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BARR

Technical Memorandum

To: Jessie Aspoas, Veit & Company
From: Ryan Erickson
Subject: Superior Terminal North Substation Equipment Release Response
WDNR Spill #: 12731
SERTS ID: 20180601NO16-1
Date: August 2, 2018
Project: 49161271.04
Cc: Alex Smith, Enbridge Energy

This memorandum summarizes the environmental response activities performed by Barr Engineering (Barr) at the request of Veit & Company (Veit) and Enbridge Energy (Enbridge), following a diesel fuel release from a bulldozer at the North Substation construction site at the Enbridge Superior Terminal (Terminal) in Superior, Wisconsin (Figure 1).

Background

On May 29, 2018, Veit contractors working on the Enbridge North Substation construction site (site) discovered that a bulldozer had released approximately 14 gallons of diesel fuel onto the ground surface within the project excavation (Photos 1 and 2; Figure 2). The contractor responded to the release by repairing the broken diesel line, removing the equipment from the excavation, and utilizing oil absorbent pads to recover fuel and limit the migration of the fuel. A vacuum truck was deployed to the site to recover impacted soil; however, lightning prevented its operation on that day. On May 30, 2018, remediation activities resumed, and impacted excavation water (Photo 3) was removed and impacted soil was excavated. The impacted water was containerized and the contaminated soil was stockpiled at the Superior Terminal Soil Management Area (SMA) until offsite disposal could be coordinate.

Enbridge Environment was contacted upon discovery of the release. On May 29, 2018, Enbridge requested Barr's assistance with the following activities:

- document remedial actions
- assess and document environmental site conditions at the release site
- assist with coordination of the offsite management of contaminated soil and water, and
- prepare a memorandum summarizing the response actions and the environmental conditions upon the completion of remedial activities.

On June 1, 2018, the Wisconsin Department of Natural Resources (WDNR) was notified and Veit submitted a *Notification for Hazardous Substance Discharge* form (Attachment A). WDNR Spill #12731 (SERTS ID: 20180601NO16-1) was assigned to the site.

Field Activities

Barr was on site May 29, May 30, June 1, and June 27, 2018, to complete the field activities listed above. On May 29, Barr observed the environmental conditions in the excavation and recommended response and remediation actions.

On May 30, a waste characterization water sample (*NSubstation-Water-1)* was collected for laboratory analysis of benzene, toluene, ethyl benzene, and xylenes (BTEX) and diesel range organics (DRO), as discussed in the *Waste Disposal Coordination* section below.

On June 1, Barr used soil field screening and sampling methods to document the environmental conditions in the excavation, as described in the WDNR Enbridge Superior Terminal Site Investigation and Response Action Plan (SI/RAP) (2014). Field screening samples were tested for the presence of organic vapors using a 10.6eV photoionization detector (PID). Samples were also inspected for the presence of other potential indicators of hydrocarbon impacts such as odor, discoloration, and sheen. The PID readings and physical observations were documented on a site investigation field sampling and screening log (Attachment B). Analytical samples *NSubstation-B-1 and NSubstation-B-2* were collected from locations within the excavation with the highest headspace readings. The analytical samples were submitted to the ALS Laboratory (ALS) in Holland, Michigan for analysis of petroleum volatile organic compounds (PVOC) and naphthalene. The laboratory results are summarized in Table 1 and the laboratory report is included in Attachment C.

On June 27, a waste characterization sample (*NSubstation Stockpile-1)* was collected from the contaminated soil stockpile in the SMA for laboratory analysis of BTEX and DRO, as described in the *Waste Disposal Coordination* section below.

Results

On June 1, 2018, Barr documented the conditions in the final remedial excavation. Barr field screened a portion of the construction excavation around the release location. The area that was evaluated was approximately 60 feet long by 25 feet wide by 3 to 4 feet deep (Photos 4 and 5; Figure 2; Attachment B). Soil in the excavation bottom and northern sidewall was a poorly graded sand, and soil in the southern sidewall was an organic rich soil. Water was observed in the excavation.

Barr collected 29 field screening soil samples from the excavation extents (Attachment B). Headspace readings were between 2.1 and 5.7 ppm and no other evidence of hydrocarbon impacts (*e.g.* odor, rainbow sheen, or discoloration) were identified. A film was observed on some of the standing water in the excavation near the release location (Photo 6); however, a hydrocarbon sheen was not observed.

Analyte concentrations in the confirmation samples *NSubstation-B-1* and *NSubstation-B-2* were below the laboratory detection limits for all compounds except for 1,2,4-Trimethylbenzene (0.03 mg/kg) in *NSubstation-B-2*. The analyte concentrations are all below WDNR Industrial Direct Contact Residual Contaminant Levels (RCLs) and WDNR Groundwater RCLs. The laboratory results are summarized below in Table 1 and the ALS laboratory report is included in Attachment C.

Based on the field screening observations and analytical results, remedial excavation activities were concluded and construction activities were resumed. The North Substation infrastructure is being constructed in this location and clean fill will be used, as needed, to complete the project.

Waste Disposal Coordination

Approximately 425 gallons of impacted water were removed from the excavation with a vacuum truck and containerized on site (Photo 7). On May 30, Barr collected analytical waste characterization water sample

N Substation-Water-1 from the containerized water for analysis of DRO and BTEX by ALS Laboratory in Holland, Michigan. The laboratory report and a waste disposal request were submitted to the Western Lake Superior Sanitary District (WLSSD) water treatment facility and approval was granted on June 5, 2018. Water was then transported to the facility for disposal. The WLSSD approval letter and the ALS Laboratory report are included in Attachment D.

On June 27, Barr collected analytical waste characterization soil sample *N Substation Stockpile-1* from the contaminated soil stockpile at the SMA (Photo 8) for laboratory analysis at ALS. The sample was analyzed for DRO and BTEX. The laboratory report was submitted to the VONCO V landfill in Duluth, Minnesota as an addendum to waste profile # 16-011-I. On July 26, 2018, 21.61 tons of contaminated soil were hauled to the landfill. The waste characterization laboratory report, the landfill approval communication, and the landfill disposal summary are included in Attachment D.

Receptor Survey

The excavation of impacted soil addressed potential direct contact risks, as verified by field screening and analytical sampling results. Water with a hydrocarbon sheen within the excavation was removed for offsite disposal and analytical characterization sampling indicated it was non-detect for BTEX and had low-level DRO concentrations (4.4 mg/L). The nearest surface water bodies are a Superior Terminal fire pond approximately 100 feet to the south and a forested wetland 450 feet to the southwest (Figures 2 and 3). No impacts to surface water were identified in the final remedial excavation or adjacent areas. In addition, Enbridge has a robust monitoring well network that it samples on a bi-annual basis to monitor site groundwater quality. Results from the next sampling event (fall 2018) will be evaluated and are submitted to the WDNR. There are no nearby structures within 100 feet of the release (the nearest potential vapor receptor is a slab-on-grade structure approximately 270 feet east of the site). The risk of hazardous vapor accumulation is low because the building is an above ground building with minimal human occupancy. Onsite employees are also required to wear four-gas detectors that would alert them to a potentially hazardous atmosphere.

Conclusions

The North Substation Project diesel release was reported to the WDNR based on the estimated release volume (14 gallons). Based on the observed field conditions in the final remedial excavation, the analytical results of the confirmation samples, and the existing facility-wide groundwater monitoring program, Barr believes that the WDNR will close the spill site (12731) and that no additional response or reporting activities will be required.

Attachments:

Site Photos	1 through 8
Table 1	Analytical Soil Sample Summary
Figure 1	Site Location
Figure 2	Site Layout
Figure 3	Receptor Survey
Attachment A	Regulatory Communications
Attachment B	Site Investigation Field Sampling and Screening Log
Attachment C	ALS Laboratory Report for Excavation Soil Samples
Attachment D	Waste Disposal Documentation

Site Photos

Photo 1

Photo 2

Photo 1: North Substation construction excavation and diesel fuel release location. Photo taken facing east on May 30, 2018.
Photo 2: North Substation construction excavation and diesel fuel release location. Photo taken facing southwest on May 30, 2018.

Photo 3

Photo 4

Photo 3: Standing water in the construction excavation with a rainbow sheen. Photo taken on May 30, 2018.
Photo 4: North Substation construction excavation and diesel fuel release location. Photo taken facing east on June 1, 2018.

Photo 5

Photo 6

Photo 5: North Substation construction excavation and diesel fuel release location. Photo taken facing west on June 1, 2018.
Photo 6: Standing water in the excavation with a hydrocarbon film. Photo taken on June 1, 2018.

Photo 7

Photo 8

Photo 7: Plastic tank containing contaminated water removed from the excavation. Photo taken on May 30, 2018**.**
Photo 8: Contaminated soil stockpile from the North Substation construction excavation in the Terminal Soil Management Area. Photo taken on June 27, 2018.

