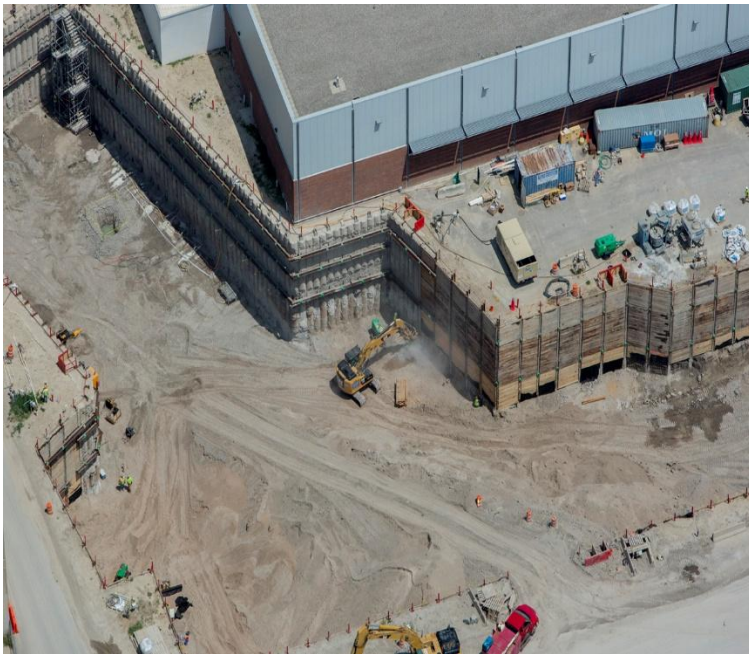


# Applied Example of Revised Part 201 Cleanup Criteria



***PRESENTED BY:***  
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Joint Environmental Conference  
East & West Michigan Chapters AWMA and  
Environmental Law Section of the State  
Bar of Michigan***



**NTH Consultants, Ltd.**

Infrastructure Engineering  
and Environmental Services

# Environmental Assessment & Redevelopment Tasks



- Phase I & II Environmental Site Assessments
- Baseline Environmental Assessment / Due Care Plan
- Remedial Investigations / Feasibility Studies
- Soil / Groundwater / Sediment Remediation
- UST /AST Removal / Closure



# Background Information

- 1.3 acre site, located in mid-Michigan
- Past site uses – auto sales and service including paint shop and repairs
- Presence of soil mounds on the property, unknown origin
- Property and surrounding sites contain fill materials described as foundry waste
- Residential structures
- Historic removal of underground fuel oil tanks
- Shallow perched water conditions

# Example Site



0 20' 40'  
SCALE

## LEGEND

- LIMITS OF STUDY AREA
- PARCEL BOUNDARY
- EXPOSED SOIL
- SOIL MOUND
- + GP-1 GEOPROBE
- HAB-1 HAND AUGER BORING

NOTE: LOCATIONS AND DIMENSIONS ARE APPROXIMATE. NOT A LEGAL SURVEY.



