RC 1995 PHASE II SAMPLE LOCATION MAPS, SAMPLE ANALYSIS, SOIL BORING DESCRIPTIONS AND ASBESTOS ANALYSIS

SAMPLE DATA SUMMARY TABL /ITH COMPARISON
TO APPLICABLE CLEAN-UP STANDARDS
SOIL BORINGS B-1 THROUGH B-15
(Includes information taken from April 25, 1995 Phase II
Environmental Site Assessment compiled by RC Associates, Inc.)
ADDITIONAL ESA SERVICES - PROPOSED BAY COUNTY CONFERENCE CENTER
BAY CITY, MICHIGAN
RC PROJECT NO. E-007019-3A

Parameters	Sample ID Numbers and Contaminant Concentrations (parts per billion - ppb)								Generic Residential** Clean-Up Criteria (Soil/ Groundwater) [MI PA 451]	Commercial Sub-Category IV*** Clean-Up Criteria (Soil/Groundwater) [MI PA 451]
	B-1, 1-BS	B-1, 4-BS	B-2, 1-BS	B-2, 1-WS	B-3, 1-BS	B-3, 3-BS	B-4, 1-BS	B-4, 4-BS		
PNA's										
Acenaphthene	ND	ND	ND	ND	ND	ND	881	ND	26,000/1,300	1,000,000,000/3,800
Fluorene	ND	ND	ND	ND	ND	ND	1,132	ND	18,000/880	1,000,000,000/2,500
Anthracene	ND	ND	345	ND	ND	ND	2,295	ND	150,000/7,300	1,000,000,000/21,000
Phenanthrene	ND	350	1,130	16.6	655	ND	7,829	ND	520/26	54,0000,000/75
Fluoranthene	ND	ND	ND	10.9	575	ND	6,705	ND	18,000/880	1,000,000,000/2,500
Pyrene	ND	391	1,744	8.2	458	ND	4,806	ND	11,000/550	1,000,000,000/1,600
Chrysene	ND	ND	1,658	5.2	ND	ND	3,721	ND	1,400,000/120	68,000,000/480
Benzo(b)fluoranthene	ND	ND	2,061	ND	405	ND	4,380	ND	14,000/1.2	680,000/4.8
Benzo(a)pyrene	ND	ND	723	ND	ND	ND	1,899	ND	1,400/0.2	68,000/0.2
BTEX										
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	100/5	2,400,000/5
Toluene	ND	ND	ND	ND	ND	112	ND	ND	16,000/790	460,000,000/790
Ethylbenzene	ND	ND	ND	ND	ND	40	ND	ND	1,500/74	200,000,000/74
Xylenes	ND	ND	ND	ND	ND	91	ND	ND	5,600/280	1,000,000,000/280
METALS										
Arsenic	4,699	21,660	9,433	ND	3,171	6,128	61,076	3,116	1,000/50	280,000/50
Barium	24,340	46,980	62,810	1,419	39,510	39,010	72,050	54,320	40,000/2,000	1,000,000,000/2,000
Cadmium	130	1,873	287	ND	218	179	476	216	100/5	7,400,000/5
Chromium	9,638	84,320	11,410	ND	11,160	13,839	13,500	16,136	2,000/100	1,000,000,000/100
Copper	10,250	52,220	35,790	ND	14,090	19,170	48,630	18,303	20,000/1,400	560,000,000/4,000
Lead	18,274	39,352	81,270	ND	35,578	84,776	249,769	18,394	80/4	400,000/4
Mercury	ND	250	250	ND	542	167	950	ND	40/2	4,500,000/2
Silver	ND	ND	ND	ND	ND	ND	ND	ND	2,000,000/34	70,000,000/98
Zinc	20,000	84,000	95,200	ND	43,130	50,516	120,880	46,240	48,000/2,400	1,000,000,000/6,900

NOTE: BS designates soil sample. WS designates water sample. Only those samples and parameters with detectable concentrations are summarized on this table. Compilation of site specific background data or performance of leachability testing may lessen concerns for elevated metal concentrations.

ND = Below the requested analytical method detection limit.

= Samples impacted above the Residential Clean-Up Criteria.

** 20X DRINKING WATER FOR SOIL GENERIC RESIDENTIAL CLEANUP

*** INDUSTRIAL DIRECT CONTACT

DED/mdi; E7019-3AT.DOC (12-95)

SAMPLE DATA SUMMARY TABL ITH COMPARISON
TO APPLICABLE CLEAN-UP STANDARDS
SOIL BORINGS B-1 THROUGH B-15
(Includes information taken from April 25, 1995 Phase II
Environmental Site Assessment compiled by RC Associates, Inc.)
ADDITIONAL ESA SERVICES - PROPOSED BAY COUNTY CONFERENCE CENTER
BAY CITY, MICHIGAN
RC PROJECT NO. E-007019-3A