Table 1
Analytical Soil Sample Summary
North Substation Equipment Diesel Release
Superior, Wisconsin
(all analyte concentrations in mg/kg)

Sample ID	Sample Date	Sample depth	1, 2, 4-Trimethyl benzene	1, 3, 5-Trimethyl benzene	Benzene	Ethyl benzene	Toluene	Xylenes	Naphthalene
WDNR Groundwater RCLs	*no exceedances*		*1.3821*	*1.3821*	*0.0051*	*1.57*	*1.1072*	*3.96*	*0.6582*
WDNR Industrial DC RCLs	*no exceedances*		*219*	*182*	*7.07*	*35.4*	*818*	*260*	*24.1*
Nsubstation-B-1	6/1/2018	0-2"	<0.0072	<.0012	<0.0067	<0.0082	<0.011	<0.034	<0.011
Nsubstation-B-2	6/1/2018	0-2"	0.03	<0.013	<0.0072	<0.0089	<0.012	<0.036	<0.012

Site Location

Terminal Property Boundary

N

0 2,000 4,000

Feet

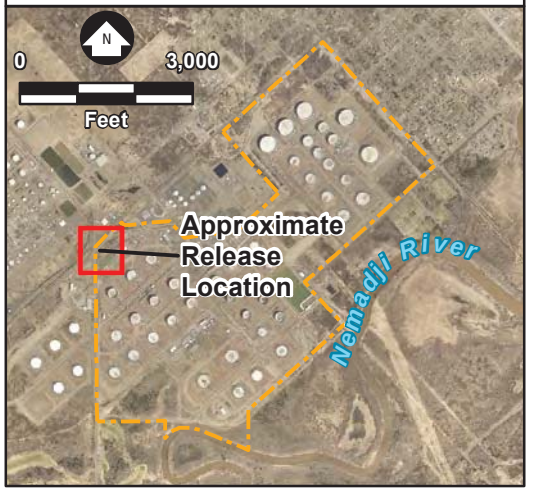
1 Inch = 2,000 Feet

Figure 1

SITE LOCATION
NORTH SUBSTATION
EQUIPMENT RELEASE
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE

ENBRIDGE SUPERIOR TERMINAL



Excavation Extents

Pipeline Infrastructure

Terminal Property Boundary

N

0 100 200

Feet

1 Inch = 100 Feet

NearMap Imagery Circa May, 2018

Figure 2

SITE LAYOUT
NORTH SUBSTATION
EQUIPMENT RELEASE
SUPERIOR TERMINAL

Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE

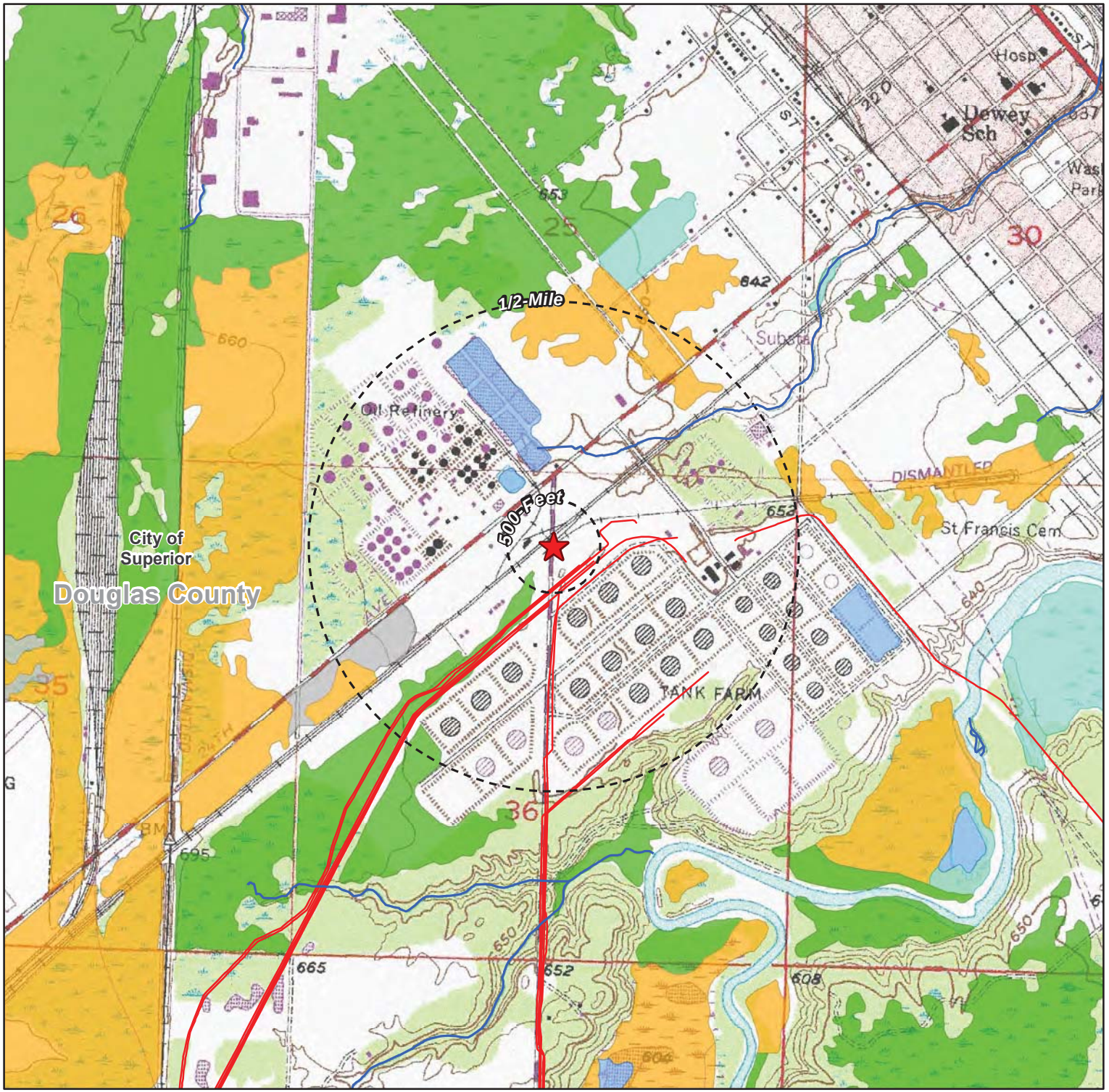


Figure 3

RECEPTOR SURVEY
NORTH SUBSTATION
EQUIPMENT RELEASE
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE

Attachment A

Regulatory Communications

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

Notification For Hazardous Substance Discharge (Non-Emergency Only)

Form 4400-225 (R 06/17)

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: Equipment Leak-Deisel Fuel

ATTN DNR: **R & R Program Associate**

Date DNR Notified: 06/01/2018

1. Discharge Reported By

Name	Firm	Phone Number (include area code)
Jessie Aspoas	Veit	(612) 490-4756

Mailing Address	Email
1100 west gary str.	jasoas@veitusa.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.

Embridge Superior Wis.

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 E 21st St. Superior Wis. 54880

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

City of Superior

County	Legal Description:	WTM:
Douglas	____ ¼ of ____ ¼ Section ____ , Town ___ N, Range ____ ◯ 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.

Veit & Company

☐ A local governmental unit claiming an exemption from state Spill Law and Solid Waste Management responsibilities for the discharge being reported, per Wis. Stat. §§ 292.11(9)(e) and 292.23, should: 1) check this box; 2) review DNR publication RR-055; and 3) provide documentation to DNR that demonstrates compliance with the statutory requirements of the liability exemptions. Local governmental units may also request a fee-based liability clarification letter from DNR by using DNR Form 4400-237.

Contact Person Name (if different)	Phone Number	Email

Mailing Address	City	State	ZIP Code

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

Veit &Company

Contact Person Name (if different)	Phone Number	Email
Jessie Aspoas	(612) 490-4756	japoas@veitusa.com

Mailing Address	City	State	ZIP Code
jaspoas@veitusa.com	Duluth	MN	55808

(continued)

Notification For Hazardous Substance Discharge (Non-Emergency Only)

4. Hazardous Substance Information

Identify hazardous substance discharged (check all that apply):

- ☐ VOCs
  - ☐ PCE
  - ☐ TCE
  - ☐ Other Chlorinated
  - ☒ Diesel
  - ☐ Fuel Oil
  - ☐ Gasoline
  - ☐ Hydraulic Oil
  - ☐ Jet Fuel

(VOCs continued)

- ☐ Mineral Oil
- ☐ Waste Oil
- ☐ Petroleum-Unknown Type
- ☐ PAHs
- ☐ PCBs
- ☐ Cyanide
- ☐ Leachate
- ☐ Manure

- ☐ Metals
  - ☐ Arsenic
  - ☐ Chromium
  - ☐ Lead
  - ☐ Other: _____
- ☐ Pesticides: _____
- ☐ Fertilizer: _____
- ☐ RCRA Hazardous Waste: _____
- ☐ Other: _____
- ☐ Unknown

5. Impacts to the Environment Information

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

- ___ Air Contamination
- ___ Co-mingled (Petroleum & Non-Petroleum)
- ___ Contamination in Fractured Bedrock
- ___ Contamination Within 1 Meter of Bedrock
- ___ Contaminated Private Well
- ___ Contaminated Public Well
- ___ Contamination in Right of Way
- ___ Fire Explosion Threat
- ___ Free Product
- ___ Groundwater Contamination
- ___ Off-Site Contamination
- ___ Sanitary Sewer Contamination
- ___ Storm Sewer Contamination
- ___ Sediment Contamination
- K Soil Contamination
- ___ Soil Gas Contamination
- ___ Sub-slab Vapor Contamination
- K Surface Water Contamination
- ___ Within 100 ft of Private Well
- ___ Within 1000 ft of Public Well

Other (specify): _____

Contamination was discovered as a result of:

☐ Tank closure assessment Date _____

☒ Site assessment Date 05/30/2018

☐ Other - Describe: _____ Date _____

Lab results: ☒ Lab results will be faxed upon receipt ☐ 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.
Spill Kits to absorb most, and Hdro-vac remaining.

