2017 Groundwater Monitoring Program Report

Superior, WI Terminal

Prepared for
Enbridge Energy

January 2018

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ENBRIDGE ENERGY LIMITED PARTNERSHIP
GROUNDWATER MONITORING PROGRAM - REPORT FORM
(Superior Terminal – Superior, WI)
Sample Dates: May 22 - 24 and October 2 - 5, 2017

I. Site Location

Site Name/Address: *Superior Terminal, 2800 East 21st Street, Superior, WI, 54880*
Milepost: *1096.95* Location Map Attached? ☒ Yes ☐ No *See Figure 1*

Legal Description: ___¼, ___ ¼, Sec *31, 36*, T *49*, R *13, 14* County: *Douglas* State: *WI*

II. Review of Physical Setting

Topography/Run-off Direction: *South*

Surrounding Land Use:

Industrial/Forest/Residential	North
Forest/Nemadji River/Golf Course	South
Industry/Forest	West
Forest/Nemadji River	East

Adjacent Water Bodies?: *Yes – to the South and East*

Name of water body (if applicable): *Nemadji River*

III. Monitoring Well Data

Monitoring Wells: *28* Site Map with Monitoring Well Locations Attached? ☒ Yes ☐ No *See Figure 2*

Key Number 3382

Well Locations (GPS Coordinates):
(add lines as necessary)

MW-1	N *46° 41' 15.577"* W *92° 4' 7.232"*	MW-2	N *46° 40' 50.491"* W *92° 4' 0.000"*	MW-5	N *46° 41' 17.485"* W *92° 3' 3.300"*
MW-5B	*46° 41' 17.419"* *-92° 3' 3.276"*	MW-6	N *46° 41' 2.130"* W *92° 3' 42.639"*	MW-6B	*46° 41' 2.101"* *-92° 3' 42.732"*
MW-10	N *46° 40' 52.450"* W *92° 3' 24.977"*	MW-11	N *46° 41' 3.405"* W *92° 3' 8.875"*	MW-11B	N *46° 41' 3.071"* W *92° 3' 24.977"*
MW-12	N *46° 41' 26.093"* W *92° 3' 2.688"*	MW-14	N *46° 41' 0.521"* W *92° 4' 0.463"*	MW-15	N *46° 41' 4.421"* W *92° 4' 1.809"*
MW-17	N *46° 41' 23.170"* W *92° 2' 53.818"*	MW-17B	N *46° 41' 23.210"* W *92° 2' 53.936"*	MW-18	N *46° 41' 26.916"* W *92° 2' 47.933"*
MW-19A	N *46° 41' 24.517"* *W 92° 3' 50.792"*	MW-19B	N *46° 41' 24.522"* W *92° 3' 50.727"*	MW-20A	N *46° 41' 8.337"* W *92° 3' 26.652"*

MW-20B	N *46° 41' 8.311"* W *92° 3' 26.584"*	MW-21A	N 46° 40' 54.784" W 92° 3' 38.863"	MW-21B	N *46° 40' 54.833"* W *92° 3' 38.848"*
MW-22B	*46° 41' 0.582"* *-92° 3' 11.2788"*	MW-23B	*46° 41' 11.6916"* *-92° 3' 2.5344"*	MW-24A	*46° 41' 25.3356"* *-92° 3' 22.4172"*
MW-24B	*46° 41' 25.386"* *-92° 3' 22.3308"*	MW-25A	*46° 41' 40.1676"* *-92° 2' 45.6936"*	MW-25B	*46° 41' 40.2036"* *-92° 2' 45.744"*
MW-26	*46° 41' 48.6024"* *46° 41' 48.6024"*				

Average Groundwater Depth (Shallow Wells): *2.35 feet below grade*
Average Groundwater Depth (Deep Wells): *12.06 feet below grade*

Groundwater Elevation and Survey Data Attached? ☒ Yes ☐ No *See Table 1 and Figure 2*

Groundwater Samples Collected? ☒ Yes ☐ No #Sampling Events: 2

Analytical Laboratory Name & Location: *ALS Environmental, Holland, Michigan (spring); Pace Analytical, Minneapolis, MN (fall).*

Analytical Parameters Submitted:

Groundwater: petroleum volatile organic compounds (PVOCs; 1,2,4 – trimethylbenzene; 1,3,5-trimethylbenzene; benzene; ethylbenzene; toluene; total xylenes; methyl tert-butyl ether) plus naphthalene.

Analytical Laboratory Reports Attached? ☒ Yes ☐ No - *See Appendix A*

Analytes Detected? ☒ Yes ☐ No *See Appendix A (Spring 2017: Naphthalene detection of 0.18 µg/l in Trip Blank; Fall 2017: Toluene detection of 0.22 µg/l in MW-19B and 0.17 µg/l in Trip Blank). All detections were below laboratory reporting limit)*

Free Product Encountered? ☐ Yes ☒ No Location: *N/A*

IV. Conclusions

- Each well was photographed and the general condition of each well was documented in the spring and fall events. Photographs of each well from the spring and fall are provided in Appendix B.
- Well names had faded from the tags on many of the protop casings. In the fall, well names were written in paint marker on the protop casings and tags where they were absent.
- Barr measured water levels and well depths in existing wells prior to groundwater sample collection.
- Groundwater levels were relatively high during the spring event. Upon opening the wells, groundwater in monitoring wells MW-5, MW-15, MW-25A, and MW-2 was observed inside the dedicated bailers that hung inside the well riser pipes. The water in the bailers was shaken back into the well prior to measuring water levels. Prior to this sampling event, it had been decided to discontinue the use of dedicated bailers, therefore the old bailers were removed from each monitoring well and discarded.
- Groundwater contours of the shallow and deep wells are provided in Figures 3 through 6.
- Field water quality parameters were measured prior to well purging using a YSI 556 down-well probe. Field parameter and well purging documentation is provided in Appendix C.

- Groundwater samples were collected from each of the existing monitoring wells following well purging as documented on the field sampling forms in Appendix C. Groundwater samples were collected using new disposable bailers.
- Groundwater sampling in 2017 occurred between May 22nd and 24th (spring event) and from October 2nd to 5th (fall event).
- Samples collected from each monitoring well were analyzed for PVOCs plus Naphthalene.
- No analytes were detected above laboratory reporting limits from any of the groundwater samples collected.
- During the spring event, Naphthalene was detected in the trip blank at a concentration of 0.18 µg/l.
- During the fall event, Toluene was detected at 0.22 µg/l in MW-19B and 0.17 µg/l in the trip blank.
- All detections were flagged by the laboratory as estimated concentrations between the method detection limit and the reporting limit.
- The detection at MW-19B may be related to use of WD-40 to open the padlock on the protective casing; this was the only well on which petroleum-based lubricant was used.
- During the fall event, the laboratory noted that many of the sample vials contained headspace (an air bubble greater than 6 mm diameter). The samples with headspace were MW-1, MW-2, MW-5, MW-6, MW-6B, MW-10, MW-17, MW-19A, MW-19B, MW-20A, MW-20B, MW-21A, MW-21B, MW-23B, MW-24A, and MW-26. The following samples did not have headspace: MW-5B, MW-11, MW-11B, MW-12, MW-14, MW-15, MW-17B, MW-18, MW-22B, MW-24B, MW-25A, and MW-25B. None of the wells at the Superior Terminal have a history of analyte detections, so the headspace is not believed to have compromised any samples. Because headspace has not been a problem in samples collected by Barr in the past, the headspace is not believed to be a result of groundwater chemistry. In addition, we have no reason to believe there was an issue with our sampling technique. According to Pace Analytical, other clients had similar problems around the time these samples were analyzed and they believe that their sample vials were the source of the problem.

Well Maintenance Activities

Several well maintenance issues were identified during the 2016 sampling events and targeted for repair in 2017. These included cutting and resurveying the risers of MW-12 and MW-25B and cleaning MW-11, MW-14, and MW-15. Cleaning of MW-22B was added to the list after small black flecks were identified in the well during the spring 2017 event. Tasks associated with well maintenance are summarized below and described in more detail in Appendix D.