Parameters	Sample ID Numbers and Contaminant Concentrations (parts per billion - ppb)								Generic ** Residential Clean-Up (Soil/ Groundwater) [MI PA 451]	Commercial *** Sub-Category IV * Clean-Up Criteria (Soil/ Groundwater) [MI PA 451]
	B-5, 2-BS	B-5, 4-BS	B-6, 2-BS	B-6, 4-BS	B-13, 4-BS	B-14, 3-SS	B-14, 1-WS	B-15, 3-SS		
PNA's										
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	26,000/1,300	1,000,000,000/3,800
Fluorene	ND	ND	ND	ND	ND	ND	ND	ND	18,000/880	1,000,000,000/2,500
Anthracene	447	ND	ND	ND	ND	ND	ND	ND	150,000/7,300	1,000,000,000/21,000
Phenanthrene	1,535	ND	ND	ND	ND	1,036	ND	ND	520/26	54,000,000/75
Fluoranthene	1,874	ND	436	ND	ND	1,364	ND	ND	18,000/880	1,000,000,000/2,500
Pyrene	1,465	ND	392	ND	ND	ND	ND	ND	11,000/550	1,000,000,000/1,600
Chrysene	1,019	ND	ND	ND	ND	1,292	ND	ND	1,400,000/120	68,000,000/480
Benzo(b)fluoranthene	1,031	ND	843	ND	ND	ND	ND	ND	14,000/1.2	680,000/4.8
Benzo(a)pyrene	742	ND	ND	ND	ND	ND	ND	ND	1,400/0.2	68,000/0.2
BTEX										
Benzene	ND	ND	110	13	ND	ND	ND	ND	100/5	2,400,000/5
Toluene	ND	ND	5,460	44	ND	ND	ND	ND	16,000/790	460,000,000/790
Ethylbenzene	ND	ND	446	16	ND	ND	ND	ND	1,500/74	200,000,000/74
Toluene	ND	ND	20,300	960	ND	ND	ND	ND	5,600/280	1,000,000,000/280
METALS										
Arsenic	11,619	4,411	7,709	2,420	18,399	3,089	ND	3,360	1,000/50	280,000/50
Barium	72,600	40,738	77,420	11,366	112,490	53,640	ND	27,750	40,000/2,000	1,000,000,000/2,000
Cadmium	287	94	138	ND	1,718	78.5	ND	124	100/5	7,400,000/5
Chromium	10,668	17,773	17,167	5,078	91,443	14,220	ND	11,750	2,000/100	1,000,000,000/100
Copper	37,440	14,893	14,351	4,867	149,070	26,240	ND	24,000	20,000/1,400	560,000,000/4,000
Lead	158,129	5,245	14,523	6,009	96,619	13,824	ND	8,375	80/4	400,000/4
Mercury	417	ND	125	ND	583	125	ND	ND	40/2	4,500,000/2
Silver	ND	ND	ND	ND	940	ND	ND	ND	2,000,000/34	70,000,000/98
Zinc	96,260	27,965	37,850	12,629	212,910	39,240	ND	29,750	48,000/2,400	1,000,000,000/6,900

NOTE: BS designates soil sample. WS designates water sample. Only those samples and parameters with detectable concentrations are summarized on this table. Compilation of site specific background data or performance of leachability testing may lessen concerns for elevated metal concentrations.

ND = Below the requested analytical method detection limit.

= Samples impacted above the Residential Clean-Up Criteria.

** 20X DRINKING WATER FOR SOIL GENERIC RESIDENTIAL CLEANUP

***INDUSTRIAL DIRECT OCNTACT

DED/mdi; E7019-3AT.DOC (12-95)

SOIL SAMPLE SPLP DATA SUMMARY TABLE WITH
COMPARISON TO APPLICABLE CLEAN-UP STANDARDS
SOIL BORINGS B-7 THROUGH B-12
PHASE IIB ESA
PROPOSED BAY COUNTY CONFERENCE CENTER
BAY CITY, MICHIGAN
RC PROJECT NO. E-007019-2A

Parameters	Sample ID Numbers and Contaminant Concentrations (parts per billion - ppb)							
	B-7, 2-SS (B-4 Vicinity)	B-7, 3-SS (B-4 Vicinity)	B-8, 2-SS	B-9, 3-SS (MW-1)	B-10, 2-SS (MW-2)	B-11, 3-SS	B-12, 3-SS (MW-4)	Generic Residential/ Commercial Clean-Up Criteria (MI PA 451) **
Toluene	ND	13	ND	ND	51	2	ND	790
Ethylbenzene	ND	ND	ND	37	628	2	ND	74
Total Xylenes	ND	ND	ND	93	1,982	4	ND	280
Arsenic	ND	ND	ND	ND	ND	ND	30.7	50
Barium	672	579	810	873	824	563	849	2,000
Lead	8.06	3.21	6.06	5.64	5.11	ND	ND	4

NOTE: Only those samples or parameters with detectable concentrations are summarized on this table. Groundwater clean-up criteria for residential and commercial categories are the same.

ND = Below the requested analytical method detection limit.

= Exceeds current Generic Residential Clean-Up Criteria.

** HEALTH BASED DRINKING WATER VALUES

QUATTRO: E7019-2A\E70192A3 (08-95)

MONITORING WELL SAMPLE DATA SUMMARY TABLE
WITH COMPARISON TO APPLICABLE CLEAN-UP STANDARDS
PHASE IIB ESA
PROPOSED BAY COUNTY CONFERENCE CENTER
BAY CITY, MICHIGAN
RC PROJECT NO. E-007019-2A

Parameters	Sample ID Numbers and Contaminant Concentrations (parts per billion - ppb)			
	B-9 MW-1	B-10 MW-2	B-12 MW-4	Generic Residential/ Commercial Clean-Up Criteria (MI PA 451) **
Arsenic	ND	19.8	18.4	50
Barium	306	245	ND	2,000
Copper	27	ND	ND	1,400
Zinc	85	ND	ND	2,400

NOTE: Only those samples or parameters with detectable concentrations are summarized on this table.

ND = Below the requested analytical method detection limit.