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

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

☒ 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: 920-662-5413); 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

Ryan E. Erickson

From: Jessie Aspoas <jaspoas@veitusa.com>
Sent: Thursday, June 28, 2018 3:29 PM
To: Mike Kleist; Andy Dammer
Subject: FW: WI SPILL #12731 ID 20180601NO16-1 - DIESEL FUEL [DIESEL]

-----Original Message-----
From: john.sager@wisconsin.gov [mailto:john.sager@wisconsin.gov]
Sent: Friday, June 01, 2018 1:03 PM
To: Jessie Aspoas <jaspoas@veitusa.com>
Subject: WI SPILL #12731 ID 20180601NO16-1 - DIESEL FUEL [DIESEL]

SERTS ID:
20180601NO16-1

Reported:
06/01/2018 12:45

Occurred:
05/29/2018 15:00

Reported by:
JESSIE ASPOAS
VEIT
jaspoas@veitusa.com
(612) 490-4756
Also RP Contact

Location:
NO REGION
DOUGLAS COUNTY
SUPERIOR, CITY OF
2800 E 21ST ST
2800 E 21ST ST

Responsible Party:
VEIT
1100 W GARY ST
DULUTH, MN 55808
(612) 490-4756

Substance:
DIESEL FUEL [DIESEL]
Released Amt: 14 Gal
Recovered Amt: 14 Gal

Cause:

OTHER CAUSE

Cause Description:
LEAK FROM BALL VALVE ON BACK OF BULLDOZER.

Environmental Impact:
CONTAMINATED SOIL.

Contractor:
BARR ENGINEERING

Cleanup:
ABSORBENTS AND VACUUM TRUCK. BARR ENGINEERING AND BRAUN RETAINED TO OVERSEE CLEANUP.

Submitted by:
JOHN SAGER
(715) 392-7822
john.sager@wisconsin.gov

Sent to:
andrew.savagian@wisconsin.gov
anita.smith@wisconsin.gov
brian.satula@wisconsin.gov
danielle.wincentsen@wisconsin.gov
david.neste@wisconsin.gov
dmawemdutyofficer@wisconsin.gov
dnrledo@wisconsin.gov
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jaspoas@veitusa.com
jessica.maloney@dhs.wisconsin.gov
john.sager@wisconsin.gov
kkesler@douglascountywi.org
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roxanne.chronert@wisconsin.gov
roy.irving@dhs.wisconsin.gov
ryan.wozniak@dhs.wisconsin.gov
stephen.ales@wisconsin.gov
stephend.mueller@wisconsin.gov
trevora.bannister@wisconsin.gov

Attachment B

Site Investigation Field Sampling and Screening Log

SITE INVESTIGATION FIELD SAMPLING AND SCREENING LOG

Page__of__

Location: *Milepost or Facility* Enbridge North Substation

Equipment used: Photo *-ionization detector with* 10.6 *eV lamp* Background Headspace: ___ ppm Date: 6-1-18

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

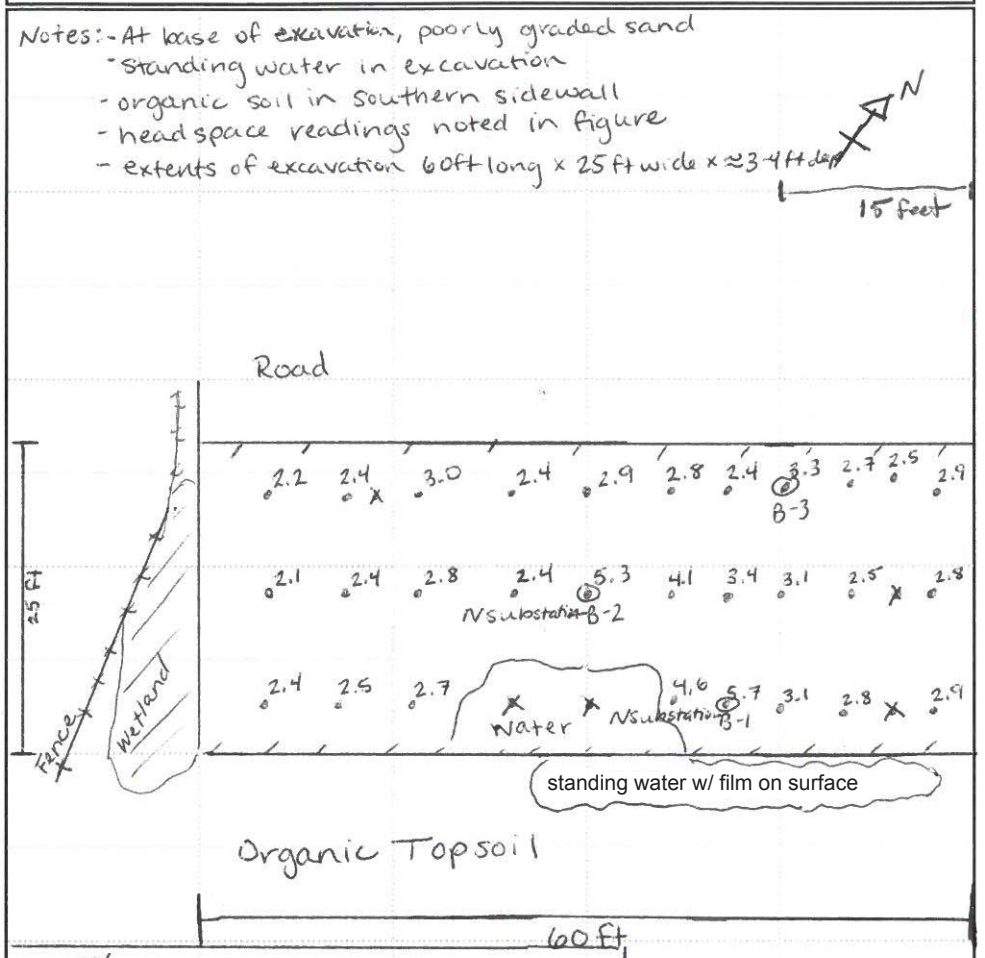
Soil Sample Types: **R** = *Removed Sample* ; **S** = *Sidewall Sample* ; **B** = *Bottom Sample* ; **Stockpile** = *Stockpile Sample* Calibration Time: _____

BARR

Sample ID	Depth (FT)	Time (military)	Soil Type (USCS)	Color/ Discolor	Odor/ Sheen	Headspace Reading (ppm)
Example: TK99-S-1	4	16:30	CL	Reddish brown	Petroleum/ Rainbow	275
NSubstation-B-1	3	10:00	SP	brown	slight odor/ no sheen	5.7
NSubstation-B-2	3	10:10	SP	brown	no odor/ no sheen	5.3
B-3	3	10:20	SP	brown	no odor/ no sheen	3.3
(B-3 not sent to lab)						

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

Notes:- At base of excavation, poorly graded sand
- standing water in excavation
- organic soil in southern sidewall
- headspace readings noted in figure
- extents of excavation 60ft long x 25 ft wide x ≈3-4 ft deep



KEY
- Field screen point w/ headspace reading
◎ soil sample

Attachment C

ALS Laboratory Report for Excavation Soil Samples

06-Jun-2018

Laura Novitzki
Barr Engineering Company
4300 Market Pointe Drive
Suite 200
Minneapolis, MN 55435

Re: **N. Substation Enbridge (49161271)** Work Order: **1806138**

Dear Laura,

ALS Environmental received 3 samples on 02-Jun-2018 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 12.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Tom Beamish

Tom Beamish
Senior Project Manager

Report of Laboratory Analysis

Certificate No: WI: 399084510

ALS Group, USA

Date: 06-Jun-18

Client: Barr Engineering Company
Project: N. Substation Enbridge (49161271)
Work Order: **1806138**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1806138-01	NSubstation-B-1	Soil		06/01/18 10:00	06/02/18 10:45	☐
1806138-02	NSubstation-B-2	Soil		06/01/18 10:10	06/02/18 10:45	☐
1806138-03	Trip Blank	Soil		06/01/18	06/02/18 10:45	☐

ALS Group, USA

Date: 06-Jun-18

Client: Barr Engineering Company
Project: N. Substation Enbridge (49161271)
WorkOrder: **1806138**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
µg/Kg-dry	Micrograms per Kilogram Dry Weight

Client: Barr Engineering Company
Project: N. Substation Enbridge (49161271)
Work Order: 1806138

Case Narrative

Samples for the above noted Work Order were received on 06/02/18. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Volatile Organics:
No deviations or anomalies were noted.

Wet Chemistry:
No deviations or anomalies were noted.

ALS Group, USA

Date: *06-Jun-18*

Client: Barr Engineering Company
Project: N. Substation Enbridge (49161271)
Sample ID: NSubstation-B-1
Collection Date: 06/01/18 10:00 AM

Work Order: 1806138
Lab ID: 1806138-01
Matrix: SOIL

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**			Prep: SW5035 / 6/4/18		Analyst: **WH**
1,2,4-Trimethylbenzene	U		7.2	39	µg/Kg-dry	1	06/04/18 17:42
1,3,5-Trimethylbenzene	U		12	39	µg/Kg-dry	1	06/04/18 17:42
Benzene	U		6.7	39	µg/Kg-dry	1	06/04/18 17:42
Ethylbenzene	U		8.2	39	µg/Kg-dry	1	06/04/18 17:42
m,p-Xylene	U		19	78	µg/Kg-dry	1	06/04/18 17:42
Naphthalene	U		11	130	µg/Kg-dry	1	06/04/18 17:42
o-Xylene	U		15	39	µg/Kg-dry	1	06/04/18 17:42
Toluene	U		11	39	µg/Kg-dry	1	06/04/18 17:42
Xylenes, Total	U		34	120	µg/Kg-dry	1	06/04/18 17:42
Surr: 1,2-Dichloroethane-d4	*101*			*70-130*	*%REC*	1	06/04/18 17:42
Surr: 4-Bromofluorobenzene	*97.5*			*70-130*	*%REC*	1	06/04/18 17:42
Surr: Dibromofluoromethane	*91.4*			*70-130*	*%REC*	1	06/04/18 17:42
Surr: Toluene-d8	*98.4*			*70-130*	*%REC*	1	06/04/18 17:42
MOISTURE		Method: **SW3550C**					Analyst: **NW**
Moisture	**13**		**0.025**	**0.050**	**% of sample**	1	06/05/18 11:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *06-Jun-18*

