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Counsel's Request**

DRAFT

**PARCEL A-2
PHASE II ENVIRONMENTAL SITE ASSESSMENT**

ADDENDUM NO. 1

**General Motors Corporation
Clark Avenue Facility
Detroit, Michigan**

**FEBRUARY 1998
REF. NO. 8889 (25)**
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CONESTOGA-ROVERS & ASSOCIATES

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1.0 **INTRODUCTION**

Consistent with a request by General Motors Corporation (GM), Conestoga-Rovers & Associates (CRA) has developed the following addendum to the Parcel A-2 Phase II Environmental Site Assessment (Phase II ESA Addendum No. 1) for a portion of the GM Clark Avenue Facility in Detroit, Michigan. The Site is defined as Parcel A-2, as designated on a survey by David C. Adams & Son, dated November 14, 1997 (Site).

This Phase II ESA Addendum No. 1 was developed to address changes in applicable criteria issued by the Michigan Department of Environmental Quality (MDEQ) - Environmental Response Division (ERD) pursuant to Act 451, Part 201.

This Phase II ESA Addendum No. 1 compares the Phase II ESA analytical data from samples collected during the period from September 1996 to December 1996, to the following criteria:

- Direct Contact Criteria;
- Soil Saturation Criteria;
- Ambient Air; and
- Indoor Air.

2.0 ANALYTICAL RESULTS

The location and number of soil samples collected is described in the Phase II ESA Report. The following sections provide a summary of detected compounds in soil samples which exceed the most restrictive Act 451, Part 201 industrial soil criteria. Tables 2.1 and 2.2 present the values for the different soil quality standards evaluation.

2.1 VOCS

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

2.2 SVOCS

A summary of detected SVOCs in soil samples is presented in Table 2.1.

None of the soil samples contained any parameters at levels above the most restrictive industrial soil criteria.

2.3 PCBS

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

2.4 INORGANICS

A summary of detected inorganics in soil samples is presented in Table 2.2.

None of the soil samples contained any parameters at levels above the most restrictive industrial soil criteria.

3.0 CONCLUSIONS

Based on the results of the Phase II ESA and the re-evaluation of the data with respect to the revised industrial criteria presented in this addendum, no additional areas of concern (AOCs) were identified.

TABLE 2.1

SUMMARY OF DETECTED SVOCs IN SOIL SAMPLES
PHASE II ESA ADDENDUM NO. 1
PARCEL A-2
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)	Soil Saturation (C _{sat})(4)	Residential Ambient Air Finite Source (5m) VSIC (3)	Industrial/Commercial Ambient Air Finite Source (5m) VSIC (3)	Residential Volatilization to Indoor Air Inhalation Criteria (4)	Industrial/Commercial Volatilization to Indoor Air Inhalation Criteria (4)	A2-2 BH-189-96 102296-PFR-310 6-6.5 10/23/96	A2-2 BH-190-96 102396-PFR-312 3.5-5 10/23/96
Parameter									
<u>Semi-Volatile Organic Compounds (µg/kg)</u>									
Acenaphthene	76,000,000	810,000,000	NA	750,000,000	1,850,000,000	190,000,000	ND(400)	ND(380)	
Anthracene	420,000,000	1,000,000,000	NA	490,000,000	1,150,000,000	1,000,000,000 B	ND(400)	ND(380)	
Benzo(a)anthracene	14,000	210,000	-	ID	ID	-	ND(400)	ND(380)	
Benzo(a)pyrene	1,400	21,000	-	220,000	800,000	-	ND(400)	ND(380)	
Benzo(b)fluoranthene	14,000	210,000	NA	ID	ID	ID	ND(400)	ND(380)	
Benzo(g,h,i)perylene	1,500,000	15,000,000	-	ID	ID	-	ND(400)	ND(380)	
Benzo(k)fluoranthene	140,000	210,000	-	ID	ID	-	ND(400)	ND(380)	
Benzyl butyl phthalate	68,000,000	210,000,000	-	3,900,000,000	9,500,000,000	-	ND(400)	ND(380)	
Bis(2-Ethylhexyl)phthalate	700,000	11,000,000	-	8,000,000,000	31,000,000,000	-	ND(400)	ND(380)	
Carbazole	-	-	-	ID	ID	-	ND(400)	ND(380)	
Chrysene	1,400,000	21,000,000	NA	ID	ID	ID	ND(400)	ND(380)	
Di-n-butylphthalate	51,000,000	540,000,000	-	13,500,000,000	38,000,000,000	-	ND(400)	ND(380)	
Dibenzofuran	1,400	21,000	-	ID	ID	-	1,100	ND(380)	
3,3'-Dichlorobenzidine	5,700	ID	NA	ID	ID	ID	ND(400)	ND(380)	
Fluoranthene	51,000,000	51,000,000	-	215,000	800,000	-	ND(800)	ND(2,300)	
Fluorene	51,000,000	540,000,000	NA	265,000,000	650,000,000	1,000,000,000 B	600	ND(380)	
Indeno(1,2,3-c,d)pyrene	14,000	540,000,000	NA	44,500,000	105,000,000	1,000,000,000 B	ND(400)	ND(380)	
2-Methylnaphthalene	15,000,000	150,000,000	-	ID	ID	-	ND(400)	ND(380)	
Naphthalene	15,000,000	160,000,000	NA	ID	ID	ID	ND(400)	460	
Pentachlorophenol	8,100	83,000	NA	4,900,000	11,500,000	78,000,000	ND(400)	ND(380)	
Phenanthrene	1,500,000	16,000,000	-	24,500,000	95,000,000	-	ND(2,000)	ND(3,900)	
Pyrene	32,000,000	340,000,000	NA	235,000,000	550,000,000	15,000,000	860	ND(380)	
						1,000,000,000 B	500	ND(380)	

Notes:

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

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.