QUATRO: E7019-2A\E70192A2 (08-95)

** HEALTH BASED DRINKING WATER VALUES FOR GENERIC RESIDENTIAL CLEANUP CRITERIA

RC ENGINEERING & ENVIRONMENTAL INC.

GEOENVIRONMENTAL SOIL BORING LOG

Boring No: B-1

Project: Phase II ESA - Proposed Conference Center RCEE Project No: E-007019

Location: Bay City, Michigan Client: Conference Center Building Authority

DESCRIPTION Ground Surface Elevation = N/A	Depth Below Surface (ft.)	Sample No. & Type	N (Blows per ft.)	qp (tsf)	*PID (ppm)	Lab No.	PARAMETERS ANALYZED
SOD							
Fine to medium sand FILL; trace gravel, silt and organics - gray - damp (SP-FILL)		1-BS	---	---	2	**	Purgeable Compounds, PNA's, PCB's, Michigan Act 64 Metals
Sandy CLAY; trace gravel, sand, silt and concrete rubble - gray - damp (CL-FILL)	5						
Gravelly sand FILL; trace silt and clay - brownish-gray - wet (SP-FILL)		2-BS	---	---	<1	---	---
Sandy CLAY; trace gravel, sand and silt - gray - wet (CL-FILL)							
	10	3-BS	---	---	<1	---	---
Fine to medium SAND; trace gravel, silt, clay, concrete and brick fragments - black - damp (SP-FILL)							
		4-BS	---	---	<1	**	Purgeable Compounds, PNA's, PCB's, Michigan Act 64 Metals
Clayey SILT; trace gravel - dark gray - damp (ML)	15						
Boring terminated at 15'							** 95-1078A

Changes in soil stratification indicated by the lines are approximate. The actual transition may vary between boring locations.

*PID = Photoionization Detector

WATER LEVEL OBSERVATIONS	BORING STARTED	03-24-95
WL @ 6' WHILE SAMPLING OR WHILE DRILLING	BORING COMPLETED	03-24-95
_____ IMMEDIATELY AFTER COMPLETION	RIG: Simco Earthprobe 200	DRAWN BY: MDI
_____ _____ AFTER COMPLETION	OPERATOR: ROM	APPROVED: BJH
	INSPECTOR: MLD	SHEET: 1 of 1

RC ENGINEERING & ENVIRONMENTAL INC.

GEOENVIRONMENTAL SOIL BORING LOG

Boring No: B-2

Project: Phase II ESA - Proposed Conference Center RCEE Project No: E-007019

Location: Bay City, Michigan Client: Conference Center Building Authority

DESCRIPTION Ground Surface Elevation = N/A	Depth Below Surface (ft.)	Sample No. & Type	N (Blows per ft.)	qp (tsf)	*PID (ppm)	Lab No.	PARAMETERS ANALYZED
Asphalt PAVEMENT							
Fine to medium sand FILL; trace gravel and silt - brown - moist (SP-FILL)							
		1-BS	---	---	5	**	Purgeable Compounds, PNA's, PCB's, Michigan Act 64 Metals
Fine to medium sand FILL; trace gravel, silt, clay, brick fragments; wood and cinders - dark gray to gray - moist to very moist (SP-FILL)	5						
		2-BS	---	---	3	---	---
Fine to medium sand FILL; trace to some silt, concrete fragments and cinders; trace yellow plastic, organics and coal - black - moist to wet (SP-FILL)	10	3-BS	---	---	7	---	---
Silty CLAY; trace sand - gray - moist to very moist (CL-FILL)							
Fine to medium sand FILL; trace silt, clay and brick fragments - dark brown - wet (SP-FILL)							
Fine to medium sand FILL; trace gravel, silt, brick fragments, coal and cinders - reddish-brown - wet (SP-FILL)	15	4-BS	---	---	1	---	---
Boring terminated at 15'							** 95-1078A
NOTE: A water sample (B2-1WS) was obtained from this boring location. Analytical parameters included.							

Changes in soil stratification indicated by the lines are approximate. The actual transition may vary between boring locations.

*PID = Photoionization Detector

WATER LEVEL OBSERVATIONS	BORING STARTED	03-24-95
WL@10-1/2' WHILE SAMPLING OR WHILE DRILLING	BORING COMPLETED	03-24-95
_____ IMMEDIATELY AFTER COMPLETION	RIG: Simco Earthprobe 200	DRAWN BY: MDI
_____ _____AFTER COMPLETION	OPERATOR: ROM	APPROVED: BJH
	INSPECTOR: MLD	SHEET: 1 of 1

RC ENGINEERING & ENVIRONMENTAL INC.

GEOENVIRONMENTAL SOIL BORING LOG

Boring No: B-3

Project: Phase II ESA - Proposed Conference Center RCEE Project No: E-007019

Location: Bay City, Michigan Client: Conference Center Building Authority

DESCRIPTION Ground Surface Elevation = N/A	Depth Below Surface (ft.)	Sample No. & Type	N (Blows per ft.)	qp (tsf)	*PID (ppm)	Lab No.	PARAMETERS ANALYZED
Asphalt PAVEMENT							
Gravel BASE COURSE							
Fine to medium sand FILL; trace gravel and silt - grayish-brown - damp (SP-FILL)		1-BS	---	---	<1	**	Purgeable Compounds, PNA's, PCB's, Michigan Act 64 Metals
Sandy CLAY FILL; trace gravel, silt, cinders, brick and wood, occasional organic sand and gravel pockets - mixed brown and black - damp (CL-FILL)	5	2-BS	---	---	<1	---	---
Silty CLAY; trace gravel and sand - grayish-brown - damp (CL-FILL)							
Sandy, woody PEAT - black - damp (Pt)	10	3-BS	---	---	<1	**	Purgeable Compounds, PNA's, PCB's, Michigan Act 64 Metals
WOOD FRAGMENTS		4-BS	---	---	<1	---	---
Boring terminated at 15'	15						** 95-1078A

Changes in soil stratification indicated by the lines are approximate. The actual transition may vary between boring locations.