Client: Barr Engineering Company
Project: N. Substation Enbridge (49161271)
Sample ID: NSubstation-B-2
Collection Date: 06/01/18 10:10 AM

Work Order: 1806138
Lab ID: 1806138-02
Matrix: SOIL

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**			Prep: SW5035 / 6/4/18		Analyst: **WH**
1,2,4-Trimethylbenzene	**30**	J	**7.8**	**42**	**µg/Kg-dry**	1	06/04/18 17:58
1,3,5-Trimethylbenzene	U		13	42	µg/Kg-dry	1	06/04/18 17:58
Benzene	U		7.2	42	µg/Kg-dry	1	06/04/18 17:58
Ethylbenzene	U		8.9	42	µg/Kg-dry	1	06/04/18 17:58
m,p-Xylene	U		20	85	µg/Kg-dry	1	06/04/18 17:58
Naphthalene	U		12	140	µg/Kg-dry	1	06/04/18 17:58
o-Xylene	U		16	42	µg/Kg-dry	1	06/04/18 17:58
Toluene	U		12	42	µg/Kg-dry	1	06/04/18 17:58
Xylenes, Total	U		36	130	µg/Kg-dry	1	06/04/18 17:58
Surr: 1,2-Dichloroethane-d4	*107*			*70-130*	*%REC*	1	06/04/18 17:58
Surr: 4-Bromofluorobenzene	*95.0*			*70-130*	*%REC*	1	06/04/18 17:58
Surr: Dibromofluoromethane	*97.8*			*70-130*	*%REC*	1	06/04/18 17:58
Surr: Toluene-d8	*99.0*			*70-130*	*%REC*	1	06/04/18 17:58
MOISTURE		Method: **SW3550C**					Analyst: **NW**
Moisture	**17**		**0.025**	**0.050**	**% of sample**	1	06/05/18 11:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *06-Jun-18*

Client: Barr Engineering Company
Project: N. Substation Enbridge (49161271)
Sample ID: Trip Blank
Collection Date: 06/01/18

Work Order: 1806138
Lab ID: 1806138-03
Matrix: SOIL

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**			Prep: SW5035 / 6/4/18		Analyst: **WH**
1,2,4-Trimethylbenzene	U		5.6	30	µg/Kg-dry	1	06/04/18 17:25
1,3,5-Trimethylbenzene	U		9.2	30	µg/Kg-dry	1	06/04/18 17:25
Benzene	U		5.1	30	µg/Kg-dry	1	06/04/18 17:25
Ethylbenzene	U		6.3	30	µg/Kg-dry	1	06/04/18 17:25
m,p-Xylene	U		14	60	µg/Kg-dry	1	06/04/18 17:25
Naphthalene	U		8.3	100	µg/Kg-dry	1	06/04/18 17:25
o-Xylene	U		12	30	µg/Kg-dry	1	06/04/18 17:25
Toluene	U		8.2	30	µg/Kg-dry	1	06/04/18 17:25
Xylenes, Total	U		26	90	µg/Kg-dry	1	06/04/18 17:25
Surr: 1,2-Dichloroethane-d4	*104*			*70-130*	*%REC*	1	06/04/18 17:25
Surr: 4-Bromofluorobenzene	*97.0*			*70-130*	*%REC*	1	06/04/18 17:25
Surr: Dibromofluoromethane	*91.2*			*70-130*	*%REC*	1	06/04/18 17:25
Surr: Toluene-d8	*97.2*			*70-130*	*%REC*	1	06/04/18 17:25

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 06-Jun-18

Client: Barr Engineering Company

QC BATCH REPORT

Work Order: 1806138

Project: N. Substation Enbridge (49161271)

Batch ID: **119244** Instrument ID **VMS8** Method: **SW8260C**

MBLK Sample ID: **MBLK-119244-119244** Units: **µg/Kg-dry** Analysis Date: **06/04/18 01:27 PM**

Client ID: Run ID: **VMS8_180604A** SeqNo: **5072161** Prep Date: **06/04/18** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	U	5.6	30	0	0	0	0-0	0			
1,3,5-Trimethylbenzene	U	9.2	30	0	0	0	0-0	0			
Benzene	U	5.1	30	0	0	0	0-0	0			
Ethylbenzene	U	6.3	30	0	0	0	0-0	0			
m,p-Xylene	U	14	60	0	0	0	0-0	0			
Naphthalene	U	8.3	100	0	0	0	0-0	0			
o-Xylene	U	12	30	0	0	0	0-0	0			
Toluene	U	8.2	30	0	0	0	0-0	0			
Xylenes, Total	U	26	90	0	0	0	0-0	0			
Surr: 1,2-Dichloroethane-d4	*1060*	0	0	*1000*	0	*106*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*970*	0	0	*1000*	0	*97*	*70-130*	0			
Surr: Dibromofluoromethane	*928.5*	0	0	*1000*	0	*92.8*	*70-130*	0			
Surr: Toluene-d8	*1022*	0	0	*1000*	0	*102*	*70-130*	0			

LCS Sample ID: **LCS-119244-119244** Units: **µg/Kg-dry** Analysis Date: **06/04/18 12:38 PM**

Client ID: Run ID: **VMS8_180604A** SeqNo: **5072160** Prep Date: **06/04/18** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	915	5.6	30	1000	0	91.5	65-135	0			
1,3,5-Trimethylbenzene	947	9.2	30	1000	0	94.7	65-135	0			
Benzene	1010	5.1	30	1000	0	101	75-125	0			
Ethylbenzene	958	6.3	30	1000	0	95.8	75-125	0			
m,p-Xylene	1922	14	60	2000	0	96.1	80-125	0			
Naphthalene	877	8.3	100	1000	0	87.7	40-140	0			
o-Xylene	958	12	30	1000	0	95.8	75-125	0			
Toluene	961.5	8.2	30	1000	0	96.2	70-125	0			
Xylenes, Total	2880	26	90	3000	0	96	75-125	0			
Surr: 1,2-Dichloroethane-d4	*1044*	0	0	*1000*	0	*104*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1009*	0	0	*1000*	0	*101*	*70-130*	0			
Surr: Dibromofluoromethane	*1012*	0	0	*1000*	0	*101*	*70-130*	0			
Surr: Toluene-d8	*1002*	0	0	*1000*	0	*100*	*70-130*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Barr Engineering Company
Work Order: 1806138
Project: N. Substation Enbridge (49161271)

QC BATCH REPORT

Batch ID: **119244** Instrument ID **VMS8** Method: **SW8260C**

MS Sample ID: **1806138-01A MS** Units: **µg/Kg-dry** Analysis Date: **06/04/18 08:26 PM**
Client ID: **NSubstation-B-1** Run ID: **VMS8_180604A** SeqNo: **5072165** Prep Date: **06/04/18** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	1233	7.2	39	1299	0	94.9	65-135	0			
1,3,5-Trimethylbenzene	1271	12	39	1299	0	97.8	65-135	0			
Benzene	1240	6.7	39	1299	0	95.4	75-125	0			
Ethylbenzene	1256	8.2	39	1299	0	96.7	75-125	0			
m,p-Xylene	2525	19	78	2598	0	97.2	80-125	0			
Naphthalene	1224	11	130	1299	0	94.2	40-140	0			
o-Xylene	1221	15	39	1299	0	94	75-125	0			
Toluene	1272	11	39	1299	0	97.9	70-125	0			
Xylenes, Total	3746	34	120	3897	0	96.1	75-125	0			
Surr: 1,2-Dichloroethane-d4	*1329*	0	0	*1299*	0	*102*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1292*	0	0	*1299*	0	*99.4*	*70-130*	0			
Surr: Dibromofluoromethane	*1172*	0	0	*1299*	0	*90.2*	*70-130*	0			
Surr: Toluene-d8	*1303*	0	0	*1299*	0	*100*	*70-130*	0			

MSD Sample ID: **1806138-01A MSD** Units: **µg/Kg-dry** Analysis Date: **06/04/18 08:42 PM**
Client ID: **NSubstation-B-1** Run ID: **VMS8_180604A** SeqNo: **5072166** Prep Date: **06/04/18** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	1275	7.2	39	1299	0	98.2	65-135	1233	3.42	30	
1,3,5-Trimethylbenzene	1332	12	39	1299	0	103	65-135	1271	4.69	30	
Benzene	1309	6.7	39	1299	0	101	75-125	1240	5.4	30	
Ethylbenzene	1340	8.2	39	1299	0	103	75-125	1256	6.5	30	
m,p-Xylene	2637	19	78	2598	0	102	80-125	2525	4.33	30	
Naphthalene	1181	11	130	1299	0	90.9	40-140	1224	3.62	30	
o-Xylene	1274	15	39	1299	0	98.1	75-125	1221	4.27	30	
Toluene	1322	11	39	1299	0	102	70-125	1272	3.91	30	
Xylenes, Total	3911	34	120	3897	0	100	75-125	3746	4.31	30	
Surr: 1,2-Dichloroethane-d4	*1334*	0	0	*1299*	0	*103*	*70-130*	1329	*0.341*	*30*	
Surr: 4-Bromofluorobenzene	*1296*	0	0	*1299*	0	*99.8*	*70-130*	1292	*0.351*	*30*	
Surr: Dibromofluoromethane	*1126*	0	0	*1299*	0	*86.7*	*70-130*	1172	*3.96*	*30*	
Surr: Toluene-d8	*1333*	0	0	*1299*	0	*103*	*70-130*	1303	*2.32*	*30*	