- During the spring event, the PVC riser pipe and cap on MW-12 was higher than the outside protective casing preventing the protective casing lid from being fully closed. As a result, the PVC riser was cut down and resurveyed on June 27, 2017. The new top of casing elevation for MW-12 has been updated on Table 1. The design of this protective casing makes this the only well at the Superior Terminal that cannot be locked.
- In the spring of 2017, the protective casing at MW-25B was found resting on the riser cap and bentonite was observed seeping up from the base of the protective casing. During the short time it was opened to collect a sample, the protective casing sunk below the height of the top of riser and could not be repositioned to close and lock the cover. Enbridge Pipeline Maintenance were able to lift the protective casing and install a gravel pad around the casing in July 2017. The well was observed to be in good condition during the fall event.
- Between the fall of 2016 and spring of 2017, evidence of bacterial and/or biological growth was observed in MW-11, MW-14, MW-15, and MW-22B. The wells were scrubbed and flushed on June 27, 2017 to reduce potential bacterial growth inside the riser and screen. During the fall event, apparent root hairs were observed again in MW-14 and MW-15, but in fewer numbers than in the

spring. Similarly, fewer algae-like flakes and no organic slime was observed in MW-22B. It is unknown if these conditions are the result of the surrounding geologic / hydrogeologic conditions, the age of the wells, or if these wells have been compromised (cracked or broken) allowing near-surface bacterial material to enter the well. There is no indication of damage to the riser or casing. This year's removal of the dedicated bailers may help.

V. Recommendations

- Continue to check monitoring well condition and measure water levels semi-annually.
- Continue to sample monitoring wells semi-annually for PVOC + Naphthalene.
- The locks on the following wells were difficult to open during the fall event and should therefore be considered for replacement: MW-1, MW-11B, MW-11, MW-19B, MW-19, MW-18 and MW-17B.
- MW-6 and MW-6B were overgrown with burdock and thistles in the fall, making them difficult to access. We recommend Enbridge consider clearing / mowing the area to improve access.

VI. Monitoring Well Conditions (well by well; spring event)

- MW-1 was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-2 was in good condition, recovery rate was poor, purged water was clear to turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-5 was in good condition, recovery rate was poor, purged water was clear, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-5B was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-6 was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-6B was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-10 was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-11 was in good condition, recovery rate was poor, purged water was clear, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-11B was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-12 was in fair condition (riser cap sits higher than the outside protective casing preventing the well from being locked), recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-14 was in good condition, recovery rate was poor, purged water was clear to slightly turbid, some small plant roots were observed in the purge water, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-15 was in good condition, recovery rate was poor, purged water was clear, some small plant roots were observed in the purge water, no evidence of contamination (odor, discoloration, sheen) was observed.

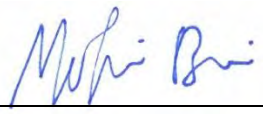
- MW-17 was in good condition, recovery rate was poor, purged water was clear, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-17B was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-18 was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-19A was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed. A duplicate sample was collected at this well. No analytes were detected in the sample or the duplicate.
- MW-19B was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-20A was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-20B was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-21A was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-21B was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-22B was in good condition, but contractors are using the area around MW-22B for parking and equipment storage. Small black flecks (possibly algae) and clear organic slime was observed on top of the water column during water level measurements, recovery rate was poor, purged water was clear to very turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-23B was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed. A duplicate sample was collected at this well. No analytes were detected in the sample or the duplicate.
- MW-24A was in good condition, recovery rate was poor, purged water was slightly turbid to turbid, no evidence of contamination (odor, discoloration, sheen) was observed. A duplicate sample was collected at this well. No analytes were detected in the sample or the duplicate.
- MW-24B was in good condition, recovery rate was poor, purged water was clear to turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-25A was in good condition, recovery rate was poor, purged water was slightly turbid to very turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-25B was in fair condition (the protective casing could not be closed following sampling because the protective casing had sunk below the top of riser), recovery rate was poor, purged water was clear to very turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-26 was in good condition, recovery rate was fair, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.

VII. Monitoring Well Conditions (well by well; fall event)

- MW-1 was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, or sheen) was observed.
- MW-2 was in good condition, recovery rate was poor, purged water was clear to turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-5 was in good condition, recovery rate was poor, purged water was clear and slightly pink, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-5B was in good condition, recovery rate was poor, purged water was clear and slightly pink, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-6 was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-6B was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-10 was in good condition, recovery rate was poor, purged water was clear and slightly gray, no evidence of contamination (odor, discoloration, sheen) was observed. Waxy pinkish flakes were observed on water level probe after measuring water level. A duplicate sample was collected at this well. No analytes were detected in the sample or the duplicate.
- MW-11 was in good condition, recovery rate was poor, purged water was clear and slightly gray, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-11B was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-12 was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-14 was in good condition, recovery rate was poor, purged water was clear to slightly turbid, some small plant roots were observed in the purge water, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-15 was in good condition, recovery rate was poor, purged water was clear to slightly turbid, some small plant roots were observed in the purge water, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-17 was in good condition, recovery rate was poor, purged water was clear, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-17B was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-18 was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-19A was in good condition, recovery rate was poor, purged water was clear and slightly gray, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-19B was in good condition, recovery rate was poor, purged water was clear and slightly gray, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-20A was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-20B was in good condition, recovery rate was poor, purged water was clear, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-21A was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed. Waxy pinkish flakes were observed on water level probe after measuring water level. A duplicate sample was collected at this well. No analytes were detected in the sample or the duplicate.

- MW-21B was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-22B was in good condition. Small brown flecks (possibly algae) were observed on top of the water column during water level measurements. Recovery rate was poor, purged water was clear to very turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-23B was in good condition, recovery rate was poor, purged water was clear and slightly gray, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-24A was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed. A duplicate sample was collected at this well. No analytes were detected in the sample or the duplicate.
- MW-24B was in good condition, recovery rate was poor, purged water was clear to turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-25A was in good condition, recovery rate was poor, purged water was slightly turbid to very turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-25B was in good condition, recovery rate was poor, purged water was clear to very turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-26 was in good condition, recovery rate was fair, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, sheen) was observed.

Company Name: Barr Engineering Co.

Prepared By: Martin Bevis  1/31/2018

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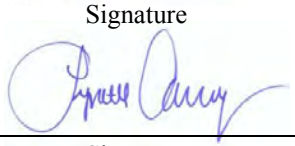
Reviewed By: Lynette Carney  1/31/2018

Printed Name | Signature | Date

Tables

Table 1
Groundwater Elevations
Enbridge Energy Limited Partnership - Superior, WI Terminal

Location	Date	TOC Elevation (feet NGVD)	Grade Elevation (feet NGVD)	Depth to Groundwater (feet)	Groundwater Elevation (feet NGVD)
MW-1	20-Dec-99	665.19	663.15	6.35	658.84
	14-Jan-00			6.91	658.28
	16-Feb-00			7.26	657.93
	1-Dec-03			6.94	658.25
	14-Oct-04			5.70	659.49
	15-Sep-08			9.43	655.76
	1-Oct-09			6.90	658.29
	20-Sep-10	665.22	663.46	5.61	659.61
	20-Sep-11			6.23	658.99
	26-Sep-12			7.33	657.89
	20-Nov-13			5.81	659.41
	27-Aug-14			5.67	659.55
	10-Nov-15			5.47	659.75
	16-May-16			5.63	659.59
	3-Oct-16			6.59	658.63
	22-May-17			4.47	660.75
	2-Oct-17			5.12	660.10
MW-2	20-Dec-99	659.42	656.96	4.17	655.25
	14-Jan-00			6.71	652.71
	16-Feb-00			7.49	651.93
	1-Dec-03			4.91	654.51
	14-Oct-04			4.81	654.61
	16-Oct-08			4.04	655.38
	1-Oct-09			7.25	652.17
	17-Sep-10	659.37	657.06	4.81	654.56
	20-Sep-11			6.74	652.63
	26-Sep-12			8.23	651.14
	20-Nov-13			5.31	654.06
	27-Aug-14			4.11	655.26
	10-Nov-15			3.30	656.07
	16-May-16			4.09	655.28
	3-Oct-16			5.70	653.67
	22-May-17			3.07	656.30
	2-Oct-17			3.14	656.23
MW-5	20-Dec-99	645.43	642.85	3.92	641.51
	14-Jan-00			6.33	639.10
	16-Feb-00			6.82	638.61
	1-Dec-03			7.26	638.17
	14-Oct-04			5.27	640.16
	15-Sep-08			6.32	639.11
	1-Oct-09			7.50	637.93
	17-Sep-10	645.37	642.85	6.26	639.11
	20-Sep-11			7.55	637.82
	26-Sep-12			9.75	635.62
	20-Nov-13			4.13	641.24
	29-Aug-14			3.68	641.69
	12-Nov-15			4.14	641.23
	18-May-16			3.38	641.99
	4-Oct-16			3.69	641.68
	23-May-17			2.87	642.50
	5-Oct-17			2.80	642.57