*PID = Photoionization Detector

WATER LEVEL OBSERVATIONS	BORING STARTED	03-24-95
WL@10-1/2' WHILE SAMPLING OR WHILE DRILLING	BORING COMPLETED	03-24-95
_____ IMMEDIATELY AFTER COMPLETION	RIG: Simco Earthprobe 200	DRAWN BY: MDI
_____ _____ AFTER COMPLETION	OPERATOR: ROM	APPROVED: BJH
	INSPECTOR: MLD	SHEET: 1 of 1

RC ENGINEERING & ENVIRONMENTAL INC.

GEOENVIRONMENTAL SOIL BORING LOG

Boring No: B-4

Project: Phase II ESA - Proposed Conference Center RCEE Project No: E-007019

Location: Bay City, Michigan Client: Conference Center Building Authority

DESCRIPTION Ground Surface Elevation = N/A	Depth Below Surface (ft.)	Sample No. & Type	N (Blows per ft.)	qp (tsf)	*PID (ppm)	Lab No.	PARAMETERS ANALYZED
Asphalt PAVEMENT							
Gravel BASE COURSE							
Sandy clay FILL; trace gravel, silt and brick fragments - mixed, brown and black - (CL-FILL)		1-BS	---	---	<1	**	Purgeable Compounds, PNA's, PCB's, Michigan Act 64 Metals
Gravelly fine to medium sand FILL; trace silt - mixed maroon and black - damp (SP-FILL)							
Sandy clay FILL; trace gravel, silt and brick - grayish-black - damp (CL-FILL)	5						
Sandy CLAY; trace gravel, silt and occasional gravelly pockets - brown - damp (CL-FILL)		2-BS	---	---	<1	---	---
Fine to medium SAND; some gravel, trace silt and clay - mixed, black and gray - wet (SP-FILL)	10	3-BS	---	---	2	---	---
WOOD FRAGMENTS							
Fine to medium SAND; trace gravel and silt - gray - wet (SP-FILL)		4-BS	---	---	<1	**	Purgeable Compounds, PNA's, PCB's, Michigan Act 64 Metals
Sandy CLAY; trace gravel, sand and silt with frequent organic pockets and root structures - gray - damp (CL)	15						** 95-1078A
Boring terminated at 15' NOTE: Refusal at 9', OS/15' east.							

Changes in soil stratification indicated by the lines are approximate. The actual transition may vary between boring locations.

*PID = Photoionization Detector

WATER LEVEL OBSERVATIONS	BORING STARTED	03-24-95
WL @ 10' WHILE SAMPLING OR WHILE DRILLING	BORING COMPLETED	03-24-95
_____ IMMEDIATELY AFTER COMPLETION	RIG: Simco Earthprobe 200	DRAWN BY: MDI
_____ _____ AFTER COMPLETION	OPERATOR: ROM	APPROVED: BJH
	INSPECTOR: MLD	SHEET: 1 of 1

RC ENGINEERING & ENVIRONMENTAL INC.

GEOENVIRONMENTAL SOIL BORING LOG

Boring No: B-5

Project: Phase II ESA - Proposed Conference Center RCEE Project No: E-007019

Location: Bay City, Michigan Client: Conference Center Building Authority

DESCRIPTION Ground Surface Elevation = N/A	Depth Below Surface (ft.)	Sample No. & Type	N (Blows per ft.)	qp (tsf)	*PID (ppm)	Lab No.	PARAMETERS ANALYZED
Asphalt PAVEMENT							
Gravel BASE COURSE							
Fine to medium sand FILL; trace gravel and silt - brown - damp (SP-FILL)		1-BS	---	---	1	---	---
Sandy clay FILL; trace gravel and silt - mixed, brown and gray - damp (CL-FILL)							
Fine to medium sand FILL; trace silt, clay and organics - mixed, brown and black - damp (SP-FILL)	5						
		2-BS	---	---	8	**	Purg. Comp., PNA's, PCB's, MI Metals, Total Phenols and Cyanide
Organic fine to medium sand FILL; some silt, clay and bark - black - damp (SP-FILL)							
	10	3-BS	---	---	<1	---	---
Gravelly, fine to medium SAND; trace silt - gray - wet (SP)							
Sandy CLAY; trace gravel, sand and silt occasional sand pockets - gray - damp (CL)		4-BS	---	---	<1	**	Purg. Comp., PNA's, PCB's, MI Metals, Total Phenols and Cyanide
Boring terminated at 15'	15						** 95-1078A

Changes in soil stratification indicated by the lines are approximate. The actual transition may vary between boring locations.

*PID = Photoionization Detector

WATER LEVEL OBSERVATIONS	BORING STARTED	03-24-95
WL@12-1/2' WHILE SAMPLING OR WHILE DRILLING	BORING COMPLETED	03-24-95
_____ IMMEDIATELY AFTER COMPLETION	RIG: Simco Earthprobe 200	DRAWN BY: MDI
_____ _____AFTER COMPLETION	OPERATOR: ROM	APPROVED: BJH
	INSPECTOR: MLD	SHEET: 1 of 1

RC ENGINEERING & ENVIRONMENTAL INC.