The following samples were analyzed in this batch: 1806138-01A 1806138-02A 1806138-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Barr Engineering Company
Work Order: 1806138
Project: N. Substation Enbridge (49161271)

QC BATCH REPORT

Batch ID: **R237441** Instrument ID **MOIST** Method: **SW3550C**

MBLK Sample ID: **WBLKS-R237441** Units: **% of sample** Analysis Date: **06/05/18 11:30 AM**
Client ID: Run ID: **MOIST_180605A** SeqNo: **5074851** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	0.03	0.025	0.050								J

LCS Sample ID: **LCS-R237441** Units: **% of sample** Analysis Date: **06/05/18 11:30 AM**
Client ID: Run ID: **MOIST_180605A** SeqNo: **5074850** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.025	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **1806017-01B DUP** Units: **% of sample** Analysis Date: **06/05/18 11:30 AM**
Client ID: Run ID: **MOIST_180605A** SeqNo: **5074830** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	18.32	0.025	0.050	0	0	0	0-0	18.8	2.59	10	

DUP Sample ID: **1806017-07B DUP** Units: **% of sample** Analysis Date: **06/05/18 11:30 AM**
Client ID: Run ID: **MOIST_180605A** SeqNo: **5074837** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	16.79	0.025	0.050	0	0	0	0-0	17.01	1.3	10	

The following samples were analyzed in this batch: 1806138-01B 1806138-02B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1806128

Barr Engineering Co. Chain of Custody

Sample Origination State: ☐ KS ☐ MO ☐ UT ☐ MI ☐ ND ☐ WI ☐ MN ☐ SD Other: ____

BARR ☐ Ann Arbor ☒ Duluth ☐ Hibbing ☐ Minneapolis ☐ Bismarck ☐ Grand Rapids ☐ Jefferson City ☐ Salt Lake City

COC Number: 57223

COC 1 of 1

REPORT TO	INVOICE TO
Company: BARR Engineering	Company: Barr Engineering
Address: 325 S Lake Ave Suite 700 Duluth, MN 55802	Address:
Name: Laura Novitzki	Name:
email: LNovitzki@BARR.com	email:
Copy to: datamgt@barr.com	P.O.
Project Name: N. Substation Enbridge	Barr Project No: 49161271

Location	Sample Depth Start	Stop	Unit (m./ft. or in.)	Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix Code	Perform MS/MSD Y / N	Total Number Of Containers	Analysis Requested: Water	Soil: PVOC - MTBE + Naphthalene	Soil: Moisture	Soil: % Solids	Preservative Code	Field Filtered Y/N
										F	A			
										N	N			
1. NSubstation-B-1	0	2	in	6/1/2018	10:00	S	N	3		2	1			ASAP TAT
2. NSubstation-B-2	0	2	in	6/1/2018	10:10	S	N	3		2	1			
3. Trip Blank	–	–	–	–	–	QC	N	1						
4. Temp Blank														
5.														
6.														
7.														
8.														
9.														
10.														

Matrix Code: GW = Groundwater, SW = Surface Water, WW = Waste Water, DW = Drinking Water, S = Soil/Solid, SD = Sediment, O = Other

Preservative Code: A = None, B = HCl, C = HNO_3, D = H_2SO_4, E = NaOH, F = MeOH, G = $NaHSO_4$, H = $Na_2S_2O_3$, I = Ascorbic Acid, J = NH_4Cl, K = Zn Acetate, O = Other

BARR USE ONLY		Relinquished by:	On Ice? Y N	Date	Time	Received by:	Date	Time
Sampled by:	RRE	Rebecca Erdahl	Y	6-1-18	12:00	FED EX		
Barr Proj. Manager:	LEN	Relinquished by: FED EX	On Ice? Y N	Date 6/2/18	Time 1045	Received by:	Date	Time
Barr DQ Manager:	JET	Samples Shipped VIA: ☐ Courier ☐ Federal Express ☐ Sampler ☐ Other:		Air Bill Number:				
Lab Name:	ALS	Lab WO:	Temperature on Receipt (°C):		Custody Seal Intact? ☐ Y ☐ N ☐ None		Requested Due Date: ☐ Standard Turn Around Time ☒ Rush ASAP (mm/dd/yyyy)	
Lab Location:	Holland, MI							

Distribution - White-Original: Accompanies Shipment to Laboratory; Yellow Copy: Include in Field Documents; Pink Copy: Send to Data Management Administrators.

SRP 2.8°C

H:\RLG\STDFORMS\Chain Of Custody Form 2015 RLG Rev. 01/02/18

ALS Group, USA

Sample Receipt Checklist

Client Name: **BARRENG-MN** Date/Time Received: **02-Jun-18 10:45**

Work Order: **1806138** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 04-Jun-18 (Date) Reviewed by: Bill Carey (eSignature) 04-Jun-18 (Date)

Matrices: Soil

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	3.8/3.8 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	6/4/2018 10:19:42 AM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	_		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

Attachment D

Waste Disposal Documentation

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

WLSSD

Western Lake Superior Sanitary District

June 5, 2018

Enbridge
Attention: Mr. Alex Smith, Environmental Advisor
119 North 25th Street East
Superior, WI 54880

Re: WLSSD Discharge Approval (**North Substation Excavation Contaminated Wastewater**)

Dear Mr. Smith:

Based on the analytical information provided on June 5, 2018, the WLSSD approves the discharge of up to **1,000 gallons of Excavation Wastewater from Enbridge North Substation** provided there is no visiual sign of 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 Street in Duluth.

This is a one time only approval for the wastewater 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. Wastewater must be transported and disposed by a hauler permitted by WLSSD.

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) 740-4814.

Sincerely,

Julie Macor

Julie Macor
Lab Lead Chemist

04-Jun-2018

Laura Novitzki
Barr Engineering Company
4300 Market Pointe Drive
Suite 200
Minneapolis, MN 55435

Re: **49161271** Work Order: **18052006**

Dear Laura,

ALS Environmental received 2 samples on 31-May-2018 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 12.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Bill Carey

Tom Beamish
Senior Project Manager

Report of Laboratory Analysis

ALS Group, USA

Date: 04-Jun-18

Client: Barr Engineering Company
Project: 49161271
Work Order: **18052006**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
18052006-01	N Substation-Water-1	Water		5/30/2018 15:50	5/31/2018 10:00	☐
18052006-02	Trip Blank	Water		5/30/2018	5/31/2018 10:00	☐

ALS Group, USA

Date: 04-Jun-18

Client: Barr Engineering Company
Project: 49161271
WorkOrder: **18052006**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

Client: Barr Engineering Company
Project: 49161271
Work Order: 18052006

Case Narrative

Samples for the above noted Work Order were received on 5/31/2018. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Volatile Organics:
No other deviations or anomalies were noted.

Extractable Organics:
No other deviations or anomalies were noted.

ALS Group, USA

Date: *04-Jun-18*

Client: Barr Engineering Company
Project: 49161271
Sample ID: N Substation-Water-1
Collection Date: 5/30/2018 03:50 PM

Work Order: 18052006
Lab ID: 18052006-01
Matrix: WATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **PUBL-SW-141**			Prep: PUBL-SW-141 / 6/1/18		Analyst: **MEB**
DRO (C10-C28)	**4.4**		**0.017**	**0.10**	**mg/L**	1	6/1/2018 23:36
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **LSY**
Benzene	U		0.42	1.0	µg/L	1	6/1/2018 01:41
Ethylbenzene	U		0.29	1.0	µg/L	1	6/1/2018 01:41
m,p-Xylene	U		0.53	2.0	µg/L	1	6/1/2018 01:41
o-Xylene	U		0.19	1.0	µg/L	1	6/1/2018 01:41
Toluene	U		0.32	1.0	µg/L	1	6/1/2018 01:41
Xylenes, Total	U		0.74	3.0	µg/L	1	6/1/2018 01:41
Surr: 1,2-Dichloroethane-d4	*109*			*75-120*	*%REC*	1	6/1/2018 01:41
Surr: 4-Bromofluorobenzene	*97.0*			*80-110*	*%REC*	1	6/1/2018 01:41
Surr: Dibromofluoromethane	*99.1*			*85-115*	*%REC*	1	6/1/2018 01:41
Surr: Toluene-d8	*97.8*			*85-110*	*%REC*	1	6/1/2018 01:41

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *04-Jun-18*

Client: Barr Engineering Company
Project: 49161271
Sample ID: Trip Blank
Collection Date: 5/30/2018

Work Order: 18052006
Lab ID: 18052006-02
Matrix: WATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**					Analyst: **LSY**
Benzene	U		0.42	1.0	µg/L	1	6/1/2018 01:25
Ethylbenzene	U		0.29	1.0	µg/L	1	6/1/2018 01:25
m,p-Xylene	U		0.53	2.0	µg/L	1	6/1/2018 01:25
o-Xylene	U		0.19	1.0	µg/L	1	6/1/2018 01:25
Toluene	U		0.32	1.0	µg/L	1	6/1/2018 01:25
Xylenes, Total	U		0.74	3.0	µg/L	1	6/1/2018 01:25
Surr: 1,2-Dichloroethane-d4	*109*			*75-120*	*%REC*	1	6/1/2018 01:25
Surr: 4-Bromofluorobenzene	*101*			*80-110*	*%REC*	1	6/1/2018 01:25
Surr: Dibromofluoromethane	*99.0*			*85-115*	*%REC*	1	6/1/2018 01:25
Surr: Toluene-d8	*99.0*			*85-110*	*%REC*	1	6/1/2018 01:25

Note: See Qualifiers page for a list of qualifiers and their definitions.

