TABLE 5-3

SOIL BORING LITHOLOGY AND SAMPLE LOG

SAMPLE NUMBER	LOCATION COORDINATES		SPOON INTERVAL (ft.)	RECOVERY (in.)	UNIT THICKNESS (in.)	LITHOLOGICAL DESCRIPTION WITH PHOTOIONIZATION DETECTOR (PID) READING*	SAMPLE INTERVALS AND COMMENTS
	Easting	Northing					
SB-11	314725.73	737675.97	0-4	40	0-32	Moist, brown, medium sand.	Grab sample.
					32-40	Moist, dark brown, medium sand with trace rocks. PID = 0.0 Refusal at 2 ft. 2 in.	VOA portion of sample collected at 30 in. of 0-4 ft. core. Remaining sample portion taken from 22-36 in. of 0-4 ft. core.
SB-12	314661.09	737649.64	0-4	36	0-36	Moist, reddish brown, medium sand. PID = 0.0	Grab sample.
			4-8	36	0-30	Moist, reddish brown, medium sand. PID = 13	VOA portion of sample collected at 34 in. of 4-8 ft. core.
					30-36	Very moist, reddish brown, medium sand. PID = 77	Remaining sample portion taken from 24-36 in. of 4-8 ft. core.
			8-10	40	0-40	Very moist, reddish brown, medium sand. PID = 3.9	

Location Coordinates: Michigan Georef NAD 1983 meters

* PID reading units are parts per million (ppm).

TABLE 5-4

GROUNDWATER MONITORING WELL SAMPLE DESCRIPTIONS

SAMPLE NUMBER	LOCATION COORDINATES		SAMPLE DESCRIPTION	PHYSICAL PARAMETERS	WELL CONSTRUCTION	COMMENTS
	Easting	Northing				
TMW-01	314638.69	737511.66	Clear	Cond = 502 pH = 7.56 T = 10.5 ORP = 18 TDS = 363	Screen: 1 in. polyvinyl chloride (PVC) #10 slot, 5 ft. Casing: 1 in. PVC.	No corresponding boring, cores logged but not sampled. Very silty, purged dry, very slow recharge, sampled at very slow rate.
TMW-02	314762.33	737647.12	Clear	Cond = 536 pH = 6.76 T = 11.8 ORP = -51 TDS = 387	Screen: 1 in. polyvinyl chloride (PVC) #10 slot, 5 ft. Casing: 1 in. PVC.	Corresponding boring SB-06. Duplicate collected.
TMW-03	314730.81	737592.85	Clear	Cond = 384 pH = 6.77 T = 11.1 ORP = 103 TDS = 276	Screen: 1 in. polyvinyl chloride (PVC) #10 slot, 5 ft. Casing: 1 in. PVC.	Corresponding boring SB-05. ORP slowly but steadily increasing. Matrix Spike/Matrix Spike Duplicate collected.

TABLE 5-4

GROUNDWATER MONITORING WELL SAMPLE DESCRIPTIONS

SAMPLE NUMBER	LOCATION COORDINATES		SAMPLE DESCRIPTION	PHYSICAL PARAMETERS	WELL CONSTRUCTION	COMMENTS
	Easting	Northing				
TMW-05	314685.80	737476.42	Clear	Cond = 495 pH = 6.49 T = 9.8 ORP = 22 TDS = 371	Screen: 1 in. polyvinyl chloride (PVC) #10 slot, 5 ft. Casing: 1 in. PVC.	No corresponding boring, cores logged but not sampled. Myron meter not stable, switch out twice.

Location Coordinates: Michigan Georef NAD 1983 meters

Cond = Conductivity (µs/cm)
pH = Hydrogen Ionization Potential
T = Temperature (°C)
ORP = Oxidation Reduction Potential (millivolts)
TDS = Total Dissolved Solids (ppm – parts per million)

TABLE 5-5

GROUNDWATER MONITORING WELL DATA

GROUNDWATER MONITORING WELL	LOCATION COORDINATES		GROUND ELEVATION	TOP OF CASING (TOC) ELEVATION	DEPTH TO WATER (from TOC)	WATER TABLE ELEVATION	DEPTH OF WELL (from TOC)	SCREEN LENGTH	SCREENED INTERVAL ELEVATION
	Easting	Northing							
TMW-01	314638.69	737511.66	98.25	100.00	8.34	91.66	14.50	5 ft.	80.50-85.50
TMW-02	314762.33	737647.12	91.11	91.69	7.34	84.35	11.74	5 ft.	74.95-79.95
TMW-03	314730.81	737592.85	93.91	94.59	11.51	83.08	12.50	5 ft.	77.09-82.09
TMW-05	314685.80	737476.42	99.77	100.39	20.93	79.46	23.85	5 ft.	71.54-76.54

Location Coordinates: Michigan Georef NAD 1983 meters

* - All elevations in feet, referenced to an arbitrary elevation of 100.00 feet

TABLE 6-1

KEY SURFICIAL SOIL SAMPLE ANALYTICAL RESULTS

SAMPLE #	CONTAMINANT	RELEASE SAMPLE RESULT	RELEASE SAMPLE FLAG	BACKGROUND SAMPLE RESULT	BACKGROUND SAMPLE FLAG	SQL/CRDL
SS-01	Designated background surficial soil sample.					
SS-02	**Semi-volatiles**	**µg/kg**	**Flag**	**µg/kg**	**Flag**	**µg/kg**
	Benzo(a)anthracene	370		190	U	220
	Benzo(a)pyrene	340		190	U	220
	Benzo(b)fluoranthene	330		190	U	220
	Benzo(g,h,i)perylene	260		190	U	220
	Benzo(k)fluoranthene	320		190	U	220
	Chrysene	470		190	U	220
	Fluoranthene	920		190	U	190
	Indeno(1,2,3-cd)pyrene	230		190	U	220
	Pyrene	840		190	U	190
	Inorganics	**mg/kg**	**Flag**	**mg/kg**	**Flag**	**mg/kg**
	Lead	32		10		1
SS-02D	**Semi-volatiles**	**µg/kg**	**Flag**	**µg/kg**	**Flag**	**µg/kg**
	Benzo(a)anthracene	310		190	U	220
	Benzo(a)pyrene	290		190	U	220
	Benzo(b)fluoranthene	340		190	U	220
	Benzo(g,h,i)perylene	260		190	U	220
	Benzo(k)fluoranthene	280		190	U	220
	Chrysene	420		190	U	220
	Fluoranthene	680		190	U	190
	Indeno(1,2,3-cd)pyrene	230		190	U	220
	Phenanthrene	540		190	U	220
	Pyrene	640		190	U	190
	Inorganics	**mg/kg**	**Flag**	**mg/kg**	**Flag**	**mg/kg**
	Lead	41		10		1

TABLE 6-1

KEY SURFICIAL SOIL SAMPLE ANALYTICAL RESULTS

SAMPLE #	CONTAMINANT	RELEASE SAMPLE		BACKGROUND SAMPLE		SQL/CRDL
		RESULT	FLAG	RESULT	FLAG	
SS-03	**Semi-volatiles**	**µg/kg**	**Flag**	**µg/kg**	**Flag**	**µg/kg**
	Acenaphthene	590		190	U	260
	Anthracene	1,700		190	U	430
	Benzo(a)anthracene	5,300		190	U	220
	Benzo(a)pyrene	4,500		190	U	220
	Benzo(b)fluoranthene	4,500		190	U	220
	Benzo(g,h,i)perylene	3,600		190	U	220
	Benzo(k)fluoranthene	3,700		190	U	220
	Carbazole	1,100		190	U	220
	Chrysene	6,200		190	U	220
	Dibenzo(a,h)anthracene	1,200		190	U	220
	Dibenzofuran	400		190	U	260
	Fluoranthene	8,900		190	U	190
	Fluorene	470		190	U	200
	Indeno(1,2,3-cd)pyrene	3,200		190	U	220
	Phenanthrene	9,200		190	U	220
	Pyrene	10,000 (843)	J	190	U	190
	Inorganics	**mg/kg**	**Flag**	**mg/kg**	**Flag**	**mg/kg**
	Cadmium	1.3 (0.92)	J	0.19 (0.27)	J	0.5
	Copper	5,180		448		2.5
	Lead	504		10		1
	Mercury	0.38		0.030 (0.055)	J	0.1

TABLE 6-1

KEY SURFICIAL SOIL SAMPLE ANALYTICAL RESULTS

SAMPLE #	CONTAMINANT	RELEASE SAMPLE		BACKGROUND SAMPLE		SQL/CRDL
		RESULT	FLAG	RESULT	FLAG	
SS-04	**Semi-volatiles**	**µg/kg**	**Flag**	**µg/kg**	**Flag**	**µg/kg**
	Benzo(a)anthracene	260		190	U	220
	Benzo(a)pyrene	270		190	U	220
	Benzo(b)fluoranthene	370		190	U	220
	Benzo(g,h,i)perylene	370		190	U	220
	Benzo(k)fluoranthene	260		190	U	220
	Bis(2-ethylhexyl)phthalate	2,100		190	U	370
	Chrysene	360		190	U	220
	Fluoranthene	420		190	U	190
	Indeno(1,2,3-cd)pyrene	270		190	U	220
	Pyrene	400		190	U	190
	Pesticides/PCBs	**µg/kg**	**Flag**	**µg/kg**	**Flag**	**µg/kg**
	4,4'-DDE	85		3.7	U	7.2
	4,4'-DDT	100		3.7	U	5.0
	Aroclor-1248	1,400		38	U	71
	Aroclor-1254	1,900		38	U	71
	Inorganics	**mg/kg**	**Flag**	**mg/kg**	**Flag**	**mg/kg**
	Antimony	34 (17)	J	6.7	UJ	6.0
	Cadmium	9.7 (6.9)	J	0.19 (0.27)	J	0.5
	Copper	124,000		448		2.5
	Lead	5,680		10		1
	Mercury	3.2		0.030 (0.055)	J	0.1
	Nickel	86 (64)	J	11 (15)	J	4
	Zinc	2500 (1667)	J	36 (54)	J	6

TABLE 6-1

KEY SURFICIAL SOIL SAMPLE ANALYTICAL RESULTS

SAMPLE #	CONTAMINANT	RELEASE SAMPLE		BACKGROUND SAMPLE		SQL/CRDL
		RESULT	FLAG	RESULT	FLAG	
SS-05	**Semi-volatiles**	**µg/kg**	**Flag**	**µg/kg**	**Flag**	**µg/kg**
	Benzo(a)anthracene	810		190	U	220
	Benzo(a)pyrene	780		190	U	220
	Benzo(b)fluoranthene	850		190	U	220
	Benzo(g,h,i)perylene	690		190	U	220
	Benzo(k)fluoranthene	610		190	U	220
	Chrysene	980		190	U	220
	Fluoranthene	1,600		190	U	190
	Indeno(1,2,3-cd)pyrene	610		190	U	220
	Phenanthrene	1,300		190	U	220
	Pyrene	1,600		190	U	190
	Inorganics	**mg/kg**	**Flag**	**mg/kg**	**Flag**	**mg/kg**
	Arsenic	434 (249)	J	1.8 (3.1)	J	1
	Cadmium	4.4 (3.1)	J	0.19 (0.27)	J	0.5
	Copper	316,000		448		2.5
	Lead	448		10		1
	Mercury	0.20		0.030 (0.055)	J	0.1
SS-06	**Inorganics**	**mg/kg**	**Flag**	**mg/kg**	**Flag**	**mg/kg**
	Cadmium	1.4 (1.0)	J	0.19 (0.27)	J	0.5
	Lead	200		10		1
	Mercury	1.9		0.030 (0.055)	J	0.1
	Zinc	325 (217)	J	36 (54)	J	6

TABLE 6-1

KEY SURFICIAL SOIL SAMPLE ANALYTICAL RESULTS

SAMPLE #	CONTAMINANT	RELEASE SAMPLE		BACKGROUND SAMPLE		SQL/CRDL
		RESULT	FLAG	RESULT	FLAG	
SS-07	**Semi-volatiles**	**µg/kg**	**Flag**	**µg/kg**	**Flag**	**µg/kg**
	Benzo(a)anthracene	1,000		190	U	220
	Benzo(a)pyrene	900		190	U	220
	Benzo(b)fluoranthene	840		190	U	220
	Benzo(g,h,i)perylene	700		190	U	220
	Benzo(k)fluoranthene	740		190	U	220
	Chrysene	1,100		190	U	220
	Fluoranthene	2,200		190	U	190
	Indeno(1,2,3-cd)pyrene	600		190	U	220
	Phenanthrene	1,400		190	U	220
	Pyrene	2,000		190	U	190
	Inorganics	**mg/kg**	**Flag**	**mg/kg**	**Flag**	**mg/kg**
	Copper	4,290		448		2.5
	Lead	400		10		1
	Mercury	0.24		0.030 (0.055)	J	0.1

TABLE 6-1

KEY SURFICIAL SOIL SAMPLE ANALYTICAL RESULTS

SAMPLE #	CONTAMINANT	RELEASE SAMPLE RESULT	RELEASE SAMPLE FLAG	BACKGROUND SAMPLE RESULT	BACKGROUND SAMPLE FLAG	SQL/CRDL
SS-08	**Semi-volatiles**	**µg/kg**	**Flag**	**µg/kg**	**Flag**	**µg/kg**
	Benzo(a)anthracene	4,100		190	U	220
	Benzo(a)pyrene	3,200		190	U	220
	Benzo(b)fluoranthene	4,200		190	U	220
	Benzo(g,h,i)perylene	2,600		190	U	220
	Benzo(k)fluoranthene	3,100		190	U	220
	Carbazole	280		190	U	220
	Chrysene	5,400		190	U	220
	Dibenzo(a,h)anthracene	1,100		190	U	220
	Fluoranthene	5,400		190	U	190
	Indeno(1,2,3-cd)pyrene	2,400		190	U	220
	Phenanthrene	2,200		190	U	220
	Pyrene	7,800		190	U	190
	Inorganics	**mg/kg**	**Flag**	**mg/kg**	**Flag**	**mg/kg**
	Cadmium	3.1 (2.2)	J	0.19 (0.27)	J	0.5
	Copper	21,500		448		2.5
	Lead	2,000		10		1
	Manganese	1010 (815)	J	157 (195)	J	1.5
	Mercury	2.1		0.030 (0.055)	J	0.1
	Zinc	1880 (1253)	J	36 (54)	J	6
SS-09	**Inorganics**	**mg/kg**	**Flag**	**mg/kg**	**Flag**	**mg/kg**
	Lead	50		10		1