# Soil Analyses Metals



Sample ID	Sample Depth (ft)	Michigan 10 Metals									
		Arsenic	Barium	Cadmium	Chromium, Total	Copper	Lead	Mercury, Total	Selenium	Silver	Zinc
		7440-38-2	7440-39-3	7440-43-9	7440-47-3	7440-50-8	7439-92-1	7439-97-6	7782-49-2	7440-22-4	7440-66-6
GP-2 S-1	(6' - 7.5')	7,200	21,000	160	8,200	10,000	11,000	<50	<200	<100	46,000
GP-3 S-1	(1' - 2')	7,300	45,000	190	7,900	10,000	35,000	82	290	<100	54,000
GP-4 S-1	(1' - 2')	13,000	240,000	460	8,100	15,000	130,000	76	360	<100	150,000
GP-5 S-1	(0.5' - 2')	15,000	72,000	330	12,000	35,000	120,000	170	640	100	91,000
GP-6 S-1	(2' - 3')	19,000	86,000	870	9,800	28,000	160,000	120	810	170	230,000
GP-6 S-2	(6' - 7')	10,000	220,000	1,200	13,000	48,000	370,000	400	1,300	210	410,000
GP-7 S-1	(2' - 4')	16,000	140,000	570	10,000	26,000	330,000	910	860	290	250,000
HAB-01 S-1	(2' - 3')	11,000	61,000	610	14,000	27,000	76,000	52	350	100	110,000
HAB-02 S-1	(2' - 3')	7,600	30,000	170	6,600	9,000	14,000	<50	230	<100	45,000
PART 201 RESIDENTIAL SOIL CLEANUP CRITERIA	SWDB	5,800 5,500	75000 45,000	1,200 2,000	18,000 15,000	32,000 14,000	21,000 11,000	130 NA	410 610	1,000 NA	47,000 39,000
	Sand RB	17,000	66,200	2,000	19,700	20,200	18,000	230	1,100	<2000	73,600
	Clay RB	17,100	198,000	2,400	43,500	32,200	42,900	500	1,100	1,000	91,900
	Topsoil RB	11,800	77,900	<2000	30,900	23,500	30,200	400	650	<250	76,100
	DWP	4,600 4,700	1,300,000 1,300,000	6,000 6,000	30,000 31,000	5.8E+6 8.8E+6	7.0E+5 1.8E+5	1,700 40	4,000 4,200	4,500 14,000	2.4E+6 5.0E+6
	GSIP	4,600	4.4E+5 (G)	3,000 (G,X)	3,300	73,000 (G)	2.5E+6 (G,X)	50 (M); 1.2	400	100 (M); 27	1.7E+5 (G)
	SVIC	NLV NA	NLV	NLV	NLV	NLV	NLV	48,000	NLV	NLV	NLV
	VSIC	NLV	NLV	NLV	NLV	NLV	NLV	52,000 160	NLV	NLV	NLV
	VSIC 5M	NLV	NLV	NLV	NLV	NLV	NLV	52,000 1,700	NLV	NLV	NLV
	VSIC 2M	NLV	NLV	NLV	NLV	NLV	NLV	52,000 4,100	NLV	NLV	NLV
	PSIC	720,000 300,000	3.3E+8 2.6E+8	1.7E+6 7.1E+5	260,000 44,000	1.3E+8 1.0E+8	1.0E+8 7.8E+6	2.0E+7 1.6E+7	1.3E+8 1.0E+9	6.7E+6 1.6E+8	ID NA
	DC	7,600 9,000	3.7E+7 6.8E+7	550,000 59,000	2500000 1,700	2.0E+7 6.2E+5	4.0E+5 1.9E+5	1.6E+5 1.6E+4	2.6E+6 3.1E+6	2.5E+6 2.5E+5	1.7E+8 1.0E+8
VI Tier I Vapor Screening Level		NA	NA	NA	NA	NA	NA	0.027	NA	NA	NA