QC BATCH REPORT

Batch ID: **119135** Instrument ID **GC8** Method: **PUBL-SW-141**

MBLK	Sample ID: **DBLKW1-119135-119135**				Units: **mg/L**			Analysis Date: **6/1/2018 10:09 PM**			
Client ID:	Run ID: **GC8_180601A**				SeqNo: **5070579**			Prep Date: **6/1/2018**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	U	0.10								

LCS	Sample ID: **DLCSW1-119135-119135**				Units: **mg/L**			Analysis Date: **6/1/2018 10:38 PM**			
Client ID:	Run ID: **GC8_180601A**				SeqNo: **5070580**			Prep Date: **6/1/2018**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	0.1034	0.10	0.1	0	103	75-115	0			

LCSD	Sample ID: **DLCSDW1-119135-119135**				Units: **mg/L**			Analysis Date: **6/1/2018 11:07 PM**			
Client ID:	Run ID: **GC8_180601A**				SeqNo: **5070581**			Prep Date: **6/1/2018**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	0.09883	0.10	0.1	0	98.8	75-115	0.1034	0	20	J

The following samples were analyzed in this batch: 18052006-01B

Client: Barr Engineering Company
Work Order: 18052006
Project: 49161271

QC BATCH REPORT

Batch ID: **R237077A** Instrument ID **VMS10** Method: **SW8260C**

MBLK Sample ID: **VBLKW2-180531-R237077A** Units: **µg/L** Analysis Date: **6/1/2018 12:21 PM**
Client ID: Run ID: **VMS10_180531B** SeqNo: **5066276** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	1.0								
Ethylbenzene	U	1.0								
m,p-Xylene	U	2.0								
o-Xylene	U	1.0								
Toluene	U	1.0								
Xylenes, Total	U	3.0								
Surr: 1,2-Dichloroethane-d4	*21.75*	0	*20*	0	*109*	*75-120*	0			
Surr: 4-Bromofluorobenzene	*19.67*	0	*20*	0	*98.4*	*80-110*	0			
Surr: Dibromofluoromethane	*19.7*	0	*20*	0	*98.5*	*85-115*	0			
Surr: Toluene-d8	*19.61*	0	*20*	0	*98*	*85-110*	0			

LCS Sample ID: **VLCSW2-180531-R237077A** Units: **µg/L** Analysis Date: **5/31/2018 11:33 PM**
Client ID: Run ID: **VMS10_180531B** SeqNo: **5066249** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	18.44	1.0	20	0	92.2	85-125	0			
Ethylbenzene	18.8	1.0	20	0	94	76-123	0			
m,p-Xylene	38.25	2.0	40	0	95.6	75-130	0			
o-Xylene	18.97	1.0	20	0	94.8	76-127	0			
Toluene	18.17	1.0	20	0	90.8	76-125	0			
Xylenes, Total	57.22	3.0	60	0	95.4	76-127	0			
Surr: 1,2-Dichloroethane-d4	*21.36*	0	*20*	0	*107*	*75-120*	0			
Surr: 4-Bromofluorobenzene	*20.63*	0	*20*	0	*103*	*80-110*	0			
Surr: Dibromofluoromethane	*21.04*	0	*20*	0	*105*	*85-115*	0			
Surr: Toluene-d8	*20.01*	0	*20*	0	*100*	*85-110*	0			

MS Sample ID: **18051770-03A MS** Units: **µg/L** Analysis Date: **6/1/2018 06:14 AM**
Client ID: Run ID: **VMS10_180531B** SeqNo: **5066274** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	22.29	1.0	20	0	111	85-125	0			
Ethylbenzene	22.26	1.0	20	0	111	76-123	0			
m,p-Xylene	45.33	2.0	40	0	113	75-130	0			
o-Xylene	21.87	1.0	20	0	109	76-127	0			
Toluene	21.25	1.0	20	0	106	76-125	0			
Xylenes, Total	67.2	3.0	60	0	112	76-127	0			
Surr: 1,2-Dichloroethane-d4	*21.91*	0	*20*	0	*110*	*75-120*	0			
Surr: 4-Bromofluorobenzene	*20.37*	0	*20*	0	*102*	*80-110*	0			
Surr: Dibromofluoromethane	*20.48*	0	*20*	0	*102*	*85-115*	0			
Surr: Toluene-d8	*19.63*	0	*20*	0	*98.2*	*85-110*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Barr Engineering Company
Work Order: 18052006
Project: 49161271

QC BATCH REPORT

Batch ID: **R237077A** Instrument ID **VMS10** Method: **SW8260C**

MSD Sample ID: **18051770-03A MSD** Units: **µg/L** Analysis Date: **6/1/2018 06:30 AM**
Client ID: Run ID: **VMS10_180531B** SeqNo: **5066275** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	21.33	1.0	20	0	107	85-125	22.29	4.4	30	
Ethylbenzene	21.38	1.0	20	0	107	76-123	22.26	4.03	30	
m,p-Xylene	43.2	2.0	40	0	108	75-130	45.33	4.81	30	
o-Xylene	21.43	1.0	20	0	107	76-127	21.87	2.03	30	
Toluene	20.91	1.0	20	0	105	76-125	21.25	1.61	30	
Xylenes, Total	64.63	3.0	60	0	108	76-127	67.2	3.9	30	
Surr: 1,2-Dichloroethane-d4	*21.75*	0	*20*	0	*109*	*75-120*	21.91	*0.733*	*30*	
Surr: 4-Bromofluorobenzene	*20.46*	0	*20*	0	*102*	*80-110*	20.37	*0.441*	*30*	
Surr: Dibromofluoromethane	*20.62*	0	*20*	0	*103*	*85-115*	20.48	*0.681*	*30*	
Surr: Toluene-d8	*19.85*	0	*20*	0	*99.2*	*85-110*	19.63	*1.11*	*30*	

The following samples were analyzed in this batch: 18052006-01A 18052006-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

1805 2006

Barr Engineering Co. Chain of Custody

BARR ☐ Ann Arbor ☒ Duluth ☐ Hibbing ☐ Minneapolis
☐ Bismarck ☐ Grand Rapids ☐ Jefferson City ☐ Salt Lake City

Sample Origination State: ☐ KS ☐ MO ☐ UT ☐ MI ☐ ND ☒ WI ☐ MN ☐ SD Other: ____

COC Number: 57127
COC 1 of 1

REPORT TO	INVOICE TO
Company: Barr Engineering	Company: Barr Engineering
Address: 325 S. Lake Ave Duluth, MN 55802	Address:
Name: Laura Novitzki	Name:
email: LEN @ barr.com	email:
Copy to: datamgt@barr.com	P.O.
Project Name:	Barr Project No: 4916127(

Location	Sample Depth Start	Stop	Unit (m./ft. or in.)	Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix Code	Perform MS/MSD Y / N	Total Number Of Containers	Analysis Requested: Water BTEX	Water DRO	Water Trip Blank	Water Temp Blank	Soil	Soil	Soil	Soil	Soil	Soil % Solids	Preservative Code	Field Filtered Y/N
1. N Substation-Water-1	—	—	—	05/30/2018	1550	W			3	1	1	1					1		ASAP TAT	
2. TRIP BLANK				↓							1									
3.																				
4.																				
5.																				
6.																				
7.																				
8.																				
9.																				
10.																				

Matrix Code: GW = Groundwater, SW = Surface Water, WW = Waste Water, DW = Drinking Water, S = Soil/Solid, SD = Sediment, O = Other

Preservative Code: A = None, B = HCl, C = HNO_3, D = H_2SO_4, E = NaOH, F = MeOH, G = $NaHSO_4$, H = $Na_2S_2O_3$, I = Ascorbic Acid, J = NH_4Cl, K = Zn Acetate, O = Other

BARR USE ONLY

Sampled by: LEN
Barr Proj. Manager: LEN
Barr DQ Manager: JET
Lab Name: ALS
Lab Location: Holland

Relinquished by: Laura Novitzki — On Ice? Y N — Date 5/30/18 — Time 1630 — Received by: FEDEX — Date — Time
Relinquished by: FEDEX — On Ice? Y N — Date 5/31/18 — Time 1000 — Received by: — Date — Time

Samples Shipped VIA: ☐ Courier ☒ Federal Express ☐ Sampler ☐ Other: _____
Air Bill Number:

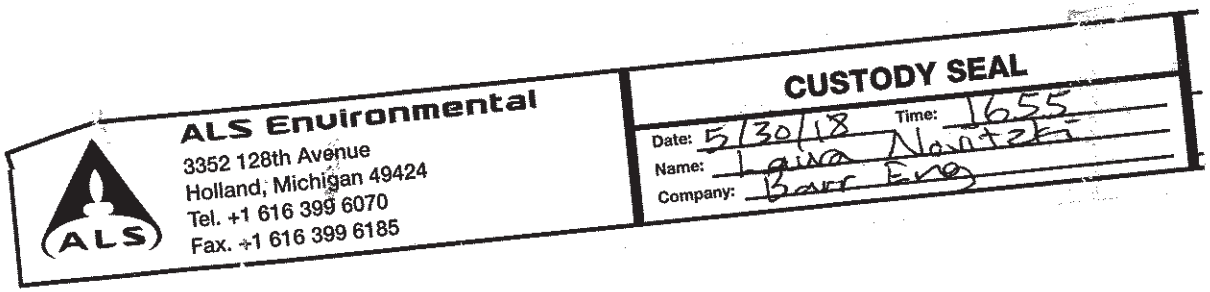
Lab WO: Temperature on Receipt (°C): Custody Seal Intact? ☐ Y ☐ N ☐ None

Requested Due Date: ☐ Standard Turn Around Time ☐ Rush _____ (mm/dd/yyyy)

Distribution - White-Original: Accompanies Shipment to Laboratory; **Yellow Copy:** Include in Field Documents; **Pink Copy:** Send to Data Management Administrators.