TABLE 6-1

KEY SURFICIAL SOIL SAMPLE ANALYTICAL RESULTS

SAMPLE #	CONTAMINANT	RELEASE SAMPLE		BACKGROUND SAMPLE		SQL/CRDL
		RESULT	FLAG	RESULT	FLAG	
SS-10	**Inorganics**	**mg/kg**	**Flag**	**mg/kg**	**Flag**	**mg/kg**
	Barium	5710 (1431)	J	20 (81)	J	20
	Cadmium	2.6 (1.8)	J	0.19 (0.27)	J	0.5
	Chromium	128	J-	12 (15)	J-	1
	Cobalt	35 (28)	J	7.3 (9.1)	J	5
	Copper	9,080		448		2.5
	Lead	8,260		10		1
	Manganese	747 (602)	J	157 (195)	J	1.5
	Mercury	0.18		0.030 (0.055)	J	0.1
	Nickel	296 (219)	J	11 (15)	J	4
	Zinc	5240 (3493)	J	36 (54)	J	6
SS-11	**Inorganics**	**mg/kg**	**Flag**	**mg/kg**	**Flag**	**mg/kg**
	Copper	1,380		448		2.5
	Lead	247		10		1
SS-12	**Inorganics**	**mg/kg**	**Flag**	**mg/kg**	**Flag**	**mg/kg**
	Lead	384		10		1
SS-12D	**Inorganics**	**mg/kg**	**Flag**	**mg/kg**	**Flag**	**mg/kg**
	Lead	121		10		1

TABLE 6-1

KEY SURFICIAL SOIL SAMPLE ANALYTICAL RESULTS

SAMPLE #	CONTAMINANT	RELEASE SAMPLE		BACKGROUND SAMPLE		SQL/CRDL
		RESULT	FLAG	RESULT	FLAG	
SS-13	**Semi-volatiles**	µg/kg	Flag	µg/kg	Flag	µg/kg
	Benzo(a)anthracene	1,000		190	U	220
	Benzo(a)pyrene	800		190	U	220
	Benzo(b)fluoranthene	610		190	U	220
	Benzo(g,h,i)perylene	650		190	U	220
	Benzo(k)fluoranthene	790		190	U	220
	Chrysene	1,100		190	U	220
	Dibenzo(a,h)anthracene	260		190	U	220
	Fluoranthene	1,900		190	U	190
	Indeno(1,2,3-cd)pyrene	650		190	U	220
	Phenanthrene	310		190	U	220
	Pyrene	1,400		190	U	190
	Inorganics	mg/kg	Flag	mg/kg	Flag	mg/kg
	Copper	2,170		448		2.5
	Lead	1,530		10		1
	Mercury	0.59		0.030 (0.055)	J	0.1
	Zinc	834 (556)	J	36 (54)	J	6

TABLE 6-1

KEY SURFICIAL SOIL SAMPLE ANALYTICAL RESULTS

SAMPLE #	CONTAMINANT	RELEASE SAMPLE		BACKGROUND SAMPLE		SQL/CRDL
		RESULT	FLAG	RESULT	FLAG	
SS-14	**Semi-volatiles**	**µg/kg**	**Flag**	**µg/kg**	**Flag**	**µg/kg**
	Acenaphthylene	340		190	U	220
	Benzo(a)anthracene	1,500		190	U	220
	Benzo(a)pyrene	1,100		190	U	220
	Benzo(b)fluoranthene	1,000		190	U	220
	Benzo(g,h,i)perylene	810		190	U	220
	Benzo(k)fluoranthene	980		190	U	220
	Chrysene	1,800		190	U	220
	Dibenzo(a,h)anthracene	270		190	U	220
	Fluoranthene	2,900		190	U	190
	Indeno(1,2,3-cd)pyrene	830		190	U	220
	Phenanthrene	1,200		190	U	220
	Pyrene	2,300		190	U	190

TABLE 6-1

KEY SURFICIAL SOIL SAMPLE ANALYTICAL RESULTS

SAMPLE #	CONTAMINANT	RELEASE SAMPLE		BACKGROUND SAMPLE		SQL/CRDL
		RESULT	FLAG	RESULT	FLAG	
SS-14	**Inorganics**	**mg/kg**	**Flag**	**mg/kg**	**Flag**	**mg/kg**
	Barium	1420 (356)	J	20 (81)	J	20
	Cadmium	2.6 (1.8)	J	0.19 (0.27)	J	0.5
	Chromium	62	J-	12 (15)	J-	1
	Lead	1,850		10		1
	Mercury	1.4		0.030 (0.055)	J	0.1
	Zinc	743 (495)	J	36 (54)	J	6

µg/kg = microgram/kilogram (parts per billion)
mg/kg = milligram/kilogram (parts per million)

The values for the background sample are taken from sample SS-01.
In the Result columns wherever two values are reported, the value in the parentheses is an adjusted value for certain J-qualified results (J, J-). These are adjusted in accordance with the U.S. EPA document, *Using Qualified Data to Document an Observed Release and Observed Contamination* (November 1996).

Qualifier flag for organic analyses:
U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

Qualifier flags for inorganic analyses:
UJ = The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J- = The result is an estimated quantity, but the result may be biased low.

SQL/CRDL:
* SQL is the Sample Quantitation Limit, which is determined by the laboratory.
* CRDL is the Contract Required Detection Limit, and is set by the Contract Laboratory Program.
* The value in the right column is either the SQL or the CRDL. When available, the SQL is used.

TABLE 6-2

KEY GROUNDWATER MONITORING WELL SAMPLE ANALYTICAL RESULTS

		RELEASE SAMPLE		BACKGROUND SAMPLE		
SAMPLE #	CONTAMINANT	RESULT	FLAG	RESULT	FLAG	SQL/CRDL
TMW-02	Arsenic	1.5		1.0	U	1.0
	Copper	8.0		2.4		2
	Manganese	1380		114		1
TMW-02D	Arsenic	1.5		1.0	U	1.0
	Copper	8.5		2.4		2
	Manganese	1340		114		1
TMW-03	Copper	13		2.4		2

All concentrations are in micrograms per liter (parts per billion).

The values for the background sample are taken from sample TMW-01.
No observed release was found in sample TMW-05.

Qualifier flags:
U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J+ = The result is an estimated quantity, but the result may be biased high.

SQL/CRDL:
* SQL is the Sample Quantitation Limit, which is determined by the laboratory.
* CRDL is the Contract Required Detection Limit, and is set by the Contract Laboratory Program.
* The value in the right column is either the SQL or the CRDL. When available, the SQL is used.

TABLE 7-1

KEY GROUNDWATER MONITORING WELL SAMPLE SUMMARY

CONTAMINANT	KEY SAMPLE CONCENTRATIONS		BACKGROUND CONC.	PART 201 CLEANUP CRITERIA & SCREENING LEVEL EXCEEDANCE	# OF KEY SAMPLES
	LOWEST	HIGHEST			
Inorganics	µg/l	µg/l	µg/l	Criteria[a]	
Arsenic		1.5	1.0 U	---	1
Copper	8.1	13	2.4	3 (5.0 µg/l)	3
Manganese	1340	1,380	114	1,2 (50* µg/l)	2

µg/l - microgram per liter [parts per billion (ppb)]

J+ = The result is an estimated quantity, but the result may be biased high.
U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

[a] - Criteria Categories
1 - Residential Drinking Water Criteria (if asterisked *, means the associated value is the aesthetic criterion)
2 - Nonesidential Drinking Water Criteria (if asterisked *, means the associated value is the aesthetic criterion)
3 - Groundwater Surface Water Interface Criteria
--- - No criteria exceedance
The values in parentheses under the Criteria column are the Criteria standards.

Part 201 Cleanup Criteria and Screening Levels dated March 25, 2011.

TABLE 7-2

KEY SURFICIAL SOIL SAMPLE SUMMARY

CONTAMINANT	KEY SAMPLE CONCENTRATIONS LOWEST	KEY SAMPLE CONCENTRATIONS HIGHEST	BACKGROUND CONC.	PART 201 CLEANUP CRITERIA & SCREENING LEVEL EXCEEDANCE	# OF KEY SAMPLES
Semi-volatiles	µg/kg	µg/kg	µg/kg	Criteria[a]	
Acenaphthene		590	190 U	---	1
Acenaphthylene		340	190 U	---	1
Benzo(a)anthracene	260	5300	190 U	---	9
Benzo(a)pyrene	270	4500	190 U	19	9
Benzo(b)fluoranthene	330	4500	190 U	---	9
Benzo(g,h,i)perylene	260	3600	190 U	---	9
Benzo(k)fluoranthene	260	37	190 U	---	9
Bis(2-ethylhexyl)phthalate		2100	190 U	---	1
Carbazole	280	1100	190 U	---	2
Chrysene	360	6200	190 U	---	9
Dibenzofuran		400	190 U	---	1
Dibenzo(a,h)anthracene	260	1200	190 U	---	4
Fluoranthene	420	8900	190 U	12	9
Fluorene		470	190 U	---	1
Indeno(1,2,3-cd)pyrene	230	3200	190 U	---	9
Phenanthrene	310	9,200	190 U	12	7
Pyrene	400	7,800	190 U	---	9
Pesticides/PCBs	µg/kg	µg/kg	µg/kg	Criteria[a]	
4,4'-DDE		85	3.7 U	---	1
4,4'-DDT		100	3.7 U	---	1
Aroclor-1254		1900	38 U		1
Aroclor-1248		1400	38 U		1
Total PCBs (Aroclors)		3,300		---	
Inorganics	mg/kg	mg/kg	mg/kg	Criteria[a]	
Antimony		34 J (17)	6.7 UJ	11, 12	1
Arsenic		434 J (249)	1.8 J (3.1)	11, 12, 19, 21, 27	1
Barium	1420 J (356)	5710 J (1431)	20 J (81)	11, 12, 21	2
Cadmium	1.3 J (0.92)	9.7 J (6.9)	0.19 J (0.27)	11, 12, 21	7
Chromium	62 J-	128 J-	12 J- (15)	11, 12, 21	2
Cobalt		35 J (28)	7.3 J (9.1)	11, 12, 21	1
Copper	1380	316000	448	11, 12, 18, 19, 21, 26, 27	8
Lead	32	8,260	10	11, 12, 19, 21	15
Manganese	747 J (602)	1010 J (815)	157 J (195)	11, 12, 21	2
Mercury	0.18	3	0.03 J (0.055)	11, 12, 21	9
Nickel	86 J (64)	296 J (219)	11 J (15)	11, 12, 21	2
Zinc	325 J (217)	5240 J (3493)	36 J (54)	11, 12	6

mg/kg - milligram per kilogram [parts per million (ppm)].
µg/kg - microgram per kilogram [parts per billion (ppb)].

Qualifier flag for organic analyses:
U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

Qualifier flags for inorganic analyses:
UJ = The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J- = The result is an estimated quantity, but the result may be biased low.

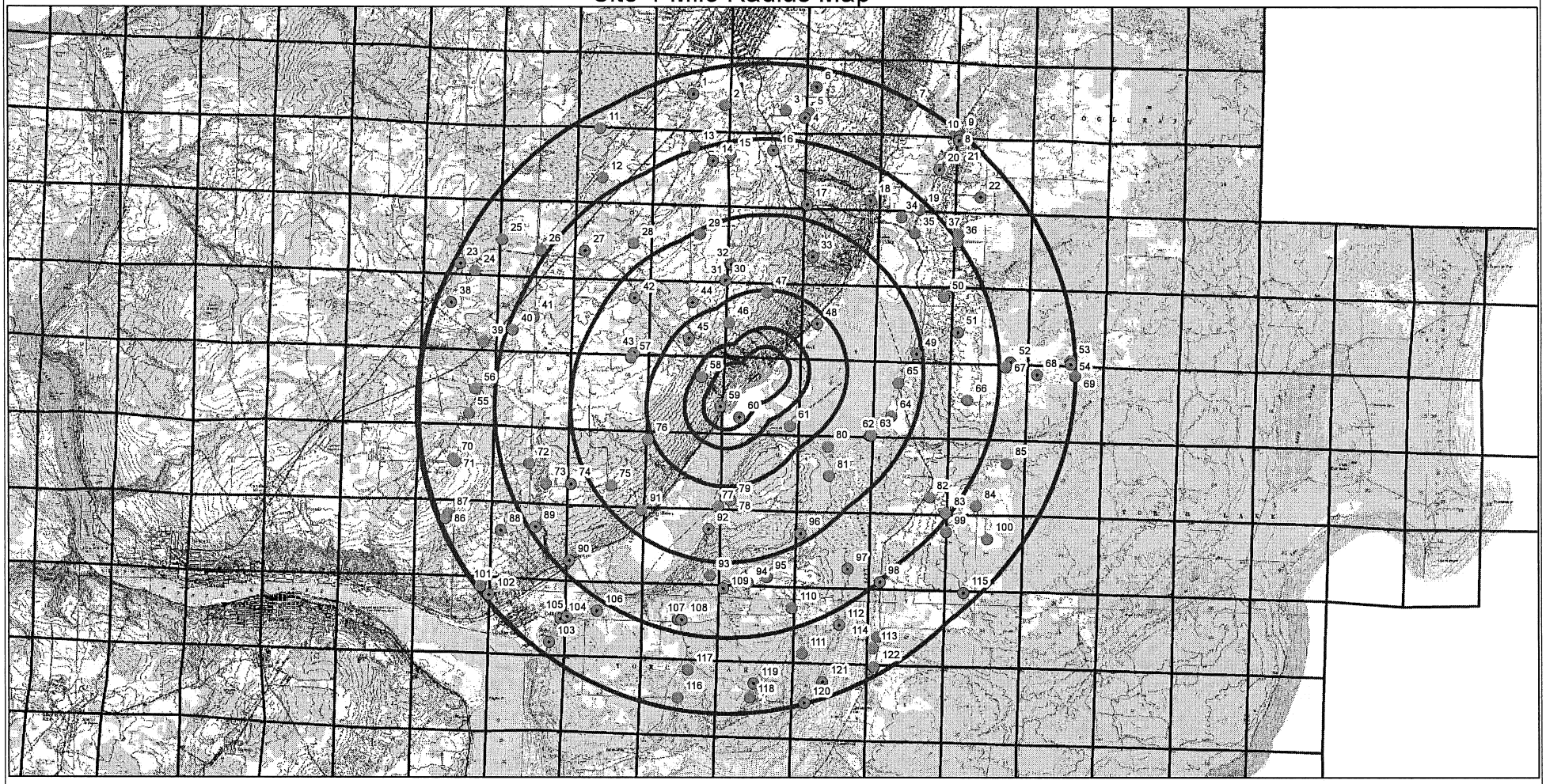
[a] - Criteria Categories
11 - Residential Drinking Water Protection Criteria
12 - Groundwater Surface Water Interface Protection Criteria
18 - Residential Particulate Soil Inhalation Criteria
19 - Residential Direct Contact Criteria
21 - Nonresidential Drinking Water Protection Criteria
26 - Nonresidential Particulate Soil Inhalation Criteria
27 - Nonresidential Direct Contact Criteria
--- - No criteria exceedance

Part 201 Cleanup Criteria and Screening Levels dated March 25, 2011.
*Number of key samples is shown and whether also found in a duplicate (D) or waste sample SS-19 (W).