Table 1
Groundwater Elevations
Enbridge Energy Limited Partnership - Superior, WI Terminal

Location	Date	TOC Elevation (feet NGVD)	Grade Elevation (feet NGVD)	Depth to Groundwater (feet)	Groundwater Elevation (feet NGVD)
MW-5B	13-Nov-15	644.199‡	640.89‡	56.33*	587.87
	18-May-16			8.12	636.08
	4-Oct-16			9.14	635.06
	23-May-17			8.15	636.05
	5-Oct-17			7.18	637.02
MW-6	20-Dec-99	648.03	646.07	21.16	626.87
	14-Jan-00			18.63	629.40
	16-Feb-00			14.12	633.91
	1-Dec-03			8.63	639.40
	14-Oct-04			8.19	639.84
	15-Sep-08			7.51	640.52
	1-Oct-09			8.98	639.05
	17-Sep-10	648.01	645.79	7.65	640.36
	20-Sep-11			7.94	640.07
	26-Sep-12			8.40	639.61
	20-Nov-13			7.42	640.59
	29-Aug-14			7.40	640.61
	11-Nov-15			7.49	640.52
	16-May-16			7.60	640.41
	6-Oct-16			8.60	639.41
	22-May-17			7.24	640.77
	3-Oct-17			6.65	641.36
MW-6B	12-Nov-15	646.77‡	644.23‡	51.56*	595.21
	17-May-16			9.92	636.85
	6-Oct-16			10.80	635.97
	22-May-17			9.12	637.65
	3-Oct-17			9.15	637.62
MW-10	20-Sep-10	662.01	660.11	6.10	655.91
	20-Sep-11			6.52	655.49
	26-Sep-12			6.86	655.15
	21-Nov-13			5.79	656.22
	29-Aug-14			4.28	657.73
	11-Nov-15			5.81	656.20
	17-May-16			6.10	655.91
	6-Oct-16			5.43	656.58
	23-May-17			5.20	656.81
	4-Oct-17			4.75	657.26
MW-11	20-Sep-10	656.33	654.06	8.31	648.02
	20-Sep-11			8.70	647.63
	26-Sep-12			8.27	648.06
	21-Nov-13			8.77	647.56
	28-Aug-14			7.86	648.47
	11-Nov-15			7.88	648.45
	17-May-16			8.22	648.11
	6-Oct-16			8.70	647.63
	23-May-17			7.80	648.53
	4-Oct-17			7.69	648.64
MW-11B	5-Dec-13	655.91	653.86	54.71*	601.20
	28-Aug-14			22.66	633.25
	11-Nov-15			21.81	634.10
	17-May-16			24.28	631.63
	6-Oct-16			26.50	629.41
	23-May-17			22.94	632.97
	4-Oct-17			26.95	628.96

Table 1
Groundwater Elevations
Enbridge Energy Limited Partnership - Superior, WI Terminal

Location	Date	TOC Elevation (feet NGVD)	Grade Elevation (feet NGVD)	Depth to Groundwater (feet)	Groundwater Elevation (feet NGVD)
MW-12	20-Sep-10	649.46	645.36	6.65	642.81
	20-Sep-11			7.35	642.11
	26-Sep-12			9.81	639.65
	21-Nov-13			7.81	641.65
	29-Aug-14			8.23	641.23
	10-Nov-15			4.90	644.56
	19-May-16			4.98	644.48
	4-Oct-16			5.05	644.41
	23-May-17			4.75	644.71
	4-Oct-17	649.17		4.42	644.75
MW-14	20-Sep-10	661.15	659.27	5.57	655.58
	20-Sep-11			6.32	654.83
	26-Sep-12			6.76	654.39
	20-Nov-13			5.52	655.63
	29-Aug-14			4.67	656.48
	10-Nov-15			5.00	656.15
	16-May-16			5.77	655.38
	5-Oct-16			6.50	654.65
	22-May-17			3.40	657.75
	2-Oct-17			4.82	656.33
MW-15	20-Sep-10	660.88	659.1	3.50	657.38
	20-Sep-11			5.03	655.85
	26-Sep-12			6.53	654.35
	20-Nov-13			4.64	656.24
	29-Aug-14			3.38	657.50
	10-Nov-15			3.93	656.95
	16-May-16			3.86	657.02
	5-Oct-16			5.35	655.53
	22-May-17			2.92	657.96
	2-Oct-17			2.82	658.06
MW-17	2-Nov-12	643.19	640.7	15.99*	627.20
	20-Nov-13			5.62	637.57
	28-Aug-14			5.40	637.79
	12-Nov-15			4.80	638.39
	18-May-16			5.30	637.89
	4-Oct-16			6.15	637.04
	23-May-17			4.24	638.95
	5-Oct-17			3.93	639.26
MW-17B	17-Dec-13	643.27	640.95	44.25*	599.02
	28-Aug-14			18.41	624.86
	12-Nov-15			15.41	627.86
	18-May-16			19.07	624.20
	4-Oct-16			21.81	621.46
	23-May-17			17.78	625.49
	5-Oct-17			22.30	620.97
MW-18	2-Nov-12	644.23	641.8	13.83*	630.40
	20-Nov-13			5.95	638.28
	29-Aug-14			5.31	638.92
	12-Nov-15			5.24	638.99
	18-May-16			6.10	638.13
	7-Oct-16			5.66	638.57
	23-May-17			5.55	638.68
	5-Oct-17			5.25	638.98

Table 1
Groundwater Elevations
Enbridge Energy Limited Partnership - Superior, WI Terminal

Location	Date	TOC Elevation (feet NGVD)	Grade Elevation (feet NGVD)	Depth to Groundwater (feet)	Groundwater Elevation (feet NGVD)
MW-19A	5-Dec-13	658.12	656.15	17.81*	640.31
	27-Aug-14			3.92	654.20
	10-Nov-15			3.41	654.71
	16-May-16			3.40	654.72
	3-Oct-16			3.59	654.53
	22-May-17			3.27	654.85
	5-Oct-17			3.08	655.04
MW-19B	5-Dec-13	658.22	656.19	53.90*	604.32
	27-Aug-14			13.42	644.80
	10-Nov-15			13.37	644.85
	17-May-16			13.31	644.91
	3-Oct-16			13.74	644.48
	22-May-17			12.88	645.34
	5-Oct-17			13.46	644.76
MW-20A	17-Dec-13	651.04	648.98	21.48*	629.56
	28-Aug-14			6.34	644.70
	9-Nov-15			5.84	645.20
	17-May-16			5.08	645.96
	5-Oct-16			7.50	643.54
	23-May-17			4.33	646.71
	3-Oct-17			4.67	646.37
MW-20B	26-Nov-13	651.34	649.36	56.40*	594.94
	28-Aug-14			20.47	630.87
	9-Nov-15			18.97	632.37
	17-May-16			19.24	632.10
	5-Oct-16			19.89	631.45
	22-May-17			17.72	633.62
	3-Oct-17			19.97	631.37
MW-21A	17-Dec-13	648.84	646.86	18.04*	630.80
	27-Aug-14			5.39	643.45
	11-Nov-15			4.61	644.23
	17-May-16			4.10	644.74
	6-Oct-16			6.25	642.59
	22-May-17			3.90	644.94
	3-Oct-17			4.00	644.84
MW-21B	17-Dec-13	648.83	646.68	38.62*	608.06
	27-Aug-14			18.98	629.85
	11-Nov-15			18.78	630.05
	17-May-16			18.50	630.33
	6-Oct-16			19.38	629.45
	22-May-17			18.71	630.12
	3-Oct-17			20.03	628.80
MW-22B	13-Nov-15	658.35‡	655.49‡	12.23*	646.12
	17-May-16			16.11	642.24
	4-Oct-16			16.55	641.80
	23-May-17			17.19	641.16
	4-Oct-17			17.83	640.52
MW-23B	16-Nov-15	646.22‡	643.51‡	50.51*	595.71
	18-May-16			9.25	636.97
	4-Oct-16			14.07	632.15
	23-May-17			8.32	637.90
	5-Oct-17			6.36	639.86
MW-24A	13-Nov-15	651.69‡	649.09‡	16.3*	635.39
	18-May-16			4.20	647.49
	5-Oct-16			3.69	648.00
	23-May-17			3.74	647.95
	3-Oct-17			3.65	648.04