H:\RLG\STDFORMS\Chain Of Custody Form 2015 RLG Rev. 01/02/18

SR2



ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 5/30/18 Time: 1655
Name: Laura Nowitzki
Company: Barr Eng

Ryan E. Erickson

From: Chris Guillemette <cguillemette@voncousa.com>
Sent: Thursday, July 05, 2018 2:19 PM
To: Ryan E. Erickson
Cc: Alex.Smith@enbridge.com; Laura E. Novitzki; Cassidy Potter
Subject: RE: Profile 16-011-I

Yes. Thanks Ryan.

Chris

From: Ryan E. Erickson [mailto:RErickson@barr.com]
Sent: Thursday, July 05, 2018 1:57 PM
To: Chris Guillemette <cguillemette@voncousa.com>
Cc: Alex.Smith@enbridge.com; Laura E. Novitzki <LNovitzki@barr.com>
Subject: Profile 16-011-I

Chris,
There was recently a small diesel fuel equipment release at the Superior Terminal and approximately 20 cubic yards of soil were generated during the environmental cleanup. A stockpile characterization sample was collected from the soil and the laboratory report is attached.

Can the data be added to the 16-011-I Superior Terminal Equipment Release profile as an addendum and can the soil be transported to VONCO V under this profile?

Thanks,

Ryan E. Erickson, PG

Senior Geologist
Duluth, MN office: 218.529.7112
fax: 218.529.8202
cell: 612.418.0166
rerickson@barr.com
www.barr.com

Vonco V Waste Management Campus
1100 West Gary Street
Duluth, MN 55808
Permit: SW 536

16-011-I SUP Terminal Field Equip Release					
Date	**Ticket**	**Customer**	**Truck**	**Material**	**Tons**
07/26/2018	301343	001342 - Enbridge Pipelines LLC	S98692W	Contaminated Soil Tons	11.10
07/26/2018	301350	001342 - Enbridge Pipelines LLC	S98692W	Contaminated Soil Tons	10.51
				Total Tons	**21.61**
				Total Loads	**2**

03-Jul-2018

Ryan Erickson
Barr Engineering Company
4300 Market Pointe Drive
Suite 200
Minneapolis, MN 55435

Re: **North Substation Stockpile (49161271.04)** Work Order: **18061869**

Dear Ryan,

ALS Environmental received 2 samples on 28-Jun-2018 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 13.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

Electronically approved by: Tom Beamish

Tom Beamish
Senior Project Manager

Report of Laboratory Analysis

ALS Group, USA

Date: 03-Jul-18

Client: Barr Engineering Company
Project: North Substation Stockpile (49161271.04)
Work Order: **18061869**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
18061869-01	N Substation Stockpile - 1	Soil		06/27/18 10:15	06/28/18 09:30	☐
18061869-02	Trip Blank	Soil		06/27/18 09:45	06/28/18 09:30	☐

ALS Group, USA

Date: 03-Jul-18

Client: Barr Engineering Company
Project: North Substation Stockpile (49161271.04)
WorkOrder: **18061869**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

Client: Barr Engineering Company
Project: North Substation Stockpile (49161271.04)
Work Order: 18061869

Case Narrative

Samples for the above noted Work Order were received on 06/28/18. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

With the following exceptions, all sample analyses achieved analytical criteria.

Volatile Organics:
No deviations or anomalies were noted.

Extractable Organics:
No deviations or anomalies were noted.

Wet Chemistry:
No deviations or anomalies were noted.

ALS Group, USA

Date: *03-Jul-18*

Client: Barr Engineering Company
Project: North Substation Stockpile (49161271.04)
Sample ID: N Substation Stockpile - 1
Collection Date: 06/27/18 10:15 AM

Work Order: 18061869
Lab ID: 18061869-01
Matrix: SOIL

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **PUBL-SW-141**			Prep: PUBL-SW-141 / 6/29/18		Analyst: **MEB**
DRO (C10-C28)	**1,300**		**6.3**	**63**	**mg/Kg-dry**	10	07/03/18 12:06
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**			Prep: SW5035 / 6/28/18		Analyst: **EMR**
Benzene	U		7.9	46	µg/Kg-dry	1	06/28/18 21:06
Ethylbenzene	U		9.7	46	µg/Kg-dry	1	06/28/18 21:06
m,p-Xylene	U		22	92	µg/Kg-dry	1	06/28/18 21:06
o-Xylene	U		18	46	µg/Kg-dry	1	06/28/18 21:06
Toluene	U		13	46	µg/Kg-dry	1	06/28/18 21:06
Xylenes, Total	U		40	140	µg/Kg-dry	1	06/28/18 21:06
Surr: 1,2-Dichloroethane-d4	*102*			*70-130*	*%REC*	1	06/28/18 21:06
Surr: 4-Bromofluorobenzene	*103*			*70-130*	*%REC*	1	06/28/18 21:06
Surr: Dibromofluoromethane	*102*			*70-130*	*%REC*	1	06/28/18 21:06
Surr: Toluene-d8	*97.6*			*70-130*	*%REC*	1	06/28/18 21:06
MOISTURE		Method: **SW3550C**					Analyst: **NW**
Moisture	**21**		**0.025**	**0.050**	**% of sample**	1	06/28/18 23:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *03-Jul-18*

Client: Barr Engineering Company
Project: North Substation Stockpile (49161271.04)
Sample ID: Trip Blank
Collection Date: 06/27/18 09:45 AM

Work Order: 18061869
Lab ID: 18061869-02
Matrix: SOIL

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260C**			Prep: SW5035 / 6/28/18		Analyst: **EMR**
Benzene	U		5.1	30	µg/Kg-dry	1	06/28/18 20:34
Ethylbenzene	U		6.3	30	µg/Kg-dry	1	06/28/18 20:34
m,p-Xylene	U		14	60	µg/Kg-dry	1	06/28/18 20:34
o-Xylene	U		12	30	µg/Kg-dry	1	06/28/18 20:34
Toluene	U		8.2	30	µg/Kg-dry	1	06/28/18 20:34
Xylenes, Total	U		26	90	µg/Kg-dry	1	06/28/18 20:34
Surr: 1,2-Dichloroethane-d4	*99.4*			*70-130*	*%REC*	1	06/28/18 20:34
Surr: 4-Bromofluorobenzene	*102*			*70-130*	*%REC*	1	06/28/18 20:34
Surr: Dibromofluoromethane	*98.4*			*70-130*	*%REC*	1	06/28/18 20:34
Surr: Toluene-d8	*98.8*			*70-130*	*%REC*	1	06/28/18 20:34

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 03-Jul-18

Client: Barr Engineering Company

QC BATCH REPORT

Work Order: 18061869

Project: North Substation Stockpile (49161271.04)

Batch ID: **120620** Instrument ID **GC8** Method: **PUBL-SW-141**

MBLK	Sample ID: **DBLKS1-120620-120620**				Units: **mg/Kg**			Analysis Date: **07/03/18 11:36 AM**			
Client ID:	Run ID: **GC8_180703A**				SeqNo: **5126467**			Prep Date: **06/29/18**		DF: **1**	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	U	0.5	5.0								

LCS	Sample ID: **DLCSS1-120620-120620**				Units: **mg/Kg**			Analysis Date: **07/03/18 11:07 AM**			
Client ID:	Run ID: **GC8_180703A**				SeqNo: **5126466**			Prep Date: **06/29/18**		DF: **1**	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	10.08	0.5	5.0	10	0	101	70-120	0			

LCSD	Sample ID: **DLCSDS1-120620-120620**				Units: **mg/Kg**			Analysis Date: **07/03/18 12:35 PM**			
Client ID:	Run ID: **GC8_180703A**				SeqNo: **5126469**			Prep Date: **06/29/18**		DF: **1**	
Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	10.32	0.5	5.0	10	0	103	70-120	10.08	2.37	20	

The following samples were analyzed in this batch: 18061869-01C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Barr Engineering Company
Work Order: 18061869
Project: North Substation Stockpile (49161271.04)

QC BATCH REPORT

Batch ID: **120572** Instrument ID **VMS9** Method: **SW8260C**

MBLK Sample ID: **MBLK-120572-120572** Units: **µg/Kg-dry** Analysis Date: **06/28/18 03:32 PM**
Client ID: Run ID: **VMS9_180628A** SeqNo: **5120052** Prep Date: **06/28/18** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.1	30	0	0	0	0-0	0			
Ethylbenzene	U	6.3	30	0	0	0	0-0	0			
m,p-Xylene	U	14	60	0	0	0	0-0	0			
o-Xylene	U	12	30	0	0	0	0-0	0			
Toluene	U	8.2	30	0	0	0	0-0	0			
Xylenes, Total	U	26	90	0	0	0	0-0	0			
Surr: 1,2-Dichloroethane-d4	*1080*	0	0	*1000*	0	*108*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*938.5*	0	0	*1000*	0	*93.8*	*70-130*	0			
Surr: Dibromofluoromethane	*934.5*	0	0	*1000*	0	*93.4*	*70-130*	0			
Surr: Toluene-d8	*957.5*	0	0	*1000*	0	*95.8*	*70-130*	0			

LCS Sample ID: **LCS-120572-120572** Units: **µg/Kg-dry** Analysis Date: **06/28/18 02:47 PM**
Client ID: Run ID: **VMS9_180628A** SeqNo: **5120048** Prep Date: **06/28/18** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1102	5.1	30	1000	0	110	75-125	0			
Ethylbenzene	977	6.3	30	1000	0	97.7	75-125	0			
m,p-Xylene	1845	14	60	2000	0	92.2	80-125	0			
o-Xylene	988	12	30	1000	0	98.8	75-125	0			
Toluene	961.5	8.2	30	1000	0	96.2	70-125	0			
Xylenes, Total	2833	26	90	3000	0	94.4	75-125	0			
Surr: 1,2-Dichloroethane-d4	*1049*	0	0	*1000*	0	*105*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*985.5*	0	0	*1000*	0	*98.6*	*70-130*	0			
Surr: Dibromofluoromethane	*1019*	0	0	*1000*	0	*102*	*70-130*	0			
Surr: Toluene-d8	*940*	0	0	*1000*	0	*94*	*70-130*	0			