Appendix A

Site 4-Mile Radius Map

Appendix A
Site 4-Mile Radius Map



SITE ASSESSMENT REPORT
C & H Tamarack Operations
MIN000510835
Michigan Department of Environmental Quality
Remediation & Redevelopment Division - Superfund Section
Site Assessment and Site Management Unit

N
W E
S

Legend
- Drinking Water Wells
- Site Boundary
- Radius Rings
- Section Boundaries

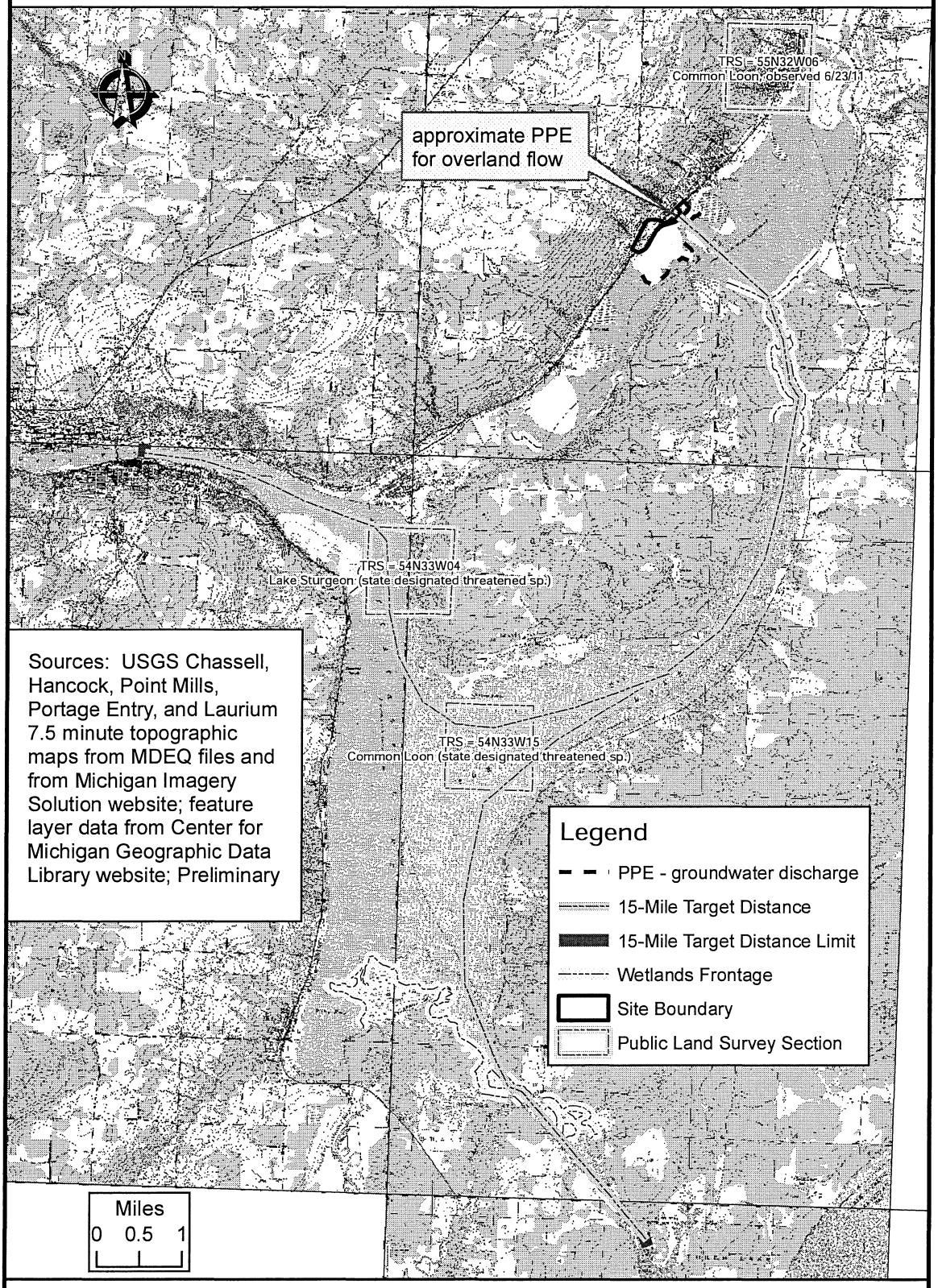
0 1 2 4 Miles

Compiled by: Leni L. Steiner-Zehender
March 20, 2013
Projected Coordinate System:
Michigan GeoRef, NAD-83, meters
Done in ESRI ArcMap 10.3
Sources: Michigan Geographic Library & USGS Topographic Map.

Appendix B

Site 15-Mile Surface Water Target Distance Limit Map

APPENDIX B
SITE 15-MILE SURFACE WATER TARGET DISTANCE LIMIT MAP



SITE INSPECTION REPORT
C & H Tamarack Operations, MIN000510835
Michigan Department of Environmental Quality
Remediation Division - Superfund Section
Site Assessment and Site Management Unit

Compiled by JES, 7/29/2011
(revised 9/11/2012, JES)
Projected coordinate system:
Michigan GeoRef, NAD-83, meters
Done in ESRI ArcView 9.3

Appendix C

Site Inspection Photographs

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 1 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: West

PHOTOGRAPH BY: JW



DESCRIPTION: Close-up view of surficial soil 01 (SS-01) sample.

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: West

PHOTOGRAPH BY: JW



DESCRIPTION: Distant view of SS-01 sample. Sample was collected at the same location as the XRF-137 screening.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 2 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/05/12

DIRECTION OF PHOTOGRAPH: South

PHOTOGRAPH BY: JW



DESCRIPTION: Close-up view of SS-02 and SS-02D samples. Samples were collected at the same location as the XRF-15 screening.

DATE: 11/05/12

DIRECTION OF PHOTOGRAPH: South

PHOTOGRAPH BY: JW



DESCRIPTION: Distant view of SS-02 and SS-02D samples.

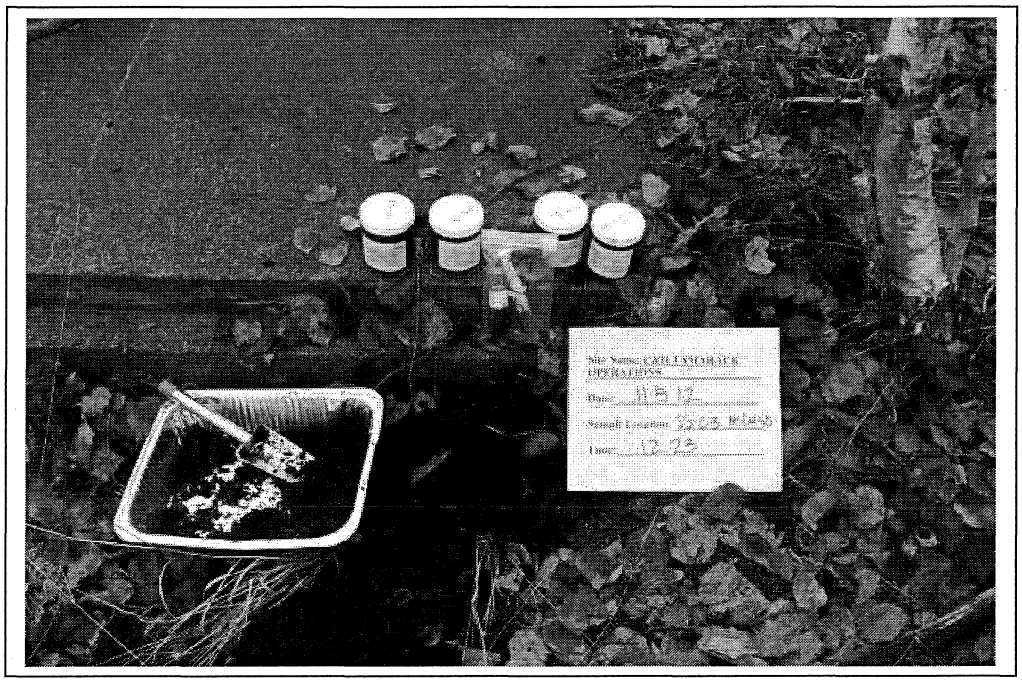
FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 3 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/05/12

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: JW

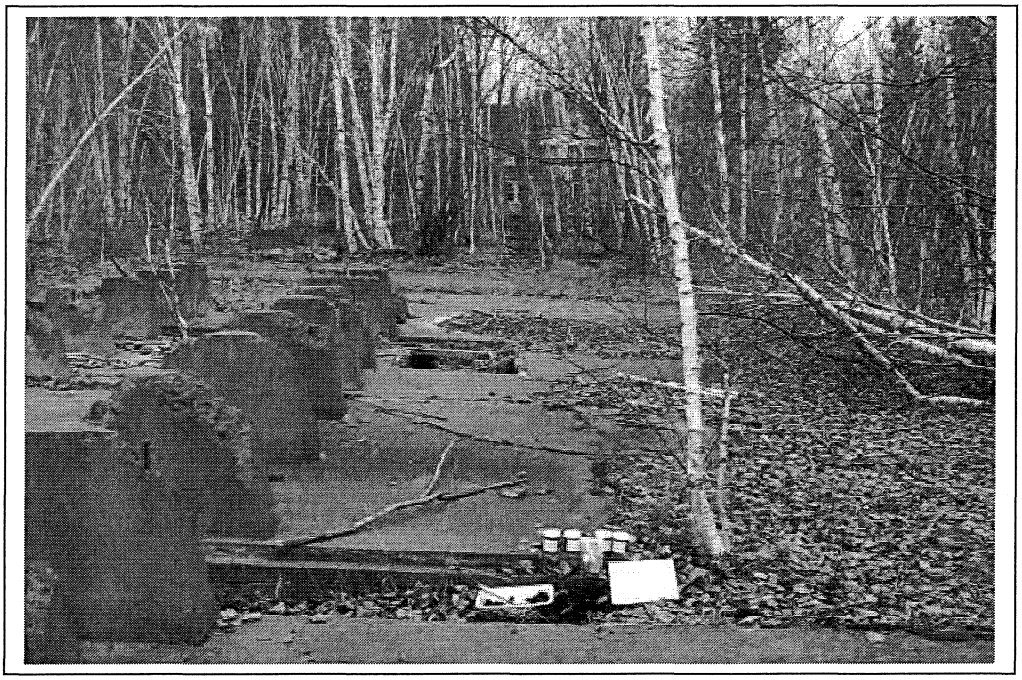


DESCRIPTION: Close-up view of SS-03 with enough volume for matrix spike/matrix spike duplicate. Sample was collected at the same location as the XRF-26 screening.

DATE: 11/05/12

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: JW



DESCRIPTION: Distant view of SS-03.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 4 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/05/12

DIRECTION OF PHOTOGRAPH: West

PHOTOGRAPH BY: JW



DESCRIPTION: Close-up view of SS-04 sample. Sample was collected at the same location as the XRF-43 screening.

DATE: 11/5/12

DIRECTION OF PHOTOGRAPH: West

PHOTOGRAPH BY: JW



DESCRIPTION: Distant view of SS-04 sample.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 5 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/05/12

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: AL



DESCRIPTION: Close-up view of SS-05 sample. Sample was collected at the same location as the XRF-56 screening.

DATE: 11/05/12

DIRECTION OF PHOTOGRAPH: West

PHOTOGRAPH BY: AL



DESCRIPTION: Distant view of SS-05 sample.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 6 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: Southeast

PHOTOGRAPH BY: JW



DESCRIPTION: Close-up view of SS-06 sample. Sample was collected at the same location as the XRF-90 screening.

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: Southeast

PHOTOGRAPH BY: JW



DESCRIPTION: Distant view of SS-06 sample.

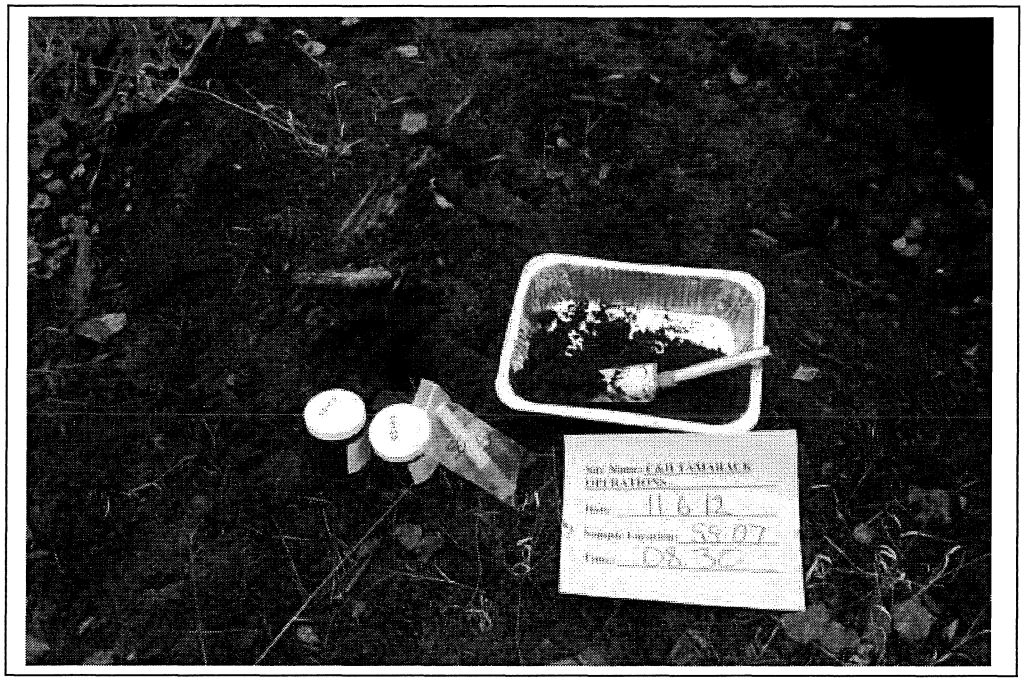
FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 7 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: South

PHOTOGRAPH BY: JW

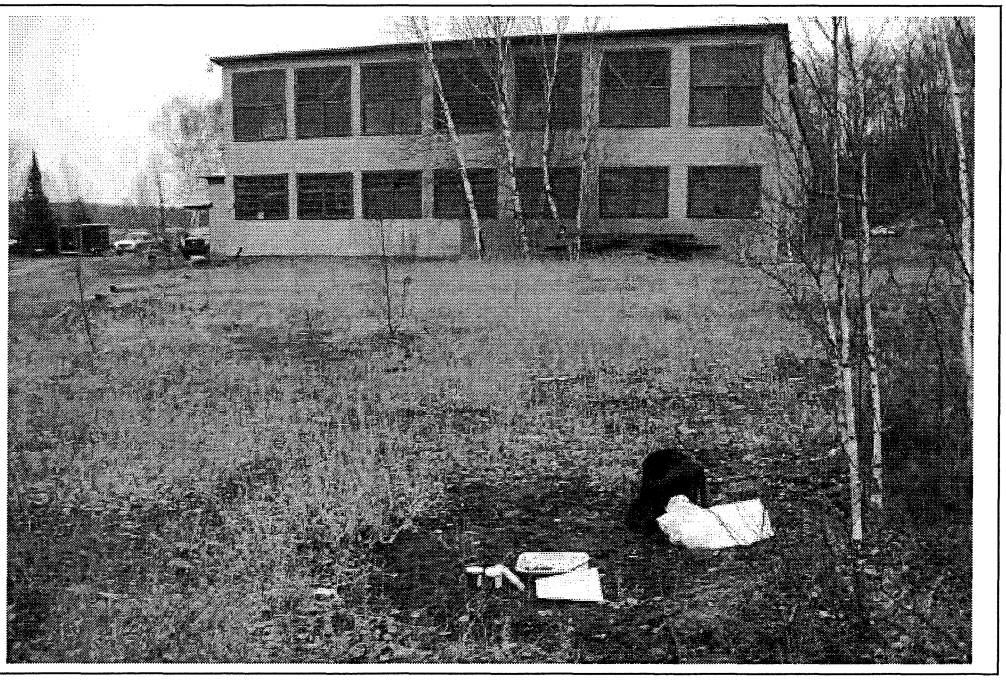


DESCRIPTION: Close-up view of SS-07 sample. Sample was collected at the same location as the XRF-84 screening.

