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engineering and environmental consultants

BARR

Technical Memorandum

To: Alex Smith, Enbridge Energy
From: Ryan Erickson
Subject: Superior Terminal Tank 1 Ring Road Project
Date: April 3, 2015
Project: 49161253.19

This memorandum summarizes the field screening, analytical sampling, and waste management assistance provided by Barr Engineering (Barr) at the request of Enbridge Energy (Enbridge) during Tank 1 ring road replacement activities at the Enbridge Superior Terminal in Superior, Wisconsin (Figure 1) in 2014.

Background

In November and December of 2014, Enbridge replaced the ring road located around the perimeter of Tank 1 at the Superior Terminal (Figure 2). The road was replaced to improve access to the tank for future maintenance work. Project tasks included removal of the old gravel roadbed, additional excavation to accommodate the new ring-road fill material, placing a geotextile fabric along the bottom of the excavation, and backfilling the excavation with Class-5 gravel. Soil with historical crude oil contamination was encountered during the excavation of the old ring road. Enbridge Environment personnel were notified when crude oil contaminated soil was encountered.

Enbridge requested that Barr complete the following actions during the project:

- field screen soil excavated from the old ring road for the presence of hydrocarbon contamination
- assess and document areas where crude oil contaminated soil was identified and segregate the excavated contaminated soil from soil without contamination
- assist with the coordination of off-site soil management of contaminated soil
- review historical release information for this location
- prepare a memorandum summarizing the extent of identified impacts and the response actions that were taken.

Field Activities

Barr was onsite as needed during the Tank 1 ring road excavation activity to field screen soil, collect analytical samples, and assist with the contaminated soil management.

Soil samples were collected as the old ring road was being excavated and the samples were field screened by Barr for the presence of organic vapors using an 11.7 eV photoionization detector (PID). Samples were also physically inspected for the presence of other potential indicators of crude oil impacts such as odor,

discoloration and sheen. PID readings and physical observations were documented on screening logs (Attachment A).

Soil was classified as contaminated if PID headspace readings were greater than 10 parts per million (ppm), or if other physical observations of hydrocarbon impacts were observed, as outlined in the pending WDNR *Enbridge Superior Terminal Site Investigation and Response Action Plan* (SI/RAP) (2014). Soil with no identified contamination was transported to and managed at an off-site gravel pit. Contaminated soil was segregated and managed in the Superior Terminal soil management area (SMA) (Figure 2) until off-site disposal was coordinated.

If contaminated soil remained in place following excavation activities, the excavation extents were field screened and representative soil samples were collected and submitted to a laboratory for analyses of petroleum volatile organic compounds (PVOC) and naphthalene to document contaminant concentrations to document existing site conditions.

Barr collected two analytical samples (*TK-1-2014-B-1* and *TK-1-2014-B-2*) from the excavation base following the completion of excavation activities to document residual contaminant concentrations. The samples were submitted to Legend Technical Services in St. Paul, Minnesota. Analyte detections were compared to WDNR industrial direct contact residual concentration limits (RCL's), WDNR groundwater RCL's and Cumulative Hazard Index criteria. Contaminated soil removal was performed to the extent practical, but the presence of above ground and below ground pipeline infrastructure limited additional remedial excavation in this location.

Enbridge indicated that the crude oil contamination encountered in the excavation was likely historical based on the location and characteristics of the contaminated soil. Barr reviewed the WDNR Bureau of Remediation and Redevelopment Tracking System (BRRTS) database for nearby release sites. Barr's findings are included in the *Results* section of this memo and historical WDNR release documents are included in Attachment A.

Results

Barr was onsite seven times between November 10 and December 15, 2014 to provide environmental assistance during Tank 1 ring road excavation activities. The ring road replacement excavation was approximately 2 feet deep and extended approximately 30 feet out from the tank (Figure 2). Excavated material consisted of the old road bed gravel fill and clay. Barr field screened the gravel and soil excavated from the old ring road (Attachment B). Approximately 8,500 cubic yards of soil were excavated from the ring road without identified crude oil contamination.

On November 20, 2014, crude oil contaminated soil was identified near a Tank 1 valve on the southeast side of the tank. The contaminated soil was located within 5 feet of the tank wall and consisted of sand

and gravel fill and clay. The soil had a petroleum odor, dark staining and elevated headspace readings that exceeded 320 ppm. Enbridge excavated as much contaminated soil as possible; however, the presence of the tank infrastructure limited additional remedial excavation activities. Analytical samples *TK-1-2014-B-1* and *TK-1-2014-B-2* were collected from the contaminated soil left in place at the base of the tank. Analyte concentrations in both samples (Table 1) were below the WDNR industrial direct contact RCL's and passed the Cumulative Hazard Index criteria. Analyte concentrations in *TK-1-2014-B-1* were below the WDNR groundwater RCL's. Analyte concentrations in *TK-1-2014-B-2* exceeded the WDNR groundwater RCL's for the 1,2,4- and 1,3,5-trimethyl benzenes and benzene.

TABLE 1: Analytical Soil Sample Results *(all analyte concentrations in mg/kg)*

Sample ID	Sample Date	Sample Depth (feet)	1,2,4-Trimethyl benzene	1,3,5-Trimethyl benzene	Benzene	Ethyl benzene	Toluene	Xylenes (total)	Naphthalene
Groundwater RCLs			***1.3793***	***1.3793***	***0.0051***	*0.785*	*0.5536*	*1.97*	*0.3294*
Industrial DC RCLs			*219*	*182*	*7.41*	*37*	*818*	*258*	*26*
TK-1-2014-B-1	11/20/14	3	0.39	0.31	<0.0030	0.022	0.011	0.092	<0.023
TK-1-2014-B-2	11/20/14	3	**2.6**	**1.6**	**0.025**	0.091	0.074	0.55	<0.024

BOLD = Analyte detections exceeding WDNR Groundwater RCLs.

The excavation was lined with a geotechnical fabric and backfilled with 2 feet of gravel fill at the completion of the ring road excavation activities.

Barr reviewed the WDNR BRRTS database for nearby release sites. Barr's findings did not identify any BRRTS sites in a close proximity to contaminated soil that was encountered.

Discussion

Residual crude oil contaminated soil remains at the base of Tank 1 southeast side. PVOC and naphthalene concentrations in samples collected from this soil were below WDNR Industrial Direct Contact RCL's and passed the Cumulative Hazard Index criteria. Analyte concentrations in *TK-1-2014-B-2* exceeded WDNR Groundwater RCL's; however, a facility-wide groundwater monitoring program is conducted at the Superior Terminal as part of the hydrogeologic performance standard established in the *WDNR SI/RAP* (2014), therefore, project specific monitoring is not required for this site. The excavation extents were covered with a geotechnical fabric and backfilled with 2 feet of gravel fill. No potential vapor receptors were identified as defined in the *WDNR SI/RAP* (2014).

Waste Disposal Coordination and Documentation

Barr collected one analytical waste characterization soil sample (*Tank1Road-Stockpile-1*) from the crude oil impacted stockpile for laboratory analysis at Legend Technical Services. The sample was analyzed for diesel range organics (DRO) and benzene, toluene, ethyl benzene, and xylenes (BTEX). A waste profile application was submitted to the Shamrock Landfill located in Cloquet, Minnesota and the soil was accepted under waste profile #CL14-0063. A total of 27.37 tons of crude oil contaminated soil was hauled to the landfill in February of 2015. The waste profile documents, the waste characterization laboratory report, and the landfill summary report are included in Attachment C.

Conclusions

Crude oil contaminated soil excavated from the Tank 1 ring road project was managed of at an approved landfill. Contaminated soil that could not be excavated due to the presence of tank infrastructure had analyte concentrations that did not exceed WDNR Industrial Direct Contact RCLs and passed the WDNR Cumulative Hazard Index criteria. The presence of clean fill, above ground infrastructure and employee-awareness will prevent direct contact exposure. Analyte concentrations did exceed WDNR Groundwater RCL's; however, groundwater monitoring at the Superior Terminal will be conducted on a facility-wide basis as part of the hydrogeologic performance standard established in the WDNR SI/RAP and project specific monitoring is not required for this site.

It is recommended that a no further response action be requested of the WDNR for this site and that the release site be added to the WDNR GIS Registry Enbridge Superior Terminal Super ERP Site.

Attachments:

Site Photos	1 through 2
Figure 1	Site Location
Figure 2	Site Layout Map
Attachment A	Site Investigation Field Sampling and Screening Logs
Attachment B	Legend Technical Laboratory Report
Attachment C	Waste Management Documentation

SITE PHOTOS

Photo 1: Ring road excavation near the valves on the southeast side of Tank 1. Photo taken facing north on November 20, 2014.
Photo 2: Discolored crude oil contaminated soil encountered at the base of the southeast side of Tank 1. Photo taken on November 20, 2014.

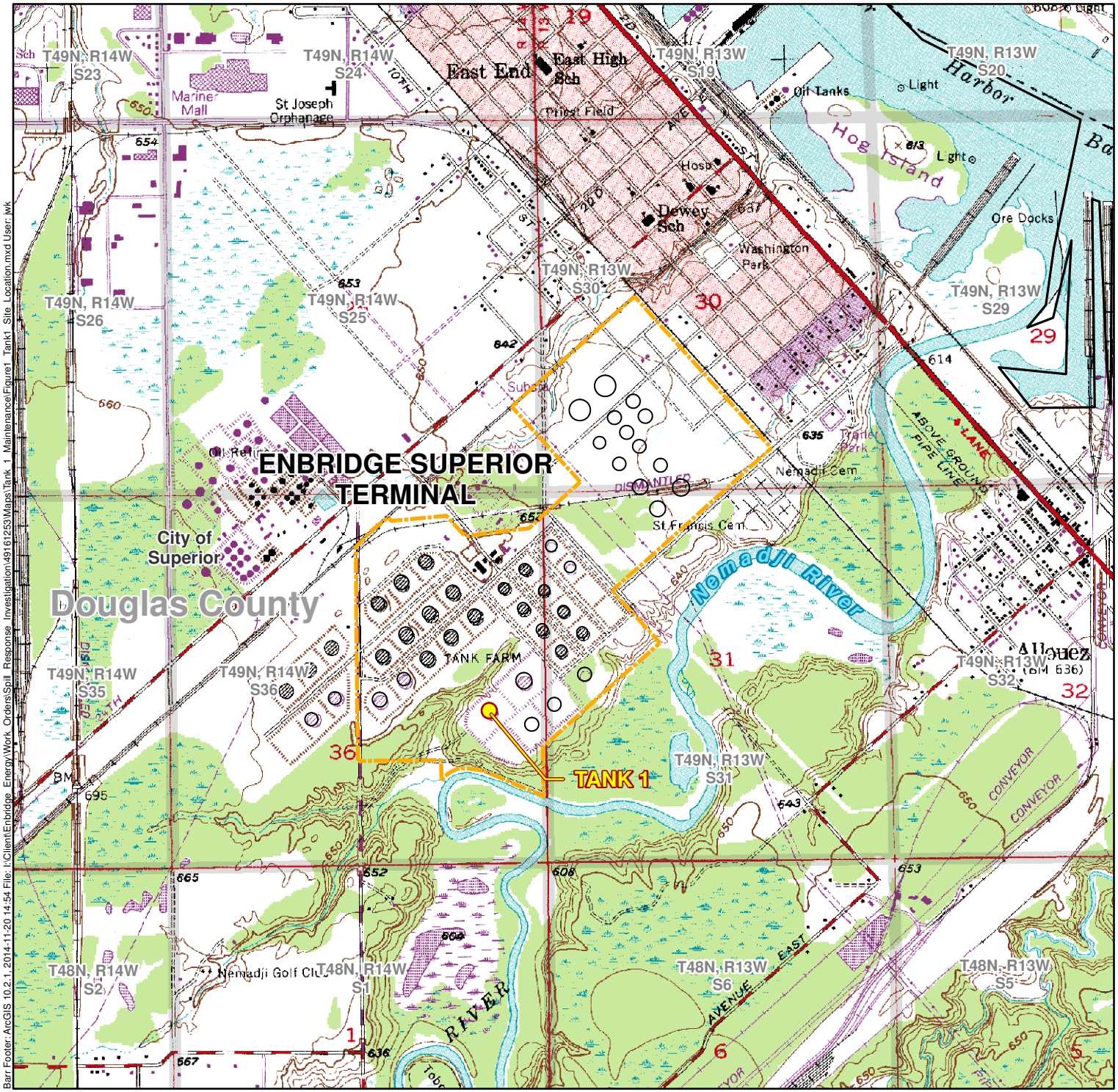
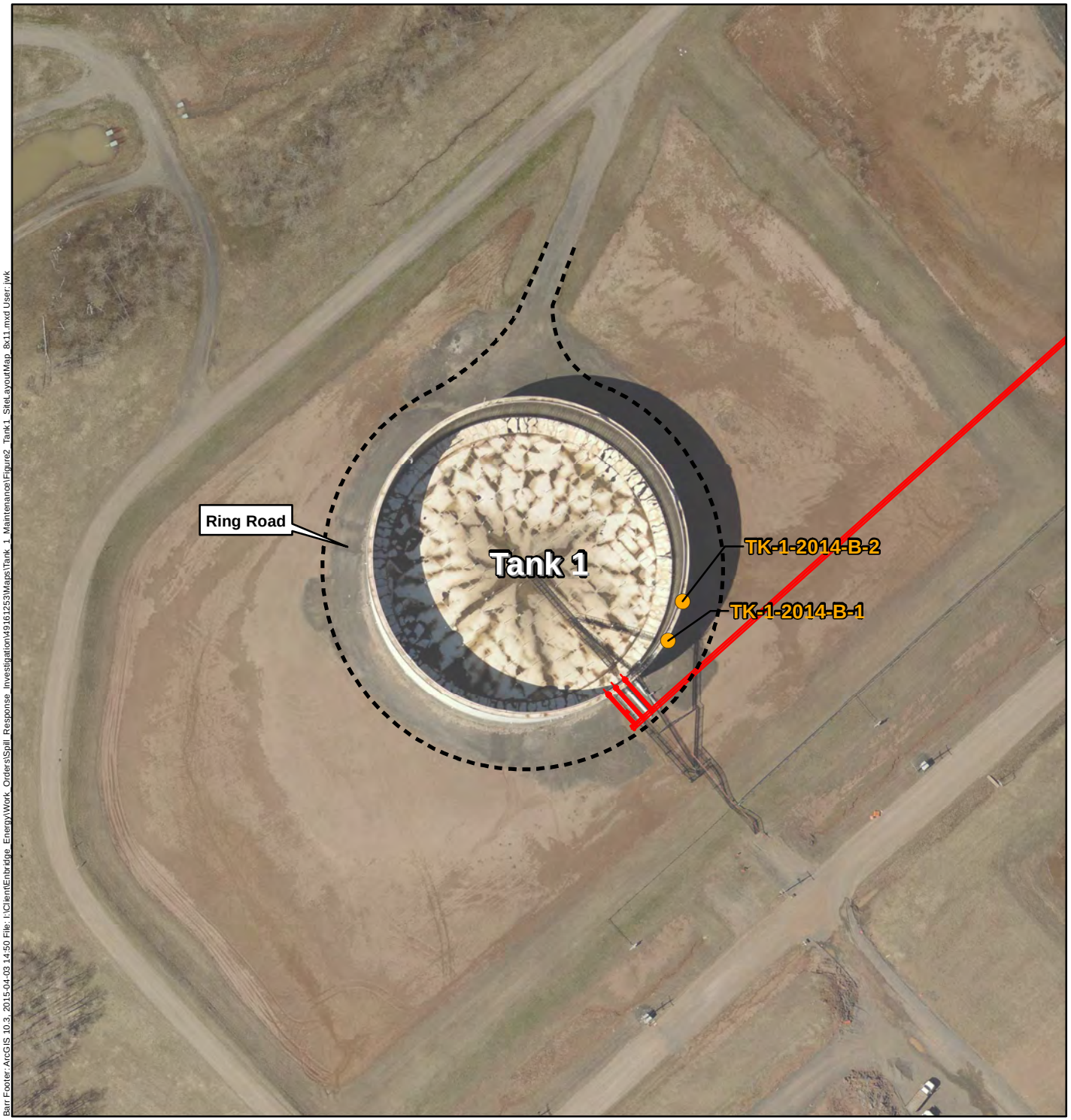