Table 1
Groundwater Elevations
Enbridge Energy Limited Partnership - Superior, WI Terminal

Location	Date	TOC Elevation (feet NGVD)	Grade Elevation (feet NGVD)	Depth to Groundwater (feet)	Groundwater Elevation (feet NGVD)
MW-24B	13-Nov-15	651.45‡	648.86‡	21.33*	630.12
	18-May-16			15.52	635.93
	5-Oct-16			15.83	635.62
	23-May-17			14.06	637.39
	3-Oct-17			13.52	637.93
MW-25A	13-Nov-15	638.31‡	635.91‡	2.71*	635.60
	19-May-16			3.05	635.26
	3-Oct-16			3.68	634.63
	23-May-17			3.03	635.28
	4-Oct-17			3.05	635.26
MW-25B	13-Nov-15	638.52‡	635.85‡	15.52*	623.00
	19-May-16			7.40	631.12
	3-Oct-16			8.38	630.14
	23-May-17			7.60	630.92
	4-Oct-71			8.50	630.02
MW-26	13-Nov-15	646.17‡	643.44‡	17.5*	628.67
	28-May-16			7.79	638.38
	4-Oct-16			6.46	639.71
	23-May-17			7.44	638.73
	4-Oct-17			7.10	639.07

Notes:
NGVD = National Geodetic Vertical Datum
TOC = Top of Casing
* = New well construction. Steady state depth to groundwater not established.
‡ = Feet in NAVD88 (North America Verticle Datum)

Table 2
Groundwater Quality Data
Enbridge Energy Limited Partnership - Superior, WI Terminal

Location	Date	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Total Xylenes (µg/L)	DRO (µg/L)	Napthalene (µg/L)	1,2,4- Trimethylbenzene (µg/L)	1,3,5- Trimethylbenzene (µg/L)
MW-1	20-Dec-99	< 1.0	< 1.2	<1.1	< 3.7	< 100	NS	NS	NS
	2-Dec-03	<0.30	<0.60	<0.58	<1.84	<100	NS	NS	NS
	14-Oct-04	0.28*	< 0.40	< 0.36	< 1.1	< 110	NS	NS	NS
	15-Sep-08	< 1.0	< 1.0	< 1.0	< 3.0	< 500	NS	NS	NS
	1-Oct-09	< 1.0	< 1.0	< 1.0	< 3.0	<51	NS	NS	NS
	17-Sep-10	< 1.0	< 1.0	< 1.0	< 3.0	<100	NS	NS	NS
	20-Sep-11	< 1.0	< 1.0	< 1.0	< 3.0	<115	NS	NS	NS
	26-Sep-12	< 1.0	< 1.0	< 1.0	< 3.0	<120	NS	NS	NS
	22-Nov-13	< 1.0	< 1.0	< 1.0	< 3.0	NS	< 4.0	< 1.0	< 1.0
	27-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	10-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	24-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	3-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	22-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	2-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-2	20-Dec-99	< 1.0	< 1.2	<1.1	< 3.7	<100	NS	NS	NS
	2-Dec-03	<0.30	<0.60	<0.58	<1.84	<100	NS	NS	NS
	14-Oct-04	1.5*	< 0.40	< 0.36	< 1.1	< 100	NS	NS	NS
	16-Oct-08	< 1.0	< 1.0	< 1.0	< 3.0	<460	NS	NS	NS
	1-Oct-09	< 1.0	< 1.0	< 1.0	< 3.0	<51	NS	NS	NS
	17-Sep-10	< 1.0	< 1.0	< 1.0	< 3.0	<103	NS	NS	NS
	20-Sep-11	< 1.0	< 1.0	< 1.0	< 3.0	<111	NS	NS	NS
	26-Sep-12	< 1.0	< 1.0	< 1.0	< 3.0	<110	NS	NS	NS
	22-Nov-13	< 1.0	<1.0	<1.0	< 3.0	NS	<4.0	<1.0	<1.0
	27-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	10-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	24-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	3-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	22-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	2-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-5	20-Dec-99	< 1.0	< 1.2	<1.1	< 3.7	<100	NS	NS	NS
	2-Dec-03	<0.30	<0.60	<0.58	<1.84	<100	NS	NS	NS
	14-Oct-04	0.75*	< 0.40	< 0.36	< 1.1	< 100	NS	NS	NS
	15-Sep-08	< 1.0	< 1.0	< 1.0	< 3.0	< 460	NS	NS	NS
	1-Oct-09	< 1.0	< 1.0	< 1.0	< 3.0	160	NS	NS	NS
	17-Sep-10	< 1.0	< 1.0	< 1.0	< 3.0	<102	NS	NS	NS
	20-Sep-11	< 1.0	< 1.0	< 1.0	< 3.0	<110	NS	NS	NS
	26-Sep-12	< 1.0	< 1.0	< 1.0	< 3.0	<100	NS	NS	NS
	25-Nov-13	< 1.0	< 1.0	< 1.0	< 3.0	NS	< 4.0	< 1.0	< 1.0
	29-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	12-Nov-15 (Dup-2)	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	24-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	4-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	24-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	5-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-5B	13-Nov-15‡	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	24-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	4-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	24-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	5-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0

Table 2
Groundwater Quality Data
Enbridge Energy Limited Partnership - Superior, WI Terminal

Location	Date	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Total Xylenes (µg/L)	DRO (µg/L)	Napthalene (µg/L)	1,2,4- Trimethylbenzene (µg/L)	1,3,5- Trimethylbenzene (µg/L)
MW-6	20-Dec-99	< 1.0	< 1.2	<1.1	< 3.7	<100	NS	NS	NS
	2-Dec-03	<0.30	<0.60	<0.58	<1.84	<100	NS	NS	NS
	14-Oct-04	0.67*	< 0.40	< 0.36	< 1.1	< 100	NS	NS	NS
	15-Sep-08	< 1.0	< 1.0	< 1.0	< 3.0	< 460	NS	NS	NS
	1-Oct-09	< 1.0	< 1.0	< 1.0	< 3.0	<51	NS	NS	NS
	20-Sep-10	< 1.0	< 1.0	< 1.0	< 3.0	<108	NS	NS	NS
	20-Sep-11	< 1.0	< 1.0	< 1.0	< 3.0	<115	NS	NS	NS
	26-Sep-12	< 1.0	< 1.0	< 1.0	< 3.0	<110	NS	NS	NS
	25-Nov-13	< 1.0	< 1.0	< 1.0	< 3.0	NS	< 4.0	< 1.0	< 1.0
	29-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	29-Aug-14(DUP-2)	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	11-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	21-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	6-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	23-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	3-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-6B	12-Nov-15‡	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	21-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	6-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	23-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	3-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-10	20-Sep-10	< 1.0	< 1.0	< 1.0	< 3.0	212	NS	NS	NS
	20-Sep-11	< 1.0	< 1.0	< 1.0	< 3.0	170	NS	NS	NS
	26-Sep-12	< 1.0	< 1.0	< 1.0	< 3.0	150	NS	NS	NS
	21-Nov-13	< 1.0	< 1.0	< 1.0	< 3.0	NS	< 4.0	< 1.0	< 1.0
	29-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	11-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	21-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	6-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	23-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	4-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-11	20-Sep-10	<1.0	<1.0	2.2	<3.0	373	NS	NS	NS
	20-Sep-11	< 1.0	< 1.0	< 1.0	< 3.0	266	NS	NS	NS
	26-Sep-12	< 1.0	< 1.0	< 1.0	< 3.0	330	NS	NS	NS
	21-Nov-13	< 1.0	< 1.0	< 1.0	< 3.0	NS	< 4.0	1.2	< 1.0
	28-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	11-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	21-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	6-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	23-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	4-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-11B	5-Dec-13	< 1.0	< 1.0	< 1.0	3.1	NS	< 4.0	< 1.0	< 1.0
	28-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	11-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	21-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	6-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	23-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	4-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-12	17-Sep-10	< 1.0	< 1.0	< 1.0	< 3.0	<101	NS	NS	NS
	20-Sep-11	< 1.0	< 1.0	< 1.0	< 3.0	<110	NS	NS	NS
	26-Sep-12	< 1.0	< 1.0	< 1.0	< 3.0	<110	NS	NS	NS
	25-Nov-13	< 1.0	< 1.0	< 1.0	< 3.0	NS	< 4.0	< 1.0	< 1.0
	29-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	10-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	22-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	4-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	24-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	4-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0