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: South

PHOTOGRAPH BY: JW



DESCRIPTION: Distant view of SS-07 sample.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 8 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: Southwest

PHOTOGRAPH BY: JW

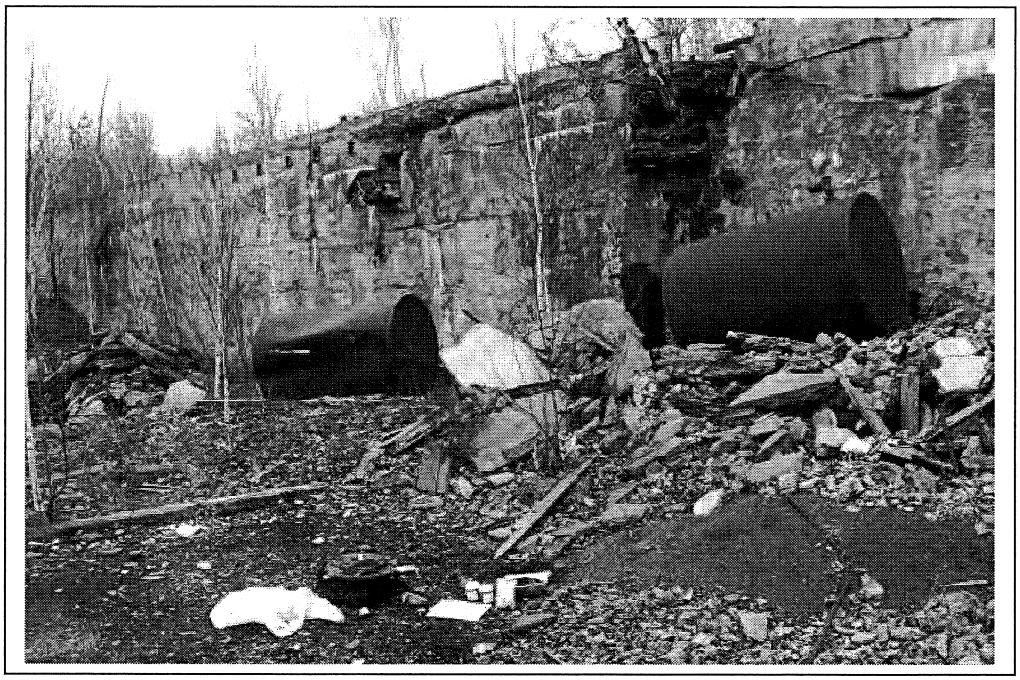


DESCRIPTION: Close-up view of SS-08 sample. Sample was collected at the same location as the XRF-104 screening location.

DATE: 11/08/12

DIRECTION OF PHOTOGRAPH: Southwest

PHOTOGRAPH BY: JW



DESCRIPTION: Distant view of SS-08 sample.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 9 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: South

PHOTOGRAPH BY: JW



DESCRIPTION: Close-up view of SS-09 sample. Sample was collected at the same location as the XRF-95 screening.

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: South

PHOTOGRAPH BY: JW



DESCRIPTION: Distant view of SS-09 sample.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 10 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: East

PHOTOGRAPH BY: JW



DESCRIPTION: Close-up view of SS-10 sample. Sample was collected at the same location as the XRF-118 screening.

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: East

PHOTOGRAPH BY: JW



DESCRIPTION: Distant view of SS-10 sample.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 11 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: JW



DESCRIPTION: Close-up view of SS-11 sample. Sample was collected at the same location as the XRF-122 screening.

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: JW



DESCRIPTION: Distant view of SS-11 sample.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 12 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: South

PHOTOGRAPH BY: JW

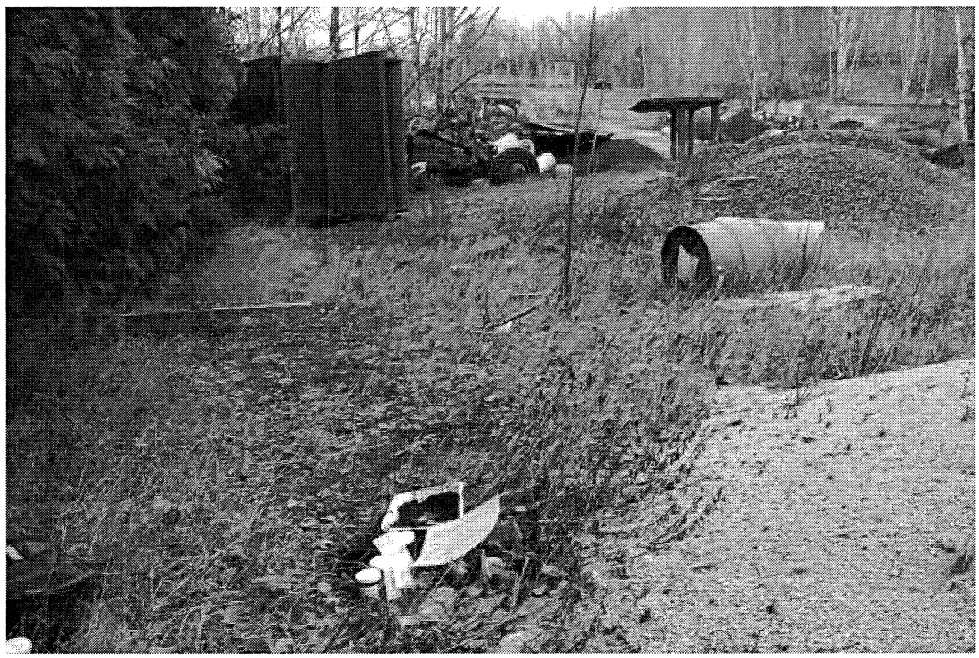


DESCRIPTION: Close-up view of SS-12 and SS-12D samples. Sample was collected at the same location as the XRF-97 screening.

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: South

PHOTOGRAPH BY: JW



DESCRIPTION: Distant view of SS-12 and SS-12D samples.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 13 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: South

PHOTOGRAPH BY: JW

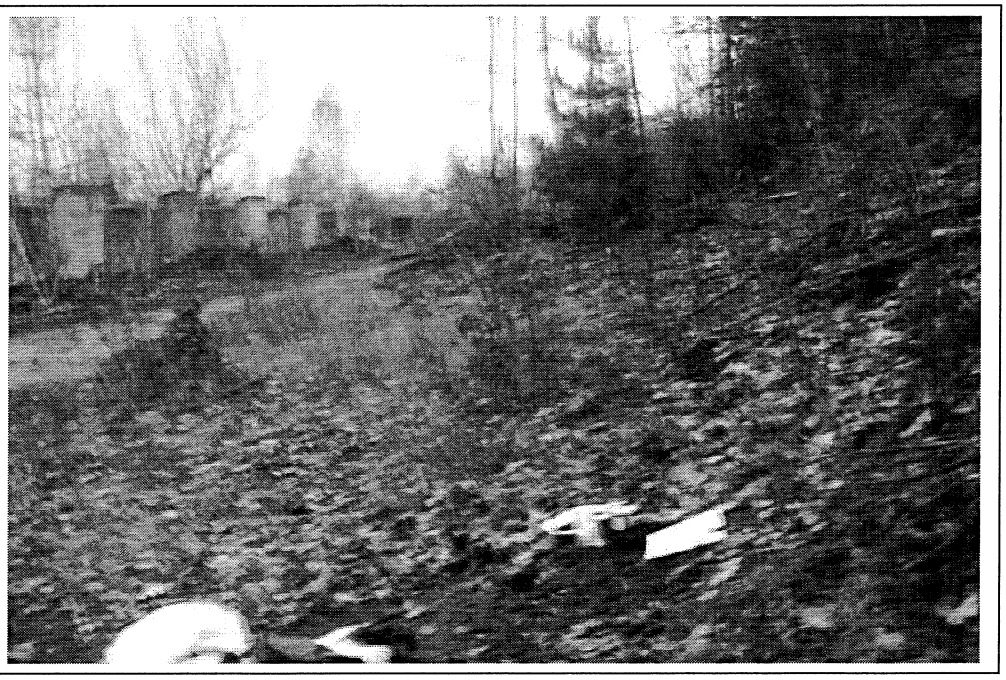


DESCRIPTION: Close-up view of SS-13 sample. Sample was collected at the same location as the XRF-123 screening.

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: South

PHOTOGRAPH BY: JW



DESCRIPTION: Distant view of SS-13 sample.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 14 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: West

PHOTOGRAPH BY: JW



DESCRIPTION: Close-up view of SS-14 sample. Sample was collected at the same location as the XRF-134 screening.

DATE: 11/06/12

DIRECTION OF PHOTOGRAPH: West

PHOTOGRAPH BY: JW



DESCRIPTION: Distant view of SS-14 sample.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 15 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/08/2012

DIRECTION OF PHOTOGRAPH: Northeast

PHOTOGRAPH BY: JES



DESCRIPTION: Close-up view of location where Waste-1 (W-1) sample was collected. No photo was taken at the time of sample collection.

DATE: 11/08/2012

DIRECTION OF PHOTOGRAPH: Northeast

PHOTOGRAPH BY: JES



DESCRIPTION: Distant view of location where W-1 sample was collected. No photo was taken at the time of sample collection.

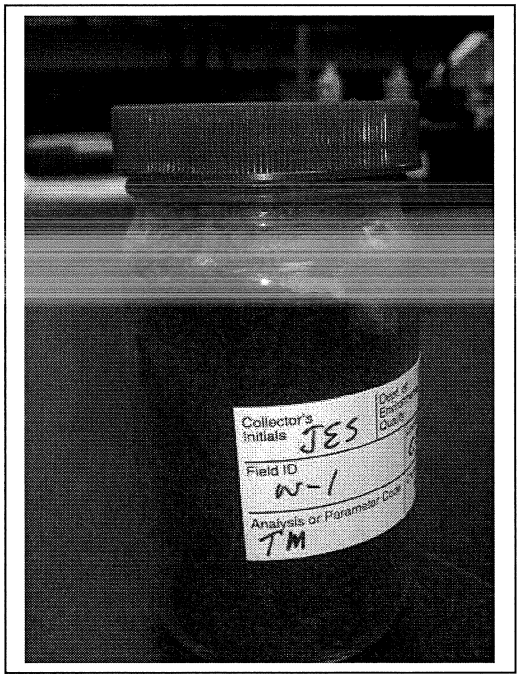
FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 16 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 12/3/12

DIRECTION OF PHOTOGRAPH:

PHOTOGRAPH BY:
DEQ laboratory

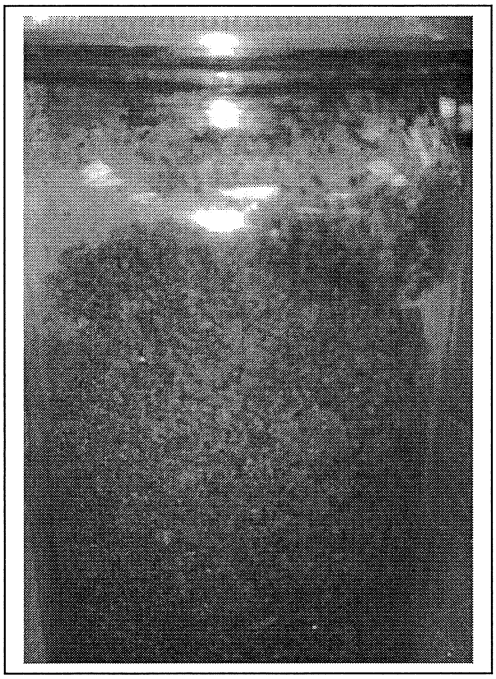


DESCRIPTION: Waste-1 (W-1) sample collected during the SI but photographed later by DEQ laboratory personnel.

DATE: 12/3/12

DIRECTION OF PHOTOGRAPH:

PHOTOGRAPH BY:
DEQ laboratory



DESCRIPTION: Waste-1 (W-1) sample collected during the SI but photographed later by DEQ laboratory personnel.

