly cleaned using the following wash sequence:

- i) cleaning with potable water and detergent (Alconox), using a brush to remove particulate matter and surface films;
- ii) rinsing thoroughly with potable water;
- iii) rinsing with isopropanol;
- iv) rinsing thoroughly with deionized water;
- v) allowing the equipment to air dry as long as possible; and
- vi) wrapping with aluminum foil, if appropriate, if the equipment was to be stored or transported.

2.3.3 SAMPLE ANALYSIS/DATA VALIDATION

Soil samples were collected and submitted to IEA, Inc. of Cary, North Carolina; Encotec of Ann Arbor, Michigan; and SPL of Scott, Louisiana; and analyzed for various

parameters, including volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and Michigan Metals (Metals).

The sample summary table, Table 2.2, presents a detailed list of which parameters were analyzed for each sample collected. Parameter selection was based on information obtained during the Phase I ESA for the Site and subsequent discussions with GM.

Samples were shipped via Federal Express or hand delivery to the analytical laboratories in sealed coolers packed with ice under chain-of-custody protocol. Chain-of-Custody records are included as Appendix B.

Quality assessment and validation of the analytical data reported by IEA, ENCOTEC, and SPL was conducted by CRA's quality assurance officer. The validation of the analytical data was based on laboratory blank data, recovery data from matrix and surrogate spikes, and check samples. The analytical data was assessed for accuracy and precision based on review of the blank and spike recovery data. The analytical data was determined to be valid and suitable for quantitative use specific to this project. The data quality assessment and validation memoranda are presented in Appendix C.

The analytical results for the soil samples were compared to Michigan Act 451, Part 201 Generic Industrial Direct Contact Criteria, as defined in the Environmental Response Division Operational Memorandum #14, Revision 2, dated June 6, 1995.

3.0 GEOLOGY AND HYDROGEOLOGY

3.1 SITE GEOLOGY

The Site is located on the southeastern edge of the Michigan Basin, a regional geologic feature that includes sedimentary rocks of the Paleozoic age.

An accumulation of unconsolidated sediment deposits cover most of the Michigan area, formed during the glaciation of the Pleistocene Epoch. The lacustrine glacial till is comprised of sand, silt, and clay, and has a thickness of 101 to 200 feet (Hydrogeologic Atlas of Michigan, Western Michigan University, 1981). The glacial till at the Site was reported in previous investigations to be 111 to 125 feet thick. The underlying bedrock is reported to be limestone of the Dundee Limestone, a late Devonian formation. The Dundee Limestone is generally a highly fractured, brown, carboniferous rock.

Through years of development and industrial use, the native soils in many areas of the Site have been overlain by earth fill (i.e., sand and gravel), asphalt, concrete, or structures. This surficial layer of fill at the Site is generally less than ten feet thick.

3.2 SITE HYDROGEOLOGY

The stratigraphy at the Site contains two water bearing zones: a shallow perched water zone within the surficial fill, and an aquifer within the limestone bedrock beneath the lacustrine glacial till.

The first usable aquifer is protected from surficial contamination by impervious material. No wells in the area are reported to be located in the bedrock. The glacial drift is generally not an aquifer, but may include thin interbedded aquifers at depth (Hydrogeologic Atlas of Michigan, Western Michigan University, 1981).

It should be noted that the perched water in many areas of Detroit is considered by the Michigan Department of Environmental Quality (MDEQ) - Environmental Response Division (ERD) to be groundwater not in an aquifer.

4.0 ANALYTICAL RESULTS

4.1 VOCS

A summary of detected VOCs in soil samples is presented in Table 4.1.

No VOC parameters were detected above the Michigan Act 451, Part 201 Generic Industrial Direct Contact Criteria.

4.2 SVOCS

A summary of detected SVOCs in soil samples is presented in Table 4.2.

The following soil sample contained benzo(a)pyrene above the Michigan Act 451, Part 201 Generic Industrial Direct Contact Criteria of 21,000 µg/kg:

<i>PAOC Number</i>	<i>Borehole Location</i>	<i>Sample Depth (feet bgs)</i>	<i>Analytical Result (µg/kg)</i>
B-4	BH-111A-96	0-2	22,000

No additional SVOC parameters were detected above the Michigan Act 451, Part 201 Generic Industrial Direct Contact Criteria.

At one borehole location, the detection limit reported was higher than the Michigan Act 451, Part 201 Generic Industrial Direct Contact Criteria for benzo(a)pyrene (an SVOC parameter), as follows: BH-105-196 (0-2 feet bgs) in PAOC B-1. The detection limits established for this project are based on the recommended Target Method Detection Limits (TMDLs) set forth in the MDEQ-ERD Operational Memorandum #6, Revision 4: "Analytical Detection Level Guidance for Environmental Contamination Response Activities under Part 201 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended," dated September 13, 1995. It should be noted

that the TMDLs are targeted quantitation limits that may not be achievable on all samples. MDEQ guidance on the issue is stated as follows:

"Analytical problems can occur because of matrix effects, interferences as a result of non-target analytes or high levels of other target analytes, and interferences from species native to the sample matrix under investigation. When detection levels are increased beyond cleanup levels as a result of such problems it may be necessary to evaluate detection limits based on the number of samples and the magnitude of the excursion above cleanup levels (September 13, 1995)."

For this Site, an evaluation of the number of samples affected and the magnitude of the excursion was completed. The Phase II ESA for the Site and adjacent parcels included the analysis of 194 SVOC samples from 88 separate boreholes. Only 2 of 194 samples were identified to contain SVOCs (specifically benzo(a)pyrene) above the Michigan Act 451, Part 201 Generic Industrial Direct Contact Criteria of 21 mg/kg. One soil sample (from BH-111A-96 at B-4) contained benzo(a)pyrene with an exceedance of 1 mg/kg (i.e. 22 mg/kg); the other soil sample (from BH-223-96, located off-Site) contained benzo(a)pyrene with an exceedance of 14 mg/kg (i.e. 35 mg/kg). The SVOC results from only 4 soil samples contained detection limits which exceeded the cleanup criteria. Based on the MDEQ recommended approach, and the standard of practice applied to the Site, the detection limit excursions are considered inconsequential to the conclusions derived for the Site relative to meeting Act 451, Part 201 Generic Industrial Direct Contact Criteria.

4.3 PCBs

No PCB parameters were detected in any of the soil samples above method detection limits.

4.4 INORGANICS

A summary of detected inorganics in soil samples is presented in Table 4.3. The following soil samples contained lead above the Michigan Act 451, Part 201 Generic Industrial Direct Contact Criteria of 400 mg/kg:

<i>PAOC Number</i>	<i>Borehole Location</i>	<i>Sample Depth (feet bgs)</i>	<i>Analytical Result (mg/kg)</i>
B-10	BH-126-96	1-2	5,530
B-15	BH-157-96	1-1.5	740

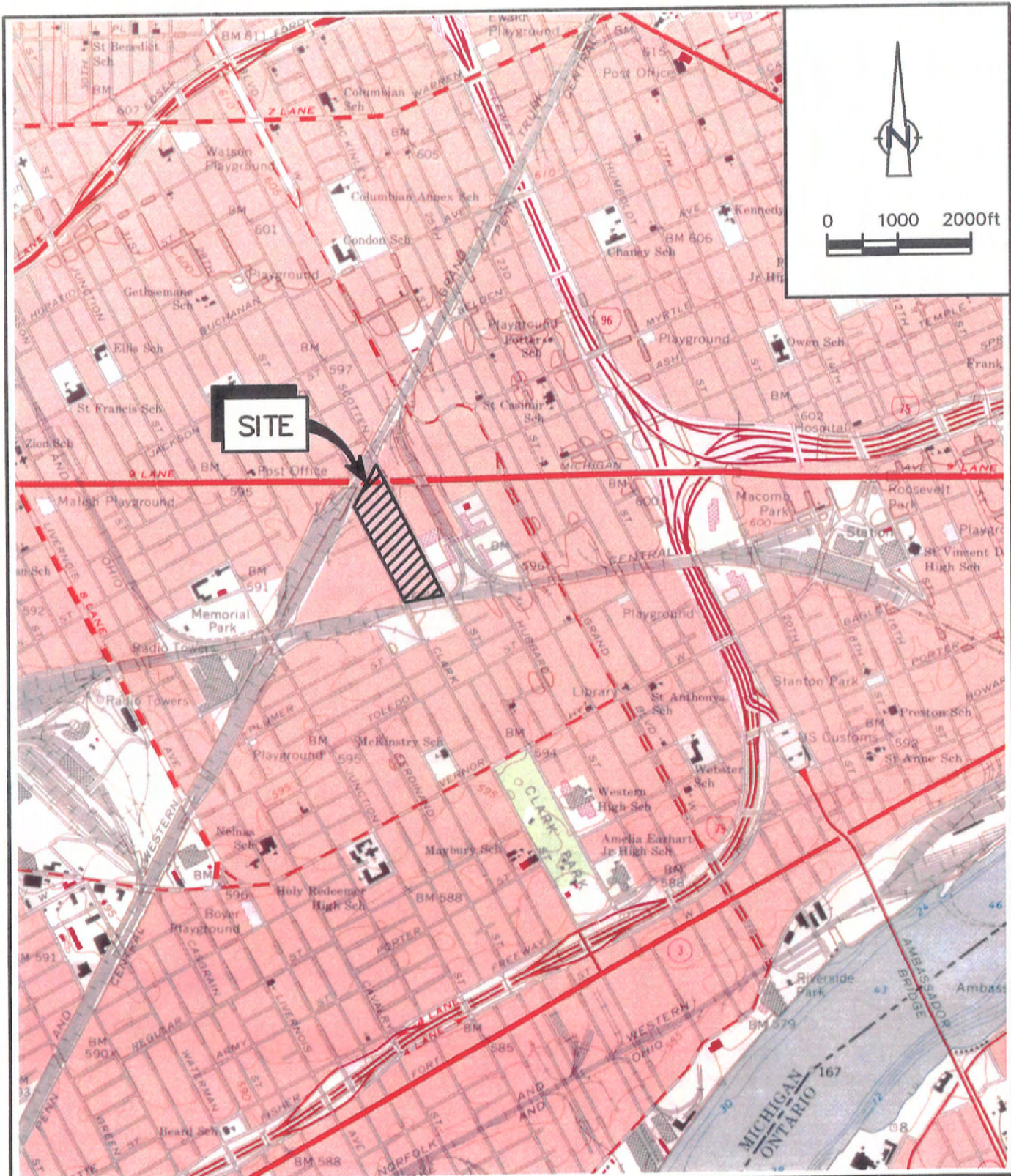
The remaining samples did not contain any parameters at levels above the Michigan Act 451, Part 201 Generic Industrial Direct Contact Criteria.

Site borehole locations with detected parameters above the Michigan Act 451, Part 201 Generic Industrial Direct Contact Criteria are presented in Figure 4.1.

5.0 **CONCLUSIONS**

Based on the results of the Phase II ESA, three areas of concern (AOCs) were identified, as follows:

<i>AOC Number</i>	<i>Borehole Location</i>	<i>Contaminant of Concern</i>
B-4	BH-111A-96	Benzo(a)pyrene
B-10	BH-126-96	Lead
B-15	BH-157-96	Lead



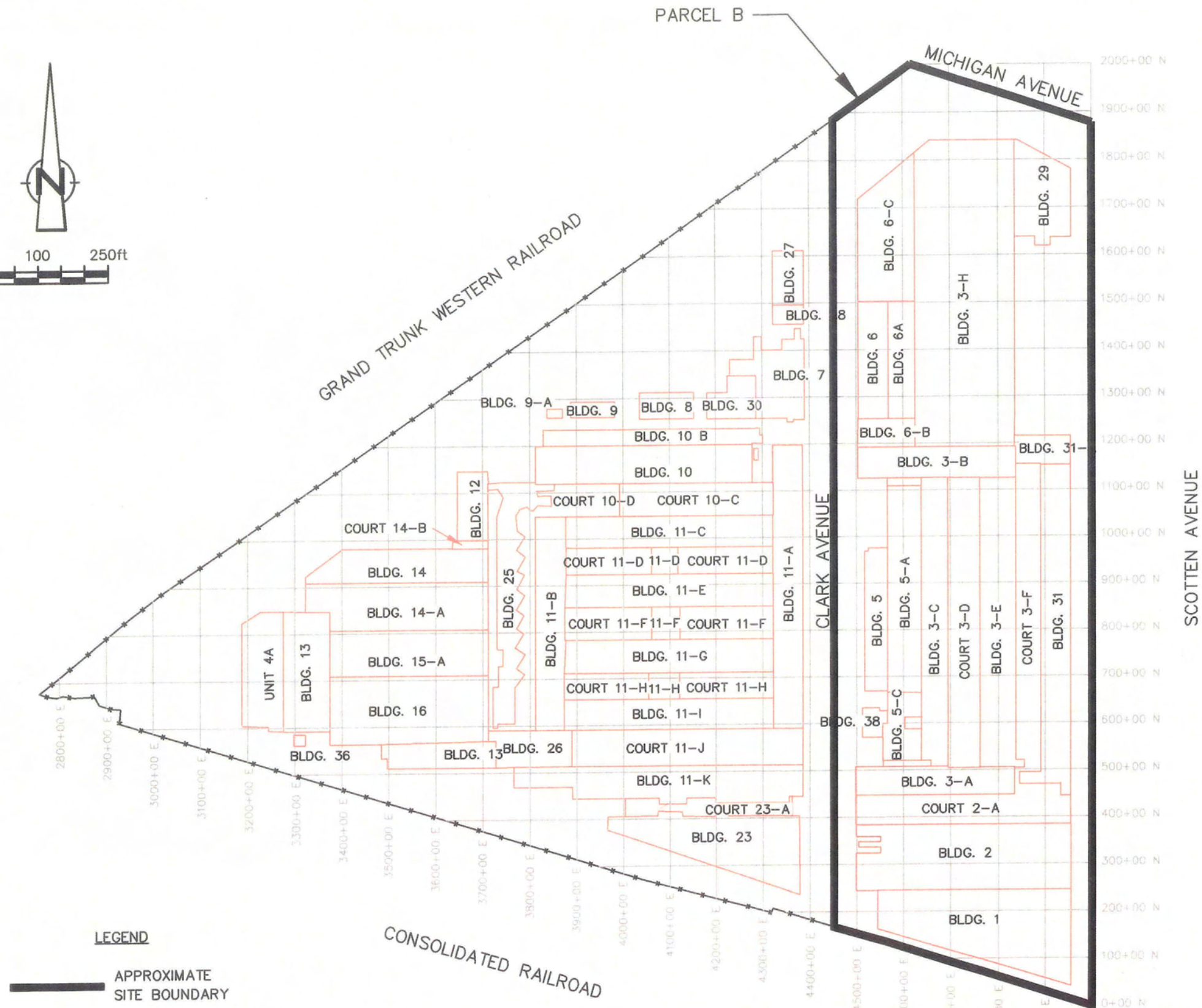
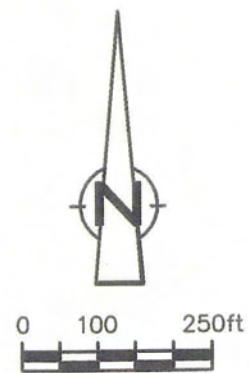
SOURCE: USGS QUADRANGLE MAP;
DETROIT, MICHIGAN



CRA

figure 1.1
SITE LOCATION
PARCEL B
GENERAL MOTORS CLARK AVENUE SITE
Detroit, Michigan

08889-00(037)GN-DE001



ENGINEERING
BUILDING 40

LEGEND

— APPROXIMATE
SITE BOUNDARY

NOTE: BUILDING LOCATIONS ARE NOT SURVEYED

figure 1.2

SITE PLAN
PARCEL B

GENERAL MOTORS CLARK AVENUE SITE
Detroit, Michigan

CRA

08889-00(037)GN-DE002

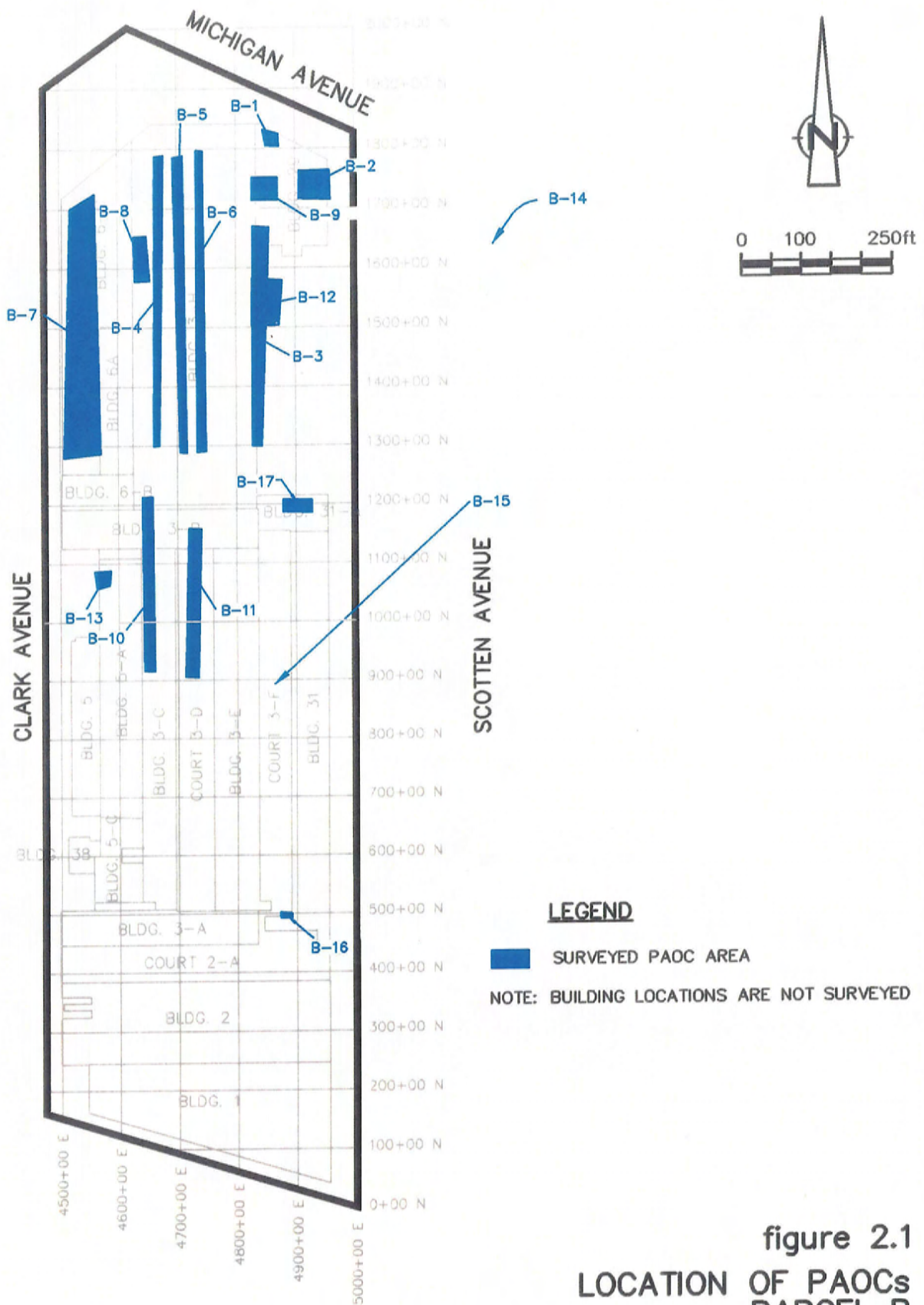
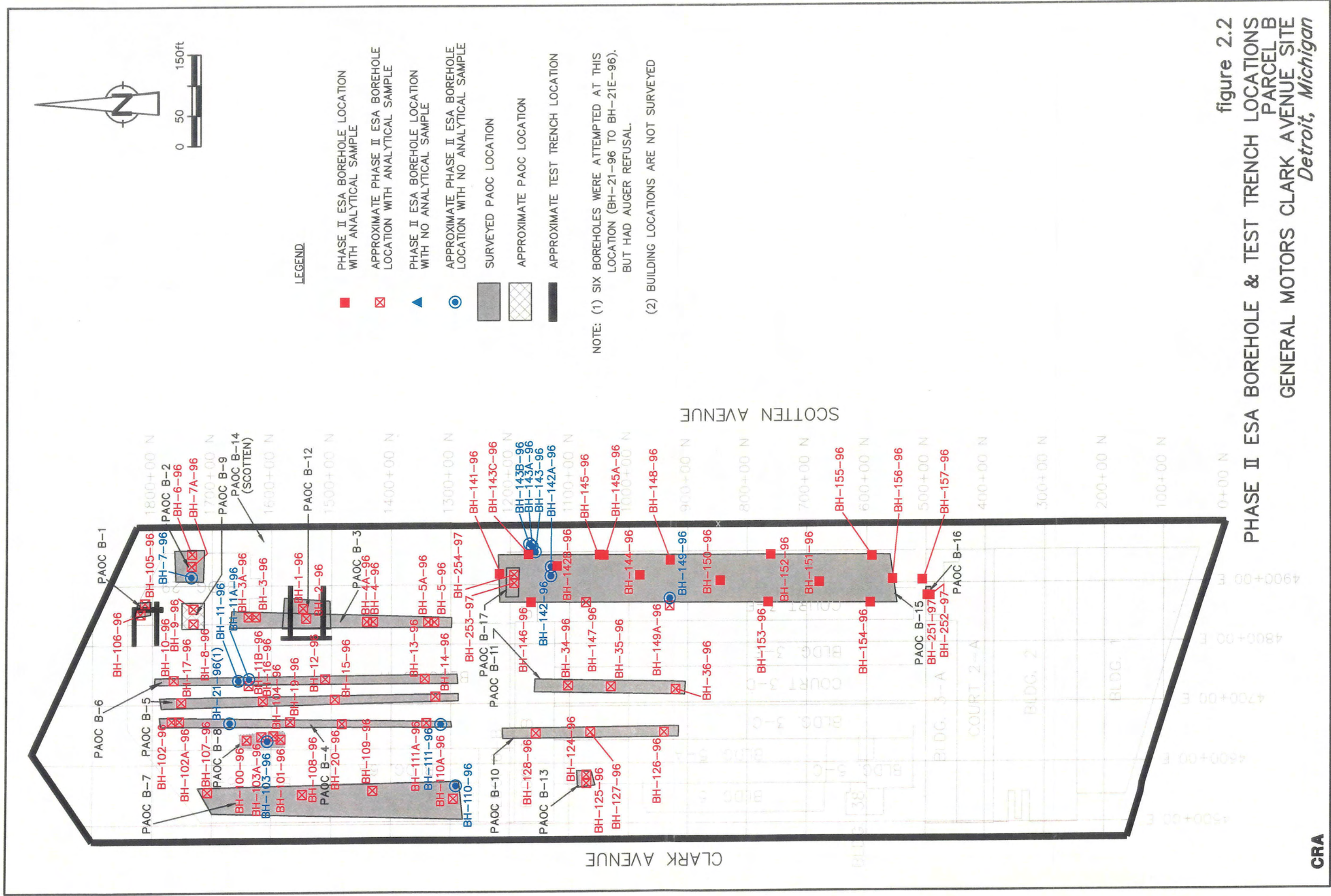


figure 2.1
LOCATION OF PAOCs
PARCEL B
GENERAL MOTORS CLARK AVENUE SITE
Detroit, Michigan



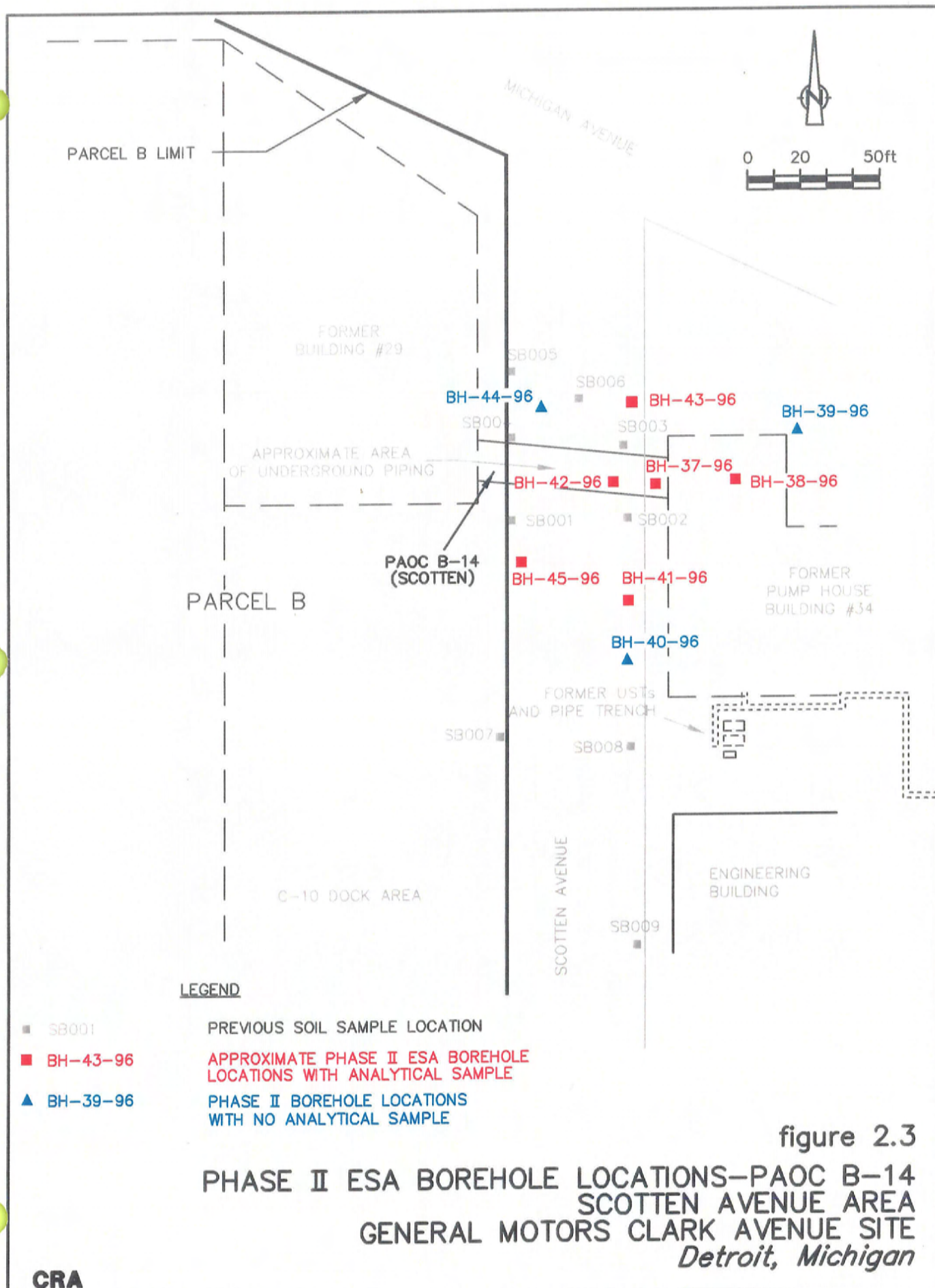


figure 2.3

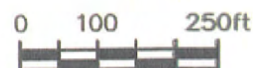
BH-111A-96 (0-2' BGS)		
PARAMETER	CONCENTRATION	CLEANUP STANDARD (1)
BENZO (A) PYRENE	22,000 mg/kg	21,000 mg/kg

BH-126-96 (1-2' BGS)		
PARAMETER	CONCENTRATION	CLEANUP STANDARD (1)
LEAD	5,530 mg/kg	400 mg/kg

BH-157-96 (1-1.5' BGS)		
PARAMETER	CONCENTRATION	CLEANUP STANDARD (1)
LEAD	740 mg/kg	400 mg/kg

CLARK AVENUE

SCOTTEN AVENUE



LEGEND

- SURVEYED PAOC LOCATION
- APPROXIMATE PHASE II ESA BOREHOLE LOCATION WITH ANALYTICAL SAMPLE
- APPROXIMATE PHASE II ESA BOREHOLE LOCATION WITH ANALYTICAL SAMPLE

NOTE: (1) MICHIGAN ACT 451, PART 201
GENERIC INDUSTRIAL DIRECT CONTACT
CRITERIA (TAKEN FROM MDEQ OPERATIONAL
MEMORANDUM #14, REVISION 2
DATED JUNE 6, 1995)

(2) BUILDING LOCATIONS ARE NOT SURVEYED

figure 4.1

DETECTED PARAMETERS ABOVE SOIL CLEANUP STANDARDS
PARCEL B
GENERAL MOTORS CLARK AVENUE SITE
Detroit, Michigan

CRA

08889-00(037)GN-DE006

TABLE 2.1

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**SUMMARY OF BOREHOLE COMPLETION
PHASE II ENVIRONMENTAL SITE ASSESSMENT - PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN**

<i>PAOC Demolition/Historical Identification</i>	<i>PAOC Number</i>	<i>Number of Boreholes With Analytical Sample</i>	<i>Number of Boreholes Without Analytical Sample</i>
20	B-1	2	0
21	B-2	2	1
22	B-3	6	0
23	B-4	4	8
24	B-5	4	0
25	B-6	4	2
26	B-7	4	1
27	B-8	4	1
28	B-9	2	0
29	B-10	3	0
30	B-11	3	0
31	B-12	2	0
32	B-13	2	0
Scotten Avenue Area	B-14	6	3
Historic Plating Area	B-15	17	7
44	B-16	2	0
45	B-17	2	0
Total Phase II ESA Boreholes		69	23

TABLE 2.2

SAMPLE SUMMARY
PHASE II ENVIRONMENTAL SITE ASSESSMENT
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

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<i>Sample Number</i>	<i>Sample Location</i>	<i>PAOC Number</i>	<i>Analysis</i>	<i>Depth (feet bgs)</i>
S-8889-090696-SF-001	BH-1-96	B-12	VOC, PCB, E.G., E.O.	0-2
S-8889-090696-SF-002	BH-1-96	B-12	VOC, PCB, E.G., E.O.	6-8
S-8889-090696-SF-003	BH-2-96	B-12	VOC, PCB, E.G., E.O.	2-4
S-8889-090696-SF-004	BH-2-96	B-12	VOC, PCB, E.G., E.O.	6-8
S-8889-090696-SF-005	BH-3-96/BH-3A-96	B-3	VOC, PCB, E.G., E.O.	0-2
S-8889-090696-SF-006	BH-3-96/BH-3A-96	B-3	VOC, PCB, E.G., E.O.	2-4
S-8889-090696-SF-007	BH-4-96/BH-4A-96	B-3	VOC, PCB, E.G., E.O.	0-2
S-8889-090696-SF-008	BH-4-96	B-3	VOC, PCB, E.G., E.O.	6-8
S-8889-090696-SF-009	BH-5-96/BH-5A-96	B-3	VOC, PCB, E.G., E.O.	2-4
S-8889-090696-SF-010	BH-5-96/BH-5A-96	B-3	VOC, PCB, E.G., E.O.	6-8
S-8889-090996-SF-011	BH-6-96	B-2	VOC, SVOC, PCB, Metals	0-2
S-8889-090996-SF-012	BH-6-96	B-2	VOC, SVOC, PCB, Metals	0-2 (Dup.)
S-8889-090996-SF-013	BH-6-96	B-2	VOC, SVOC, PCB, Metals	4-6
S-8889-090996-SF-014	BH-7A-96	B-2	VOC, SVOC, PCB, Metals	0-2
S-8889-090996-SF-015	BH-7A-96	B-2	VOC, SVOC, PCB, Metals	2-4
S-8889-090996-SF-016	BH-8-96	B-9	VOC, SVOC, PCB, Metals	0-2
S-8889-090996-SF-017	BH-8-96	B-9	VOC, SVOC, PCB, Metals	4-6
S-8889-090996-SF-018	BH-9-96	B-9	VOC, SVOC, PCB, Metals	0-2
S-8889-090996-SF-019	BH-9-96	B-9	VOC, SVOC, PCB, Metals	2-4
S-8889-090996-SF-020	BH-10-96	B-6	VOC, SVOC, PCB, Metals	0-2
S-8889-090996-SF-021	BH-10-96	B-6	VOC, SVOC, PCB, Metals	4-6
S-8889-091096-SF-022	BH-11B-96	B-6	VOC, SVOC, PCB, Metals	0-2
S-8889-091096-SF-023	BH-11B-96	B-6	VOC, SVOC, PCB, Metals	2-4 (MS/MSD)
S-8889-091096-SF-024	BH-12-96	B-6	VOC, SVOC, PCB, Metals	0-2
S-8889-091096-SF-025	BH-12-96	B-6	VOC, SVOC, PCB, Metals	4-6
S-8889-091096-SF-026	BH-13-96	B-6	VOC, SVOC, PCB, Metals	0-2
S-8889-091096-SF-027	BH-13-96	B-6	VOC, SVOC, PCB, Metals	6-8
S-8889-091096-SF-028	BH-13-96	B-6	VOC, SVOC, PCB, Metals	6-8 (Dup.)
S-8889-091096-SF-029	BH-14-96	B-5	VOC, SVOC, PCB, Metals	2-4 (MS/MSD)
S-8889-091096-SF-030	BH-14-96	B-5	VOC, SVOC, PCB, Metals	6-8
S-8889-091096-SF-031	BH-14-96	B-5	VOC, SVOC, PCB, Metals	6-8 (Dup.)
S-8889-091096-SF-032	BH-15-96	B-5	VOC, SVOC, PCB, Metals	0-2
S-8889-091096-SF-033	BH-15-96	B-5	VOC, SVOC, PCB, Metals	4-6
S-8889-091096-SF-034	BH-16-96	B-5	VOC, SVOC, PCB, Metals	2-4
S-8889-091096-SF-035	BH-16-96	B-5	VOC, SVOC, PCB, Metals	8-10
S-8889-091096-SF-036	BH-17-96	B-5	VOC, SVOC, PCB, Metals	0-2
S-8889-091096-SF-037	BH-17-96	B-5	VOC, SVOC, PCB, Metals	4-6
S-8889-091096-SF-040	BH-19-96	B-4	VOC, SVOC, PCB, Metals	2-4