Table 2
Groundwater Quality Data
Enbridge Energy Limited Partnership - Superior, WI Terminal

Location	Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	Total Xylenes (ug/L)	DRO (ug/L)	Napthalene (ug/L)	1,2,4- Trimethylbenzene (ug/L)	1,3,5- Trimethylbenzene (ug/L)
MW-14	17-Sep-10	< 1.0	< 1.0	< 1.0	< 3.0	<111	NS	NS	NS
	20-Sep-11	< 1.0	< 1.0	< 1.0	< 3.0	<105	NS	NS	NS
	26-Sep-12	< 1.0	< 1.0	< 1.0	< 3.0	<110	NS	NS	NS
	22-Nov-13	< 1.0	< 1.0	< 1.0	< 3.0	NS	< 4.0	< 1.0	< 1.0
	29-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	10-Nov-15(Dup-1)	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	22-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	5-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	22-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	2-Oct-17	<1.1	<0.45	<0.57	<0.81	NS	<1.4	<0.45	<0.60
MW-15	17-Sep-10	< 1.0	< 1.0	< 1.0	< 3.0	<102	NS	NS	NS
	20-Sep-11	< 1.0	< 1.0	< 1.0	< 3.0	<112	NS	NS	NS
	26-Sep-12	< 1.0	< 1.0	< 1.0	< 3.0	<110	NS	NS	NS
	22-Nov-13	< 1.0	< 1.0	< 1.0	< 3.0	NS	< 4.0	< 1.0	< 1.0
	29-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	10-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	22-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	5-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	22-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	2-Oct-17	<1.1	<0.45	<0.57	<0.81	NS	<1.4	<0.45	<0.60
MW-17	2-Nov-12	< 1.0	< 1.0	< 1.0	< 3.0	190	NS	NS	NS
	21-Nov-13	< 1.0	< 1.0	< 1.0	< 3.0	NS	< 4.0	< 1.0	< 1.0
	28-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	28-Aug-14(DUP-1)	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	12-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	22-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	4-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	24-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	5-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-17B	17-Dec-13	< 1.0	< 1.0	< 1.0	< 3.0	NS	< 4.0	< 1.0	< 1.0
	28-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	12-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	22-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	4-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	24-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	5-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-18	2-Nov-12	< 1.0	< 1.0	< 1.0	< 3.0	160	NS	NS	NS
	21-Nov-13	< 1.0	< 1.0	< 1.0	< 3.0	NS	< 4.0	< 1.0	< 1.0
	29-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	12-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	22-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	7-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	24-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	5-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-19A	5-Dec-13	< 1.0	< 1.0	1.2	< 3.0	NS	< 4.0	< 1.0	< 1.0
	29-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	10-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	24-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	3-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	22-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	5-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-19B	5-Dec-13	< 1.0	< 1.0	1.0	< 3.0	NS	< 4.0	< 1.0	< 1.0
	29-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	10-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	24-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	3-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	22-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	5-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0

Table 2
Groundwater Quality Data
Enbridge Energy Limited Partnership - Superior, WI Terminal

Location	Date	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Total Xylenes (µg/L)	DRO (µg/L)	Napthalene (µg/L)	1,2,4- Trimethylbenzene (µg/L)	1,3,5- Trimethylbenzene (µg/L)
MW-20A	17-Dec-13	< 1.0	< 1.0	< 1.0	< 3.0	NS	< 4.0	< 1.0	< 1.0
	28-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	9-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	21-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	5-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	23-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	3-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-20B	17-Dec-13	< 1.0	< 1.0	< 1.0	< 3.0	NS	< 4.0	< 1.0	< 1.0
	28-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	9-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	21-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	5-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	23-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	3-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-21A	17-Dec-13	< 1.0	< 1.0	< 1.0	< 3.0	NS	< 4.0	< 1.0	< 1.0
	27-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	11-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	21-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	6-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	23-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	3-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-21B	26-Nov-13	< 2.0	< 2.0	< 2.0	< 6.0	NS	< 8.0	< 2.0	< 2.0
	27-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	11-Nov-15	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	21-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	6-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	23-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	3-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-22B	13-Nov-15‡	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	21-May-16	<1.0	<1.0	3.6	<3.0	NS	<5.0	<1.0	<1.0
	4-Oct-16	<1.0	<1.0	<3.0	<3.0	NS	<5.0	<1.0	<1.0
	24-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	4-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-23B	16-Nov-15‡	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	21-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	4-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	24-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	5-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-24A	13-Nov-15‡	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	22-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	5-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	24-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	3-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-24B	13-Nov-15(Dup-3)‡	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	22-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	5-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	24-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	3-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-25A	13-Nov-15‡	<5.0	<5.0	<5.0	<15.0	NS	<20.0	<5.0	<5.0
	22-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	3-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	24-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	4-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
MW-25B	13-Nov-15‡	<5.0	<5.0	<5.0	<15.0	NS	<20.0	<5.0	<5.0
	22-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	3-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	24-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	4-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0

Table 2
Groundwater Quality Data
Enbridge Energy Limited Partnership - Superior, WI Terminal

Location	Date	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Total Xylenes (µg/L)	DRO (µg/L)	Napthalene (µg/L)	1,2,4- Trimethylbenzene (µg/L)	1,3,5- Trimethylbenzene (µg/L)
MW-26	13-Nov-15‡	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	22-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	4-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	24-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	4-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
Trip Blank	2-Dec-03	<0.30	<0.60	<0.58	<1.84	---	NS	NS	NS
	14-Oct-04	1.3*	< 0.40	< 0.36	< 1.1	---	NS	NS	NS
	20-Sep-10	< 1.0	< 1.0	< 1.0	< 3.0	---	NS	NS	NS
	20-Sep-11	< 1.0	< 1.0	< 1.0	< 3.0	---	NS	NS	NS
	26-Sep-12	< 1.0	< 1.0	< 1.0	< 3.0	---	NS	NS	NS
	2-Nov-12	< 1.0	< 1.0	< 1.0	< 3.0	---	NS	NS	NS
	22-Nov-13	< 1.0	< 1.0	< 1.0	< 3.0	---	< 4.0	< 1.0	< 1.0
	27-Aug-14	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	9-Nov-15	<1.0	<1.0	1.7	<3.0	NS	<4.0	<1.0	<1.0
	10-Nov-15	<1.0	<1.0	1.6	<3.0	NS	<4.0	<1.0	<1.0
	10-Nov-15	<1.0	<1.0	1.7	<3.0	NS	<4.0	<1.0	<1.0
	11-Nov-15	<1.0	<1.0	1.3	<3.0	NS	<4.0	<1.0	<1.0
	11-Nov-15	<1.0	<1.0	1.3	<3.0	NS	<4.0	<1.0	<1.0
	12-Nov-15‡	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	13-Nov-15‡	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	22-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	22-May-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	3-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	6-Oct-16	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	24-May-17	<1.0	<1.0	<1.0	<3.0	NS	<5.0	<1.0	<1.0
	5-Oct-17	<1.0	<1.0	<1.0	<3.0	NS	<10.0	<4.0	<1.0
Field Blank	14-Oct-04	1.9*	< 0.40	0.49*	< 1.1	---	NS	NS	NS