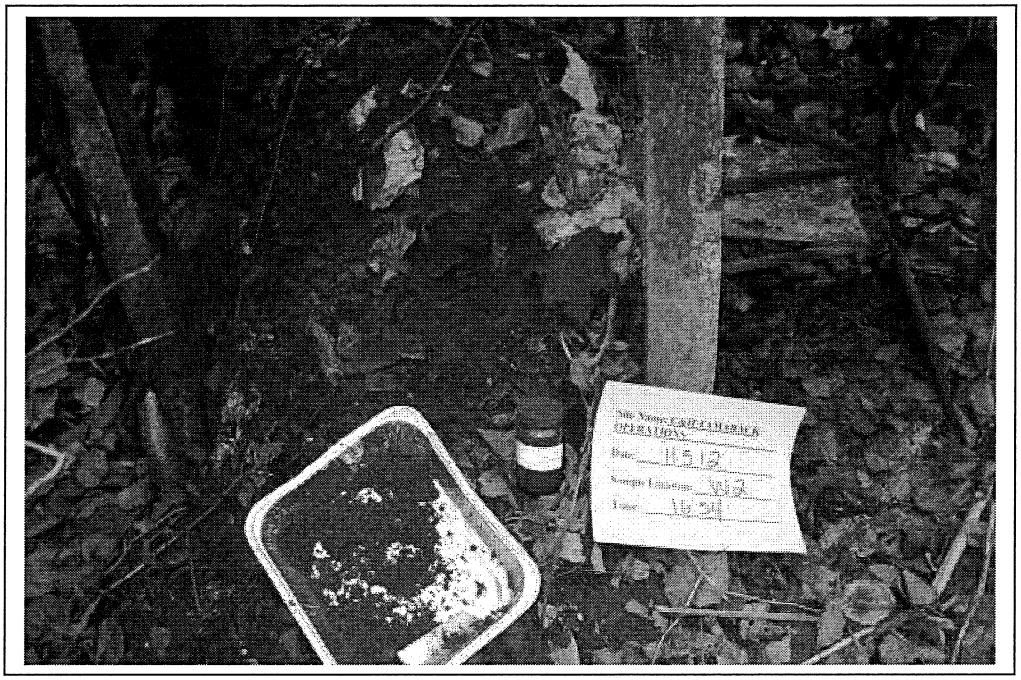
FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 17 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/05/2012

DIRECTION OF PHOTOGRAPH: West

PHOTOGRAPH BY: JES

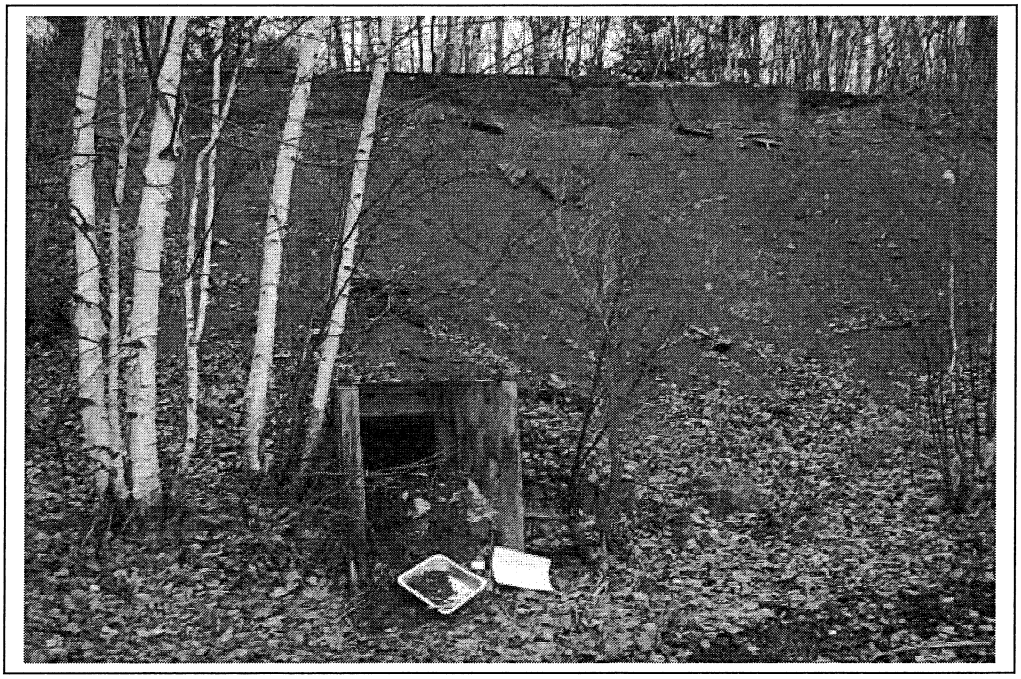


DESCRIPTION: Close-up view of W-2 sample, a sample of waste.

DATE: 11/05/2012

DIRECTION OF PHOTOGRAPH: West

PHOTOGRAPH BY: JES



DESCRIPTION: Distant view of W-2 sample. Sample is located at the remains of a former launder line (waste conveyance system used during former mine company operations).

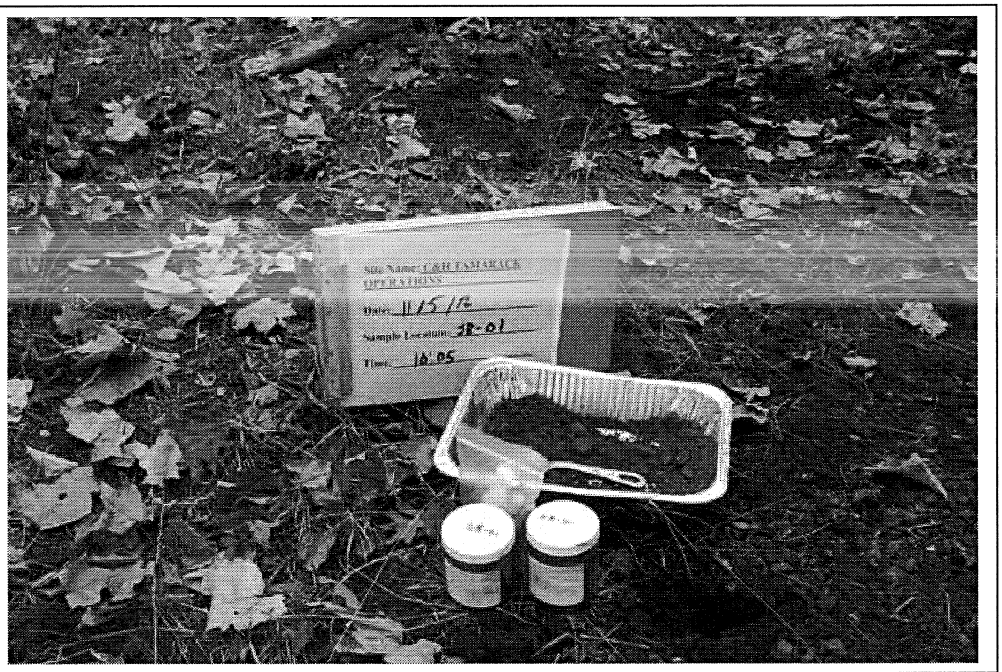
FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 18 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/05/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Close-up view of soil boring 01 (SB-01) sample.

DATE: 11/05/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Distant view of SB-01 sample.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 19 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/05/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Close-up view of SB-02 and SB-02D samples.

DATE: 11/05/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Distant view of SB-02 and SB-02D samples.

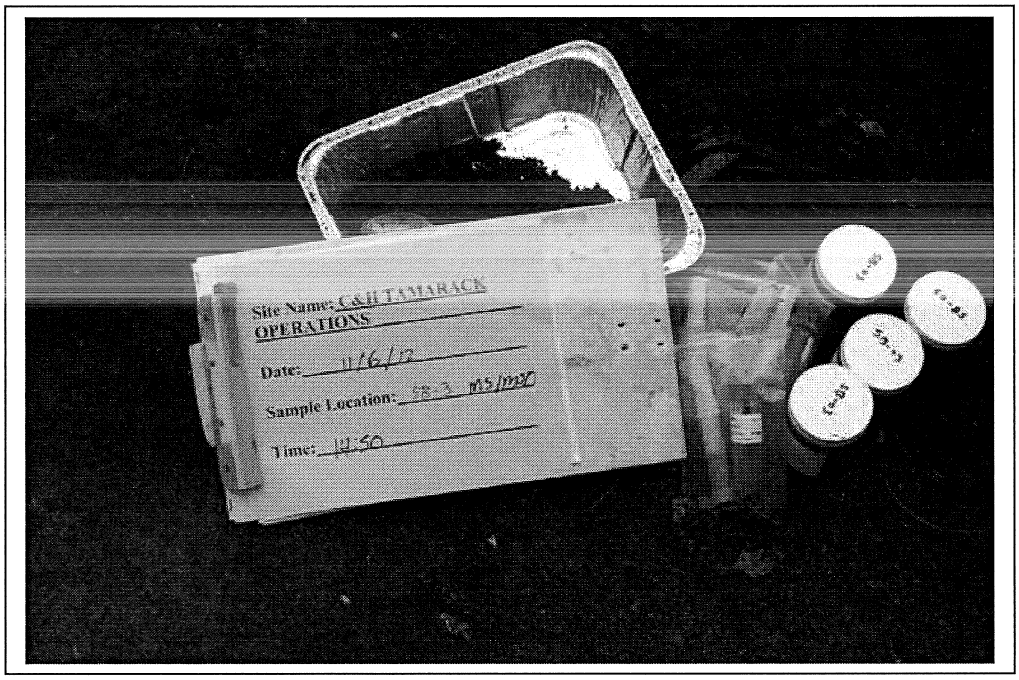
FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 20 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Close-up view of SB-03 with enough volume for matrix spike/matrix spike duplicate.

DATE: 11/06/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Distant view of SB-03.

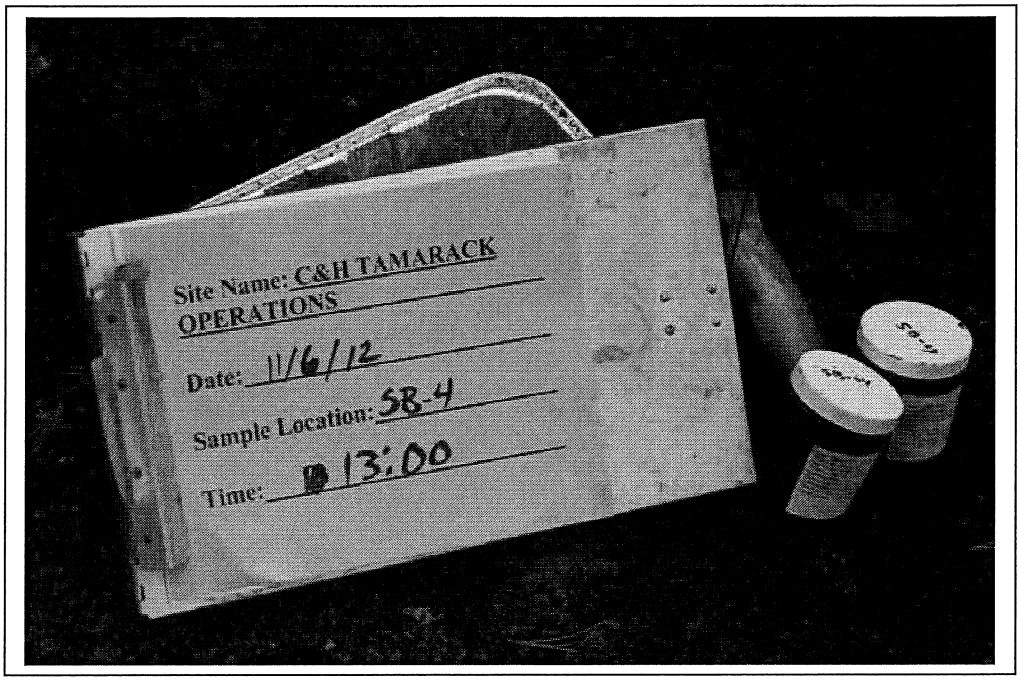
FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 21 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND

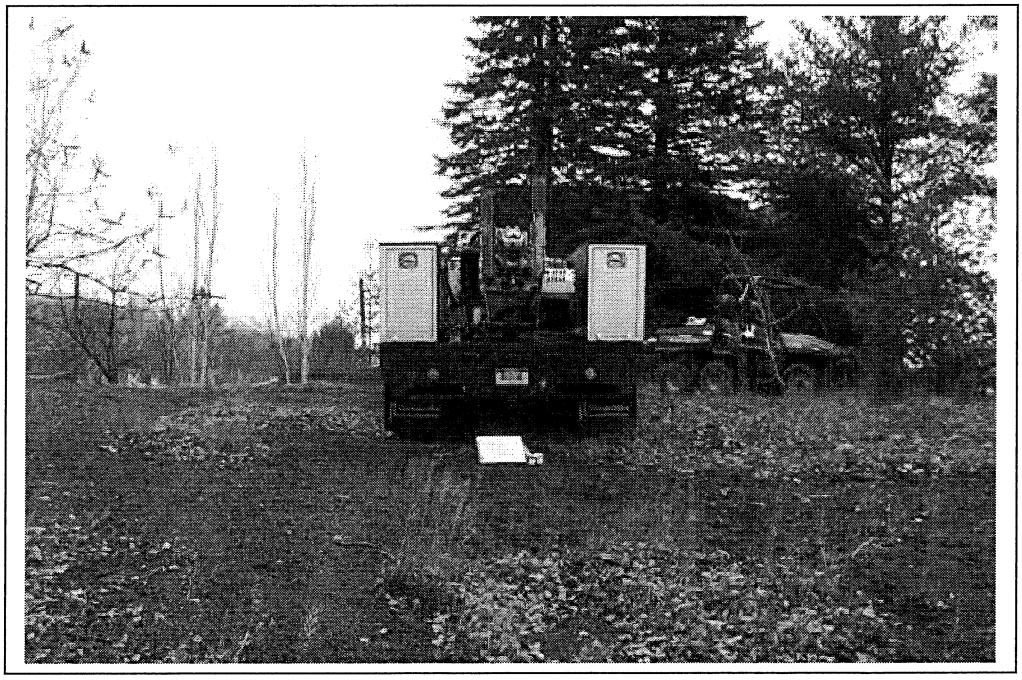


DESCRIPTION: Close-up view of SB-04 sample.

DATE: 11/06/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Distant view of SB-04 sample.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 22 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/05/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Close-up view of SB-05 sample.

DATE: 11/05/2012

DIRECTION OF PHOTOGRAPH:

PHOTOGRAPH BY:



DESCRIPTION: Distant view of SB-05 sample.

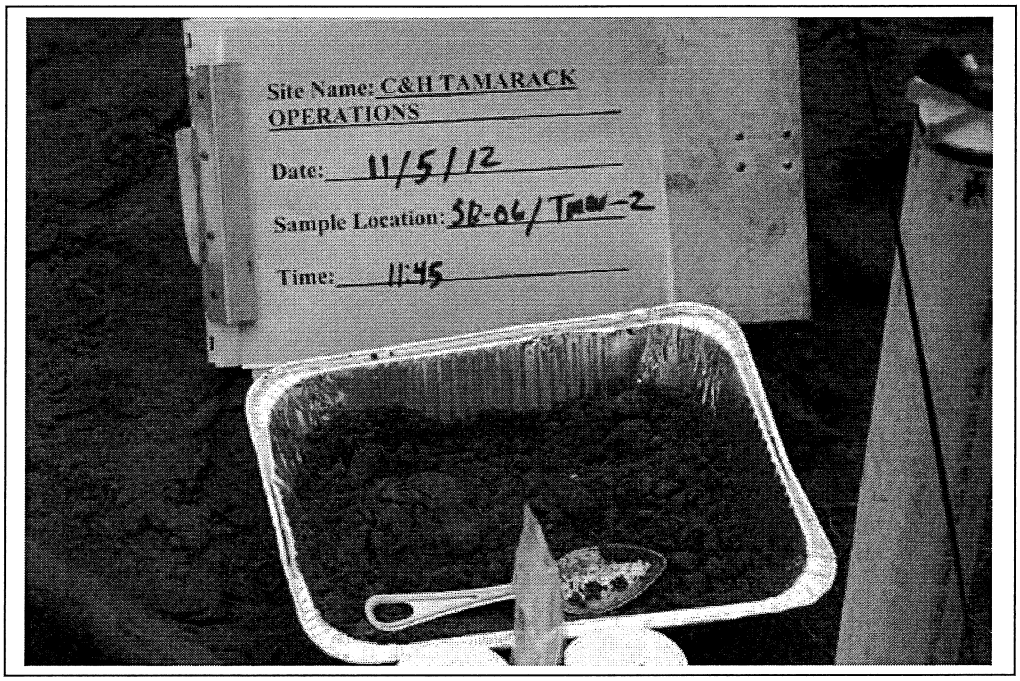
FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 23 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/05/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND

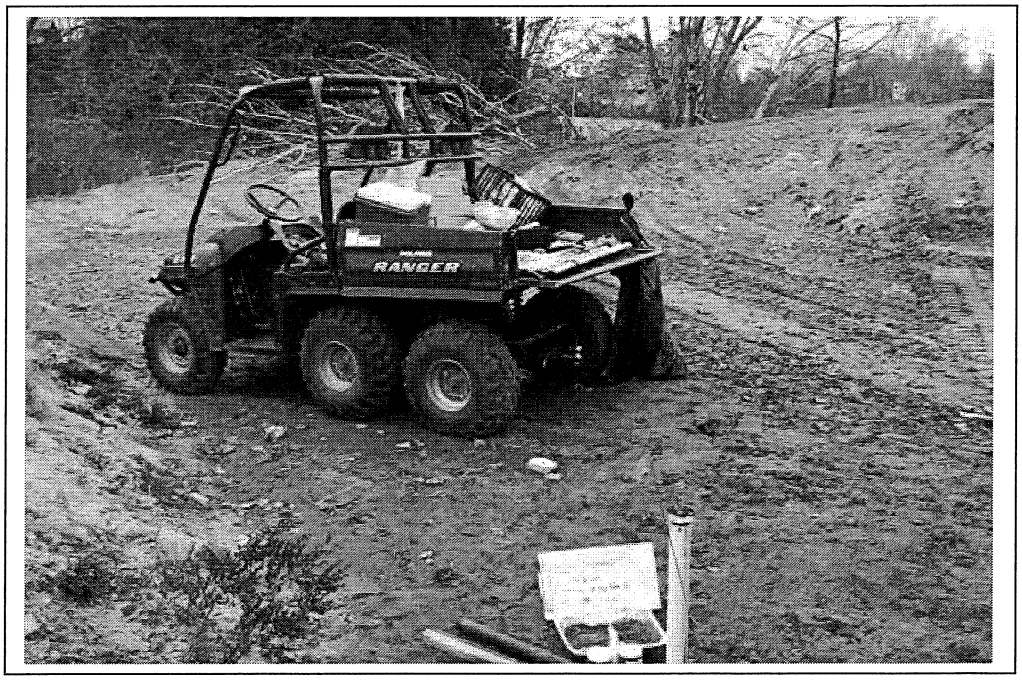


DESCRIPTION: Close-up view of SB-06 sample.

DATE: 11/05/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Distant view of SB-06 sample.

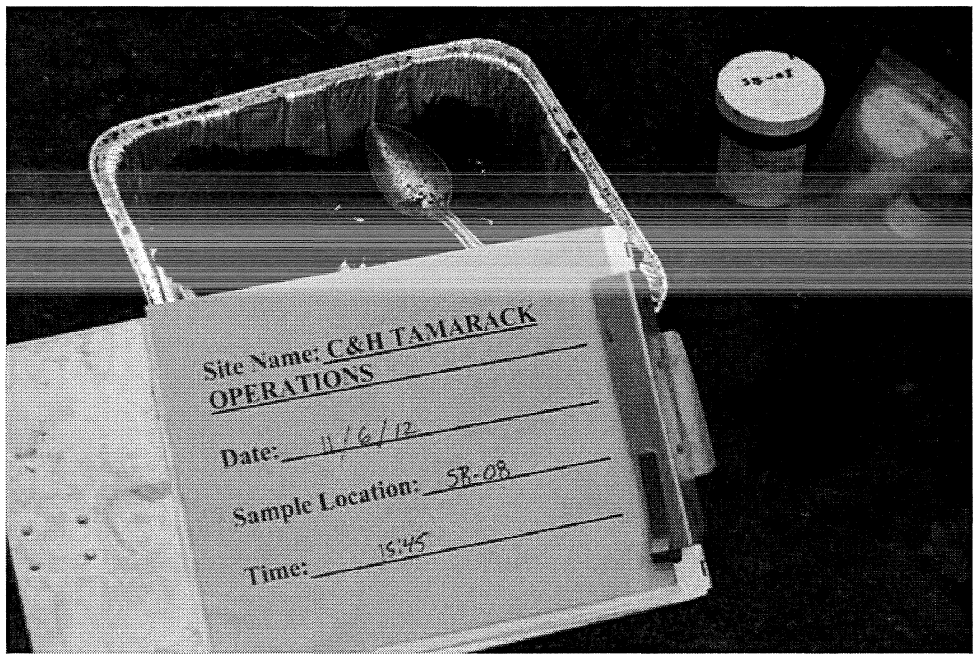
FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 24 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Close-up view of SB-08 sample.

DATE: 11/06/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Distant view of SB-08 sample.

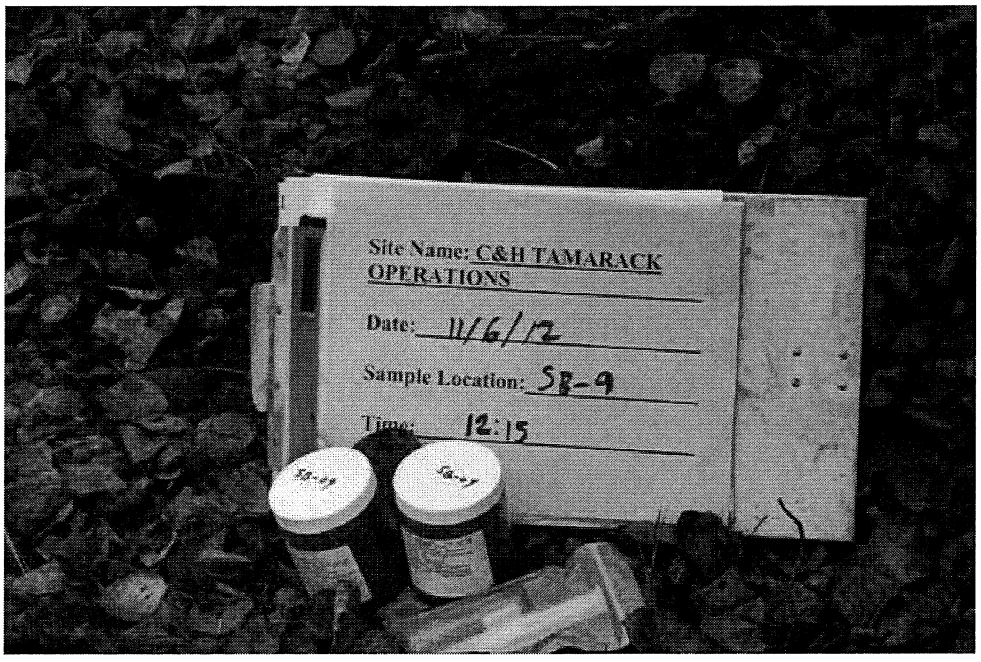
FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 25 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Close-up view of SB-09 sample.

DATE: 11/06/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Distant view of SB-09 sample.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 26 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/05/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Close-up view of SB-10 sample.

DATE: 11/05/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Distant view of SB-10 sample.

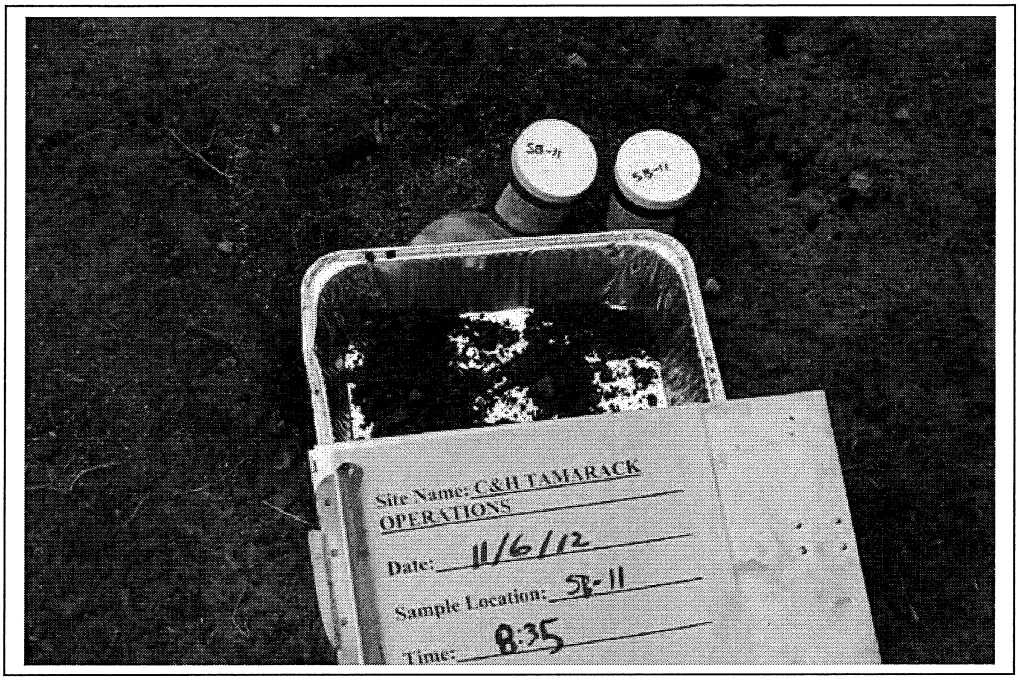
FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 27 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND

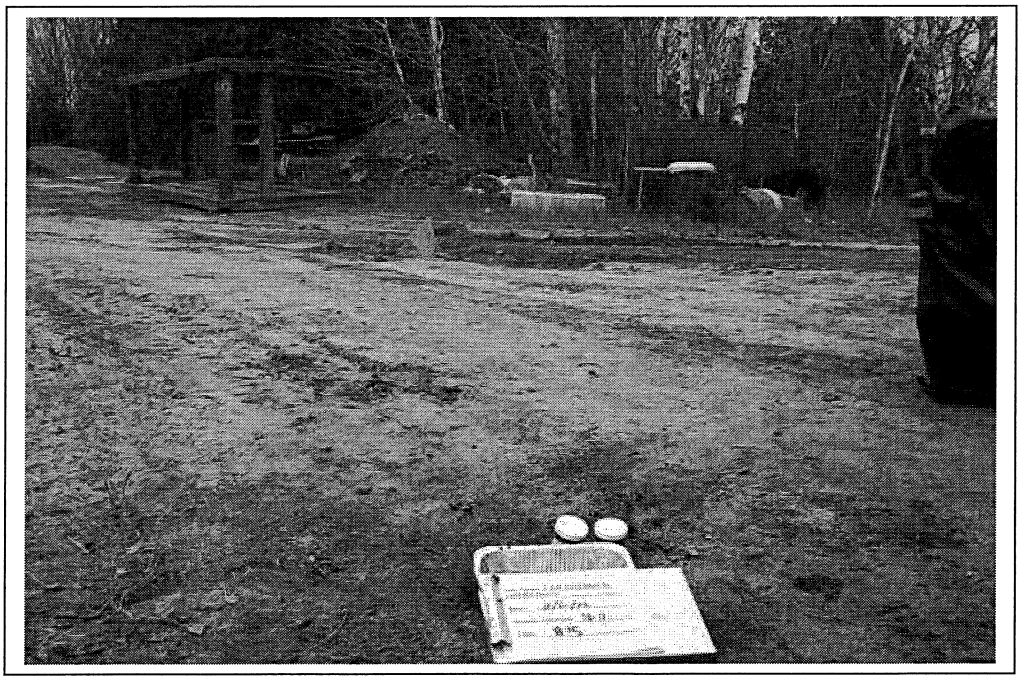


DESCRIPTION: Close-up view of SB-11 sample.

DATE: 11/06/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Distant view of SB-11 sample.

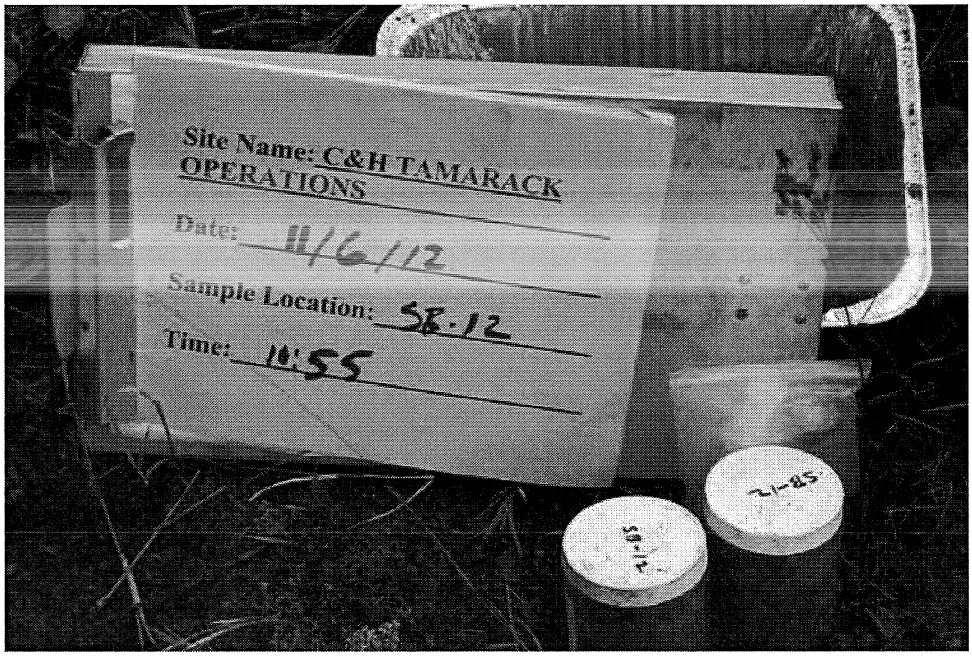
FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 28 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND

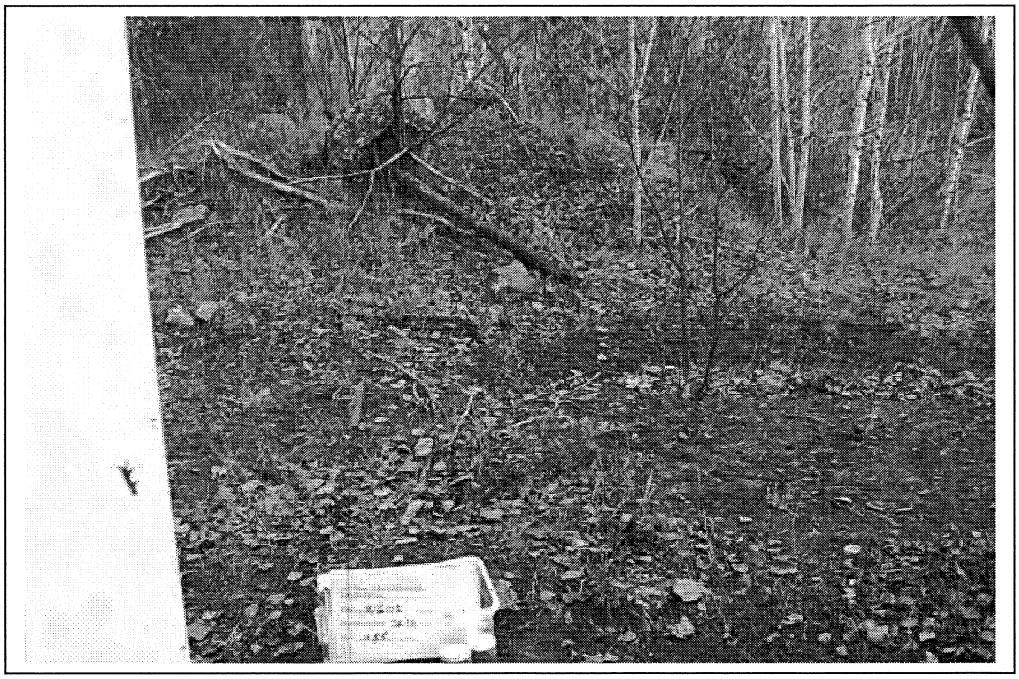


DESCRIPTION: Close-up view of SB-12 sample.