TABLE 2.2

SAMPLE SUMMARY
PHASE II ENVIRONMENTAL SITE ASSESSMENT
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

Page 2 of 5

<i>Sample Number</i>	<i>Sample Location</i>	<i>PAOC Number</i>	<i>Analysis</i>	<i>Depth (feet bgs)</i>
S-8889-091096-SF-041	BH-19-96	B-4	VOC, SVOC, PCB, Metals	4-6
S-8889-091096-SF-042	BH-19-96	B-4	VOC, SVOC, PCB, Metals	4-6 (Dup.)
S-8889-091096-SF-043	BH-20-96	B-4	VOC, SVOC, PCB, Metals	2-4
S-8889-091096-SF-044	BH-20-96	B-4	VOC, SVOC, PCB, Metals	4-6
S-8889-091396-SF-069	BH-34-96	B-11	VOC, SVOC, PCB, Metals	0-2
S-8889-091396-SF-070	BH-34-96	B-11	VOC, SVOC, PCB, Metals	6-8
S-8889-091396-SF-071	BH-35-96	B-11	VOC, SVOC, PCB, Metals	0-2
S-8889-091396-SF-072	BH-35-96	B-11	VOC, SVOC, PCB, Metals	2-4
S-8889-091396-SF-073	BH-35-96	B-11	VOC, SVOC, PCB, Metals	2-4 (Dup.)
S-8889-091396-SF-074	BH-36-96	B-11	VOC, SVOC, PCB, Metals	0-2
S-8889-091396-SF-075	BH-36-96	B-11	VOC, SVOC, PCB, Metals	2-4
S-8889-091696-SF-076	BH-37-96	B-14	BTEX, Lead	34367
S-8889-091696-SF-077	BH-37-96	B-14	BTEX, Lead	8-10 (MS/MSD)
S-8889-091696-SF-078	BH-38-96	B-14	BTEX, Lead	34397
S-8889-091696-SF-079	BH-38-96	B-14	BTEX, Lead	34587
S-8889-091696-SF-080	BH-38-96	B-14	BTEX, Lead	9-11 (Dup.)
S-8889-091796-SF-081	BH-41-96	B-14	BTEX, Lead	3-5
S-8889-091796-SF-082	BH-41-96	B-14	BTEX, Lead	5-7
S-8889-091796-SF-083	BH-42-96	B-14	BTEX, Lead	1-3
S-8889-091796-SF-084	BH-42-96	B-14	BTEX, Lead	5-7
S-8889-091896-SF-085	BH-43-96	B-14	BTEX, Lead	6-8
S-8889-091896-SF-086	BH-43-96	B-14	BTEX, Lead	10-12
S-8889-091896-SF-087	BH-43-96	B-14	BTEX, Lead	10-12 (Dup.)
S-8889-091896-SF-088	BH-45-96	B-14	BTEX, Lead	5-7
S-8889-091896-SF-089	BH-45-96	B-14	BTEX, Lead	7-9
S-8889-090696-SM-100	BH-100-96	B-8	BTEX, Lead	0-2
S-8889-090696-SM-101	BH-100-96	B-8	BTEX, Lead	4-6
S-8889-090696-SM-102	BH-101-96	B-8	BTEX, Lead	0-2
S-8889-090696-SM-103	BH-101-96	B-8	BTEX, Lead	8-10
S-8889-090696-SM-104	BH-102A-96	B-4	VOC, SVOC, PCB, Metals	2-4
S-8889-090696-SM-105	BH-102A-96	B-4	VOC, SVOC, PCB, Metals	8-10
S-8889-090696-SM-106	BH-103A-96	B-8	BTEX, Lead	0-2
S-8889-090696-SM-107	BH-103A-96	B-8	BTEX, Lead	8-10
S-8889-090696-SM-108	BH-104-96	B-8	BTEX, Lead	2-4
S-8889-090696-SM-109	BH-104-96	B-8	BTEX, Lead	8-10
S-8889-090996-KMV-110	BH-105-96	B-1	VOC, SVOC, PCB, Metals	0-2
S-8889-090996-KMV-111	BH-105-96	B-1	VOC, SVOC, PCB, Metals	4-5

TABLE 2.2

SAMPLE SUMMARY
PHASE II ENVIRONMENTAL SITE ASSESSMENT
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

Page 3 of 5

<i>Sample Number</i>	<i>Sample Location</i>	<i>PAOC Number</i>	<i>Analysis</i>	<i>Depth (feet bgs)</i>
S-8889-091096-JM-112	BH-106-96	B-1	VOC, SVOC, PCB, Metals	6-8
S-8889-091096-JM-113	BH-106-96	B-1	VOC, SVOC, PCB, Metals	8-10
S-8889-091096-JM-114	BH-107-96	B-7	VOC, SVOC, PCB, Metals	2-3
S-8889-091096-JM-115	BH-107-96	B-7	VOC, SVOC, PCB, Metals	4-6
S-8889-091096-JM-116	BH-108-96	B-7	VOC, SVOC, PCB, Metals	2-4
S-8889-091096-JM-117	BH-108-96	B-7	VOC, SVOC, PCB, Metals	6-8
S-8889-091096-JM-118	BH-108-96	B-7	VOC, SVOC, PCB, Metals	6-8 (Dup.)
S-8889-091096-DRM-119	BH-109-96	B-7	VOC, SVOC, PCB, Metals	2-4
S-8889-091096-DRM-120	BH-109-96	B-7	VOC, SVOC, PCB, Metals	6-8
S-8889-091096-DRM-121	BH-110A-96	B-7	VOC, SVOC, PCB, Metals	0-2 (MS/MSD)
S-8889-091096-DRM-122	BH-110A-96	B-7	VOC, SVOC, PCB, Metals	4-6
S-8889-091096-DRM-123	BH-110A-96	B-7	VOC, SVOC, PCB, Metals	4-6 (Dup.)
S-8889-091096-DRM-124	BH-111A-96	B-4	VOC, SVOC, PCB, Metals	0-2
S-8889-091096-DRM-125	BH-111A-96	B-4	VOC, SVOC, PCB, Metals	4-6
S-8889-091496-PFR-160	BH-124-96	B-13	VOC, SVOC, PCB, Metals	3-4 (MS/MSD)
S-8889-091496-PFR-161	BH-124-96	B-13	VOC, SVOC, PCB, Metals	6-8
S-8889-091496-PFR-162	BH-125-96	B-13	VOC, SVOC, PCB, Metals	2.5-3.5
S-8889-091496-PFR-163	BH-125-96	B-13	VOC, SVOC, PCB, Metals	4-5
S-8889-091496-PFR-164	BH-126-96	B-10	VOC, SVOC, PCB, Metals	1-2
S-8889-091496-PFR-165	BH-126-96	B-10	VOC, SVOC, PCB, Metals	3-4
S-8889-091496-PFR-166	BH-126-96	B-10	VOC, SVOC, PCB, Metals	3-4 (Dup.)
S-8889-091496-PFR-167	BH-127-96	B-10	VOC, SVOC, PCB, Metals	3-4
S-8889-091496-PFR-168	BH-127-96	B-10	VOC, SVOC, PCB, Metals	5-6
S-8889-091496-PFR-169	BH-128-96	B-10	VOC, SVOC, PCB, Metals	0-1
S-8889-091496-PFR-170	BH-128-96	B-10	VOC, SVOC, PCB, Metals	3-4
S-8889-100996-PFR-193	BH-141-96	B-15	Metals, CN	4-6
S-8889-100996-PFR-194	BH-142B-96	B-15	Metals, CN	3.5-4
S-8889-100996-PFR-195	BH-142B-96	B-15	Metals, CN	4.5-5
S-8889-100996-PFR-196	BH-143C-96	B-15	Metals, CN	5-5.5
S-8889-100996-PFR-197	BH-143C-96	B-15	Metals, CN	7.5-8
S-8889-100996-PFR-198	BH-144-96	B-15	Metals, CN	3-3.5
S-8889-100996-PFR-199	BH-144-96	B-15	Metals, CN	9-9.5
S-8889-101096-PFR-200	BH-146-96	B-15	Metals, CN	0-1
S-8889-101096-PFR-201	BH-146-96	B-15	Metals, CN	3-4
S-8889-101096-PFR-202	BH-146-96	B-15	Metals, CN	3-4 (Dup.)
S-8889-101096-PFR-203	BH-147-96	B-15	Metals, CN	2-2.5
S-8889-101096-PFR-204	BH-147-96	B-15	Metals, CN	6-6.5
S-8889-101096-PFR-205	BH-145A-96	B-15	Metals, CN	5-5.25

TABLE 2.2

**SAMPLE SUMMARY
PHASE II ENVIRONMENTAL SITE ASSESSMENT
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN**

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<i>Sample Number</i>	<i>Sample Location</i>	<i>PAOC Number</i>	<i>Analysis</i>	<i>Depth (feet bgs)</i>
S-8889-101096-PFR-206	BH-145A-96	B-15	Metals, CN	7.5-8
S-8889-101096-PFR-207	BH-148-96	B-15	Metals, CN	6-6.25
S-8889-101096-PFR-208	BH-148-96	B-15	Metals, CN	8-9
S-8889-101096-PFR-209	BH-150-96	B-15	Metals, CN	5-6.5
S-8889-101096-PFR-210	BH-150-96	B-15	Metals, CN	9.5-10
S-8889-101096-PFR-211	BH-149A-96	B-15	Metals, CN	3-4
S-8889-101096-PFR-212	BH-149A-96	B-15	Metals, CN	7-8
S-8889-101096-PFR-213	BH-151-96	B-15	Metals, CN	5.5-6.5
S-8889-101096-PFR-214	BH-151-96	B-15	Metals, CN	5.5-6.5 (Dup.)
S-8889-101096-PFR-215	BH-151-96	B-15	Metals, CN	9.5-10
S-8889-101196-PFR-216	BH-152-96	B-15	Metals, CN	5.5-6.5
S-8889-101196-PFR-217	BH-152-96	B-15	Metals, CN	13.5-14
S-8889-101196-PFR-218	BH-153-96	B-15	Metals, CN	1-1.75
S-8889-101196-PFR-219	BH-153-96	B-15	Metals, CN	5-6
S-8889-101196-PFR-220	BH-154-96	B-15	Metals, CN	0.5-1.5
S-8889-101196-PFR-221	BH-154-96	B-15	Metals, CN	5-6
S-8889-101196-PFR-222	BH-155-96	B-15	Metals, CN	6-6.75
S-8889-101196-PFR-223	BH-155-96	B-15	Metals, CN	9-10
S-8889-101196-PFR-224	BH-156-96	B-15	Metals, CN	6-6.5
S-8889-101196-PFR-225	BH-156-96	B-15	Metals, CN	6-6.5 (Dup.)
S-8889-101196-PFR-226	BH-156-96	B-15	Metals, CN	11-12
S-8889-101196-PFR-227	BH-157-96	B-15	Metals, CN	1-1.5
S-8889-101196-PFR-228	BH-157-96	B-15	Metals, CN	11-12
S-8889-120997-SF-533	BH-251-97	B-16	VOC, SVOC, PCB, Metals	0-2
S-8889-120997-SF-534	BH-251-97	B-16	VOC, SVOC, PCB, Metals	0-2 (Dup.)
S-8889-120997-SF-535	BH-251-97	B-16	VOC, SVOC, PCB, Metals	2-4
S-8889-120997-SF-536	BH-252-97	B-16	VOC, SVOC, PCB, Metals	0-2
S-8889-120997-SF-537	BH-252-97	B-16	VOC, SVOC, PCB, Metals	2-4
S-8889-123097-SEA-538	BH-253-97	B-17	VOC, SVOC, PCB, Metals	2-4
S-8889-123097-SEA-539	BH-253-97	B-17	VOC, SVOC, PCB, Metals	6-8
S-8889-123097-SEA-540	BH-254-97	B-17	VOC, SVOC, PCB, Metals	2-4
S-8889-123097-SEA-541	BH-254-97	B-17	VOC, SVOC, PCB, Metals	6-8

Notes:

VOC = Volatile Organic Compound
SVOC = Semi-Volatile Organic Compound
E.G. = Ethylene Glycol
E.O. = Ethylene Oxide
PCB = Polychlorinated Biphenyls
BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes
CN=Cyanide

TABLE 2.2

**SAMPLE SUMMARY
PHASE II ENVIRONMENTAL SITE ASSESSMENT
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN**

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<i>Sample Number</i>	<i>Sample Location</i>	<i>PAOC Number</i>	<i>Analysis</i>	<i>Depth (feet bgs)</i>
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Dup. = Duplicate

MS/MSD = Matrix Spike/Matrix Spike Duplicate

TABLE 4.1
SUMMARY OF DETECTED VOCs IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan	Michigan	Michigan	B-1	B-2	B-2	B-3	B-3	B-3	B-3	B-3	B-3
Sample Location	Generic Residential	Generic Industrial	Generic Industrial	BH-106-96	BH-6-96	BH-7A-96	BH-3/3A-96	BH-3/3A-96	BH-4/4A-96	BH-4-96	BH-5/5A-96	
Sample ID (S-8889-)	Direct Contact	Direct Contact	Criteria (2)	091096-JM-113	090696-SF-011	090696-SF-014	090696-SF-005	090696-SF-006	090696-SF-007	090696-SF-008	090696-SF-009	
Sample Depth (feet bgs)	Criteria (1)			8-10	0-2	0-2	0-2	2-4	0-2	6-8	2-4	
Date Sampled				9/10/96	9/6/96	9/6/96	9/6/96	9/6/96	9/6/96	9/6/96	9/6/96	
Parameter												
Volatile Organic Compounds (µg/kg)												
Acetone	11,000,000	74,000,000		ND(100) UJ	ND(100)	ND(100)	ND(100)	ND(100)	220 J	ND(100)	ND(100)	
Benzene	88,000	850,000		ND(10) UJ	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	
Methylene chloride	340,000	3,300,000		ND(10) UJ	U(11)	U(14)	U(18)	U(14)	U(15)	U(13)	U(12)	
1, 2-Dichloroethane	28,000	270,000		ND(10) UJ	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	
Ethylbenzene	11,000,000	72,000,000		ND(10) UJ	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	
Tetrachloroethylene	50,000	490,000		ND(10) UJ	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	
Toluene	24,000,000	160,000,000		ND(10) UJ	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	
Xylenes	200,000,000	1,000,000,000		ND(30) UJ	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	

Notes:

ND() - Parameter was not detected above level in parentheses.

NA - Sample was not analyzed for parameter.

J - The associated numerical value is an estimated quantity.

UJ - The compound was analyzed for but not detected. The sample quantitation limit is an estimated value.

U() - The compound was analyzed for, but was not detected above the reported sample quantitation limit in parenthesis.

PAOC - Potential Area of Concern.

bgs - below ground surface.

(1) Values taken from MDEQ Operational Memorandum #8, Revision 4, dated June 5, 1995.

(2) Values taken from MDEQ Operational Memorandum #14, Revision 2, dated June 6, 1995.

TABLE 4.1
SUMMARY OF DETECTED VOCs IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan	Michigan	B-3	B-4	B-4	B-4	B-4	B-5	B-5	B-5	B-5	B-5	B-5	B-5	B-5	B-5	B-5
Sample Location	Generic Residential	Generic Industrial	BH-5/5A-96	BH-102A-96	BH-102A-96	BH-102A-96	BH-14-96	BH-14-96	BH-14-96	BH-14-96	BH-14-96	BH-15-96	BH-15-96	BH-15-96	BH-15-96	BH-15-96	BH-16-96
Sample ID (S-8889-)	Direct Contact	Direct Contact	090696-SF-010	090696-SM-104	090696-SM-104	090696-SM-105	091096-SF-030	091096-SF-031	091096-SF-032	091096-SF-033	091096-SF-034	091096-SF-032	091096-SF-033	091096-SF-033	091096-SF-033	091096-SF-033	091096-SF-034
Sample Depth (feet bgs)	Criteria (1)	Criteria (2)	6-8	2-4	8-10	6-8	6-8	6-8 (Dup.)	0-2	4-6	2-4	0-2	4-6	2-4	4-6	2-4	2-4
Date Sampled			9/6/96	9/6/96	9/6/96	9/10/96	9/10/96	9/10/96	9/10/96	9/10/96	9/10/96	9/10/96	9/10/96	9/10/96	9/10/96	9/10/96	9/10/96
Parameter																	
Volatile Organic Compounds (ug/kg)																	
Acetone	11,000,000	74,000,000	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	190	
Benzene	88,000	850,000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	
Methylene chloride	340,000	3,300,000	U(12)	U(15)	U(15)	U(15)	U(15)	U(14)	U(27)	U(21)	U(20)	U(21)	U(21)	U(21)	U(21)	U(20)	
1, 2-Dichloroethane	28,000	270,000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	
Ethylbenzene	11,000,000	72,000,000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	
Tetrachloroethylene	50,000	490,000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	
Toluene	24,000,000	160,000,000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	
Xylenes	200,000,000	1,000,000,000	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	

Notes:

ND() - Parameter was not detected above level in parentheses.

NA - Sample was not analyzed for parameter.

J - The associated numerical value is an estimated quantity.

UJ - The compound was analyzed for but not detected. The sample quantitation limit is an estimated value.

U() - The compound was analyzed for, but was not detected above the reported sample quantitation limit in parenthesis.

PAOC - Potential Area of Concern.

bgs - below ground surface.

(1) Values taken from MDEQ Operational Memorandum #8, Revision 4, dated June 5, 1995.

(2) Values taken from MDEQ Operational Memorandum #14, Revision 2, dated June 6, 1995.

TABLE 4.1
SUMMARY OF DETECTED VOCs IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan	Michigan	B-5	B-5	B-6	B-6	B-6	B-6	B-6	B-6	B-6
Sample Location	Generic Residential	Generic Industrial	BH-16-96	BH-17-96	BH-10-96	BH-10-96	BH-11B-96	BH-11B-96	BH-12-96	BH-12-96	BH-12-96
Sample ID (S-8889-)	Direct Contact	Direct Contact	091096-SF-035	091096-SF-036	090996-SF-020	090996-SF-021	091096-SF-022	091096-SF-023	091096-SF-024	091096-SF-025	
Sample Depth (feet bgs)	Criteria (1)	Criteria (2)	8-10	0-2	0-2	4-6	0-2	2-4	0-2	4-6	
Date Sampled			9/10/96	9/10/96	9/9/96	9/9/96	9/10/96	9/10/96	9/10/96	9/10/96	
Parameter											
<u>Volatile Organic Compounds (µg/kg)</u>											
Acetone	11,000,000	74,000,000	ND(100) UJ	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)
Benzene	88,000	850,000	ND(10) UJ	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Methylene chloride	340,000	3,300,000	ND(10) UJ	U(11)	U(16)	U(14)	U(18)	U(22)	U(24)	U(13)	U(13)
1, 2-Dichloroethane	28,000	270,000	ND(10) UJ	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Ethylbenzene	11,000,000	72,000,000	ND(10) UJ	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Tetrachloroethylene	50,000	490,000	ND(10) UJ	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Toluene	24,000,000	160,000,000	ND(10) UJ	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Xylenes	200,000,000	1,000,000,000	ND(30) UJ	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)

Notes:

- ND() - Parameter was not detected above level in parentheses.
NA - Sample was not analyzed for parameter.
J - The associated numerical value is an estimated quantity.
UJ - The compound was analyzed for but not detected. The sample quantitation limit is an estimated value.
U() - The compound was analyzed for, but was not detected above the reported sample quantitation limit in parenthesis.
PAOC - Potential Area of Concern.
bgs - below ground surface.
(1) Values taken from MDEQ Operational Memorandum #8, Revision 4, dated June 5, 1995.
(2) Values taken from MDEQ Operational Memorandum #14, Revision 2, dated June 6, 1995.

TABLE 4.1
SUMMARY OF DETECTED VOCs IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan	Michigan	Michigan	B-6	B-6	B-7	B-7	B-8	B-8	B-8
Sample Location	Generic Residential	Generic Industrial	Generic Industrial	BH-13-96	BH-13-96	BH-108-96	BH-109-96	BH-100-96	BH-100-96	BH-101-96
Sample ID (S-8889-)	Direct Contact	Direct Contact	Direct Contact	091096-SF-027	091096-SF-028	091096-JM-117	091096-DRM-120	090696-SM-101	090696-SM-101	090696-SM-102
Sample Depth (feet bgs)	Criteria (1)	Criteria (2)	Criteria (2)	6-8	6-8 (Dup.)	6-8	6-8	4-6	0-2	0-2
Date Sampled				9/10/96	9/10/96	9/10/96	9/10/96	9/6/96	9/6/96	9/6/96
Parameter										
<u>Volatile Organic Compounds (ug/kg)</u>										
Acetone	11,000,000	74,000,000		ND(100)	ND(100)	ND(100) UJ	ND(100)	NA	NA	NA
Benzene	88,000	850,000		ND(10)	ND(10)	ND(10) UJ	ND(10)	ND(1)	ND(1)	ND(1)
Methylene chloride	340,000	3,300,000		U(53)	U(11)	ND(10) UJ	ND(10)	NA	NA	NA
1, 2-Dichloroethane	28,000	270,000		ND(10)	ND(10)	ND(10) UJ	ND(10)	NA	NA	NA
Ethylbenzene	11,000,000	72,000,000		ND(10)	ND(10)	ND(10) UJ	ND(10)	ND(1)	ND(1)	ND(1)
Tetrachloroethylene	50,000	490,000		ND(10)	ND(10)	ND(10) UJ	27	NA	NA	NA
Toluene	24,000,000	160,000,000		ND(10)	ND(10)	ND(10) UJ	ND(10)	ND(1)	ND(1)	ND(1)
Xylenes	200,000,000	1,000,000,000		ND(30)	ND(30)	ND(30) UJ	ND(30)	ND(1)	ND(1)	ND(1)

Notes:

- ND() - Parameter was not detected above level in parentheses.
NA - Sample was not analyzed for parameter.
J - The associated numerical value is an estimated quantity.
UJ - The compound was analyzed for but not detected. The sample quantitation limit is an estimated value.
U() - The compound was analyzed for, but was not detected above the reported sample quantitation limit in parenthesis.
PAOC - Potential Area of Concern.
bgs - below ground surface.
(1) Values taken from MDEQ Operational Memorandum #8, Revision 4, dated June 5, 1995.
(2) Values taken from MDEQ Operational Memorandum #14, Revision 2, dated June 6, 1995.

TABLE 4.1

	PACONo.	B-8	B-8	B-8	B-8	B-9	B-10
	<i>Sample Location</i>	BH-101-96	BH-103A-96	BH-103A-96	BH-104-96	BH-8-96	BH-126-96
	<i>Sample ID (S-8889-)</i>	090696-SM-103	090696-SM-106	090696-SM-107	090696-SM-108	090696-SF-017	091496-PFR-164
	<i>Sample Depth (feet bgs)</i>	8-10	8-10	8-10	8-10	4-6	1-2
	<i>Date Sampled</i>	9/6/96	9/6/96	9/6/96	9/9/96	9/9/96	9/14/96

Volatile Organic Compounds ($\mu\text{g}/\text{kg}$)

Chemical	Concentration (ppm)	NA	NA	NA	NA	NA	170
Acetone	11,000,000	NA	NA	NA	NA	NA	ND(100)
Benzene	88,000	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(10)
Methylene chloride	340,000	NA	NA	NA	NA	NA	ND(10)
1, 2-Dichloroethane	28,000	NA	NA	NA	NA	NA	ND(10)
Ethylbenzene	11,000,000	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(10)
Tetrachloroethylene	50,000	NA	NA	NA	NA	NA	ND(10)
Toluene	24,000,000	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(10)
Xylenes	200,000,000	ND(1)	ND(1)	ND(1)	ND(1)	ND(1)	ND(30)

ND() - Parameter was not detected above level in parentheses.
 NA - Sample was not analyzed for parameter.
 - - - - - The associated numerical value is an estimated quantity.
 JJ - The compound was analyzed for but not detected. The sample quantitation limit is an estimated value.
 U() - The compound was analyzed for, but was not detected above the reported sample quantitation limit in parenthesis.
 PAOC - Potential Area of Concern.
 ggs - below ground surface.
 (1) Values taken from MDEQ Operational Memorandum #8, Revision 4, dated June 5, 1995.
 (2) Values taken from MDEQ Operational Memorandum #14, Revision 2, dated June 6, 1995.

TABLE 4.1
SUMMARY OF DETECTED VOCs IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan Generic Residential Direct Contact Criteria (1)	Michigan Generic Industrial Direct Contact Criteria (2)	B-10 BH-127-96 091496-PFR-167 3-4 9/14/96	B-10 BH-128-96 091496-PFR-170 3-4 9/14/96	B-12 BH-1-96 090696-SF-001 0-2 9/6/96	B-12 BH-2-96 090696-SF-002 2-4 9/6/96	B-12 BH-2-96 090696-SF-003 6-8 9/6/96	B-13 BH-125-96 091496-PFR-163 4-5 9/14/96
Sample Location								
Sample ID (S-8889-)								
Sample Depth (feet bgs)								
Date Sampled								
Parameter								
<u>Volatile Organic Compounds (ug/kg)</u>								
Acetone	11,000,000	74,000,000	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)	ND(100)
Benzene	88,000	850,000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Methylene chloride	340,000	3,300,000	U(14)	U(18)	U(13)	U(16)	U(16)	ND(10)
1, 2-Dichloroethane	28,000	270,000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Ethylbenzene	11,000,000	72,000,000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	67
Tetrachloroethylene	50,000	490,000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Toluene	24,000,000	160,000,000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Xylenes	200,000,000	1,000,000,000	ND(30)	ND(30)	ND(30)	ND(30)	ND(30)	42

Notes:

- ND() - Parameter was not detected above level in parentheses.
NA - Sample was not analyzed for parameter.
J - The associated numerical value is an estimated quantity.
UJ - The compound was analyzed for but not detected. The sample quantitation limit is an estimated value.
U() - The compound was analyzed for, but was not detected above the reported sample quantitation limit in parenthesis.
PAOC - Potential Area of Concern.
bgs - below ground surface.
(1) Values taken from MDEQ Operational Memorandum #8, Revision 4, dated June 5, 1995.
(2) Values taken from MDEQ Operational Memorandum #14, Revision 2, dated June 6, 1995.

TABLE 4.1
SUMMARY OF DETECTED VOCs IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan	Michigan	B-14	B-14	B-14	B-14	B-14	B-14	B-14	B-14	B-14	B-14
Sample Location	Generic Residential	Generic Industrial	BH-37-96	BH-37-96	BH-38-96	BH-38-96	BH-38-96	BH-38-96	BH-41-96	BH-41-96	BH-41-96	BH-42-96
Sample ID (S-8889-)	Direct Contact	Direct Contact	091696-SF-076	091696-SF-077	091696-SF-078	091696-SF-079	091696-SF-080	091696-SF-081	091796-SF-082	091796-SF-083		
Sample Depth (feet bgs)	Criteria (1)	Criteria (2)	2-3	8-10	3-5	9-11	9-11 (Dup.)	3-5	5-7	1-3		
Date Sampled			9/16/96	9/16/96	9/16/96	9/16/96	9/16/96	9/17/96	9/17/96	9/17/96		
Parameter												
<u>Volatile Organic Compounds (ug/kg)</u>												
Acetone	11,000,000	74,000,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	88,000	850,000	4.3	ND(1.2)	ND(290)	11 J	7.7	31	4,000	4.6		
Methylene chloride	340,000	3,300,000	NA	NA	NA	NA	NA	NA	NA	NA		
1, 2-Dichloroethane	28,000	270,000	NA	NA	NA	NA	NA	NA	NA	NA		
Ethylbenzene	11,000,000	72,000,000	3.4	ND(1.2)	ND(290)	2.7 J	27	66	40	ND(1.2)		
Tetrachloroethylene	50,000	490,000	NA	NA	NA	NA	NA	NA	NA	NA		
Toluene	24,000,000	160,000,000	12	ND(1.2)	ND(290)	19 J	3.8	94	2,100	ND(1.2)		
Xylenes	200,000,000	1,000,000,000	10	ND(1.2)	3000 J	110 J	21	540	660	ND(1.2)		

Notes:

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NA - Sample was not analyzed for parameter.
J - The associated numerical value is an estimated quantity.
UJ - The compound was analyzed for but not detected. The sample quantitation limit is an estimated value.
U() - The compound was analyzed for, but was not detected above the reported sample quantitation limit in parenthesis.
PAOC - Potential Area of Concern.
bgs - below ground surface.
(1) Values taken from MDEQ Operational Memorandum #8, Revision 4, dated June 5, 1995.
(2) Values taken from MDEQ Operational Memorandum #14, Revision 2, dated June 6, 1995.

TABLE 4.1
SUMMARY OF DETECTED VOCs IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan	Michigan	B-14	B-14	B-14	B-14	B-14	B-14	B-16
Sample Location	Generic Residential	Generic Industrial	BH-42-96	BH-43-96	BH-43-96	BH-43-96	BH-45-96	BH-45-96	BH-252-97
Sample ID (S-8889-)	Direct Contact	Direct Contact	091796-SF-084	091896-SF-085	091896-SF-086	091896-SF-087	091896-SF-088	091896-SF-089	120997-SF-537
Sample Depth (feet bgs)	Criteria (1)	Criteria (2)	5-7	6-8	10-12	10-12 (Dup.)	5-7	7-9	2-4
Date Sampled			9/17/96	9/18/96	9/18/96	9/18/96	9/18/96	9/18/96	12/9/97
Parameter									
<u>Volatile Organic Compounds (ug/kg)</u>									
Acetone	11,000,000	74,000,000	NA	NA	NA	NA	NA	NA	ND(130)
Benzene	88,000	850,000	ND(1.2)	ND(150)	1,200	900	ND(1.3)	ND(1.2)	ND(6)
Methylene chloride	340,000	3,300,000	NA	NA	NA	NA	NA	NA	ND(13)
1, 2-Dichloroethane	28,000	270,000	NA	NA	NA	NA	NA	NA	ND(6)
Ethylbenzene	11,000,000	72,000,000	ND(1.2)	2,300	780	170	ND(1.3)	ND(1.2)	16
Tetrachloroethylene	50,000	490,000	NA	NA	NA	NA	NA	NA	ND(6)
Toluene	24,000,000	160,000,000	ND(1.2)	4,500	2,500	880	ND(1.3)	ND(1.2)	ND(6)
Xylenes	200,000,000	1,000,000,000	ND(1.2)	9,600	2,400	970	ND(1.3)	ND(1.2)	ND(6)

Notes:

- ND() - Parameter was not detected above level in parentheses.
NA - Sample was not analyzed for parameter.
J - The associated numerical value is an estimated quantity.
UJ - The compound was analyzed for but not detected. The sample quantitation limit is an estimated value.
U() - The compound was analyzed for, but was not detected above the reported sample quantitation limit in parenthesis.
PAOC - Potential Area of Concern.
bgs - below ground surface.
(1) Values taken from MDEQ Operational Memorandum #8, Revision 4, dated June 5, 1995.
(2) Values taken from MDEQ Operational Memorandum #14, Revision 2, dated June 6, 1995.

TABLE 4.1
SUMMARY OF DETECTED VOCs IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan	Michigan	B-17
Sample Location	Generic Residential	Generic Industrial	BH-254-97
Sample ID (S-8889-)	Direct Contact	Direct Contact	123097-SEA-541
Sample Depth (feet bgs)	Criteria (1)	Criteria (2)	6-8
Date Sampled			12/30/97

Parameter			
<u>Volatile Organic Compounds (ug/kg)</u>			
Acetone	11,000,000	74,000,000	ND(100)
Benzene	88,000	850,000	ND(10)
Methylene chloride	340,000	3,300,000	ND(10)
1, 2-Dichloroethane	28,000	270,000	36 J
Ethylbenzene	11,000,000	72,000,000	ND(10)
Tetrachloroethylene	50,000	490,000	ND(10)
Toluene	24,000,000	160,000,000	13 J
Xylenes	200,000,000	1,000,000,000	ND(30)

Notes:

- ND() - Parameter was not detected above level in parentheses.
NA - Sample was not analyzed for parameter.
J - The associated numerical value is an estimated quantity.
UJ - The compound was analyzed for but not detected. The sample quantitation limit is an estimated value.
U() - The compound was analyzed for, but was not detected above the reported sample quantitation limit in parenthesis.
PAOC - Potential Area of Concern.
bgs - below ground surface.
(1) Values taken from MDEQ Operational Memorandum #8, Revision 4, dated June 5, 1995.
(2) Values taken from MDEQ Operational Memorandum #14, Revision 2, dated June 6, 1995.