Notes:

µg/L = micrograms per liter (parts per billion)

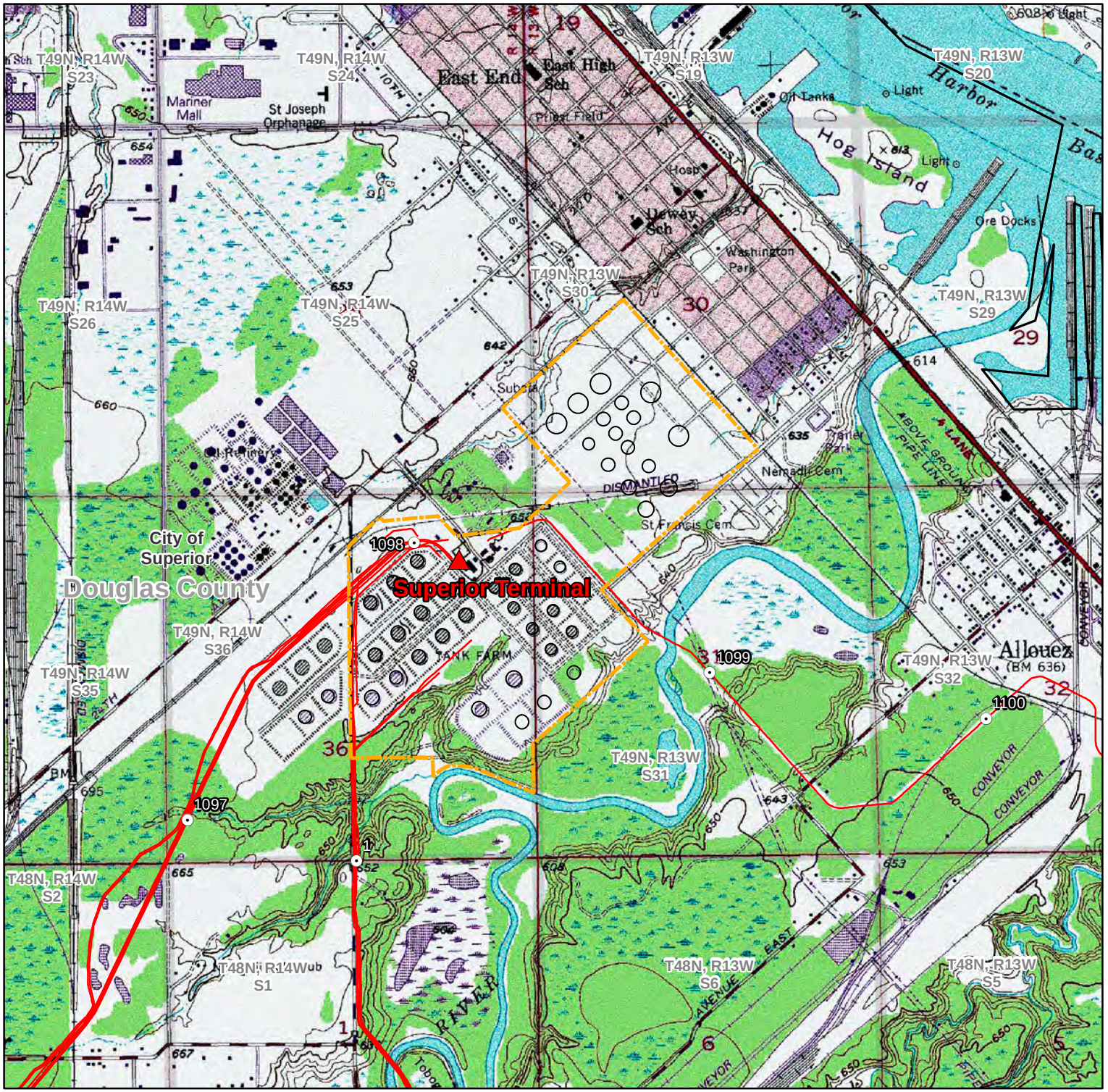
NS = Not sampled for this parameter

* Detections are likely false positives. Samples were stored at lab in refigerator at laboratory next to unrelated samples with high benzene and toluene concentrations.

‡ Well analyzed for full-list volatile organic compounds.

<1.0 = not detected above the laboratory practical quantitation limit or reporting limit

Figures



Site Location
Terminals
Mile Posts (1-Mile)
Enbridge Pipelines
Terminal Property Boundary

N

0 2,000 4,000

Feet

1 Inch = 2,000 Feet

Figure 1

SITE LOCATION
Superior Terminal
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE

Barr Footer: ArcGIS 10.4, 2016-07-27 08:14 File: I:\Client\Enbridge_Energy\Work_Orders\Spill_Response_Investigation\49161349\Maps\Reports\Figure1_SuperiorTerminal_Site_Location.mxd User: jwk

Monitoring Well Location

Terminal Property Boundary

Note:
Monitoring well locations MW-5B, MW-6B, MW-11B, MW-17B, MW-19B, MW-20B, MW-21B, MW-22B, MW-23B, MW-24B and MW-25B are piezometers.

N

0 1,000 2,000

Feet

1 Inch = 1,000 Feet

Douglas County Imagery Circa May, 2016

Figure 2

MONITORING WELL LOCATIONS
Superior Terminal
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE

Barr Footer: ArcGIS 10.4, 2016-07-27 08:23 File: I:\Client\Enbridge_Energy\Work_Orders\Spill_Response_Investigation\49161349\Maps\Reports\Figure2_Superior_SiteMap_2016.mxd User: iwk

Site Location

Monitoring Wells
Groundwater Elevation (ft NAVD)

Groundwater Elevation (ft)
Contour Interval = 2-Foot
(Dashed Where Inferred)

Groundwater Flow Direction

5-Foot Topographic Contours

Terminal Property Boundary

Groundwater elevations measured on
5/22/17 and 5/23/17

N

0 1,000 2,000

Feet

1 Inch = 1,000 Feet

Figure 3

SPRING 2017
SHALLOW GROUNDWATER
ELEVATION CONTOURS

Superior Terminal
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE

Barr Footer: ArcGIS 10.4.1, 2018-01-31 08:31 File: I:\Client\Enbridge_Energy\Work_Orders\Spill_Response_Investigation\49161385\Maps\Reports\01_Spring2017\Figure3_Superior_Spring_Shallow_GroundwaterElevation_Contours.mxd User: jwk

Site Location

Monitoring Wells - Piezometer
Groundwater Elevation (ft NAVD)

Groundwater Elevation (ft)
Contour Interval = 2-Foot
(Dashed Where Inferred)

Groundwater Flow Direction

5-Foot Topographic Contours

Terminal Property Boundary

Groundwater elevations measured on
5/22/2017 and 5/23/2017

N

0 1,000 2,000

Feet
1 Inch = 1,000 Feet

Figure 4

SPRING 2017
DEEP GROUNDWATER
ELEVATION CONTOURS

Superior Terminal
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE

Barr Footer: ArcGIS 10.4.1, 2018-01-31 08:46 File: I:\Client\Enbridge_Energy\Work_Orders\Spill_Response_Investigation\49161385\Maps\Reports\01_Spring2017\Figure4_Superior_Spring_Deep_GroundwaterElevation_Contours.mxd User: jwk

Site Location

Monitoring Wells
Groundwater Elevation (ft NAVD)

Groundwater Elevation (ft)
Contour Interval = 2-Foot
(Dashed Where Inferred)

Groundwater Flow Direction

5-Foot Topographic Contours

Terminal Property Boundary

Groundwater elevations measured on
10/2/2017, 10/3/2017, 10/4/2017, and 10/5/2017

N

0 1,000 2,000

Feet
1 Inch = 1,000 Feet
Figure 5
FALL 2017
SHALLOW GROUNDWATER ELEVATION CONTOURS
Superior Terminal
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE

Barr Footer: ArcGIS 10.4.1, 2018-01-31 09:33 File: I:\Client\Enbridge_Energy\Work_Orders\Spill_Response_Investigation\49161385\Maps\Reports\02_Fall2017\Figure5_Superior_Fall_Shallow_GroundwaterElevation_Contours.mxd User: jwk

Site Location

Monitoring Wells - Piezometer
Groundwater Elevation (ft NAVD)

Groundwater Elevation (ft)
Contour Interval = 2-Foot
(Dashed Where Inferred)

Groundwater Flow Direction

5-Foot Topographic Contours

Terminal Property Boundary

Groundwater elevations measured on
10/2/2017, 10/3/2017, 10/4/2017, and 10/5/2017

N

0 1,000 2,000

Feet
1 Inch = 1,000 Feet
Figure 6
FALL 2017
DEEP GROUNDWATER ELEVATION CONTOURS
Superior Terminal
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE

Barr Footer: ArcGIS 10.4.1, 2018-01-31 09:59 File: I:\Client\Enbridge_Energy\Work_Orders\Spill_Response_Investigation\49161385\Maps\Reports\02_Fall2017\Figure6_Superior_Fall_Deep_GroundwaterElevation_Contours.mxd User: jwk

Appendix A

Laboratory Analytical Reports

Spring 2017 Laboratory Analytical Reports

05-Jun-2017

Lynette Carney
Barr Engineering Company
4300 Market Pointe Drive
Suite 200
Minneapolis, MN 55435

Re: **2017 Enbridge GW (49161385.00)** Work Order: **17051581**

Dear Lynette,

ALS Environmental received 32 samples on 26-May-2017 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental 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 47.

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

Sincerely,

Electronically approved by: Tom Beamish

Tom Beamish
Senior Project Manager

Certificate No: WI: 399084510

ALS Group, USA

Date: 05-Jun-17

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Work Order: **17051581**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
17051581-01	MW-14	Groundwater		05/22/17 12:46	05/26/17 09:30	☐
17051581-02	MW-15	Groundwater		05/22/17 13:32	05/26/17 09:30	☐
17051581-03	MW-2	Groundwater		05/22/17 14:57	05/26/17 09:30	☐
17051581-04	MW-1	Groundwater		05/22/17 15:44	05/26/17 09:30	☐
17051581-05	MW-19B	Groundwater		05/22/17 16:53	05/26/17 09:30	☐
17051581-06	MW-19A	Groundwater		05/22/17 17:24	05/26/17 09:30	☐
17051581-07	Dup-1	Groundwater		05/22/17 17:24	05/26/17 09:30	☐
17051581-08	MW-20B	Groundwater		05/23/17 10:30	05/26/17 09:30	☐
17051581-09	MW-20A	Groundwater		05/23/17 11:01	05/26/17 09:30	☐
17051581-10	MW-21B	Groundwater		05/23/17 12:05	05/26/17 09:30	☐
17051581-11	MW-21A	Groundwater		05/23/17 12:41	05/26/17 09:30	☐
17051581-12	MW-6B	Groundwater		05/23/17 14:10	05/26/17 09:30	☐
17051581-13	MW-6A	Groundwater		05/23/17 14:43	05/26/17 09:30	☐
17051581-14	MW-10	Groundwater		05/23/17 15:47	05/26/17 09:30	☐
17051581-15	MW-11B	Groundwater		05/23/17 16:34	05/26/17 09:30	☐
17051581-16	MW-11	Groundwater		05/23/17 16:58	05/26/17 09:30	☐
17051581-17	MW-23B	Groundwater		05/24/17 08:33	05/26/17 09:30	☐
17051581-18	MW-5B	Groundwater		05/24/17 09:34	05/26/17 09:30	☐
17051581-19	MW-5	Groundwater		05/24/17 10:12	05/26/17 09:30	☐
17051581-20	MW-17B	Groundwater		05/24/17 10:54	05/26/17 09:30	☐
17051581-21	MW-17A	Groundwater		05/24/17 11:17	05/26/17 09:30	☐
17051581-22	MW-18	Groundwater		05/24/17 11:49	05/26/17 09:30	☐
17051581-23	MW-25B	Groundwater		05/24/17 12:48	05/26/17 09:30	☐
17051581-24	MW-25A	Groundwater		05/24/17 13:18	05/26/17 09:30	☐
17051581-25	MW-26	Groundwater		05/24/17 13:54	05/26/17 09:30	☐
17051581-26	Dup-2	Groundwater		05/24/17 08:33	05/26/17 09:30	☐
17051581-27	MW-12	Groundwater		05/24/17 14:28	05/26/17 09:30	☐
17051581-28	MW-24B	Groundwater		05/24/17 15:27	05/26/17 09:30	☐
17051581-29	MW-24A	Groundwater		05/24/17 15:59	05/26/17 09:30	☐
17051581-30	MW-22B	Groundwater		05/24/17 17:00	05/26/17 09:30	☐
17051581-31	Dup-3	Groundwater		05/24/17 15:59	05/26/17 09:30	☐
17051581-32	Trip Blank	Water		05/22/17	05/26/17 09:30	☐

ALS Group, USA

Date: 05-Jun-17

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
WorkOrder: **17051581**

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Work Order: 17051581

Case Narrative

Samples for the above noted Work Order were received on 05/26/17. 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.

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Date: *05-Jun-17*

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-14
Collection Date: 05/22/17 12:46 PM

Work Order: 17051581
Lab ID: 17051581-01
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/01/17 22:42
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/01/17 22:42
Benzene	U		0.30	1.0	µg/L	1	06/01/17 22:42
Ethylbenzene	U		0.40	1.0	µg/L	1	06/01/17 22:42
m,p-Xylene	U		0.98	2.0	µg/L	1	06/01/17 22:42
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/01/17 22:42
Naphthalene	U		0.18	5.0	µg/L	1	06/01/17 22:42
o-Xylene	U		0.35	1.0	µg/L	1	06/01/17 22:42
Toluene	U		0.37	1.0	µg/L	1	06/01/17 22:42
Xylenes, Total	U		1.3	3.0	µg/L	1	06/01/17 22:42
Surr: 1,2-Dichloroethane-d4	*97.4*			*75-120*	*%REC*	1	06/01/17 22:42
Surr: 4-Bromofluorobenzene	*93.3*			*80-110*	*%REC*	1	06/01/17 22:42
Surr: Dibromofluoromethane	*95.6*			*85-115*	*%REC*	1	06/01/17 22:42
Surr: Toluene-d8	*99.8*			*85-110*	*%REC*	1	06/01/17 22:42

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

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Date: *05-Jun-17*

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-15
Collection Date: 05/22/17 01:32 PM

Work Order: 17051581
Lab ID: 17051581-02
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/01/17 22:58
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/01/17 22:58
Benzene	U		0.30	1.0	µg/L	1	06/01/17 22:58
Ethylbenzene	U		0.40	1.0	µg/L	1	06/01/17 22:58
m,p-Xylene	U		0.98	2.0	µg/L	1	06/01/17 22:58
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/01/17 22:58
Naphthalene	U		0.18	5.0	µg/L	1	06/01/17 22:58
o-Xylene	U		0.35	1.0	µg/L	1	06/01/17 22:58
Toluene	U		0.37	1.0	µg/L	1	06/01/17 22:58
Xylenes, Total	U		1.3	3.0	µg/L	1	06/01/17 22:58
Surr: 1,2-Dichloroethane-d4	*99.6*			*75-120*	*%REC*	1	06/01/17 22:58
Surr: 4-Bromofluorobenzene	*98.4*			*80-110*	*%REC*	1	06/01/17 22:58
Surr: Dibromofluoromethane	*97.7*			*85-115*	*%REC*	1	06/01/17 22:58
Surr: Toluene-d8	*102*			*85-110*	*%REC*	1	06/01/17 22:58

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-2
Collection Date: 05/22/17 02:57 PM