DATE: 11/06/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: ND



DESCRIPTION: Distant view of SB-12 sample.

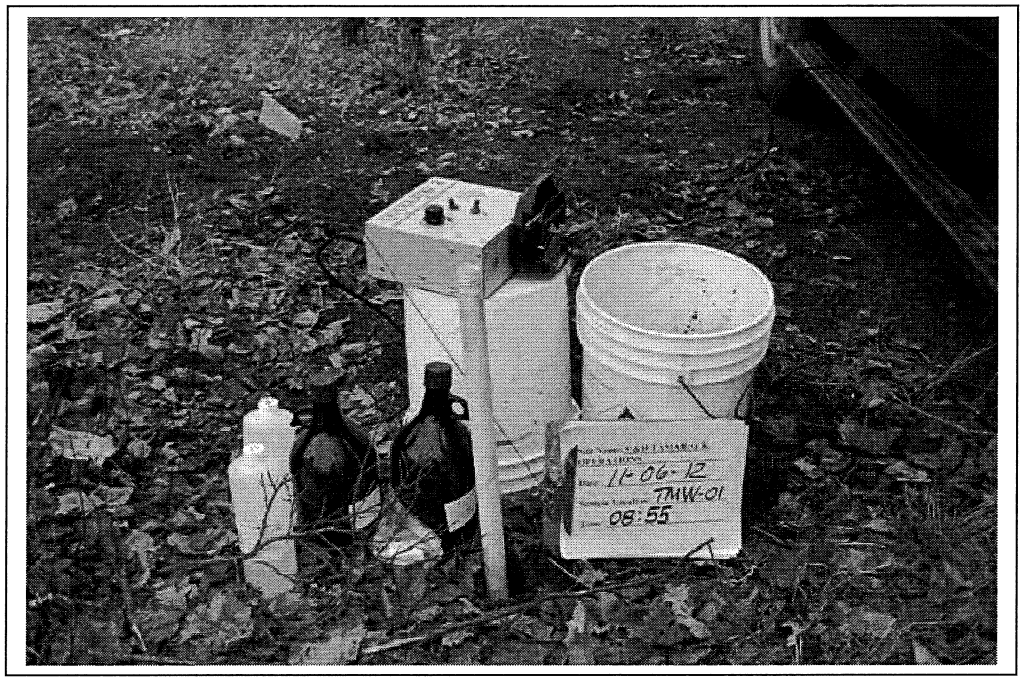
FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 29 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: TAD

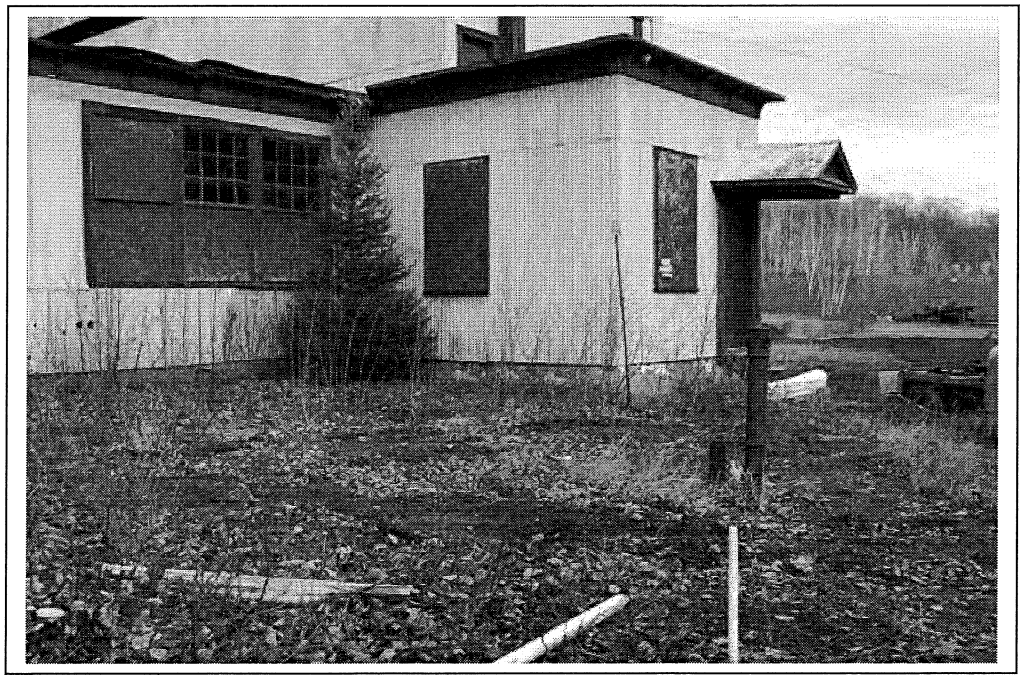


DESCRIPTION: Close-up view of Temporary Monitoring Well 01 (TMW-01) sample.

DATE: 11/08/2012

DIRECTION OF PHOTOGRAPH: Northwest

PHOTOGRAPH BY: JES



DESCRIPTION: Distant view of TMW-01.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 30 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/05/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: TAD



DESCRIPTION: Close-up view of TMW-02 and TMW-02D.

DATE: 11/05/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: TAD



DESCRIPTION: Distant view of TMW-02 and TMW-02D.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 31 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/05/2012

DIRECTION OF PHOTOGRAPH: West

PHOTOGRAPH BY: TAD

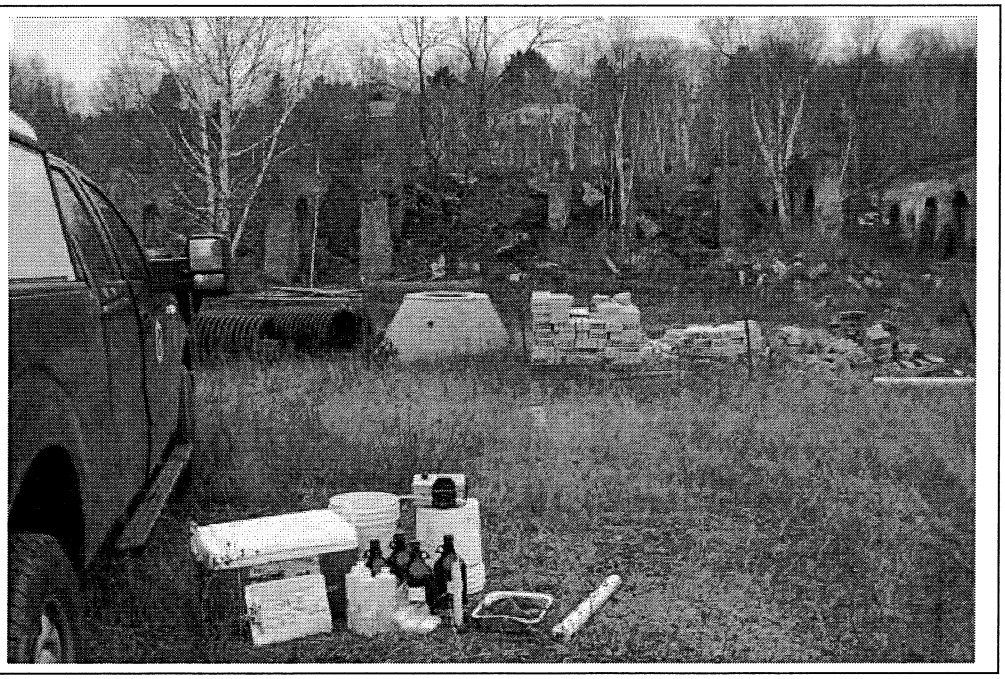


DESCRIPTION: Close-up view of TMW-03 with enough volume for matrix spike/matrix spike duplicate.

DATE: 11/05/2012

DIRECTION OF PHOTOGRAPH: West

PHOTOGRAPH BY: TAD



DESCRIPTION: Distant view of TMW-03.

FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 32 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 11/06/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: TAD

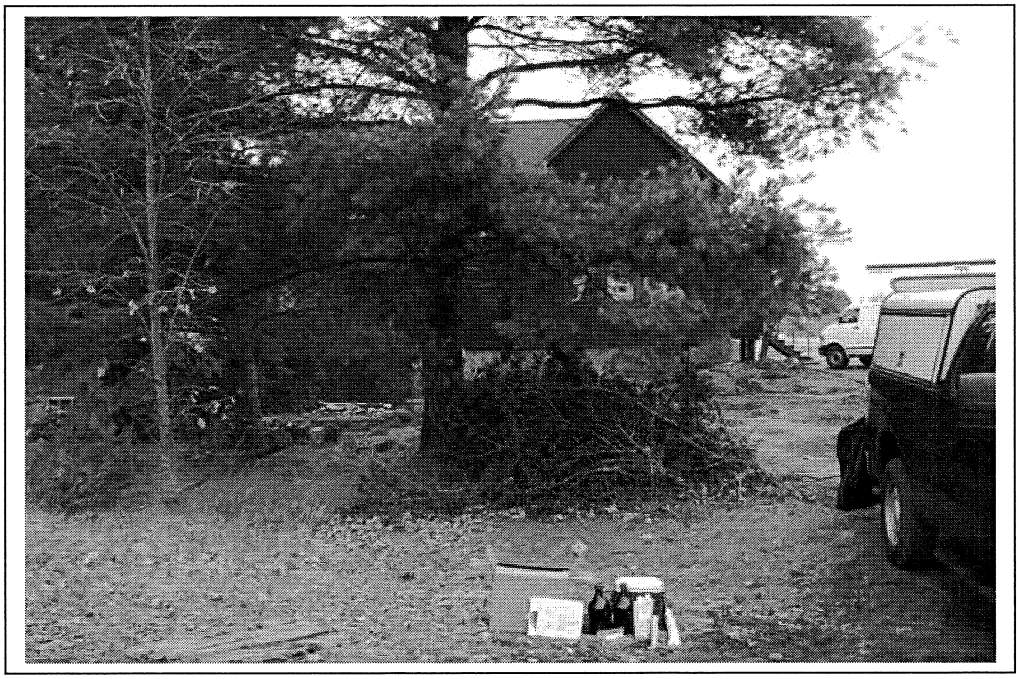


DESCRIPTION: Close-up view of TMW-05 sample.

DATE: 11/06/2012

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: TAD



DESCRIPTION: Distant view of TMW-05 sample.

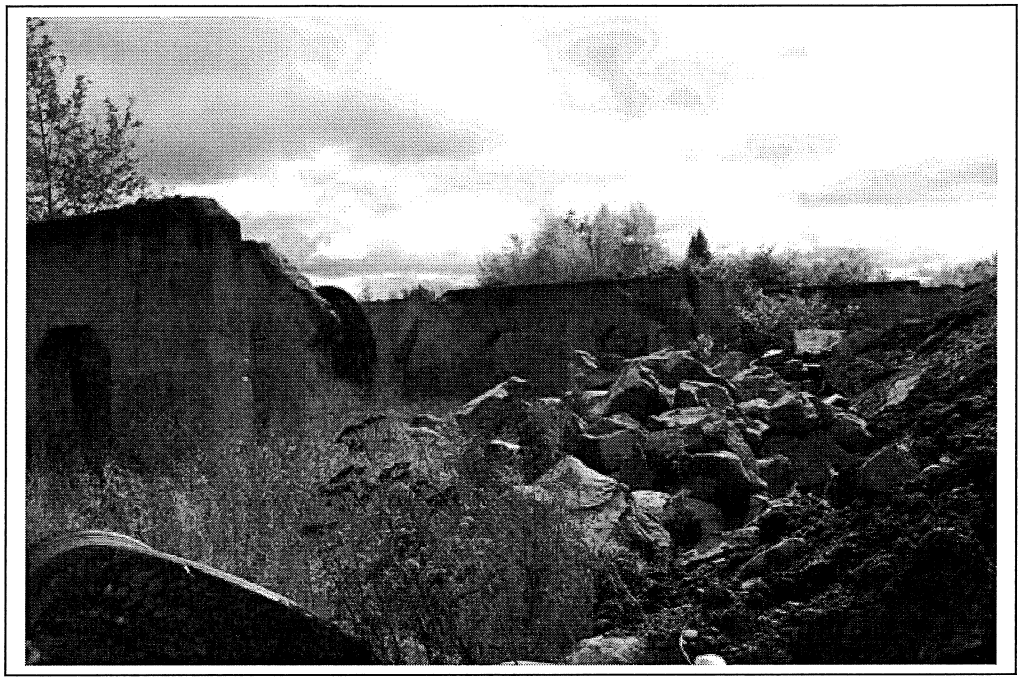
FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 33 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 10/11/12

DIRECTION OF PHOTOGRAPH: Southeast

PHOTOGRAPH BY: JES



DESCRIPTION: Northwest end of the former leach plant, showing some fill dirt encroaching towards the plant remains.

DATE: 10/11/12

DIRECTION OF PHOTOGRAPH: North

PHOTOGRAPH BY: JES



DESCRIPTION: South corner of the former leach plant, showing fill dirt filling the spaces between the concrete foundation remains.