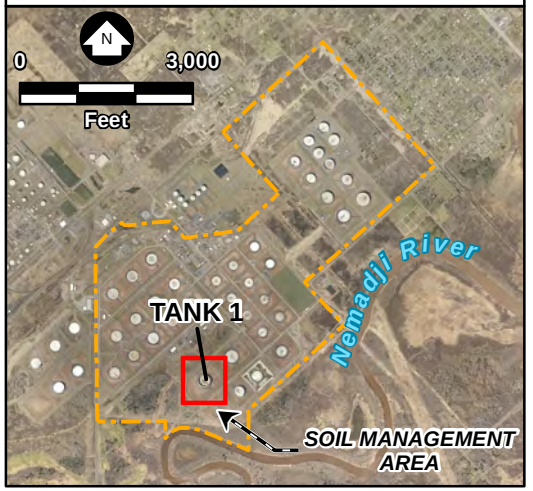
Figure 1

SITE LOCATION
TANK 1
SUPERIOR TERMINAL
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE



ENBRIDGE SUPERIOR TERMINAL



- Analytical Sample Locations
- Ring Road Replacement Excavation
- Pipeline Infrastructure
- Terminal Property Boundary

N

0 100 200

Feet
1 Inch = 100 Feet

Douglas County Imagery Circa May, 2013

Figure 2

SITE LAYOUT
TANK 1
SUPERIOR TERMINAL
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE

Attachment A

Site Investigation Field Sampling and Screening Log

SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: *Milepost or Facility* Tank 1 Ring Road excavation

Equipment used: Photo -*ionization detector with* 11.7 *eV lamp* Background Headspace: 0.0 ppm

Sample Nomenclature *(Location - sample type - #)*: _____

Soil Sample Types: **R** = *Removed Sample* ; **S** = *Sidewall Sample* ; **B** = *Bottom Sample* ; **Stockpile** = *Stockpile Sample*

Date: 11.10.2014

Sampler: TLS

Calibration Time: 0700

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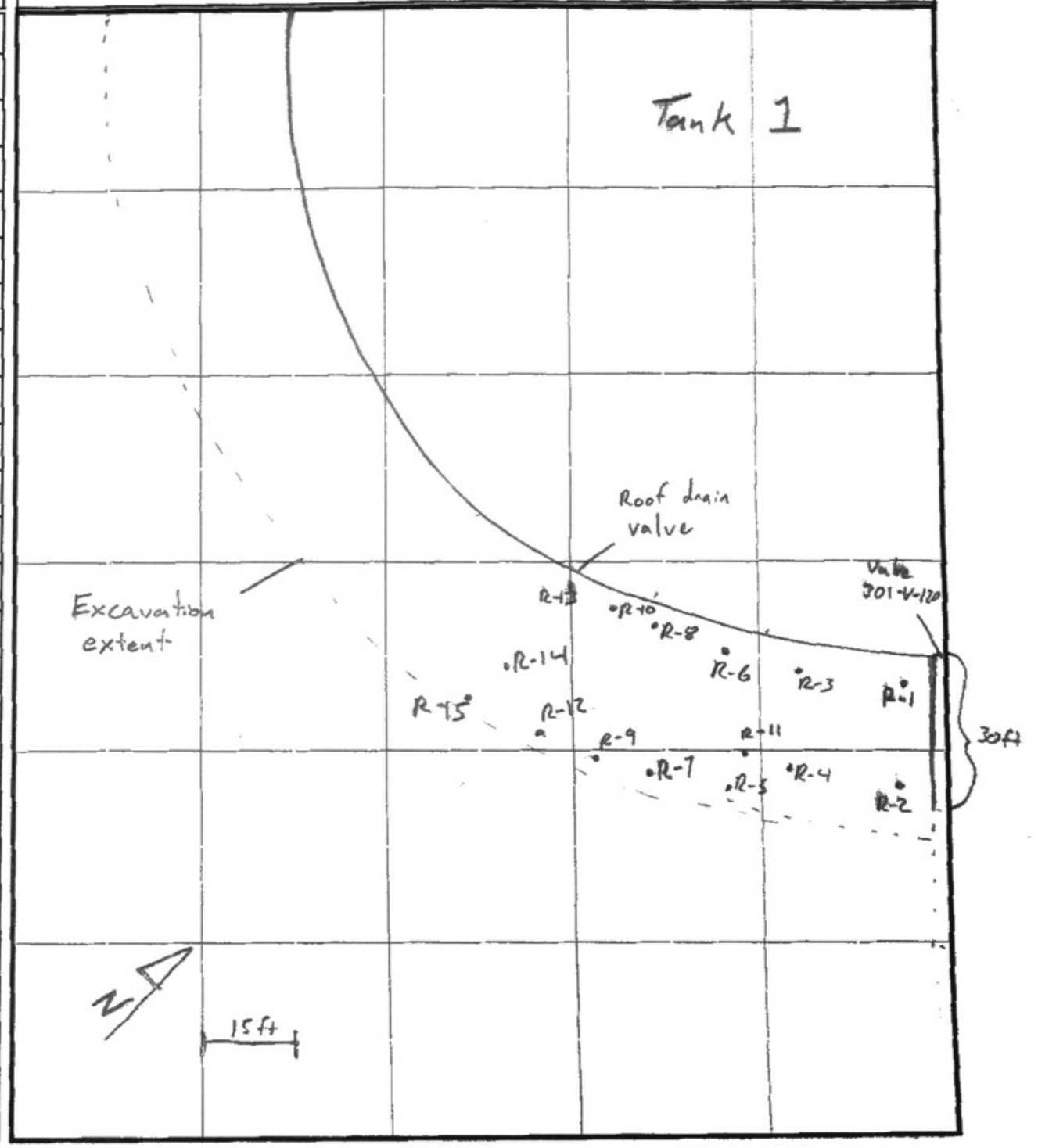
Sample ID	Depth (FT)	Time (military)	Soil Type (USCS)	Color/ Discolor	Odor/ Sheen	Headspace Reading (ppm)
Example: Stockpile-1	4	16:30	CL	Reddish brown	Petroleum/ Rainbow	275
R-1	1.6	0800	CH	Reddish brown	N/N	0.0
R-2	1.2	0815	GP	Dk gray		0.0
R-3	1.2	0825	CH	Reddish brown		0.2
R-4	1.2	0840	GP/CH	Reddish brown		0.0
R-5	1.4	0900	GP	Dk gray		0.4
R-6	1.5	0920	CH	Reddish brn		0.0
R-7	2.3	0940	CH/GP			0.0
R-8	1.4	1000	CH/GP			0.0
R-9	2.0	1015	CH/GP			0.0
R-10	1.5	1030	CH/GP		✓	0.0
R-11	2.3	1035	CH		Faint/Right	2.6
R-12	2.4	1055	CH/GP		N/N	0.3
R-13	1.5	1105	CH/GP		Faint sweet/N	1.2
R-14	2.0	1135	CH/GP		N/N	0.0
R-15	2.0	1150	CH/GP	✓	N/N	0.4

SITE SKETCH: north is up; excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features... **1 inch/grid =** 30 **FEET**



SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: *Milepost or Facility* Tank 1 Ring Road excavation

Equipment used: Photo -*ionization detector with* 11.7 *eV lamp* Background Headspace: 0.0 ppm Date: 11.10.2014

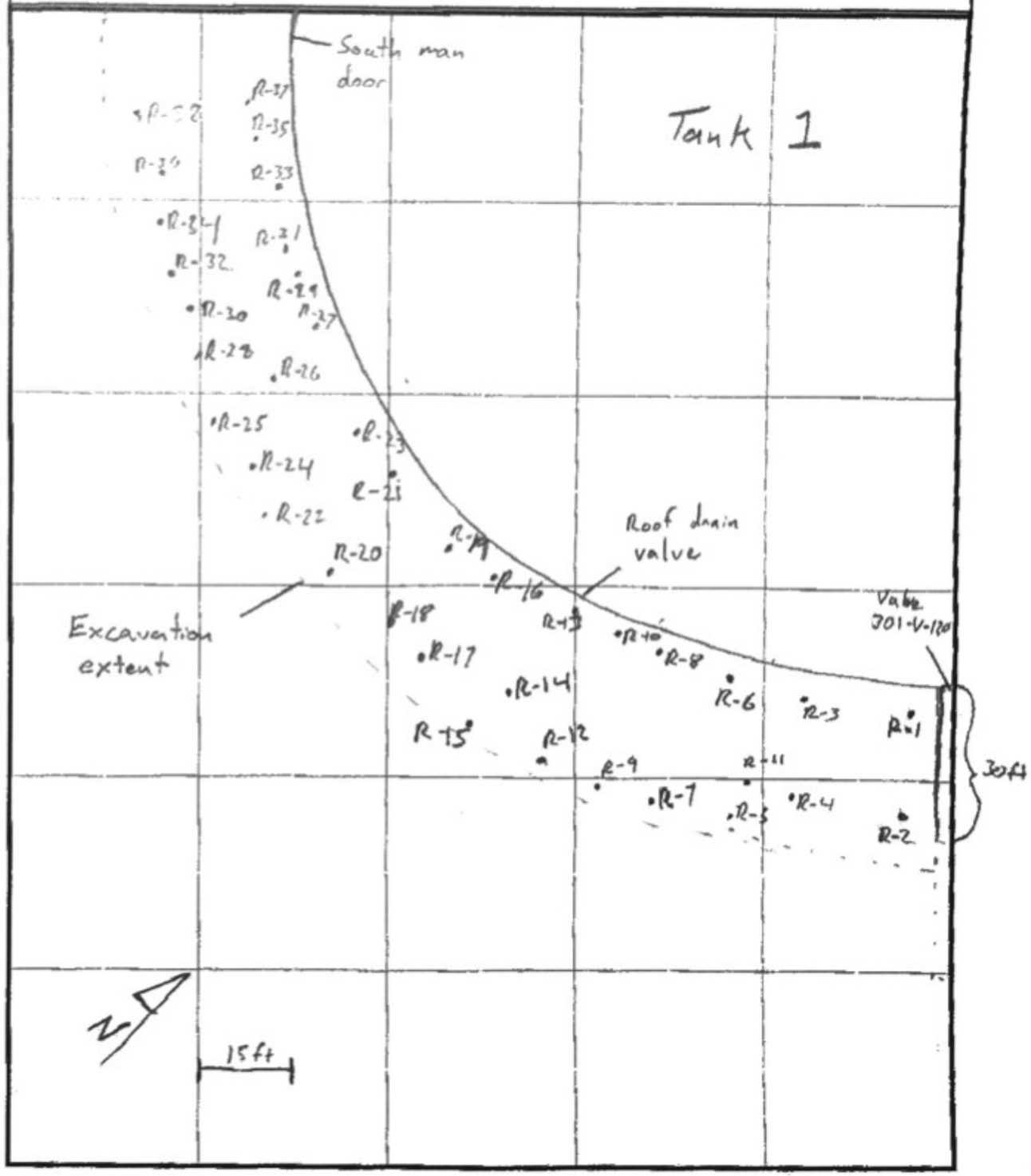
Sample Nomenclature *(Location - sample type - #)*: _____ Sampler: TTS

Soil Sample Types: **R** = *Removed Sample* ; **S** = *Sidewall Sample* ; **B** = *Bottom Sample* ; **Stockpile** = *Stockpile Sample* Calibration Time: 0700

BARR

Sample ID	Depth (FT)	Time (military)	Soil Type (USCS)	Color/ Discolor	Odor/ Sheen	Headspace Reading (ppm)
Example: Stockpile-1	4	16:30	CL	Reddish brown	Petroleum/ Rainbow	275
R-1	1.6	0800	CH	Reddish brown	N/N	0.0
R-2	1.2	0815	GP	Dk gray		0.0
R-3	1.2	0825	CH	Reddish brown		0.2
R-4	1.2	0840	GP/CH	Reddish brown		0.0
R-5	1.4	0900	GP	Dk gray		0.4
R-6	1.5	0920	CH	Reddish brn		0.0
R-7	2.3	0940	CH/GP			0.0
R-8	1.4	1000	CH/GP			0.0
R-9	2.0	1015	CH/GP			0.0
R-10	1.5	1030	CH/GP		✓	0.0
R-11	2.3	1035	CH		Faint/Light	2.6
R-12	2.4	1055	CH/GP		N/N	0.3
R-13	1.5	1105	CH/GP		Faint sheen/N	1.2
R-14	2.0	1135	CH/GP		N/N	0.0
R-15	2.0	1150	CH/GP	✓	N/N	0.4

SITE SKETCH: north is up; excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features... ***1 inch/grid =*** 30 ***FEET***



SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: *Milepost or Facility* Tank 1 Ring Road excavation

Equipment used: Photo -ionization detector with 11.7 eV lamp Background Headspace: ___ ppm Date: 11.13.2014

Sample Nomenclature *(Location - sample type - #)*: _____ Sampler: TTB

Soil Sample Types: **R** = *Removed Sample* ; **S** = *Sidewall Sample* ; **B** = *Bottom Sample* ; **Stockpile** = *Stockpile Sample* Calibration Time: 0820

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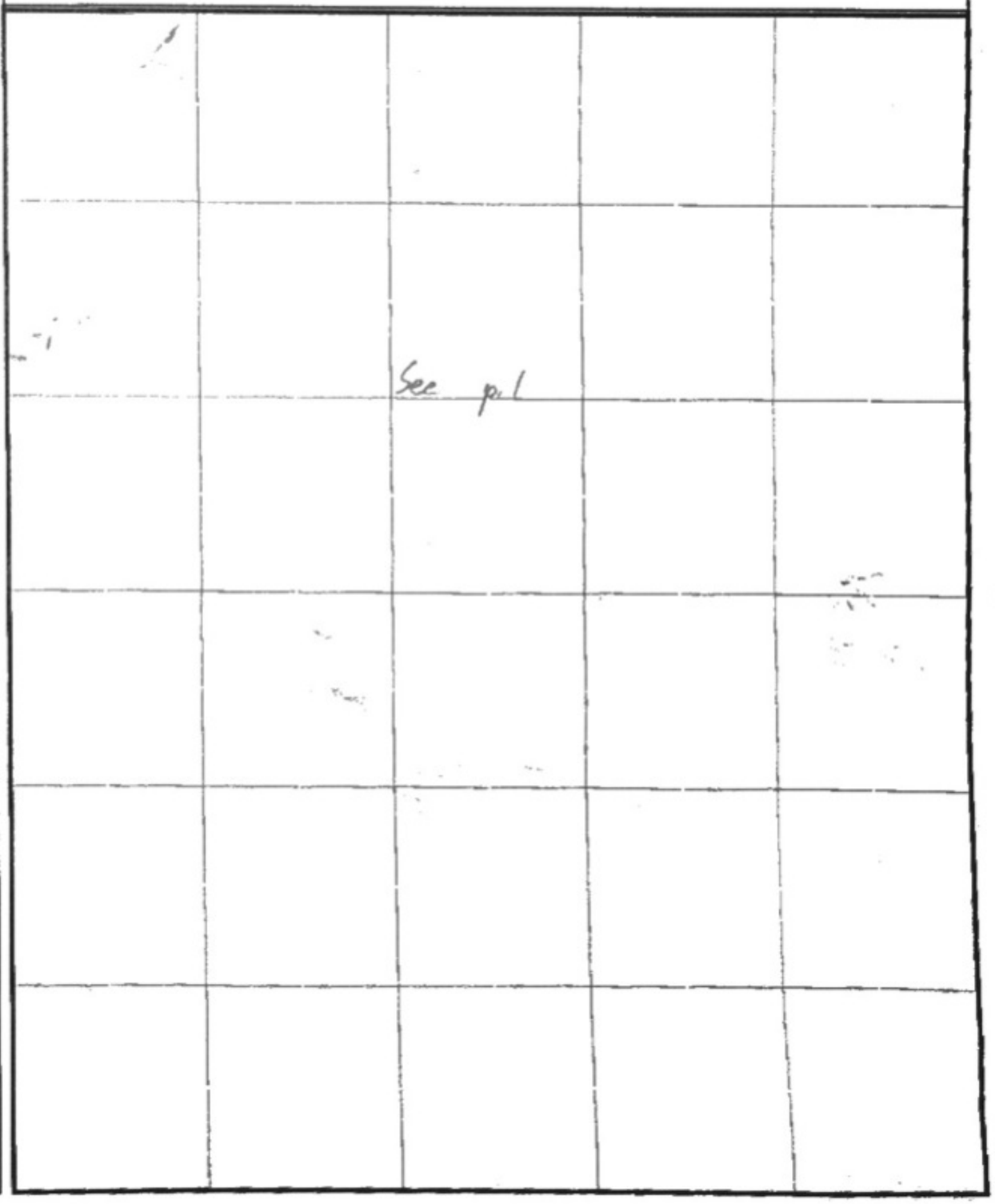
Sample ID	Depth (FT)	Time (military)	Soil Type (USCS)	Color/ Discolor	Odor/ Sheen	Headspace Reading (ppm)
Example: Stockpile-1	4	16:30	CL	Reddish brown	Petroleum/ Rainbow	275
R-16	1.5	0840	CH	Reddish brn	N/N	0.0
R-17	2.0	0855	CH, GP	Reddish brn		0.0
R-18	2.0	0905	GP	Dk gry		0.2
R-19	1.8	0915	CH, GP	Reddish brn		0.0
R-20	2.0	0925	CH	Reddish brn		0.1
R-21	1.5	0935	CH, GP	Reddish brn		0.0
R-22	2.0	1005	CH, SP	↓		0.0
R-23	1.8	1040	SP	Black		0.0
R-24	2.2	1050	CH, GP	Reddish brn		0.1
R-25	2.2	1100	CH			0.0
R-26	2.0	1120	SP			0.0
R-27	2.0	1130	CH, GP			0.1
R-28	1.8	1140	CH			0.0
R-29	2.3	1235	SP, GP			0.0
R-30	1.8	1245	CH			0.0
R-31	1.8	1300	GP, SP			0.0
R-32	2.0	1305	CH			0.0
R-33	1.8	1420	GP, SP			0.0
R-34	2.0	1430	CH			0.0
R-35	2.0	1440	CH			0.0
R-36	2.2	1500	CH			0.0
R-37	2.0	1500	GP			0.0
R-38	1.8	1515	GP, SP	↓	↓	0.1

SITE SKETCH: north is up; excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features... **1 inch/grid = FEET**



ENBRIDGE SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Date: 11/17/14

Location: *Milepost or Facility* Superior Terminal Tank 1 Road Excavation

Sampler: CJGZ

Equipment used: PID *-ionization detector with* 11.7 *eV lamp* Background Headspace: 0.0 ppm

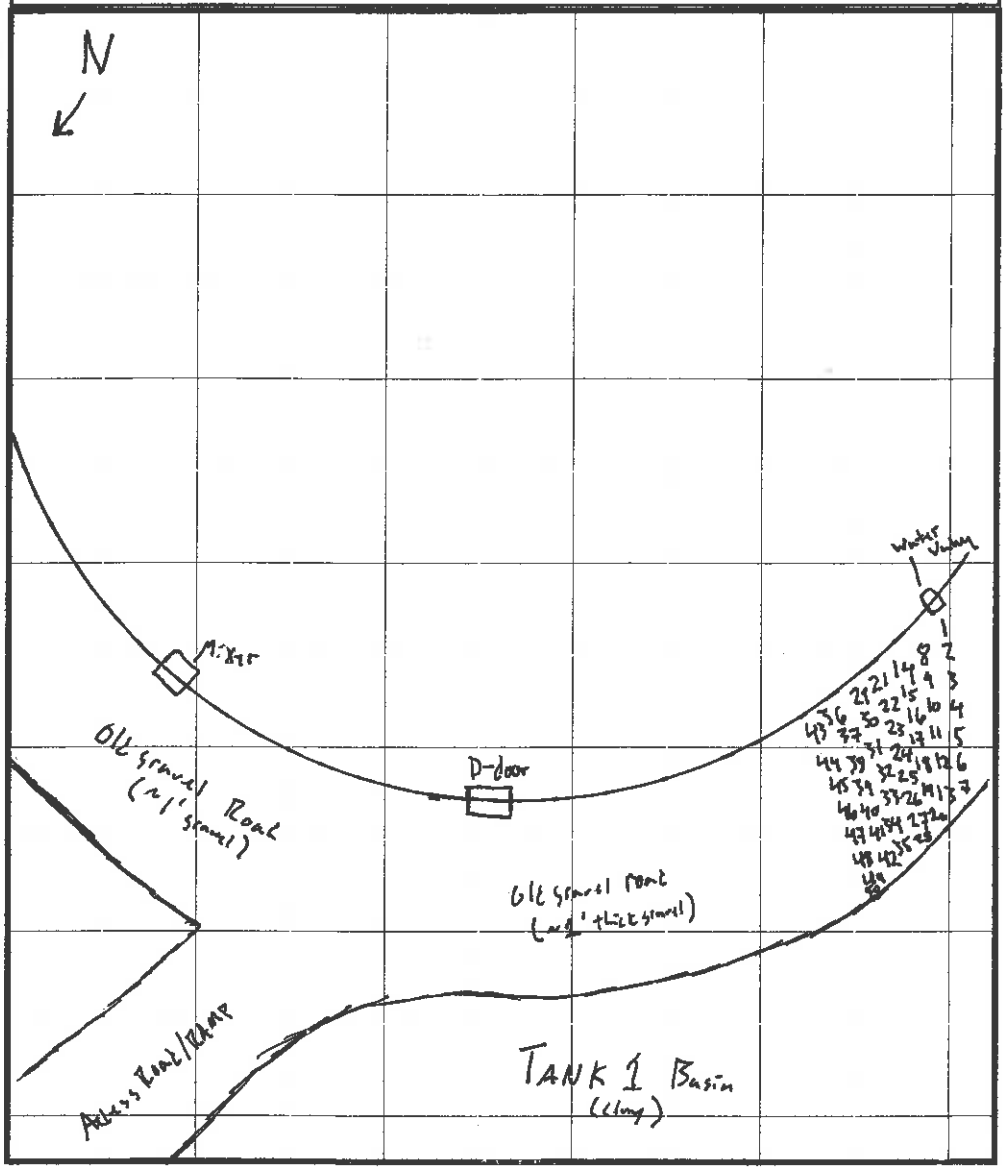
Calibration Time: 730

Sample Nomenclature *(Location - sample type - #):* _____

Soil Sample Types: **R** = *Removed Sample* ; **S** = *Sidewall Sample* ; **B** = *Bottom Sample* ; **Stockpile** = *Stockpile Sample*

Sample ID	Depth (ft)	Time (military)	Soil Type (USCS)	Color/ Discolor	Odor/ Sheen	Headspace Reading (ppm)
Example: R-1	*4*	*16:30*	*CL*	*Reddish brown*	*Petroleum/ Rainbow*	*275*
R-1	1	745	GP	Gry /-	none / none	3.0
2	2	745	CL	Red /-		2.4
3	1	755	GP	Grey /-		1.7
4	2	755	CL	Red /-		2.2
5	1	805	GP	Grey /-		1.9
6	2	805	CL	Red /-		2.0
7	1	815	GP	Grey /-		2.1
8	2	815	CL	Red /-		1.0
9	1	825	GP	Grey /-		0.7
10	2	825	CL	Red /-		0.1
11	1	1000	GP	Grey /-		1.2
12	2	1000	CL	Red /-		3.1
13	1	1015	GP	Grey /-		3.7
14	2	1015	CL	Red /-		2.5
15	1	1030	GP	Grey /-		3.1
16	2	1030	CL	Red /-		2.4
17	1	1045	GP	Grey /-		2.1
18	2	1045	CL	Red /-		1.7
19	1	1100	GP	Grey /-		1.4
20	2	1100	CL	Red /-		1.2
21	1	1130	GP	Grey /-		1.8
22	2	1130	CL	Red /-		2.0
23	1	1225	GP	Grey /-		2.1
24	2	1225	CL	Red /-		1.6
25	1	1235	GP	Grey /-		2.2

SITE SKETCH: *north is ~~up~~, excavation extents and depths, sample locations, structures, utilities, boring locations, wells, natural features...* ***1 inch/grid =*** *30* ***FEET***



ENBRIDGE SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Date: 11/17/14

Location: *Milepost or Facility* Superior Terminal Tank 1 Roof excavation

Sampler: CJG2

Equipment used: PID *-ionization detector with* 11.7 *eV lamp* Background Headspace: 0.0 ppm

Calibration Time: 730

Sample Nomenclature *(Location - sample type - #):* _____

Soil Sample Types: **R** = *Removed Sample* ; **S** = *Sidewall Sample* ; **B** = *Bottom Sample* ; **Stockpile** = *Stockpile Sample*

Sample ID	Depth (ft)	Time (military)	Soil Type (USCS)	Color/ Discolor	Odor/ Sheen	Headspace Reading (ppm)
Example: R-1	4	16:30	CL	Reddish brown	Petroleum/ Rainbow	275
R-26	2	1235	CL	Red/ –	none / none	1.8
27	1	1245	GP	Grey/ –		2.1
28	2	1245	CL	Red/ –		1.0
29	1	1300	GP	Grey/ –		0.6
30	2	1300	CL	Red/ –		1.3
31	1	1310	GP	Grey/ –		2.4
32	2	1310	CL	Red/ –		2.1
33	1	1330	GP	Grey/ –		1.8
34	2	1330	CL	Red/ –		1.8
35	1	1410	GP	Grey/ –		0.9
36	2	1410	CL	Red/ –		1.3
37	1	1425	GP	Grey/ –		1.3
38	2	1425	CL	Red/ –		1.4
39	1	1440	GP	Grey/ –		2.3
40	2	1440	CL	Red/ –		2.1
41	1	1455	GP	Grey/ –		4.0
42	2	1455	CL	Red/ –		2.5
43	1	1510	GP	Grey/ –		2.0
44	2	1510	CL	Red/ –		2.1
45	1	1520	GP	Grey/ –		1.7
46	2	1520	CL	Red/ –		0.9
47	1	1520	GP	Grey/ –		2.4
48	2	1520	CL	Red/ –		2.1
49	1	1520	GP	Grey/ –		2.2
50	2	1520	CL	Red/ –		3.1

SITE SKETCH: *north is up; excavation extents and depths, sample locations, structures, utilities, boring locations, wells, natural features...* ***1 inch/grid =*** ***FEET***

ENBRIDGE SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Date: 11/18/14

Location: *Milepost or Facility* Superior Terminal Tank 1 Road Excavation

Sampler: CSG

Equipment used: PID *-ionization detector with* 11.7 eV lamp (10.6 # 1-10 11.7, 10-54 10.6) Background Headspace: 6.0 ppm

Calibration Time: 730 / 1000

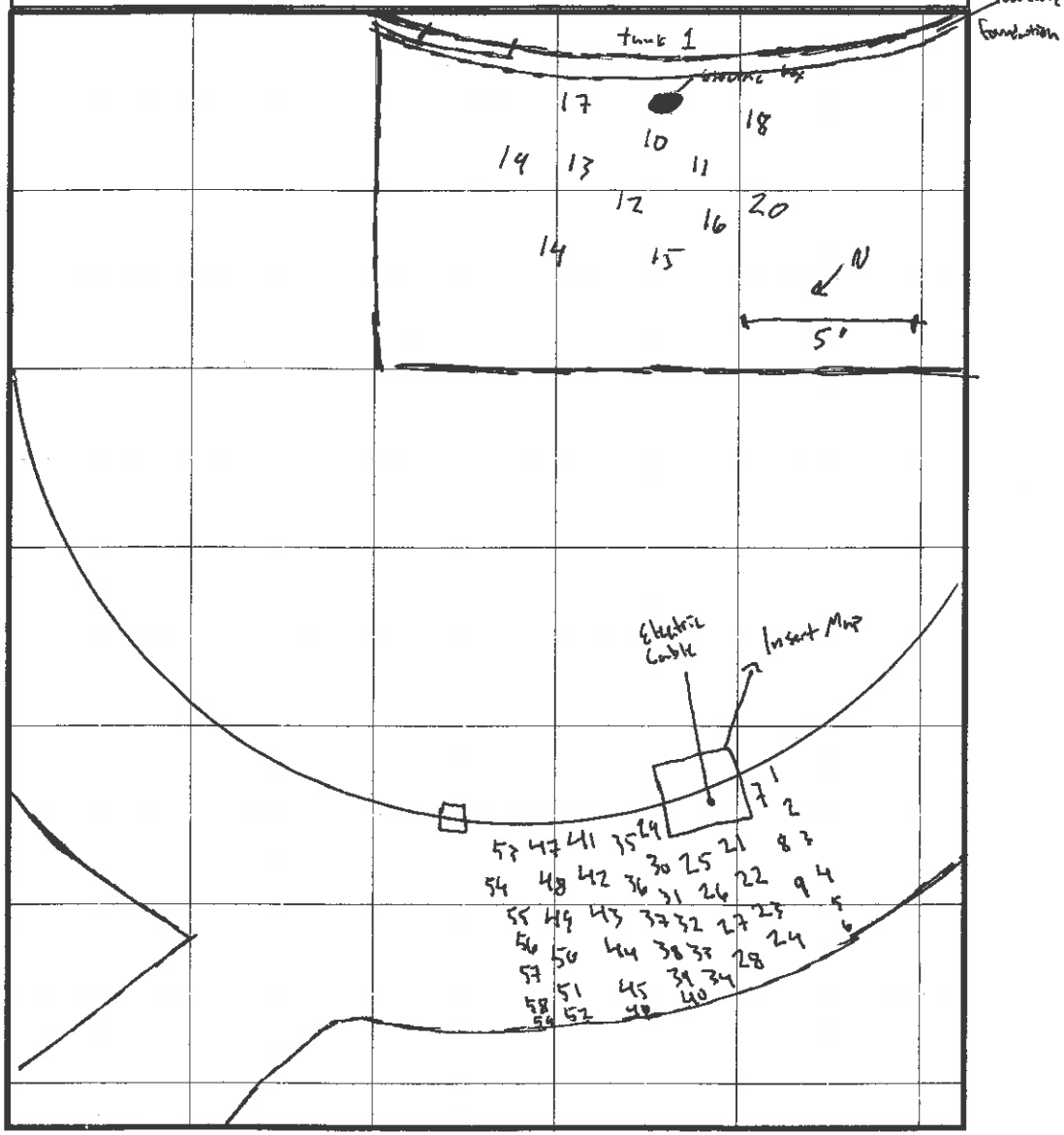
Sample Nomenclature *(Location - sample type - #)*: _____

Soil Sample Types: **R** = *Removed Sample* ; **S** = *Sidewall Sample* ; **B** = *Bottom Sample* ; **Stockpile** = *Stockpile Sample*

Sample ID	Depth (ft)	Time (military)	Soil Type (USCS)	Color/ Discolor	Odor/ Sheen	Headspace Reading (ppm)
Example: R-1	4	16:30	CL	Reddish brown	Petroleum/ Rainbow	275
1	1	~~840~~ 730	GP	Grey/ —	None/ None	2.1
2	2	730	CL	Red/ —		3.1
3	1	750	GP	Grey/ —		6.9
4	2	750	CL	Red/ —		1.7
5	1	830	GP	Grey/ —		1.7
6	2	830	CL	Red/ —		2.0
7	1	845	GP	Grey/ —		2.1
8	2	845	CL	Red/ —		2.1
9	1	930	GP	Grey/ —		3.0
10	2	930	CL	Red/ Black	Petro/ None	4.3
11	2.5	1000	CL	Red/ None	None/ None	1.2
12	2.5	1000	CL	Red/ None		2.6
13	2.5	1000	CL	Red/ None		4.0
14	2	1000	CL	Red/ None		3.3
15	2	1000	CL	Red/ None		2.5
16	2	1000	CL	Red/ None		3.0
17	2.5	1006	CL	Red/ None		1.1
18	2.5	1000	CL	Red/ None		2.7
19	2	1000	CL	Red/ None		1.9
20	2	1000	CL	Red/ None		3.3
21	1	1016	GP	Grey/ —		1.8
22	2	1610	CL	Red/ —		2.5
23	1	1026	GP	Grey/ —		3.3
24	2	1020	CL	Red/ —		4.1
25	1	1030	GP	Grey/ —		3.0

Removed, ~20 after excavation obviously impacted soil

SITE SKETCH: *north is up; excavation extents and depths, sample locations, structures, utilities, boring locations, wells, natural features...* ***1 inch/grid = 30' FEET***



ENBRIDGE SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Date: 11/18/14

Location: *Milepost or Facility* Superior Terminal Tank 1 Roof Excavation

Sampler: CJW

Equipment used: PID *-ionization detector with* 10.6 *eV lamp*

Background Headspace: 0.6 ppm

Calibration Time: 1000

Sample Nomenclature *(Location - sample type - #)*: _____

Soil Sample Types: **R** = *Removed Sample* ; **S** = *Sidewall Sample* ; **B** = *Bottom Sample* ; **Stockpile** = *Stockpile Sample*

Sample ID	Depth (ft)	Time (military)	Soil Type (USCS)	Color/ Discolor	Odor/ Sheen	Headspace Reading (ppm)
Example: R-1	4	16:30	CL	Reddish brown	Petroleum/ Rainbow	275
26	2	1030	CL	Red/ —	none / none	2.3
27	1	1040	GP	Gray/ —		1.7
28	2	1040	CL	Red/ —		1.1
29	1	1050	GP	Gray/ —		0.7
30	2	1050	CL	Red/ —		0.9
31	1	1100	GP	Gray/ —		3.3
32	2	1100	CL	Red/ —		2.3
33	1	1130	GP	Gray/ —		2.4
34	2	1130	CL	Red/ —		3.1
35	1	1140	GP	Gray/ —		1.7
36	2	1140	CL	Red/ —		1.4
37	1	1140	GP	Gray/ —		2.1
38	2	1140	CL	Red/ —		1.6
39	1	1150	GP	Gray/ —		4.1
40	2	1150	CL	Red/ —		3.7
41	1	1200	GP	Gray/ —		2.5
42	2	1200	CL	Red/ —		3.3
43	1	1210	GP	Gray/ —		4.1
44	2	1210	CL	Red/ —		3.7
45	1	1220	GP	Gray/ —		2.6
46	2	1220	CL	Red/ —		1.9
47	1	1230	GP	Gray/ —		2.1
48	2	1230	CL	Red/ —		1.5
49	1	1250	GP	Gray/ —		2.0

SITE SKETCH: *north is up; excavation extents and depths, sample locations, structures, utilities, boring locations, wells, natural features...* ***1 inch/grid =*** ***FEET***

ENBRIDGE SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Date: 11/18/14

Location: *Milepost or Facility* Superior Terminal Tank 1 Roof Excavation

Sampler: JSaz

Equipment used: PID *-ionization detector with* 10.6 *eV lamp*

Background Headspace: 0.0 ppm

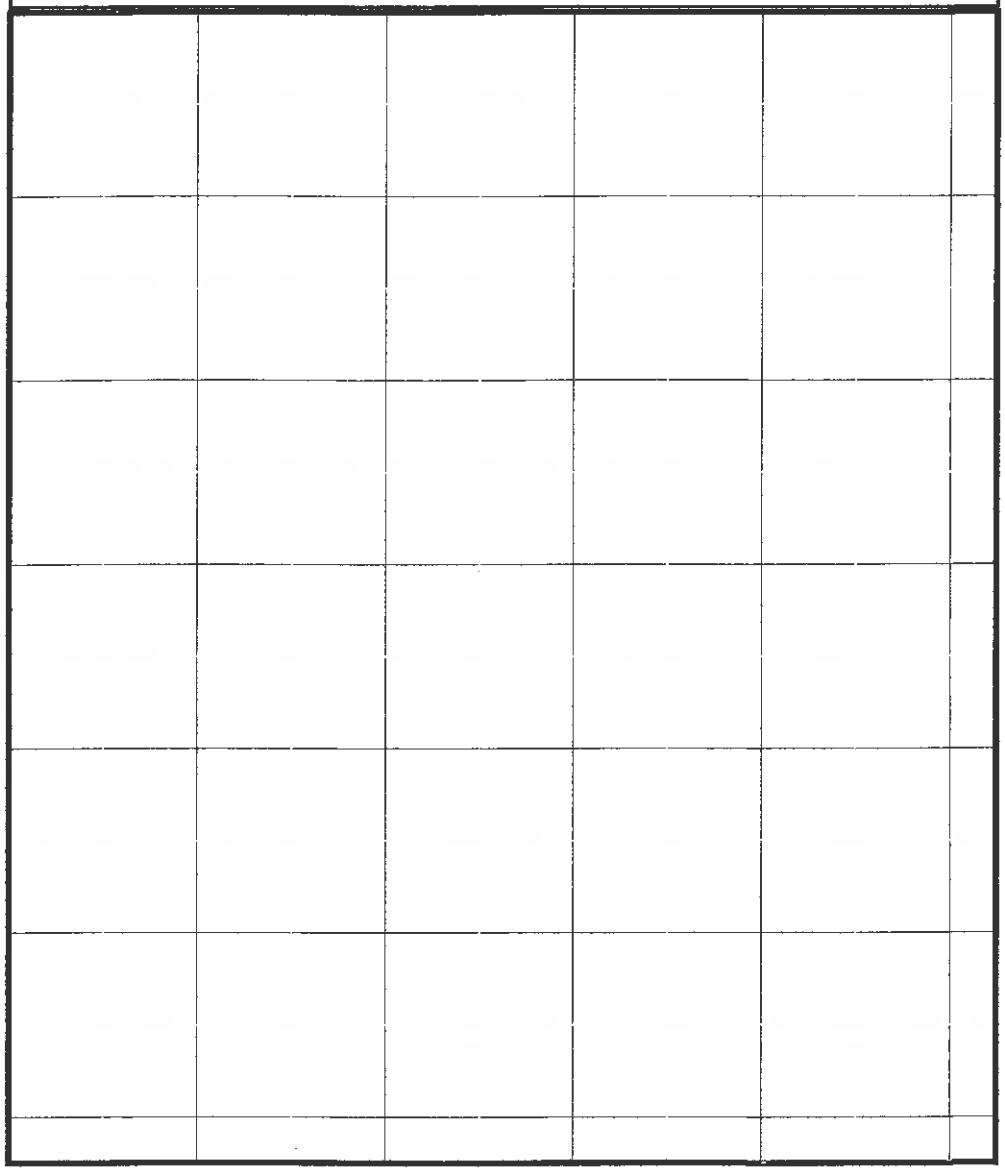
Calibration Time: 1000

Sample Nomenclature *(Location - sample type - #)*: _____

Soil Sample Types: **R** = *Removed Sample* ; **S** = *Sidewall Sample* ; **B** = *Bottom Sample* ; **Stockpile** = *Stockpile Sample*

Sample ID	Depth (ft)	Time (military)	Soil Type (USCS)	Color/ Discolor	Odor/ Sheen	Headspace Reading (ppm)
Example: R-1	4	16:30	CL	Reddish brown	Petroleum/ Rainbow	275
S0	2	1250	CL	Red/ —	None/ none	0.4
S1	1	1300	GP	Gray/ —		0.7
S2	2	1360	CL	Red/ —		1.2
S3	1	1310	GP	Gray/ —		1.4
S4	2	1310	CL	Red/ —		2.5
S5	1	1320	GP	Gray/ —		4.7
S6	2	1320	CL	Red/ —		3.7
S7	1	1330	GP	Gray/ —		3.0
S8	2	1330	CL	Red/ —		3.2
S9	1	1340	GP	Gray/ —	↓	3.0

SITE SKETCH: *north is up; excavation extents and depths, sample locations, structures, utilities, boring locations, wells, natural features...* ***1 inch/grid =*** ***FEET***



SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: *Milepost or Facility* Tank 1 at the Enbridge Superior terminal WI

Equipment used: Photo *-ionization detector with* 10.6 *eV lamp* Background Headspace: 0.1 ppm

Date: 11-19-14

Sampler: NRS2

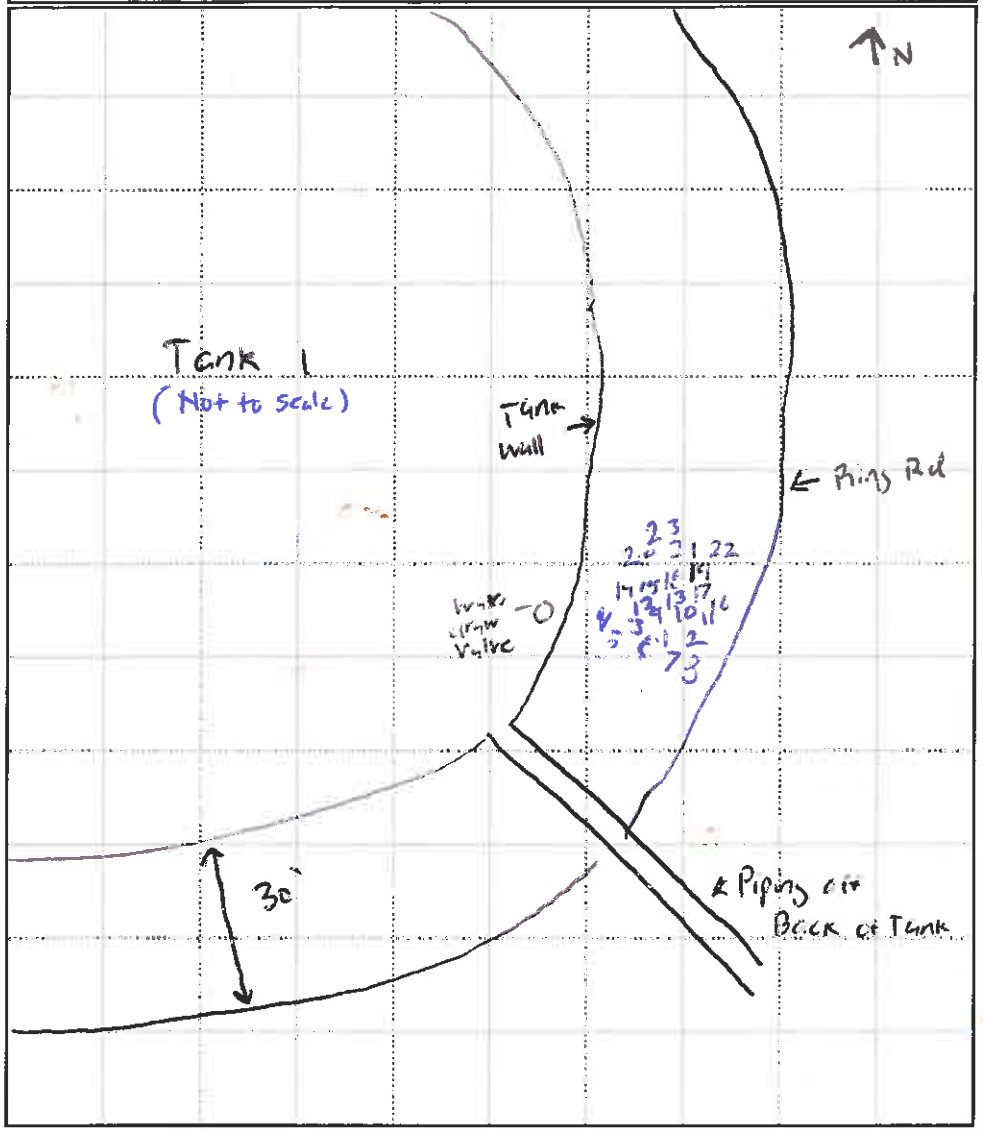
Calibration Time: 06:45

Sample Nomenclature *(Location - sample type - #):*

Soil Sample Types: **R** = *Removed Sample* ; **S** = *Sidewall Sample* ; **B** = *Bottom Sample* ; **Stockpile** = *Stockpile Sample*

Sample ID	Depth (FT)	Time (military)	Soil Type (USCS)	Color/ Discolor	Odor/ Sheen	Headspace Reading (ppm)
Example TK99-S-1	4	16:30	CL	Reddish brown	Petroleum/ Rainbow	275
R-1	0-4	0800	CL	Reddish Brown	none/none	1.2
R-2	0-4	"				1.4
B-3	0-4	0820				1.0
B-4	0-4	"				1.2
B-5	0-4	0840				1.5
B-6		"				1.5
B-7		0935				1.5
B-8		"				1.7
B-9		1007				2.4
B-10		"				1.8
R-11		1030				2.0
B-12		"				5.3
B-13		"				2.5
B-14		1140				1.1
B-15		"				1.3
B-16		1155				1.4
B-17		"				1.1
B-18		"				0.5
B-19		"				1.0
B-20		1335				0.9
B-21		"				1.2
B-22		"				1.3
B-23		1425				1.8

SITE SKETCH: *north is up; excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features...* ***1 inch/grid =*** 30' ***FEET***



SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: *Milepost or Facility* Tank 1 Enbridge Terminal Superior WI

Equipment used: Photo *-ionization detector with* 10.6 *eV lamp* Background Headspace: 00 ppm

Sample Nomenclature *(Location - sample type - #):* _____

Soil Sample Types: **R** = *Removed Sample* ; **S** = *Sidewall Sample* ; **B** = *Bottom Sample* ; **Stockpile** = *Stockpile Sample*

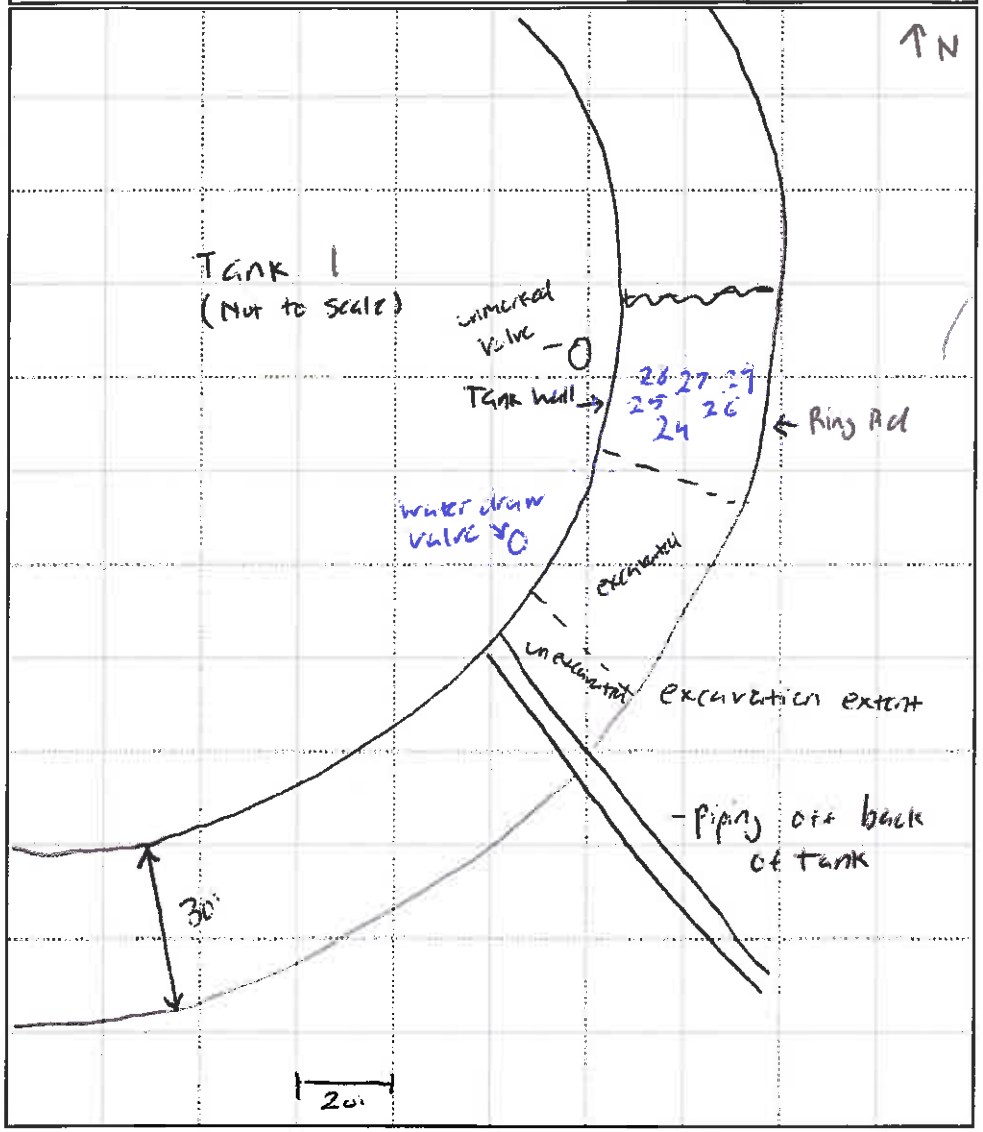
Date: 11-19-14

Sampler: NRSZ

Calibration Time: 0645

Sample ID	Depth (FT)	Time (military)	Soil Type (USCS)	Color/ Discolor	Odor/ Sheen	Headspace Reading (ppm)
Example TK99-S-1	4	16:30	CL	Reddish brown	Petroleum/ Rainbow	275
B-24	0-4	~~1325~~	CL	Reddish brown	none/none	1.4
B-25		1425				0.1
B-26		1430				7.6
B-27		"				0.0
B-28		1430				0.7
B-29		"				0.3

SITE SKETCH: *north is up; excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features...* ***1 inch/grid =*** ~~30~~ 20 ***FEET***



SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: *Milepost or Facility* Tank 1 Superior Terminal WI

Equipment used: Photo *-ionization detector with* 10.6 *eV lamp* Background Headspace: ___ ppm

Date: 11-20-14

Sampler: NRS2

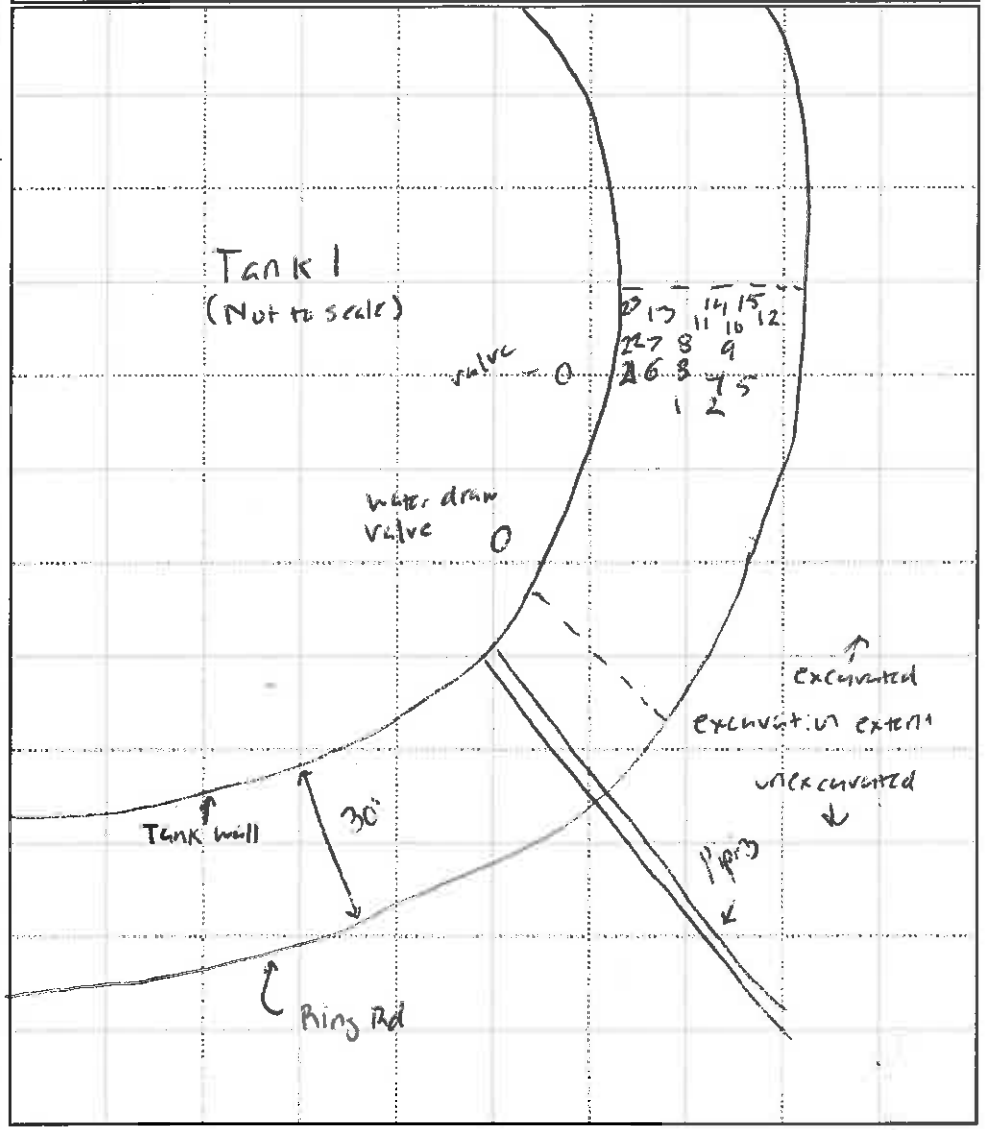
Calibration Time: 0615

Sample Nomenclature *(Location - sample type - #):* _____

Soil Sample Types: **R** = *Removed Sample* ; **S** = *Sidewall Sample* ; **B** = *Bottom Sample* ; **Stockpile** = *Stockpile Sample*

Sample ID	Depth (FT)	Time (military)	Soil Type (USCS)	Color/ Discolor	Odor/ Sheen	Headspace Reading (ppm)
Example Tk99-S-1	4	16.30	CL	Reddish brown	Petroleum/ Rainbow	275
B-1		0825	CL	Reddish brown	none/none	0.9
B-2		11				1.1
B-3		0900				1.4
B-4		"				2.2
B-5		0910				0.8
B-6		"				1.0
B-7		9:20				0.7
B-8		9:25				0.8
B-9		9:40				0.7
B-10		"				1.2
B-11		1050				0.8
B-12		"				1.2
B-13		11:00				0.7
B-14		"				1.7
B-15		"				0.8
B-20		"				1.5
S-B-21		1120				458
S-22		1120				320

SITE SKETCH: *north is up; excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features...* ***1 inch/grid =*** 15' ***FEET***



SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: *Milepost or Facility* Tank 1 Superior terminal WI

Equipment used: Photo *-ionization detector with* 10.6 *eV lamp* Background Headspace: 00 ppm

Sample Nomenclature *(Location - sample type - #):* _____

Soil Sample Types: **R** = *Removed Sample* ; **S** = *Sidewall Sample* ; **B** = *Bottom Sample* ; **Stockpile** = *Stockpile Sample*

Date: 11-20-14

Sampler: NRS2

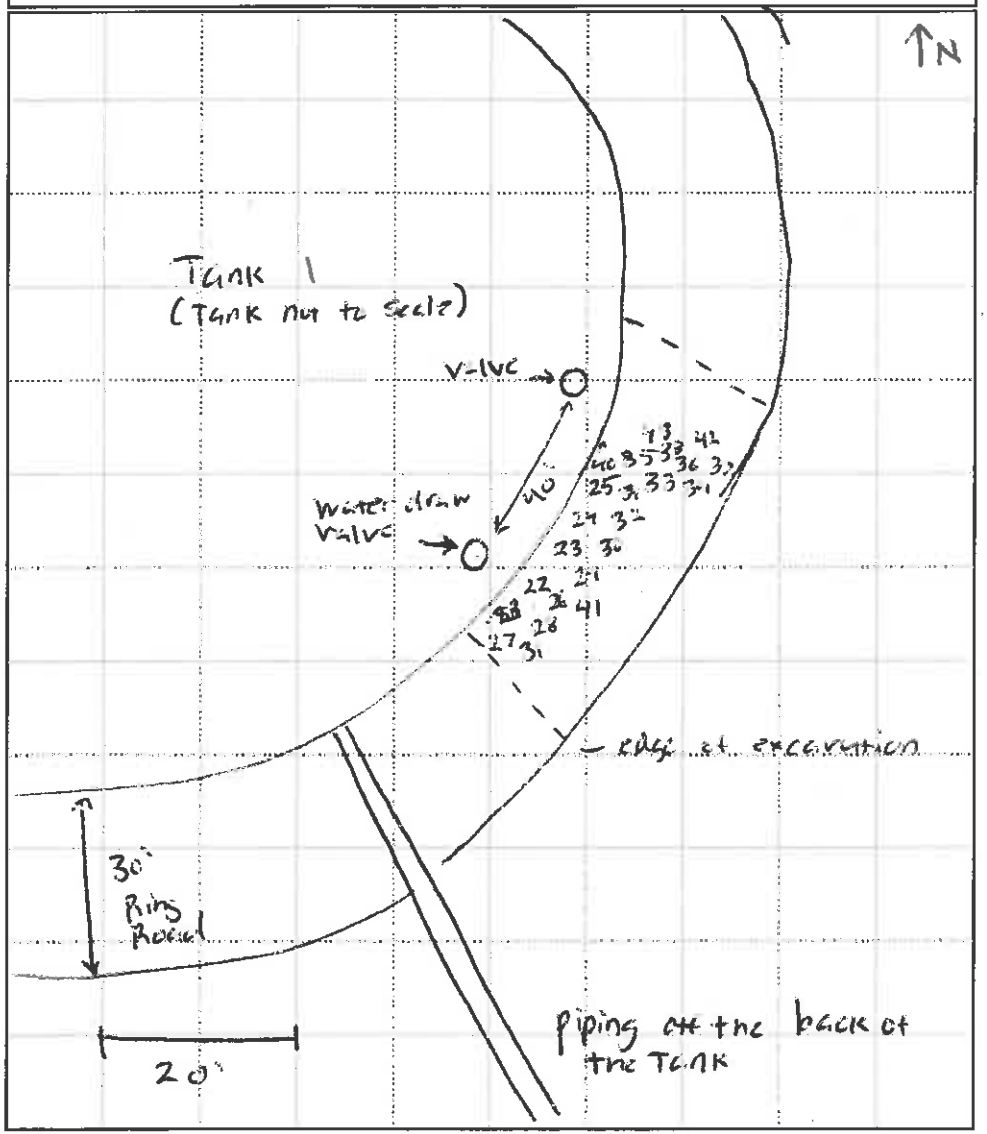
Calibration Time: 0615 am

BARR

Sample ID	Depth (FT)	Time (military)	Soil Type (USCS)	Color/ Discolor	Odor/ Sheen	Headspace Reading (ppm)
Example TK99-S-1	4	16:30	CL	Reddish brown	Petroleum/ Rainbow	275
S-21		1120	Sand + gravel	Greenish gray	moderate * / none	58
S-22		11				320+
S-23		1135				150+
S-24						9.3
S-25						28
S-26		1140	CL	Reddish brown	none/none	38
B-27			CL			9.1
B-28			CL			6.7
B-29			CL			0.6
B-30			CL			0.8
B-31		1150				0.5
B-32		11				0.8
B-33		1155				0.4
B-34		11				0.5
B-35						0.8
B-36						1.0
B-37		1200				0.5
B-38		11				0.4
B-39		1310	CL			3.1
S-40		11	CL + Si	gray discolor	slight odor	50+
B-41		11	CL	Reddish brown	none/none	1.0
B-42		1330	CL	Black + brown Reddish		5.6
B-43		1340	CL	11		0.7

* Moderate petroleum odor

SITE SKETCH: *north is up; excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features...* ***1 inch/grid =*** 20 ***FEET***



SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: *Milepost or Facility* Tank 1 Superior Terminal WI

Equipment used: Photo *-ionization detector with* 10.6 *eV lamp* Background Headspace: 0.0 ppm

Sample Nomenclature *(Location - sample type - #):* _____

Soil Sample Types: **R** = *Removed Sample* ; **S** = *Sidewall Sample* ; **B** = *Bottom Sample* ; **Stockpile** = *Stockpile Sample*

Date: 11-20-14

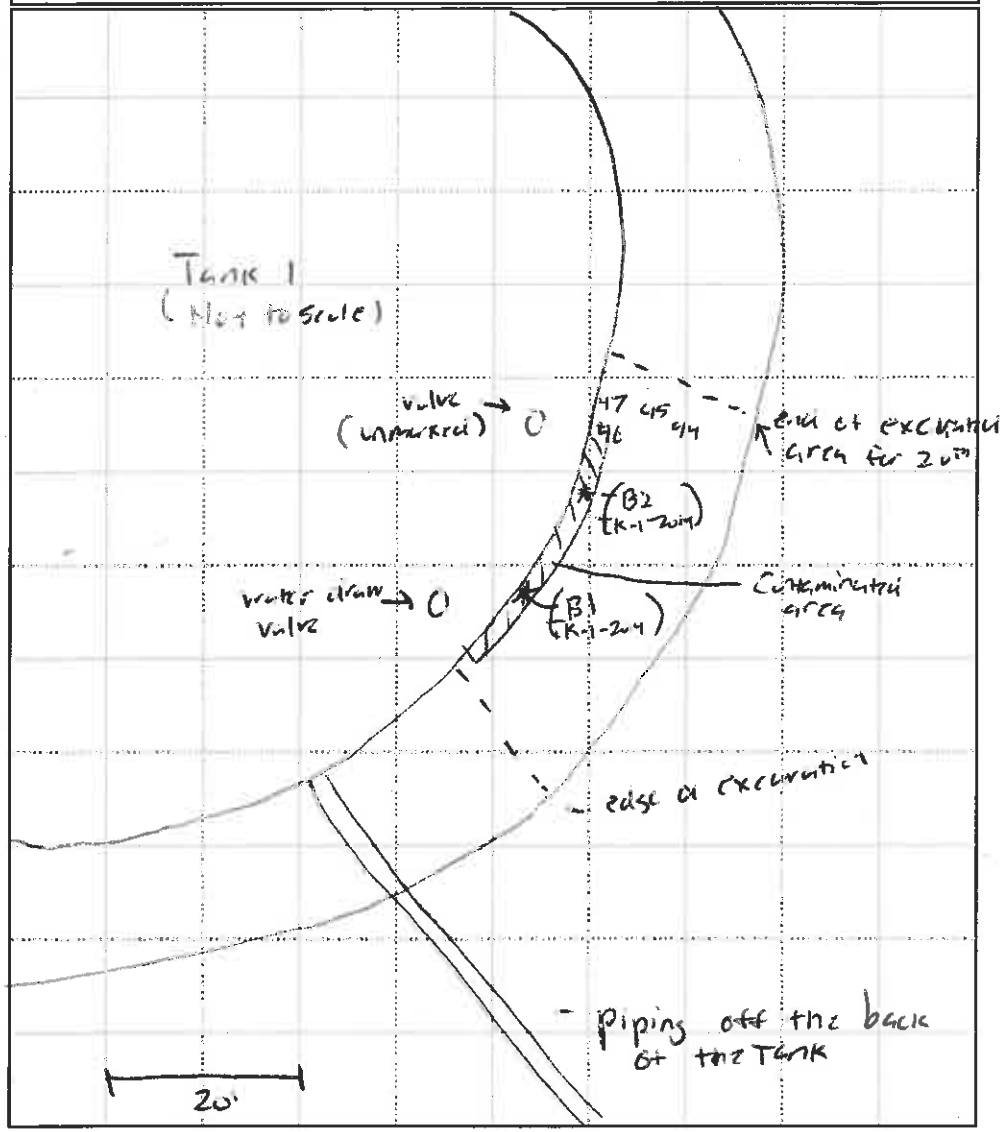
Sampler: NBS2

Calibration Time: 0615

BARR

Sample ID	Depth (FT)	Time (military)	Soil Type (USCS)	Color/ Discolor	Odor/ Sheen	Headspace Reading (ppm)
Example: TK99-S-1	4	16.30	CL	Reddish brown	Petroleum/ Rainbow	275
B-44		1350	CL	Reddish brown	none/none	0.4
B-45		11	CL	1	1	3.6
B-46		1400	Sand	Gray	1	0.2
B-47		11	11	gray	1	0.8
TK-1-2014-B1		1430	SP	gray/green	moderate odor *	—
TK-1-2014-B2		1440	SP	11	11	—

SITE SKETCH: *north is up; excavation extents & depths, impacted areas, sample locations, borings, wells, structures, utilities, natural features...* **1 inch/grid = 20 FEET**



* Moderate petroleum odor. No Sheen

Attachment B

Legend Technical Laboratory Report

LEGEND
Technical Services, Inc.
www.legend-group.com

88 Empire Drive
St Paul, MN 55103
Tel: 651-642-1150
Fax: 651-642-1239

December 11, 2014

Ms. Andrea Nord
Barr Engineering Co.
4700 W 77th St
Minneapolis, MN 55435

Work Order Number: 1405361
RE: 49161253

Enclosed are the results of analyses for samples received by the laboratory on 11/25/14. If you have any questions concerning this report, please feel free to contact me.

Results are not blank corrected unless noted within the report. Additionally, all QC results meet requirements unless noted.

All samples will be retained by Legend Technical Services, Inc., unless consumed in the analysis, at ambient conditions for 30 days from the date of this report and then discarded unless other arrangements are made. All samples were received in acceptable condition unless otherwise noted.

WI Accreditation #998022410

Prepared by,
LEGEND TECHNICAL SERVICES, INC

Bach Pham
Client Manager II
bpham@legend-group.com

LEGEND Technical Services, Inc.
www.legend-group.com

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St Paul, MN 55103
Tel: 651-642-1150
Fax: 651-642-1239

Barr Engineering Co.	Project:	49161253	
4700 W 77th St	Project Number:	49161253.19 100 001	Work Order #: 1405361
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 12/11/14

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TK-1-2014-B1_3-3	1405361-01	Soil	11/20/14 14:30	11/25/14 09:45
TK-1-2014-B2_3-3	1405361-02	Soil	11/20/14 14:40	11/25/14 09:45

Shipping Container Information

Default Cooler Temperature (°C): 1.2

Received on ice: Yes
Temperature blank was present
Received on ice pack: No
Received on melt water: No
Ambient: No
Acceptable (IH/ISO only): No
Custody seals: No

Case Narrative:

The dry weight correction and dilution applies to the sample result, MDL, and RL.

Ethylbenzene; 1,3,5-trimethylbenzene; 1,2,4-trimethylbenzene; and naphthalene were present in the method blank between the MDL and RL for the BTEX analysis.

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4700 W 77th St	Project Number:	49161253.19 100 001	Work Order #: 1405361
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 12/11/14

WI(95) GRO/8015D
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TK-1-2014-B1_3-3 (1405361-01) Soil	**Sampled: 11/20/14 14:30**			**Received: 11/25/14 9:45**						
1,2,4-Trimethylbenzene	**0.39**	0.026	0.0028	mg/kg dry	1	B4L0411	12/04/14	12/04/14	WI(95) GRO	
1,3,5-Trimethylbenzene	**0.31**	0.026	0.0064	mg/kg dry	1	"	"	"	"	
Benzene	<0.0030	0.026	0.0030	mg/kg dry	1	"	"	"	"	
Ethylbenzene	**0.022**	0.026	0.0066	mg/kg dry	1	"	"	"	"	B-01, J
Naphthalene	<0.023	0.52	0.023	mg/kg dry	1	"	"	"	"	T-1
Toluene	**0.011**	0.026	0.0042	mg/kg dry	1	"	"	"	"	J
Xylenes (total)	**0.092**	0.078	0.015	mg/kg dry	1	"	"	"	"	
Surrogate: 4-Fluorochlorobenzene	*99.4*			*80-150 %*		"	"	"	"	
TK-1-2014-B2_3-3 (1405361-02) Soil	**Sampled: 11/20/14 14:40**			**Received: 11/25/14 9:45**						
1,2,4-Trimethylbenzene	**2.6**	0.028	0.0030	mg/kg dry	1	B4L0411	12/04/14	12/04/14	WI(95) GRO	
1,3,5-Trimethylbenzene	**1.6**	0.028	0.0068	mg/kg dry	1	"	"	"	"	
Benzene	**0.025**	0.028	0.0032	mg/kg dry	1	"	"	"	"	J
Ethylbenzene	**0.091**	0.028	0.0071	mg/kg dry	1	"	"	"	"	B-01
Naphthalene	<0.024	0.55	0.024	mg/kg dry	1	"	"	"	"	T-1
Toluene	**0.074**	0.028	0.0045	mg/kg dry	1	"	"	"	"	
Xylenes (total)	**0.55**	0.083	0.016	mg/kg dry	1	"	"	"	"	
Surrogate: 4-Fluorochlorobenzene	*115*			*80-150 %*		"	"	"	"	

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Barr Engineering Co.	Project:	49161253	
4700 W 77th St	Project Number:	49161253.19 100 001	Work Order #: 1405361
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 12/11/14

PERCENT SOLIDS
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TK-1-2014-B1_3-3 (1405361-01) Soil	**Sampled: 11/20/14 14:30**			**Received: 11/25/14 9:45**						
% Solids	**89**			%	1	B4L0208	12/02/14	12/02/14	% calculation	
TK-1-2014-B2_3-3 (1405361-02) Soil	**Sampled: 11/20/14 14:40**			**Received: 11/25/14 9:45**						
% Solids	**86**			%	1	B4L0208	12/02/14	12/02/14	% calculation	

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4700 W 77th St	Project Number:	49161253.19 100 001	Work Order #: 1405361
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 12/11/14

WI(95) GRO/8015D - Quality Control
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
Batch B4L0411 - EPA 5035 Soil (Purge and Trap)											
Blank (B4L0411-BLK1)					Prepared & Analyzed: 12/04/14						
1,2,4-Trimethylbenzene	0.00713	0.025	0.0027	mg/kg wet							B-02, J
1,3,5-Trimethylbenzene	0.00624	0.025	0.0062	mg/kg wet							B-02, J
Benzene	< 0.0029	0.025	0.0029	mg/kg wet							
Ethylbenzene	0.0151	0.025	0.0064	mg/kg wet							B-02, J
Naphthalene	0.0448	0.50	0.022	mg/kg wet							B-02, J
Toluene	< 0.0041	0.025	0.0041	mg/kg wet							
Xylenes (total)	< 0.014	0.075	0.014	mg/kg wet							
Surrogate: 4-Fluorochlorobenzene	*25.2*			*ug/L*	*25.0*		*101*	*80-150*			
LCS (B4L0411-BS1)					Prepared & Analyzed: 12/04/14						
1,2,4-Trimethylbenzene	92.2			ug/L	100		92.2	80-120			
1,3,5-Trimethylbenzene	96.4			ug/L	100		96.4	80-120			
Benzene	98.9			ug/L	100		98.9	80-120			
Ethylbenzene	99.3			ug/L	100		99.3	80-120			
Naphthalene	90.9			ug/L	100		90.9	80-120			
Toluene	99.2			ug/L	100		99.2	80-120			
Xylenes (total)	293			ug/L	300		97.5	80-120			
Surrogate: 4-Fluorochlorobenzene	*25.2*			*ug/L*	*25.0*		*101*	*80-150*			
LCS Dup (B4L0411-BSD1)					Prepared: 12/04/14 Analyzed: 12/05/14						
1,2,4-Trimethylbenzene	95.1			ug/L	100		95.1	80-120	3.11	20	
1,3,5-Trimethylbenzene	98.0			ug/L	100		98.0	80-120	1.60	20	
Benzene	96.7			ug/L	100		96.7	80-120	2.23	20	
Ethylbenzene	98.5			ug/L	100		98.5	80-120	0.782	20	
Naphthalene	103			ug/L	100		103	80-120	12.7	20	
Toluene	96.8			ug/L	100		96.8	80-120	2.44	20	
Xylenes (total)	295			ug/L	300		98.2	80-120	0.741	20	
Surrogate: 4-Fluorochlorobenzene	*24.5*			*ug/L*	*25.0*		*97.8*	*80-150*			
Matrix Spike (B4L0411-MS1)		**Source: 1405394-02**			Prepared: 12/04/14 Analyzed: 12/05/14						
1,2,4-Trimethylbenzene	106			ug/L	100	3.84	103	80-120			
1,3,5-Trimethylbenzene	111			ug/L	100	2.57	108	80-120			
Benzene	97.6			ug/L	100	0.00651	97.6	80-120			
Ethylbenzene	102			ug/L	100	2.79	99.6	80-120			
Naphthalene	114			ug/L	100	9.29	105	80-120			
Toluene	97.0			ug/L	100	0.526	96.5	80-120			
Xylenes (total)	302			ug/L	300	3.66	99.4	80-120			
Surrogate: 4-Fluorochlorobenzene	*27.2*			*ug/L*	*25.0*		*109*	*80-150*			

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Barr Engineering Co.	Project:	49161253	
4700 W 77th St	Project Number:	49161253.19 100 001	Work Order #: 1405361
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 12/11/14

PERCENT SOLIDS - Quality Control
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
Batch B4L0208 - General Preparation											
Duplicate (B4L0208-DUP1)		**Source: 1405318-10**			Prepared & Analyzed: 12/02/14						
% Solids	79.0			%		79.0			0.00	20	
Duplicate (B4L0208-DUP2)		**Source: 1405361-02**			Prepared & Analyzed: 12/02/14						
% Solids	88.0			%		86.0			2.30	20	

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Barr Engineering Co.	Project:	49161253		
4700 W 77th St	Project Number:	49161253.19 100 001	Work Order #:	1405361
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported:	12/11/14

Notes and Definitions

T-1	MDH does not offer certification for this parameter.
J	Parameter was present between the MDL and RL and should be considered an estimated value
B-02	Target analyte was present in the method blank between the MDL and RL.
B-01	Analyte was present in the method blank. Sample result is less than or equal to 10 times the blank concentration.
<	Less than value listed
dry	Sample results reported on a dry weight basis
NA	Not applicable. The %RPD is not calculated from values less than the reporting limit.
MDL	Method Detection Limit
RL	Reporting Limit
RPD	Relative Percent Difference
LCS	Laboratory Control Spike = Blank Spike (BS) = Laboratory Fortified Blank (LFB)
MS	Matrix Spike = Laboratory Fortified Matrix (LFM)

L E G E N D
Technical Services, Inc.
www.legend-group.com

88 Empire Drive
St Paul, MN 55103
Tel: 651-642-1150
Fax: 651-642-1239

Chain of Custody

BARR
4700 West 77th Street
Minneapolis, MN 55435-4803
(952) 832-2600

1405361

Project Number: 49161253.19 100 001

Project Name: Tank 1 Ring Road replacement

Sample Origination State: WI (use two letter postal state abbreviation)

COC Number: № 43120

COC 1 of 1

Project Manager: REE

Project QC Contact: JET

Sampled by: NRS2

Laboratory: Legend

Number of Containers/Preservative

Location	Start Depth	Stop Depth	Depth Unit (m./ft. or in.)	Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix: Water	Matrix: Soil	Type: Grab	Type: Comp.	Type: QC	Water: VOCs (HCl) #1	Water: SVOCs (unpreserved) #2	Water: Dissolved Metals (HNO_3)	Water: Total Metals (HNO_3)	Water: General (unpreserved) #3	Water: Diesel Range Organics (HCl)	Water: Nutrients (H_2SO_4) #4	Water: Proc-MTBE + naphthalene	Soil: VOCs (tared MeOH) #1	Soil: GRO, BTEX (tared MeOH) #1	Soil: DRO (tared unpreserved)	Soil: Metals (unpreserved)	Soil: SVOCs (unpreserved) #2	Soil: % Solids (plastic vial, unpres.)	Soil: Proc-MTBE + naphthalene	Total Number Of Containers	
1. TK-1-2014-B1			3	11/20/2014	1430		X	X																1	2	3	Proc-MTBE + naphthalene.
2. TK-1-2014-B2			3	11/20/2014	1440		X	X																1	2	3	
3.																											
4.																											
5.																											Standard Turn
6.																											
7.																											
8.																											
9.																											
10.																											