SUMMARY OF DETECTED SVOCs IN SOIL SAMPLES

PHASE II ESA

PARCEL B

GM CLARK AVENUE FACILITY

DETROIT, MICHIGAN

PAOC No.	Michigan	Michigan	Michigan	B-1	B-1	B-2	B-4	B-4	B-4	B-4	B-4	B-4
Sample Location	Generic Residential	Generic Industrial	Generic Industrial	BH-105-96	BH-106-96	BH-7A-96	BH-19-96	BH-102A-96	BH-102A-96	BH-102A-96	BH-111A-96	BH-111A-96
Sample ID (S-8889-)	Direct Contact	Direct Contact	Direct Contact	090996-KMV-110	091096-JM-112	090696-SF-014	091096-SF-041	090696-SM-104	090696-SM-105	090696-SM-105	091096-DRM-124	091096-DRM-124
Sample Depth (feet bgs)	Criteria (1)	Criteria (2)	Criteria (2)	0-2	6-8	0-2	4-6	2-4	8-10	8-10	0-2	0-2
Date Sampled				9/9/96	9/10/96	9/6/96	9/10/96	9/6/96	9/6/96	9/6/96	9/10/96	9/10/96
Parameter												
<u>Semi-Volatile Organic Compounds (ug/kg)</u>												
Acenaphthene	76,000,000		810,000,000	ND(83,000)	ND(860)	ND(430)	ND(390)	ND(400)	ND(870)	ND(870)	ND(7,800)	ND(7,800)
Acenaphthylene	1,500,000		16,000,000	ND(83,000)	ND(860)	ND(430)	ND(390)	ND(400)	ND(870)	ND(870)	ND(7,800)	ND(7,800)
Anthracene	420,000,000		1,000,000,000	ND(83,000)	ND(860)	ND(430)	ND(390)	ND(400)	ND(870)	ND(870)	ND(7,800)	ND(7,800)
Benzo(a)anthracene	14,000		210,000	ND(83,000)	ND(860)	760	ND(390)	440	ND(870)	ND(870)	28,000	28,000
Benzo(b)fluoranthene	14,000		210,000	ND(83,000)	ND(860)	830	ND(390)	410	ND(870)	ND(870)	23,000	23,000
Benzo(k)fluoranthene	140,000		2,100,000	ND(83,000)	ND(860)	520	ND(390)	ND(400)	ND(870)	ND(870)	16,000	16,000
Benzo(g,h,i)perylene	1,500,000		16,000,000	ND(83,000)	ND(860)	ND(430)	ND(390)	ND(400)	ND(870)	ND(870)	12,000	12,000
Benzo(a)pyrene	1,400		21,000	ND(83,000)	ND(860)	750	ND(390)	420	ND(870)	ND(870)	22,000	22,000
Benzybutylphthalate	68,000,000		720,000,000	ND(83,000)	ND(860)	ND(430)	ND(390)	ND(400)	ND(870)	ND(870)	ND(7,800)	ND(7,800)
Carbazole	-		-	ND(83,000)	ND(860)	ND(430)	ND(390)	ND(400)	ND(870)	ND(870)	ND(7,800)	ND(7,800)
Chrysene	1,400,000		21,000,000	ND(83,000)	ND(860)	ND(430)	ND(390)	ND(400)	ND(870)	ND(870)	ND(7,800)	ND(7,800)
Di-n-butylphthalate	51,000,000		540,000,000	ND(83,000)	ND(860)	850	ND(390)	470	ND(870)	ND(870)	24,000	24,000
Dibenzofuran	ID	ID	ID	ND(83,000)	U(1,100)	ND(430)	U(440)	ND(400)	5,100	5,100	ND(7,800)	ND(7,800)
Fluoranthene	51,000,000		540,000,000	ND(83,000)	ND(860)	ND(430)	ND(390)	ND(400)	ND(870)	ND(870)	ND(7,800)	ND(7,800)
Fluorene	51,000,000		540,000,000	180,000	ND(860)	1,800	ND(390)	980	ND(870)	ND(870)	34,000	34,000
Indeno(1,2,3-cd)pyrene	14,000		210,000	ND(83,000)	ND(860)	ND(430)	ND(390)	ND(400)	ND(870)	ND(870)	ND(7,800)	ND(7,800)
2-Methylphthalene	15,000,000		160,000,000	ND(83,000)	ND(860)	ND(430)	ND(390)	ND(400)	ND(870)	ND(870)	13,000	13,000
Napthalene	15,000,000		160,000,000	93,000	ND(860)	ND(430)	ND(390)	ND(400)	ND(870)	ND(870)	ND(7,800)	ND(7,800)
Phenanthrene	1,500,000		16,000,000	340,000	ND(860)	1,100	ND(390)	520	ND(870)	ND(870)	ND(7,800)	ND(7,800)
Pyrene	32,000,000		340,000,000	160,000	ND(860)	1,900	ND(390)	820	ND(870)	ND(870)	35,000	35,000

Notes:

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PAOC - Potential Area of Concern.

bgs - below ground surface.

-- - Criterion is not available

ID - Insufficient data to develop criterion.

Boxed number indicates exceedance of Generic Industrial Direct Contact Criteria.

Shaded number indicates exceedance of Generic Residential Direct Contact Criteria.

(1) Values taken from MDEQ Operational Memorandum #8,

Revision 4, dated June 5, 1995.

(2) Values taken from MDEQ Operational Memorandum #14,

Revision 2, dated June 6, 1995.

SUMMARY OF DETECTED SVOCs IN SOIL SAMPLES

PHASE II ESA

PARCEL B

GM CLARK AVENUE FACILITY

DETROIT, MICHIGAN

PAOC No.	Michigan	Michigan	Michigan	B-5	B-5	B-5	B-6	B-6	B-6	B-6	B-6
Sample Location	Generic Residential	Generic Industrial	Generic Industrial	BH-14-96	BH-16-96	BH-17-96	BH-10-96	BH-11B-96	BH-12-96	BH-13-96	BH-13-96
Sample ID (S-8899-)	Direct Contact	Direct Contact	Direct Contact	091096-SF-029	091096-SF-034	091096-SF-036	090996-SF-020	091096-SF-022	091096-SF-024	091096-SF-026	091096-SF-026
Sample Depth (feet bgs)	Criteria (1)	Criteria (2)	Criteria (2)	2-4	2-4	0-2	0-2	0-2	0-2	0-2	0-2
Date Sampled	9/10/96	9/10/96	9/10/96	9/10/96	9/10/96	9/10/96	9/9/96	9/10/96	9/10/96	9/10/96	9/10/96
Parameter											
<u>Semi-Volatile Organic Compounds (ug/kg)</u>											
Acenaphthene	76,000,000	810,000,000	810,000,000	ND(800)	ND(400)	ND(780)	ND(400)	ND(400)	ND(400)	ND(380)	ND(380)
Acenaphthylene	1,500,000	16,000,000	16,000,000	ND(800)	ND(400)	ND(780)	ND(400)	420	ND(400)	ND(380)	ND(380)
Anthracene	420,000,000	1,000,000,000	1,000,000,000	1,200	ND(400)	1,200	ND(400)	ND(400)	ND(400)	ND(380)	ND(380)
Benzo(a)anthracene	14,000	210,000	210,000	2,200	440	3,400	610	1,000	ND(400)	710	710
Benzo(b)fluoranthene	14,000	210,000	210,000	2,000	550	4,200	620	1,300	ND(400)	1,400	1,400
Benzo(k)fluoranthene	140,000	2,100,000	2,100,000	1,700	400	2,000	440	890	ND(400)	1,400	1,400
Benzo(g,h,i)perylene	1,500,000	16,000,000	16,000,000	ND(800)	ND(400)	1,300	ND(400)	ND(400)	ND(400)	810	810
Benzo(a)pyrene	1,400	21,000	21,000	2,200	510	2,400	570	1,100	ND(400)	490	490
Benzy/ibuty/iphthalate	68,000,000	720,000,000	720,000,000	ND(800)	ND(400)	ND(780)	ND(400)	ND(400)	ND(400)	ND(380)	ND(380)
Carbazole	-	-	-	ND(800)	ND(400)	ND(780)	ND(400)	ND(400)	ND(400)	ND(380)	ND(380)
Chrysene	1,400,000	21,000,000	21,000,000	2,200	500	3,500	700	1,000	ND(400)	1,400	1,400
Di-n-butylphthalate	51,000,000	540,000,000	540,000,000	ND(800)	ND(400)	ND(780)	ND(400)	ND(400)	ND(400)	ND(380)	ND(380)
Dibenzofuran	ID	ID	ID	ND(800)	ND(400)	ND(780)	ND(400)	ND(400)	ND(400)	ND(380)	ND(380)
Fluoranthene	51,000,000	540,000,000	540,000,000	5,200	900	ND(780)	1,500	1,200	ND(400)	ND(380)	ND(380)
Fluorene	51,000,000	540,000,000	540,000,000	ND(800)	ND(400)	ND(780)	ND(400)	510	ND(400)	ND(380)	ND(380)
Indeno(1,2,3-cd)pyrene	14,000	210,000	210,000	820	ND(400)	ND(780)	ND(400)	ND(400)	ND(400)	530	530
2-Methylnaphthalene	15,000,000	160,000,000	160,000,000	ND(800)	ND(400)	ND(780)	ND(400)	ND(400)	ND(400)	ND(380)	ND(380)
Naphthalene	15,000,000	160,000,000	160,000,000	ND(800)	ND(400)	ND(780)	ND(400)	ND(400)	ND(400)	ND(380)	ND(380)
Phenanthrene	1,500,000	16,000,000	16,000,000	3,800	ND(400)	3,800	870	ND(400)	ND(400)	2,200	2,200
Pyrene	32,000,000	340,000,000	340,000,000	4,800	940	ND(780)	1,400	1,500	ND(400)	ND(380)	ND(380)

Notes:

ND() - Parameter was not detected above level in parentheses.

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PAOC - Potential Area of Concern.

bgs - below ground surface.

-- - Criterion is not available

ID - Insufficient data to develop criterion.

Boxed number indicates exceedance of Generic Industrial Direct Contact Criteria.

Shaded number indicates exceedance of Generic Residential Direct Contact Criteria.

(1) Values taken from MDEQ Operational Memorandum #8,

Revision 4, dated June 5, 1995.

(2) Values taken from MDEQ Operational Memorandum #14,

Revision 2, dated June 6, 1995.

DETROIT, MICHIGAN

Notes:

CRA 8889 (37) Revision 2, dated June 6, 1995.

T. 4.2
SUMMARY OF DETECTED SVOCs IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan Generic Residential Direct Contact Criteria (1)	Michigan Generic Industrial Direct Contact Criteria (2)	B-7 BH-110A-96 091096-DRM-121 0-2 9/10/96	B-7 BH-110A-96 091096-DRM-122 4-6 9/10/96	B-7 BH-110A-96 091096-DRM-123 4-6 (Dup.) 9/10/96	B-9 BH-8-96 090996-SF-016 0-2 9/9/96	B-10 BH-126-96 091496-PFR-164 1-2 9/14/96	B-10 BH-126-96 091496-PFR-165 3-4 9/14/96
Sample Location								
Sample ID (S-8889-)								
Sample Depth (feet bgs)								
Date Sampled								
Parameter								
<u>Semi-Volatile Organic Compounds (µg/kg)</u>								
Acenaphthene	76,000,000	810,000,000	ND(380)	ND(400)	ND(4,500)	ND(780)	ND(420)	ND(390)
Acenaphthylene	1,500,000	16,000,000	ND(380)	ND(400)	ND(4,500)	ND(780)	ND(420)	ND(390)
Anthracene	420,000,000	1,000,000,000	ND(380)	ND(400)	6,000	960	ND(420)	ND(390)
Benzo(a)anthracene	14,000	210,000	830 J	ND(400)	14,000	2,500	ND(420)	ND(390)
Benzo(b)fluoranthene	14,000	210,000	610 J	ND(400)	12,000	4,200	ND(420)	ND(390)
Benzo(k)fluoranthene	140,000	2,100,000	630 J	ND(400)	8,800	1,300	ND(420)	ND(390)
Benzo(g,h,i)perylene	1,500,000	16,000,000	ND(380)	ND(400)	5,900	1,200	ND(420)	ND(390)
Benzo(a)pyrene	1,400	21,000	710 J	ND(400)	11,000	2,900	ND(420)	ND(390)
Benzylbutylphthalate	68,000,000	720,000,000	ND(380)	ND(400)	ND(4,500)	ND(780)	ND(420)	ND(390)
Carbazole	-	-	ND(380)	ND(400)	ND(4,500)	ND(780)	ND(420)	ND(390)
Chrysene	1,400,000	21,000,000	760 J	ND(400)	12,000	2,800	ND(420)	ND(390)
Di-n-butylphthalate	51,000,000	540,000,000	ND(380)	U(2,400)	ND(4,500)	ND(780)	1,400	1,100
Dibenzofuran	ID	ID	ND(380)	ND(400)	ND(4,500)	ND(780)	ND(420)	ND(390)
Fluoranthene	51,000,000	540,000,000	1,600 J	ND(400)	27,000	6,100	ND(420)	ND(390)
Fluorene	51,000,000	540,000,000	ND(380)	ND(400)	ND(4,500)	ND(780)	ND(420)	ND(390)
Indeno(1,2,3-cd)pyrene	14,000	210,000	ND(380)	ND(400)	6,200	1,100	ND(420)	ND(390)
2-Methylnaphthalene	15,000,000	160,000,000	ND(380)	ND(400)	ND(4,500)	ND(780)	ND(420)	ND(390)
Naphthalene	15,000,000	160,000,000	ND(380)	ND(400)	ND(4,500)	ND(780)	ND(420)	ND(390)
Phenanthrene	1,500,000	16,000,000	1,200 J	ND(400)	22,000	4,100	ND(420)	ND(390)
Pyrene	32,000,000	340,000,000	1,500 J	ND(400)	23,000	5,100	ND(420)	ND(390)

Notes:

ND() - Parameter was not detected above level in parentheses.

J - The associated numerical value is an estimated quantity.

U() - The compound was analyzed for, but was not detected above the reported sample quantitation limit in parenthesis.

PAOC - Potential Area of Concern.

bgs - below ground surface.

--- Criterion is not available

ID - Insufficient data to develop criterion.

Boxed number indicates exceedance of Generic Industrial Direct Contact Criteria.

Shaded number indicates exceedance of Generic Residential Direct Contact Criteria.

(1) Values taken from MDEQ Operational Memorandum #8,

Revision 4, dated June 5, 1995.

(2) Values taken from MDEQ Operational Memorandum #14,

Revision 2, dated June 6, 1995.

SUMMARY OF DETECTED SVOCs IN SOIL SAMPLES

PHASE II ESA

PARCEL B

GM CLARK AVENUE FACILITY

DETROIT, MICHIGAN

PAOC No.	Michigan	Michigan	Michigan	B-10	B-10	B-10	B-10	B-11	B-11	B-11	B-11
Sample Location	Generic Residential	Generic Industrial	Generic Industrial	BH-126-96	BH-126-96	BH-126-96	BH-126-96	BH-34-96	BH-36-96	BH-36-96	BH-36-96
Sample ID (S-8889-)	Direct Contact	Direct Contact	Direct Contact	091496-PFR-166	091496-PFR-168	091496-PFR-169	091496-PFR-170	091396-SF-069	091396-SF-074	091396-SF-075	091396-SF-075
Sample Depth (feet bgs)	Criteria (1)	Criteria (2)	Criteria (2)	3-4 (Dup.)	5-6	0-1	3-4	0-2	0-2	0-2	2-4
Date Sampled	9/14/96	9/14/96	9/14/96	9/14/96	9/14/96	9/14/96	9/14/96	9/13/96	9/13/96	9/13/96	9/13/96
Parameter											
<u>Semi-Volatile Organic Compounds (ug/kg)</u>											
Acenaphthene	76,000,000		810,000,000	ND(380)	ND(410)	ND(3,800)	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Acenaphthylene	1,500,000		16,000,000	ND(380)	ND(410)	ND(3,800)	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Anthracene	420,000,000		1,000,000,000	ND(380)	ND(410)	4,800	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Benzo(a)anthracene	14,000		210,000	ND(380)	ND(410)	5,800	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Benzo(b)fluoranthene	14,000		210,000	ND(380)	ND(410)	4,000	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Benzo(k)fluoranthene	140,000		2,100,000	ND(380)	ND(410)	ND(3,800)	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Benzo(g,h,i)perylene	1,500,000		16,000,000	ND(380)	ND(410)	ND(3,800)	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Benzo(a)pyrene	1,400		21,000	ND(380)	ND(410)	4,000	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Benzybutylphthalate	68,000,000		720,000,000	ND(380)	ND(410)	ND(3,800)	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Carbazole	--		--	ND(380)	ND(410)	ND(3,800)	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Chrysene	1,400,000		21,000,000	ND(380)	ND(410)	ND(3,800)	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Di-n-butylphthalate	51,000,000		540,000,000	ND(380)	ND(410)	5,700	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Dibenzofuran	ID	ID	ID	690	3,000	ND(3,800)	2,700	500	ND(410)	2,000	2,000
Fluoranthene	51,000,000		540,000,000	ND(380)	ND(410)	ND(3,800)	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Fluorene	51,000,000		540,000,000	ND(380)	ND(410)	15,000	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Indeno(1,2,3-cd)pyrene	14,000		210,000	ND(380)	ND(410)	ND(3,800)	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
2-Methylnaphthalene	15,000,000		160,000,000	ND(380)	ND(410)	ND(3,800)	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Naphthalene	15,000,000		160,000,000	ND(380)	ND(410)	ND(3,800)	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Phenanthrene	1,500,000		16,000,000	ND(380)	ND(410)	ND(3,800)	ND(410)	ND(390)	ND(410)	ND(400)	ND(400)
Pyrene	32,000,000		340,000,000	ND(380)	ND(410)	17,000	ND(410)	ND(390)	580	ND(400)	ND(400)
						12,000	ND(410)	ND(390)	670	ND(400)	ND(400)

Notes:

ND() - Parameter was not detected above level in parentheses.

J - The associated numerical value is an estimated quantity.

U() - The compound was analyzed for, but was not detected above the reported sample quantitation limit in parenthesis.

PAOC - Potential Area of Concern.

bgs - below ground surface.

-- - Criterion is not available

ID - Insufficient data to develop criterion.

Boxed number indicates exceedance of Generic Industrial Direct Contact Criteria.

Shaded number indicates exceedance of Generic Residential Direct Contact Criteria.

(1) Values taken from MDEQ Operational Memorandum #8,

Revision 4, dated June 5, 1995.

(2) Values taken from MDEQ Operational Memorandum #14,

Revision 2, dated June 6, 1995.

SUMMARY OF DETECTED SVOCs IN SOIL SAMPLES

PHASE II ESA

PARCEL B

GM CLARK AVENUE FACILITY

DETROIT, MICHIGAN

PAOC No.	Michigan	Michigan	B-13	B-13	B-13	B-13	B-16
Sample Location	Generic Residential	Generic Industrial	BH-124-96	BH-124-96	BH-124-96	BH-124-96	BH-252-97
Sample ID (S-8889-)	Direct Contact	Direct Contact	091496-PFR-160	091496-PFR-161	091496-PFR-162	091496-SF-163	120997-SF-537
Sample Depth (feet bgs)	Criteria (1)	Criteria (2)	3-4	6-8	2.5-3.5	4-5	2-4
Date Sampled			9/14/96	9/14/96	9/14/96	9/14/96	34,311
Parameter							

Semi-Volatile Organic Compounds (µg/kg)

Acenaphthene	76,000,000	810,000,000	ND(400)	ND(410)	ND(440)	ND(400)	7,900
Acenaphthylene	1,500,000	16,000,000	ND(400)	ND(410)	ND(440)	ND(400)	ND(330)
Anthracene	420,000,000	1,000,000,000	ND(400)	ND(410)	ND(440)	ND(400)	7,800
Benzo(a)anthracene	14,000	210,000	ND(400)	ND(410)	ND(440)	ND(400)	2,700
Benzo(b)fluoranthene	14,000	210,000	ND(400)	ND(410)	ND(440)	ND(400)	1,300
Benzo(k)fluoranthene	140,000	2,100,000	ND(400)	ND(410)	ND(440)	ND(400)	1,700
Benzo(g,h,i)perylene	1,500,000	16,000,000	ND(400)	ND(410)	ND(440)	ND(400)	860
Benzo(a)pyrene	1,400	21,000	ND(400)	ND(410)	ND(440)	ND(400)	2,300
Benzo(butyl)phthalate	68,000,000	720,000,000	ND(400)	ND(410)	690	ND(400)	ND(330)
Carbazole	-	-	ND(400)	ND(410)	ND(440)	ND(400)	6,100
Chrysene	1,400,000	21,000,000	ND(400)	ND(410)	ND(440)	ND(400)	2,600
Di-n-butylphthalate	51,000,000	540,000,000	1,700	3,200	1,200	2,300	ND(330)
Dibenzofuran	ID	ID	ND(400)	ND(410)	ND(440)	ND(400)	6,200
Fluoranthene	51,000,000	540,000,000	ND(400)	ND(410)	ND(440)	ND(400)	9,400
Fluorene	51,000,000	540,000,000	ND(400)	ND(410)	ND(440)	ND(400)	9,400
Indeno(1,2,3-cd)pyrene	14,000	210,000	ND(400)	ND(410)	ND(440)	ND(400)	860
2-Methylnaphthalene	15,000,000	160,000,000	ND(400)	ND(410)	ND(440)	ND(400)	5,300
Naphthalene	15,000,000	160,000,000	ND(400)	ND(410)	ND(440)	ND(400)	17,000
Phenanthrene	1,500,000	16,000,000	ND(400)	ND(410)	ND(440)	ND(400)	27,000
Pyrene	32,000,000	340,000,000	ND(400)	ND(410)	ND(440)	ND(400)	10,000

Notes:

ND() - Parameter was not detected above level in parentheses.

J - The associated numerical value is an estimated quantity.

U() - The compound was analyzed for, but was not detected above the reported sample quantitation limit in parenthesis.

PAOC - Potential Area of Concern.

bgs - below ground surface.

-- - Criterion is not available

ID - Insufficient data to develop criterion.

Boxed number indicates exceedance of Generic Industrial Direct Contact Criteria.

Shaded number indicates exceedance of Generic Residential Direct Contact Criteria.

(1) Values taken from MDEQ Operational Memorandum #8,

Revision 4, dated June 5, 1995.

(2) Values taken from MDEQ Operational Memorandum #14,

Revision 2, dated June 6, 1995.

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan Generic Residential	Michigan Generic Industrial	B-1	B-1	B-1	B-1	B-2	B-2
Sample Location	Direct Contact	Direct Contact	BH-105-96	BH-105-96	BH-106-96	BH-106-96	BH-6-96	BH-6-96
Sample ID (S-8889-)	Criteria (1)	Criteria (2)	090996-KMV-110	090996-KMV-111	091096-JM-112	091096-JM-113	090696-SF-011	090696-SF-012
Sample Depth (feet bgs)			0-2	4-5	6-8	8-10	0-2	0-2 (Dup.)
Date Sampled			9/9/96	9/9/96	9/10/96	9/10/96	9/6/96	9/6/96
Parameter								
<u>Inorganics (mg/kg)</u>								
Arsenic	6.6	100	8.95 J	4.90 J	9.13	6.94 J	13.3 J	6.44 J
Barium	30,000	320,000	121 J	73.0 J	29.6	66.9 J	84.1 J	74.3 J
Cadmium	210	2,300	0.405	0.235	0.215	0.115 J	0.354	0.456
Chromium	2,000	22,000	24.6 J	15.2 J	11.7	22.2 J	16.0 J	14.8 J
Copper	16,000	170,000	28.6 J	11.8 J	10.4	15.6 J	23.6 J	13.6 J
Lead	400	400	183 J	7.69 J	5.53	9.60 J	87.9 J	12.0 J
Mercury	130	1,400	0.500 J	ND(0.124) UJ	ND(0.120)	ND(0.127)	0.149 J	ND(0.123) UJ
Selenium	2,100	23,000	ND(1.22)	ND(1.24)	ND(1.20)	1.64 J	ND(1.17)	ND(1.23)
Silver	2,000	21,000	ND(0.609)	ND(0.622)	ND(0.602)	ND(0.635)	ND(0.586)	ND(0.614)
Zinc	140,000	1,000,000	82.6 J	72.8 J	33.7	57.6	45.6 J	68.6 J
Cyanide	9,300,000	99,000	NA	NA	NA	NA	NA	NA

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan Generic Residential	Michigan Generic Industrial	Michigan Direct Contact	Criteria (1)	B-2 BH-6-96 090696-SF-013 4-6 9/6/96	B-2 BH-7A-96 090696-SF-014 0-2 9/6/96	B-2 BH-7A-96 090696-SF-015 2-4 9/6/96	B-4 BH-19-96 091096-SF-040 2-4 9/10/96	B-4 BH-19-96 091096-SF-041 4-6 9/10/96	B-4 BH-19-96 091096-SF-042 4-6 (Dup.) 9/10/96	B-4 BH-20-96 091096-SF-043 2-4 9/10/96
Sample Location											
Sample ID (S-8889-)											
Sample Depth (feet bgs)											
Date Sampled											
Parameter											
<u>Inorganics (mg/kg)</u>											
Arsenic	6.6	100	10.2 J	8.80 J	9.38 J						
Barium	30,000	320,000	34.2 J	139 J	63.1 J			1.74	1.90	5.41	2.76
Cadmium	210	2,300	0.307	0.464	0.147			8.73	60.0	83.8	5.21
Chromium	2,000	22,000	12.5 J	14.5 J	16.7 J			ND(0.092)	0.105	0.139	0.104
Copper	16,000	170,000	19.9 J	27.4 J	20.5 J			3.93	15.5	21.7	3.73
Lead	400	400	8.99 J	129 J	11.3 J			3.99	13.2	19.3	5.15
Mercury	130	1,400	ND(0.120) UJ	0.628 J	ND(0.122) UJ			3.14	13.3	13.3	2.36
Selenium	2,100	23,000	ND(1.20)	ND(1.18)	ND(1.22)			ND(0.116) UJ	ND(0.125) UJ	ND(0.127) UJ	ND(0.115) UJ
Silver	2,000	21,000	ND(0.602)	ND(0.591)	ND(0.609)			ND(1.16)	ND(1.25)	ND(1.27)	ND(1.15)
Zinc	140,000	1,000,000	47.1 J	73.3 J	58.8 J			ND(0.580)	ND(0.624)	ND(0.635)	ND(0.576)
Cyanide	9,300,000	99,000	NA	NA	NA			67.6 J	67.2 J	69.6 J	55.4 J
								NA	NA	NA	NA

TABLE 4.3
 SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
 PHASE II ESA
 PARCEL B
 GM CLARK AVENUE FACILITY
 DETROIT, MICHIGAN

PAOC No.	Sample Location	Sample ID (S-8889-)	Sample Depth (feet bgs)	Date Sampled	Michigan Generic Residential Direct Contact Criteria (1)	Michigan Generic Industrial Direct Contact Criteria (2)	B-5 BH-14-96 091096-SF-030 6-8 9/10/96	B-5 BH-14-96 091096-SF-031 6-8 (Dup.) 9/10/96	B-5 BH-15-96 091096-SF-032 0-2 9/10/96	B-5 BH-15-96 091096-SF-033 4-6 9/10/96	B-5 BH-16-96 091096-SF-034 2-4 9/10/96	B-5 BH-16-96 091096-SF-035 8-10 9/10/96	B-5 BH-17-96 091096-SF-036 0-2 9/10/96
Parameter													
<u>Inorganics (mg/kg)</u>													
Arsenic	6.6	100	4.68	7.06	7.03	2.30	4.32	4.70	9.18				
Barium	30,000	320,000	62.1 J	58.2 J	37.7	51.2	89.3	80.3	90.1				
Cadmium	210	2,300	0.114 J	0.156 J	0.156	ND(0.103)	0.646	0.168	0.445				
Chromium	2,000	22,000	22.1	21.2	10.6	7.97	16.4	27.0	18.3				
Copper	16,000	170,000	16.8 J	14.1 J	4.88	8.68	14.6	16.8	26.0				
Lead	400	400	8.45 J	8.82 J	7.44	16.8	38.6	11.0	67.2				
Mercury	130	1,400	ND(0.130) UJ	ND(0.128) UJ	0.202 J	ND(0.129) UJ	0.356 J	ND(0.127) UJ	0.250 J				
Selenium	2,100	23,000	ND(1.30)	ND(1.28)	ND(1.22)	ND(1.29)	ND(1.21)	ND(1.27)	1.58				
Silver	2,000	21,000	ND(0.648)	ND(0.638)	ND(0.611)	ND(0.646)	ND(0.606)	ND(0.637)	ND(0.599)				
Zinc	140,000	1,000,000	56.8 J	51.6 J	146 J	64.2 J	70.4 J	57.2 J	153 J				
Cyanide	9,300,000	99,000	NA	NA	NA	NA	NA	NA	NA				

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan Generic Residential	Michigan Generic Industrial	Michigan Direct Contact	Criteria (1)	Michigan Generic Residential	Michigan Generic Industrial	Criteria (2)	B-5 BH-17-96 091096-SF-037 4-6 9/10/96	B-6 BH-10-96 090996-SF-020 0-2 9/9/96	B-6 BH-10-96 090996-SF-021 4-6 9/9/96	B-6 BH-11B-96 091096-SF-022 0-2 9/10/96	B-6 BH-11B-96 091096-SF-023 2-4 9/10/96	B-6 BH-12-96 091096-SF-024 0-2 9/10/96	B-6 BH-12-96 091096-SF-025 4-6 9/10/96
Sample Location														
Sample ID (S-8889-)														
Sample Depth (feet bgs)														
Date Sampled														
Parameter														
<u>Inorganics (mg/kg)</u>														
Arsenic	6.6	100	4.49	9.18 J	4.92 J	6.20	6.61	4.89	8.00					
Barium	30,000	320,000	78.6	133 J	90.1	145 J	61.3 J	69.4 J	126 J					
Cadmium	210	2,300	0.207	0.425	0.262 J	1.76 J	0.322 J	0.212 J	0.281 J					
Chromium	2,000	22,000	15.5	27.6 J	27.9 J	15.1	17.7	14.1	19.7					
Copper	16,000	170,000	15.7	28.7 J	19.7	36.3 J	23.7 J	20.8 J	18.7 J					
Lead	400	400	11.3	85.6 J	11.0 J	391 J	19.9 J	36.0 J	9.36 J					
Mercury	130	1,400	ND(0.120) UJ	0.140 J	ND(0.125)	2.63 J	ND(0.122) UJ	ND(0.122) UJ	ND(0.124) UJ					
Selenium	2,100	23,000	ND(1.20)	ND(1.16)	ND(1.25)	ND(1.18)	ND(1.22)	ND(1.22)	ND(1.24)					
Silver	2,000	21,000	ND(0.603)	ND(0.580)	ND(0.624)	ND(0.593)	ND(0.611)	ND(0.612)	ND(0.621)					
Zinc	140,000	1,000,000	40.2 J	320 J	62.8	329 J	87.3 J	78.9 J	65.5 J					
Cyanide	9,300,000	99,000	NA	NA	NA	NA	NA	NA	NA					

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan	Michigan		B-6	B-6	B-6	B-6	B-6	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7	B-7
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TABLE 4.3

PAOC No.
Sample Loc
Sample ID (C
Sample Dep
Date Sample

Inorganics (mg/kg)

Arsenic
Barium
Cadmium
Chromium
Copper
Lead
Mercury
Selenium
Silver
Zinc
Cyanide

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan Generic Residential	Michigan Generic Industrial	B-7 BH-110A-96	B-8 BH-100-96	B-8 BH-100-96	B-8 BH-101-96	B-8 BH-101-96	B-8 BH-103A-96
Sample Location	Direct Contact	Direct Contact	091096-DRM-123	090696-SM-100	090696-SM-101	090696-SM-102	090696-SM-103	090696-SM-106
Sample ID (S-8889-)	Criteria (1)	Criteria (2)	4-6 (Dup.)	0-2	4-6	0-2	8-10	0-2
Sample Depth (feet bgs)			9/10/96	9/6/96	9/6/96	9/6/96	9/6/96	9/6/96
Date Sampled								
<i>Parameter</i>								
<i>Inorganics (mg/kg)</i>								
Arsenic	6.6	100	6.08 J	NA	NA	NA	NA	NA
Barium	30,000	320,000	76.6 J	NA	NA	NA	NA	NA
Cadmium	210	2,300	0.141 J	NA	NA	NA	NA	NA
Chromium	2,000	22,000	20.6 J	NA	NA	NA	NA	NA
Copper	16,000	170,000	17.2 J	NA	NA	NA	NA	NA
Lead	400	400	26.7 J	18.4 J	5.74 J	39.3 J	9.94 J	27.2 J
Mercury	130	1,400	ND(0.128)	NA	NA	NA	NA	NA
Selenium	2,100	23,000	1.64 J	NA	NA	NA	NA	NA
Silver	2,000	21,000	ND(0.642)	NA	NA	NA	NA	NA
Zinc	140,000	1,000,000	61.0	NA	NA	NA	NA	NA
Cyanide	9,300,000	99,000	NA	NA	NA	NA	NA	NA

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan Generic Residential	Michigan Generic Industrial	Michigan Direct Contact	Criteria (1)	Criteria (2)	B-8 BH-103A-96	B-8 BH-104-96	B-8 BH-104-96	B-8 BH-104-96	B-9 BH-8-96	B-9 BH-8-96	B-9 BH-9-96
Sample Location												
Sample ID (S-8889-)						090696-SM-107	090696-SM-108	090696-SM-109	090996-SF-016	090996-SF-017	090996-SF-018	
Sample Depth (feet bgs)						8-10	2-4	8-10	0-2	4-6	0-2	
Date Sampled						9/6/96	9/6/96	9/6/96	9/9/96	9/9/96	9/9/96	

Parameter

Inorganics (mg/kg)

Arsenic	6.6	100	NA	NA	NA	16.9 J	8.87 J	5.27 J
Barium	30,000	320,000	NA	NA	NA	115 J	88.2 J	72.2 J
Cadmium	210	2,300	NA	NA	NA	1.02	0.328	0.265
Chromium	2,000	22,000	NA	NA	NA	19.2 J	22.8 J	18.6 J
Copper	16,000	170,000	NA	NA	NA	242 J	18.3 J	13.6 J
Lead	400	400	7.09 J	19.9 J	10.2 J	195 J	10.5 J	34.4 J
Mercury	130	1,400	NA	NA	NA	0.530 J	ND(0.125)UJ	ND(0.122) UJ
Selenium	2,100	23,000	NA	NA	NA	ND(1.20)	ND(1.25)	ND(1.22)
Silver	2,000	21,000	NA	NA	NA	ND(0.600)	ND(0.624)	ND(0.609)
Zinc	140,000	1,000,000	NA	NA	NA	146 J	68.2 J	82.3 J
Cyanide	9,300,000	99,000	NA	NA	NA	NA	NA	NA

TABLE 4.3
 SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
 PHASE II ESA
 PARCEL B
 GM CLARK AVENUE FACILITY
 DETROIT, MICHIGAN

PAOC No.	Michigan Generic Residential	Michigan Direct Contact	Criteria (1)	Michigan Generic Industrial	Direct Contact	Criteria (2)	B-9 BH-9-96	B-10 BH-126-96	B-10 BH-126-96	B-10 BH-126-96	B-10 BH-127-96	B-10 BH-127-96
Sample Location												
Sample ID (S-8889-)							090996-SF-019	091496-PFR-164	091496-PFR-165	091496-PFR-166	091496-PFR-167	091496-PFR-168
Sample Depth (feet bgs)							2-4	1-2	3-4	3-4 (Dup.)	3-4	5-6
Date Sampled							9/9/96	9/14/96	9/14/96	9/14/96	9/14/96	9/14/96

Parameter

Inorganics (mg/kg)

Arsenic	6.6	100	5.24 J	66.4	1.06	3.83	4.37	4.47
Barium	30,000	320,000	91.8 J	80.1	42.9	39.9	42.4	63.7
Cadmium	210	2,300	0.279	1.47 J	0.128 J	0.123 J	ND(0.101)	0.437 J
Chromium	2,000	22,000	21.1 J	11.9	9.82	9.86	11.1	15.6
Copper	16,000	170,000	16.2 J	16,500	6.31	6.79	6.11	15.3
Lead	400	400	8.21 J	5,530 J	6.48 J	17.2 J	8.41 J	7.72 J
Mercury	130	1,400	ND(0.121) UJ	0.559	ND(0.116)	ND(0.122)	ND(0.129)	ND(0.125)
Selenium	2,100	23,000	ND(1.21)	1.67	ND(1.16)	ND(1.22)	ND(1.26)	ND(1.25)
Silver	2,000	21,000	ND(0.606)	ND(0.626)	ND(0.583)	ND(0.611)	ND(0.631)	ND(0.624)
Zinc	140,000	1,000,000	58.8 J	199	38.3	42.2	59.4	56.6
Cyanide	9,300,000	99,000	NA	NA	NA	NA	NA	NA

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan Generic Residential Direct Contact Criteria (1)	Michigan Generic Industrial Direct Contact Criteria (2)	B-10 BH-128-96 091496-PFR-169 0-1 9/14/96	B-10 BH-128-96 091496-PFR-170 3-4 9/14/96	B-11 BH-34-96 091396-SF-069 0-2 9/13/96	B-11 BH-34-96 091396-SF-070 6-8 9/13/96	B-11 BH-35-96 091396-SF-071 0-2 9/13/96	B-11 BH-35-96 091396-SF-072 2-4 9/13/96
Sample Location								
Sample ID (S-8889-)								
Sample Depth (feet bgs)								
Date Sampled								

Parameter

Inorganics (mg/kg)

Arsenic	6.6	100	15.1	8.48	1.99	8.29	5.04	7.31
Barium	30,000	320,000	65.3	108	6.76 J	92.2 J	31.6 J	84.3 J
Cadmium	210	2,300	0.284 J	0.492 J	0.0975	0.187	0.166	0.354
Chromium	2,000	22,000	6.22	17.3	5.41 J	25.8 J	7.64 J	17.2 J
Copper	16,000	170,000	37.1	38.9	2.28	15.5	11.7	12.6
Lead	400	400	110 J	267 J	3.60 J	8.15 J	17.5 J	9.92 J
Mercury	130	1,400	0.400	0.200	ND(0.121)	ND(0.133)	ND(0.121)	ND(0.119)
Selenium	2,100	23,000	ND(1.19)	ND(1.27)	ND(1.21)	ND(1.33)	ND(1.21)	ND(1.19)
Silver	2,000	21,000	ND(0.593)	ND(0.637)	ND(0.604)	ND(0.665)	ND(0.607)	ND(0.597)
Zinc	140,000	1,000,000	94.0	132	12.1	68.5	29.3	44.4
Cyanide	9,300,000	99,000	NA	NA	NA	NA	NA	NA

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan Generic Residential	Michigan Generic Industrial	B-11 BH-35-96	B-11 BH-36-96	B-11 BH-36-96	B-13 BH-124-96	B-13 BH-124-96	B-13 BH-125-96
Sample Location	Direct Contact	Direct Contact	091396-SF-073	091396-SF-074	091396-SF-075	091496-PFR-160	091496-PFR-161	091496-PFR-162
Sample ID (S-8889-)	Criteria (1)	Criteria (2)	2-4 (Dup.)	0-2	2-4	3-4	6-8	2.5-3.5
Sample Depth (feet bgs)			9/13/96	9/13/96	9/13/96	9/14/96	9/14/96	9/14/96
Date Sampled								

Parameter

Inorganics (mg/kg)

Arsenic	6.6	100	9.23	4.01	8.82	2.35	13.7	6.43
Barium	30,000	320,000	70.5 J	130 J	60.4 J	25.8	65.8	59.8
Cadmium	210	2,300	0.207	0.250	0.257	0.273 J	0.137 J	0.260 J
Chromium	2,000	22,000	18.8 J	18.8 J	19.9 J	5.36	17.0	10.6
Copper	16,000	170,000	15.1	12.8	23.5	7.28	20.6	27.8
Lead	400	400	8.36 J	61.5 J	12.8 J	16.6 J	13.4 J	195 J
Mercury	130	1,400	ND(0.124)	0.225	ND(0.122)	0.173	ND(0.125)	1.63
Selenium	2,100	23,000	ND(1.24)	ND(1.17)	ND(1.22)	ND(1.16)	ND(1.25)	ND(1.40)
Silver	2,000	21,000	ND(0.618)	ND(0.587)	ND(0.612)	ND(0.582)	ND(0.627)	ND(0.698)
Zinc	140,000	1,000,000	48.6	114	65.1	22.6	69.6	159
Cyanide	9,300,000	99,000	NA	NA	NA	NA	NA	NA

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan Generic Residential	Michigan Generic Industrial	B-13 BH-125-96	B-14 BH-37-96	B-14 BH-37-96	B-14 BH-38-96	B-14 BH-38-96	B-14 BH-38-96
Sample Location	Direct Contact	Direct Contact	091496-PFR-163	091696-SF-076	091696-SF-077	091696-SF-078	091696-SF-079	091696-SF-080
Sample ID (S-8889-)	Criteria (1)	Criteria (2)	4-5	2-3	8-10	3-5	9-11	9-11 (Dup.)
Sample Depth (feet bgs)								
Date Sampled			9/14/96	9/16/96	9/16/96	9/16/96	9/16/96	9/16/96

Parameter

Inorganics (mg/kg)

Arsenic	6.6	100	2.98	NA	NA	NA	NA	NA
Barium	30,000	320,000	73.2	NA	NA	NA	NA	NA
Cadmium	210	2,300	0.147 J	NA	NA	NA	NA	NA
Chromium	2,000	22,000	12.8	NA	NA	NA	NA	NA
Copper	16,000	170,000	9.82	NA	NA	NA	NA	NA
Lead	400	400	10.8 J	8.72 J	8.07 J	6.10 J	9.24 J	11.5 J
Mercury	130	1,400	ND(0.122)	NA	NA	NA	NA	NA
Selenium	2,100	23,000	ND(1.22)	NA	NA	NA	NA	NA
Silver	2,000	21,000	ND(0.610)	NA	NA	NA	NA	NA
Zinc	140,000	1,000,000	46.6	NA	NA	NA	NA	NA
Cyanide	9,300,000	99,000	NA	NA	NA	NA	NA	NA

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan	Michigan	Michigan	B-14	B-14	B-14	B-14	B-14	B-14	B-14
Sample Location	Generic Residential	Generic Industrial	Direct Contact	BH-41-96	BH-41-96	BH-42-96	BH-42-96	BH-43-96	BH-43-96	BH-43-96
Sample ID (S-8889-)	Criteria (1)	Criteria (2)	Criteria (2)	091796-SF-081	091796-SF-082	091796-SF-083	091796-SF-084	091896-SF-085	091896-SF-086	091896-SF-087
Sample Depth (feet bgs)				3-5	5-7	1-3	5-7	6-8	10-12	10-12 (Dup.)
Date Sampled				9/17/96	9/17/96	9/17/96	9/17/96	9/18/96	9/18/96	9/18/96

Parameter

Inorganics (mg/kg)

Arsenic	6.6	100	NA	NA	NA	NA	NA	NA	NA	NA
Barium	30,000	320,000	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	210	2,300	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	2,000	22,000	NA	NA	NA	NA	NA	NA	NA	NA
Copper	16,000	170,000	NA	NA	NA	NA	NA	NA	NA	NA
Lead	400	400	1.90	11.4	2.06	9.96	19.5 J	6.46 J	6.69 J	6.69 J
Mercury	130	1,400	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	2,100	23,000	NA	NA	NA	NA	NA	NA	NA	NA
Silver	2,000	21,000	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	140,000	1,000,000	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	9,300,000	99,000	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan Generic Residential Direct Contact Criteria (1)	Michigan Generic Industrial Direct Contact Criteria (2)	B-14 BH-45-96 091896-SF-088 5-7 9/18/96	B-14 BH-45-96 091896-SF-089 7-9 9/18/96	B-15 BH-141-96 100996-PFR-193 4-6 10/9/96	B-15 BH-142B-96 100996-PFR-194 3.5-4 10/9/96	B-15 BH-142B-96 100996-PFR-195 4.5-5 10/9/96	B-15 BH-143C-96 100996-PFR-196 5-5.5 10/9/96
Sample Location								
Sample ID (S-8889-)								
Sample Depth (feet bgs)								
Date Sampled								
Parameter								
<u>Inorganics (mg/kg)</u>								
Arsenic	6.6	100	NA	NA	6.47 J	6.29 J	8.18 J	4.35 J
Barium	30,000	320,000	NA	NA	62.4	93.0	103	38.1
Cadmium	210	2,300	NA	NA	0.336 J	ND(0.093) UJ	0.130 J	ND(0.087) UJ
Chromium	2,000	22,000	NA	NA	13.1	3.71	13.8	15.8
Copper	16,000	170,000	NA	NA	17.4	12.6	21.1	12.5
Lead	400	400	51.8 J	7.58 J	8.47 J	15.0 J	10.5 J	8.70 J
Mercury	130	1,400	NA	NA	ND(0.122)	ND(0.117)	ND(0.144)	ND(0.110)
Selenium	2,100	23,000	NA	NA	ND(1.22)	ND(1.17)	ND(1.44)	ND(1.10)
Silver	2,000	21,000	NA	NA	ND(0.611)	ND(0.585)	ND(0.718)	ND(0.548)
Zinc	140,000	1,000,000	NA	NA	47.9	161	58.3	42.3
Cyanide	9,300,000	99,000	NA	NA	0.414	0.323	0.429	ND(0.274)

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan	Michigan	Michigan	B-15	B-15	B-15	B-15	B-15	B-15
Sample Location	Generic Residential	Generic Industrial	Generic Industrial	BH-143C-96	BH-144-96	BH-144-96	BH-146-96	BH-146-96	BH-146-96
Sample ID (S-8889-)	Direct Contact	Direct Contact	Direct Contact	100996-PFR-197	100996-PFR-198	100996-PFR-199	101096-PFR-200	101096-PFR-201	101096-PFR-202
Sample Depth (feet bgs)	Criteria (1)	Criteria (2)	Criteria (2)	7.5-8	3-3.5	9-9.5	0-1	3-4	3-4 (Dup.)
Date Sampled				10/9/96	10/9/96	10/9/96	10/10/96	10/10/96	10/10/96

Parameter

Inorganics (mg/kg)

Arsenic	6.6	100	6.48 J	2.65 J	4.99 J	2.27 J	7.43 J	9.61 J
Barium	30,000	320,000	72.4	ND(24.2)	103	ND(24.2)	65.6	84.6
Cadmium	210	2,300	0.194 J	ND(0.096) UJ	0.279 J	ND(0.096) UJ	0.311 J	0.392 J
Chromium	2,000	22,000	21.9	5.66	20.8	6.23	13.5	13.2
Copper	16,000	170,000	24.7	5.87	18.8	1.78	21.8	26.1
Lead	400	400	13.0 J	2.86 J	15.4 J	4.44 J	11.1 J	12.8 J
Mercury	130	1,400	ND(0.129)	ND(0.121)	ND(0.126)	ND(0.121)	ND(0.123)	ND(0.125)
Selenium	2,100	23,000	ND(1.29)	ND(1.21)	ND(1.26)	ND(1.21)	ND(1.23)	ND(1.25)
Silver	2,000	21,000	ND(0.646)	ND(0.605)	ND(0.630)	ND(0.605)	ND(0.617)	ND(0.627)
Zinc	140,000	1,000,000	70.5	18.1	57.3	13.5	57.6	58.2
Cyanide	9,300,000	99,000	3.75	2.06	ND(0.315)	ND(0.303)	0.509	0.428

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan	Michigan	B-15	B-15	B-15	B-15	B-15	B-15
Sample Location	Generic Residential	Generic Industrial	BH-147-96	BH-147-96	BH-145A-96	BH-145A-96	BH-148-96	BH-148-96
Sample ID (S-8889-)	Direct Contact	Direct Contact	101096-PFR-203	101096-PFR-204	101096-PFR-205	101096-PFR-206	101096-PFR-207	101096-PFR-208
Sample Depth (feet bgs)	Criteria (1)	Criteria (2)	2-2.5	6-6.5	5-5.25	7.5-8	6-6.25	8-9
Date Sampled			10/10/96	10/10/96	10/10/96	10/10/96	10/10/96	10/10/96

Parameter

Inorganics (mg/kg)

Arsenic	6.6	100	5.47 J	4.91 J	4.77 J	5.60 J	3.16 J	6.05 J
Barium	30,000	320,000	92.4	74.5	84.9	33.2	72.3	49.8
Cadmium	210	2,300	0.676 J	0.206 J	0.332 J	0.291 J	0.172 J	0.121 J
Chromium	2,000	22,000	12.6	24.6	156	16.6	14.6	21.0
Copper	16,000	170,000	24.9	25.2	22.9	19.7	20.0	17.4
Lead	400	400	87.5 J	9.84 J	85.5 J	7.94 J	41.2 J	10.6 J
Mercury	130	1,400	0.310	ND(0.125)	ND(0.124)	ND(0.121)	ND(0.127)	ND(0.126)
Selenium	2,100	23,000	ND(1.31)	ND(1.25)	ND(1.24)	ND(1.21)	ND(1.27)	ND(1.26)
Silver	2,000	21,000	ND(0.656)	ND(0.626)	ND(0.621)	ND(0.605)	ND(0.637)	ND(0.632)
Zinc	140,000	1,000,000	224	78.5	76.4	67.8	67.7	56.2
Cyanide	9,300,000	99,000	ND(0.328)	ND(0.313)	1.42	0.810	5.72	1.07

TABLE 4.3

PAOC No.	Michigan	Michigan	B-15	B-15	B-15	B-15	B-15	B-15
Sample Location	Generic Residential	Generic Industrial	BH-150-96	BH-150-96	BH-149A-96	BH-149A-96	BH-151-96	BH-151-96
Sample ID (S-8889-)	Direct Contact	Direct Contact	101096-PFR-209	101096-PFR-210	101096-PFR-211	101096-PFR-212	101096-PFR-213	101096-PFR-214
Sample Depth (feet bgs)	Criteria (1)	Criteria (2)	5-6.5	9.5-10	3-4	7-8	5.5-6.5	5.5-6.5 (Dup.)
Date Sampled			10/10/96	10/10/96	10/10/96	10/10/96	10/10/96	10/10/96
Parameter								
<u>Inorganics (mg/kg)</u>								
Arsenic	6.6	100	3.47 J	5.93 J	8.22 J	5.74 J	4.84 J	7.06 J
Barium	30,000	320,000	36.7	93.8	74.8	78.2	5,280	981
Cadmium	210	2,300	0.230 J	0.0997 J	0.428 J	0.172 J	0.497 J	1.16 J
Chromium	2,000	22,000	36.5	19.1	12.0	22.2	153 J	63.8 J
Copper	16,000	170,000	91.6	17.9	16.1	21.5	3,660 J	1,520 J
Lead	400	400	211 J	8.90 J	16.2 J	10.4 J	59.1 J	177 J
Mercury	130	1,400	ND(0.124)	ND(0.122)	ND(0.124)	ND(0.128)	ND(0.129)	0.214
Selenium	2,100	23,000	ND(1.24)	ND(1.22)	ND(1.24)	ND(1.28)	ND(1.29)	ND(1.35)
Silver	2,000	21,000	ND(0.620)	ND(0.612)	ND(0.619)	ND(0.640)	2.65 J	ND(0.674) UJ
Zinc	140,000	1,000,000	54.5	55.6	50.8 J	61.8 J	378 J	850 J
Cyanide	9,300,000	99,000	ND(0.310)	0.631	3.06	6.42	41.5	56.1

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan Generic Residential	Michigan Generic Industrial	Michigan Direct Contact	Criteria (1)	Criteria (2)	B-15 BH-151-96	B-15 BH-152-96	B-15 BH-152-96	B-15 BH-153-96	B-15 BH-153-96	B-15 BH-154-96
Sample Location											
Sample ID (S-8889-)						101096-PFR-215	101196-PFR-216	101196-PFR-217	101196-PFR-218	101196-PFR-219	101196-PFR-220
Sample Depth (feet bgs)						9.5-10	5.5-6.5	13.5-14	1-1.75	5-6	0.5-1.5
Date Sampled						10/10/96	10/11/96	10/11/96	10/11/96	10/11/96	10/11/96

Parameter

Inorganics (mg/kg)

Arsenic	6.6	100	7.12 J	5.23 J	7.82 J	7.02 J	3.36 J	12.6 J
Barium	30,000	320,000	52.3	107 J	92.1 J	182 J	69.3 J	268 J
Cadmium	210	2,300	0.137 J	0.368 J	0.114 J	0.294 J	0.165 J	1.86 J
Chromium	2,000	22,000	24.9 J	14.2 J	22.6 J	13.5 J	16.8 J	9.93 J
Copper	16,000	170,000	19.9 J	198 J	16.4 J	24.2 J	11.8 J	16.0 J
Lead	400	400	9.40 J	42.9 J	9.82 J	89.6 J	7.59 J	14.3 J
Mercury	130	1,400	ND(0.124)	ND(0.116)	ND(0.127)	0.165	ND(0.126)	0.430
Selenium	2,100	23,000	ND(1.24)	ND(1.16) UJ	ND(1.27) UJ	ND(1.16) UJ	ND(1.26) UJ	ND(1.23) UJ
Silver	2,000	21,000	ND(0.618) UJ	ND(0.579) UJ	ND(0.634) UJ	ND(0.582) UJ	ND(0.629) UJ	ND(0.616) UJ
Zinc	140,000 -	1,000,000	63.0 J	99.5 J	51.1 J	171 J	50.1 J	107 J
Cyanide	9,300,000	99,000	0.690	4.27	0.866	1.02	4.69	ND(0.309)

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan	Michigan	Michigan	B-15	B-15	B-15	B-15	B-15	B-15
Sample Location	Generic Residential	Generic Industrial	Direct Contact	BH-154-96	BH-155-96	BH-155-96	BH-156-96	BH-156-96	BH-156-96
Sample ID (S-8889-)	Direct Contact	Direct Contact	101196-PFR-221	101196-PFR-222	101196-PFR-223	101196-PFR-224	101196-PFR-225	101196-PFR-226	101196-PFR-226
Sample Depth (feet bgs)	Criteria (1)	Criteria (2)	5-6	6-6.75	9-10	6-6.5	6-6.5 (Dup.)	11-12	10/11/96
Date Sampled	10/11/96	10/11/96	10/11/96	10/11/96	10/11/96	10/11/96	10/11/96	10/11/96	10/11/96

Parameter

Inorganics (mg/kg)

Arsenic	6.6	100	3.71 J	6.65 J	6.64 J	2.06 J	4.41 J	7.12 J
Barium	30,000	320,000	50.8 J	75.0 J	26.6 J	57.4 J	53.4 J	67.4 J
Cadmium	210	2,300	0.201 J	ND(0.098) UJ	0.273 J	0.197 J	0.282 J	ND(0.104) UJ
Chromium	2,000	22,000	12.5 J	19.4 J	15.2 J	12.6 J	9.73 J	21.8 J
Copper	16,000	170,000	9.82 J	71.9 J	196 J	597 J	772 J	19.1 J
Lead	400	400	9.24 J	11.5 J	7.47 J	33.9 J	48.9 J	9.47 J
Mercury	130	1,400	ND(0.123)	ND(0.123)	ND(0.121)	ND(0.124)	0.146	ND(0.130)
Selenium	2,100	23,000	ND(1.23) UJ	1.65 J	ND(1.21) UJ	ND(1.24) UJ	ND(1.28) UJ	ND(1.30) UJ
Silver	2,000	21,000	ND(0.615) UJ	ND(0.617) UJ	ND(0.604) UJ	ND(0.622) UJ	ND(0.638)	ND(0.649)
Zinc	140,000	1,000,000	41.1 J	61.8 J	50.6 J	70.9 J	58.2 J	49.8 J
Cyanide	9,300,000	99,000	0.518	2.88	1.90	ND(0.312)	0.443	0.574

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan Generic Residential	Michigan Generic Industrial	Michigan Direct Contact	Criteria (1)	Criteria (2)	B-15 BH-157-96	B-15 BH-157-96	B-16 BH-251-97	B-16 BH-251-97	B-16 BH-251-97	B-16 BH-252-97
Sample Location											
Sample ID (S-8889-)						101196-PFR-227	101196-PFR-228	120997-SF-533	120997-SF-534	120997-SF-535	120997-SF-536
Sample Depth (feet bgs)						1-15	11-12	0-2	0-2(Dup.)	2-4	0-2
Date Sampled						10/11/96	10/11/96	12/9/97	12/9/97	12/9/97	12/9/97

Parameter

Inorganics (mg/kg)

Arsenic	6.6	100	6.89 J	7.00 J	2.8	2.4	8.0	3.5
Barium	30,000	320,000	142 J	79.7 J	16.0	24.8	40.8	22.7
Cadmium	210	2,300	0.959 J	0.176 J	0.16	0.11	0.15	0.10
Chromium	2,000	22,000	55.3 J	23.3 J	7.2	6.2	10.5	5.1
Copper	16,000	170,000	36.6 J	15.9 J	4.8 J	5.3 J	18.1 J	12.1 J
Lead	400	400	740 J	9.20 J	2.7	3.8	6.4	5.1
Mercury	130	1,400	0.180	ND(0.122)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Selenium	2,100	23,000	1.34 J	ND(1.22) UJ	ND(0.6)	ND(0.6)	ND(0.6)	ND(0.6)
Silver	2,000	21,000	ND(0.571)	ND(0.611)	ND(0.6) UJ	ND(0.6) UJ	ND(0.6) UJ	ND(0.6) UJ
Zinc	140,000	1,000,000	215 J	53.3 J	18.7	16.0	32.3	17.8
Cyanide	9,300,000	99,000	1.07	ND(0.305)	NA	NA	NA	NA

TABLE 4.3
SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA
PARCEL B
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan Generic Residential	Michigan Generic Industrial	B-16 BH-252-97	B-17 BH-253-97	B-17 BH-253-97	B-17 BH-254-97	B-17 BH-254-97
Sample Location							
Sample ID (S-8889-)			120997-SF-537	123097-SEA-538	123097-SEA-539	123097-SEA-540	123097-SEA-541
Sample Depth (feet bgs)			2-4	2-4	6-8	2-4	6-8
Date Sampled			12/9/97	12/30/97	12/30/97	12/30/97	12/30/97

Parameter

Inorganics (mg/kg)

Arsenic	6.6	100	8.0	7.5	11.9	4.7	6.3
Barium	30,000	320,000	51.5	58.9	147	24.4	102
Cadmium	210	2,300	0.19	0.1	0.3	0.2	0.1
Chromium	2,000	22,000	9.2	16.1	16.5	20.1	26.8
Copper	16,000	170,000	15.5 J	6.0	18.9	37.9	34.3
Lead	400	400	10.4	6.9	9.4	8.9	10.4
Mercury	130	1,400	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Selenium	2,100	23,000	ND(0.6)	ND(0.6)	ND(0.6)	ND(0.6)	ND(0.6)
Silver	2,000	21,000	ND(0.6) UJ	ND(0.1)	ND(0.1)	ND(0.1)	ND(0.1)
Zinc	140,000	1,000,000	36.7	40.2 J	52.1 J	67.1 J	71.3 J
Cyanide	9,300,000	99,000	NA	NA	NA	NA	NA

Notes:

- ND() - Parameter was not detected above level in parentheses.
NA - Sample was not analyzed for parameter.
J - The associated numerical value is an estimated quantity.
UJ - The compound was analyzed for but not detected. The sample quantitation limit is an estimated value.
PAOC - Potential Area of Concern.
bgs - below ground surface.
Shaded number indicates exceedance of Generic Residential Direct Contact Criteria.
(1) Values taken from MDEQ Operational Memorandum #8, Revision 4, dated June 5, 1995.
(2) Values taken from MDEQ Operational Memorandum #14, Revision 2, dated June 6, 1995.

APPENDIX A

BOREHOLE STRATIGRAPHIC LOGS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-01)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH1-96
DATE COMPLETED: SEPTEMBER 6, 1996
DRILLING METHOD: 4X" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	Fill, some clay, some to little sand, trace to little gravel, loose, fine to medium grained, well graded, brown with green and black staining, pungent odor		 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	1SS	X	6	1100
				2SS	X	6	375
-5.0	CL-CLAY, some silt, little sand, trace gravel, very soft to soft, low plasticity, brown with green, black and purple stains, slight pungent odor	-4.0		3SS	X	2	0
-7.5	- firm, brown and gray, no odor			4SS	X	5	0
	END OF HOLE @ 8.0ft BGS	-8.0					
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-02)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH2-96
DATE COMPLETED: SEPTEMBER 6, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt, little gravel, loose, fine to medium grained, well graded, brown, moist - black and green staining - some clay, little silt, little to trace gravel, black and green staining, no odor, very loose	-4.0	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	1SS	X	6	0
				2SS	X	2	0
-5.0	CL-CLAY, some silt, little sand, trace gravel, low plasticity, soft, moist, brown with green staining - brown, no staining			3SS	X	3	0
-7.5	END OF HOLE @ 8.0ft BGS	-8.0		4SS	X	10	0
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND ☒ STATIC WATER LEVEL ☒

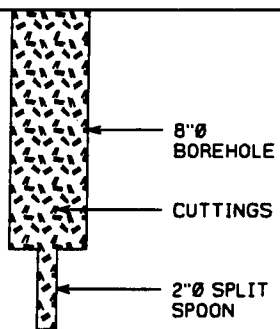
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-03)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH3-96
DATE COMPLETED: SEPTEMBER 6, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt, little sand, loose, trace gravel, fine to medium grained, well graded, black, moist, no odor - some clay and silt, little sand, trace gravel, black, gray, rust, moist	-2.0	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	1SS	X	4	0
-5.0	CL-CLAY, some silt, little sand, trace gravel, stiff, low plasticity, brown and gray, moist - very soft to soft - stiff			2SS	X	10	0
-7.5	- gray			3SS	X	2	0
	END OF HOLE @ 8.0ft BGS	-8.0		4SS	X	9	0
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-04)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH3A-96
DATE COMPLETED: SEPTEMBER 6, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	See stratigraphic log BH3-96 for stratigraphy	-4.0	 CUTTINGS 2" Ø SPLIT SPOON	ISS	X	4	0
-5.0	END OF HOLE @ 4.0ft BGS			2SS	X	10	0
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☐ STATIC WATER LEVEL ☐
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-05)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH4-96
DATE COMPLETED: SEPTEMBER 6, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt, little sand, loose, trace gravel, fine to medium grained, well graded, black, moist, no odor - some clay and silt, little sand, trace gravel, brown with some gray and slight green staining	-2.0	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	ISS	X	7	0
-5.0	CL-CLAY, some silt, little sand, trace gravel, soft, low plasticity, gray and brown with slight green staining, no odor			2SS	X	10	0
-7.5				3SS	X	2	0
-8.0	END OF HOLE @ 8.0ft BGS	-8.0		4SS	X	8	0
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☐ STATIC WATER LEVEL ☐
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-06)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH4A-96
DATE COMPLETED: SEPTEMBER 6, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	See stratigraphic log BH4-96 for stratigraphy		 CUTTINGS 2"Ø SPLIT SPOON	ISS	X	8	0
-2.5	END OF HOLE @ 2.0ft BGS	-2.0					
-5.0							
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

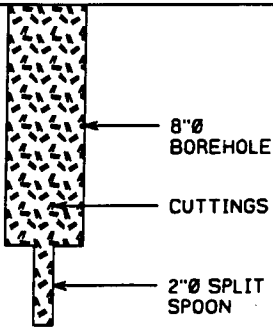
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-07)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH5-96
DATE COMPLETED: SEPTEMBER 6, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	Fill, some sand and clay, little silt, trace to little gravel, loose, fine to medium grained, well graded, brown and black, moist	-2.0	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	1SS	X	8	0
-5.0	CL-CLAY, some silt, little sand, trace to little gravel, low plasticity, firm, gray and brown with green and black staining, moist, no odor - soft to firm, brown and gray with slight green stains, no odor - brown			2SS	X	5	0
-7.5				3SS	X	4	0
-8.0	END OF HOLE @ 8.0ft BGS	-8.0		4SS	X	7	0
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-08)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH5A-96
DATE COMPLETED: SEPTEMBER 6, 1996
DRILLING METHOD: 4X" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	See stratigraphic log BH5-96 for stratigraphy		 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	ISS	X	5	0
-2.5				2SS	X	8	0
-5.0				3SS	X	5	0
-7.5				4SS	X	5	0
	END OF HOLE @ 8.0ft BGS	-8.0					
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-09)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH6-96
DATE COMPLETED: SEPTEMBER 9, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SC-SAND (FILL), some clay, little silt and gravel, loose, fine to medium grained, well graded, moist, dark brown to black	-1.0	 8" Ø BOREHOLE CUTTINGS 2" Ø SPLIT SPOON	1SS	X	9	0
-5.0	CL-CLAY, some silt, little sand, trace gravel, stiff, light brown, moist, low plasticity - firm - stiff			2SS	X	5	0
				3SS	X	9	0
	END OF HOLE @ 6.0ft BGS	-6.0					
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-10)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH7-96
DATE COMPLETED: SEPTEMBER 9, 1996
DRILLING METHOD: 4X" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SP-SAND, little to some gravel, trace silt, loose, medium grained, poorly graded, brown, moist - concrete			ISS	X	6	0
-5.0	- auger refusal END OF HOLE @ 4.0ft BGS	-4.0					
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-11)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH7A-96
DATE COMPLETED: SEPTEMBER 9, 1996
DRILLING METHOD: 4 1/4" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SC-SAND (FILL), some clay, little silt and gravel, loose, medium grained, well graded, moist, black to dark brown CL-CLAY, some silt, little sand, trace gravel, low plasticity, brown, moist	-1.0	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	1SS	X	6	0
-5.0				2SS	X	4	0
-6.0	END OF HOLE @ 6.0ft BGS	-6.0		3SS	X	11	0
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND ▼ STATIC WATER LEVEL ▼

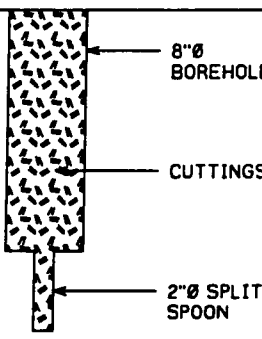
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-12)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH8-96
DATE COMPLETED: SEPTEMBER 9, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some gravel, little silt, trace clay, medium dense, medium to coarse grained, black, brown, moist, red brick - no sample obtained, concrete			ISS	X	10	0
-5.0	CL-CLAY, some silt, little sand, trace gravel, low plasticity, soft, brown and gray, moist	-4.0		2SS	X	3	0
-7.5				3SS	X	9	0
	END OF HOLE @ 8.0ft BGS	-8.0					
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-13)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH9-96
DATE COMPLETED: SEPTEMBER 9, 1996
DRILLING METHOD: 4X" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some gravel, little silt, trace clay, medium dense, medium grained, black, rust and brown, moist	-2.0	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	ISS	X	12	0
-2.5	CL-CLAY, some silt, little sand, trace gravel, stiff, low plasticity, brown and gray, moist	-2.0		2SS	X	13	0
-5.0		-6.0		3SS	X	6	0
-7.5	END OF HOLE @ 6.0ft BGS						
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