GEOENVIRONMENTAL SOIL BORING LOG

Boring No: B-6

Project: Phase II ESA - Proposed Conference Center RCEE Project No: E-007019

Location: Bay City, Michigan Client: Conference Center Building Authority

DESCRIPTION Ground Surface Elevation = N/A	Depth Below Surface (ft.)	Sample No. & Type	N (Blows per ft.)	qp (tsf)	*PID (ppm)	Lab No.	PARAMETERS ANALYZED
Asphalt PAVEMENT							
Gravel BASE COURSE							
Fine to medium sand FILL; trace gravel, silt, clay and brick fragments - mixed, brown, black and gray - damp (SP-FILL)		1-BS	---	---	1	---	---
Sandy clay FILL; trace gravel and silt - brown and gray - damp (CL)	5	2-BS	---	---	1	**	Purgeable Compounds, PNA's, PCB's, Michigan Act 64 Metals
Organic, fine to medium sand FILL; black - damp (SP-FILL)							
WOOD FRAGMENTS	10	3-BS	---	---	50	---	---
Medium to coarse SAND; trace silt and shell fragments - grayish-brown - wet (SP)		4-BS	--	---	77	**	Purgeable Compounds, PNA's, PCB's, Michigan Act 64 Metals
Sandy CLAY; trace gravel and silt, frequent root structures - gray - moist to very moist (CL)							
Boring terminated at 13'	15						** 95-1078A

Changes in soil stratification indicated by the lines are approximate. The actual transition may vary between boring locations.

*PID = Photoionization Detector

WATER LEVEL OBSERVATIONS	BORING STARTED	03-24-95
WL @ 11' WHILE SAMPLING OR WHILE DRILLING	BORING COMPLETED	03-24-95
_____ IMMEDIATELY AFTER COMPLETION	RIG: Simco Earthprobe 200	DRAWN BY: MDI
_____ _____AFTER COMPLETION	OPERATOR: ROM	APPROVED: BJH
	INSPECTOR: MLD	SHEET: 1 of 1

RC ENGINEERING & ENVIRONMENTAL INC.

GEOENVIRONMENTAL SOIL BORING LOG

Boring No: B-7

Project: Phase IIB ESA-Prop. Bay Co. Conf. Center RCEE Project No: E-007019-2A

Location: Bay City, Michigan Client: Bay Co. Conf. Center Building Authority

DESCRIPTION Ground Surface Elevation = N/A	Depth Below Surface (ft.)	Sample No. & Type	N (Blows per ft.)	qp (tsf)	*PID (ppm)	Lab No.	PARAMETERS ANALYZED
Asphalt PAVEMENT							
Sandy gravel BASE COURSE							
Fine to medium sand FILL; trace to some clay, trace gravel, silt, wood, glass and brick fragments - mixed, brown, dark gray and red - moist (SP-FILL)		1-SS	20	---	1	---	---
Silty clay FILL; trace gravel, sand and coal - brown - moist (CL-FILL)	5						
Sandy clay FILL; trace gravel, silt and coal - brown with few dark brown mottles - moist (CL-FILL)		2-SS	13	---	22	2192A-1	SPLP BTEX, PNA's, Michigan Act 64 Metals
	10	3-SS	2	---	15	2192A-2	SPLP BTEX, PNA's, Michigan Act 64 Metals
Fine to medium SAND; trace gravel, silt and wood fragments - dark gray - wet (SP)		4-SS	16	---	NR	---	---
Boring terminated at 15' and backfilled with bentonite.	15						

Changes in soil stratification indicated by the lines are approximate. The actual transition may vary between boring locations.

*PID = Photoionization Detector

WATER LEVEL OBSERVATIONS		BORING STARTED	07-05-95
9-3/4'	WHILE SAMPLING OR WHILE DRILLING	BORING COMPLETED	07-05-95
DC @ 8'3"	IMMEDIATELY AFTER COMPLETION	RIG: B-57	DRAWN BY: MDI
		OPERATOR: TN/BB/DN	APPROVED: DED
	AFTER COMPLETION	INSPECTOR: RM/ML	SHEET: 1 of 1

RC ENGINEERING & ENVIRONMENTAL INC.

GEOENVIRONMENTAL SOIL BORING LOG

Boring No: B-8

Project: Phase IIB ESA-Prop. Bay Co. Conf. Center RCEE Project No: E-007019-2A

Location: Bay City, Michigan Client: Bay Co. Conf. Center Building Authority

DESCRIPTION Ground Surface Elevation = N/A	Depth Below Surface (ft.)	Sample No. & Type	N (Blows per ft.)	qp (tsf)	*PID (ppm)	Lab No.	PARAMETERS ANALYZED
Asphalt PAVEMENT							
Sandy gravel BASE COURSE							
Silty clay FILL; trace gravel and sand - brown - moist (CL-FILL)		1-SS	11	---	1	---	---
Fine to medium sand FILL; trace gravel, silt, bricks, coal and wood fragments - dark gray - moist (SP-FILL)							
Sandy clay FILL; trace silt - brown - moist (CL-FILL)	5						
		2-SS	4	---	2	2192A-3	SPLP BTEX, PNA's, Michigan Act 64 Metals
SAW DUST AND WOOD FRAGMENTS							
	10	3-SS	6	---	1	---	---
Sandy CLAY; trace gravel and silt - grayish-brown - moist (CL)		4-SS	24	---	<1	---	---
Boring terminated at 15' and backfilled with bentonite.	15						

Changes in soil stratification indicated by the lines are approximate. The actual transition may vary between boring locations.

*PID = Photoionization Detector

WATER LEVEL OBSERVATIONS		BORING STARTED	07-05-95
11-1/2'	WHILE SAMPLING OR WHILE DRILLING	BORING COMPLETED	07-05-95
DC @ 12'1"	IMMEDIATELY AFTER COMPLETION	RIG: B-57	DRAWN BY: MDI
		OPERATOR: TN/BB/DN	APPROVED: DED
	AFTER COMPLETION	INSPECTOR: RM/ML	SHEET: 1 of 1

RC ENGINEERING & ENVIRONMENTAL INC.

GEOENVIRONMENTAL SOIL BORING LOG

Boring No: B9/MW-1

Project: Phase IIB ESA-Prop. Bay Co. Conf. Center RCEE Project No: E-007019-2A

Location: Bay City, Michigan Client: Bay Co. Conf. Center Building Authority

DESCRIPTION Ground Surface Elevation = 104.69'	Depth Below Surface (ft.)	Sample No. & Type	N (Blows per ft.)	qp (tsf)	*PID (ppm)	Lab No.	PARAMETERS ANALYZED
Gravel FILL							
Fine to medium sand FILL; trace gravel, silt, brick fragments and cinders - brown - damp (SP-FILL)		1-SS	12	---	2	---	---
Fine to medium sand FILL; trace gravel and silt - dark gray - damp (SP-FILL)							
Sandy clay FILL; trace gravel and silt - mixed, brown and tan - moist (CL-FILL)	5	2-SS	6	---	2	---	---
Fine to medium sand FILL; trace gravel, silt, organics and wood fragments- dark gray - moist (SP-FILL)							
Fine to medium SAND; trace silt - dark gray - moist to very moist (SP)	10	3-SS	9	---	**	2192A-4	SPLP and Total BTEX, PNA's, Michigan Act 64 Metals
Sandy CLAY; trace gravel and silt - brown with few gray and blue-green mottles - moist (CL)		4-SS	31	---	12	---	---
Boring terminated at 15'	15						** 1,239
NOTE: Monitoring Well MW-1 was installed in bore hole immediately after completion. Refer to Wellpoint Installation sheet for backfill method for MW-1.	20						

Changes in soil stratification indicated by the lines are approximate. The actual transition may vary between boring locations.

*PID = Photoionization Detector

WATER LEVEL OBSERVATIONS		BORING STARTED		07-05-95
NW	WHILE SAMPLING OR WHILE DRILLING	BORING COMPLETED		07-05-95
DC @ 12'8"	IMMEDIATELY AFTER COMPLETION	RIG: B-57	DRAWN BY:	MDI
		OPERATOR: TN/BB/DN	APPROVED:	DED
	AFTER COMPLETION	INSPECTOR: RM/ML	SHEET:	1 of 1

RC ENGINEERING & ENVIRONMENTAL INC.

GEOENVIRONMENTAL SOIL BORING LOG

Boring No: B10/MW-2

Project: Phase IIB ESA-Prop. Bay Co. Conf. Center RCEE Project No: E-007019-2A

Location: Bay City, Michigan Client: Bay Co. Conf. Center Building Authority

DESCRIPTION Ground Surface Elevation = 103.70'	Depth Below Surface (ft.)	Sample No. & Type	N (Blows per ft.)	qp (tsf)	*PID (ppm)	Lab No.	PARAMETERS ANALYZED
SOD							
TOPSOIL							
Gravel FILL - tan - damp (GP-FILL)		1-SS	12	---	1	---	---
Fine to medium sand FILL; trace gravel, silt, bricks, wood and glass fragments - dark gray and brown - damp (SP-FILL)	5	2-SS	4	---	1	2192A-5	SPLP BTEX, PNA's, Michigan Act 64 Metals
Clayey sand FILL; trace gravel and silt - gray - very moist (SC-FILL)	10	3-SS	3	---	<1	---	---
Sandy CLAY; trace gravel and silt - brown - moist (CL)	15	4-SS	36	---	<1	---	---
Boring terminated at 15' NOTE: Monitoring Well MW-2 was installed in bore hole immediately after completion. Refer to Wellpoint Installation sheet for backfill method for MW-2.	20						

Changes in soil stratification indicated by the lines are approximate. The actual transition may vary between boring locations.

*PID = Photoionization Detector

WATER LEVEL OBSERVATIONS	BORING STARTED	07-05-95
11' WHILE SAMPLING OR WHILE DRILLING	BORING COMPLETED	07-05-95
WC@12-3/4" IMMEDIATELY AFTER COMPLETION	RIG: B-57	DRAWN BY: MDI
	OPERATOR: TN/BB/DN	APPROVED: DED
_____ _____ AFTER COMPLETION	INSPECTOR: RM/ML	SHEET: 1 of 1

RC ENGINEERING & ENVIRONMENTAL INC.

GEOENVIRONMENTAL SOIL BORING LOG

Boring No: B11/MW-3

Project: Phase IIB ESA-Prop. Bay Co. Conf. Center RCEE Project No: E-007019-2A

Location: Bay City, Michigan Client: Bay Co. Conf. Center Building Authority

DESCRIPTION Ground Surface Elevation = 97.86'	Depth Below Surface (ft.)	Sample No. & Type	N (Blows per ft.)	qp (tsf)	*PID (ppm)	Lab No.	PARAMETERS ANALYZED
SOD							
TOPSOIL							
Fine to medium sand FILL; trace gravel, silt, concrete and metal fragments (tin can), few clay layers - dark gray - damp (SP-FILL)		1-SS	37	---	1	---	---
	5						
Sandy clay FILL; trace gravel, silt and concrete fragments, few root structures - gray with few dark gray mottles - moist to very moist (CL-FILL)		2-SS	12	---	1	---	---
	10	3-SS	7	---	10	2193A-1	SPLP BTEX, PNA's, Michigan Act 64 Metals
Alternating layers of wood fragments (2") and clay (1"); Silty CLAY; trace to some sand, trace gravel - gray - wet (CL-WOOD)		4-SS	11	---	2	---	---
	15						
Boring terminated at 15'							
NOTE: Monitoring Well MW-3 was installed in bore hole immediately after completion. Refer to Wellpoint Installation sheet for backfill method for MW-3.	20						

Changes in soil stratification indicated by the lines are approximate. The actual transition may vary between boring locations.

*PID = Photoionization Detector

WATER LEVEL OBSERVATIONS		BORING STARTED	07-06-95
WS @ 9'	WHILE SAMPLING OR WHILE DRILLING	BORING COMPLETED	07-06-95
	IMMEDIATELY AFTER COMPLETION	RIG: B-57	DRAWN BY: MDI
5'4"	10 minutes AFTER COMPLETION	OPERATOR: TN/BB/DN	APPROVED: DED
		INSPECTOR: RM/ML	SHEET: 1 of 1

RC ENGINEERING & ENVIRONMENTAL INC.

GEOENVIRONMENTAL SOIL BORING LOG

Boring No: B12/MW-4

Project: Phase IIB ESA-Prop. Bay Co. Conf. Center RCEE Project No: E-007019-2A

Location: Bay City, Michigan Client: Bay Co. Conf. Center Building Authority

DESCRIPTION Ground Surface Elevation = 96.81'	Depth Below Surface (ft.)	Sample No. & Type	N (Blows per ft.)	qp (tsf)	*PID (ppm)	Lab No.	PARAMETERS ANALYZED
SOD							
TOPSOIL							
Fine to medium sand FILL; trace to some gravel, trace silt, clay and wood fragments, layer of concrete encountered at 5' (approximately 6" thick) - mixed, dark brown and dark gray - very moist (SP-FILL)		1-SS	19	---	1	---	---
	5	2-SS	13	---	1	---	---
Sandy clay FILL; trace to some silt, trace gravel and brick fragments - dark gray - very moist (CL-FILL)	10	3-SS	3	---	3	2193A-2	SPLP BTEX, PNA's, Michigan Act 64 Metals
Silty CLAY; some shells, trace sand and organics, few organic pockets - dark gray with few black pockets - very moist (CL)		4-SS	1/12"	---	<1	---	---
Boring terminated at 15'	15						
NOTE: Monitoring Well MW-4 was installed in bore hole immediately after completion. Refer to Wellpoint Installation sheet for backfill method for MW-4.	20						

Changes in soil stratification indicated by the lines are approximate. The actual transition may vary between boring locations.

*PID = Photoionization Detector

WATER LEVEL OBSERVATIONS	BORING STARTED	07-06-95
WD@ 8'3-4" WHILE SAMPLING OR WHILE DRILLING	BORING COMPLETED	07-06-95
_____ IMMEDIATELY AFTER COMPLETION	RIG: B-57	DRAWN BY: MDI
12'4" 10 minutes AFTER COMPLETION	OPERATOR: TN/BB/DN	APPROVED: DED
	INSPECTOR: RM/ML	SHEET: 1 of 1

GEOENVIRONMENTAL SOIL BORING LOG

Boring No: B-13

Project: Additional ESA Svcs.-Prop. Bay Co. Conference Cntr. RC Project No: E-007019-3A

Location: Bay City, Michigan Client: Bay Cnty. Conf. Bldg. Auth.

DESCRIPTION Ground Surface Elevation = N/A	Depth Below Surface (ft.)	Sample No. & Type	N (Blows per ft.)	qp (tsf)	*PID (ppm)	Lab No.	PARAMETERS ANALYZED
SOD/TOPSOIL							
Fine to medium sand FILL; trace to some gravel, trace silt - brown to grayish brown - damp (SP-FILL)		1-BS	---	---	<1	---	---
	5	2-BS	---	---	<1	---	---
Fine GRAVEL; trace to some sand, trace silt - gray to dark gray - wet (GP)	10	3-BS	---	---	<1	---	---
Sandy CLAY; trace gravel and silt - dark gray - moist (CL)		4-BS	---	---	<1	**	BTEX, PNA's, Total Michigan Act 64 Metals
Boring terminated at 15' and backfilled with bentonite. Water Sample B-13, 1-WS extracted from a depth of 2 to 4 feet.	15						** 3408A-3

Changes in soil stratification indicated by the lines are approximate. The actual transition may vary between boring locations.

*PID = Photoionization Detector

WATER LEVEL OBSERVATIONS		BORING STARTED	11-20-95
2'	WHILE SAMPLING OR WHILE DRILLING	BORING COMPLETED	11-20-95
2'	IMMEDIATELY AFTER COMPLETION	RIG: Simco EarthProbe 200	DRAWN BY: MDI
2.1'	1/4 hour AFTER COMPLETION	OPERATOR: ROM	APPROVED: DED
		INSPECTOR: UKG	SHEET: 1 of 1

GEOENVIRONMENTAL SOIL BORING LOG

Boring No: B-14

Project: Additional ESA Svcs.-Prop. Bay Co. Conference Cntr. RC Project No: E-007019-3A

Location: Bay City, Michigan Client: Bay Cnty. Conf. Bldg. Auth.

DESCRIPTION Ground Surface Elevation = N/A	Depth Below Surface (ft.)	Sample No. & Type	N (Blows per ft.)	qp (tsf)	*PID (ppm)	Lab No.	PARAMETERS ANALYZED
Concrete PAVEMENT							
Fine to medium sand FILL; trace gravel, silt and clay - brown to dark brown - moist (SP-FILL)		1-BS	---	---	<1	---	---
Sandy clay FILL; trace gravel and silt - grayish-brown - moist (CL-FILL)	5	2-BS	---	---	1	---	---
Silty clay FILL; trace to some sand, trace gravel and wood fragments (sawdust) - dark brown - moist (CL-FILL)	10	3-BS	---	---	6	**	BTEX, PNA's, Total Michigan Act 64 Metals
Medium SAND; trace silt and organics - mottled, light brown, brown and dark brown - moist (SW)		4-BS	---	---	<1	---	---
Boring terminated at 15' and backfilled with bentonite. Water Sample B-14, 1-WS extracted from a depth of 4 to 6 feet.	15						** 3408A-2

Changes in soil stratification indicated by the lines are approximate. The actual transition may vary between boring locations.

*PID = Photoionization Detector

WATER LEVEL OBSERVATIONS	BORING STARTED	11-20-95
5' WHILE SAMPLING OR WHILE DRILLING	BORING COMPLETED	11-20-95
4.7' IMMEDIATELY AFTER COMPLETION	RIG: Simco EarthProbe 200	DRAWN BY: MDI
_____ _____ AFTER COMPLETION	OPERATOR: ROM	APPROVED: DED
	INSPECTOR: UKG	SHEET: 1 of 1

GEOENVIRONMENTAL SOIL BORING LOG

Boring No: B-15

Project: Additional ESA Svcs.-Prop. Bay Co. Conference Cntr. RC Project No: E-007019-3A

Location: Bay City, Michigan Client: Bay Cnty. Conf. Bldg. Auth.

DESCRIPTION Ground Surface Elevation = N/A	Depth Below Surface (ft.)	Sample No. & Type	N (Blows per ft.)	qp (tsf)	*PID (ppm)	Lab No.	PARAMETERS ANALYZED
Concrete PAVEMENT							
Fine to medium sand FILL; trace gravel, silt and organics - mixed, light brown, brown and dark brown - moist (SP-FILL)		1-BS	---	---	< 1	---	---
Sandy clay FILL; trace gravel and silt, trace to some asphalt fragments - dark brown - gray - moist (CL-FILL)	5	2-BS	---	---	1	---	---
Medium sand FILL; trace gravel, silt, clay and asphalt fragments - dark brown - wet (SP-FILL)	10	3-BS	---	---	28	**	BTEX, PNA's, Total Michigan Act 64 Metals
Silty CLAY; trace to some sand, trace gravel - brownish-gray - moist (CL)		4-BS	---	---	< 1	---	---
Boring terminated at 15' and backfilled with bentonite.	15						** 3408A-1

Changes in soil stratification indicated by the lines are approximate. The actual transition may vary between boring locations.

*PID = Photoionization Detector

WATER LEVEL OBSERVATIONS	BORING STARTED	11-20-95
1' WHILE SAMPLING OR WHILE DRILLING	BORING COMPLETED	11-20-95
1' IMMEDIATELY AFTER COMPLETION	RIG: Simco EarthProbe 200	DRAWN BY: MDI
1' 10 minutes AFTER COMPLETION	OPERATOR: ROM	APPROVED: DED
	INSPECTOR: UKG	SHEET: 1 of 1

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RC Engineering and Environmental
2970 Bay Road
Saginaw, MI 48603

Thursday, March 30, 1995

Ref Number: MI952571

POLARIZED LIGHT MICROSCOPY (PLM)

Project: E7019

SAMPLE	LOCATION	APPEARANCE	SAMPLE TREATMENT	ASBESTOS %	ASBESTOS TYPE	NONASBESTOS %	NONASBESTOS FIBROUS	NONASBESTOS %	NONASBESTOS NONFIBROUS
# 1		Grey Fibrous Heterogeneous	Teased	None Detected		10% 10%	Cellulose Glass	80%	Other
# 2		Tan Non-Fibrous Heterogeneous	Teased/Dissolved	None Detected		2%	Cellulose	98%	Other
# 3		Grey Fibrous Heterogeneous	Teased/Dissolved	5%	Chrysotile			95%	Other
# 4		Grey Fibrous Heterogeneous	Teased/Dissolved	5%	Chrysotile			95%	Other
# 5		Grey Fibrous Heterogeneous	Teased/Dissolved	5%	Chrysotile			95%	Other

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

Robert Thomas Letarte
Analyst

Laboratory
Supervisor

Other Approved
Signatory

Disclaimers: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. Floor tiles and wipes should be tested with either SEM or TEM. The above test report relates only to the items tested. This report may only be reproduced in full with written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. All "NVLAP" reports with NVLAP logo must contain at least one signature to be valid. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.
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