NA - Not applicable

ID - Inadequate data to develop criterion.

-- - Criterion not available.

PAOC - Potential Area of Concern.

bgs - below ground surface

B - Calculated criterion exceeds 100%, hence it is reduced to 100% (1.0E+9). Evaluation of free phase contaminant, environmental impacts, adverse aesthetics and acute or point contact toxicity is required.

Shaded number indicates most restrictive industrial criterion.

(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.

(3) Values taken from MDEQ-ERD Part 201 Generic Soil Inhalation Criteria for Ambient Air. Technical Support Document, dated April 23, 1997 (Modifier of 0.5 used for 11-acre parcel).

(4) Values taken from MDEQ-ERD Draft Part 201 Generic Groundwater and Soil Volatilization to Indoor Air Criteria.

Technical Support Document, dated December 21, 1997.

TABLE 2.2

SUMMARY OF DETECTED INORGANICS IN SOIL SAMPLES
PHASE II ESA ADDENDUM NO. 1
PARCEL A-2
GM CLARK AVENUE FACILITY
DETROIT, MICHIGAN

PAOC No.	Michigan Generic Residential Direct Contact	Michigan Generic Industrial Direct Contact	Soil Saturation (Csat) (4)	Residential Ambient Air Finite Source (5 m) VSIC (3)	Industrial/Commercial Ambient Air Finite Source (5 m) VSIC (3)	Residential Volatilization to Indoor Air Inhalation Criteria (4)	Industrial/Commercial Volatilization to Indoor Air Inhalation Criteria (4)	A2-2 BH-189-96 102296-PFR-310 6-6.5 10/22/96	A2-2 BH-189-96 102296-PFR-311 13.5-14 10/22/96
Sample ID (S-8889-)	Criteria (1)	Criteria (2)							
Sample Depth (feet bgs)									
Date Sampled									
Inorganics (mg/kg)									
Arsenic	6.6	100	NA	ID	ID	--	--	11.6	5.29
Barium	30,000	520,000	NA	ID	ID	--	--	114	62.2
Cadmium	210	2,200	NA	ID	ID	--	--	0.381 J	0.198 J
Chromium	2,000	22,000	NA	ID	ID	--	--	19.9	18.4
Copper	16,000	170,000	NA	ID	ID	--	--	18,600	17,100
Lead	400	200	NA	ID	ID	--	--	13.2 J	8.38 J
Mercury	130	1,400	NA	ID	ID	--	--	ND(0.100)	ND(0.100)
Selenium	2,100	23,000	NA	ID	ID	--	--	ND(1.26)	ND(1.30)
Silver	2,000	21,000	NA	ID	ID	--	--	ND(0.628)	ND(0.649)
Zinc	140,000	1,000,000	NA	ID	ID	--	--	58.4	77.3

Notes:

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

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.

NA - Not applicable.

ID - Insufficient data to develop criterion.

-- - Criterion not available.

PAOC - Potential Area of Concern

bgs - below ground surface.

Shaded number indicates most restrictive industrial criterion.

Boxed number indicates exceedance of at least one soil criterion.

(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.

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Sample ID (S-8889-)	Criteria (1)	Criteria (2)							
Sample Depth (feet bgs)									
Date Sampled									
Inorganics (mg/kg)									
Arsenic	6.6	100	NA	ID	ID	-	-	4.54	7.3
Barium	30,000	320,000	NA	ID	ID	-	-	62.8	89.2
Cadmium	210	2,300	NA	ID	ID	-	-	0.207 J	0.116 J
Chromium	2,000	22,000	NA	ID	ID	-	-	16.8	28.2
Copper	16,000	170,000	NA	ID	ID	-	-	17,200	16,200
Lead	400	400	NA	ID	ID	-	-	33.5 J	9.69 J
Mercury	130	1,400	NA	ID	ID	-	-	0.2	ND(0.128)
Selenium	2,100	23,000	NA	ID	ID	-	-	ND(1.24)	ND(1.28)
Silver	2,000	21,000	NA	ID	ID	-	-	ND(0.619) UJ	ND(0.638) UJ
Zinc	140,000	1,000,000	NA	ID	ID	-	-	58.2 J	56.4 J

Notes:

- ND() - Parameter was not detected above level in parentheses.
 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.
 NA - Not applicable.
 ID - Insufficient data to develop criterion.
 -- - Criterion not available.
 PAOC - Potential Area of Concern
 bgs - below ground surface.
 Shaded number indicates most restrictive industrial criterion.
 Boxed number indicates exceedance of at least one soil criterion.
 (1) Values taken from MDEQ Operational Memorandum #8, Revision 4, dated June 5, 1995.
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