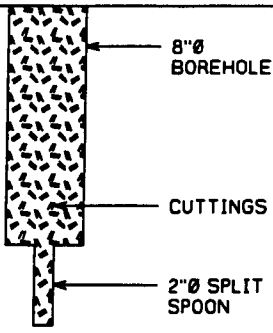
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-14)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH10-96
DATE COMPLETED: SEPTEMBER 9, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), little gravel and silt, loose, medium grained, well graded, black and brown, moist	-2.0	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	1SS	X	4	0
	SP-SAND, little gravel, trace silt, loose, medium grained, poorly graded, brown, moist	-4.0		2SS	X	7	0
-5.0	CL-CLAY, some silt, little sand, trace gravel, low plasticity, firm, brown and gray, moist	-7.5		3SS	X	6	0
-7.5	END OF HOLE @ 8.0ft BGS	-8.0		4SS	X	8	0
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-15)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH11-96
DATE COMPLETED: SEPTEMBER 9, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some gravel, little silt, medium dense, coarse grained, black and gray, well graded, moist		 8"Ø BOREHOLE CUTTINGS	1SS	X	13	0
-2.5	- concrete, split spoon refusal			2SS	X	>50	0
-5.0	- auger refusal END OF HOLE @ 4.0ft BGS	-4.0					
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-16)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH11A-96
DATE COMPLETED: SEPTEMBER 9, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some gravel, trace silt, medium dense, coarse grained, well graded, brown, black and gray, moist		 8"Ø BOREHOLE CUTTINGS	1SS	X	15	0
-3.5	- auger refusal END OF HOLE @ 3.5ft BGS	-3.5		2SS	X	14	0
-5.0							
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-17)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH11B-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt and gravel, medium dense, medium to fine grained, well graded, black and brown, moist, pieces of concrete and red brick	-2.0	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	1SS	X	17	0
-5.0	CL-CLAY, some silt, little sand, trace gravel, very stiff, low plasticity, brown and gray, moist - stiff			2SS	X	17	0
				3SS	X	9	0
	END OF HOLE @ 6.0ft BGS	-6.0					
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-18)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH12-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	0.00					
2.5	SM-SAND (FILL), some silt and gravel, trace clay, very loose, fine to medium grained, well graded, brown and black, moist, pieces of wood	-2.0	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	1SS	X	2	0
5.0	CL-CLAY, some silt, little sand, trace gravel, firm, low plasticity, green/blue, gray and tan, moist - soft to firm - firm - brown			2SS	X	6	0
7.5				3SS	X	4	0
	END OF HOLE @ 8.0ft BGS	-8.0		4SS	X	5	0
10.0							
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

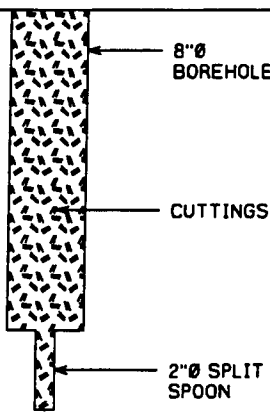
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH13-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4X" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt, little to some gravel, trace to little clay, medium dense, dark brown to black, moist	-2.0	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	1SS	X	11	0
-5.0	SP-SAND, little gravel, trace silt, medium dense, poorly graded, medium grained, brown, moist	-6.0		2SS	X	13	0
-7.5	CL-CLAY, some silt, little sand, trace gravel, stiff, low plasticity, brown and gray, moist - firm, gray with rust staining	-8.0		3SS	X	5	0
-10.0	END OF HOLE @ 10.0ft BGS	-10.0		4SS	X	9	0
-12.5				5SS	X	6	0
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-20)
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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH14-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4X" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some gravel, trace to little silt and clay, medium dense, poorly graded, medium grained, black, moist	-4.0	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	1SS	X	10	0
-5.0	CL-CLAY, some silt, little sand, trace to little gravel, soft, low plasticity, brown, moist			2SS	X	11	0
-7.5				3SS	X	3	0
-8.0	END OF HOLE @ 8.0ft BGS			4SS	X	19	0
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

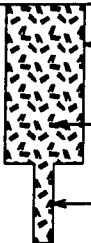
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH15-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	Fill, some clay, little sand, silt and gravel, medium dense to stiff, black, gray, brown and rust, moist	-3.0	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	ISS	X	13	0
-5.0	CL-CLAY, some silt, little sand and gravel, stiff, low plasticity, gray, brown, moist - very soft to soft			2SS	X	12	0
				3SS	X	2	0
	END OF HOLE @ 6.0ft BGS	-6.0					
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

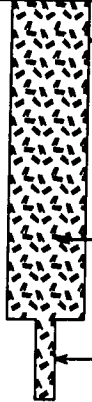
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH16-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4X" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SW-SAND (FILL), some gravel, little silt and clay, medium dense, well graded, medium grained, black and brown with rust staining, moist - some gravel and clay, little silt, green staining	-3.0	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	ISS	X	10	0
				(2SS)	X	18	0
-5.0	CL-CLAY, some silt, little sand, trace to little gravel, very stiff, low plasticity, brown and gray with green staining - soft			3SS	X	3	0
-7.5	- firm, green and black staining - stiff, gray			4SS	X	7	0
-10.0	END OF HOLE @ 10.0ft BGS	-10.0		(5SS)	X	9	0
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

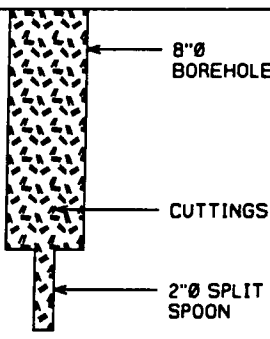
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH17-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4X" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SW-SAND (FILL), some gravel, little silt and clay, medium dense, well graded, medium grained, black, brown and rust, moist	-4.0	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	1SS	X	13	0
-5.0	CL-CLAY, some silt, little sand, trace gravel, firm, low plasticity, brown, moist			2SS	X	16	0
-7.5				3SS	X	5	0
-8.0	END OF HOLE @ 8.0ft BGS	-8.0		4SS	X	5	0
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND ▼ STATIC WATER LEVEL ▼

ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH19-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt, trace gravel, loose, fine to medium grained, poorly graded, brown, moist - medium dense, moist to wet		 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	ISS	X	7	0
				2SS	X	23	0
-5.0	CL-CLAY, some silt, little sand, trace gravel, stiff, low plasticity, brown, moist	-4.0		3SS	X	12	0
-7.5				4SS	X	7	0
	END OF HOLE @ 8.0ft BGS	-8.0					
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-26)
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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH20-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt, trace gravel, loose, fine to medium grained, poorly graded, brown, moist		 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	1SS	X	6	0
				2SS	X	8	0
-5.0	CL-CLAY, some silt, little sand, trace gravel, stiff, low plasticity, brown, moist	-4.0		3SS	X	13	0
-7.5				4SS	X	7	0
	END OF HOLE @ 8.0ft BGS	-8.0					
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-27)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH21-96
DATE COMPLETED: SEPTEMBER 11, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt, trace gravel, loose, fine to medium grained, poorly graded, brown, moist - concrete - auger refusal	-3.5	 8"Ø BOREHOLE CUTTINGS	ISS		4	0
-5.0	END OF HOLE @ 3.5ft BGS			2SS		3	0
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

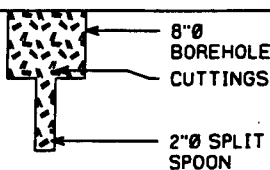
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-28)
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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH21A-96
DATE COMPLETED: SEPTEMBER 11, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt, trace gravel, loose, fine to medium grained, poorly graded, brown, moist - concrete - split spoon refusal	-3.5		ISS	X	6	0
-5.0	END OF HOLE @ 3.5ft BGS			2SS	X	>50	0
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-29)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH21B-96
DATE COMPLETED: SEPTEMBER 11, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	See stratigraphic log BH21A-96 for stratigraphy - concrete, split spoon refusal END OF HOLE @ 1.5ft BGS	-1.5	 2"Ø SPLIT SPOON CUTTINGS	1SS	X	>50	0
-2.5							
-5.0							
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH21C-96
DATE COMPLETED: SEPTEMBER 11, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	See stratigraphic log BH21-96 for stratigraphy - concrete, split spoon refusal END OF HOLE @ 1.0ft BGS	-1.0	 2"Ø PLIT SPOON CUTTINGS	ISS	X	>50	0
-2.5							
-5.0							
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-31)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH21D-96
DATE COMPLETED: SEPTEMBER 11, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	See stratigraphic log BH21-96 for stratigraphy		 8"Ø BOREHOLE CUTTINGS	ISS	X	10	0
-2.5	- auger refusal	-4.0		2SS	X	18	0
-5.0	END OF HOLE @ 4.0ft BGS						
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH21E-96
DATE COMPLETED: SEPTEMBER 11, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt, trace gravel, loose, fine to medium grained, poorly graded, brown, moist	-3.5	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	1SS	X	7	0
-2.5	- concrete, split spoon refusal			2SS	X	>50	0
-2.5	END OF HOLE @ 3.5ft BGS				X		
-5.0							
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

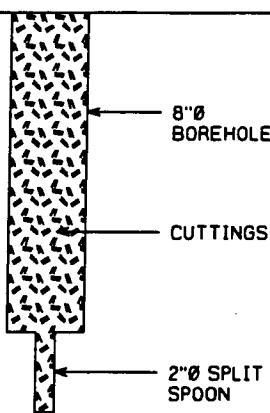
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-55)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH37-96
DATE COMPLETED: SEPTEMBER 16, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	Asphalt and crushed stone						
-2.5	CL-CLAY, some silt, little sand, trace gravel, soft to firm, low plasticity, dark brown, moist, petroleum-like odor - dark gray to green, petroleum-like odor - firm - brown and gray, petroleum-like odor - brown, no odor	-2.0	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	1SS	X	4	105.0
-5.0				2SS	X	5	22.7
-7.5				3SS	X	6	0.0
-10.0				4SS	X	7	0.0
-10.0	END OF HOLE @ 10.0ft BGS	-10.0					
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

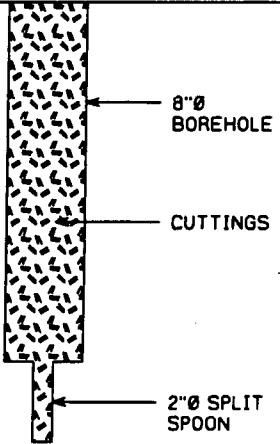
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH38-96
DATE COMPLETED: SEPTEMBER 16, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	Asphalt and crushed stone						
-2.5	SM-SAND (FILL), some silt, little sand, trace gravel, dense, fine to medium grained, well graded, dark brown to black, moist, no odor	-1.0		1SS	X	32	0.0
-5.0	SP-SAND, some to little gravel, trace silt, very loose, medium grained, poorly graded, gray with black staining, moist, petroleum-like odor	-3.0		2SS	X	2	1227
-7.5	CL-CLAY, some silt, little sand, trace gravel, very soft to soft, low plasticity, brown and gray with slight green staining, moist, petroleum-like odor	-6.0		3SS	X	2	750
-10.0	- firm			4SS	X	7	159
-11.0	- brown, no odor			5SS	X	8	0.0
	END OF HOLE @ 11.0ft BGS	-11.0					
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☐ STATIC WATER LEVEL ☐
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH39-96
DATE COMPLETED: SEPTEMBER 16, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	Asphalt - concrete		 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON				
-2.5	CL-CLAY, some silt, little sand, trace gravel, soft, low plasticity, brown and gray, little black staining, moist, no odor	-2.0		1SS	X	3	0.0
-5.0				2SS	X	2	0.0
	END OF HOLE @ 6.0ft BGS	-6.0					
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

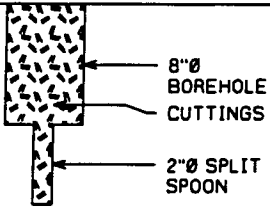
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH40-96
DATE COMPLETED: SEPTEMBER 17, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	Brick - concrete	-1.0	 8" Ø BOREHOLE CUTTINGS 2" Ø SPLIT SPOON	1SS	X	4	31.6
-2.5	CL-CLAY, some silt, little sand, trace gravel, soft to firm, low plasticity, brown and gray with green and black staining, moist, petroleum-like odor			2SS	X	6	4.3
-5.0	- brown and gray, no staining and no odor END OF HOLE @ 5.0ft BGS	-5.0					
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

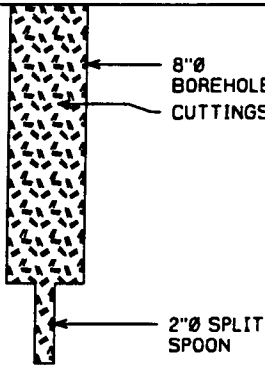
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH41-96
DATE COMPLETED: SEPTEMBER 17, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
2.5	-brick - concrete SM-SAND (FILL), some silt, trace gravel, loose, fine to medium grained, poorly graded, brown, moist	-1.0		1SS	X	5	1784
5.0	- black - oil-like sheen on top of soil	-5.0		2SS	X	4	1843
7.5	CL-CLAY, some silt, little sand, trace gravel, firm to stiff, low plasticity, brown, moist, no odor			3SS	X	8	0.0
10.0	END OF HOLE @ 9.0ft BGS	-9.0		4SS	X	11	0.0
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

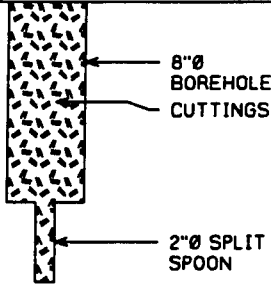
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH42-96
DATE COMPLETED: SEPTEMBER 17, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	-brick - concrete SM-SAND (FILL), some silt, trace gravel, loose, fine to medium grained, poorly graded, brown, moist	-1.0 -3.0		ISS	X	6	0.0
-5.0	- black, no odor CL-CLAY, some silt, little sand, trace gravel, stiff, low plasticity, brown with slight green and black staining, moist	-7.0		2SS	X	13	0.0
-7.5	END OF HOLE @ 7.0ft BGS			3SS	X	6	0.0
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

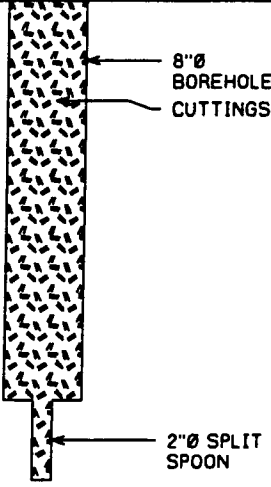
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH43-96
DATE COMPLETED: SEPTEMBER 18, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt, trace gravel, very loose, fine grained, poorly graded, brown, moist		 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	1SS	X	2	0.0
-5.0	- wet, fine to medium grained			2SS	X	2	1001
-7.5	- trace to little gravel, black, petroleum-like odor			3SS	X	2	1041
-10.0	CL-CLAY, some silt, little sand, trace gravel, soft, low plasticity, gray and brown, slight green staining, moist, petroleum-like odor	-8.0		4SS	X	3	60.3
-12.5	- very soft to soft, gray and brown, no odor	-12.0		5SS	X	2	0.0
-12.5	END OF HOLE @ 12.0ft BGS						
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

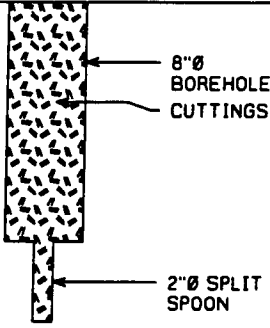
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH44-96
DATE COMPLETED: SEPTEMBER 18, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	- brick - concrete	-2.0		1SS	X	18	0.0
-5.0	Fill, silt, sand, and gravel, pieces of concrete and rock, mixture of brown, black and gray/white, very stiff, moist	-5.0		2SS	X	3	133
-7.5	CL-CLAY, some silt, little sand, trace gravel, soft, low plasticity, gray and brown mixture, moist, petroleum-like odor - brown, petroleum-like odor	-8.0		3SS	X	3	0.0
-8.0	END OF HOLE @ 8.0ft BGS						
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-63)
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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH45-96
DATE COMPLETED: SEPTEMBER 18, 1996
DRILLING METHOD: 4X" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	- brick - concrete SM-SAND (FILL), some silt, trace gravel, loose, poorly graded, fine to medium grained, brown, moist	-1.0 -3.0	 8"Ø BOREHOLE CUTTINGS 2"Ø SPLIT SPOON	1SS	X	7	0.0
-5.0	CL-CLAY, some silt, little sand, trace gravel, soft to firm, low plasticity, brown, moist - black with green staining, no odor			2SS	X	4	0.0
-7.5	- brown			3SS	X	5	0.0
-9.0	END OF HOLE @ 9.0ft BGS	-9.0		4SS	X	15	0.0
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH100-96
DATE COMPLETED: SEPTEMBER 6, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: S. MCVAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SP-SAND (FILL), trace silt and gravel, loose, medium grained, poorly graded, yellowish-brown, moist	-2.2	 CUTTINGS 8" Ø BOREHOLE	ISS	X	5	0
-5.0	CL-CLAY, some sand, firm, medium plasticity, gray with oxidation stains, moist			2SS	X	6	0
-6.0	END OF HOLE @ 6.0ft BGS	-6.0		3SS	X	16	0
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-69)
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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH101-96
DATE COMPLETED: SEPTEMBER 6, 1996
DRILLING METHOD: 4 W" ID HSA
CRA SUPERVISOR: S. MCVAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	CL-CLAY, some sand, firm, high plasticity, yellowish-brown, moist	-1.5		1SS	X	5	0
	SW-SAND, trace silt, loose, medium grained, well graded, yellowish-brown, moist			2SS	X	25	0
-5.0	CL-CLAY and SAND, firm, high plasticity, brown, moist	-3.8		3SS	X	6	0
	SW-SAND, little gravel, trace silt, loose, medium grained, well graded, brown, wet	-4.5			X		
-7.5	CL-CLAY, little sand, very soft, high plasticity, gray, wet	-6.0		4SS	X	2	0
-10.0	END OF HOLE @ 10.0ft BGS	-10.0		5SS	X	4	0
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH102-96
DATE COMPLETED: SEPTEMBER 6, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: S. MCVAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SP-SAND, some gravel, medium dense, medium grained, well graded, yellowish brown, moist, concrete pieces CL-CLAY, little sand, stiff, low plasticity, brown, moist	-1.7		ISS	X	17	0
				2SS	X	21	0
-5.0	END OF HOLE @ 4.0ft BGS	-4.0					
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☐ STATIC WATER LEVEL ☐
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH102A-96
DATE COMPLETED: SEPTEMBER 6, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: S. MCVAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SW-SAND (FILL), trace gravel, loose, fine grained to medium grained, well graded, yellowish brown, moist	-0.3 -0.7 -0.8	 CUTTINGS 8" Ø BOREHOLE	1SS	X	4	0
	CL-CLAY, trace sand, soft, high plasticity, brown, moist			2SS	X	5	0
-5.0	SW-SAND (FILL), trace gravel, loose, medium grained, brown, moist			3SS	X	6	0
-7.5	CL-CLAY, little sand, trace gravel, soft, high plasticity, brown, moist, pieces of brick, concrete - low plasticity - black stains			4SS	X	14	0
-10.0	END OF HOLE @ 10.0ft BGS	-10.0		5SS	X	14	0
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-72)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH103-96
DATE COMPLETED: SEPTEMBER 6, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: S. MCVAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	CL-CLAY and SAND, very soft, medium plasticity, gray, moist, gasoline-like odor		 CUTTINGS 8" Ø BOREHOLE	ISS	X	2	0
-2.5	Auger refusal on concrete END OF HOLE @ 3.0ft BGS	-3.0		2SS	X	14	0
-5.0							
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-73)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH103A-96
DATE COMPLETED: SEPTEMBER 6, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: S. MCVAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SW-SAND, trace gravel and silt, loose, medium grained, brown, moist CL-CLAY, some sand, soft, medium to low plasticity, gray/brown, green, moist, gasoline-like odor - sand lenses	-2.2	 CUTTINGS 8" Ø BOREHOLE	1SS	X	4	0
-5.0	- low plasticity			2SS	X	7	0
-7.5				3SS	X	4	0
-10.0	- gray END OF HOLE @ 10.0ft BGS	-10.0		4SS	X	11	0
-12.5				5SS	X	12	0
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH104-96
DATE COMPLETED: SEPTEMBER 6, 1996
DRILLING METHOD: 4 X" ID HSA
CRA SUPERVISOR: S. MCVAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
2.5	CL-CLAY, trace sand, firm, low plasticity, gray, moist		 CUTTINGS 8" Ø BOREHOLE	1SS	X	6	0
	- gasoline-like odor			2SS	X	6	0
5.0	- brownish gray, oxidation stains			3SS	X	7	0
	- gasoline-like odor			4SS	X	16	0
7.5	- no odor			5SS	X	9	0
	- trace gravel, gray						
10.0	END OF HOLE @ 10.0ft BGS	-10.0					
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-75)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH105-96
DATE COMPLETED: SEPTEMBER 9, 1996
DRILLING METHOD: 4 X" ID HSA
CRA SUPERVISOR: K. VANDER MEULEN

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM/GW-SAND and GRAVEL (FILL), some silt, little clay, loose, fine grained sand, well graded gravel, dark brown to black, very moist, bricks	-1.5	 CUTTINGS 8" Ø BOREHOLE	1SS	X	7	0
	SM-SAND (FILL), little clay, loose, fine grained, poorly graded, brown, moist	-2.2		2SS	X	13	0
-5.0	CL-CLAY, little silt, stiff, low to medium plasticity, brown/gray, moist			3SS	X	14	0
-7.5	- little to some silt, brown			4SS	X	15	0
	END OF HOLE @ 8.0ft BGS	-8.0					
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH106-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: J. McCLELLAN

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	GM/SP-GRAVEL and SAND (FILL), concrete, brick, loose, coarse grained, dark brown	-2.0		ISS	X	6	0
	SC-SAND, medium grained, tan			2SS	X	20	0
-5.0				3SS	X	5	0
-7.5	CL-CLAY, stiff, tan/gray, dry - compact, moist	-7.0		4SS	X	14	0
-10.0	END OF HOLE @ 10.0ft BGS	-10.0		5SS	X	10	0
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☐ STATIC WATER LEVEL ☐
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL-77)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH107-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4 X" ID HSA
CRA SUPERVISOR: J. McCLELLAN

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	CL-CLAY (FILL), bricks, stiff, tan, moist	-2.5		ISS	X	13	0
-5.0	CL-CLAY, trace silt, dense, compact, very stiff, tan, brown, gray	-6.0		2SS	X	17	0
-7.5	- stiff, tan/gray			3SS	X	7	0
-10.0	END OF HOLE @ 6.0ft BGS						
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH108-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: J. McCLELLAN

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SW-SAND, medium dense, medium grained, tan, dry - moist, some staining	-4.0		ISS	X	14	0
-5.0	CL-CLAY, some sand, trace silt, firm, tan-gray, dry - dense, very stiff			2SS	X	6	0
-7.5				3SS	X	8	0
	END OF HOLE @ 8.0ft BGS	-8.0		4SS	X	18	0
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☐ STATIC WATER LEVEL ☐
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH109-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: D. MEIN

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SP-SAND (FILL), trace silt and gravel, medium dense, fine to medium grained, brown, moist	-2.5	 CUTTINGS 8" Ø BOREHOLE	ISS	X	17	0
-5.0	CL-CLAY (FILL), some silt, trace sand and gravel, firm, brown with orange and black staining - brick pieces, red - wood pieces	-4.5		2SS	X	7	0
-7.5	CL-CLAY, some silt, trace to some sand, trace gravel, firm, laminated, gray mottled rust orange	-8.0		3SS	X	9	0
-8.0	END OF HOLE @ 8.0ft BGS			4SS	X	7	0
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH110-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4 1/4" ID HSA
CRA SUPERVISOR: D. MEIN

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SP/ML-MIXED SAND and SILT (FILL), little crushed concrete and gravel, loose, black and gray, moist	-1.5	 CUTTINGS 8" Ø BOREHOLE	ISS	X	6	0
-2.5	SP-SAND, trace silt and gravel, medium dense, fine to medium grained, brown	-2.5		2SS	X	25	0
-5.0	FILL, concrete, brick, wood, plastic Auger refusal END OF HOLE @ 3.8ft BGS	-3.8					
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
 WATER FOUND ▼ STATIC WATER LEVEL ▼
 ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH110A-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: D. MEIN

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	SP/CL-SAND and CLAY (FILL), interlayered sand and gravel with clay, loose, brown, black and gray, moist	-1.8		ISS	X	7	0
-2.5	CL-CLAY, some silt, trace sand and gravel, occasional sand seam, firm, grayish brown	-2.3		2SS	X	5	0
-5.0	CL-CLAY, some silt, little sand, trace gravel, occasional dark brown and black thin sand seams (1/4" thick), firm, grayish brown	-4.5		3SS	X	9	0
-7.5	CL-CLAY, some silt, trace to little sand, trace gravel, occasional sand partings, stiff, mottled gray and rust orange	-6.0					
	END OF HOLE @ 6.0ft BGS						
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH111-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4 X" ID HSA
CRA SUPERVISOR: D. MEIN

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SP-SAND (FILL), trace silt and gravel, loose, fine to medium grained, brown, moist - little crushed concrete and slag		 CUTTINGS 8" Ø BOREHOLE	ISS	X	8	0
-3.7	Auger refusal on possible concrete END OF HOLE @ 3.7ft BGS	-3.7		2SS	X	11	0
-5.0							
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH111A-96
DATE COMPLETED: SEPTEMBER 10, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: D. MEIN

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	CL/SP-CLAY and SAND (FILL), brick and wood, glass, trace gravel, medium dense, mixed brown, black and gray, moist	-3.0		1SS	X	10	0
-5.0	CL-CLAY, some silt, trace sand and gravel, occasional silt and sand lense, stiff, mottled gray and rust orange			2SS	X	7	0
				3SS	X	8	0
-7.5	END OF HOLE @ 6.0ft BGS	-6.0					
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

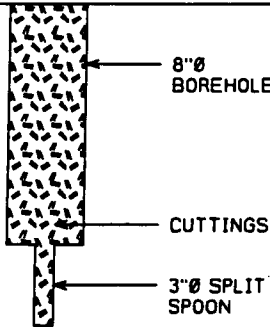
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH34-96
DATE COMPLETED: SEPTEMBER 13, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt, trace gravel, loose, brown, moist, poorly graded, fine to medium grained, black, rust	-2.0	 8"Ø BOREHOLE CUTTINGS 3"Ø SPLIT SPOON	1SS	X	6	0
	CL-CLAY, some silt, little sand, trace gravel, firm, low plasticity, brown and gray, moist			2SS	X	7	0
-5.0	- gray, petroleum-like odor			3SS	X	5	197
-7.5	- brown and gray, stiff			4SS	X	14	0
	END OF HOLE @ 8.0ft BGS	-8.0					
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH35-96
DATE COMPLETED: SEPTEMBER 13, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt, trace gravel and clay, loose, fine to medium grained, poorly graded, dark brown to black, moist - brown	-2.0	 8" Ø BOREHOLE CUTTINGS 3" Ø SPLIT SPOON	ISS	X	5	0
-5.0	CL-CLAY, some sand, little silt, stiff, low plasticity, brown and gray, moist - some silt, little sand, firm			2SS	X	12	0
				3SS	X	6	0
	END OF HOLE @ 6.0ft BGS	-6.0					
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MICHIGAN

HOLE DESIGNATION: BH36-96
DATE COMPLETED: SEPTEMBER 13, 1996
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft.	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt, little sand, trace to little clay, very loose, poorly graded, fine to medium grained, brown and light brown	-2.0	 8"Ø BOREHOLE CUTTINGS 3"Ø SPLIT SPOON	1SS	X	2	0
-5.0	CL-CLAY, some silt, little sand, trace gravel, firm, brown and gray, moist - little silt and sand, trace gravel, soft to firm	-6.0		2SS	X	6	0
-7.5	END OF HOLE @ 6.0ft BGS			3SS	X	4	0
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH124-96
DATE COMPLETED: SEPTEMBER 14, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	FILL						
-2.5	SM-SAND, some silt, little clay, medium dense, very fine to fine sand, poorly graded, brown with black staining, moist, petroleum odor	-2.0	 CUTTINGS 8" Ø BOREHOLE	1SS	X	17	11.8
-5.0	CL-CLAY, some silt, firm, medium to high plasticity, olive green, strong petroleum/chemical odor	-4.0		2SS	X	8	8.7
-7.5				3SS	X	5	3.2
	END OF HOLE @ 8.0ft BGS	-8.0					
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH125-96
DATE COMPLETED: SEPTEMBER 14, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	FILL						
-2.5		-2.5	 CUTTINGS 8" Ø BOREHOLE	ISS	X	5	0
	SM-SAND, some silt, trace gravel, very loose, very fine sand, fine gravel, poorly graded, black, petroleum odor	-3.8		2SS	X	2	3.8
-5.0	CL-CLAY, some silt, high plasticity, firm, olive green, strong petroleum/chemical odor			3SS	X	6	265.0
-7.5	- brown	-8.0		4SS	X	5	7.9
	END OF HOLE @ 8.0ft BGS						
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL105)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH126-96
DATE COMPLETED: SEPTEMBER 14, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SW-SAND, little gravel, little silt, loose, fine sand to medium gravel, poorly graded, black, moist	-0.5	 CUTTINGS 8" Ø BOREHOLE	1SS	X	6	3.0
-2.5	SM-SAND, some silt, trace gravel, loose, very fine sand, fine gravel, poorly graded, black	-2.3		2SS	X	4	3.4
-5.0	CL-CLAY, little sand, little silt, soft, medium plasticity, olive green, wet - brown	-5.0		3SS	X	3	0.3
-7.5	SM-SAND, and silt, little clay, very loose, very fine sand, well graded, gray, wet	-6.0					
-7.5	END OF HOLE @ 6.0ft BGS						
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☐ STATIC WATER LEVEL ☐
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL106)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH127-96
DATE COMPLETED: SEPTEMBER 14, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND, little silt, little gravel, loose, very fine sand to fine gravel, poorly graded, brown, black staining, moist - some silt, trace clay, trace gravel		 CUTTINGS 8" Ø BOREHOLE	1SS	X	9	4.1
-5.0		-4.7		2SS	X	5	75.1
-7.5	CL-CLAY, little sand, little silt, firm, high plasticity, olive-green to brown, moist			3SS	X	7	6.8
		-8.0		4SS	X	6	3.8
	END OF HOLE @ 8.0ft BGS						
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☐ STATIC WATER LEVEL ☐
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GENRAL MOTORS CORPORATION
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH128-96
DATE COMPLETED: SEPTEMBER 14, 1996
DRILLING METHOD: 4 X" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SW-SAND, little gravel, trace silt, loose, fine to medium grained sand, fine gravel, poorly graded, black, moist	-1.2	 CUTTINGS 8" Ø BOREHOLE	1SS	X	8	1.3
	CL-CLAY, trace sand, trace silt, firm, high plasticity, olive green			2SS	X	6	0.2
-5.0				3SS	X	13	6.7
	CONCRETE and WOOD	-5.7 -6.3		4SS	X	15	0.1
-7.5	CL-CLAY, trace sand, trace silt, stiff, high plasticity, brown, moist	-8.0					
	END OF HOLE @ 8.0ft BGS						
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL129)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH141-96
DATE COMPLETED: OCTOBER 9, 1996
DRILLING METHOD: 4 X" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	CONCRETE		 CUTTINGS 8" Ø BOREHOLE				
-5.0	CL-CLAY, little silt, trace sand, firm, high plasticity, brown, dry	-4.0		1SS	X	5	0
-7.5				2SS	X	10	0
-8.0	END OF HOLE @ 8.0ft BGS	-8.0					
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL130)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH142-96
DATE COMPLETED: OCTOBER 9, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	FILL, cobble size						
-5.0				1SS	X	4	
-7.5	CONCRETE END OF HOLE @ 7.5ft BGS	-7.5 -7.5		2SS	X	9	
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☐ STATIC WATER LEVEL ☐
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL131)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH142A-96
DATE COMPLETED: OCTOBER 9, 1996
DRILLING METHOD: 4 1/4" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	CONCRETE						
-2.5							
		-3.3					
		-3.7					
-5.0	SW/GW-SAND and GRAVEL (FILL), trace silt, medium dense, fine to coarse sand, fine to medium gravel, well graded, dark gray, dry	-4.5					
	CL-CLAY, little silt, firm, high plasticity, light brown, moist						
-7.5	END OF HOLE @ 4.5ft BGS						
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							



CUTTINGS

8" Ø
BOREHOLE

ISS

27

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☐ STATIC WATER LEVEL ☐
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL132)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH142B-96
DATE COMPLETED: OCTOBER 9, 1996
DRILLING METHOD: 4 X" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	CONCRETE						
-2.5	SW/GW-SAND and GRAVEL, trace silt, loose, fine to coarse sand, fine gravel, well graded, black, moist	-2.0	 CUTTINGS 8" Ø BOREHOLE	1SS	X	7	
-5.0	CL-CLAY, trace silt, soft, high plasticity, light brown, moist	-4.2		2SS	X	3	
-7.5	SM-SAND, some silt, loose, very fine to medium sand, brown, moist, dilatant	-7.3		3SS	X	6	
-10.0	CL-CLAY, trace silt, firm, high plasticity, gray, moist	-9.3		4SS	X	5	
	END OF HOLE @ 10.0ft BGS	-10.0					
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL133)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH143-96
DATE COMPLETED: OCTOBER 9, 1996
DRILLING METHOD: 4 1/4" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE				
				NUMBER	STATE	'N' VALUE	PID (ppm)	
	GROUND SURFACE	0.00						
-2.5	SW/GW-SAND and GRAVEL (FILL), trace silt, medium dense, very fine to coarse sand, fine to medium gravel, well graded, gray, dry - brick fragments			ISS	X	22		
-5.0				2SS	X	5		
-7.5	SW-SAND, some gravel, trace silt, loose, very fine to coarse sand, fine gravel, well graded, gray-brown, wet, weak chemical odor	-5.7		3SS	X	7		
				4SS	X	6		
-9.0	END OF HOLE @ 9.0ft BGS	-9.0		5SS	X	-		
-10.0								
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND  STATIC WATER LEVEL 
ANALYSIS 

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL134)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH143A-96
DATE COMPLETED: OCTOBER 9, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	No sample						
-2.5	SW/GW-SAND and GRAVEL (FILL), medium dense, fine to coarse sand, fine to medium gravel, well graded, gray, dry, red brick fragments	-2.0		ISS	X	10	
-5.0	- wet			2SS	X	15	
	END OF HOLE @ 6.0ft BGS	-6.0					
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL135)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH143B-96
DATE COMPLETED: OCTOBER 9, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	No sample						
-2.5	SW/GW-SAND and GRAVEL (FILL), medium dense, fine to coarse sand, fine to medium gravel, well graded, gray, dry	-2.0		1SS	X	10	
-5.0				2SS	X	4	
-7.5		-6.5		3SS	X	-	
-7.5	END OF HOLE @ 6.5ft BGS						
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL136)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH143C-96
DATE COMPLETED: OCTOBER 9, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	CONCRETE						
-2.5	SM-SAND, little silt, trace clay, loose, very fine to medium sand, light brown, dry	-1.3	 CUTTINGS 8" Ø BOREHOLE	ISS	X	5	
-5.0				2SS	X	2	
-7.5	CL-CLAY, stiff, high plasticity, gray, moist/dry	-8.0		3SS	X	9	
	END OF HOLE @ 8.0ft BGS	-8.0					
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☐ STATIC WATER LEVEL ☐
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL137)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH144-96
DATE COMPLETED: OCTOBER 9, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	CONCRETE						
-2.5	SW-SAND, trace gravel, medium dense, medium to coarse sand, fine gravel, poorly graded, light brown, moist	-1.5	 CUTTINGS 8" Ø BOREHOLE	1SS	X	10	
-5.0				2SS	X	5	
-7.5				3SS	X	2	
	CL-CLAY, firm, high plasticity, gray, dry	-7.8		4SS	X	6	
-10.0	END OF HOLE @ 10.0ft BGS	-10.0					
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH145-96
DATE COMPLETED: OCTOBER 9, 1996
DRILLING METHOD: 4 1/4" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SW/GW-SAND and GRAVEL (FILL), medium dense, fine to coarse sand, fine gravel, well graded, gray, dry		 CUTTINGS 8" Ø BOREHOLE	ISS	X	25	
-5.0				2SS	X	13	
-5.0				3SS	X	7	
-7.5	END OF HOLE @ 5.5ft BGS	-5.5					
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
 WATER FOUND ☒ STATIC WATER LEVEL ☒
 ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH145A-96
DATE COMPLETED: OCTOBER 10, 1996
DRILLING METHOD: 4 M" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SW/GW-SAND and GRAVEL (FILL), medium dense, well graded, fine to coarse sand, fine to medium gravel, brick fragments, gray, dry			1SS	X	29	
	- wet			2SS	X	12	
-5.0	- yellow-green staining on top of concrete	-5.0		3SS	X		
	CONCRETE	-5.3		4SS	X	8	
-7.5	SW-SAND, trace gravel and silt, loose, very fine to coarse sand, fine gravel, gray, wet, yellow-green fragments			5SS	X	6	
	CL-CLAY, trace silt, firm to stiff, high plasticity, gray, moist						
-10.0	END OF HOLE @ 10.0ft BGS	-10.0					
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH146-96
DATE COMPLETED: OCTOBER 10, 1996
DRILLING METHOD: 4 X" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
2.5	SM-SAND, some silt, loose, very fine to fine sand, light brown, dry	-1.1	 CUTTINGS 8" Ø BOREHOLE	1SS	X	6	
	CL-CLAY, some silt, trace sand, firm, medium plasticity, orange-brown, moist			2SS	X	6	
5.0				3SS	X	5	
	END OF HOLE @ 6.0ft BGS	-6.0					
7.5							
10.0							
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH147-96
DATE COMPLETED: OCTOBER 10, 1996
DRILLING METHOD: 4 X" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND, some silt, trace clay, very loose, very fine to medium sand, well graded, dark brown to black, wet		 CUTTINGS 8" Ø BOREHOLE	1SS	X	2	
-5.0	CL-CLAY, some silt, trace sand, very soft, medium to high plasticity, brown, moist	-4.0		2SS	X	1	
-7.5	- little silt, stiff, high plasticity, gray-brown, dry			3SS	X	2	
	END OF HOLE @ 8.0ft BGS	-8.0		4SS	X	11	
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH148-96
DATE COMPLETED: OCTOBER 10, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SW/GW-SAND and GRAVEL (FILL), medium dense, fine to coarse sand, fine to medium gravel, well graded, gray, dry		 CUTTINGS 8" Ø BOREHOLE	1SS	X	21	
-5.0	- wet CONCRETE			2SS	X	10	
				3SS	X		
-7.5	SM-SAND, little silt, loose, very fine to medium sand, brown, wet	-6.0 -6.1		4SS	X	6	
	CL-CLAY, trace sand, trace gravel, firm to stiff, low plasticity, gray, dry			5SS	X	8	
-10.0	END OF HOLE @ 10.0ft BGS	-10.0					
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL217)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH149-96
DATE COMPLETED: OCTOBER 10, 1996
DRILLING METHOD: 4 1/4" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SW-SAND, little silt and gravel, loose, very fine to coarse sand, fine to medium gravel, well graded, brown, moist Auger refusal, concrete and steel END OF HOLE @ 2.0ft BGS	-2.0	 CUTTINGS 8" Ø BOREHOLE	ISS	X		
-5.0							
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☐ STATIC WATER LEVEL ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL218)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH149A-96
DATE COMPLETED: OCTOBER 10, 1996
DRILLING METHOD: 4 X" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	FILL		 CUTTINGS 8" Ø BOREHOLE				
-2.5	SW/GW-SAND and GRAVEL (FILL), trace silt, loose, very fine to coarse sand, fine to medium gravel, well graded, dark brown, wet	-2.0		1SS	X	5	
-5.0	CL-CLAY, little silt, trace sand, soft, high plasticity, gray-brown, moist	-4.0		2SS	X	6	
-7.5		-8.0		3SS	X	3	
	END OF HOLE @ 8.0ft BGS						
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL219)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH150-96
DATE COMPLETED: OCTOBER 10, 1996
DRILLING METHOD: 4 X" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	SW-SAND, trace gravel, dense, medium to coarse sand, fine gravel, brown, dry	-0.8	 CUTTINGS 8" Ø BOREHOLE	1SS	X	35	
2.5	SW/GW-SAND and GRAVEL (FILL), trace silt, dense, very fine to coarse sand, fine to coarse gravel, well graded, gray, dry, concrete fragments			2SS	X	32	
	- brown, wet	-3.9 -4.0 -5.0 -5.8		3SS	X	5	
5.0	ML-SILT, trace sand, trace gravel, trace clay, soft, low plasticity, brown, moist			4SS	X	9	
	SW-SAND, little gravel, trace silt, loose, very fine to coarse sand, fine gravel, well graded, black, wet	-7.7		5SS	X	8	
7.5	ML-SILT, trace sand, trace gravel, trace clay, soft, low plasticity, olive-green, moist						
10.0	SP-SAND, trace gravel, loose, coarse sand to fine gravel, poorly graded, orange, wet, piece of glazed rock, clay tile pipe, igneous rocks, imported fill	-10.0					
12.5	CL-CLAY, trace sand, firm to stiff, high plasticity, gray, moist						
	END OF HOLE @ 10.0ft BGS						
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL220)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH151-96
DATE COMPLETED: OCTOBER 10, 1996
DRILLING METHOD: 4 X" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SW/GW-SAND and GRAVEL (FILL), trace silt, dense, fine to coarse sand, fine to medium gravel, well graded, brown, dry - gray, red brick and concrete fragments			1SS	X	33	
-5.0				2SS	X	28	
-7.5				3SS	X	7	
-7.5	ML-SILT, little sand, trace clay, soft, low plasticity, olive-green, moist to wet, black staining	-6.9 -7.5		4SS	X	3	
-10.0	CL-CLAY, trace sand, stiff, high plasticity, fine to medium sand, gray, dry END OF HOLE @ 10.0ft BGS	-10.0		5SS	X	7	
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL139)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH152-96
DATE COMPLETED: OCTOBER 11, 1996
DRILLING METHOD: 4 X ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SW/GW-SAND and GRAVEL (FILL), trace silt, medium dense, fine to coarse sand, fine to coarse gravel, well graded, gray, dry		 CUTTINGS 8" Ø BOREHOLE	1SS	X	24	
	- wet, brick fragments			2SS	X	20	
-5.0	- concrete	-5.0		3SS	X	-	
	CL-CLAY, some silt, trace sand, firm, high plasticity, olive green, moist	-5.5		4SS	X	7	
-7.5	SP-SAND, loose, fine to medium sand, poorly graded, yellow brown, dry			5SS	X	4	
	- wet, moderately dilatant			6SS	X	2	
-10.0	- little gravel			7SS	X	6	
-12.5	CL-CLAY, trace sand, firm, very high plasticity, gray, dry	-11.5					
-15.0	END OF HOLE @ 14.0ft BGS	-14.0					
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL140)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH153-96
DATE COMPLETED: OCTOBER 11, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SW/GW-SAND and GRAVEL (FILL), trace silt, very loose, fine to coarse sand, fine to coarse gravel, well graded, dark brown, dry	-1.0 -1.7		ISS	X	1	
-5.0	SM/ML-SAND and SILT, trace sand, trace gravel, loose, very fine to medium sand, fine gravel, gray-brown, moist, black metallic fragments			2SS	X	4	
-7.5	CL-CLAY, little silt, soft to firm, high plasticity, orange-brown, moist			3SS	X	4	
-8.0	END OF HOLE @ 8.0ft BGS	-8.0		4SS	X	8	
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL141)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH154-96
DATE COMPLETED: OCTOBER 11, 1996
DRILLING METHOD: 4 1/4" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SW/GW-SAND and GRAVEL (FILL), trace silt, loose, fine to coarse sand, fine to coarse gravel, well graded, dark brown, dry	-0.8	 CUTTINGS 8" Ø BOREHOLE	ISS	X	4	
	SM-SAND, little silt, loose, very fine to medium sand, olive green, moist	-3.0		2SS	X	5	
-5.0	ML-SILT, little clay, trace sand, firm, medium plasticity, orange-brown, moist			3SS	X	6	
-7.5	CL-CLAY, trace silt, trace sand, firm, high plasticity, gray, dry	-6.0		4SS	X	7	
	END OF HOLE @ 8.0ft BGS	-8.0					
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☐ STATIC WATER LEVEL ☐
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL142)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH155-96
DATE COMPLETED: OCTOBER 11, 1996
DRILLING METHOD: 4 X" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SW/GW-SAND and GRAVEL (FILL), trace silt, loose, fine to coarse sand, fine to medium gravel, well graded, gray-brown, dry, brick fragments		 CUTTINGS 8" Ø BOREHOLE	1SS	X	9	
-5.0	- wet			2SS	X	10	
	CONCRETE	-5.5		3SS	X	10	
-7.5	CL/ML-CLAY and SILT, trace sand, soft, high plasticity, olive-green, moist	-6.0		4SS	X	2	
	CL-CLAY, trace silt, soft, high plasticity, gray, dry	-6.7		5SS	X	4	
-10.0	END OF HOLE @ 10.0ft BGS	-10.0					
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ↓ STATIC WATER LEVEL ↓
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL143)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH156-96
DATE COMPLETED: OCTOBER 11, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	CONCRETE						
-2.5	SP-SAND, medium dense, fine to medium sand, light brown, moist - wet, moderately dilatant	-1.5	 CUTTINGS 8" Ø BOREHOLE	1SS	X	11	
-5.0	CONCRETE	-5.0		2SS	X	8	
-7.5	SW-SAND, trace gravel, trace clay, very loose, very fine to medium sand, black, moist, weakly dilatant	-6.0		3SS	X	1	
-10.0	CL-CLAY, trace silt, trace sand, soft, very high plasticity, gray, dry	-9.2		4SS	X	3	
-12.5	END OF HOLE @ 12.0ft BGS	-12.0		5SS	X	3	
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH157-96
DATE COMPLETED: OCTOBER 11, 1996
DRILLING METHOD: 4 1/2" ID HSA
CRA SUPERVISOR: P. RUMMEL

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	0.00					
	CONCRETE						
-2.5	SM-SAND, trace clay, trace gravel, little silt, very loose, very fine to coarse sand, fine gravel, well graded, yellow brown, moist, black stain	-1.0	 CUTTINGS 8" Ø BOREHOLE	ISS	X	2	2.8
-5.0				2SS	X	2	1.1
				3SS	X	1	14.5
-7.5	CL-CLAY, some silt, trace sand, very soft, high plasticity, yellow-brown, moist	-5.8 -6.5		4SS	X	1	2.3
-10.0	SM-SAND, little silt, very loose, very fine to medium sand, yellow-brown, wet, weakly dilatant - trace gravel, little clay, crock pipe fragments	-8.3		5SS	X	5	2.1
-12.5	CL-CLAY, firm, high plasticity, gray, dry	-12.0		8SS	X	5	
-12.5	END OF HOLE @ 12.0ft BGS						
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889-20
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH-251-97
DATE COMPLETED: DECEMBER 09, 1997
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	CONCRETE (FILL), crushed SM-SAND (FILL), some silt, trace gravel, loose, fine grained, poorly graded, brown, moist	-1.5	 8"Ø BOREHOLE CUTTINGS 3"Ø SPLIT SPOON	ISS	X	9	0.0
-5.0	CL-CLAY, some silt, little sand, trace gravel, mottled brown and gray, moist END OF HOLE @ 4.0ft BGS	-3.0 -4.0		2SS	X	8	0.0
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(DL266)
Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889-20
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH-252-97
DATE COMPLETED: DECEMBER 09, 1997
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. FIELEK

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt, trace gravel, loose, fine grained, poorly graded, brown, moist	-2.0	 8" Ø BOREHOLE CUTTINGS 3" Ø SPLIT SPOON	ISS	X	4	0.0
-2.5	CL-CLAY, some, silt, trace gravel, firm, low plasticity, gray, moist	-4.0		2SS	X	7	0.0
-5.0	END OF HOLE @ 4.0ft BGS						
-7.5							
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889-20
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH-253-97
DATE COMPLETED: DECEMBER 30, 1997
DRILLING METHOD: 4 X" HSA
CRA SUPERVISOR: S. ANDERSON

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt, trace gravel, loose, fine to medium grained, well graded, brown, moist - some clay, some silt, brown/gray	-4.0	 8"Ø BOREHOLE CUTTINGS 3"Ø SPLIT SPOON	1SS	X	5	0.0
-5.0	CL-CLAY, some silt, little sand, trace gravel, soft, low plasticity, moist, gray/brown, no odor - firm			2SS	X	6	0.0
-7.5				3SS	X	3	0.0
	END OF HOLE @ 8.0ft BGS	-8.0		4SS	X	5	0.0
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND ▼ STATIC WATER LEVEL ▼

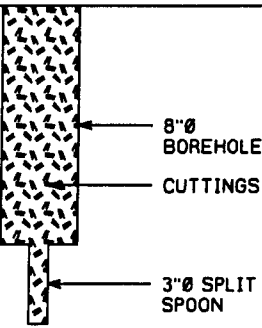
ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: GM CLARK STREET
PROJECT NUMBER: 8889-20
CLIENT: GM
LOCATION: DETROIT, MI

HOLE DESIGNATION: BH-254-97
DATE COMPLETED: DECEMBER 30, 1997
DRILLING METHOD: 4 1/2" HSA
CRA SUPERVISOR: S. ANDERSON

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	0.00					
-2.5	SM-SAND (FILL), some silt, trace gravel, medium dense, fine to medium grained, well graded, brown, moist, - brown/black sand, stained, slight odor - some clay, brown/gray		 8"Ø BOREHOLE CUTTINGS 3"Ø SPLIT SPOON	ISS	X	10	0.0
-5.0	CL-CLAY, some silt, little sand, soft, low plasticity, moist, gray/ brown	-5.0		2SS	X	15	0.0
-7.5				3SS	X	2	0.0
-8.0	END OF HOLE @ 8.0ft BGS	-8.0		4SS	X	11	0.0
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
ANALYSIS ○

APPENDIX B

CHAIN-OF-CUSTODY FORMS

CONESTOGA
 -ROVERS & ASSOCIATES, INC.
 11100 Metro Airport Center Drive - Suite 160
 Romulus, MI 48174 (313) 942-0909

IEA, No. 14 Carolina

REFERENCE NUMBER:
 8889

PROJECT NAME:
 6M Clark Street

CHAIN OF CUSTODY RECORD

SAMPLER'S SIGNATURE: Sarah May		PRINTED NAME: Sarah May		PROJECT NAME: 6M Clark Street		REFERENCE NUMBER: 8889	
SEQ. No.	DATE	TIME	SAMPLE TYPE	CONTAINERS	PARAMETERS	REMARKS	
1	9/6/96	1140	Soil	2	X X	TAT 24 to 72 hours	
2	1145			2	X X		
3	1300			2	X X		
4	1315			2	X X	Samples 001 thru 004 - analysis for PCB only	
5	1400			4	X X X X		
6	1415			4	X X X X		
7	1510			2	X X		
8	1530			2	X X		
9	1612			2	X X		
10	1622			2	X X		
11	1120			2	X X	9/9/96	
12	1135			2	X X		
13	1255			2	X X		
14	1310			2	X X		
TOTAL NUMBER OF CONTAINERS 28							

RELINQUISHED BY: <u>Susan Filler</u>		RECEIVED BY: 1. <u> </u>		DATE: 9/10/96		TIME: 1630	
RELINQUISHED BY: 2. <u> </u>		RECEIVED BY: 2. <u> </u>		DATE: <u> </u>		TIME: <u> </u>	
RELINQUISHED BY: 3. <u> </u>		RECEIVED BY: 1. <u> </u>		DATE: <u> </u>		TIME: <u> </u>	
METHOD OF SHIPMENT: Fed Ex							
SAMPLE TEAM: S. May				RECEIVED FOR LABORATORY BY: JEA # 808-11070			
Nº 3361				DATE: 9/9/96 TIME: 10:40am			

CRA

CONESTOGA-ROVERS & ASSOCIATES, INC.
11100 Metro Airport Center Drive - Suite 160
Romulus, MI 48174 (313) 942-0909

SHIPPED TO (Laboratory Name):

Encotec

REFERENCE NUMBER:

8889

PROJECT NAME:

GM Clark Street

CHAIN OF CUSTODY RECORD

SAMPLER'S SIGNATURE: *Sarah McVay* PRINTED NAME: *Sarah McVay*

SEQ. No.	DATE	TIME	SAMPLE TYPE	CONTAINERS	PARAMETERS	REMARKS
1	9/6/96	1120	Soil	1	X	TAT 24 to 72 hr
2	1425			1	X	
3	1120			2	X	
4	1135			2	X	
5	1255			2	X	
6	1310			2	X	
7	1340			2	X	
8	1348			2	X	
9	1440			2	X	
10	1455			2	X	
11	1550			2	X	
12	1605			2	X	

TOTAL NUMBER OF CONTAINERS

22

RELINQUISHED BY: <i>Sarah Fielder</i>	DATE: 9/6/96	RECEIVED BY: <i>[Signature]</i>	DATE: 9/7/96
RELINQUISHED BY:	TIME: 1830	RECEIVED BY:	TIME: 1900
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
RELINQUISHED BY:	TIME:	RECEIVED BY:	TIME:
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
RELINQUISHED BY:	TIME:	RECEIVED BY:	TIME:

METHOD OF SHIPMENT: *Fed Ex*

AIR BILL No.

White - Fully Executed Copy
Yellow - Receiving Laboratory Copy

SAMPLE TEAM:

S. McVay
S. Fielder

RECEIVED FOR LABORATORY BY:

DATE: 9/7/96 TIME: 1900

No. 3362

CRA

CONESTOGA-ROVERS & ASSOCIATES, INC.
11100 Metro Airport Center Drive - Suite 160
Romulus, MI 48174 (313) 942-0909

SHIPPED TO (Laboratory Name):

Exotoc

CHAIN OF CUSTODY RECORD

REFERENCE NUMBER:

8889

PROJECT NAME:

GM Clark Street

SAMPLER'S SIGNATURE: *Susan Fick* PRINTED NAME: *Susan Fick*

SEQ. No.	DATE	TIME	SAMPLE TYPE	NO. OF CONTAINERS	PARAMETERS	REMARKS
1	09090	0915	Sol	1		72 MV TAT
2		0915		1		
3		0925		1		
4		1020		1		
5		1025		1		
6		1030		1		
7		1105		1		
8		1130		1		
9		1140		1		
10		1200		1		
11		1300		1		
12		0910		1		
13		0930		1		

TOTAL NUMBER OF CONTAINERS

13

RELINQUISHED BY:

Susan Fick

DATE: 090906

TIME: 1600

RECEIVED BY:

1.

DATE:

TIME:

DATE: 9-10-96

TIME: 1000

RELINQUISHED BY:

2. *Susan Fick*

RECEIVED BY:

1.

DATE:

TIME:

DATE: 9-10-96

TIME: 1000

RELINQUISHED BY:

3.

DATE:

TIME:

METHOD OF SHIPMENT: *Fed ex*

AIR BILL No.

White - Fully Executed Copy
Yellow - Receiving Laboratory Copy

SAMPLE TEAM:

Pink - Shipper Copy
Goldenrod - Sampler Copy

S. Fick

No. 3358

RECEIVED FOR LABORATORY BY:

Susan Fick

F. Vandermeulen

DATE: 9-10-96 TIME: 0930

CRA

CONESTOGA-ROVERS & ASSOCIATES, INC.
11100 Metro Airport Center Drive - Suite 160
Romulus, MI 48174 (313) 942-0909

CHAIN OF CUSTODY RECORD

SAMPLER'S SIGNATURE: Susan Fielek PRINTED NAME: Susan Fielek

SEQ. No.	DATE	TIME	SAMPLE TYPE	NO. OF CONTAINERS	PARAMETERS	REMARKS
1	09/09/96	0830	S- 889-091096-SF-022	4	✓✓✓✓	72 hr. TAT
2	0830		-073 HS/MSD	4	✓✓✓✓	
3	0900		-024	4	✓✓✓✓	
4	0915		-025	4	✓✓✓✓	
5	0940		-026	4	✓✓✓✓	
6	0950		-027	4	✓✓✓✓	
7	1000		-028	4	✓✓✓✓	
8	1035		-029 MS/MSD	4	✓✓✓✓	
9	1050		-030	4	✓✓✓✓	
10	1050		-031	4	✓✓✓✓	
11	1125		-032	4	✓✓✓✓	
12	1135		-033	4	✓✓✓✓	
13	1150		-034	1	✓✓✓	
14	1225		-035	1	✓✓✓	
TOTAL NUMBER OF CONTAINERS					50	

RELINQUISHED BY: 1. <u>Susan Fielek</u>	DATE: 09/09/96	RECEIVED BY: 1. _____	DATE: _____
RELINQUISHED BY: 2. _____	TIME: 1900	RECEIVED BY: 2. _____	TIME: _____
RELINQUISHED BY: 3. _____	DATE: _____	RECEIVED BY: 3. _____	DATE: _____
	TIME: _____		TIME: _____

METHOD OF SHIPMENT: Fed Ex AIR BILL No. _____

While Executed Copy -Receiving Laboratory Copy -Shipper Copy -Sampler Copy	SAMPLE TEAM: <u>S. Fielek</u> <u>J. McCullen</u>	RECEIVED FOR LABORATORY BY: <u>Yes</u>
No. <u>3355</u>	DATE: <u>9/11/96</u> TIME: <u>10:00</u>	<u>1808-112000</u>

CRA

CONESTOGA-ROVERS & ASSOCIATES, INC.
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Romulus, MI 48174 (313) 942-0909

CHAIN OF CUSTODY RECORD

SAMPLER'S SIGNATURE: Susan J. Field PRINTED NAME: Susan J. Field

SEQ. No.	DATE	TIME	SAMPLE TYPE	NO. OF CONTAINERS	PARAMETERS	REMARKS
15	09/10/96	1355	S-036	1	X X X	72 hr. TAT
16	1415	-037	1	1	X X X	
17	1615	-040	1	1	X X X	
18	1620	-041	1	1	X X X	
19	1620	-042	1	1	X X X	
20	1700	-043	1	1	X X X	
21	1710	-044	1	1	X X X	
22	0900	24 -112	3	3	X X X	
23	0915	-113	3	3	X X X	
24	1030	-114	3	3	X X X	
25	1035	-115	3	3	X X X	
26	1105	-116	3	3	X X X	
27	1120	-117	3	3	X X X	
28	1120	-118	3	3	X X X	
TOTAL NUMBER OF CONTAINERS				28		

RELINQUISHED BY: Susan J. Field DATE: 09/09/96 RECEIVED BY: _____ DATE: _____
TIME: 1900 TIME: _____
RELINQUISHED BY: _____ DATE: _____ RECEIVED BY: _____ DATE: _____
TIME: _____ TIME: _____
RELINQUISHED BY: _____ DATE: _____ RECEIVED BY: _____ DATE: _____
TIME: _____ TIME: _____

METHOD OF SHIPMENT: Fed Ex AIR BILL No. _____

White - Fully Executed Copy Pink - Shipper Copy
Yellow - Receiving Laboratory Copy Goldenrod - Sampler Copy
SAMPLE TEAM: S. Field D. Klein
J. McClellan
RECEIVED FOR LABORATORY BY: you
DATE: 9/10/96 TIME: 10:00

CRA

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11100 Metro Airport Center Drive - Suite 160
Romulus, MI 48174 (313) 942-0909

CHAIN OF CUSTODY RECORD

SAMPLER'S SIGNATURE: Susan Field PRINTED NAME: Susan Field

SEQ. No.	DATE	TIME	SAMPLE TYPE	NO. OF CONTAINERS	PARAMETERS	REMARKS
29	09/09/96	1110	501	1	X X X	70 hr. TAG
30	1220			1	X X X	
31	1410		-121MS/MSD	1	X X X	
32	1420		-122	1	X X X	
33	1420		-123	1	X X X	
34	1540		-124	1	X X X	
35	1600		-125	1	X X X	
TOTAL NUMBER OF CONTAINERS						7
RELINQUISHED BY: <u>Susan Field</u>						
1.	DATE: 09/09/96	TIME: 1900	RECEIVED BY: 1.	DATE:	TIME:	
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY: 2.	DATE:	TIME:	
2.	DATE:	TIME:	RECEIVED BY: 3.	DATE:	TIME:	
RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY: 1.	DATE:	TIME:	
3.	DATE:	TIME:				

METHOD OF SHIPMENT: Fed Ex AIR BILL No. _____

White Yellow	Fully Executed Copy -Receiving Laboratory Copy	Pink Goldenrod	Shipment Copy -Sampler Copy
SAMPLE TEAM: <u>S. Field</u> <u>D. Mein</u>			
RECEIVED FOR LABORATORY BY: <u>J. McClellan</u>			
DATE: <u>9/14/96</u> TIME: <u>10:00</u> <u>1808/112 PDE</u>			

SHIPPED TO (Laboratory Name):

1EA

CONESTOGA ROVERS & ASSOCIATES, INC.
11100 Metro Airport Center Drive - Suite 160
Romulus, MI 48174 (313) 942-0909

CHAIN OF CUSTODY RECORD

REFERENCE NUMBER:

8889-20

PROJECT NAME:

G M Clark Street

SAMPLER'S SIGNATURE: Susan Field

PRINTED NAME: Susan Field

SAMPLE TYPE

No. Of CONTAINERS

PARAMETERS

Lead

REMARKS

SEQ. No.	DATE	TIME	SAMPLE TYPE	No. Of CONTAINERS	PARAMETERS	REMARKS
1	09/16/96	1245	S-8889-0916 96-SF-076	2	✓	24 hr. TAT
2	1230			2	✓	
3	1300		-077 MS/MSD	2	✓	
4	1315		-078	2	✓	
5	1345		-079	2	✓	
6			-080	2	✓	
7						
8						
9						
10						
11						
12						
13						

SF 09/16/96

TOTAL NUMBER OF CONTAINERS

10

RELINQUISHED BY: Susan Field

DATE: 09/16/96

RECEIVED BY: 1.

DATE:

RELINQUISHED BY:

DATE: 10-50

RECEIVED BY: 2.

DATE:

RELINQUISHED BY:

DATE:

RECEIVED BY: 1.

DATE:

METHOD OF SHIPMENT: Fed Ex

AIR BILL No.

White - Fully Executed Copy
Yellow - Receiving Laboratory Copy

Pink - Shipper Copy
Goldenrod - Sampler Copy

SAMPLE TEAM: S. Field

RECEIVED FOR LABORATORY BY: D. Wm. Clark

No 3397

DATE: 9/17/96 TIME: 0930

1EA# 1808-11778

CRA

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Romulus, MI 48174 (313) 942-0909

SHIPPED TO (Laboratory Name):

1EA

CHAIN OF CUSTODY RECORD

REFERENCE NUMBER:

8889-30

PROJECT NAME:

GM Clark Street

SAMPLER'S
SIGNATURE: Susan Fielek PRINTED NAME: Susan Fielek

SEQ. No.	DATE	TIME	SAMPLE TYPE	No. OF CONTAINERS	PARAMETERS		REMARKS
					HEAVY METALS	PH	
1	09/18/96	1020	S-8889-091896-SF-0BS	2	✓	✓	24hr TAT
2	✓	1035	-086	2	✓	✓	
3	✓	1230	-087	2	✓	✓	
4	✓	1240	-088	2	✓	✓	
5	✓	1400	-089	2	✓	✓	
6	✓	1405	-090	1	✓	✓	
7	✓	1423	-091	1	✓	✓	
8	✓	1430	-092	1	✓	✓	
9	✓	1452	-093	1	✓	✓	
10	✓	1500	-094	1	✓	✓	
11	✓	1515	-095 MS/MSD	1	✓	✓	
12	✓	1525	-096	1	✓	✓	
13	✓	1525	-097	1	✓	✓	

TOTAL NUMBER OF CONTAINERS

18

RELINQUISHED BY:

Susan Fielek

DATE: 09/18/96

TIME: 1900

RECEIVED BY:

1.

DATE:

TIME:

RELINQUISHED BY:

DATE:

TIME:

RECEIVED BY:

2.

DATE:

TIME:

RELINQUISHED BY:

DATE:

TIME:

RECEIVED BY:

1.

DATE:

TIME:

METHOD OF SHIPMENT: Fed Ex

AIR BILL No.

White
Yellow

-Fully Executed Copy

-Receiving Laboratory Copy

Pink

Goldenrod

-Shipper Copy

-Sampler Copy

SAMPLE TEAM:

S. Fielek

RECEIVED FOR LABORATORY BY:

D. Mc Carck

No. 3399

DATE: 9/18/96 TIME: 0930

40C

CRA

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11100 Metro Airport Center Drive - Suite 160
Romulus, MI 48174 (313) 942-0909

SHIPPED TO (Laboratory Name):

Encotac

CHAIN OF CUSTODY RECORD

REFERENCE NUMBER:

8889-20

PROJECT NAME:

GM Clark Street

SAMPLER'S SIGNATURE: *Susan Fielek*

PRINTED NAME: *Susan Fielek*

CONTAINERS

PARAMETERS

SEQ. No.	DATE	TIME	SAMPLE TYPE	REMARKS
1	09/13/96	0905	SF -061	72 Hour TAT
2	1000		-062	
3	1015		-063	
4	1015		-064	
5	0840		-060	
6	1115		-065	
7	1125		-066	
8	1325		-067	
9	1335		-068	
10	1420		-069	
11	1435		-070	
12	1525		-071	
13	1535		-072	
14	1535		-073	

TOTAL NUMBER OF CONTAINERS

14

RELINQUISHED BY: <i>Susan Fielek</i>	DATE: 09/13/96	RECEIVED BY: <i>me</i>	DATE: 9/14/96
RELINQUISHED BY:	TIME: 1900	1. <i>me</i>	TIME: 1370
RELINQUISHED BY:	DATE:	2.	DATE:
RELINQUISHED BY:	TIME:	RECEIVED BY:	TIME:
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
RELINQUISHED BY:	TIME:	RECEIVED BY:	TIME:

METHOD OF SHIPMENT: *Fed Ex*

AIR BILL No.

White - Fully Executed Copy
Yellow - Receiving Laboratory Copy

Pink - Shipper Copy
Goldenrod - Sampler Copy

SAMPLE TEAM: *S. Fielek*

RECEIVED FOR LABORATORY BY: *[Signature]*

No. 3387

DATE: 9/14/96 TIME: 1030

CRA

CONESTOGA-ROVERS & ASSOCIATES, INC.
11100 Metro Airport Center Drive - Suite 160
Romulus, MI 48174 (313) 942-0909

SHIPPED TO (Laboratory Name):

1EA

CHAIN OF CUSTODY RECORD

REFERENCE NUMBER:

8889-20

PROJECT NAME:

GM Clark Street

SAMPLER'S SIGNATURE: Susan Fielek

PRINTED NAME: Susan Fielek

PARAMETERS

NO. OF CONTAINERS

DATE

TIME

SEQ. No.

SAMPLE TYPE

REMARKS

1 09/13/96 1000 S-8889-091396 - 3f - 062

2 1015 - 063

3 1015 - 064

4 0840 - 066

5 0905 - 061

6 1115 - 065

7 1125 - 066

8 1325 - 067

9 1335 - 068

10 1420 - 069

11 1435 - 070

12 1525 - 071

13 1535 - 072

14 1535 - 073

72 Hour TAT

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

TOTAL NUMBER OF CONTAINERS

4

RELINQUISHED BY:

DATE: 09/13/96

TIME: 1900

RELINQUISHED BY:

DATE:

TIME:

RELINQUISHED BY:

DATE:

TIME:

METHOD OF SHIPMENT: FedEx

AIR BILL No.

White - Fully Executed Copy

Yellow - Receiving Laboratory Copy

Pink - Shipper Copy

Goldenrod - Sampler Copy

SAMPLE TEAM:

S. Fielek

P. Rimmer

RECEIVED FOR LABORATORY BY:

F. Beck

1808-116 PM

No 3388

DATE: 9/14 TIME: 0945

90

CRA

CONESTOGA-ROVERS & ASSOCIATES, INC.
11100 Metro Airport Center Drive - Suite 160
Romulus, MI 48174 (313) 942-0909

SHIPPED TO (Lab. Name):

1 EA

CHAIN OF CUSTODY RECORD

REFERENCE NUMBER:

8889-20

PROJECT NAME:

GM Clark Street

SAMPLER'S SIGNATURE: Patricke Rummel PRINTED NAME: Patricke Rummel

SEQ. No.	DATE	TIME	SAMPLE TYPE	NO. OF CONTAINERS	PARAMETERS	REMARKS
15	09/13/94	1600	Soil	1	✓	
16	✓	1600	✓	1	✓	
17	Sept. 13/94	800	Soil	1	✓	72 hrs TAT
18	✓	900	"	1	✓	
19	✓	1000	"	1	✓	
20	✓	1100	"	1	✓	
21	✓	1200	"	1	✓	
22	✓	1300	"	1	✓	
23	✓	1400	"	1	✓	
24	✓	1500	"	1	✓	
25	✓	1600	"	1	✓	
26	✓	1700	"	1	✓	
27	✓	1800	"	1	✓	
28	✓	1900	"	1	✓	
TOTAL NUMBER OF CONTAINERS						

RELINQUISHED BY: <u>Sue Fielek</u>	DATE: <u>09/13/94</u>	RECEIVED BY: <u>1.</u>	DATE: _____
RELINQUISHED BY: _____	TIME: <u>1900</u>	RECEIVED BY: <u>2.</u>	TIME: _____
RELINQUISHED BY: _____	DATE: _____	RECEIVED BY: <u>3.</u>	DATE: _____
RELINQUISHED BY: _____	TIME: _____	RECEIVED BY: <u>1.</u>	TIME: _____
RELINQUISHED BY: _____	DATE: _____	RECEIVED BY: <u>2.</u>	DATE: _____
RELINQUISHED BY: _____	TIME: _____	RECEIVED BY: <u>3.</u>	TIME: _____

METHOD OF SHIPMENT: Fedex

AIR BILL No.

White - Fully Executed Copy
Yellow - Receiving Laboratory Copy

SAMPLE TEAM: Sue Fielek

RECEIVED FOR LABORATORY BY: P. R. Rummel

No. 3389

DATE: 9/14 TIME: 0945

CRA

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11100 Metro Airport Center Drive - Suite 160
Romulus, MI 48174 (313) 942-0909

SHIPPED TO (Laboratory Name):

ENCOTEC

CHAIN OF CUSTODY RECORD

REFERENCE NUMBER:

3039-20

PROJECT NAME:

Cym. Clark Str.

SAMPLER'S SIGNATURE: Patricia Rummel PRINTED NAME: Patricia Rummel

PARAMETERS

SEQ. No.	DATE	TIME	SAMPLE TYPE	CONTAINERS	REMARKS
1	Sep 14/96	815	Soil	1	72 hr TAT
2	"	815	"	1	
3	"	900	"	1	
4	"	900	"	1	
5	"	930	"	1	
6	"	930	"	1	
7	"	1030	"	1	
8	"	1030	"	1	
9	"	1100	"	1	
10	"	1100	"	1	
11	"	1100	"	1	

TOTAL NUMBER OF CONTAINERS

11

RELINQUISHED BY: <u>Susan J. Jell</u>	DATE: <u>09/16/96</u>	RECEIVED BY: <u>Patricia Rummel</u>	DATE: <u>09/16/96</u>
RELINQUISHED BY:	TIME: <u>1600</u>	RECEIVED BY:	TIME: <u>1600</u>
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
RELINQUISHED BY:	TIME:	RECEIVED BY:	TIME:
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
RELINQUISHED BY:	TIME:	RECEIVED BY:	TIME:

METHOD OF SHIPMENT: Fedex

AIR BILL No.

While - Fully Executed Copy
Yellow - Receiving Laboratory Copy

SAMPLE TEAM:

Patricia Rummel

RECEIVED FOR LABORATORY BY:

No. 3391

DATE: TIME:

CRA

CONESTOGA-ROVERS & ASSOCIATES, INC.
11100 Metro Airport Center Drive - Suite 160
Romulus, MI 48174 (313) 942-0909

SHIPPED TO (Laboratory Name):

IEA

CHAIN OF CUSTODY RECORD

REFERENCE NUMBER:

8389-20

PROJECT NAME:

GM-Clark Str.

SAMPLER'S SIGNATURE: Patrick Rummel PRINTED NAME: Patrick Rummel

PARAMETERS

CONTAINERS

SAMPLE TYPE

1 02.9.96 1000 5- 3389-100996 PER-193

2 1100 5- 194

3 1100 5- 195

4 1300 5- 196

5 1300 5- 197

6 1500 5- 198

7 1500 5- 199

REMARKS

MS/MSD

72 hrs TAT

TOTAL NUMBER OF CONTAINERS

7

RELINQUISHED BY:

Patrick Rummel

DATE: 02.9.96

TIME: 1300

RECEIVED BY:

1.

DATE:

TIME:

RELINQUISHED BY:

DATE:

TIME:

RECEIVED BY:

2.

DATE:

TIME:

RELINQUISHED BY:

DATE:

TIME:

RECEIVED BY:

1.

DATE:

TIME:

METHOD OF SHIPMENT: Fedex

AIR BILL No.

White - Fully Executed Copy
Yellow - Receiving Laboratory Copy
Pink - Shipper Copy
Goldenrod - Sampler Copy

SAMPLE TEAM:

Patrick Rummel

RECEIVED FOR LABORATORY BY:

Q.M. Conch

No 3651

DATE: 02/11/96 TIME: 0930

40C

CRA

CONESTOGA-ROVERS & ASSOCIATES, INC.
11100 Metro Airport Center Drive - Suite 160
Romulus, MI 48174 (313) 942-0909

CHAIN OF CUSTODY RECORD

SHIPPED TO (Laboratory Name):

1EA

REFERENCE NUMBER:

8889-20

PROJECT NAME:

GM-Clark Str.

SAMPLER'S SIGNATURE: Patrick Rummel PRINTED NAME: Patrick Rummel

SEQ. No.	DATE	TIME	SAMPLE TYPE	CONTAINERS	PARAMETERS		REMARKS
					Midpoint Metals	General	
1	Oct. 10/96	800	S-3337-101096-PFR-200	1	✓	✓	
2		800	S-201	1	✓	✓	72 ATAT
3		900	S-202	1	✓	✓	
4		900	S-203	1	✓	✓	
5		1000	S-204	1	✓	✓	
6		1000	S-205	1	✓	✓	
7		1100	S-206	1	✓	✓	
8		1100	S-207	1	✓	✓	
9		1200	S-208	1	✓	✓	
10		1200	S-209	1	✓	✓	
11		1300	S-210	1	✓	✓	
12		1300	S-211	1	✓	✓	
13		1400	S-212	1	✓	✓	
14		1400	S-213	1	✓	✓	
TOTAL NUMBER OF CONTAINERS				14			

RELINQUISHED BY: <u>Patrick Rummel</u>	DATE: Oct. 10/96	RECEIVED BY: 1.	DATE: _____
RELINQUISHED BY: _____	TIME: 1800	RECEIVED BY: 2.	TIME: _____
RELINQUISHED BY: _____	DATE: _____	RECEIVED BY: 1.	DATE: _____
RELINQUISHED BY: _____	TIME: _____	RECEIVED BY: 2.	TIME: _____

METHOD OF SHIPMENT: Fedex AIR BILL NO. _____

White Yellow	-Fully Executed Copy -Receiving Laboratory Copy	Pink Goldenrod	-Shipper Copy -Sampler Copy
SAMPLE TEAM: _____			
RECEIVED FOR LABORATORY BY: <u>D. M. Co.</u>			
DATE: 10/11/96 TIME: 0930			

No. 3652

CONESTOGA-ROVERS & ASSOCIATES, INC.
11100 Metro Airport Center Drive - Suite 160
Romulus, MI 48174 (313) 942-0909

15

Romulus, MI 48174 (313) 942-0909

CHAIN OF CUSTODY RECORD

SAMPLER'S SIGNATURE: Patrick Zymel PRINTED NAME:

REFERENCE NUMBER:

5039-22

PROJECT NAME:

Cym - Clerk Str.

SAMPLER'S SIGNATURE: Patrick Zummel PRINTED NAME:

Patrick Ramm el

PARAMETERS

महाराष्ट्र
राज्य
महाराष्ट्र

SEQ.	No.
------	-----

DATE	TIME
------	------

SAMPLE	TVDF
--------	------

15	02.10.46	1500	5-8897-1006-172-214
16		1500	5- " " " " 215

REMARKS

72 hrs 7AT.

TOTAL NUMBER OF CONTAINERS

RELINQUISHED BY:
1.

Stick Bomb

DATE: 04.10/96

RECEIVED BY:

DATE:

RELINQUISHED BY:

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METHOD OF SHIPMENT: Fedex.

AIR BILL No.

White	Pink	Shopper Copy
Yellow	Goldenrod	Sampler Copy

SAMPLE TEAM:

RECEIVED FOR LABORATORY BY:

1808-124

№ 3653

DATE: 10/11/96 TIME: 0930

4

CRA

CONESTOGA-ROVERS & ASSOCIATES, INC.
11100 Metro Airport Center Drive - Suite 160
Romulus, MI 48174 (313) 942-0909

CHAIN OF CUSTODY RECORD

SAMPLER'S SIGNATURE: Patricia R. Rovers PRINTED NAME: Patricia Rovers

SEQ. No.	DATE	TIME	SAMPLE TYPE	No. OF CONTAINERS	PARAMETERS	REMARKS
1	6/10/96	AM	6.3389 - 121191 - 223	2	✓	
2			309	2	✓	
3			210	2	✓	
4			211	2	✓	
5			212	2	✓	
6			213	2	✓	
7	6/10/96	AM	6.3389 - 121191 - 223	1	✓	
8			214	1	✓	
9			215	1	✓	
10			216	1	✓	
11			217	1	✓	
12			218	1	✓	
13			219	1	✓	
14			220	1	✓	
15			221	1	✓	
16			222	1	✓	
17			223	1	✓	
TOTAL NUMBER OF CONTAINERS				20		

RELINQUISHED BY: Patricia Rovers DATE: 6/10/96 TIME: 1730 RECEIVED BY: _____ DATE: _____ TIME: _____

RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY: _____ DATE: _____ TIME: _____

RELINQUISHED BY: _____ DATE: _____ TIME: _____ RECEIVED BY: _____ DATE: _____ TIME: _____

METHOD OF SHIPMENT: Fedex AIR BILL No. _____

White - Fully Executed Copy Pink - Shipper Copy
Yellow - Receiving Laboratory Copy Goldenrod - Sampler Copy

SAMPLE TEAM: Patricia Rovers
Ken Van der Aalst

RECEIVED FOR LABORATORY BY: _____ DATE: _____ TIME: _____

CRA

CONESTOGA-ROVERS & ASSOCIATES, INC.
11100 Metro Airport Center Drive - Suite 160
Romulus, MI 48174 (313) 942-0909

SHIPPED TO (Laboratory Name):

TEA

REFERENCE NUMBER:

6339-20

PROJECT NAME:

GM - (code 54)

CHAIN OF CUSTODY RECORD

SAMPLER'S

SIGNATURE: Patrick Rummel PRINTED

NAME: _____

SEQ. No.	DATE	TIME	SAMPLE TYPE	No. OF CONTAINERS	PARAMETERS		REMARKS
					(code 54)	(code 54)	
15	12/1/96	PM	5-5339-1-1156-PCR-224	1	✓	✓	72 HR TAT
16			5-5339-1-1156-PCR-225	1	✓	✓	
17			5-5339-1-1156-PCR-226	1	✓	✓	
18			5-5339-1-1156-PCR-227	1	✓	✓	
19			5-5339-1-1156-PCR-228	1	✓	✓	
20							
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TOTAL NUMBER OF CONTAINERS

RELINQUISHED BY:	DATE: 12/1/96	RECEIVED BY:	DATE:
1. Patrick Rummel	TIME: 1:10	1. _____	TIME:
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
2. _____	TIME:	2. _____	TIME:
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
3. _____	TIME:	1. _____	TIME:

METHOD OF SHIPMENT: Express

AIR BILL No.

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Yellow - Receiving Laboratory Copy

Pink - Shipper Copy
Goldentrod - Sampler Copy

SAMPLE TEAM:

Patrick Rummel
Ken Vetter Maken

RECEIVED FOR LABORATORY BY:

3656

DATE: 1/1/97 TIME: 11/

CONESTOGA-ROVERS & ASSOCIATES, INC.
11100 Metro Airport Center Drive - Suite 160
Romulus, MI 48174 (313) 942-0909

765
H₂O

CHAIN OF CUSTODY RECORD

SAMPLER'S SIGNATURE: Shawn E. Anderson PRINTED NAME: Shawn E. Anderson

Sarah E Anderson

SEQ: No.	DATE	TIME	SAMPLE TYPE	CONTAINER	REMARKS
1	12/30/97		SOIL	2	72-41
2				2	T.A.I.
3				2	
4				2	
 2/20/97					
TOTAL NUMBER OF CONTAINERS					8

TOTAL NUMBER OF CONTAINERS

RELINQUISHED BY:

RELINQUISHED BY:
1. James Anderson

DATE: 10-28-97 RECEIVED BY:

1. Q

DATE: 12-30
TIME: 14:55

1

DATE: _____

RELINQUISHED BY:

TIME: 14:55
DATE:

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TIME: _____

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DATE: _____
TIME: _____

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DATE: _____
PAGE: _____

RELINQUISHED BY:

DATE: _____
TIME: _____

21

TIME:

3. _____

DATE: _____
TIME: _____

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DATE: _____
PAGE: _____

METHOD OF SHIPMENT: Federal Express

ШХД

AIR BILL No.

White	Fully Executed Copy	Pink
Yellow	Receiving Laboratory Copy	Goldenrod
		-Shipper Copy
		-Sampler Copy

SAMPLE TEAM: S. Anderson

RECEIVED FOR LABORATORY BY:

5417

DATE: _____ TIME: _____

APPENDIX C

DATA VALIDATION MEMORANDA

CRA

11100 Metro Airport Center Drive
Suite 160
Romulus, MI 48174
(313) 942-0909

MEMO

TO: Sara Anderson

REFERENCE NO: 8889

FROM: Mary Cameron/dfh/8/Det. *MAC*

DATE: October 30, 1996

RE: Data Quality Assessment and Validation for Phase II Soil Samples
Collected from the General Motors Clark Street Site in Detroit, Michigan

The following details a quality assessment and validation of the analytical data resulting from the September 6 through September 10, 1996, collection of 68 soil samples from the General Motors Clark Street Site in Detroit, Michigan. The samples identified in Table 1 were analyzed for target compound list (TCL) volatile organic compounds (VOC); TCL semi-volatile organic compounds (SVOC); polychlorinated biphenyls (PCB); Michigan metals and benzene, toluene, ethylbenzene and total xylenes (BTEX). Sample analysis was completed at IEA Inc's Cary, North Carolina facility with the exception of TCL VOC which was completed at Rollins Environmental Inc.'s (ENCOTEC) Ann Arbor, Michigan facility in accordance with the methodologies presented in Table 2. The quality control criteria used to assess the data were established by the methods and the quality assurance project plan (QAPP).¹

Holding Time Period and Sample Analysis

The holding time periods are presented in Table 3. The samples, as indicated by the sample collection, extraction and analysis dates on the chain-of-custody forms and analytical reports provided by IEA and ENCOTEC, were prepared and analyzed within the required holding time periods.

Method Blank Samples

Contamination of samples contributed by laboratory conditions or procedures was monitored by concurrent preparation and analysis of method blank samples. The samples presented in Table 4 should be qualified due to laboratory contamination. The metals preparation blanks were reported with zinc at a concentration of 1.01 mg/kg and 1.06 mg/kg. The associated sample results reported for zinc were ten (10) times higher than the reported preparation blanks, therefore no qualification was required. The remaining method blank samples were reported to be free from detectable levels of target analytes, indicating no additional laboratory-attributable contamination occurred.

¹ Application of quality assurance criteria was consistent with "Draft National Functional Guideline for Organic Data Review," December, 1990, revised June, 1991 and "Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis," Draft October 1989.

Laboratory Control Sample (LCS)

The laboratory control sample analyses serve as a monitor of the overall performance in all steps of the sample analysis. The check sample percent recoveries were within the laboratory control limits, indicating that an acceptable level of overall performance was achieved.

Surrogate Compound Percent Recoveries (Surrogate Recoveries) - Organic Analyses

Individual sample performance for the organic analyses was monitored by assessing the results of surrogate compound percent recoveries. The sample analyses that violated surrogate acceptance criteria are identified and qualified in Table 5. The surrogate recoveries could not be measured for in TCL SVOC analysis of sample S-8889-090996-KMV-110 due to the dilutions required to analyze the sample. The surrogate recovery acceptance criteria was met for the remaining samples.

Matrix Spike/Matrix Spike Duplicate Analysis - Metal Analyses

Matrix spike/matrix spike duplicate (MS/MSD) percent recoveries were monitored to determine the effects of sample matrix on the laboratories digestion and measurement methods. The samples that should be qualified due to MS/MSD percent recoveries are outlined in Table 6. The remainder of the data were within the acceptance criteria.

Duplicate Sample Analyses - Metal Analyses

The laboratory precision of matrix-specific metals methods was monitored by the analyses of duplicate samples. The duplicate relative percent difference (RPD) data for the samples outlined in Table 7 violated the acceptance criteria. The duplicate RPD acceptance criteria for cadmium, chromium and lead data were also violated but the associated samples were previously qualified. The remaining samples were within the acceptance criteria.

MS/MSD Percent Recoveries - Organic Analyses

To assess the long term accuracy and precision of the analytical methods on various matrices, MS/MSD percent recoveries and the RPD of the recoveries were determined. Table 8 presents outlying MS/MSD results and the associated samples that should be qualified. The percent recovery RPD for BTEX exceeded the acceptance criteria. The associated samples were reported as not detected, therefore no further qualification was required. The TCL SVOC MS/MSD percent recoveries exceeded the acceptance criteria but the samples were reported as not detected therefore no qualification was required. The remainder of the data were within acceptance criteria.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC consisted of six (6) field duplicate sample sets.

Overall precision for the sampling event and laboratory procedures was monitored using the results of the field duplicate sample sets. Table 9 summarizes the results of the detected analytes in the field duplicate sample sets. The TCL SVOC RPD for samples S-8889-091096-DRM-122 and S-8889-091096-DRM-123 was not calculable due to the sample reported results of not detect. The significant difference between the reported results of this sample set may be attributed to the heterogeneity of the matrix sampled. The remainder of the data indicate that an adequate level of precision was achieved for the sampling event.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision, based on the provided information, and may be used with the qualifications noted.

TABLE 1

SAMPLE IDENTIFICATION NUMBERS
GM CLARK STREET SITE
DETROIT, MICHIGAN

S-8889-090696-SF-001	S-8889-091096-SF-035
S-8889-090696-SF-002	S-8889-091096-SF-036
S-8889-090696-SF-003	S-8889-091096-SF-037
S-8889-090696-SF-004	S-8889-091096-SF-040
S-8889-090696-SF-005	S-8889-091096-SF-041
S-8889-090696-SF-006	S-8889-091096-SF-042
S-8889-090696-SF-007	S-8889-091096-SF-043
S-8889-090696-SF-008	S-8889-091096-SF-044
S-8889-090696-SF-009	S-8889-090696-SF-100
S-8889-090696-SF-010	S-8889-090696-SF-101
S-8889-090996-SF-011	S-8889-090696-SF-102
S-8889-090996-SF-012	S-8889-090696-SF-103
S-8889-090996-SF-013	S-8889-090696-SF-104
S-8889-090996-SF-014	S-8889-090696-SF-105
S-8889-090996-SF-015	S-8889-090696-SF-106
S-8889-090996-SF-016	S-8889-090696-SF-107
S-8889-090996-SF-017	S-8889-090696-SF-108
S-8889-090996-SF-018	S-8889-090696-SF-109
S-8889-090996-SF-019	S-8889-090996-KMV-110
S-8889-090996-SF-020	S-8889-090996-KMV-111
S-8889-090996-SF-021	S-8889-091096-JM-112
S-8889-091096-SF-022	S-8889-091096-JM-113
S-8889-091096-SF-023	S-8889-091096-JM-114
S-8889-091096-SF-024	S-8889-091096-JM-115
S-8889-091096-SF-025	S-8889-091096-JM-116
S-8889-091096-SF-026	S-8889-091096-JM-117
S-8889-091096-SF-027	S-8889-091096-JM-118
S-8889-091096-SF-028	S-8889-091096-DRM-119
S-8889-091096-SF-029	S-8889-091096-DRM-120
S-8889-091096-SF-030	S-8889-091096-DRM-121
S-8889-091096-SF-031	S-8889-091096-DRM-122
S-8889-091096-SF-032	S-8889-091096-DRM-123
S-8889-091096-SF-033	S-8889-091096-DRM-124
S-8889-091096-SF-034	S-8889-091096-DRM-125

TABLE 2

SUMMARY OF ANALYTICAL METHODS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Parameter</i>	<i>Method</i>
TCL VOC	SW-846 8260 ¹ A
TCL SVOC	SW-846 8270A
PCB	SW-846 8080
BTEX	SW-846 8020
Michigan Metals	
Arsenic	SW-846 6020
Barium	SW-846 6020
Cadmium	SW-846 6020
Chromium	SW-846 6020
Copper	SW-846 6020
Lead	SW-846 6020
Mercury	SW-846 7471
Selenium	SW-846 6010
Silver	SW-846 6010
Zinc	SW-846 6020

¹ "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd Edition, and Promulgated Updates, November 1986.

TABLE 3

HOLDING TIME PERIODS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Analysis</i>	<i>Holding Time Period</i>
TCL VOC/BTEX	- 14 days from sample collection to completion of analysis
TCL SVOC, PCB	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis
Michigan Metals -	
Metals (except Mercury)	- 180 days from sample collection to completion of analysis
Mercury	- 28 days from sample collection to completion of analysis

TABLE 4

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
METHOD BLANK CONTAMINATION
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Analyte</i>	<i>Associated Samples</i>	<i>Qualified Sample Result (µg/kg)</i>
Di-n-butylphthalate	S-8889-091096-SF-041	U(440)
	S-8889-091096-JM-112	U(1,100)
	S-8889-091096-JM-113	U(2,800)
	S-8889-091096-JM-114	U(400)
	S-8889-091096-JM-115	U(760)
	S-8889-091096-JM-116	U(1,400)
	S-8889-091096-JM-117	U(960)
	S-8889-091096-DRM-119	U(1,700)
	S-8889-091096-DRM-120	U(560)
	S-8889-091096-DRM-122	U(2,400)
Methylene chloride	S-8889-090696-SF-001	U(13)
	S-8889-090696-SF-002	U(18)
	S-8889-090696-SF-003	U(16)
	S-8889-090696-SF-004	U(16)
	S-8889-090696-SF-005	U(18)
	S-8889-090696-SF-006	U(14)
	S-8889-090696-SF-007	U(15)
	S-8889-090696-SF-008	U(18)
	S-8889-090696-SF-009	U(12)
	S-8889-090696-SF-010	U(12)
	S-8889-090996-SF-011	U(11)
	S-8889-090996-SF-014	U(14)
	S-8889-090996-SF-017	U(11)
	S-8889-090996-SF-020	U(16)
	S-8889-090996-SF-021	U(14)
	S-8889-091096-SF-022	U(18)
	S-8889-091096-SF-023	U(22)
	S-8889-091096-SF-024	U(24)

TABLE 4

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
METHOD BLANK CONTAMINATION
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Analyte</i>	<i>Associated Samples</i>	<i>Qualified¹ Sample Result (µg/kg)</i>
Methylene chloride	S-8889-091096-SF-025	U(13)
	S-8889-091096-SF-027	U(53)
	S-8889-091096-SF-028	U(11)
	S-8889-091096-SF-030	U(15)
	S-8889-091096-SF-031	U(14)
	S-8889-091096-SF-032	U(27)
	S-8889-091096-SF-033	U(21)
	S-8889-091096-SF-034	U(20)
	S-8889-091096-SF-036	U(11)
	S-8889-090696-SF-104	U(15)
	S-8889-090696-SF-105	U(15)

¹ Samples should be qualified for method blank contamination as:

U() - The analyte was analyzed for, but was not detected above the reported sample quantitation limit in parenthesis.

TABLE 5

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
VIOLATION OF SURROGATE PERCENT RECOVERY CRITERIA
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Analysis</i>	<i>Associated Samples</i>	<i>Qualifier¹</i>
PCB	S-8889-090996-KMV-110	UJ
	S-8889-091096-JM-113	UJ
	S-8889-091096-DRM-120	UJ
	S-8889-091096-DRM-122	UJ
TCL VOC	S-8889-090696-SF-007	J
	S-8889-090696-SF-035	UJ
	S-8889-090696-SF-113	UJ
	S-8889-090696-SF-117	UJ

¹ The analysis results should be qualified as:

- UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is estimated and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample (for non-detected parameters).
- J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample (for detected parameters).

TABLE 6

SUMMARY OF OUTLYING MATRIX SPIKE/MATRIX SPIKE DUPLICATE
PERCENT RECOVERIES
METALS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Associated Samples</i>	<i>Parameters</i>	<i>Qualifier</i>
S-8889-090996-SF-011	Barium	UJ, J
S-8889-090996-SF-012	Chromium	UJ, J
S-8889-090996-SF-013	Copper	UJ, J
S-8889-090996-SF-014	Lead	J
S-8889-090996-SF-015	Mercury	UJ, J
S-8889-090996-SF-016	Zinc	UJ, J
S-8889-090996-SF-017		
S-8889-090996-SF-018		
S-8889-090996-SF-019		
S-8889-090996-SF-020		
S-8889-090996-KMV-110		
S-8889-090996-KMV-111		
S-8889-091096-SF-022	Barium	UJ, J
S-8889-091096-SF-023	Cadmium	UJ, J
S-8889-091096-SF-024	Copper	UJ, J
S-8889-091096-SF-025	Lead	UJ, J
S-8889-091096-SF-026	Mercury	UJ, J
S-8889-091096-SF-027	Zinc	J
S-8889-091096-SF-028		
S-8889-091096-SF-029		
S-8889-091096-SF-030		
S-8889-091096-SF-031		
S-8889-091096-SF-032	Mercury	UJ, J
S-8889-091096-SF-033	Zinc	UJ, J
S-8889-091096-SF-034		
S-8889-091096-SF-035		
S-8889-091096-SF-036		
S-8889-091096-SF-037		
S-8889-091096-SF-038		
S-8889-091096-SF-039		
S-8889-091096-SF-040		
S-8889-091096-SF-041		
S-8889-091096-SF-042		
S-8889-091096-SF-043		

TABLE 6

SUMMARY OF OUTLYING MATRIX SPIKE/MATRIX SPIKE DUPLICATE
PERCENT RECOVERIES
METALS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Associated Samples</i>	<i>Parameters</i>	<i>Qualifier¹</i>
S-8889-090696-SF-104	Arsenic	J
S-8889-090696-SF-105	Barium	J
	Chromium	J
S-8889-091096-JM-113	Arsenic	UJ, J
S-8889-091096-JM-114	Barium	UJ, J
S-8889-091096-JM-115	Chromium	UJ, J
S-8889-091096-JM-116	Copper	UJ, J
S-8889-091096-JM-117	Lead	UJ, J
S-8889-091096-JM-118	Selenium	UJ, J
S-8889-091096-DRM-119		
S-8889-091096-DRM-120		
S-8889-091096-DRM-121		
S-8889-091096-DRM-122		
S-8889-091096-DRM-123		
S-8889-091096-DRM-124		
S-8889-091096-DRM-125		

¹ Samples should be qualified for the listed parameters as:

- J - The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample (for detected parameters).
- UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is estimated and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample (for non-detected parameters).

TABLE 7

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
OUTLYING METAL MATRIX DUPLICATE RESULTS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Associated Samples</i>	<i>Parameter</i>	<i>Qualifier</i>
S-8889-090696-SM-100	Lead	J
S-8889-090696-SM-101		
S-8889-090696-SM-102		
S-8889-090696-SM-103		
S-8889-090696-SM-106		
S-8889-090696-SM-107		
S-8889-090696-SM-108		
S-8889-090696-SM-109		
S-8889-090696-SM-104	Cadmium	J
	Lead	J
	Mercury	J
S-8889-090696-SM-105	Cadmium	J
	Lead	J
S-8889-090996-SF-011	Arsenic	J
S-8889-090996-SF-012		
S-8889-090996-SF-013		
S-8889-090996-SF-014		
S-8889-090996-SF-015		
S-8889-090996-SF-016		
S-8889-090996-SF-017		
S-8889-090996-SF-018		
S-8889-090996-SF-019		
S-8889-090996-SF-020		
S-8889-090996-SF-021		
S-8889-090996-KMV-110		
S-8889-090996-KMV-111		
S-8889-090996-SF-021	Cadmium	J
	Chromium	J
	Lead	J

TABLE 7

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
OUTLYING METAL MATRIX DUPLICATE RESULTS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Associated Samples</i>	<i>Parameter</i>	<i>Qualifier¹</i>
S-8889-091096-JM-113	Cadmium	J
S-8889-091096-JM-114		
S-8889-091096-JM-115		
S-8889-091096-JM-116		
S-8889-091096-JM-117		
S-8889-091096-JM-118		
S-8889-091096-DRM-119		
S-8889-091096-DRM-120		
S-8889-091096-DRM-121		
S-8889-091096-DRM-122		
S-8889-091096-DRM-123		
S-8889-091096-DRM-124		
S-8889-091096-DRM-125		

¹ Samples should be qualified for listed parameters as:

J - The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

TABLE 8

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
OUTLYING ORGANIC MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)
RESULTS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Analysis</i>	<i>Sample</i>	<i>Parameter</i>	<i>Qualifier</i> ¹
TCL SVOC	S-8889-091096-DRM-121	Benzo(a)anthracene	J
		Benzo(b)fluoranthene	J
		Benzo(k)fluoranthene	J
		Benzo(a)pyrene	J
		Chrysene	J
		Fluoranthene	J
		Phenanthrene	J
		Pyrene	J

¹ The sample should be qualified for listed parameters as:

J - The analyte was positively identified; but the associated numerical value is the approximate concentration of the analyte in the sample (for detected parameters).

TABLE 9

**SUMMARY OF DETECTED ANALYTIES IN FIELD DUPLICATE SAMPLE SETS
GM CLARK STREET SITE
DETROIT, MICHIGAN**

<i>Parameter</i>	<i>Investigative Sample</i>	<i>Duplicate Sample</i>	<i>RPD¹</i>
	S-8889-090996-SF-011	S-8889-090996-SF-012	
Michigan Metals (mg/kg)			
Arsenic	13.3	6.44	70
Barium	84.1 J ²	74.3 J	12
Cadmium	0.354	0.456	25
Chromium	16.0 J	14.8 J	8
Copper	23.6 J	13.6 J	54
Lead	87.9 J	12.0 J	150
Mercury	0.149 J	ND ³ (0.123) UJ ⁴	NC ⁵
Zinc	45.6 J	68.6 J	40
	S-8889-091096-SF-027	S-8889-091096-SF-028	
Michigan Metals (mg/kg)			
Arsenic	9.56	5.45	55
Barium	100 J	97.4 J	3
Cadmium	0.262 J	0.279 J	6
Chromium	22.4	23.1	3
Copper	15.6 J	17.1 J	9
Lead	36.6 J	17.7 J	70
Selenium	ND(1.31)	1.44	NC
Zinc	79.0 J	54.0 J	38
	S-8889-091096-SF-030	S-8889-091096-SF-031	
Michigan Metals (mg/kg)			
Arsenic	4.68	7.06	41
Barium	62.1 J	58.2 J	6
Cadmium	0.114 J	0.156 J	31
Chromium	22.1	21.2	4
Copper	16.8 J	14.1 J	17
Lead	8.45 J	8.82 J	4
Zinc	56.8 J	51.6 J	10

TABLE 9

SUMMARY OF DETECTED ANALYTIES IN FIELD DUPLICATE SAMPLE SETS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Parameter</i>	<i>Investigative Sample</i>	<i>Duplicate Sample</i>	<i>RPD</i>
Michigan Metals (mg/kg)	S-8889-091096-SF-041	S-8889-091096-SF-042	
Arsenic	1.90	5.41	96
Barium	60.0	83.8	33
Cadmium	0.105	0.139	28
Chromium	15.5	21.7	33
Copper	13.2	19.3	38
Lead	13.3	13.3	0
Zinc	67.2 J	69.6 J	4
Michigan Metals (mg/kg)	S-8889-091096-JM-117	S-8889-091096-JM-118	
Arsenic	14.2 J	12.3 J	14
Barium	44.4 J	120 J	92
Cadmium	0.172	0.195	13
Chromium	16.8 J	40.6 J	83
Copper	15.7 J	25.4 J	47
Lead	7.80 J	15.8 J	68
Zinc	51.9	102	65
TCL SVOC (µg/kg)	S-8889-091096-DRM-122	S-8889-091096-DRM-123	
Anthracene	ND(330)	6,000	NC
Benzo(a)anthracene	ND(330)	14,000	NC
Benzo(b)fluoranthene	ND(330)	12,000	NC
Benzo(k)fluoranthene	ND(330)	8,800	NC
Benzo(g,h,i)perylene	ND(330)	5,900	NC
Benzo(a)pyrene	ND(330)	11,000	NC
Chrysene	ND(330)	12,000	NC
Di-n-butylphthalate	U ⁶ (2,400)	27,000	NC
Fluoranthene	ND(330)	6,200	NC
Indeno(1,2,3-cd)pyrene	ND(330)	22,000	NC
Phenanthrene	ND(330)	23,000	NC

TABLE 9

SUMMARY OF DETECTED ANALYTIES IN FIELD DUPLICATE SAMPLE SETS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Parameter</i>	<i>Investigative Sample</i>	<i>Duplicate Sample</i>	<i>RPD</i>
	S-8889-091096-DRM-122	S-8889-091096-DRM-123	
Michigan Metals (mg/kg)			
Arsenic	10.1 J	6.08 J	50
Barium	41.9 J	76.6 J	59
Cadmium	0.175	0.141	22
Chromium	12.6 J	20.6 J	48
Copper	20.7 J	17.2 J	18
Lead	9.23 J	26.7 J	97
Selenium	ND(1.25) J	1.64 J	NC
Zinc	51.1	61.0	18

¹ RPD - Relative Percent Difference

² J - The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

³ ND() - Not detected at the quantitation limit stated in parentheses.