MS Sample ID: **18061848-01A MS** Units: **µg/Kg-dry** Analysis Date: **06/28/18 09:40 PM**
Client ID: Run ID: **VMS9_180628A** SeqNo: **5120132** Prep Date: **06/28/18** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	974.9	5.2	30	1010	0	96.5	75-125	0			
Ethylbenzene	899.6	6.4	30	1010	0	89	75-125	0			
m,p-Xylene	1721	14	61	2021	0	85.2	80-125	0			
o-Xylene	905.2	12	30	1010	0	89.6	75-125	0			
Toluene	870.8	8.3	30	1010	0	86.2	70-125	0			
Xylenes, Total	2627	26	91	3031	0	86.7	75-125	0			
Surr: 1,2-Dichloroethane-d4	*1030*	0	0	*1010*	0	*102*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1011*	0	0	*1010*	0	*100*	*70-130*	0			
Surr: Dibromofluoromethane	*930.9*	0	0	*1010*	0	*92.2*	*70-130*	0			
Surr: Toluene-d8	*956.7*	0	0	*1010*	0	*94.7*	*70-130*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Barr Engineering Company
Work Order: 18061869
Project: North Substation Stockpile (49161271.04)

QC BATCH REPORT

Batch ID: **120572** Instrument ID **VMS9** Method: **SW8260C**

MSD Sample ID: **18061848-01A MSD** Units: **µg/Kg-dry** Analysis Date: **06/28/18 09:55 PM**
Client ID: Run ID: **VMS9_180628A** SeqNo: **5120133** Prep Date: **06/28/18** DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	992.6	5.2	30	1010	0	98.2	75-125	974.9	1.8	30	
Ethylbenzene	906.2	6.4	30	1010	0	89.7	75-125	899.6	0.727	30	
m,p-Xylene	1709	14	61	2021	0	84.6	80-125	1721	0.707	30	
o-Xylene	901.1	12	30	1010	0	89.2	75-125	905.2	0.447	30	
Toluene	838	8.3	30	1010	0	83	70-125	870.8	3.84	30	
Xylenes, Total	2610	26	91	3031	0	86.1	75-125	2627	0.617	30	
Surr: 1,2-Dichloroethane-d4	*1063*	0	0	*1010*	0	*105*	*70-130*	1030	*3.14*	*30*	
Surr: 4-Bromofluorobenzene	*999.6*	0	0	*1010*	0	*99*	*70-130*	1011	*1.16*	*30*	
Surr: Dibromofluoromethane	*957.2*	0	0	*1010*	0	*94.8*	*70-130*	930.9	*2.78*	*30*	
Surr: Toluene-d8	*950.6*	0	0	*1010*	0	*94.1*	*70-130*	956.7	*0.636*	*30*	

The following samples were analyzed in this batch: 18061869-01A 18061869-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Barr Engineering Company
Work Order: 18061869
Project: North Substation Stockpile (49161271.04)

QC BATCH REPORT

Batch ID: **R239174** Instrument ID **MOIST** Method: **SW3550C**

MBLK Sample ID: **WBLKS-R239174** Units: **% of sample** Analysis Date: **06/28/18 11:30 PM**
Client ID: Run ID: **MOIST_180628D** SeqNo: **5120426** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.025	0.050								

LCS Sample ID: **LCS-R239174** Units: **% of sample** Analysis Date: **06/28/18 11:30 PM**
Client ID: Run ID: **MOIST_180628D** SeqNo: **5120425** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.025	0.050	100	0	100	99.5-100.5	0			

DUP Sample ID: **18061888-01A DUP** Units: **% of sample** Analysis Date: **06/28/18 11:30 PM**
Client ID: Run ID: **MOIST_180628D** SeqNo: **5120409** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	9.05	0.025	0.050	0	0	0	0-0	9.17	1.32	10	

DUP Sample ID: **18061888-11A DUP** Units: **% of sample** Analysis Date: **06/28/18 11:30 PM**
Client ID: Run ID: **MOIST_180628D** SeqNo: **5120420** Prep Date: DF: **1**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	14.29	0.025	0.050	0	0	0	0-0	13.58	5.1	10	

The following samples were analyzed in this batch: 18061869-01B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

18061869

Barr Engineering Co. Chain of Custody

BARR

☐ Ann Arbor ☐ Bismarck ☒ Duluth ☐ Hibbing ☐ Jefferson City ☐ Minneapolis

Sample Origination State: ☐ KS ☐ MI ☐ MN ☐ MO ☐ ND ☐ SD ☒ WI Other: ____

COC Number: **53615**

COC 1 of 1

REPORT TO	
Company:	Barr Engineering
Address:	325 S. Lake Ave Duluth
Name:	Ryan Erickson
email:	rerickson@barr.com
Copy to:	datamgt@barr.com / Jtaraldsen@barr.com
Project Name:	North Substation Stockpile

INVOICE TO	
Company:	Barr
Address:	
Name:	Same
email:	
Barr Project No:	49161271.04 002 001

Analysis Requested — Soil: 40ml VOA Vial; 4 oz DRO; 4 oz Hold jar; % Solids

Matrix Code: GW = Groundwater; SW = Surface Water; WW = Waste Water; DW = Drinking Water; S = Soil/Solid; SD = Sediment; O = Other

Preservative Code: A = None; B = HCl; C = HNO_3; D = H_2SO_4; E = NaOH; F = MeOH; G = $NaHSO_4$; H = $Na_2S_2O_3$; I = Ascorbic Acid; J = NH_4Cl; K = Zn Acetate; O = Other

Preservative Code: F, A, A, A
Field Filtered Y/N: — — — —

	Location	Sample Depth Start	Stop	Unit (m./ft. or in.)	Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix Code	Perform MS/MSD Y/N	Total Number Of Containers	40ml VOA Vial	4 oz DRO	4 oz Hold jar	% Solids	Comments
1.	N Substation, Stockpile - 1	—		—	6/27/18	1015	S	N	5	2	1	1	1	BTEX, DRO, % Moisture + 4 oz Hold jar
2.	Trip Blank*	—			6/27/18	09:45*	Q/C	N	1	1				BTEX only
3.	Temp Blank	—			—	—	Q/C	N	1					—
4.														
5.														
6.	See COC # 53616													
7.	for trip Blank (SMA project)													
8.														
9.														
10.														

ASAP TAT

BARR USE ONLY	
Sampled by:	Jim Taraldsen / NCA
Barr Proj. Manager:	Ryan Erickson
Barr DQ Manager:	JET
Lab Name:	ALS Environmental
Lab Location:	Holland MI

Relinquished by:	On Ice?	Date	Time	Received by:	Date	Time
James Taraldsen	Y	6/27/18	12:00	FedEx		
FedEx	Y N	6/28/18	0930	[signature]		

Samples Shipped VIA: ☐ Courier ☒ Federal Express ☐ Sampler ☐ Other: ____

Air Bill Number:

Requested Due Date: ☐ Standard Turn Around Time ☒ Rush ASAP (mm/dd/yyyy)

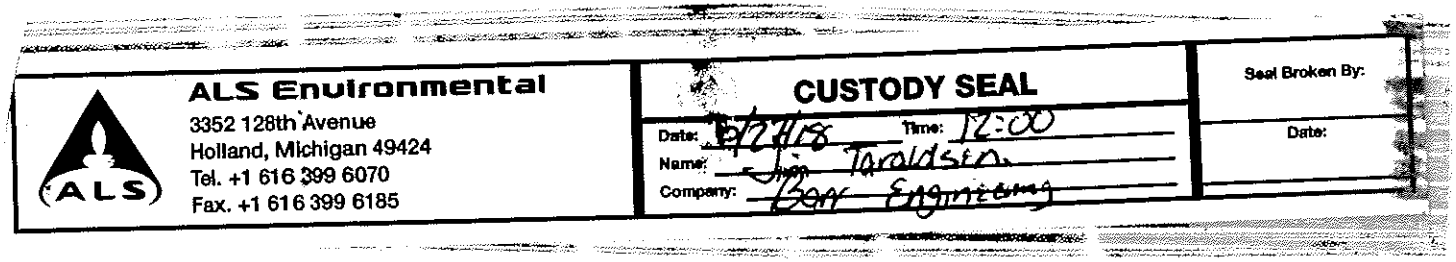
Lab WO: Temperature on Receipt (°C): Custody Seal Intact? ☐ Y ☐ N ☐ None

Distribution - White-Original: Accompanies Shipment to Laboratory; **Yellow Copy:** Include in Field Documents; **Pink Copy:** Send to Data Management Administrators.

4.2°c

TOB

H:\RLG\STDFORMS\Chain Of Custody Form 2015 RLG Rev. 06/16/15



ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185

CUSTODY SEAL

Date: 8/27/18 Time: 12:00
Name: Jim Taraldsen
Company: Bay Engineering

Seal Broken By:

Date:

ALS Group, USA

Sample Receipt Checklist

Client Name: **BARRENG-MN** Date/Time Received: **28-Jun-18 09:30**

Work Order: **18061869** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 28-Jun-18 (Date) Reviewed by: Tom Bramish (eSignature) 28-Jun-18 (Date)

Matrices: Soil

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.2/4.2 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	6/28/2018 12:42:44 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction: