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BARR

Technical Memorandum

To: Alex Smith, Enbridge Energy
From: Ryan Erickson
Subject: Superior Terminal Tank 5 Historical Crude Oil Impacts – Platform Installation
Date: December 3, 2013
Project: 49161092

This memorandum summarizes the field screening, analytical sampling and waste management assistance conducted by Barr Engineering (Barr) at the request of Enbridge Energy (Enbridge) in response to the discovery of historical, crude oil impacted soil during the construction of two platforms at Tank 5 located within the Enbridge Superior Terminal in Superior, Wisconsin (Figure 1) in September of 2013.

Background and Response Activities

Enbridge installed two valve platforms adjacent to Tank 5 at the Enbridge Superior Terminal in September of 2013 (Figure 2). The purpose of the new platforms was to improve Tank 5 valve accessibility. Platform construction activities consisted of excavating two areas adjacent to Tank 5, pouring concrete bases and installing the steel platform structures.

Crude oil impacted soil and water were encountered by Enbridge contractors in both Tank 5 platform excavations (Figure 3) between September 11 and September 24, 2013. The impacted excavation areas are identified in this memo as: the southern valve platform (Photos 1 through 4 and Photo 8) and the western valve platform (Photos 5 and 6). Enbridge Environment was notified by the contractor when historical crude oil impacts were encountered.

Enbridge requested that Barr complete the following activities during the Tank 5 platform project:

- assess the environmental site conditions
- identify and segregate excavated crude oil impacted soil from unimpacted soil
- identify crude oil impacted water
- assist with the off-site disposal coordination and documentation of contaminated soil and water
- document the residual crude-oil impacts left in place

Barr was onsite several times during construction work to carry out the above tasks. Crude oil impacted soil was generally not excavated beyond the construction excavation limits due to the presence of tank infrastructure.

Enbridge indicated that the crude oil impacts discovered during the platform excavations were likely historical based on the location and characteristics of the contaminated soil. Barr checked the Wisconsin Department of Natural Resources (WDNR) Bureau for Remediation and Redevelopment Tracking System (BRRTS) database and no reported releases were identified near the Tank 5 excavations. Therefore, Enbridge submitted a Notification for Hazardous Substance Discharge to the WDNR on December 3, 2013 (Attachment A).

Field Methods

Barr was onsite at Tank 5 as needed during the platform excavation activities between September 11 and September 24, 2013. Barr field screened excavated soil for the presence of organic vapors using a photoionization detector (PID) and documented other potential indicators of crude oil impacts such as odor, discoloration and sheen (Attachment B). Excavated soil with PID headspace readings greater than ten parts per million (ppm), or other evidence of crude oil impacts, was segregated and transported to the Superior Terminal Soil Management Area (SMA) (Photo 7) for storage until it could be characterized and approved for off-site disposal. If a petroleum sheen or free-product were observed on water within the excavation, the water was considered contaminated and was containerized in a tanker trailer until it could be characterized and approved for off-site disposal.

After construction excavation activities were completed, Barr collected field screening soil samples from the excavation extents to identify whether residual soil impacts were present. Residual soil impacts were considered present if a headspace greater than ten ppm were identified. If residual impacts were identified, and the impacted soil could not be excavated, analytical soil samples were collected from the excavation to document residual soil impacts. Soil samples were submitted to Pace Analytical or Legend Technical Services for laboratory analyses of petroleum volatile organic compounds (PVOCs). Soil sample locations are shown on Figure 3, field screening data is provided in Attachment B, and analytical results are provided in Attachment C.

Results

Excavation activities, field screening and analytical sampling at the two platform locations are described below. Analytical results from each location were input into the WDNR Web Calculator to compare analyte detections to groundwater residual contaminant levels (RCL) and industrial direct contact RCL and determine whether the soil passes the Cumulative Hazard Index criteria described in WDNR guidance document PUB-RR-890 (Table 1).

Southern Valve Platform

Crude oil impacted soil and water was encountered on the south side of Tank 5 in the valve platform construction excavation. The construction excavation extents were approximately 25-feet long by 6 feet-wide by 3-feet deep (Attachment B). The impacted soil was located along the base of the tank beneath the valve at a depth of approximately two feet below ground surface (bgs) (Photo 3). Impacted soil in this location had elevated headspace detections (140 ppm), dark discoloration and a petroleum odor (Photo 3; Attachment B). Excavation extent soil field screening away from the base of the tank did not identify any impacts migrating out into the surrounding clay and gravel fill. Approximately 50 cubic yards of impacted soil was excavated, as feasible based on infrastructure, and stockpiled in in the terminal SMA (Photo 7). Analytical sample TK5-S-2 was collected from the excavation sidewall for laboratory analysis of PVOCs to document residual soil impacts left in place (Figure 3; Attachment B). PVOC analyte concentrations from sample TK5-S-2 were below the groundwater RCL and the direct contact pathway RCL and passed the Cumulative Hazard Index criteria (Table 1).

Western Valve Platform

Crude oil impacted soil and water was encountered on the western side of Tank 5 in the valve platform construction excavation. The construction excavation extents were approximately 25-feet long by 6 feet-wide by 3-feet deep (Attachment B). The impacted soil was located along the base of the tank beneath the valve at a depth of approximately two feet bgs. Impacted soil in this location had elevated headspace detections (379 ppm), slight petroleum odor and a rainbow sheen (Photos 5 and 6; Attachment B). Excavation extent soil field screening away from the base of the tank did not identify any impacts migrating out into the surrounding clay and gravel fill. Approximately 50 cubic yards of impacted soil was excavated, as feasible based on infrastructure, and stockpiled in in the terminal SMA (Photo 7). Analytical sample TK5-S-1 was collected from the excavation sidewall soil and analytical sample TK5-B-1 was collected from the base of the construction excavation to document residual soil impacts, if applicable.

Analyte concentrations from TK5-S-1 exceeded groundwater RCL's for ethyl benzene, xylene, and both 1,2,4- and 1,3,5-trimethylbenzene (Table 1). TK5-S-1 concentrations did not exceed the direct contact pathway RCL and passed the Cumulative Hazard Index criteria (Table 1). Analyte concentrations from TK5-B-1 were below the groundwater RCL and the direct contact pathway RCL and passed the Cumulative Hazard Index criteria (Table 1).

Discussion

Analyte concentrations detected in the southern platform excavation sidewall soil sample (TK5-S-2) and the western platform base of excavation soil sample (TK5-B-1) were below the groundwater RCL and industrial direct contact RCL and passed the Cumulative Hazard Index criteria (Table 1). The western platform soil sample (TK5-S-1) exceeded groundwater RCL's for ethyl benzene (1.16 mg/kg), xylene (17.9 mg/kg), 1,2,4-trimethylbenzene (17.5 mg/kg) and 1,3,5-trimethylbenzene (10.5 mg/kg). The TK5-S-1 sample was below the groundwater RCL and industrial direct contact RCL and passed the Cumulative Hazard Index criteria for remaining criteria analyzed (Table 1).

Additional excavation of the crude oil impacted soil that was encountered at the base of Tank 5 in the zero to four foot bgs direct contact zone was not possible due to the presence of the tank infrastructure. Following the completion of the platform construction, the excavations were backfilled with clean fill and no crude oil impacted soil is exposed at the ground surface (Photo 8).

Waste Disposal Coordination and Documentation

Barr collected two analytical waste characterization samples from the crude oil impacted soil stockpile (*TK5 Platform-Stockpile-1* and *TK5-Stockpile-2*) for laboratory analysis at Legend Technical Services (Attachment D). The samples were analyzed for diesel range organics (DRO) and benzene, toluene, ethylbenzene, and xylenes (BTEX). Laboratory reports are included in the Shamrock Landfill Waste Profile application in Attachment D. A waste profile application with the laboratory results was submitted to the Shamrock Landfill near Cloquet, Minnesota and the soil was accepted under waste profile #CL13-0051 (Attachment D). A total of 146.15 tons of crude oil impacted soil was hauled to the landfill on October 7, 2013.

Approximately 8,000 gallons of water with visible crude oil impacts (rainbow sheen and product) was removed from the Tank 5 platform construction excavations and containerized in a tanker trailer. Analytical water sample *TK5-Platforms-Water-1* was collected and submitted to Legend Technical Services for laboratory analysis of DRO and BTEX (Attachment D). The laboratory report was submitted to the Western Lake Superior Sanitary District water treatment facility in Duluth, Minnesota and the water was accepted for disposal on September 24, 2013 (Attachment D). The construction contractor facilitated the disposal of the water.

Conclusions and Recommendations

Crude oil impacted soil and water was encountered during the construction of two Tank 5 valve platforms. The contaminated soil was excavated to the extent possible; however, two small crude oil impacted areas at the base of Tank 5 were left in place due to the presence of infrastructure. Residual crude oil impacted soil analyte concentrations did not exceed industrial direct contact RCLs, passed the Cumulative Hazard Index Criteria and have been covered with gravel fill. The gravel and employee-awareness will prevent direct contact exposure.

The groundwater pathway for the Superior Terminal is currently being reviewed by the WDNR on a case by case site-wide basis. If the WDNR agrees that the risk to the groundwater pathway associated with this historical release can be addressed using the site-wide approach, no further response action for groundwater or documentation for the WDNR will be required. Assuming a site-wide GIS registry is established for the terminal, the figures and tables attached to this memo can be used to update the registry.

Attachments:

Photos	Site Photos 1 through 8
Figure 1	Tank 5 Site Location
Figure 2	Tank 5 Site Layout Map
Figure 3	Tank 5 Sample Locations
Table 1	Soil Analytical Data Summary
Attachment A	WDNR Notification for Hazardous Substance Discharge
Attachment B	Enbridge Site Investigation Field Sampling and Screening Logs
Attachment C	Pace Analytical and Legend Technical Services Laboratory Reports for Excavation Soil Samples
Attachment D	Waste Disposal Documentation

Site Photos:

Photo 1

Photo 2

Photo 1: Tank 5 southern valve platform construction excavation facing west. A sheen is present on the water within the excavation.
Photo 2: Tank 5 southern valve platform construction excavation facing northeast.

Photo 3

Photo 4

Photo 3: Tank 5 southern valve construction excavation facing north. Contaminated soil was encountered in the excavation and was left in place due to the presence of terminal infrastructure.
Photo 4: Water within the Tank 5 southern valve platform excavation with a petroleum sheen and trace product on the surface.

Photo 5

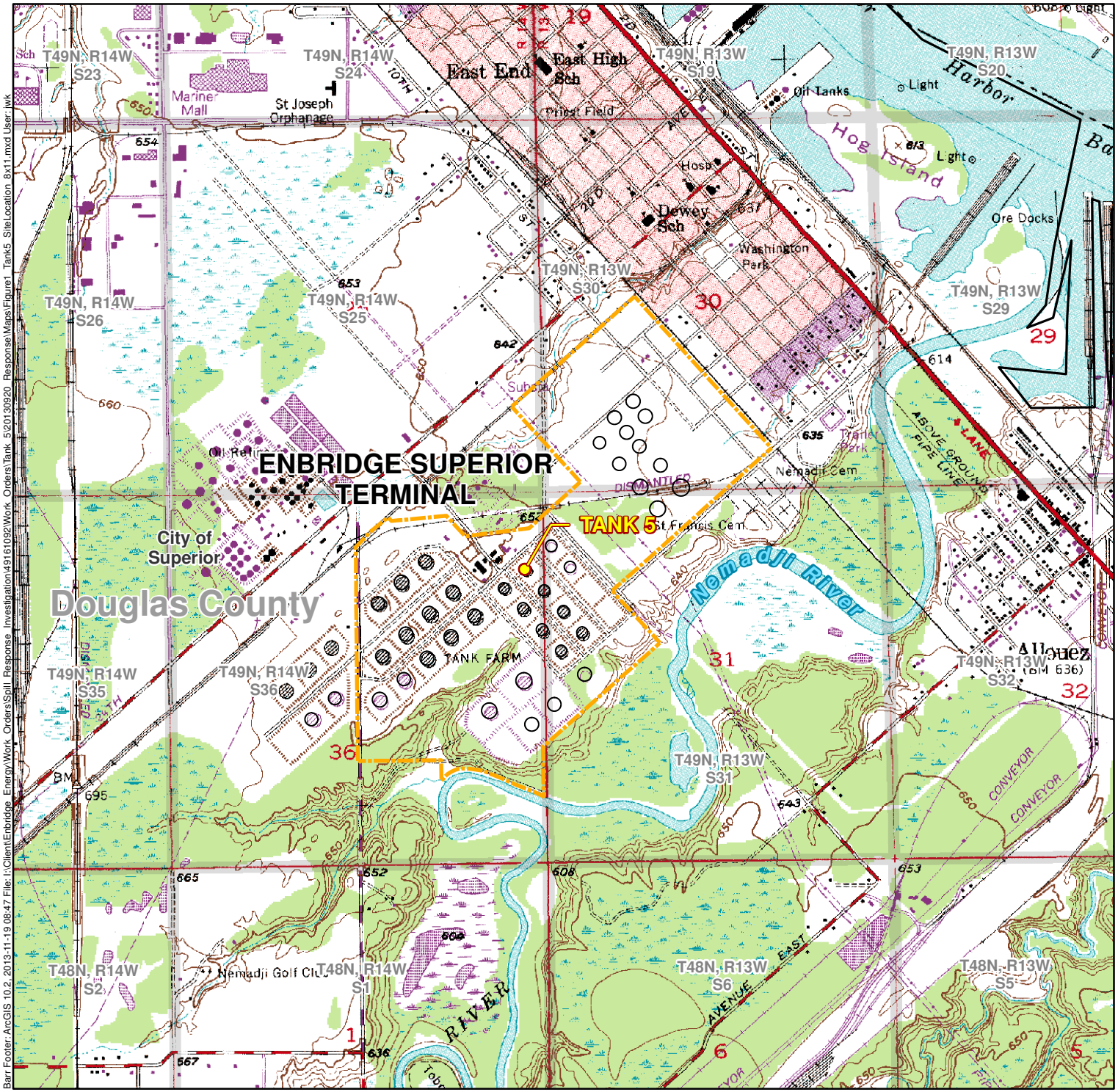
Photo 6

Photo 5: Tank 5 western valve platform construction excavation facing northeast. A petroleum sheen is present on the water within the excavation.
Photo 6: Crude oil impacted soil in the north end of the Tank 5 western valve platform construction excavation. The crude oil impacted soil was left in place due to the presence of terminal infrastructure.

Photo 7

Photo 8

Photo 7: Contaminated soil stockpile stored in the soil management area (SMA) building.
Photo 8: The completed Tank 5 southern valve platform.



Tank 5

Terminal Property Boundary

N

0 2,000 4,000

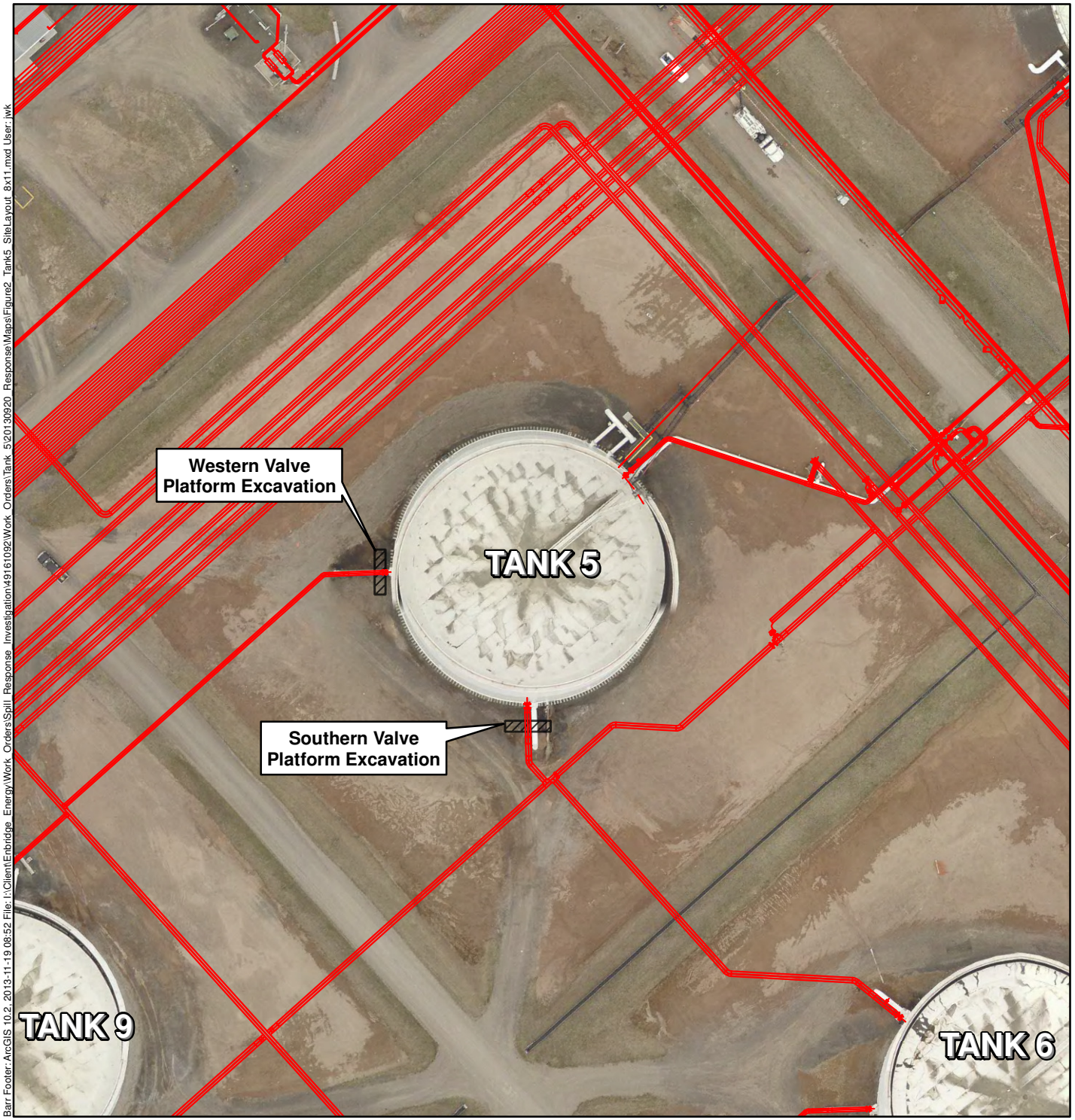
Feet

1 Inch = 2,000 Feet

Figure 1

TANK 5 SITE LOCATION
SUPERIOR TERMINAL
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE



ENBRIDGE SUPERIOR TERMINAL

Excavation Extent

Pipeline Infrastructure

Terminal Property Boundary

N

0 80 160

Feet

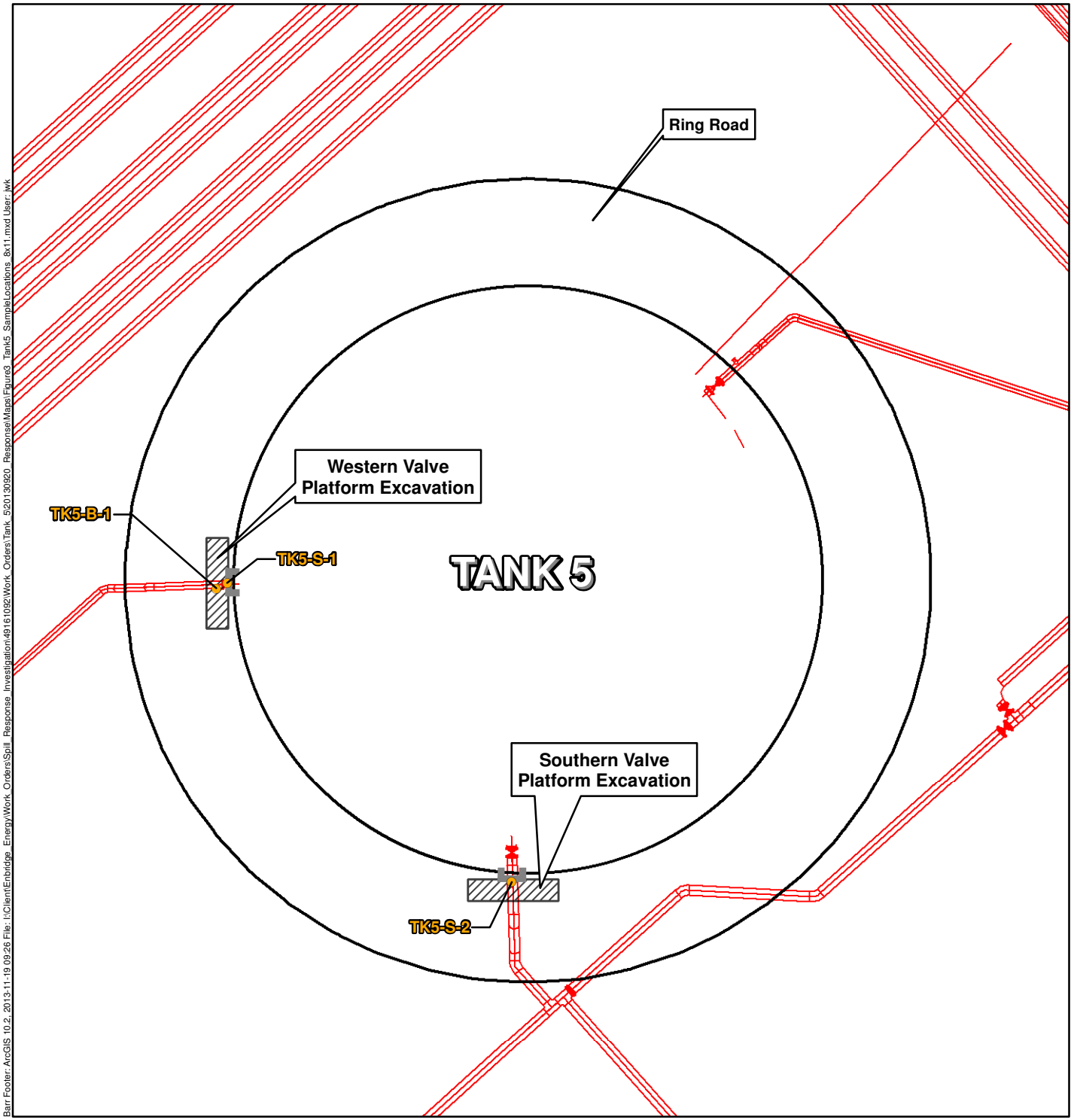
1 Inch = 80 Feet

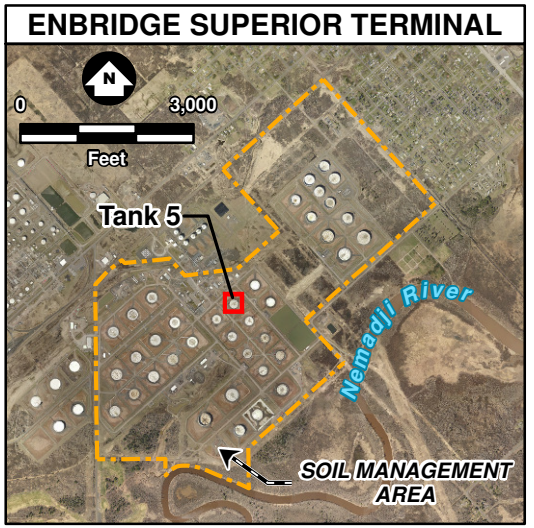
Douglas County Aerial Photography Circa April/May, 2013

Figure 2

TANK 5 SITE LAYOUT MAP
SUPERIOR TERMINAL
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE





Sample Locations

Excavation Extent

Crude Impacted Soil Left In Place

Road Ring

Pipeline Infrastructure

Terminal Property Boundary

N

0 40 80

Feet

1 Inch = 40 Feet

Figure 3

TANK 5 SAMPLE LOCATIONS
SUPERIOR TERMINAL
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE

Table 1
Soil Analytical Data Summary
Tank 5 Platform Excavations
Enbridge Energy Terminal - Superior, Wisconsin
Units, mg/kg (unless otherwise noted)

Parameter			Moisture	Solids, percent	1,2,4-Trimethyl benzene	1,3,5-Trimethyl benzene	Benzene	Ethyl benzene	Toluene	Xylene, total	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k) fluoranthene
	Effective Date	**Exceedance Key**																
Groundwater RCL		**Bold**			**1.3793 TR**	**1.3793 TR**	0.0051	**0.785**	0.5536	**1.97 XYL**			196.7442		0.47	0.48		
Industrial Direct Contact RCL	05/01/2012	No Exceed			219	182	7.41	37	818	258	33000	487	100000	2.11	0.211	2.11		21.1
Tank 5 Valve Platform Excavations	**Date**	**Depth (ft)**																
TK5-B-1	9/20/2013	3	21.7 %	--	< 0.0642	< 0.0642	< 0.0257	< 0.0642	< 0.0642	< 0.193	--	--	--	--	--	--	--	--
TK5-S-1	9/20/2013	2.5	24.9 %	--	**17.5**	**10.5**	< 0.0261	**1.16**	< 0.0652	**17.9**	0.0534	< 0.0132	0.0539	0.0675	0.0282	0.0442	< 0.0132	0.0169
TK5-S-2	9/24/2013	1.5	--	88 %	0.035	0.027	< 0.0033	0.051 b	0.020 j	0.89	--	--	--	--	--	--	--	--

*WDNR RCL Determinations based on guidance criteria described in WDNR document PUB-RR-890. Hazard index is based a cumalitive direct contact standard.

TR - Based on 1,2,4-Trimethylbenzene and 1,3,5-Trimethylbenzene combined.

XYL - Based on Xylenes (m-, o-, p- combined).

j - Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.

b - Potential false positive value based on blank data validation procedures.

Table 1
Soil Analytical Data Summary
Tank 5 Platform Excavations
Enbridge Energy Terminal - Superior, Wisconsin
Units, mg/kg (unless otherwise noted)

Parameter			Chrysene	Dibenz(a,h) anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd) pyrene	Naphthalene	Phenanthrene	Pyrene	WDNR RCL Determinations*			
											Exceedance Count	Hazard Index	Cumulative Cancer Risk	Pass or Fail
	Effective Date	Exceedance Key												
Groundwater RCL		**Bold**	0.0725		44.4089	7.4074		0.3294		27.2362				
Industrial Direct Contact RCL	05/01/2012	No Exceed	211	0.211	22000	22000	2.11	26	115	16500	0	1.0	0.00001	Pass
Tank 5 Valve Platform Excavations	**Date**	**Depth (ft)**												
TK5-B-1	9/20/2013	3	--	--	--	--	--	--	--	--	0	0.0003	5.2E-09	Pass
TK5-S-1	9/20/2013	2.5	0.0519	< 0.0132	0.247	0.108	< 0.0132	0.242	0.314	0.188	0	0.0524	3.0E-07	Pass
TK5-S-2	9/24/2013	1.5	--	--	--	--	--	--	--	--	0	0.0003	1.8E-09	Pass

*WDNR RCL Determinations based on guidance criteria described in WDNR document PUB-RR-890. Hazard index is based a cumalitive direct contact standard.

TR - Based on 1,2,4-Trimethylbenzene and 1,3,5-Trimethylbenzene combined.

XYL - Based on Xylenes (m-, o-, p- combined).

j - Reported value is less than the stated laboratory quantitation limit and is considered an estimated value.

b - Potential false positive value based on blank data validation procedures.

Attachment A

WDNR Notification for Hazardous Substance Discharge

State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Notification For Hazardous Substance Discharge (Non-Emergency Only)

Form 4400-225 (05/12) Page 1 of 2

Emergency Discharges / Spills should be reported via the 24-Hour Hotline: 1-800-943-0003

Notice: Hazardous substance discharges must be reported immediately according to s. 292.11 Wis. Stats. Non-emergency hazardous substance discharges may be reported by telefaxing or e-mailing a completed report to the Department, or calling or visiting a Department office in person. If you choose to notify the Department by telefax or by email, you should use this form to be sure that all necessary information is included. However, use of this form is not mandatory. Under s. 292.99, Wis. Stats., the penalty for violating the reporting requirements of ch. 292 Wis. Stats., shall be no less than $10 nor more than $5000 for each violation. Each day of continued violation is a separate offense. It is not the Department's intention to use any personally identifiable information from this form for any purpose other than program administration. However, information submitted on this form may also be made available to requesters under Wisconsin's Open Records Law (ss. 19.31 – 19.39, Wis. Stats.).

Confirmatory laboratory data should be included with this form, to assist the DNR in processing this Hazardous Substance Release Notification.

Complete this form. **TYPE or PRINT LEGIBLY.** NOTIFY appropriate DNR region (see next page) **IMMEDIATELY** upon discovery of a potential release from **(check one)**:

- ☐ Underground Petroleum Storage Tank System (additional information may be required for Item 6 below)
- ☐ Aboveground Petroleum Storage Tank System
- ☐ Dry Cleaner Facility
- ☒ Other - Describe: Historical crude oil impacts discovered near an above ground petroleum storage tank during valve platform construction

ATTN DNR: **R & R Program Associate** Date DNR Notified: 12/03/2013

1. Discharge Reported By

Name	Firm	Phone No. (include area code)
Alex Smith	Enbridge Energy	(715) 398-4795

Mailing Address	Email Address
1320 Grand Ave., Superior, WI 54880	alex.smith@enbridge.com

2. Site Information

Name of site at which discharge occurred. Include local name of site/business, not responsible party name, unless a residence/vacant property. Enbridge Superior Terminal - Tank 5 Valve Platform Installation

Location: Include street address, not PO Box. If no street address, describe as precisely as possible, i.e., 1/4 mile NW of CTHs 60 & 123 on E side of CTH 60. 2800 East 21st Street, Superior, WI 54880

Municipality: (City, Village, Township) Specify municipality in which the site is located, not mailing address/city.
Superior

County:	Legal Description:	WTM:
Douglas	NE 1/4 NE 1/4 Sec 36 Tn 49N Range 14 ○ E ◉ W	X Y

3. Responsible Party (RP) and/or RP Representative

Responsible Party Name: Business or owner name that is responsible for cleanup. If more than one, list all. Attach additional pages as necessary.
Enbridge Energy

☐ Reported in compliance with s. 292.11(2), Wis. Stats., by a local government exempt from liability under s. 292.11(9)(e), Wis. Stats. For more information see http://dnr.wi.gov/org/aw/rr/lgu/liability.htm.

Contact Person Name (if different)	Phone Number	Email Address
Alex Smith	(715) 398-4795	alex.smith@enbridge.com

Mailing Address	City	State	ZIP Code
1320 Grand Ave., Superior, WI 54880	Superior	WI	54880

Property owner if Different From RP: Business or owner name that is responsible for cleanup. If more than one, list all. Attach additional pages as necessary.

Contact Person Name (if different)	Phone Number	Email Address

Mailing Address	City	State	ZIP Code

(continued)

State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Notification For Hazardous Substance Discharge (Non-Emergency Only)

4. Hazardous Substance Information

Identify hazardous substance discharged (check all that apply):

- [x] VOC's
- [ ] PAH's
- [ ] Metals (specify): _____
  - [ ] Arsenic
  - [ ] Chromium
  - [ ] Cyanide
  - [ ] Lead
  - [ ] PCB's
- [ ] Diesel
- [ ] Fuel Oil
- [ ] Gasoline
- [ ] Hydraulic Oil
- [ ] Jet Fuel
- [ ] Mineral Oil
- [ ] Waste Oil
- [ ] Petroleum-Unknown Type
- [ ] PERC (Dry Cleaners)
- [ ] RCRA Hazardous Waste
- [ ] Leachate
- [ ] Fertilizer
- [ ] Pesticide/Herbicide/Insecticide(s)
- [x] Other (specify): Crude oil
- [ ] Unknown

5. Impacts to the Environment Information

Enter "K" for known/confirmed or "P" for potential for all that apply.

- ___ Air Contamination
- ___ Co-Contamination (Petroleum & Non-Petroleum)
- ___ Contamination Within 1 Meter of Bedrock
- ___ Contaminated Private Well
- ___ Contaminated Public Well
- ___ Contamination in Fractured Bedrock
- ___ Sanitary Sewer Contamination
- ___ Contamination in Right of Way
- ___ Fire Explosion Threat
- ___ Free Product
- P Groundwater Contamination
- ___ Off-Site Contamination
- ___ Other (specify): _____
- K Soil Contamination
- ___ Storm Sewer Contamination
- ___ Surface Water Contamination
- ___ Within 100 ft of Private Well
- ___ Within 1000 ft of Public Well

Contamination was discovered as a result of:

- [ ] Tank closure assessment — Date _____
- [ ] Site assessment — Date _____
- [x] Other - Describe: Valve platform construction excavation — Date 09/11/2013

Lab results: [ ] Lab results will be faxed upon receipt [x] Lab results are attached

Additional Comments: Include a brief description of immediate actions taken to halt the release and contain or cleanup hazardous substances that have been discharged.

Impacts were from historical releases

6. Federal Energy Act Requirements (Section 9002(d) of the Solid Waste Disposal Act (SWDA))

For all confirmed releases from UST's occurring after 9/30/2007 please provide the following information:

- [x] Does not apply.

Source

- [ ] Tank
- [ ] Piping
- [ ] Dispenser
- [ ] Submersible Turbine Pump
- [ ] Delivery Problem
- [ ] Other (specify): _____

Cause

- [ ] Spill
- [ ] Overfill
- [ ] Corrosion
- [ ] Physical or Mechanical Damage
- [ ] Installation Problem
- [ ] Other (does not fit any of above)
- [ ] Unknown

Contact information to report non-emergency releases in DNR's five regions are as follows:

Northeast Region (FAX: 920-662-5197); Attention -- R&R Program Associate: DNRRRNER@wisconsin.gov

Brown, Calumet, Door, Fond du Lac **(except City of Waupun - see South Central Region)**, Green Lake, Kewaunee, Manitowoc, Marinette, Marquette, Menominee, Oconto, Outagamie, Shawano, Sheboygan, Waupaca, Waushara, Winnebago counties

Northern Region (FAX: 715-623-6773); Attention -- R&R Program Associate: DNRRRNOR@wisconsin.gov

Ashland, Barron, Bayfield, Burnett, Douglas, Forest, Florence, Iron, Langlade, Lincoln, Oneida, Polk, Price, Rusk, Sawyer, Taylor, Vilas, Washburn counties

South Central Region (FAX: 608-273-5610); Attention -- R&R Program Associate: DNRRRSCR@wisconsin.gov

Columbia, Dane, Dodge, Fond du Lac **(City of Waupun only)**, Grant, Green, Iowa, Jefferson, Lafayette, Richland, Rock, Sauk, Walworth counties

Southeast Region (FAX: 414-263-8550); Attention -- R&R Program Associate: DNRRRSER@wisconsin.gov

Kenosha, Milwaukee, Ozaukee, Racine, Washington, Waukesha counties

West Central Region (FAX: 715-839-6076); Attention -- R&R Program Associate: DNRRRWCR@wisconsin.gov

Adams, Buffalo, Chippewa, Clark, Crawford, Dunn, Eau Claire, Jackson, Juneau, LaCrosse, Marathon, Monroe, Pepin, Pierce, Portage, St. Croix, Trempealeau, Vernon, Wood counties

Attachment B

Enbridge Site Investigation Field Sampling and Screening Logs

9/11/2013, 9/19/2013, 9/20/2013 – Western Platform
9/24/2013 – Southern Platform

ENBRIDGE SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: *Milepost or Facility:* ~~STEP Slurry Stockpile~~ Tank 5 Excavation, Valve 503 - Western

Date: 9/11/13

Sampler: LEN

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

Background Headspace: 0.0 ppm

Calibration Time: 10:30

Sample Nomenclature *(Location - sample type - #):* STEP Slurry Stockpile -

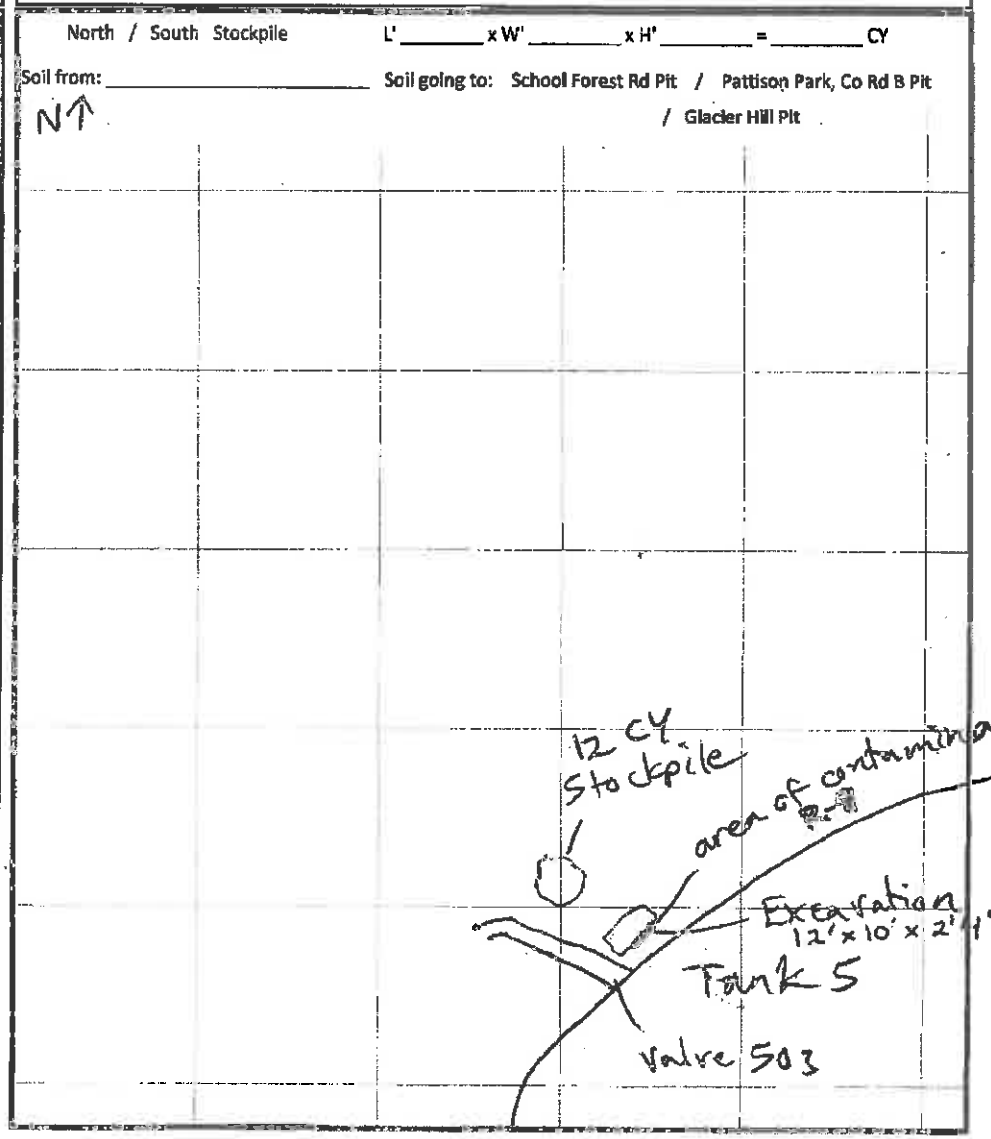
Soil Sample Types: **R** = *Removed Sample* ; **S** = *Sidewall Sample* ; **B** = *Bottom Sample* ; **Stockpile** = *Stockpile Sample*

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 Stockpile	-	13:55	gravelly clay	brown	slight odor	0.0
R-2	-			some discoloration	organic sheen	0.2
R-3	-				organic?	0.0
R-4	-					0.0
R-5	-					0.0
R-6	-					0.0
R-7	-					0.0
R-8	-					0.0
R-9	-	14:30		gray	petro odor	0.0
R-10	-					
R-11	-					
R-12	-					
R-13	-					
R-14	-					
R-15	-					
R-16	-					
R-17	-					
R-18	-					
R-19	-					
R-20	-					

SITE SKETCH: *north is up; excavation extents and depths, sample locations, structures, utilities, boring locations, wells, natural features...* ***1 inch/grid = 5 FEET***

North / South Stockpile L' _____ x W' _____ x H' _____ = _____ CY

Soil from: _____ Soil going to: School Forest Rd Pit / Pattison Park, Co Rd B Pit / Glacier Hill Pit



ENBRIDGE SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: *Milepost or Facility* Superior Terminal, Tank 5 Platforms - Western

Equipment used: Photo -*Ionization detector with* 10.6 *eV lamp* min: RAE 2000 Background Headspace: 0.0 ppm

Date: 9/19/13

Sampler: CJG2

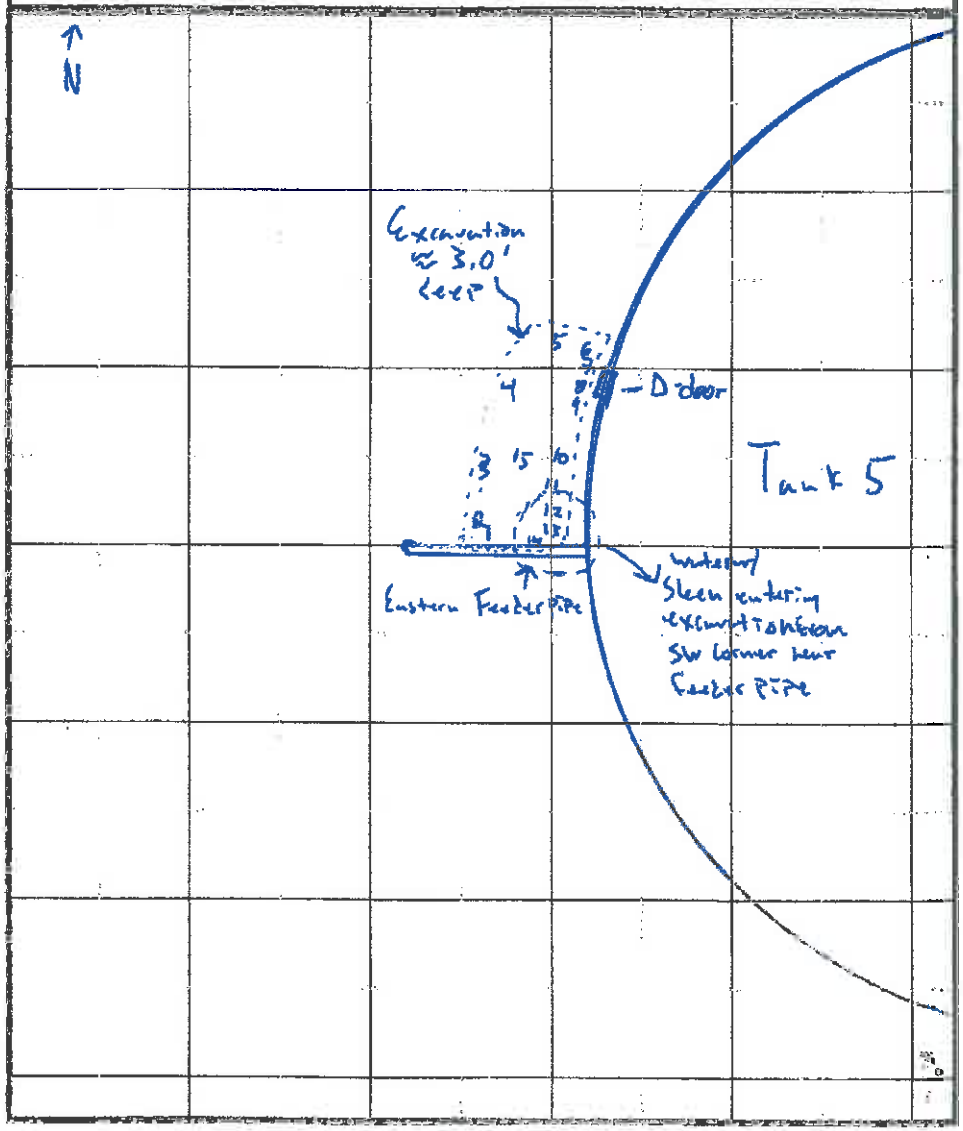
Calibration Time: 11:30

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	10:30	CL	Reddish brown	Petroleum/ Rainbow	275
1	1.0	1215	SP/CL	Red brown	none/none	0.7
2	1.5		SP/CL	Red brown	none/none	0.0
3	2.0		CL	Red brown	none/none	0.7
4	0.5		GP	Grey/black	none/none	0.6
5	1.0		GP/SP	Grey	none/none	0.4
6	1.0		GP/SP	Grey	none/none	0.0
7	1.5		GP/CL	Grey/Red	none/none	0.0
8	0.5		SP/GP	Red/Grey	none/none	0.1
9	1.5		CL/GP	Red brown	none/none	0.0
10	1.5		CL	Red brown	none/none	0.0
11	1.0		CL	Red brown	None/none	0.4
12	2.0		GP	Grey/black	None/None	2.0
13	1.5		GP	Grey/black	None/None	3.7
14	1.5		GP	black	Discolored?	4.5
15	3.0		CL	Red brown	None/None	0.1

SITE SKETCH: north is up; excavation extents and depths, sample locations, structures, utilities, boring locations, wells, natural features... *1 inch/grid ≈* 5 FEET



ENBRIDGE SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: *Milepost or Facility* Tank 5 platforms, S. Preston Terminal Western Platform

Equipment used: Photo -ionization detector with 10.6 eV lamp (RAE 3000) Background Headspace: 0.0 ppm

Sample Nomenclature *(Location - sample type - #)*: TK5-

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

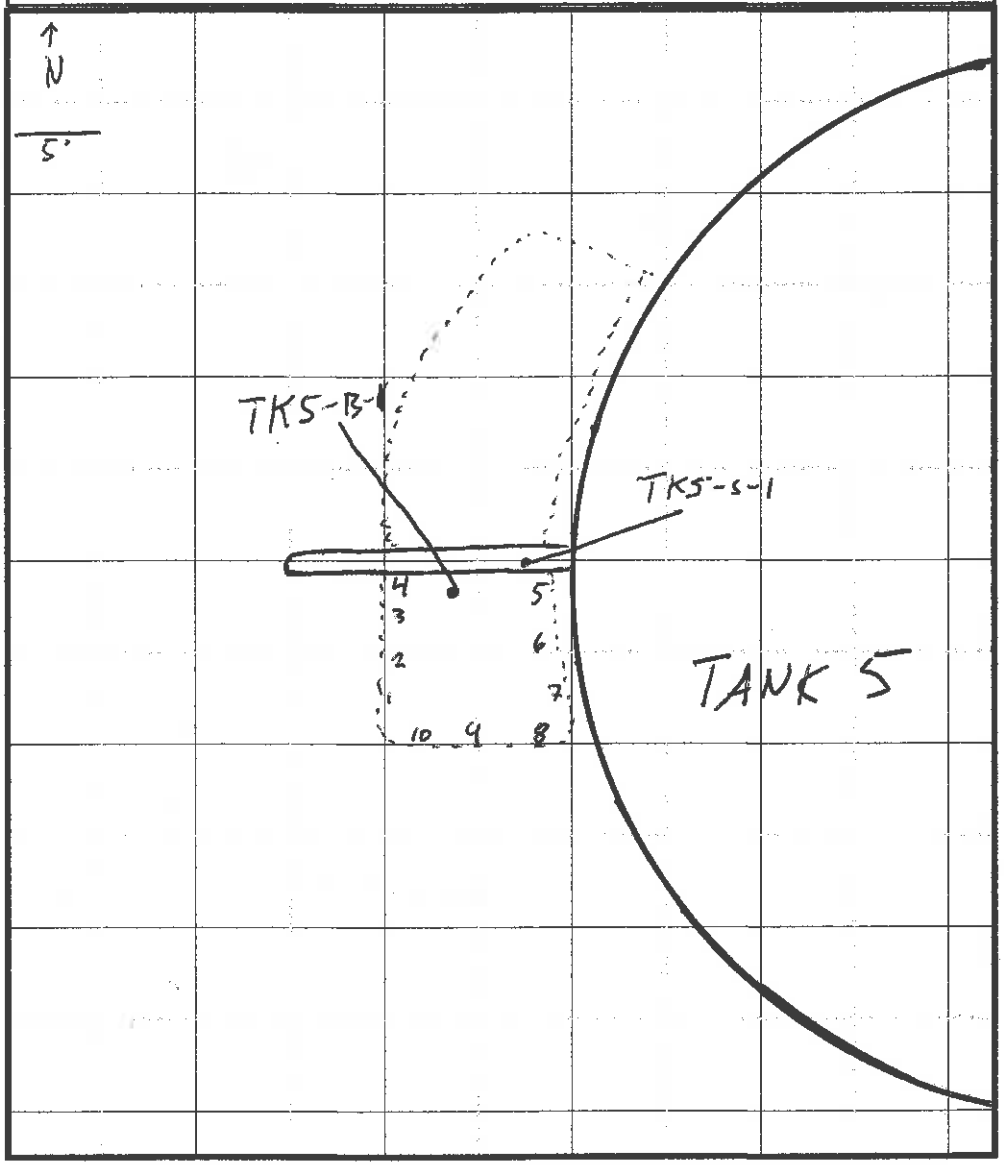
Date: 9/20/13

Sampler: CJG Z

Calibration Time: 820

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	0.5	1100	CL/GP	Red brown	—/—	0.0
2	1.5		CL/SP			0.0
3	2.0		CL/SP			0.0
4	1.5		SP/CL			0.0
5	1.5		GP/SP	dk.	Slight/Filmy	43.9
6	2.5		SP/CL			0.8
7	0.5		GP/SP			0.4
8	1.5		GP/SP			0.3
9	2.0		CL/SP			0.2
10	0.5	↓	SP/CL			0.1
TK5-S-1	2.5	1135	CL	Red brown	slight/Filmy	379+
TK5-B-1	3.0	1210	CL	Red brown	—/—	0.1

SITE SKETCH: *north is up; excavation extents and depths, sample locations, structures, utilities, boring locations, wells, natural features...* ***1 inch/grid =*** 10 ***FEET***



ENBRIDGE SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Location: *Milepost or Facility:* ~~STEP Slurry SMA~~ Tank 5 Platforms - Southern Platform

Date: 9/24/15

Sampler: LEN

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

Background Headspace: 0 ppm

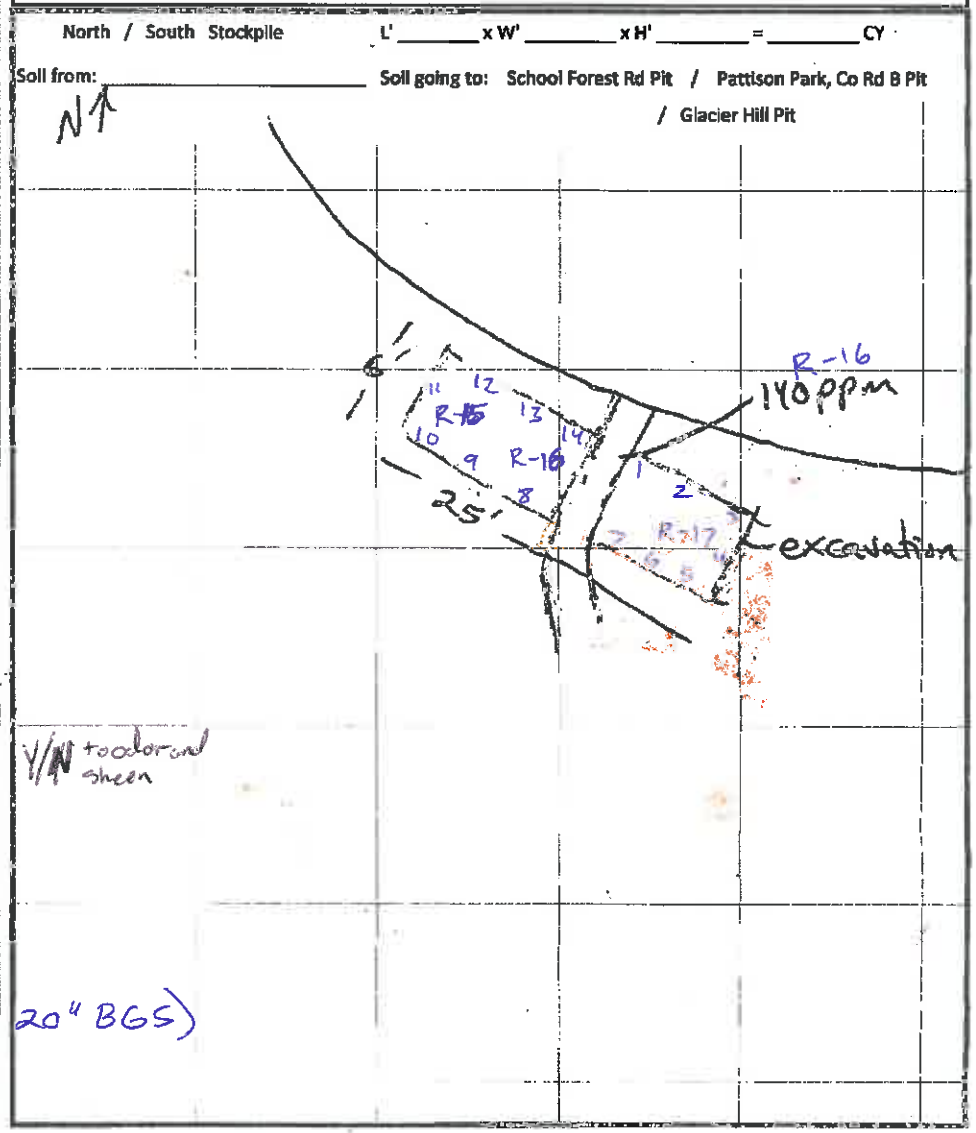
Calibration Time: 12:30 p.m.

Sample Nomenclature *(Location - sample type - #):* STEP Slurry Stockpile -

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	15"	12:30	gravelly clay	brown	n/n	0.1
R-2	-					0.5
R-3	-					0.5
R-4	-					0.2
R-5	-					0.3
R-6	-					0.5
R-7	-					0.6
R-8	-					0.5
R-9	-					0.4
R-10	-					1.0
R-11	-					5.4
R-12	-					2.2
R-13	-					1.6
R-14	bottom 12'					1.7
R-15	2'					0.8
R-16	2'			discolored	right under pipes near tank	140
R-17	2'			brown	n/n	9.1
R-18	-					
R-19	-					
R-20	-					
TK5-S-2		taken at	R-16 (sample depth ~			20" BGS)

SITE SKETCH: north is up; excavation extents and depths, sample locations, structures, utilities, boring locations, wells, natural features... ***1 inch/grid =*** 10 **FEET**



Attachment C

Pace Analytical and Legend Technical Services Laboratory Reports for Excavation Soil Samples

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

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

October 02, 2013

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

Work Order Number: 1304759
RE: 49161092

Enclosed are the results of analyses for samples received by the laboratory on 09/25/13. 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

Samantha Jaworski
Manager, Organics
sjaworski@legend-group.com

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

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

Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 300 025	Work Order #: 1304759
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 10/02/13

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TK5-S-2	1304759-01	Soil	09/24/13 13:30	09/25/13 09:50

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: No

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.

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Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 300 025	Work Order #: 1304759
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 10/02/13

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

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TK5-S-2 (1304759-01) Soil Sampled: 09/24/13 13:30 Received: 09/25/13 9:50										
1,2,4-Trimethylbenzene	**0.035**	0.027	0.0037	mg/kg dry	1	B3I2605	09/26/13	09/26/13	WI(95) GRO	
1,3,5-Trimethylbenzene	**0.027**	0.027	0.0041	mg/kg dry	1	"	"	"	"	
Benzene	<0.0033	0.027	0.0033	mg/kg dry	1	"	"	"	"	
Ethylbenzene	**0.051**	0.027	0.0023	mg/kg dry	1	"	"	"	"	B-01
Toluene	**0.020**	0.027	0.0029	mg/kg dry	1	"	"	"	"	J
Xylenes (total)	**0.89**	0.080	0.0085	mg/kg dry	1	"	"	"	"	
Surrogate: 4-Fluorochlorobenzene	*98.0*			*80-150 %*		"	"	"	"	

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Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 300 025	Work Order #: 1304759
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 10/02/13

PERCENT SOLIDS
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TK5-S-2 (1304759-01) Soil Sampled: 09/24/13 13:30 Received: 09/25/13 9:50										
% Solids	**88**			%	1	B3J0111	10/01/13	10/01/13	% calculation	

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St Paul, MN 55103
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Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 300 025	Work Order #: 1304759
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 10/02/13

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 B3I2605 - EPA 5035 Soil (Purge and Trap)											
Blank (B3I2605-BLK1)					Prepared & Analyzed: 09/26/13						
1,2,4-Trimethylbenzene	< 0.025	0.025	0.0035	mg/kg wet							
1,3,5-Trimethylbenzene	< 0.025	0.025	0.0039	mg/kg wet							
Benzene	< 0.0031	0.025	0.0031	mg/kg wet							
Ethylbenzene	0.0131	0.025	0.0022	mg/kg wet							B-02, J
Toluene	< 0.0027	0.025	0.0027	mg/kg wet							
Xylenes (total)	< 0.0080	0.075	0.0080	mg/kg wet							
Surrogate: 4-Fluorochlorobenzene	*23.9*			*ug/L*	*25.0*		*95.8*	*80-150*			
LCS (B3I2605-BS1)					Prepared & Analyzed: 09/26/13						
1,2,4-Trimethylbenzene	114			ug/L	100		114	80-120			
1,3,5-Trimethylbenzene	102			ug/L	100		102	80-120			
Benzene	103			ug/L	100		103	80-120			
Ethylbenzene	105			ug/L	100		105	80-120			
Toluene	105			ug/L	100		105	80-120			
Xylenes (total)	311			ug/L	300		104	80-120			
Surrogate: 4-Fluorochlorobenzene	*24.7*			*ug/L*	*25.0*		*98.6*	*80-150*			
LCS (B3I2605-BS2)					Prepared & Analyzed: 09/26/13						
1,2,4-Trimethylbenzene	105			ug/L	100		105	80-120			
1,3,5-Trimethylbenzene	95.7			ug/L	100		95.7	80-120			
Benzene	103			ug/L	100		103	80-120			
Ethylbenzene	102			ug/L	100		102	80-120			
Toluene	104			ug/L	100		104	80-120			
Xylenes (total)	303			ug/L	300		101	80-120			
Surrogate: 4-Fluorochlorobenzene	*25.1*			*ug/L*	*25.0*		*100*	*80-150*			
LCS Dup (B3I2605-BSD1)					Prepared & Analyzed: 09/26/13						
1,2,4-Trimethylbenzene	112			ug/L	100		112	80-120	1.73	20	
1,3,5-Trimethylbenzene	101			ug/L	100		101	80-120	0.713	20	
Benzene	102			ug/L	100		102	80-120	0.964	20	
Ethylbenzene	105			ug/L	100		105	80-120	0.300	20	
Toluene	104			ug/L	100		104	80-120	1.25	20	
Xylenes (total)	310			ug/L	300		103	80-120	0.333	20	
Surrogate: 4-Fluorochlorobenzene	*25.2*			*ug/L*	*25.0*		*101*	*80-150*			
Matrix Spike (B3I2605-MS1)		**Source: 1304752-01**			Prepared & Analyzed: 09/26/13						
1,2,4-Trimethylbenzene	114			ug/L	100	<	114	80-120			
1,3,5-Trimethylbenzene	103			ug/L	100	<	103	80-120			
Benzene	106			ug/L	100	0.130	106	80-120			
Ethylbenzene	107			ug/L	100	0.264	107	80-120			
Toluene	109			ug/L	100	<	109	80-120			
Xylenes (total)	317			ug/L	300	<	106	80-120			

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Fax: 651-642-1239

Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 300 025	Work Order #: 1304759
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 10/02/13

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 B3I2605 - EPA 5035 Soil (Purge and Trap)											
Matrix Spike (B3I2605-MS1)				**Source: 1304752-01**		Prepared & Analyzed: 09/26/13					
Surrogate: 4-Fluorochlorobenzene	*25.4*			*ug/L*	*25.0*		*102*	*80-150*			

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Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 300 025	Work Order #: 1304759
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 10/02/13

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 B3J0111 - General Preparation											
Duplicate (B3J0111-DUP1)		**Source: 1304851-01**			Prepared & Analyzed: 10/01/13						
% Solids	79.0			%		79.0			0.00	20	

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Barr Engineering Co.	Project:	49161092		
4700 W 77th St	Project Number:	49161092.02 300 025	Work Order #:	1304759
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported:	10/02/13

Notes and Definitions

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

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Tel: 651-642-1150
Fax: 651-642-1239

Chain of Custody

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

1304759

Project Number: 49161092.02 300 025

Project Name: Tank 5 Platforms

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

COC Number: № 40491

Number of Containers/Preservative

COC 1 of 1

Project Manager: REE/LEN

Project QC Contact: AAN

Sampled by: LEN

Laboratory: Legend

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	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: SVOC	Total Number Of Containers
1. TK5-S-2				09/24/2013	13:30		X	X															1	
2.																								
3.																								
4.																								
5.																								
6.																								
7.																								
8.																								
9.																								
10.																								

Regular TAT.

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
Lauren Hastie	(Y) N	9/24/13	3:30			
Relinquished By:	On Ice?	Date	Time	Received by:	Date	Time
	(Y)				9/25/13	9:50

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

Air Bill Number: see no temp.

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

H:\RLG\STDFORMS\Chain Of Custody Form 2009 RLG Rev. 09Oct09

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

October 03, 2013

Andrea Nord
Barr Engineering
4700 West 77th Street
Minneapolis, MN 55435

RE: Project: 49161092 Tank 5 Enbridge
Pace Project No.: 10242984

Dear Andrea Nord:
Enclosed are the analytical results for sample(s) received by the laboratory on September 21, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Michelle Kruse for
Andrea Opland
andrea.opland@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 49161092 Tank 5 Enbridge
Pace Project No.: 10242984

Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
Colorado Certification #Pace
Connecticut Certification #: PH-0256
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Hawaii Certification #Pace
Idaho Certification #: MN00064
Illinois Certification #: 200011
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT CERT0092
Nebraska Certification #: Pace
Nevada Certification #: MN_00064
New Jersey Certification #: MN-002
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Oregon Certification #: MN300001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia/DCLS Certification #: 002521
Virginia/VELAP Certification #: 460163
Washington Certification #: C754
West Virginia Certification #: 382
Wisconsin Certification #: 999407970

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

SAMPLE SUMMARY

Project: 49161092 Tank 5 Enbridge
Pace Project No.: 10242984

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10242984001	**TK5-S-1**	Solid	09/20/13 11:35	09/21/13 09:24
10242984002	**TK5-B-1**	Solid	09/20/13 12:10	09/21/13 09:24

Pace Analytical Services, Inc.
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(612)607-1700

SAMPLE ANALYTE COUNT

Project: 49161092 Tank 5 Enbridge
Pace Project No.: 10242984

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10242984001	**TK5-S-1**	ASTM D2974	JDL	1	PASI-M
		EPA 8270 by SIM	AJP	18	PASI-M
		EPA 8260	CNC	9	PASI-M
10242984002	**TK5-B-1**	ASTM D2974	JDL	1	PASI-M
		EPA 8260	CNC	9	PASI-M

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: 49161092 Tank 5 Enbridge
Pace Project No.: 10242984

Method: **EPA 8270 by SIM**
Description: 8270 MSSV PAH by SIM
Client: Barr Engineering
Date: October 03, 2013

General Information:
1 sample was analyzed for EPA 8270 by SIM. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3550 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: 49161092 Tank 5 Enbridge
Pace Project No.: 10242984

Method: **EPA 8260**
Description: 8260 MSV UST
Client: Barr Engineering
Date: October 03, 2013

General Information:
2 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 5035/5030B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MSV/25135

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10243845001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1540209)
  - 1,2,4-Trimethylbenzene
  - 1,3,5-Trimethylbenzene
  - Benzene
  - Ethylbenzene
  - Toluene

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

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PROJECT NARRATIVE

Project: 49161092 Tank 5 Enbridge
Pace Project No.: 10242984

Method: **EPA 8260**
Description: 8260 MSV UST
Client: Barr Engineering
Date: October 03, 2013

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: 49161092 Tank 5 Enbridge
Pace Project No.: 10242984

Sample: TK5-S-1 **Lab ID: 10242984001** Collected: 09/20/13 11:35 Received: 09/21/13 09:24 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight	Analytical Method: ASTM D2974								
Percent Moisture	**24.9**	%	0.10	0.10	1		09/25/13 00:00		
8270 MSSV PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3550								
Acenaphthene	**53.4**	ug/kg	13.2	1.3	1	09/25/13 07:53	09/30/13 20:26	83-32-9	
Acenaphthylene	**<13.2**	ug/kg	13.2	1.8	1	09/25/13 07:53	09/30/13 20:26	208-96-8	
Anthracene	**53.9**	ug/kg	13.2	6.6	1	09/25/13 07:53	09/30/13 20:26	120-12-7	
Benzo(a)anthracene	**67.5**	ug/kg	13.2	6.6	1	09/25/13 07:53	09/30/13 20:26	56-55-3	
Benzo(a)pyrene	**28.2**	ug/kg	13.2	6.6	1	09/25/13 07:53	09/30/13 20:26	50-32-8	
Benzo(b)fluoranthene	**44.2**	ug/kg	13.2	0.78	1	09/25/13 07:53	09/30/13 20:26	205-99-2	
Benzo(g,h,i)perylene	**<13.2**	ug/kg	13.2	6.6	1	09/25/13 07:53	09/30/13 20:26	191-24-2	
Benzo(k)fluoranthene	**16.9**	ug/kg	13.2	6.6	1	09/25/13 07:53	09/30/13 20:26	207-08-9	
Chrysene	**51.9**	ug/kg	13.2	6.6	1	09/25/13 07:53	09/30/13 20:26	218-01-9	
Dibenz(a,h)anthracene	**<13.2**	ug/kg	13.2	6.6	1	09/25/13 07:53	09/30/13 20:26	53-70-3	
Fluoranthene	**247**	ug/kg	13.2	6.6	1	09/25/13 07:53	09/30/13 20:26	206-44-0	
Fluorene	**108**	ug/kg	13.2	1.6	1	09/25/13 07:53	09/30/13 20:26	86-73-7	
Indeno(1,2,3-cd)pyrene	**<13.2**	ug/kg	13.2	6.6	1	09/25/13 07:53	09/30/13 20:26	193-39-5	
Naphthalene	**242**	ug/kg	13.2	2.0	1	09/25/13 07:53	09/30/13 20:26	91-20-3	
Phenanthrene	**314**	ug/kg	13.2	6.6	1	09/25/13 07:53	09/30/13 20:26	85-01-8	
Pyrene	**188**	ug/kg	13.2	6.6	1	09/25/13 07:53	09/30/13 20:26	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	75	%	51-125		1	09/25/13 07:53	09/30/13 20:26	321-60-8	
Terphenyl-d14 (S)	97	%	57-125		1	09/25/13 07:53	09/30/13 20:26	1718-51-0	
8260 MSV UST	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Benzene	**<26.1**	ug/kg	26.1	13.0	1	10/01/13 10:58	10/01/13 23:34	71-43-2	
Ethylbenzene	**1160**	ug/kg	65.2	26.1	1	10/01/13 10:58	10/01/13 23:34	100-41-4	
Toluene	**<65.2**	ug/kg	65.2	26.1	1	10/01/13 10:58	10/01/13 23:34	108-88-3	
1,2,4-Trimethylbenzene	**17500**	ug/kg	326	163	5	10/01/13 10:58	10/02/13 15:11	95-63-6	
1,3,5-Trimethylbenzene	**10500**	ug/kg	65.2	32.6	1	10/01/13 10:58	10/01/13 23:34	108-67-8	
Xylene (Total)	**17900**	ug/kg	196	78.2	1	10/01/13 10:58	10/01/13 23:34	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%	57-150		1	10/01/13 10:58	10/01/13 23:34	17060-07-0	
Toluene-d8 (S)	102	%	70-136		1	10/01/13 10:58	10/01/13 23:34	2037-26-5	
4-Bromofluorobenzene (S)	110	%	67-138		1	10/01/13 10:58	10/01/13 23:34	460-00-4	

Sample: TK5-B-1 **Lab ID: 10242984002** Collected: 09/20/13 12:10 Received: 09/21/13 09:24 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
Dry Weight	Analytical Method: ASTM D2974								
Percent Moisture	**21.7**	%	0.10	0.10	1		09/25/13 00:00		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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(612)607-1700

ANALYTICAL RESULTS

Project: 49161092 Tank 5 Enbridge
Pace Project No.: 10242984

Sample: TK5-B-1 **Lab ID: 10242984002** Collected: 09/20/13 12:10 Received: 09/21/13 09:24 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B								
Benzene	**<25.7**	ug/kg	25.7	12.8	1	10/01/13 10:58	10/01/13 23:17	71-43-2	
Ethylbenzene	**<64.2**	ug/kg	64.2	25.7	1	10/01/13 10:58	10/01/13 23:17	100-41-4	
Toluene	**<64.2**	ug/kg	64.2	25.7	1	10/01/13 10:58	10/01/13 23:17	108-88-3	
1,2,4-Trimethylbenzene	**<64.2**	ug/kg	64.2	32.1	1	10/01/13 10:58	10/01/13 23:17	95-63-6	
1,3,5-Trimethylbenzene	**<64.2**	ug/kg	64.2	32.1	1	10/01/13 10:58	10/01/13 23:17	108-67-8	
Xylene (Total)	**<193**	ug/kg	193	77.1	1	10/01/13 10:58	10/01/13 23:17	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	106	%	57-150		1	10/01/13 10:58	10/01/13 23:17	17060-07-0	
Toluene-d8 (S)	104	%	70-136		1	10/01/13 10:58	10/01/13 23:17	2037-26-5	
4-Bromofluorobenzene (S)	100	%	67-138		1	10/01/13 10:58	10/01/13 23:17	460-00-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161092 Tank 5 Enbridge
Pace Project No.: 10242984

QC Batch: MPRP/42127
QC Batch Method: ASTM D2974
Analysis Method: ASTM D2974
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 10242984001, 10242984002

SAMPLE DUPLICATE: 1534607

Parameter	Units	10242986004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	22.6	22.7	.3	30	

SAMPLE DUPLICATE: 1534699

Parameter	Units	10243166001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	2.4	2.2	7	30	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161092 Tank 5 Enbridge
Pace Project No.: 10242984

QC Batch: MSV/25135 Analysis Method: EPA 8260
QC Batch Method: EPA 5035/5030B Analysis Description: 8260 MSV UST
Associated Lab Samples: 10242984001, 10242984002

METHOD BLANK: 1540207 Matrix: Solid
Associated Lab Samples: 10242984001, 10242984002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	<50.0	50.0	10/01/13 17:36	
1,3,5-Trimethylbenzene	ug/kg	<50.0	50.0	10/01/13 17:36	
Benzene	ug/kg	<20.0	20.0	10/01/13 17:36	
Ethylbenzene	ug/kg	<50.0	50.0	10/01/13 17:36	
Toluene	ug/kg	<50.0	50.0	10/01/13 17:36	
Xylene (Total)	ug/kg	<150	150	10/01/13 17:36	
1,2-Dichloroethane-d4 (S)	%	105	57-150	10/01/13 17:36	
4-Bromofluorobenzene (S)	%	101	67-138	10/01/13 17:36	
Toluene-d8 (S)	%	104	70-136	10/01/13 17:36	

LABORATORY CONTROL SAMPLE: 1540208

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	1000	884	88	74-125	
1,3,5-Trimethylbenzene	ug/kg	1000	878	88	73-125	
Benzene	ug/kg	1000	837	84	72-125	
Ethylbenzene	ug/kg	1000	857	86	75-125	
Toluene	ug/kg	1000	852	85	75-125	
Xylene (Total)	ug/kg	3000	2620	87	75-125	
1,2-Dichloroethane-d4 (S)	%			98	57-150	
4-Bromofluorobenzene (S)	%			101	67-138	
Toluene-d8 (S)	%			102	70-136	

MATRIX SPIKE SAMPLE: 1540209

Parameter	Units	10243845001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	1190	651	54	74-135	M1
1,3,5-Trimethylbenzene	ug/kg	ND	1190	636	53	71-137	M1
Benzene	ug/kg	ND	1190	629	53	71-137	M1
Ethylbenzene	ug/kg	ND	1190	642	53	75-134	M1
Toluene	ug/kg	ND	1190	635	53	74-133	M1
Xylene (Total)	ug/kg	ND	3580	1950	55	75-135	MS
1,2-Dichloroethane-d4 (S)	%				105	57-150	
4-Bromofluorobenzene (S)	%				101	67-138	
Toluene-d8 (S)	%				102	70-136	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161092 Tank 5 Enbridge
Pace Project No.: 10242984

SAMPLE DUPLICATE: 1540210

Parameter	Units	10243845002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/kg	ND	<55.2		30	
1,3,5-Trimethylbenzene	ug/kg	ND	<55.2		30	
Benzene	ug/kg	ND	<22.1		30	
Ethylbenzene	ug/kg	ND	<55.2		30	
Toluene	ug/kg	ND	<55.2		30	
Xylene (Total)	ug/kg	ND	<166		30	
1,2-Dichloroethane-d4 (S)	%	107	107	6		
4-Bromofluorobenzene (S)	%	101	98	8		
Toluene-d8 (S)	%	103	104	5		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161092 Tank 5 Enbridge
Pace Project No.: 10242984

QC Batch: OEXT/23116
QC Batch Method: EPA 3550
Analysis Method: EPA 8270 by SIM
Analysis Description: 8270 Solid PAH by SIM MSSV
Associated Lab Samples: 10242984001

METHOD BLANK: 1533882 Matrix: Solid
Associated Lab Samples: 10242984001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Acenaphthene	ug/kg	<10.0	10.0	09/30/13 15:30	
Acenaphthylene	ug/kg	<10.0	10.0	09/30/13 15:30	
Anthracene	ug/kg	<10.0	10.0	09/30/13 15:30	
Benzo(a)anthracene	ug/kg	<10.0	10.0	09/30/13 15:30	
Benzo(a)pyrene	ug/kg	<10.0	10.0	09/30/13 15:30	
Benzo(b)fluoranthene	ug/kg	<10.0	10.0	09/30/13 15:30	
Benzo(g,h,i)perylene	ug/kg	<10.0	10.0	09/30/13 15:30	
Benzo(k)fluoranthene	ug/kg	<10.0	10.0	09/30/13 15:30	
Chrysene	ug/kg	<10.0	10.0	09/30/13 15:30	
Dibenz(a,h)anthracene	ug/kg	<10.0	10.0	09/30/13 15:30	
Fluoranthene	ug/kg	<10.0	10.0	09/30/13 15:30	
Fluorene	ug/kg	<10.0	10.0	09/30/13 15:30	
Indeno(1,2,3-cd)pyrene	ug/kg	<10.0	10.0	09/30/13 15:30	
Naphthalene	ug/kg	<10.0	10.0	09/30/13 15:30	
Phenanthrene	ug/kg	<10.0	10.0	09/30/13 15:30	
Pyrene	ug/kg	<10.0	10.0	09/30/13 15:30	
2-Fluorobiphenyl (S)	%	75	51-125	09/30/13 15:30	
Terphenyl-d14 (S)	%	93	57-125	09/30/13 15:30	

LABORATORY CONTROL SAMPLE: 1533883

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Acenaphthene	ug/kg	33.3	28.1	84	45-125	
Acenaphthylene	ug/kg	33.3	29.6	89	45-125	
Anthracene	ug/kg	33.3	29.6	89	53-125	
Benzo(a)anthracene	ug/kg	33.3	30.1	90	56-125	
Benzo(a)pyrene	ug/kg	33.3	32.8	98	55-125	
Benzo(b)fluoranthene	ug/kg	33.3	35.8	107	59-125	
Benzo(g,h,i)perylene	ug/kg	33.3	33.4	100	54-125	
Benzo(k)fluoranthene	ug/kg	33.3	28.8	86	52-125	
Chrysene	ug/kg	33.3	31.0	93	54-125	
Dibenz(a,h)anthracene	ug/kg	33.3	33.5	100	53-125	
Fluoranthene	ug/kg	33.3	31.8	95	60-125	
Fluorene	ug/kg	33.3	30.0	90	52-125	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	33.0	99	55-125	
Naphthalene	ug/kg	33.3	28.0	84	40-125	
Phenanthrene	ug/kg	33.3	30.2	91	50-125	
Pyrene	ug/kg	33.3	33.5	100	59-125	
2-Fluorobiphenyl (S)	%			81	51-125	
Terphenyl-d14 (S)	%			97	57-125	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161092 Tank 5 Enbridge
Pace Project No.: 10242984

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1533884 1533885

Parameter	Units	10242645001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Acenaphthene	ug/kg	ND	38.7	38.8	30.6	32.0	79	83	30-129	5	30	
Acenaphthylene	ug/kg	ND	38.7	38.8	32.2	33.9	83	87	30-150	5	30	
Anthracene	ug/kg	ND	38.7	38.8	31.2	34.1	81	88	30-150	9	30	
Benzo(a)anthracene	ug/kg	ND	38.7	38.8	32.1	34.9	83	90	30-150	8	30	
Benzo(a)pyrene	ug/kg	ND	38.7	38.8	35.9	38.8	93	100	30-150	8	30	
Benzo(b)fluoranthene	ug/kg	ND	38.7	38.8	33.9	41.2	88	106	30-150	19	30	
Benzo(g,h,i)perylene	ug/kg	ND	38.7	38.8	37.3	39.7	96	102	30-150	6	30	
Benzo(k)fluoranthene	ug/kg	ND	38.7	38.8	31.5	35.0	82	90	30-150	10	30	
Chrysene	ug/kg	ND	38.7	38.8	33.2	35.9	86	93	30-150	8	30	
Dibenz(a,h)anthracene	ug/kg	ND	38.7	38.8	37.0	39.6	96	102	30-150	7	30	
Fluoranthene	ug/kg	ND	38.7	38.8	33.8	36.9	87	95	30-150	9	30	
Fluorene	ug/kg	ND	38.7	38.8	32.2	34.5	83	89	36-125	7	30	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	38.7	38.8	36.3	38.7	94	100	30-150	7	30	
Naphthalene	ug/kg	ND	38.7	38.8	30.9	32.4	80	83	30-150	5	30	
Phenanthrene	ug/kg	ND	38.7	38.8	32.3	35.8	84	92	30-150	10	30	
Pyrene	ug/kg	ND	38.7	38.8	36.1	39.0	93	101	30-150	8	30	
2-Fluorobiphenyl (S)	%						77	81	51-125			
Terphenyl-d14 (S)	%						90	99	57-125			

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 49161092 Tank 5 Enbridge
Pace Project No.: 10242984

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-M	Pace Analytical Services - Minneapolis

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
MS	Analyte recovery in the matrix spike was outside QC limits for one or more of the constituent analytes used in the calculated result.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 49161092 Tank 5 Enbridge
Pace Project No.: 10242984

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10242984001	**TK5-S-1**	ASTM D2974	MPRP/42127		
10242984002	**TK5-B-1**	ASTM D2974	MPRP/42127		
10242984001	**TK5-S-1**	EPA 3550	OEXT/23116	EPA 8270 by SIM	MSSV/9815
10242984001	**TK5-S-1**	EPA 5035/5030B	MSV/25135	EPA 8260	MSV/25136
10242984002	**TK5-B-1**	EPA 5035/5030B	MSV/25135	EPA 8260	MSV/25136

10242984

Chain of Custody

1105

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

COC 1 of 1

Project Number: 49161092

Project Name: Tank 5 Platforms, Enbridge Superior Terminal

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

COC Number: Nº 40605

Project Manager: REG

Project QC Contact: AAN

Sampled by: CJG2

Laboratory: PACE

	Location	Start Depth	Stop Depth	Depth Unit (m./ft. or in.)	Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix: Water	Matrix: Soil	Matrix:	Type: Grab	Type: Comp.	Type: QC	Number of Containers/Preservative — Water: VOCs (HCl) #1	SVOCs (unpreserved) #2	Dissolved Metals (HNO_3)	Total Metals (HNO_3)	General (unpreserved) #3	Diesel Range Organics (HCl)	Nutrients (H_2SO_4) #4				Soil: VOCs (tared MeOH) #1	GRO, BTEX (tared MeOH) #1	DRO (tared unpreserved)	PAH (unpreserved)	SVOCs (unpreserved) #2	% Solids (plastic vial, unpres.)	PVOC(-MTBE)	Total Number Of Containers	
1.	TK5-S-1	2.5	2.5	ft	9/20/13	1135		X		X															1		1	1	3	PVOC(-MTBE), % solids, PAH 001
2.	TK5-B-1	3.0	3.0	ft	9/20/13	1210		X		X																	1	1	2	PVOC(-MTBE), % solids 002
3.																														
4.																														
5.																														
6.																														Normal Turn
7.																														Around Time
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

	On Ice?	Date	Time		Date	Time
Relinquished By:	Y N	9/20/13	1400	Received by:	9/20/13	1450
Relinquished By:	Y N	9/20/13	1500	Received by: IH/ PACE	9/21/13	9:24

Samples Shipped VIA: ☐ Air Freight ☐ Federal Express ☐ Sampler ☐ Other: Dropped off @ Pace Duluth

Air Bill Number:

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

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 19Sep2013 Page 1 of 1
	Document No.: **F-MN-L-213-rev.07**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: BARR

Project #: WO# : 10242984

10242984

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other:

Tracking Number: 7967 3685 8264

Custody Seal on Cooler/Box Present? ☑ Yes ☐ No **Seals Intact?** ☑ Yes ☐ No

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other: **Temp Blank?** ☑ Yes ☐ No

Thermom. Used: ☐ 80512447 ☐ 72337080 ☑ B88A912167504 ☐ B88A9132521491 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read (°C): 3.9 **Cooler Temp Corrected (°C):** 3.8 **Biological Tissue Frozen?** ☐ Yes ☐ No

Temp should be above freezing to 6°C **Correction Factor:** -0.1 **Date and Initials of Person Examining Contents:** IH 9-24-13

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and/or Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: Solid	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked? Noncompliances are noted in 13.	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH>12)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	☐ Yes	☑ No		Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

Project Manager Review: Date: 9/24/13

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Attachment D

Waste Disposal 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 5 Platform Excavation	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: Crude contaminated soil - Tank 5 Platform Excavation	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: Tank 5 Platform Excavation		

III. Waste Composition and Constituents (list all known)

	Actual Range %	ppm
Crude oil impacted 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	Printed Name	Title	Date
	Alex Smith	Environmental Analyst	9-24-13

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

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

September 20, 2013

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

Work Order Number: 1304567
RE: 49161092

Enclosed are the results of analyses for samples received by the laboratory on 09/17/13. 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

Samantha Jaworski
Manager, Organics
sjaworski@legend-group.com

LEGEND Technical Services, Inc.
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Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 003 025 TK5	Work Order #: 1304567
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/20/13

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TK5 Platform-Stockpile-1	1304567-01	Soil	09/16/13 10:30	09/17/13 09:30

Shipping Container Information

Default Cooler Temperature (°C): 3.2

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

The DRO chromatogram is attached for the sample.

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Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 003 025 TK5	Work Order #: 1304567
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/20/13

DRO/8015D
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TK5 Platform-Stockpile-1 (1304567-01) Soil Sampled: 09/16/13 10:30 Received: 09/17/13 9:30										
Diesel Range Organics	**400**	8.4	0.97	mg/kg dry	1	B3I1711	09/17/13	09/18/13	WI(95) DRO	L1
Surrogate: Triacontane (C-30)	*78.0*			*70-130 %*		"	"	"	"	

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Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 003 025 TK5	Work Order #: 1304567
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/20/13

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

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TK5 Platform-Stockpile-1 (1304567-01) Soil Sampled: 09/16/13 10:30 Received: 09/17/13 9:30										
Benzene	<0.0057	0.046	0.0057	mg/kg dry	1	B3I1804	09/18/13	09/18/13	WI(95) GRO	
Ethylbenzene	**0.052**	0.046	0.0040	mg/kg dry	1	"	"	"	"	B-01
Toluene	**0.049**	0.046	0.0050	mg/kg dry	1	"	"	"	"	
Xylenes (total)	**0.11**	0.14	0.015	mg/kg dry	1	"	"	"	"	J
Surrogate: 4-Fluorochlorobenzene	*107*			*80-150 %*		"	"	"	"	

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4700 W 77th St	Project Number:	49161092.02 003 025 TK5	Work Order #: 1304567
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/20/13

PERCENT SOLIDS
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TK5 Platform-Stockpile-1 (1304567-01) Soil Sampled: 09/16/13 10:30 Received: 09/17/13 9:30										
% Solids	**54**			%	1	B3I1906	09/19/13	09/19/13	% calculation	

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4700 W 77th St	Project Number:	49161092.02 003 025 TK5	Work Order #: 1304567
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/20/13

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 B3I1711 - Sonication (Wisc DRO)											
Blank (B3I1711-BLK1)					Prepared: 09/17/13 Analyzed: 09/18/13						
Diesel Range Organics	< 0.93	8.0	0.93	mg/kg wet							
Surrogate: Triacontane (C-30)	*11.7*			*mg/kg wet*	*16.0*		*73.0*	*70-130*			
LCS (B3I1711-BS1)					Prepared: 09/17/13 Analyzed: 09/18/13						
Diesel Range Organics	50.2	8.0	0.93	mg/kg wet	64.0		78.5	70-120			
Surrogate: Triacontane (C-30)	*13.2*			*mg/kg wet*	*16.0*		*82.6*	*70-130*			
LCS Dup (B3I1711-BSD1)					Prepared: 09/17/13 Analyzed: 09/18/13						
Diesel Range Organics	53.8	8.0	0.93	mg/kg wet	64.0		84.1	70-120	6.91	20	
Surrogate: Triacontane (C-30)	*13.7*			*mg/kg wet*	*16.0*		*85.7*	*70-130*			

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4700 W 77th St	Project Number:	49161092.02 003 025 TK5	Work Order #: 1304567
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/20/13

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 B3I1804 - EPA 5035 Soil (Purge and Trap)											
Blank (B3I1804-BLK1)					Prepared & Analyzed: 09/18/13						
Benzene	< 0.0031	0.025	0.0031	mg/kg wet							
Ethylbenzene	0.0123	0.025	0.0022	mg/kg wet							B-02, J
Toluene	< 0.0027	0.025	0.0027	mg/kg wet							
Xylenes (total)	< 0.0080	0.075	0.0080	mg/kg wet							
Surrogate: 4-Fluorochlorobenzene	*24.3*			*ug/L*	*25.0*		*97.0*	*80-150*			
LCS (B3I1804-BS1)					Prepared & Analyzed: 09/18/13						
Benzene	102			ug/L	100		102	80-120			
Ethylbenzene	105			ug/L	100		105	80-120			
Toluene	104			ug/L	100		104	80-120			
Xylenes (total)	311			ug/L	300		104	80-120			
Surrogate: 4-Fluorochlorobenzene	*26.5*			*ug/L*	*25.0*		*106*	*80-150*			
LCS Dup (B3I1804-BSD1)					Prepared & Analyzed: 09/18/13						
Benzene	104			ug/L	100		104	80-120	1.52	20	
Ethylbenzene	106			ug/L	100		106	80-120	1.31	20	
Toluene	106			ug/L	100		106	80-120	1.85	20	
Xylenes (total)	315			ug/L	300		105	80-120	1.29	20	
Surrogate: 4-Fluorochlorobenzene	*25.9*			*ug/L*	*25.0*		*104*	*80-150*			
Matrix Spike (B3I1804-MS1)		**Source: 1304565-01**			Prepared & Analyzed: 09/18/13						
Benzene	105			ug/L	100	<	105	80-120			
Ethylbenzene	108			ug/L	100	0.239	107	80-120			
Toluene	107			ug/L	100	<	107	80-120			
Xylenes (total)	319			ug/L	300	<	106	80-120			
Surrogate: 4-Fluorochlorobenzene	*26.3*			*ug/L*	*25.0*		*105*	*80-150*			

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Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 003 025 TK5	Work Order #: 1304567
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/20/13

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 B3I1906 - General Preparation											
Duplicate (B3I1906-DUP1)		**Source: 1304593-01**			Prepared & Analyzed: 09/19/13						
% Solids	94.0			%		94.0			0.00	20	

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4700 W 77th St	Project Number:	49161092.02 003 025 TK5	Work Order #: 1304567
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/20/13

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
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)

BARR

Chain of Custody

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

1304907

Project Number: 49161092.02 003 025

Project Name: Enbridge Tank 5 Platform

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

COC Number: № 35336

COC 1 of 1

Project Manager: REE

Project QC Contact: AAN

Sampled by: REE

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 (HNO3)	Water: Total Metals (HNO3)	Water: General (unpreserved) #3	Water: Diesel Range Organics (HCl)	Water: Nutrients (H2SO4) #4	Water:	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: Hold jars	Total Number Of Containers	
1. TKS Platform-Stockpile				9/16/13	1030		X	X												1	1			[illegible]	2	5	BTEX, DRO, Moisture
2.																											
3.																											
4.																											
5.																											
6.																											
7.																											
8.																											
9.																											
10.																											

01

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
[signature]	(Y) N	9/16/13	1300			
Relinquished By:	On Ice? (Y) N	Date	Time	Received by: [signature]	9/17/13	9:30

Samples Shipped VIA: ☐ Air Freight ☒ Federal Express ☐ Sampler ☐ Other: ______

Air Bill Number:

3.2°C

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

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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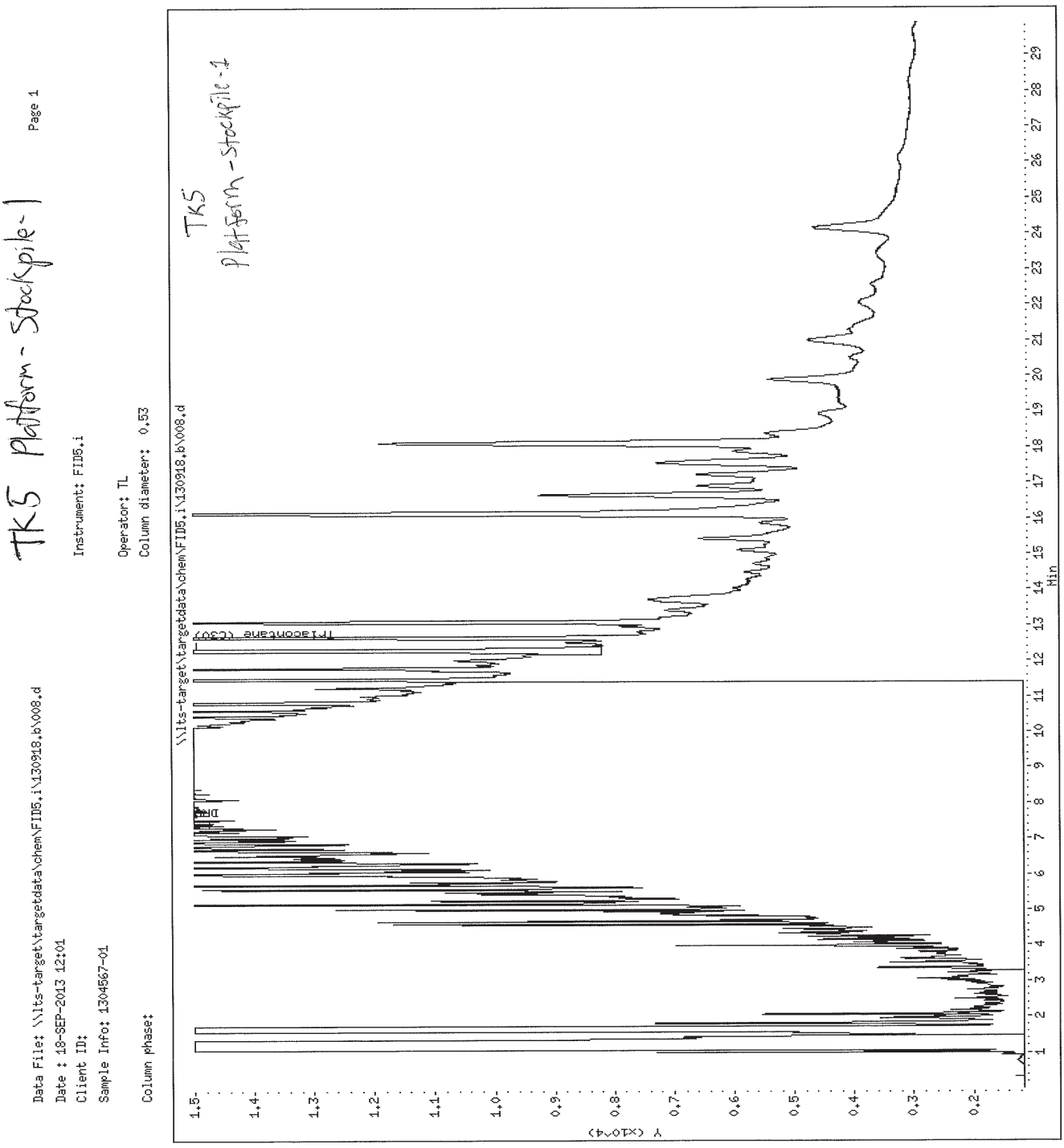

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September 26, 2013

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

Work Order Number: 1304739
RE: 49161092

Enclosed are the results of analyses for samples received by the laboratory on 09/25/13. 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

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Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 300 025	Work Order #: 1304739
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/26/13

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TK5-Stockpile-2	1304739-01	Soil	09/24/13 14:30	09/25/13 09:50

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: No

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.

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Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 300 025	Work Order #: 1304739
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/26/13

DRO/8015D
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TK5-Stockpile-2 (1304739-01) Soil Sampled: 09/24/13 14:30 Received: 09/25/13 9:50										
Diesel Range Organics	**300**	8.2	0.95	mg/kg dry	1	B3I2521	09/25/13	09/25/13	WI(95) DRO	
Surrogate: Triacontane (C-30)	*80.5*			*70-130 %*		"	"	"	"	

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Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 300 025	Work Order #: 1304739
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/26/13

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

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TK5-Stockpile-2 (1304739-01) Soil	**Sampled: 09/24/13 14:30**		**Received: 09/25/13 9:50**							
Benzene	<0.0038	0.031	0.0038	mg/kg dry	1	B3I2605	09/26/13	09/26/13	WI(95) GRO	
Ethylbenzene	**0.012**	0.031	0.0026	mg/kg dry	1	"	"	"	"	B-01, J
Toluene	<0.0033	0.031	0.0033	mg/kg dry	1	"	"	"	"	
Xylenes (total)	**0.011**	0.092	0.0099	mg/kg dry	1	"	"	"	"	J
Surrogate: 4-Fluorochlorobenzene	*93.8*			*80-150 %*		"	"	"	"	

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

Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 300 025	Work Order #: 1304739
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/26/13

PERCENT SOLIDS
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TK5-Stockpile-2 (1304739-01) Soil	**Sampled: 09/24/13 14:30**			**Received: 09/25/13 9:50**						
% Solids	**88**			%	1	B3I2613	09/26/13	09/26/13	% calculation	

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Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/26/13

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 B3I2521 - Sonication (Wisc DRO)											
Blank (B3I2521-BLK1)					Prepared & Analyzed: 09/25/13						
Diesel Range Organics	< 0.93	8.0	0.93	mg/kg wet							
Surrogate: Triacontane (C-30)	*12.8*			*mg/kg wet*	*16.0*		*80.3*	*70-130*			
LCS (B3I2521-BS1)					Prepared & Analyzed: 09/25/13						
Diesel Range Organics	49.3	8.0	0.93	mg/kg wet	64.0		77.0	70-120			
Surrogate: Triacontane (C-30)	*13.5*			*mg/kg wet*	*16.0*		*84.5*	*70-130*			
LCS Dup (B3I2521-BSD1)					Prepared & Analyzed: 09/25/13						
Diesel Range Organics	51.5	8.0	0.93	mg/kg wet	64.0		80.5	70-120	4.39	20	
Surrogate: Triacontane (C-30)	*13.8*			*mg/kg wet*	*16.0*		*86.1*	*70-130*			

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4700 W 77th St	Project Number:	49161092.02 300 025	Work Order #: 1304739
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/26/13

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 B3I2605 - EPA 5035 Soil (Purge and Trap)											
Blank (B3I2605-BLK1)					Prepared & Analyzed: 09/26/13						
Benzene	< 0.0031	0.025	0.0031	mg/kg wet							
Ethylbenzene	0.0131	0.025	0.0022	mg/kg wet							B-02, J
Toluene	< 0.0027	0.025	0.0027	mg/kg wet							
Xylenes (total)	< 0.0080	0.075	0.0080	mg/kg wet							
Surrogate: 4-Fluorochlorobenzene	*23.9*			*ug/L*	*25.0*		*95.8*	*80-150*			
LCS (B3I2605-BS1)					Prepared & Analyzed: 09/26/13						
Benzene	103			ug/L	100		103	80-120			
Ethylbenzene	105			ug/L	100		105	80-120			
Toluene	105			ug/L	100		105	80-120			
Xylenes (total)	311			ug/L	300		104	80-120			
Surrogate: 4-Fluorochlorobenzene	*24.7*			*ug/L*	*25.0*		*98.6*	*80-150*			
LCS Dup (B3I2605-BSD1)					Prepared & Analyzed: 09/26/13						
Benzene	102			ug/L	100		102	80-120	0.964	20	
Ethylbenzene	105			ug/L	100		105	80-120	0.300	20	
Toluene	104			ug/L	100		104	80-120	1.25	20	
Xylenes (total)	310			ug/L	300		103	80-120	0.333	20	
Surrogate: 4-Fluorochlorobenzene	*25.2*			*ug/L*	*25.0*		*101*	*80-150*			
Matrix Spike (B3I2605-MS1)		**Source: 1304752-01**			Prepared & Analyzed: 09/26/13						
Benzene	106			ug/L	100	0.130	106	80-120			
Ethylbenzene	107			ug/L	100	0.264	107	80-120			
Toluene	109			ug/L	100	<	109	80-120			
Xylenes (total)	317			ug/L	300	<	106	80-120			
Surrogate: 4-Fluorochlorobenzene	*25.4*			*ug/L*	*25.0*		*102*	*80-150*			

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Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 300 025	Work Order #: 1304739
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/26/13

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 B3I2613 - General Preparation											
Duplicate (B3I2613-DUP1)		**Source: 1304752-01**			Prepared & Analyzed: 09/26/13						
% Solids	66.0			%		65.0			1.53	20	
Duplicate (B3I2613-DUP2)		**Source: 1304752-02**			Prepared & Analyzed: 09/26/13						
% Solids	69.0			%		69.0			0.00	20	

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Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/26/13

Notes and Definitions

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)

Chain of Custody

BARR

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

1304739

COC 1 of 1

Project Number: 49161092.02 300 025

Project Name: Tank 5 Platforms

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

COC Number: № 40495

Project Manager: REE/LEN

Project QC Contact: AAN

Sampled by: LEN

Laboratory: Legend

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.	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	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.)	Total Number Of Containers	
1. TKS-Stockpile-2				09/24/2013	14:30		X	X											1	1			1	3	ASAP TAT..
2.																									
3.																									
4.																									
5.																									
6.																									
7.																									
8.																									
9.																									
10.																									

a, AC

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
Laura Noreth (signature)	(Y) N	9/24/13	3:30			
Relinquished By:	On Ice? (Y)	Date	Time	Received by: (signature)	9/25/13	9:50

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

Air Bill Number: CC, No temp

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

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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

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

Shamrock Landfill

September 30, 2013

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

RE: CL13-0051 Crude Contaminated Soil - Tank 5 Platform

Dear Mr. Beaster,

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 sopstad@skbinc.com.

Shamrock Landfill

Steve Opstad

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

DATE: 10-1-2013

WASTE APPROVAL Period: 9/30/2013 to 9/16/2015

P.O. Box 338 • Esko, MN 55733-0338
Main: 218.878.0112 • Fax: 218.879.2120

Shamrock Landfill

Bill To Customer

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

Service For Generator

Enbridge Pipelines Limited Partnership, LLC
2800 East 21st St
Superior, WI 54880

Disposal

Waste Description: Crude Contaminated Soil - Tank 5 Platform

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	Crude Contaminated Soil - Tank 5 Platform

Shamrock Landfill

Notification of Waste Acceptance

CUSTOMER INFORMATION

EPA ID#: WID981092133
Enbridge Pipelines Limited Partnership,
Enbridge Superior Terminal

2800 East 21st St
Superior, WI 54880
Contact: Karl Beaster
Phone: (715) 398-4795

INVOICE INFORMATION

Bill #: 2133
Enbridge Pipelines Limited Partnership,
Accounts Payable

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

Profile Sheet #:
Waste Stream #: CL13-0051
Waste Name: Crude Contaminated Soil - Tank 5 Platform

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 9/30/2013 thru 9/16/2015 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.

Shamrock Landfill

WASTE STREAM ANALYSIS INFORMATION

Waste Name:	Crude Contaminated Soil - Tank 5 Platform
Physical State:	Solid
Process Producing Waste:	tank 5 platform excavation

PRE-ACCEPTANCE SAMPLE RESULTS

Color:		Physical State:	
Dust Present:	0	Free Liquids:	0
Paint Filter Test:	0	Odor:	
Flash Point Range:		Density:	
Radioactive?:	0	Water Reactivity:	0
pH Range:		React to Acid:	0
React to Base:	0	% Moisture:	
OVM Sniff:		Sulfide:	
Oxidizers:	0	Cyanide:	
Reacts with Air:	0		

This analysis is solely for use by Shamrock Landfill employees for the purpose of determining waste acceptability. No other claims are made or implied.

COMMENTS

AUTHORIZATION

Approval: _____ Date: 9/30/13

P.O. Box 338 • Esko, MN 55733-0338
Main: 218.878.0112 • Fax: 218.879.2120

SKB SLOQUET

REPORT NAME: **Tons Each Load By WSID**
DESCRIPTION: **Tonnage for EACH LOAD, grouped by customer**
DATE RANGE: **01/01/2013 to 10/08/2013**
PRINTED ON (DATE): **Tuesday, October 08, 2013**

ENBS1
Enbridge Pipelines Limited Partnership,
2800 East 21st St
Superior WI 54880

LOAD #	MANIFEST	ARRIVED	WASTE STREAM	WASTE NAME	CELL	SPOT	LIFT	TONS
13943 (A)	17012	10/7/2013	CL13-0051	Crude Contaminated Soil - Tank 5 P	2A	R42	1175	16.12
13944 (A)	17011	10/7/2013	CL13-0051	Crude Contaminated Soil - Tank 5 P	2A	R41	1175	18.95
13945 (A)	17010	10/7/2013	CL13-0051	Crude Contaminated Soil - Tank 5 P	2A	R41	1175	21.73
13970 (A)	17005	10/7/2013	CL13-0051	Crude Contaminated Soil - Tank 5 P	2A	R41	1175	17.52
13974 (A)	17007	10/7/2013	CL13-0051	Crude Contaminated Soil - Tank 5 P	2A	R41	1175	15.78
13976 (A)	17006	10/7/2013	CL13-0051	Crude Contaminated Soil - Tank 5 P	2A	R41	1175	18.07
13997 (A)	17008	10/7/2013	CL13-0051	Crude Contaminated Soil - Tank 5 P	2A	R41	1175	14.51
14007 (A)	17009	10/7/2013	CL13-0051	Crude Contaminated Soil - Tank 5 P	2A	R41	1175	23.47

Total # of Loads: 8 **Total Tons: 146.15**

Grand Total (Tons): 146.15
Grand Total (Loads): 8

2626 Courtland Street
Duluth, MN 55806-1894
phone 218.722.3336
fax 218.727.7471
www.wlssd.com

WLSSD
Western Lake Superior Sanitary District

September 24, 2013

Alex Smith
Enbridge
1320 Grand Avenue
Superior, WI 54880

Re: WLSSD Discharge Approval (TK5-Platforms Water 1)

Dear Mr. Smith:

Based on the analytical information provided on **9/24/2013**, the WLSSD approves the discharge of **approximately 8000 gallons of TK5-Platforms water from Enbridge Superior** provided there is no visual sign of the petroleum oil, grease or other petroleum related products. This contaminated water is to be disposed of at the WLSSD's main treatment facility, which is located at 2626 Courtland in Duluth.

This is a one time only approval for the waste described. It does not release **Enbridge** from any conditions/regulations set forth by the MPCA and/or any other agency that regulates the waste being discharged. In addition, this approval does not release **Enbridge or any consultant/contractor** involved from any subsequent liabilities associated with conducting this discharge.

Disposal during a significant rainstorm may be denied because of high flows. A copy of this letter of approval is to accompany each load and is to be disposed of and given to the process control operator. **Please attempt to discharge at our facility between 7:00 a.m. and 5:00 p.m. If you are unable to discharge at that time please call the procees control operator (218) 722-3336 ext. 301 with you estimated time of arrival.**

If there are any questions, please contact me at (218) 740-4815.

Sincerely,

Tim Tuominen
Chemist

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

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

September 23, 2013

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

Work Order Number: 1304615
RE: 49161092

Enclosed are the results of analyses for samples received by the laboratory on 09/19/13. 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

Samantha Jaworski
Manager, Organics
sjaworski@legend-group.com

LEGEND
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Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 003 025	Work Order #: 1304615
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/23/13

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TK5-Platforms-Water-1	1304615-01	Water	09/18/13 09:45	09/19/13 09:20

Shipping Container Information

Default Cooler Temperature (°C): 3.1

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

The DRO chromatogram for the sample is attached.

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4700 W 77th St	Project Number:	49161092.02 003 025	Work Order #: 1304615
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/23/13

DRO/8015D
Legend Technical Services, Inc.

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TK5-Platforms-Water-1 (1304615-01) Water Sampled: 09/18/13 09:45 Received: 09/19/13 9:20										
Diesel Range Organics	**390**	93	26	ug/L	1	B3I1908	09/19/13	09/19/13	WI(95) DRO	L1
Surrogate: Triacontane (C-30)	*76.4*			*70-130 %*		"	"	"	"	

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Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 003 025	Work Order #: 1304615
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/23/13

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

Analyte	Result	RL	MDL	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
TK5-Platforms-Water-1 (1304615-01) Water Sampled: 09/18/13 09:45 Received: 09/19/13 9:20										
Benzene	<0.13	1.0	0.13	ug/L	1	B3I1903	09/19/13	09/19/13	WI(95) GRO	
Ethylbenzene	**0.36**	1.0	0.022	ug/L	1	"	"	"	"	B-01, J
Toluene	<0.15	1.0	0.15	ug/L	1	"	"	"	"	
Xylenes (total)	<0.41	3.0	0.41	ug/L	1	"	"	"	"	
Surrogate: 4-Fluorochlorobenzene	*96.6*			*80-150 %*		"	"	"	"	

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4700 W 77th St	Project Number:	49161092.02 003 025	Work Order #: 1304615
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/23/13

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 B3I1908 - EPA 3510C (Sep Funnel)											
Blank (B3I1908-BLK1)					Prepared & Analyzed: 09/19/13						
Diesel Range Organics	< 28	100	28	ug/L							
Surrogate: Triacontane (C-30)	*349*			*ug/L*	*400*		*87.2*	*70-130*			
LCS (B3I1908-BS1)					Prepared & Analyzed: 09/19/13						
Diesel Range Organics	1560	100	28	ug/L	1600		97.2	75-115			
Surrogate: Triacontane (C-30)	*374*			*ug/L*	*400*		*93.5*	*70-130*			
LCS Dup (B3I1908-BSD1)					Prepared: 09/19/13 Analyzed: 09/20/13						
Diesel Range Organics	1440	100	28	ug/L	1600		89.9	75-115	7.83	20	
Surrogate: Triacontane (C-30)	*346*			*ug/L*	*400*		*86.6*	*70-130*			
Duplicate (B3I1908-DUP1)		**Source: 1304615-01**			Prepared & Analyzed: 09/19/13						
Diesel Range Organics	364	93	26	ug/L		389			6.80	20	L1
Surrogate: Triacontane (C-30)	*296*			*ug/L*	*372*		*79.5*	*70-130*			

LEGEND Technical Services, Inc.
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88 Empire Drive
St Paul, MN 55103
Tel: 651-642-1150
Fax: 651-642-1239

Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 003 025	Work Order #: 1304615
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/23/13

WI(95) GRO/8015D - Quality Control
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Analyte	Result	RL	MDL	Units	Spike Level	Source Result	%REC	%REC Limits	%RPD	%RPD Limit	Notes
Batch B3I1903 - EPA 5030 Water (Purge and Trap)											
Blank (B3I1903-BLK1)					Prepared & Analyzed: 09/19/13						
Benzene	< 0.13	1.0	0.13	ug/L							
Ethylbenzene	0.271	1.0	0.022	ug/L							B-02, J
Toluene	< 0.15	1.0	0.15	ug/L							
Xylenes (total)	< 0.41	3.0	0.41	ug/L							
Surrogate: 4-Fluorochlorobenzene	*28.3*			*ug/L*	*25.0*		*113*	*80-150*			
LCS (B3I1903-BS1)					Prepared & Analyzed: 09/19/13						
Benzene	100	1.0	0.13	ug/L	100		100	80-120			
Ethylbenzene	101	1.0	0.022	ug/L	100		101	80-120			
Toluene	101	1.0	0.15	ug/L	100		101	80-120			
Xylenes (total)	299	3.0	0.41	ug/L	300		99.7	80-120			
Surrogate: 4-Fluorochlorobenzene	*26.9*			*ug/L*	*25.0*		*108*	*80-150*			
LCS Dup (B3I1903-BSD1)					Prepared: 09/19/13		Analyzed: 09/20/13				
Benzene	89.9	1.0	0.13	ug/L	100		89.9	80-120	10.9	20	
Ethylbenzene	90.0	1.0	0.022	ug/L	100		90.0	80-120	11.1	20	
Toluene	90.4	1.0	0.15	ug/L	100		90.4	80-120	11.2	20	
Xylenes (total)	264	3.0	0.41	ug/L	300		88.1	80-120	12.3	20	
Surrogate: 4-Fluorochlorobenzene	*24.4*			*ug/L*	*25.0*		*97.6*	*80-150*			
Matrix Spike (B3I1903-MS1)		**Source: 1304615-01**			Prepared: 09/19/13		Analyzed: 09/20/13				
Benzene	92.4	1.0	0.13	ug/L	100	<1.0	92.4	80-120			
Ethylbenzene	92.7	1.0	0.022	ug/L	100	<1.0	92.3	80-120			
Toluene	93.1	1.0	0.15	ug/L	100	<1.0	93.1	80-120			
Xylenes (total)	273	3.0	0.41	ug/L	300	<3.0	90.9	80-120			
Surrogate: 4-Fluorochlorobenzene	*24.5*			*ug/L*	*25.0*		*97.9*	*80-150*			

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Barr Engineering Co.	Project:	49161092	
4700 W 77th St	Project Number:	49161092.02 003 025	Work Order #: 1304615
Minneapolis, MN 55435	Project Manager:	Ms. Andrea Nord	Date Reported: 09/23/13

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
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

Project Number: 49161092.02.003.025 13040615
Project Name: Enbridge Superior Terminal Tank 5 Platforms
Sample Origination State: WI (use two letter postal state abbreviation)
COC Number: No 40603

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	Number of Containers/Preservative: Water: VOCs (HCl) #1	Soil: VOCs (HCl) #1	Total Number Of Containers
1. TKS-Platforms-water-1				9/18/2013	9:45	X		X			3		3
2.													
3.													
4.													
5.													
6.													
7.													
8.													
9.													
10.													

Number of Containers/Preservative: Water: VOCs (HCl) #1 BTEX; Soil: VOCs (HCl) #1 BTEX

Project Manager: RLL
Project QC Contact: AAV
Sampled by: CSG2
Laboratory: Legend
COC 1 of 1

Relinquished By: [signature] On Ice? Y N Date 9/18/13 Time 1200 Received by:
Relinquished By: On Ice? Y N Date Time Received by: Date Time
Samples Shipped VIA: Air Freight Federal Express Sampler Other: Priority Overnight Air Bill Number: 3146

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

H:\LGISTDFORMS\Chain Of Custody Form 2008 RLG Rev 09/01/08

ASAP TAT

5 BTEX, DRO.

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