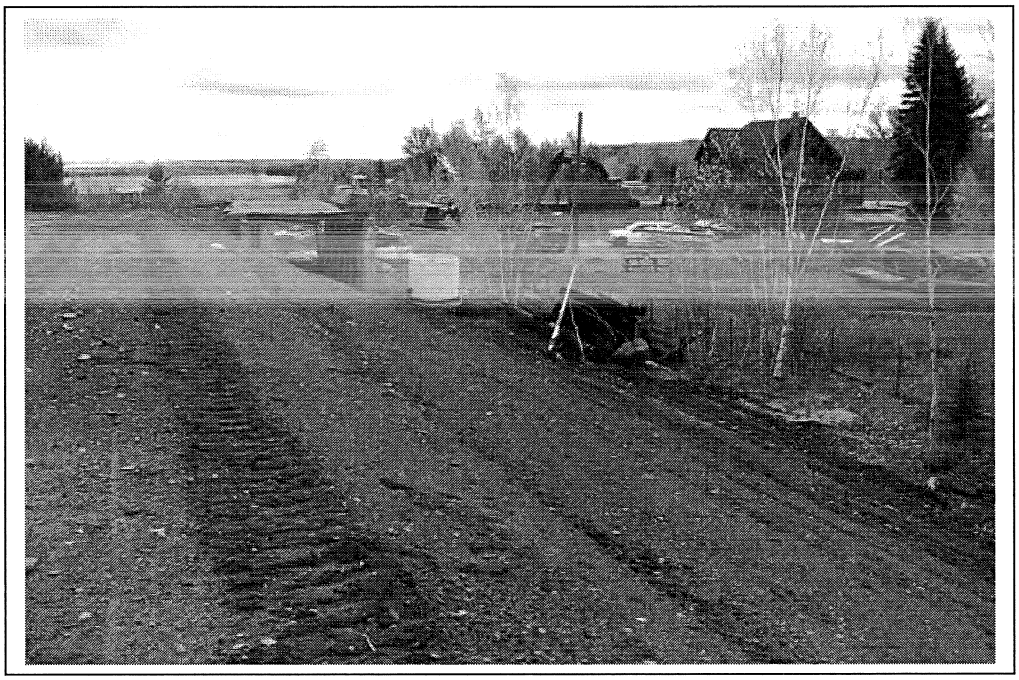
FIELD PHOTOGRAPHY LOG SHEET

PROPERTY NAME: C & H TAMARACK OPERATIONS PAGE: 34 OF: 34
U.S. EPA ID #: MIN000510835

DATE: 10/11/12

DIRECTION OF PHOTOGRAPH: Southeast

PHOTOGRAPH BY: JES

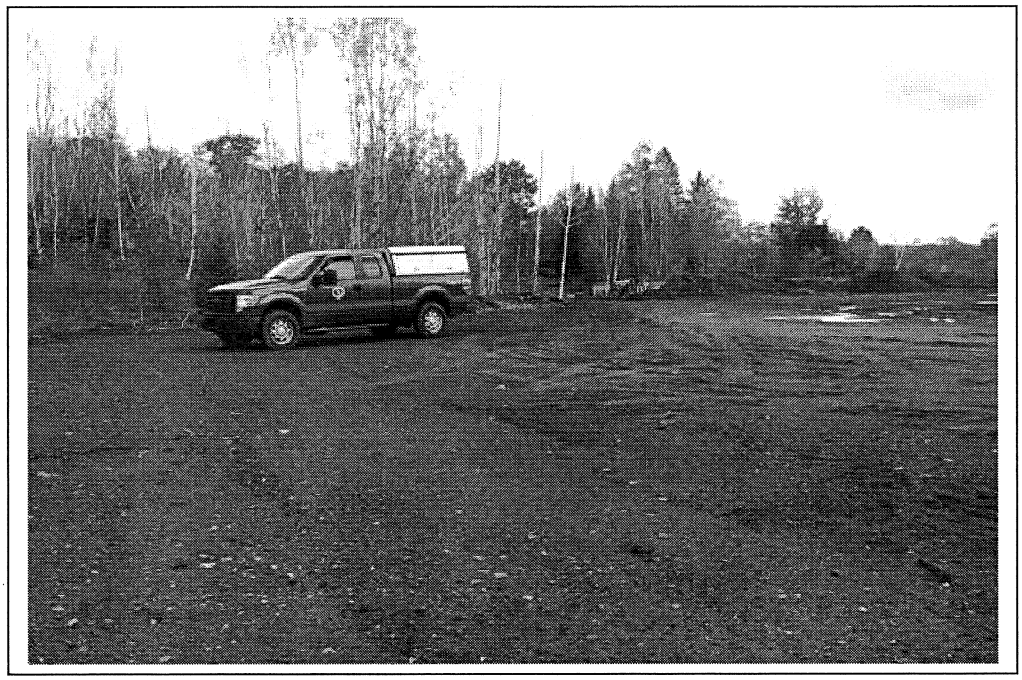


DESCRIPTION: Top of filled area of the former leach plant looking towards the south corner of the plant remains and Torch Lake in the background.

DATE: 10/11/12

DIRECTION OF PHOTOGRAPH:

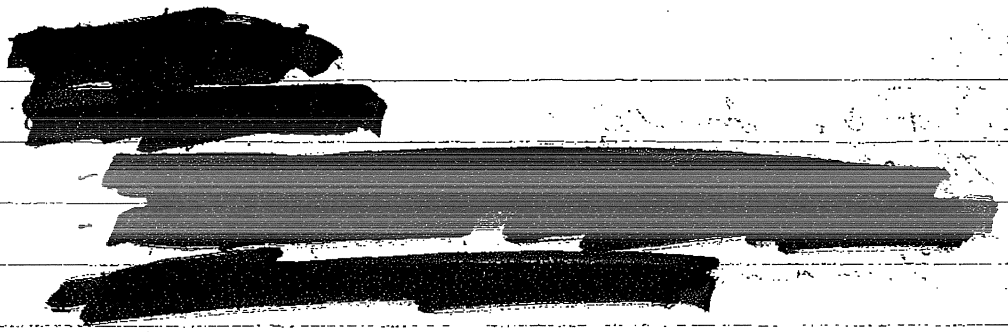
PHOTOGRAPH BY: JES



DESCRIPTION: On top of filled area of the former leach plant, with plant foundations and potentially remaining wastes buried below.

Appendix D

Field Log Book



[redacted]

Prerem mtg. 1015 – wh – DD, Lin, Joe, Anthony

Access – approach owners first, but let Scott know

tx Osceola Township

906-337-5960 – "not in service"

906-482-8578 2:39p – Osc. T of HC

9-12 MTUW Steven Karpiak is supervisor

closed Sh F

Tu. 9/11/12 tx Steven K. Osc. T. Sup.

Teaches at MTU

- have public access – no specific access needed
- stimulus money being used for some work at Ahmeek AP plant
- MDOT redoing M-26 in area
- rebar, concr. covered in parts around concr. pillars
- "site of interest" for Kew Nat. Park
- part of AP is pub. park now
- towards Macon – they own dredge also
- TL Sewer Auth. owns 100 acres
- Assessor Dave Peterson (DPM Assessing) 482-0144
  & Treasurer → Mary Ringles & Rene Cunningham may help deputy treasurer
- WUPPADR – Western UP Planning & Devel. Region 906 482-7205
  – have 615/615 data

MTU W 9-12

- Gabriela H.

Tu, 9/11/12

Nine C. at Osc. Township

- they have maps but not electronically

- suggested I contact WUPPADR for parcel boundary maps

to WUPPADR 906-482-7205

m-F 8-12, 1-5

→ Steve Rouser - srouser@wuppdr.org

- has parcel shapefiles he can send me

[redacted]

Th, 9/13/12

~~Ax~~ Denise Ringle DIT

- ~~uninstalled Adobe Acrobat v.7 in order to be able to print to Adobe for my HRMN TE exp. vouchers~~

- ~~says I can create pdfs from Microsoft Office 2010 but will need Acrobat Prof. to do bookmarks, etc. or other editing~~

TM, 9/17/12

~~Ax~~ Doug Pascoe

Tom. City - ~~the~~ furthest south for Mich. Am.

Marvin - Dollar Bay wells

Mich. Am. - south to Houghton Co. airport

Thu 10/4/12

Tx from [redacted] ~ 131.2

— OK to look over his property at [redacted]

[redacted]

m26 "up in the air" resurfacing

water lines in recently

In Lansing

[redacted]

Substance Abuse Coord.

[redacted] surplus dirt being

moved in from road constr. projects

Lived there since an infant

His dad taught 33 yrs at MTU

— hist., pol. Sci.

Remember C&H operations

— In Lansing 2nd F. in Nov.

— [redacted]

next week

— said he is next door [redacted]

Tx [redacted] — GMO does not own any property

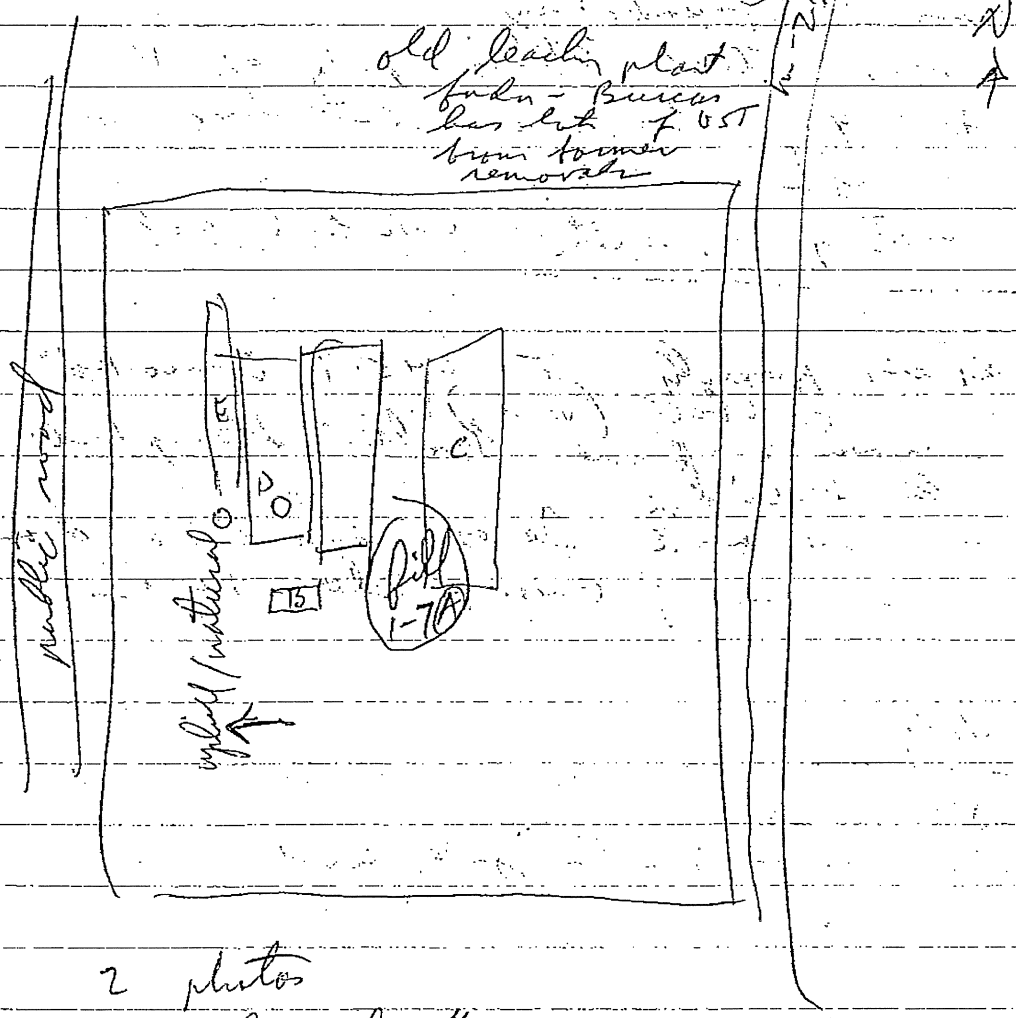
Hubbell or Tamarack City

Th. 10/11/12

[redacted] 230 pm.

(Lori called ~ 220 p)

photo #	what
A ~ 1-7	panoramic from
B	foundation
C	old leaching plant fndn - Burcas has lot of OST from former removals



D 2 photos

E concrete "drive"

XRF # [redacted] XRF 10/11/12

#55 brown & black soil

56 black soil

57 red soil

58 tan sand pile

59 reddish brown soil

60 Fill dirt S end of former Rect. Plant

60 blue/green heavy rock

---

62 white soft rock

63 brown m-c sand w/ gravel fill S end of fm. Rect. plant

64 stamp sand pile

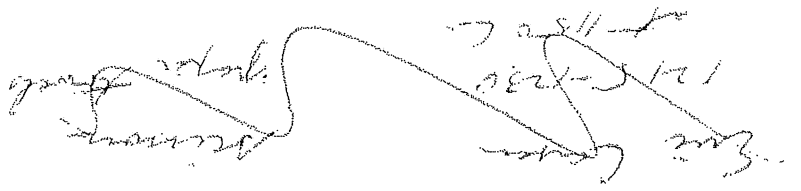
65 red sand pile covered w/ vegetation

66 | reddish-brown soil pile
67 |

68 tan/brown of sand pile

H endlr. prop.

10/11/12



IF FOUND PLEASE RETURN TO:

NAME John E. Spielberg

COMPANY Mich DEQ - PRD - SF

STREET 525 W. Allegan

CITY Lansing STATE MI ZIP 48913

PHONE 517 - 242 - 6663 DEQ cell
517 - 285 - 10328 pers cell
517 - 373 - 4951 office

JOB BOOK

PROJECT NAME C & H Tamarack Op

PROJECT NUMBER

CREW

DATE BOOK # OF

WEATHER

Forestry Suppliers, Inc.
MORE THAN THE NAME IMPLIES
P.O. Box 8397 • Jackson, MS 39284-8397
Sales 1.800.647.5368
Fax 1.800.543.4203
www.forestry-suppliers.com

Stock No. 49365

		date	time	
SB-01	ME3PA9	11/5/12	1005	Lem & Nick
SB-02	B0	"	1435	
SB-02D	B1	"	1435	
SB-03	B2	11/6/12	1450	
SB-04	3	11/6/12	1300	needs photo tag
SB-05	4	11/5	1350	L+N
SB-06	5	11/5	1145	L+N
SB-07	6	did	not	collect
SB-08	7	11/6	1545	
SB-09	8	11/6	1215	
SB-10	9	11/5	15:20	
SB-11	C0	11/6	835	
SB-12	1	"	~~1055~~ ~~1145~~ 1055	

	date	time	
SS-01	11/6/12	1633	
SS-02	11/5/12	1123	
SS02D	"	"	
SS03	"	1223	
SS-04	"	1410	= XRF 43
05	"	1514	
06	11/6/12	906	
07	"	830	
8	"	1100	
9	"	1000	
10	"	1223	
11	"	1251	
12+D	11/6/12	1030	
13	"	1710	
14	"	1556	
15	not done		
16			
17			
18			
W-1	11/5/12	1510	Waste-1 (heavy, removed large chunk) - for TM
W-2	11/5	1659	Waste-2 sludgy mat.

	inorgs ↓	date	time	
TMW-01	ME3PC2	11/6/12	855	slow well, air
TMW-02	3	11/5/12	1350	
TMW-02D	4	"	1350	
TMW-03	ms/msf 5	"	1610	
TMW-04		did not sample – no well		
TMW-05	7	11/6/12	1006	
FB-01	8	11/5/12	1310	
FB-02	9	11/6/12	1430	
PB-01	ME3PD0	11/6/12	1240	

Tu, 11/6/12

PFN – phone
Roose Contracting – fiber
along road only

[redacted]

[illegible] property) stopped
by & asked if we find some –
they can they still use
property – Joe & I explaining
yes, that we have not found
a lot on former stamp
mills

Wi, 11/7/12
Diana Tx ~830 – Get Access
from Bum:
1) Anthony Clement 26231
2) Torch Lake Serv. Auth. Tdm.
Ralph Hager