# Soil Analyses PAHs



Sample ID	Sample Depth (ft)	PNAs										
		Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Fluoranthene	Indeno(1,2,3-cd)pyrene	2-Methylnaphthalene	Phenanthrene	Pyrene
		56-55-3	50-32-8	205-99-2	191-24-2	207-08-9	218-01-9	206-44-0	193-39-5	91-57-6	85-01-8	129-00-0
GP-2 S-1	(6' - 7.5')	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
GP-3 S-1	(1' - 2')	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
GP-4 S-1	(1' - 2')	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
GP-5 S-1	(0.5' - 2')	580	480	780	340	<330	430	1,200	340	<330	570	980
GP-6 S-1	(2' - 3')	1,200	1,200	1,700	900	540	1,100	2,200	850	430	1,400	2,200
GP-6 cPAH	1,577	120	1,200	170		0.54	1.1		85			
GP-6 S-2	(6' - 7')	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
GP-7 S-1	(2' - 4')	1,600	1,600	2,200	690	680	1,400	2,300	850	<330	390	2,300
HAB-01 S-1	(2' - 3')	<330	<330	400	<330	<330	<330	430	<330	<330	<330	420
HAB-02 S-1	(2' - 3')	440	530	790	<330	<330	570	1,200	<330	<330	510	980
PART 201 RESIDENTIAL SOIL CLEANUP CRITERIA	SWDB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	DWP	NLL 13,000	NLL 3,800	NLL 29,000	NLL 16,000	NLL 15,000	NLL 25,000	7.3E+5 4.3E+5	NLL 12,000	57,000 1,900	56,000 96,000	4.8E+5 2.4E+5
	GSIP	NLL	NLL	NLL	NLL	NLL	NLL	5,500	NLL	4,200	2,100	ID
	SVIIC	NLV	NLV	ID	NLV	NLV	ID	1.0E+9 NA	NLV	2.7E+6	2.8E+6	1.0E+9
	VSIC	NLV 3.0E+5	NLV	ID	NLV	NLV	ID	7.4E+8 NA	NLV	1.5E+6 2.3E+5	1.6E+5 24,000	6.5E+8 9.6E+7
	VSIC 5M	NLV 3.1E+5	NLV	ID	NLV	NLV	ID	7.4E+8 NA	NLV	1.5E+6 2.3E+5	1.6E+5 25,000	6.5E+8 9.9E+7
	VSIC 2M	NLV 3.1E+5	NLV	ID	NLV	NLV	ID	7.4E+8 NA	NLV	1.5E+6 2.5E+5	1.6E+5 25,000	6.5E+8 9.9E+7
	PSIC	ID 8.7E+6	1.5E+6 1.0E+5	ID 8.7E+6	8.0E+8 3.7E+8	ID 8.7E+7	ID 8.7E+8	9.3E+9 7.3E+9	ID 8.7E+6	6.7E+8 5.2E+8	6.7E+6 5.2E+6	6.7E+9 5.2E+9
	DC	20,000 Q RPF 0.1	2,000 1,600	20,000 Q RPF 0.1	2.5E+6 7.1E+5	2.0E+5 Q RPF 0.001	2.0E+6 Q RPF 0.001	4.6E+7 1.6E+7	20,000 Q RPF 0.1	8.1E+6 1.0E+6	1.6E+6 7.5E+6	2.9E+7 1.2E+7
	VI Tier I Vapor Screening Level	1.60E+5	NA	NA	NA	NA	NA	NA	NA	1,700	NA	2.50E+7

# Soil Analyses VOCs



Sample ID	Sample Depth (ft)	VOCs		
		Toluene	1,2,4-Trimethylbenzene	Xylenes
		108-88-3	95-63-6	1330-20-7
GP-2 S-1	(6' - 7.5')	<50	<100	<150
GP-3 S-1	(1' - 2')	<50	<100	<150
GP-4 S-1	(1' - 2')	<50	<100	<150
GP-5 S-1	(0.5' - 2')	<50	<100	<150
GP-6 S-1	(2' - 3')	110	100	300
GP-6 S-2	(6' - 7')	<50	<100	<150
GP-7 S-1	(2' - 4')	<50	<100	<150
HAB-01 S-1	(2' - 3')	<50	<100	<150
HAB-02 S-1	(2' - 3')	<50	<100	<150
PART 201 RESIDENTIAL SOIL CLEANUP CRITERIA	SWDB	NA	NA	NA
	DWP	16,000	2,100	5,600
	GSIP	5,400	570	820
	SVIIC	3.3E+5	4.3E+6	6.3E+6
	VSIC	2.8E+6	2.1E+7	4.6E+7
	VSIC 5M	5.1E+6	5.0E+8	6.1E+7
	VSIC 2M	1.2E+7	5.0E+8	1.3E+8
	PSIC	2.7E+10	8.2E+10	2.9E+11
	DC	5.0E+7	3.2E+7	4.1E+8
		2.0E+7	2.5E+6	5.0E+7
VI Tier I Vapor Screening Level		3,700	150	1.60E+5

# QUESTIONS

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