Common Parameter/Container - Preservation Key

- #1 - Volatile Organics = BTEX, GRO, TPH, 8260 Full List
- #2 - Semivolatile Organics = PAHs, PCP, Dioxins, 8270 Full List, Herbicide/Pesticide/PCBs
- #3 - General = pH, Chloride, Fluoride, Alkalinity, TSS, TDS, TS, Sulfate
- #4 - Nutrients = COD, TOC, Phenols, Ammonia Nitrogen, TKN

Relinquished By:	On Ice?	Date	Time	Received by:	Date	Time
	N	11/24/14	1530			
Relinquished By:	On Ice?	Date	Time	Received by:	Date	Time
	Y				11/25/14	945

Samples Shipped VIA: ☐ Air Freight ☑ Federal Express ☐ Sampler ☐ Other:

Air Bill Number: 1.29

Distribution: White-Original Accompanies Shipment to Lab; Yellow - Field Copy; Pink - Lab Coordinator

H:\RLG\STDFORMS\Chain Of Custody Form 2009 RLG Rev. 09/01/09

Attachment C

Waste Management Documentation

Shamrock Landfill

Waste Profile Sheet

Shamrock Landfill

P.O. Number	Customer Code	SKB Representative	CL

I. Generator Information

Generator Name: Enbridge Pipelines Limited Partnership, LLC		Generator EPA ID Number	SIC Code
Generator Location: Enbridge Superior Terminal - Tank 1 Maintenance	County: Douglas	Generator Contact: Alex Smith	
		Phone: 715-398-4795	Fax: 832-325-5511
Generator Mailing Address (if different: 1320 Grand Ave, Superior, WI 54880		Generator Email Address: alex.smith@enbridge.com	
Bill To Name & Address: Enbridge Energy, 1100 Louisiana Ave, STE. 3300, Houston, TX 77002	Bill To #:	Billing Contact: Alex Smith	
		Phone: 715-398-4795	Fax: 832-325-5511
Invoice Contact:		Billing Email Address: alex.smith@enbridge.com	

II. Waste Generation Information

Waste Name: 141124 Tank 1 Maintenance	Estimated rate of waste generation: 50 ☐ Lbs. ☐ tons ☒ cy ☐ drums	☒ one time ☐ yearly
Generator Facility Operations and/or Site History: Enbridge Pipeline Terminal		
Describe the generating process or source of contaminated soil/debris and/or waste: Pipeline Terminal Activities		

III. Waste Composition and Constituents (list all known)

	Actual Range %	ppm
Crude contaminated soil	100	

IV. Waste Properties

Physical state:	Free Liquids:	pH Range:	Flash point:	Color:	Odor (describe):
☒ Solid ☐ Liquid ☐ Sludge ☐ Gas	☐ Yes ☒ No Content _____%	☐ <2 ☐ 2-4 ☐ 5-8 ☐ 8-12.4 ☐ >12.5	☐ ≤ 140°F ☐ > 140°F to < 200°F ☐ > 200°F	Brown	petroleum odor

V. Waste Classification

Waste stream properties (answer ALL questions)			Does this waste contain absorbents?	☐ Yes	☒ No
Does this waste stream contain any D, F, K, U or P listed as hazardous waste, either in pure form, as a mixture, or treatment residue?	☐ Yes	☒ No	Is this waste lethal (by Minn. Rules 7045.0131 Subp. 6)?	☐ Yes	☒ No
Does this waste stream contain PCB material	☐ Yes	☒ No	Is this waste recyclable?	☐ Yes	☒ No
If yes, concentration: _____ppm			Is this waste explosive?	☐ Yes	☒ No
Does this waste stream contain fuming acids?	☐ Yes	☒ No	Is this waste infectious?	☐ Yes	☒ No
Does this waste contain asbestos?	☐ Yes	☒ No	Is this putrescible waste?	☐ Yes	☒ No
Does this waste contain oxidizers?	☐ Yes	☒ No	Is this waste demolition debris?	☐ Yes	☒ No
Does this waste contain radioactive material?	☐ Yes	☒ No	Is this waste sewer sludge?	☐ Yes	☒ No

Please attach any available information or analytical test results that have previously been performed on this waste that substantiates these determinations. Include MSDS's and any information from other agencies (i.e., MPCA, USEPA)

VI. Shipping Information

Proper DOT Shipping Name (per CFR 172.101) where applicable			
Reportable Quantity	DOT Hazard Class	UN/NA Number	Packing Group
Method of packaging: ☐ drums (size _____) ☒ Bulk Solids ☐ boxes (size _____)		Method of shipment ☐ Roll-off ☒ End dump ☐ Rail ☐ Other (Specify) _____	

VII. Certification of Non Hazardous Waste & Approval Conditions

I hereby certify and warrant, on behalf of the generator and myself that, to the best of my knowledge and belief, the information contained herein is accurate, and true and that the waste is nonhazardous as defined in Title 42, Unites States Code Section 6903, Minnesota Statute Section 116.06, Subdivision 13, and/or any rules adopted by the Minnesota Pollution Control Agency under Minnesota Statute Section 116.07.

I understand that any approval is no longer valid if there are any changes in the process generating the waste or there have been changes in the composition of the waste. Therefore, if the composition of the waste stream changes or potentially changes, I or someone representing the generator, will immediately notify SKB Environmental. I, on behalf of the generator, hereby agree to fully indemnify SKB Environmental for any damages and/or costs incurred as a result of this certification being inaccurate or untrue.

Signature	Alex Smith Printed Name	Environmental Analyst Title	11/24/14 Date

LEGEND
Technical Services, Inc.
www.legend-group.com

88 Empire Drive
St Paul, MN 55103
Tel: 651-642-1150
Fax: 651-642-1239

November 21, 2014

Mr. James E. Taraldsen
Barr Engineering Co.
4700 W 77th St
Minneapolis, MN 55435

Work Order Number: 1405264
RE: 49161253

Enclosed are the results of analyses for samples received by the laboratory on 11/19/14. If you have any questions concerning this report, please feel free to contact me.

Results are not blank corrected unless noted within the report. Additionally, all QC results meet requirements unless noted.

All samples will be retained by Legend Technical Services, Inc., unless consumed in the analysis, at ambient conditions for 30 days from the date of this report and then discarded unless other arrangements are made. All samples were received in acceptable condition unless otherwise noted.

WI Accreditation #998022410

Prepared by,
LEGEND TECHNICAL SERVICES, INC

Bach Pham
Client Manager II
bpham@legend-group.com

LEGEND
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88 Empire Drive
St Paul, MN 55103
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Barr Engineering Co.	Project:	49161253	
4700 W 77th St	Project Number:	49161253.19 100 001	Work Order #: 1405264
Minneapolis, MN 55435	Project Manager:	Mr. James E. Taraldsen	Date Reported: 11/21/14

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Tank 1 road-stockpile-1	1405264-01	Soil	11/18/14 09:30	11/19/14 09:45

Shipping Container Information

Default Cooler Temperature (°C):

Received on ice: Yes
Temperature blank was not present
Received on ice pack: No
Received on melt water: No
Ambient: No
Acceptable (IH/ISO only): No
Custody seals: Yes

Case Narrative:

The dry weight correction and dilution applies to the sample result, MDL, and RL.

Ethylbenzene was present in the method blank between the MDL and RL for the BTEX analysis.

Recovery of the DRO surrogate for the sample was not available due to sample dilution required from high analyte concentration. The DRO chromatogram for the sample is attached.

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Barr Engineering Co.	Project:	49161253	
4700 W 77th St	Project Number:	49161253.19 100 001	Work Order #: 1405264
Minneapolis, MN 55435	Project Manager:	Mr. James E. Taraldsen	Date Reported: 11/21/14

DRO/8015D
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Tank 1 road-stockpile-1 (1405264-01) Soil Sampled: 11/18/14 09:30 Received: 11/19/14 9:45										
Diesel Range Organics	**9500**	450	72	mg/kg dry	100	B4K2012	11/20/14	11/21/14	WI(95) DRO	L1
Surrogate: Triacontane (C-30)				*70-130 %*		"	"	"	"	*D-1*

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Barr Engineering Co.	Project:	49161253	
4700 W 77th St	Project Number:	49161253.19 100 001	Work Order #: 1405264
Minneapolis, MN 55435	Project Manager:	Mr. James E. Taraldsen	Date Reported: 11/21/14

WI(95) GRO/8015D
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Tank 1 road-stockpile-1 (1405264-01) Soil Sampled: 11/18/14 09:30 Received: 11/19/14 9:45										
Benzene	<0.0036	0.031	0.0036	mg/kg dry	1	B4K1907	11/19/14	11/20/14	WI(95) GRO	
Ethylbenzene	**0.021**	0.031	0.0079	mg/kg dry	1	"	"	"	"	B-01, J
Toluene	<0.0051	0.031	0.0051	mg/kg dry	1	"	"	"	"	
Xylenes (total)	**0.028**	0.093	0.018	mg/kg dry	1	"	"	"	"	J
Surrogate: 4-Fluorochlorobenzene	*97.9*			*80-150 %*		"	"	"	"	

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Barr Engineering Co.	Project:	49161253	
4700 W 77th St	Project Number:	49161253.19 100 001	Work Order #: 1405264
Minneapolis, MN 55435	Project Manager:	Mr. James E. Taraldsen	Date Reported: 11/21/14

PERCENT SOLIDS
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Tank 1 road-stockpile-1 (1405264-01) Soil	**Sampled: 11/18/14 09:30**			**Received: 11/19/14 9:45**						
% Solids	**81**			%	1	B4K2005	11/20/14	11/20/14	% calculation	

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Barr Engineering Co.	Project:	49161253	
4700 W 77th St	Project Number:	49161253.19 100 001	Work Order #: 1405264
Minneapolis, MN 55435	Project Manager:	Mr. James E. Taraldsen	Date Reported: 11/21/14

DRO/8015D - Quality Control
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
Batch B4K2012 - Sonication (Wisc DRO)											
Blank (B4K2012-BLK1)					Prepared & Analyzed: 11/20/14						
Diesel Range Organics	< 8.0	8.0	1.3	mg/kg wet							
Surrogate: Triacontane (C-30)	*14.6*			*mg/kg wet*	*16.0*		*91.3*	*70-130*			
LCS (B4K2012-BS1)					Prepared & Analyzed: 11/20/14						
Diesel Range Organics	62.8	8.0	1.3	mg/kg wet	64.0		98.1	70-120			
Surrogate: Triacontane (C-30)	*16.4*			*mg/kg wet*	*16.0*		*103*	*70-130*			
LCS Dup (B4K2012-BSD1)					Prepared: 11/20/14 Analyzed: 11/21/14						
Diesel Range Organics	56.8	8.0	1.3	mg/kg wet	64.0		88.7	70-120	10.0	20	
Surrogate: Triacontane (C-30)	*15.7*			*mg/kg wet*	*16.0*		*98.0*	*70-130*			

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Barr Engineering Co.	Project:	49161253	
4700 W 77th St	Project Number:	49161253.19 100 001	Work Order #: 1405264
Minneapolis, MN 55435	Project Manager:	Mr. James E. Taraldsen	Date Reported: 11/21/14

WI(95) GRO/8015D - Quality Control
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
Batch B4K1907 - EPA 5035 Soil (Purge and Trap)											
Blank (B4K1907-BLK1)					Prepared & Analyzed: 11/19/14						
Benzene	< 0.0029	0.025	0.0029	mg/kg wet							
Ethylbenzene	0.0102	0.025	0.0064	mg/kg wet							B-02, J
Toluene	< 0.0041	0.025	0.0041	mg/kg wet							
Xylenes (total)	< 0.014	0.075	0.014	mg/kg wet							
Surrogate: 4-Fluorochlorobenzene	*23.7*			*ug/L*	*25.0*		*95.0*	*80-150*			
LCS (B4K1907-BS1)					Prepared & Analyzed: 11/19/14						
Benzene	98.9			ug/L	100		98.9	80-120			
Ethylbenzene	99.4			ug/L	100		99.4	80-120			
Toluene	99.7			ug/L	100		99.7	80-120			
Xylenes (total)	301			ug/L	300		100	80-120			
Surrogate: 4-Fluorochlorobenzene	*24.0*			*ug/L*	*25.0*		*96.0*	*80-150*			
LCS Dup (B4K1907-BSD1)					Prepared: 11/19/14 Analyzed: 11/20/14						
Benzene	98.4			ug/L	100		98.4	80-120	0.564	20	
Ethylbenzene	97.1			ug/L	100		97.1	80-120	2.29	20	
Toluene	98.5			ug/L	100		98.5	80-120	1.25	20	
Xylenes (total)	294			ug/L	300		97.9	80-120	2.34	20	
Surrogate: 4-Fluorochlorobenzene	*24.2*			*ug/L*	*25.0*		*96.6*	*80-150*			
Matrix Spike (B4K1907-MS1)		**Source: 1405248-01**			Prepared: 11/19/14 Analyzed: 11/20/14						
Benzene	97.8			ug/L	100	<	97.8	80-120			
Ethylbenzene	98.2			ug/L	100	0.359	97.8	80-120			
Toluene	96.3			ug/L	100	<	96.3	80-120			
Xylenes (total)	299			ug/L	300	2.26	99.0	80-120			
Surrogate: 4-Fluorochlorobenzene	*23.9*			*ug/L*	*25.0*		*95.8*	*80-150*			

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Barr Engineering Co.	Project:	49161253	
4700 W 77th St	Project Number:	49161253.19 100 001	Work Order #: 1405264
Minneapolis, MN 55435	Project Manager:	Mr. James E. Taraldsen	Date Reported: 11/21/14

PERCENT SOLIDS - Quality Control
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
Batch B4K2005 - General Preparation											
Duplicate (B4K2005-DUP1)		**Source: 1405209-01**			Prepared & Analyzed: 11/20/14						
% Solids	87.0			%		88.0			1.14	20	
Duplicate (B4K2005-DUP2)		**Source: 1405264-01**			Prepared & Analyzed: 11/20/14						
% Solids	84.0			%		81.0			3.64	20	

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Barr Engineering Co.	Project:	49161253	
4700 W 77th St	Project Number:	49161253.19 100 001	Work Order #: 1405264
Minneapolis, MN 55435	Project Manager:	Mr. James E. Taraldsen	Date Reported: 11/21/14

Notes and Definitions

L1	Results in the diesel organics range are primarily due to overlap from a heavy oil range product.
J	Parameter was present between the MDL and RL and should be considered an estimated value
D-1	The surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interferences.
B-02	Target analyte was present in the method blank between the MDL and RL.
B-01	Analyte was present in the method blank. Sample result is less than or equal to 10 times the blank concentration.
<	Less than value listed
dry	Sample results reported on a dry weight basis
NA	Not applicable. The %RPD is not calculated from values less than the reporting limit.
MDL	Method Detection Limit
RL	Reporting Limit
RPD	Relative Percent Difference
LCS	Laboratory Control Spike = Blank Spike (BS) = Laboratory Fortified Blank (LFB)
MS	Matrix Spike = Laboratory Fortified Matrix (LFM)