⁴ UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is estimated and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample (for non-detected parameters).

⁵ NC - Not calculable.

⁶ U - The analyte was analyzed for but was not detected above the level of the associated value.

CRA

11100 Metro Airport Center Drive
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Romulus, MI 48174
(313) 942-0909

MEMO

TO: Sara Anderson

REFERENCE NO: 8889

FROM: Mary Cameron/dfh/9/Det. *mbc*

DATE: November 1, 1996

RE: Data Quality Assessment and Validation for Soil Samples Collected
from the General Motors Clark Street Site in Detroit, Michigan

The following details a quality assessment and validation of the analytical data resulting from the September 9 through September 18, 1996, collection of 14 soil samples from the General Motors Clark Street Site in Detroit, Michigan. The samples identified in Table 1 were analyzed for benzene, toluene, ethylbenzene and total xylenes (BTEX), and lead. Sample analysis was completed at IEA Inc's Cary, North Carolina facility in accordance with the methodologies presented in Table 2. The quality control criteria used to assess the data were established by the methods and the quality assurance project plan (QAPP).¹

Holding Time Period and Sample Analysis

The holding time periods are presented in Table 3. The samples, as indicated by the sample collection, extraction and analysis dates on the chain-of-custody forms and analytical reports provided by IEA, were prepared and analyzed within the required holding time periods.

Method Blank Samples

Contamination of samples contributed by laboratory conditions or procedures was monitored by concurrent preparation and analysis of method blank samples. The method blank samples were reported to be free from detectable levels of target analytes, indicating no laboratory-attributable contamination occurred.

Laboratory Control Sample (LCS)

The laboratory control sample analyses serve as a monitor of the overall performance in all steps of the sample analysis. The LCS percent recoveries were within the laboratory control limits, indicating that an acceptable level of overall performance was achieved.

¹ Application of quality assurance criteria was consistent with "Draft National Functional Guideline for Organic Data Review," December, 1990, revised June, 1991 and "Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis," Draft October 1989.

Surrogate Compound Percent Recoveries (Surrogate Recoveries) - Organic Analyses

Individual sample performance for the organic analyses was monitored by assessing the results of surrogate compound percent recoveries. The sample analyses that violated surrogate acceptance criteria are identified and qualified in Table 4. The surrogate recovery acceptance criteria was met for the remaining samples.

Matrix Spike/Matrix Spike Duplicate Analysis - Lead Analyses

Matrix spike/matrix spike duplicate (MS/MSD) percent recoveries were monitored to determine the effects of sample matrix on the laboratories digestion and measurement methods. The samples that should be qualified due to MS/MSD percent recoveries are outlined in Table 5. The remainder of the data were within the acceptance criteria.

Duplicate Sample Analyses - Lead Analyses

The laboratory precision of matrix-specific metals methods was monitored by the analyses of duplicate samples. The duplicate relative percent difference (RPD) data for the samples outlined in Table 6 violated the acceptance criteria. The remaining samples were within the acceptance criteria.

MS/MSD Percent Recoveries - Organic Analyses

To assess the long term accuracy and precision of the analytical methods on various matrices, MS/MSD percent recoveries and the RPD of the recoveries were determined. The data were within acceptance criteria.

Field Quality Assurance/Quality Control (QA/QC)

The field QA/QC consisted of two (2) field duplicate sample sets.

Overall precision for the sampling event and laboratory procedures was monitored using the results of the field duplicate sample sets. Table 7 summarizes the results of the detected analytes in the field duplicate sample sets. The data indicate that an adequate level of precision was achieved for the sampling event.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision, based on the provided information, and may be used with the qualifications noted.

TABLE 1

SAMPLE IDENTIFICATION NUMBERS
GM CLARK STREET SITE
DETROIT, MICHIGAN

S-8889-091696-SF-076
S-8889-091696-SF-077
S-8889-091696-SF-078
S-8889-091696-SF-079
S-8889-091696-SF-080
S-8889-091796-SF-081
S-8889-091796-SF-082
S-8889-091796-SF-083
S-8889-091796-SF-084
S-8889-091896-SF-085
S-8889-091896-SF-086
S-8889-091896-SF-087
S-8889-091896-SF-088
S-8889-091896-SF-089

TABLE 2

SUMMARY OF ANALYTICAL METHODS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Parameter</i>	<i>Method</i>
BTEX	SW-846 8020 ¹
Lead	SW-846 6020

¹ "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd Edition, and Promulgated Updates, November 1986.

TABLE 3

HOLDING TIME PERIODS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Analysis</i>	<i>Holding Time Period</i>
BTEX	- 14 days from sample collection to completion of analysis
Lead	- 180 days from sample collection to completion of analysis

TABLE 4

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
VIOLATION OF SURROGATE PERCENT RECOVERY CRITERIA
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Analysis</i>	<i>Associated Samples</i>	<i>Qualifier¹</i>
BTEX	S-8889-091696-SF-078	J
	S-8889-091696-SF-079	J

¹ The parameters associated with these analyses should be qualified for the listed samples as:

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample (for detected analytes).

TABLE 5

SUMMARY OF OUTLYING MATRIX SPIKE/MATRIX SPIKE DUPLICATE
DATA-LEAD
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Parameter</i>	<i>Associated Samples</i>	<i>Qualifier¹</i>
Lead	S-8889-091696-SF-076	J
	S-8889-091696-SF-077	J
	S-8889-091696-SF-078	J
	S-8889-091696-SF-079	J
	S-8889-091696-SF-080	J

¹ The parameter should be qualified for the listed samples as:

- J - The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

TABLE 6

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
OUTLYING LEAD DUPLICATE RESULTS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Parameter</i>	<i>Associated Samples</i>	<i>Qualifier¹</i>
Lead	S-8889-091896-SF-085	J
	S-8889-091896-SF-086	J
	S-8889-091896-SF-087	J
	S-8889-091896-SF-088	J
	S-8889-091896-SF-089	J

¹ The Parameter should be qualified for the listed samples as:

- J - The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

TABLE 7

SUMMARY OF DETECTED ANALYTIES IN FIELD DUPLICATE SAMPLE SETS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Parameter</i>	<i>Investigative Sample</i>	<i>Duplicate Sample</i>	<i>RPD¹</i>
	S-8889-091696-SF-079	S-8889-091696-SF-080	
Lead (mg/kg)	9.24 J ²	11.5 J	12
Benzene (µg/kg)	11 J	7.7	43
Ethylbenzene	19 J	3.8	130
Toluene	2.7 J	27	160
Xylene (total)	110 J	21	140
	S-8889-091896-SF-086	S-8889-091896-SF-087	
Lead (mg/kg)	6.46 J	6.69 J	3
Benzene (µg/kg)	1,200	900	50
Ethylbenzene	2,500	880	96
Toluene	780	170	130
Xylene (total)	2,400	970	85

¹ RPD - Relative Percent Difference

J - The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

CRA

11100 Metro Airport Center Drive
Suite #160
Romulus, Michigan 48174
(734) 942-0909

MEMO

TO: Sara Anderson

REFERENCE NO. 8889

FROM: Mary Cameron/rm/71/Det.

DATE: November 4, 1996

RE: Data Quality Assessment and Validation for Soil Samples Collected
from the General Motors Clark Street Site in Detroit, Michigan

The following details a quality assessment and validation of the analytical data resulting from the September 13, 1996, collection of eighteen (18) soil samples from the General Motors Clark Street Site in Detroit, Michigan. The samples identified in Table 1 were analyzed for total compound list (TCL) semi-volatile organic compounds (SVOC), polychlorinated biphenyls (PCB) and Michigan metals. Sample analysis was completed at IEA Inc.'s Cary, North Carolina facility (IEA) in accordance with the methodologies presented in Table 2. The quality control criteria used to assess the data were established by the methods and the quality assurance project plan (QAPP).¹

Holding Time Period and Sample Analysis

The holding time periods are presented in Table 3. The samples, as indicated by the sample collection, extraction and analysis dates on the chain-of-custody forms and analytical reports provided by IEA, were prepared and analyzed within the required holding time periods.

Method Blank Samples

Contamination of samples contributed by laboratory conditions or procedures was monitored by concurrent preparation and analysis of method blank samples. A metal preparation blank was reported with zinc at 1.03 mg/kg, but the associated reported sample zinc results were ten (10) times higher, therefore no qualification was required. The remaining method blank samples were reported to be free from detectable levels of target analytes, indicating no additional laboratory-attributable contamination occurred.

Laboratory Control Sample

The laboratory control sample (LCS) analyses serve as a monitor of the overall performance in all steps of the sample analysis. The LCS percent recoveries were within the laboratory control limits, indicating that an acceptable level of overall performance was achieved.

¹ Application of quality assurance criteria was consistent with "Draft National Functional Guideline for Organic Data Review," December, 1990, revised June, 1991 and "Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis," Draft October 1989.

Surrogate Compound Percent Recoveries (Surrogate Recoveries) - Organic Analyses

Individual sample performance for the organic analyses was monitored by assessing the results of surrogate compound percent recoveries. The surrogate recovery acceptance criteria was met for all of the samples.

Matrix Spike/Matrix Spike Duplicate Analysis- Metal Analysis

Matrix spike/matrix spike duplicate (MS/MSD) percent recoveries were monitored to determine the effects of sample matrix on the laboratories digestion and measurement methods. The samples that should be qualified due to MS/MSD percent recoveries are outlined in Table 4. The remainder of the data were within the acceptance criteria

Duplicate Sample Analyses - Metal Analyses

The laboratory precision of matrix-specific metals methods was monitored by the analyses of duplicate samples. The duplicate relative percent difference (RPD) data for the samples outlined in Table 5 violated the acceptance criteria. The duplicate RPD acceptance criteria for lead data were also violated but the associated samples were previously qualified. The remaining samples were within the acceptance criteria.

Matrix Spike/Mareix Spike Duplicate Percent Recoveries – Organic Analyses

To assess the long term accuracy and precision of the analytical methods on various matrices, MS/MSD percent recoveries and the RPD of the recoveries were determined. The MS/MSD percent recoveries and RPDs of the recoveries were within acceptance criteria.

Field Quality Assurance/Quality Control

The field quality assurance/quality control consisted of six (6) field duplicate sample sets. Overall precision for the sampling event and laboratory procedures was monitored using the results of the field duplicate sample sets. Table 8 summarizes the results of the detected analytes in the field duplicate sample sets. The data indicate that an adequate level of precision was achieved for the sampling event.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision, based on the provided information, and may be used with the qualifications noted.

TABLE 1

**SAMPLE IDENTIFICATION NUMBERS
GM CLARK STREET SITE
DETROIT, MICHIGAN**

S-8889-091396-SF-069
S-8889-091396-SF-070
S-8889-091396-SF-071
S-8889-091396-SF-072
S-8889-091396-SF-073
S-8889-091396-SF-074
S-8889-091396-SF-075
S-8889-091496-PFR-160
S-8889-091496-PFR-161
S-8889-091496-PFR-162
S-8889-091496-PFR-163
S-8889-091496-PFR-164
S-8889-091496-PFR-165
S-8889-091496-PFR-166
S-8889-091496-PFR-167
S-8889-091496-PFR-168
S-8889-091496-PFR-169
S-8889-091496-PFR-170

TABLE 2

SUMMARY OF ANALYTICAL METHODS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Parameter</i>	<i>Method</i>
TCL SVOC	SW-846 8270 ¹
PCB	SW-846 8080
Michigan Metals	
Arsenic	SW-846 6020
Barium	SW-846 6020
Cadmium	SW-846 6020
Chromium	SW-846 6020/6010
Copper	SW-846 6020/6010
Lead	SW-846 6020
Mercury	SW-846 7471
Selenium	SW-846 6020/6010
Silver	SW-846 6010
Zinc	SW-846 6020/6010

¹ "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd Edition, and Promulgated Updates, November 1986.

TABLE 3

**HOLDING TIME PERIODS
GM CLARK STREET SITE
DETROIT, MICHIGAN**

<i>Analysis</i>	<i>Holding Time Period</i>
TCL SVOC, PCB	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis
Michigan Metals -	
Metals (except Mercury)	- 180 days from sample collection to completion of analysis
Mercury	- 28 days from sample collection to completion of analysis

TABLE 4

SUMMARY OF OUTLYING MATRIX SPIKE/MATRIX SPIKE DUPLICATE
DATA - MICHIGAN METALS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Samples</i>	<i>Parameters</i>	<i>Qualifier¹</i>
S-8889-091396-SF-069	Chromium	J
S-8889-091396-SF-070		
S-8889-091396-SF-071		
S-8889-091396-SF-072		
S-8889-091396-SF-073		
S-8889-091396-SF-074		
S-8889-091396-SF-075		
S-8889-091496-PFR-160	Lead	J
S-8889-091496-PFR-161		
S-8889-091496-PFR-162		
S-8889-091496-PFR-163		
S-8889-091496-PFR-164		
S-8889-091496-PFR-165		
S-8889-091496-PFR-166		
S-8889-091496-PFR-167		
S-8889-091496-PFR-168		
S-8889-091496-PFR-169		
S-8889-091496-PFR-170		

¹ The samples should be qualified for the listed parameters as:

- J - The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

TABLE 5
SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
OUTLYING DUPLICATE RESULTS - METALS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Samples</i>	<i>Parameters</i>	<i>Qualifier¹</i>
S-8889-091396-SF-069	Barium	J
S-8889-091396-SF-070	Lead	J
S-8889-091396-SF-071		
S-8889-091396-SF-072		
S-8889-091396-SF-073		
S-8889-091396-SF-074		
S-8889-091396-SF-075		
S-8889-091496-PFR-160	Cadmium	J
S-8889-091496-PFR-161		
S-8889-091496-PFR-162		
S-8889-091496-PFR-163		
S-8889-091496-PFR-164		
S-8889-091496-PFR-165		
S-8889-091496-PFR-166		
S-8889-091496-PFR-168		
S-8889-091496-PFR-169		
S-8889-091496-PFR-170		

¹ The samples should be qualified for the listed parameters as:

J - The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

TABLE 6

**SUMMARY OF DETECTED ANALYTIES IN FIELD DUPLICATE SAMPLE SETS
GM CLARK STREET SITE
DETROIT, MICHIGAN**

<i>Parameter</i>	<i>Investigative Sample</i>	<i>Duplicate Sample</i>	<i>RPD¹</i>
	S-8889-091396-SF-072	S-8889-091396-SF-073	
Michigan Metals (mg/kg)			
Arsenic	7.31	9.23	23
Barium	84.3 J ²	70.5 J	18
Cadmium	0.354	0.207	52
Chromium	17.2 J	18.8 J	8.9
Copper	12.6	15.1	18
Lead	9.92 J	8.36 J	17
Zinc	44.4	48.6	9.0
	S-8889-091496-PFR-165	S-8889-091496-PFR-166	
TCL SVOC (µg/kg)			
Di-n-butylphthalate	1,100	690	46
Michigan Metals (mg/kg)			
Arsenic	1.06	3.83	110
Barium	42.6	39.9	6.5
Cadmium	0.128 J	0.123 J	4.0
Chromium	9.82	9.86	0
Copper	6.31	6.79	7.3
Lead	6.48 J	17.2 J	90
Zinc	38.3	42.2	9.7

¹ RPD - Relative Percent Difference

² J - The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample.

CRA

11100 Metro Airport Center Drive
Suite #160
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(734) 942-0909

MEMO

TO: Sara Anderson

REFERENCE NO: 8889

FROM: Mary Cameron/dfh/68/Det.

DATE: December 30, 1996

RE: Data Quality Assessment and Validation for Phase II Soil Samples
Collected from the General Motors Clark Street Site in Detroit, Michigan

The following details a quality assessment and validation of the analytical data resulting from the October 9, 10, and October 11, 1996, collection of 36 soil samples from the General Motors Clark Street Site in Detroit, Michigan. The samples identified in Table 1 were analyzed for Michigan metals and total cyanide. Sample analysis was completed at IEA Inc's Cary, North Carolina facility in accordance with the methodologies presented in Table 2. The quality control criteria used to assess the data were established by the methods and the quality assurance project plan (QAPP).¹

Holding Time Period and Sample Analysis

The holding time periods are presented in Table 3. The samples, as indicated by the sample collection, extraction and analysis dates on the chain-of-custody forms and analytical reports provided by IEA, were prepared and analyzed within the required holding time periods.

Method Blank Samples

Contamination of samples contributed by laboratory conditions or procedures was monitored by concurrent preparation and analysis of method blank samples. A metal preparation blank was reported with zinc at a concentration of 3.13 mg/kg. The associated sample result reported for zinc was ten (10) times higher than the reported preparation blank, therefore no qualification was required. The remaining method blank samples were reported to be free from detectable levels of target analytes, indicating no additional laboratory-attributable contamination occurred.

Laboratory Control Sample

The laboratory control sample (LCS) analyses serve as a monitor of the overall performance in all steps of the sample analysis. The LCS percent recoveries were within the laboratory control limits, indicating that an acceptable level of overall performance was achieved.

Matrix Spike/Matrix Spike Duplicate Percent Recoveries

Matrix spike/matrix spike duplicate (MS/MSD) percent recoveries were monitored to determine the effects of sample matrix on the laboratory digestion and measurement methods.

¹ Application of quality assurance criteria was consistent with "Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis", Draft October 1989.

Matrix Spike/Matrix Spike Duplicate Percent Recoveries (Cont'd)

The samples that should be qualified due to violation of MS/MSD percent recovery criteria are outlined in Table 4. The remainder of the data were within the acceptance criteria.

Duplicate Sample Analyses

The laboratory precision of matrix-specific metals methods was monitored by the analyses of duplicate samples. The duplicate relative percent difference (RPD) data for the samples outlined in Table 5 violated the acceptance criteria. The duplicate RPD acceptance criteria for arsenic, barium, chromium, copper, and lead data were also violated but the associated samples were previously qualified. The remaining samples were within the acceptance criteria.

Field Quality Assurance/Quality Control

The field quality assurance/quality control consisted of three (3) field duplicate sample sets. Overall precision for the sampling event and laboratory procedures was monitored using the results of the field duplicate sample sets. Table 6 summarizes the results of the detected analytes in the field duplicate sample sets. The data indicate that an adequate level of precision was achieved for the sampling event.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision, based on the provided information, and may be used with the qualifications noted.

TABLE 1

**SAMPLE IDENTIFICATION NUMBERS
GM CLARK STREET SITE
DETROIT, MICHIGAN**

S-8889-100996-PFR-193	S-8889-101096-PFR-211
S-8889-100996-PFR-194	S-8889-101096-PFR-212
S-8889-100996-PFR-195	S-8889-101096-PFR-213
S-8889-100996-PFR-196	S-8889-101096-PFR-214
S-8889-100996-PFR-197	S-8889-101096-PFR-215
S-8889-100996-PFR-198	S-8889-101196-PFR-216
S-8889-100996-PFR-199	S-8889-101196-PFR-217
S-8889-101096-PFR-200	S-8889-101196-PFR-218
S-8889-101096-PFR-201	S-8889-101196-PFR-219
S-8889-101096-PFR-202	S-8889-101196-PFR-220
S-8889-101096-PFR-203	S-8889-101196-PFR-221
S-8889-101096-PFR-204	S-8889-101196-PFR-222
S-8889-101096-PFR-205	S-8889-101196-PFR-223
S-8889-101096-PFR-206	S-8889-101196-PFR-224
S-8889-101096-PFR-207	S-8889-101196-PFR-225
S-8889-101096-PFR-208	S-8889-101196-PFR-226
S-8889-101096-PFR-209	S-8889-101196-PFR-227
S-8889-101096-PFR-210	S-8889-101196-PFR-228

TABLE 2
SUMMARY OF ANALYTICAL METHODS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Parameter</i>	<i>Method</i>
Michigan Metals	
Arsenic	SW-846 6020 ¹
Barium	SW-846 6010
Cadmium	SW-846 6020
Chromium	SW-846 6010
Copper	SW-846 6010
Cyanide (total)	SW-846 9010A
Lead	SW-846 6020
Mercury	CLPM ² 245.5
Selenium	SW-846 6010/6020
Silver	SW-846 6010
Zinc	SW-846 6010/6020

¹ "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd Edition, and Promulgated Updates, November 1986.

² CLPM - "USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media Multi-Concentration," Document Number ILM 2.0, (Modified Method) September 1991, and revisions ILM 02.1.

TABLE 3
HOLDING TIME PERIODS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Analysis</i>	<i>Holding Time Period</i>
Michigan Metals -	
Metals (except Mercury)	- 180 days from sample collection to completion of analysis
Mercury	- 28 days from sample collection to completion of analysis
Cyanide (total)	- 14 days from sample collection to completion of analysis

TABLE 4

**SUMMARY OF OUTLYING MATRIX SPIKE/MATRIX SPIKE DUPLICATE
PERCENT RECOVERIES - METALS
GM CLARK STREET SITE
DETROIT, MICHIGAN**

<i>Associated Samples</i>	<i>Parameters</i>	<i>Qualifier ¹</i>
S-8889-100996-PFR-193	Arsenic	J
S-8889-100996-PFR-194	Cadmium	J, UJ
S-8889-100996-PFR-195	Lead	J
S-8889-100996-PFR-196		
S-8889-100996-PFR-197		
S-8889-100996-PFR-198		
S-8889-100996-PFR-199		
S-8889-101096-PFR-200		
S-8889-101096-PFR-201		
S-8889-101096-PFR-202		
S-8889-101096-PFR-203		
S-8889-101096-PFR-204		
S-8889-101096-PFR-205		
S-8889-101096-PFR-206		
S-8889-101096-PFR-207		
S-8889-101096-PFR-208		
S-8889-101096-PFR-209		
S-8889-101096-PFR-210		
S-8889-101096-PFR-211	Arsenic	J
S-8889-101096-PFR-212	Cadmium	J
S-8889-101096-PFR-213	Lead	J
S-8889-101096-PFR-214	Zinc	J
S-8889-101096-PFR-215		
S-8889-101096-PFR-213	Silver	J, UJ
S-8889-101096-PFR-214		
S-8889-101096-PFR-215		

TABLE 4

**SUMMARY OF OUTLYING MATRIX SPIKE/MATRIX SPIKE DUPLICATE
PERCENT RECOVERIES - METALS
GM CLARK STREET SITE
DETROIT, MICHIGAN**

<i>Associated Samples</i>	<i>Parameters</i>	<i>Qualifier</i>
S-8889-101196-PFR-216	Arsenic	J
S-8889-101196-PFR-217	Barium	J
S-8889-101196-PFR-218	Cadmium	J, UJ
S-8889-101196-PFR-219	Chromium	J
S-8889-101196-PFR-220	Copper	J
S-8889-101196-PFR-221	Lead	J
S-8889-101196-PFR-222	Selenium	J, UJ
S-8889-101196-PFR-223	Silver	UJ
S-8889-101196-PFR-224	Zinc	J
S-8889-101196-PFR-225		
S-8889-101196-PFR-226		
S-8889-101196-PFR-227		
S-8889-101196-PFR-228		

¹ The samples should be qualified for the listed parameters as:

- J – The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample (for detected parameters).
- UJ – The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is estimated and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample (for non-detected parameters).

TABLE 5
SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
OUTLYING DUPLICATE RESULTS - METALS
GM CLARK STREET SITE
DETROIT, MICHIGAN

<i>Associated Samples</i>	<i>Parameters</i>	<i>Qualifier¹</i>
S-8889-101096-PFR-213	Chromium	J
S-8889-101096-PFR-214	Copper	J
S-8889-101096-PFR-215		

¹ Samples should be qualified for the listed parameters as:

- J - The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample (for detected parameters).

TABLE 6

**SUMMARY OF DETECTED ANALYTIES IN FIELD DUPLICATE SAMPLE SETS
GM CLARK STREET SITE
DETROIT, MICHIGAN**

<i>Parameter</i>	<i>Investigative Sample</i>	<i>Duplicate Sample</i>	<i>RPD ¹</i>
	S-8889-101096-PFR-201	S-8889-101096-PFR-202	
Michigan Metals (mg/kg)			
Arsenic	7.43 J ²	9.61 J	26
Barium	65.6	84.6	25
Cadmium	0.311 J	0.392 J	23
Chromium	13.5	13.2	2.2
Copper	21.8	26.1	18
Cyanide - total	0.509	0.428	17
Lead	11.1 J	12.8 J	14
Zinc	57.6	58.2	1.0
	S-8889-101096-PFR-213	S-8889-101096-PFR-214	
Michigan Metals (mg/kg)			
Arsenic	4.84 J	7.06 J	37
Barium	5,280	981	140
Cadmium	0.497 J	1.16 J	80
Chromium	153 J	63.8 J	82
Copper	3,660 J	1,520 J	83
Cyanide - total	41.5	56.1	30
Lead	59.1 J	177 J	100
Mercury	ND (0.129) ³	0.214	NC ⁴
Silver	2.65	ND(0.674)	NC
Zinc	378 J	850 J	77

TABLE 6

**SUMMARY OF DETECTED ANALYTIES IN FIELD DUPLICATE SAMPLE SETS
GM CLARK STREET SITE
DETROIT, MICHIGAN**

<i>Parameter</i>	<i>Investigative Sample</i>	<i>Duplicate Sample</i>	<i>RPD</i> ¹
	S-8889-101196-PFR-224	S-8889-101196-PFR-225	
Michigan Metals (mg/kg)			
Arsenic	2.06 J	4.41 J	73
Barium	57.4 J	53.4 J	7.2
Cadmium	0.197 J	0.282 J	35
Chromium	12.6 J	9.73 J	26
Copper	597 J	772 J	26
Cyanide - total	ND(0.312)	0.443	NC
Lead	33.9 J	48.9 J	36
Mercury	ND(0.124)	0.146	NC
Zinc	70.9 J	58.2 J	20

¹ RPD – Relative percent difference.

² J – qualified as an estimated value.

³ ND () – Not detected above the quantitation limit in the parenthesis.

⁴ NC – Not calculable.

CRA

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MEMO

TO: Sara Anderson
FROM: Mary Cameron/jsd/66/Det.
RE: Data Quality Assessment and Validation for Phase V Soil Samples
Collected from the General Motors Clark Street Site in Detroit, Michigan

REFERENCE NO: 8889
DATE: February 3, 1998

The following details a quality assessment and validation of the analytical data resulting from the December 9 and 30, 1997, collection of 9 soil samples from the General Motors Clark Street Site in Detroit, Michigan. The samples identified in Table 1 were analyzed for target compound list (TCL) volatile organic compounds (VOC); TCL semi-volatile organic compounds (SVOC); polychlorinated biphenyls (PCB); and Michigan metals. Sample analysis was completed at SPL's Scott, Louisiana facility (SPL) in accordance with the methodologies presented in Table 2. The quality control criteria used to assess the data were established by the methods and the quality assurance project plan (QAPP).¹

Holding Time Period and Sample Analysis

The holding time periods are presented in Table 3. The samples, as indicated by the sample collection, extraction and analysis dates on the chain-of-custody forms and analytical reports provided by SPL, were prepared and analyzed within the required holding time periods.

Method Blank Samples

Contamination of samples contributed by laboratory conditions or procedures was monitored by concurrent preparation and analysis of method blank samples. A metal method blank was reported with silver at 1.6 mg/kg but the associated samples results were reported as ten times the method blank, therefore no qualification was required. Xylene (total) was reported detected at 7 μ g/kg in a TCL VOC method blank but the associated samples results were reported as non-detect for xylene, therefore no qualification was required. The remaining method blank samples were reported to be free from detectable levels of target analytes, indicating no additional laboratory-attributable contamination occurred.

Laboratory Control Sample Analysis

The laboratory control sample (LCS) analyses serve as a monitor of the overall performance in all steps of the sample analysis. The LCS percent recoveries were within the laboratory control limits, indicating that an acceptable level of overall performance was achieved.

¹ Application of quality assurance criteria was consistent with "Draft National Functional Guideline for Organic Data Review," December, 1990, revised June, 1991 and "Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis," Draft October 1989.

Surrogate Compound Percent Recoveries (Surrogate Recoveries)

Individual sample performance for the organic analyses was monitored by assessing the results of surrogate compound percent recoveries. The sample analyses that violated surrogate acceptance criteria are identified and qualified in Table 4. The PCB surrogate recoveries could not be measured for one sample due to dilutions required to successfully analyze the sample. No further qualification was required. The surrogate recovery acceptance criteria was met for the remaining samples.

Matrix Spike/Matrix Spike Duplicate Percent Recoveries - Metals Analyses

Matrix spike/matrix spike duplicate (MS/MSD) samples were monitored to determine the effects of sample matrix on the laboratories digestion and measurement methods. The MS/MSD percent recoveries were monitored to evaluate accuracy and the relative percent difference (RPD) of the percent recoveries was monitored to evaluate precision. The samples that should be qualified due to violation of MS/MSD percent recovery acceptance criteria are outlined in Table 5. The remainder of the data were within the acceptance criteria.

Matrix Spike/Matrix Spike Duplicate Percent Recoveries – Organic Analyses

To assess the long term accuracy and precision of the analytical methods on various matrices, MS/MSD percent recoveries and the RPD of the recoveries were determined. The MS/MSD percent recoveries and RPDs acceptance criteria were met for all analyses.

Field Quality Assurance/Quality Control

The field quality assurance/quality control consisted of one (1) field duplicate sample set. Overall precision for the sampling event and laboratory procedures was monitored using the results of the field duplicate sample set. Table 6 summarized the results of the detected analytes in the field duplicate sample set. The data indicate that an adequate level of precision was achieved for the sampling event.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision, based on the provided information, and may be used with the qualifications noted.

TABLE 1

**SAMPLE IDENTIFICATION NUMBERS
GENERAL MOTORS CLARK STREET SITE
DETROIT, MICHIGAN**

S-8889-120997-SF-533
S-8889-120997-SF-534
S-8889-120997-SF-535
S-8889-120997-SF-536
S-8889-120997-SF-537
S-8889-123097-SEA-538
S-8889-123097-SEA-539
S-8889-123097-SEA-540
S-8889-123097-SEA-541

TABLE 2

SUMMARY OF ANALYTICAL METHODS
GENERAL MOTORS CLARK STREET SITE
DETROIT, MICHIGAN

<i>Parameter</i>	<i>Method</i>
TCL VOC	SW-846 8260 ¹
TCL SVOC	SW-846 8270
PCB	SW-846 8080
Michigan Metals	
Arsenic	SW-846 7060A
Barium	SW-846 6010A
Cadmium	SW-846 6010A/7131A
Chromium	SW-846 6010A
Copper	SW-846 6010A
Lead	SW-846 6010A
Mercury	SW-846 7471A
Selenium	SW-846 6010A/7740
Silver	SW-846 7761/6010A
Zinc	SW-846 6010A

¹ "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd Edition, and Promulgated Updates, November 1986.

TABLE 3

**HOLDING TIME PERIODS
GENERAL MOTORS CLARK STREET SITE
DETROIT, MICHIGAN**

<i>Analysis</i>	<i>Holding Time Period</i>
TCL VOC	- 14 days from sample collection to completion of analysis
TCL SVOC, PCB	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis
Michigan Metals -	
Metals (except Mercury)	- 180 days from sample collection to completion of analysis
Mercury	- 28 days from sample collection to completion of analysis

TABLE 4

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
VIOLATION OF SURROGATE PERCENT RECOVERY CRITERIA
GENERAL MOTORS CLARK STREET SITE
DETROIT, MICHIGAN

<i>Analysis</i>	<i>Associated Samples</i>	<i>Qualifier¹</i>
TCL VOC	S-8889-123097-SEA-541	J

¹ The analysis parameter results should be qualified for the associated samples as:

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample (for detected parameters).

TABLE 5

**SUMMARY OF QUALIFIED SAMPLE DATA DUE TO OUTLYING
MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY DATA-METALS
GENERAL MOTORS CLARK STREET SITE
DETROIT, MICHIGAN**

<i>Analysis</i>	<i>Samples</i>	<i>Parameters</i>	<i>Qualifier¹</i>
Michigan Metals	S-8889-120997-SF-531,	Copper	J
	S-8889-120997-SF-532,	Silver	UJ
	S-8889-120997-SF-533,		
	S-8889-120997-SF-534,		
	S-8889-120997-SF-535,		
	S-8889-120997-SF-536,		
	S-8889-120997-SF-537		
	S-8889-123097-SEA-538,	Zinc	J
	S-8889-123097-SEA-539,		
	S-8889-123097-SEA-540,		
	S-8889-123097-SEA-541		

¹ The parameter results should be qualified for the listed samples as:

- J - The analyte was analyzed for and was positively identified, but the associated numerical value may not be consistent with the amount actually present in the environmental sample (for detected parameters).
- UJ - The analyte was analyzed for but was not detected above the level of the associated value. The associated value may not accurately or precisely represent the sample detection limit (for non-detected parameters).

TABLE 6

**SUMMARY OF DETECTED ANALYTIES IN FIELD DUPLICATE SAMPLE SET
GENERAL MOTORS CLARK STREET SITE
DETROIT, MICHIGAN**

<i>Parameter</i>	<i>Investigative Sample</i>	<i>Duplicate Sample</i>	<i>RPD¹</i>
	S-8889-120997-SF-533	S-8889-120997-SF-534	
Michigan Metals (mg/kg)			
Arsenic	2.8	2.4	15
Barium	16.0	24.8	43
Cadmium	0.16	0.11	37
Chromium	7.2	6.2	15
Copper	4.8 J ²	5.3 J	9.9
Lead	2.7	3.8	34
Zinc	18.7	16.0	16

¹ RPD - Relative Percent Difference

² J - The associated numerical value is an estimated quantity.