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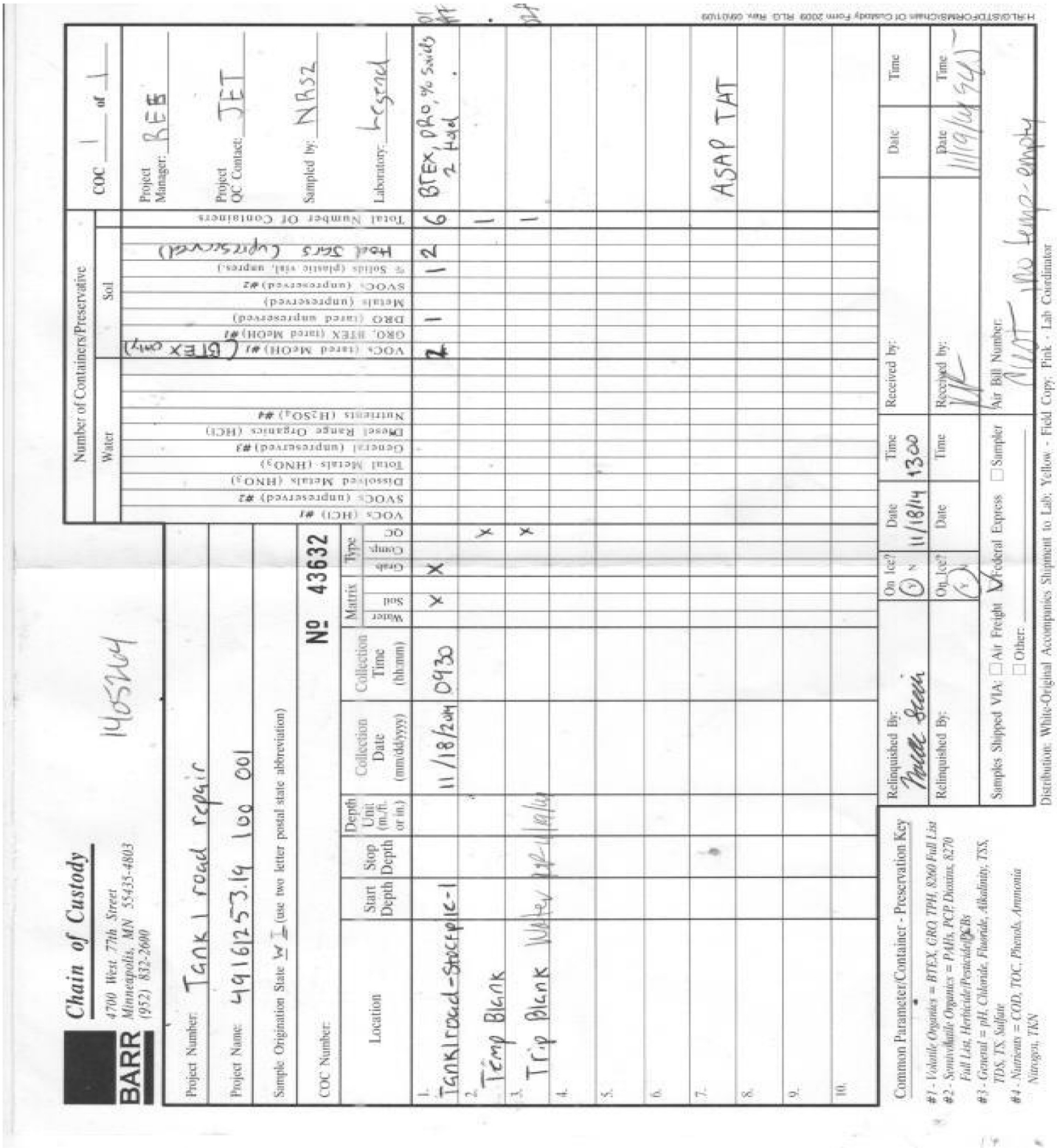

Chain of Custody

BARR
4700 West 77th Street
Minneapolis, MN 55435-4803
(952) 832-2600

140524

Project Number: Tank 1 road repair
Project Name: 4916125319 100 001
Sample Origination State: WI (use two letter postal state abbreviation)
COC Number: No 43632

Location	Start Depth	Stop Depth	Depth Unit (m./ft. or in.)	Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix: Water	Matrix: Soil	Type: Grab	Type: Comp.	Type: QC	VOCs (HCl) #1	SVOCs (unpreserved) #2	Dissolved Metals (HNO3)	Total Metals (HNO3)	General (unpreserved) #3	Diesel Range Organics (HCl)	Nutrients (H2SO4) #4	VOCs (tared MeOH) #1 (BTEX only)	GRO, BTEX (tared MeOH) #1	DRO (tared unpreserved)	Metals (unpreserved)	SVOCs (unpreserved) #2	% Solids (plastic vial, unpres.)	Total Number Of Containers
1. Tank1road-Sample-1				11/18/24	0930		X	X										2	1				1	6
2. Temp Blank										X														1
3. Trip Blank Water Hold										X														1
4.																								
5.																								
6.																								
7.																								
8.																								
9.																								
10.																								

Relinquished By: Mallie Steen — On Ice? (Y) N — Date: 11/18/24 — Time: 1300 — Received by:
Relinquished By: — On Ice? (Y) — Date: — Time: — Received by:
Samples Shipped VIA: ☐ Air Freight ☑ Federal Express ☐ Sampler ☐ Other:
Air Bill Number: NLT

Project Manager: BEB
Project QC Contact: JET
Sampled by: NASZ
Laboratory: Legend

Number of Containers/Preservative — Water / Soil

COC 1 of 1

Date / Time

Common Parameter/Container - Preservation Key

#1 - Volatile Organics = BTEX, GRO, TPH, 8260 Full List
#2 - Semivolatile Organics = PAHs, PCP, Dioxins, 8270 Full List, Herbicide/Pesticide/PCBs
#3 - General = pH, Chloride, Fluoride, Alkalinity, TSS, TDS, TS, Sulfate
#4 - Nutrients = COD, TOC, Phenols, Ammonia Nitrogen, TKN

Distribution: White-Original Accompanies Shipment to Lab; Yellow - Field Copy; Pink - Lab Coordinator

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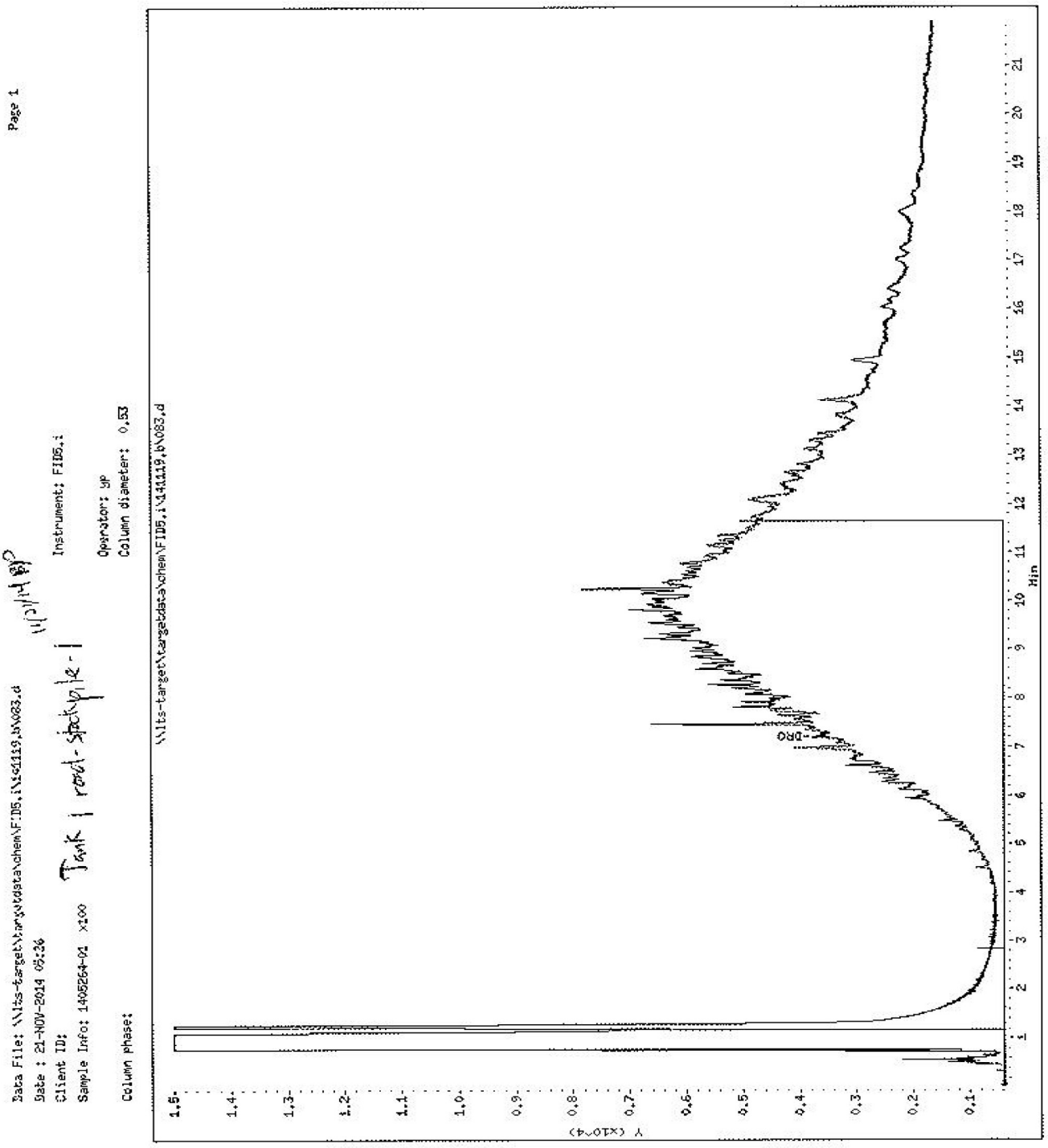

November 24, 2014

Alex Smith
Enbridge Pipelines Limited Partnership, LLC
Accounts Payable
1100 Louisiana Ave, Ste 3300
Houston, TX 77002

RE: CL14-0063 141124 Tank

Dear Mr. Smith,

This agreement will confirm the price and length of service for disposal and /or transportation of your non-hazardous industrial material at our facility. This agreement is for the term of the Waste Approval granted by Shamrock Landfill and is for all services ordered and performance initiated within such period and does include the disposal surcharge fees which you are obligated to pay as of the date of this agreement. Shamrock Landfill may incur additional costs including but not limited to increases in state and local taxes. Shamrock Landfill may pass these costs on to the customer only after notification to the Customer. This agreement grants Shamrock Landfill the exclusive right to dispose of the referenced waste for the term of this agreement. This agreement shall automatically renew thereafter for an additional term of 24 months "Renewal Term" unless either party gives the other party written notification of termination at least 90 days prior to the termination of the then-existing term. Shamrock Landfill will notify the customer prior to the expiration of the agreement of any rate changes prior to the start of the Renewal Term.

Payment and terms are net thirty (30) days. Interest will be charged at a rate of 1 ½% per month (18% annually) on any unpaid balance 30 days after the date of the invoice. In the event Customer terminates this Agreement prior to its expiration other than as a result of a breach by Shamrock Landfill or Shamrock Landfill terminates this agreement for Customer's breach (including nonpayment) Customer agrees to pay to Shamrock Landfill as liquidated damages a sum calculated as follows: (1) if the remaining term under this agreement is six or more months Customer shall pay its average monthly charges multiplied by six: or (2) if the remaining term under this agreement is less than six months Customer shall pay its average monthly charge multiplied by the number of months remaining in the term. Customer expressly acknowledges that in the event of an unauthorized termination of this agreement the anticipated loss to Shamrock Landfill in such event is estimated to be the amount set forth in the foregoing liquidated damages provision and such estimated value is reasonable and is not imposed as a penalty.

These prices are based on an approved waste stream composition. In the event that a non-conforming waste is received, you will be notified of additional charges, when applicable.

To accept this agreement, please sign one copy and return it to our St. Paul, MN office at Shamrock Landfill, 251 Starkey St., St. Paul, MN 55107 or Via Fax at 651-223-8197 or email to jonp@shamrocklandfill.com.

Shamrock Landfill

Jon Penheiter

Customer ACCEPTED BY: (name, position) Alex Smith Environmental Analyst

DATE: 11-24-14

WASTE APPROVAL Period: 11/24/2014 to 11/24/2019

Bill To Customer

Enbridge Pipelines Limited Partnership, LLC
Accounts Payable
1100 Louisiana Ave, Ste 3300
Houston, TX 77002

Service For Generator

Enbridge Pipelines LLP
1320 Grand Ave
Superior, WI 54880

Disposal

Waste Description: 141124 Tank

Estimated Volume: 50 YARDS / ONE TIME ONLY

Disposal Method: Secure Non-Hazardous Landfill

Treatment Method: None Expected For Conforming Waste

Pricing

Disposal	$16.00	Per Ton	141124 Tank

Notification of Waste Acceptance

11/24/2014

CUSTOMER INFORMATION

EPA ID#:
Enbridge Pipelines LLP
Superior Terminal -Tank 1 Maintenance

1320 Grand Ave
Superior, WI 54880
Contact: Alex Smith
Phone: (715) 398-4795

INVOICE INFORMATION

Bill #: 2133
Enbridge Pipelines Limited Partnership,
Accounts Payable

1100 Louisiana Ave, Ste 3300
Houston, TX 77002
Contact: Alex Smith
Phone: (715) 398-4795

Profile Sheet #:
Waste Stream #: CL14-0063
Waste Name: 141124 Tank

Thank you for selecting SHAMROCK LANDFILL for your waste management requirements. Your waste stream has been reviewed and is acceptable for management at our facility based on the information provided in the profile sheet number listed above and conditions below. Our facility has the necessary permits to allow the storage, treatment, or disposal of this waste. The above referenced acceptance number should be listed on all shipping documents and correspondence. Please retain these documents for your records and future reference.

To schedule a shipment, or should you have any questions, please contact the facility at (218) 878-0112.

ACCEPTANCE INFORMATION

The waste stream identified by the reference above is acceptable for disposal.
The anticipated frequency of shipment is 50 YARDS / ONE TIME ONLY

This waste is acceptable for delivery beginning on 11/24/2014 thru 11/24/2019 at which time the material will need to be reanalyzed and recertified.

PCB Statement: The Minnesota Pollution Control Agency encourages generators of non-hazardous PCB waste to voluntarily manage the waste as hazardous waste or to seek an alternative to land disposal such as incineration

Spill Reporting Reminder: Proper County and MPCA spill reporting procedures must be followed.

Empty Container Statement: Each shipment containing empty containers must be accompanied with a completed 'EMPTY CONTAINER CERTIFICATION FORM'.

Free Liquid Statement: Free liquids will not be placed in cells at Shamrock Landfill. Free liquids must be solidified either prior to shipment to Shamrock Landfill or at Shamrock Landfill.

Shipping Requirements A NON-HAZARDOUS certificate is required to be on file, certifying the waste is non-hazardous as specified per 40 CFR 261.4. The shipment must be accompanied with an Shamrock Landfill manifest.

AUTHORIZATION

Approval: _____ Date: 11/24/14

SKB CLOQUET

REPORT NAME: **Tons Each Load By WSID**
DESCRIPTION: **Tonnage for EACH LOAD, grouped by customer**
DATE RANGE: **01/01/2015 to 03/23/2015**
PRINTED ON (DATE): **Monday, March 23, 2015**

ENB28

Enbridge Pipelines Limited
150205 Line 5 Valve
Superior WI

LOAD #	MANIFEST	ARRIVED	WASTE STREAM	WASTE NAME	CELL	SPOT.	LIFT	TONS
29042 (A)	50947	2/27/2015	CL15-0006	150205 Line 5 Valve Soil	2A	S36	1178	9.58
29043 (A)	50948	2/27/2015	CL15-0006	150205 Line 5 Valve Soil	2A	S36	1178	9.79
29048 (A)	50946	2/27/2015	CL15-0006	150205 Line 5 Valve Soil	2A	S36	1178	8.00
				Total # of Loads: 3			**Total Tons:**	**27.37**

Grand Total (Tons): 27.37
Grand Total (Loads): 3