Work Order: 17051581
Lab ID: 17051581-03
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/01/17 23:15
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/01/17 23:15
Benzene	U		0.30	1.0	µg/L	1	06/01/17 23:15
Ethylbenzene	U		0.40	1.0	µg/L	1	06/01/17 23:15
m,p-Xylene	U		0.98	2.0	µg/L	1	06/01/17 23:15
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/01/17 23:15
Naphthalene	U		0.18	5.0	µg/L	1	06/01/17 23:15
o-Xylene	U		0.35	1.0	µg/L	1	06/01/17 23:15
Toluene	U		0.37	1.0	µg/L	1	06/01/17 23:15
Xylenes, Total	U		1.3	3.0	µg/L	1	06/01/17 23:15
Surr: 1,2-Dichloroethane-d4	*99.5*			*75-120*	*%REC*	1	06/01/17 23:15
Surr: 4-Bromofluorobenzene	*98.0*			*80-110*	*%REC*	1	06/01/17 23:15
Surr: Dibromofluoromethane	*97.8*			*85-115*	*%REC*	1	06/01/17 23:15
Surr: Toluene-d8	*101*			*85-110*	*%REC*	1	06/01/17 23:15

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-1
Collection Date: 05/22/17 03:44 PM

Work Order: 17051581
Lab ID: 17051581-04
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/01/17 23:31
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/01/17 23:31
Benzene	U		0.30	1.0	µg/L	1	06/01/17 23:31
Ethylbenzene	U		0.40	1.0	µg/L	1	06/01/17 23:31
m,p-Xylene	U		0.98	2.0	µg/L	1	06/01/17 23:31
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/01/17 23:31
Naphthalene	U		0.18	5.0	µg/L	1	06/01/17 23:31
o-Xylene	U		0.35	1.0	µg/L	1	06/01/17 23:31
Toluene	U		0.37	1.0	µg/L	1	06/01/17 23:31
Xylenes, Total	U		1.3	3.0	µg/L	1	06/01/17 23:31
Surr: 1,2-Dichloroethane-d4	*101*			*75-120*	*%REC*	1	06/01/17 23:31
Surr: 4-Bromofluorobenzene	*96.0*			*80-110*	*%REC*	1	06/01/17 23:31
Surr: Dibromofluoromethane	*97.8*			*85-115*	*%REC*	1	06/01/17 23:31
Surr: Toluene-d8	*99.5*			*85-110*	*%REC*	1	06/01/17 23:31

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

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Date: *05-Jun-17*

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-19B
Collection Date: 05/22/17 04:53 PM

Work Order: 17051581
Lab ID: 17051581-05
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/01/17 23:47
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/01/17 23:47
Benzene	U		0.30	1.0	µg/L	1	06/01/17 23:47
Ethylbenzene	U		0.40	1.0	µg/L	1	06/01/17 23:47
m,p-Xylene	U		0.98	2.0	µg/L	1	06/01/17 23:47
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/01/17 23:47
Naphthalene	U		0.18	5.0	µg/L	1	06/01/17 23:47
o-Xylene	U		0.35	1.0	µg/L	1	06/01/17 23:47
Toluene	U		0.37	1.0	µg/L	1	06/01/17 23:47
Xylenes, Total	U		1.3	3.0	µg/L	1	06/01/17 23:47
Surr: 1,2-Dichloroethane-d4	*101*			*75-120*	*%REC*	1	06/01/17 23:47
Surr: 4-Bromofluorobenzene	*94.0*			*80-110*	*%REC*	1	06/01/17 23:47
Surr: Dibromofluoromethane	*99.2*			*85-115*	*%REC*	1	06/01/17 23:47
Surr: Toluene-d8	*99.7*			*85-110*	*%REC*	1	06/01/17 23:47

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-19A
Collection Date: 05/22/17 05:24 PM

Work Order: 17051581
Lab ID: 17051581-06
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/02/17 12:03
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/02/17 12:03
Benzene	U		0.30	1.0	µg/L	1	06/02/17 12:03
Ethylbenzene	U		0.40	1.0	µg/L	1	06/02/17 12:03
m,p-Xylene	U		0.98	2.0	µg/L	1	06/02/17 12:03
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/02/17 12:03
Naphthalene	U		0.18	5.0	µg/L	1	06/02/17 12:03
o-Xylene	U		0.35	1.0	µg/L	1	06/02/17 12:03
Toluene	U		0.37	1.0	µg/L	1	06/02/17 12:03
Xylenes, Total	U		1.3	3.0	µg/L	1	06/02/17 12:03
Surr: 1,2-Dichloroethane-d4	*101*			*75-120*	*%REC*	1	06/02/17 12:03
Surr: 4-Bromofluorobenzene	*93.8*			*80-110*	*%REC*	1	06/02/17 12:03
Surr: Dibromofluoromethane	*97.8*			*85-115*	*%REC*	1	06/02/17 12:03
Surr: Toluene-d8	*100*			*85-110*	*%REC*	1	06/02/17 12:03

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: Dup-1
Collection Date: 05/22/17 05:24 PM

Work Order: 17051581
Lab ID: 17051581-07
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/02/17 12:20
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/02/17 12:20
Benzene	U		0.30	1.0	µg/L	1	06/02/17 12:20
Ethylbenzene	U		0.40	1.0	µg/L	1	06/02/17 12:20
m,p-Xylene	U		0.98	2.0	µg/L	1	06/02/17 12:20
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/02/17 12:20
Naphthalene	U		0.18	5.0	µg/L	1	06/02/17 12:20
o-Xylene	U		0.35	1.0	µg/L	1	06/02/17 12:20
Toluene	U		0.37	1.0	µg/L	1	06/02/17 12:20
Xylenes, Total	U		1.3	3.0	µg/L	1	06/02/17 12:20
Surr: 1,2-Dichloroethane-d4	*99.7*			*75-120*	*%REC*	1	06/02/17 12:20
Surr: 4-Bromofluorobenzene	*94.0*			*80-110*	*%REC*	1	06/02/17 12:20
Surr: Dibromofluoromethane	*97.1*			*85-115*	*%REC*	1	06/02/17 12:20
Surr: Toluene-d8	*102*			*85-110*	*%REC*	1	06/02/17 12:20

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

ALS Group, USA

Date: *05-Jun-17*

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-20B
Collection Date: 05/23/17 10:30 AM

Work Order: 17051581
Lab ID: 17051581-08
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/02/17 12:36
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/02/17 12:36
Benzene	U		0.30	1.0	µg/L	1	06/02/17 12:36
Ethylbenzene	U		0.40	1.0	µg/L	1	06/02/17 12:36
m,p-Xylene	U		0.98	2.0	µg/L	1	06/02/17 12:36
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/02/17 12:36
Naphthalene	U		0.18	5.0	µg/L	1	06/02/17 12:36
o-Xylene	U		0.35	1.0	µg/L	1	06/02/17 12:36
Toluene	U		0.37	1.0	µg/L	1	06/02/17 12:36
Xylenes, Total	U		1.3	3.0	µg/L	1	06/02/17 12:36
Surr: 1,2-Dichloroethane-d4	*101*			*75-120*	*%REC*	1	06/02/17 12:36
Surr: 4-Bromofluorobenzene	*93.8*			*80-110*	*%REC*	1	06/02/17 12:36
Surr: Dibromofluoromethane	*97.6*			*85-115*	*%REC*	1	06/02/17 12:36
Surr: Toluene-d8	*100*			*85-110*	*%REC*	1	06/02/17 12:36

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-20A
Collection Date: 05/23/17 11:01 AM

Work Order: 17051581
Lab ID: 17051581-09
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/02/17 12:52
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/02/17 12:52
Benzene	U		0.30	1.0	µg/L	1	06/02/17 12:52
Ethylbenzene	U		0.40	1.0	µg/L	1	06/02/17 12:52
m,p-Xylene	U		0.98	2.0	µg/L	1	06/02/17 12:52
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/02/17 12:52
Naphthalene	U		0.18	5.0	µg/L	1	06/02/17 12:52
o-Xylene	U		0.35	1.0	µg/L	1	06/02/17 12:52
Toluene	U		0.37	1.0	µg/L	1	06/02/17 12:52
Xylenes, Total	U		1.3	3.0	µg/L	1	06/02/17 12:52
Surr: 1,2-Dichloroethane-d4	*101*			*75-120*	*%REC*	1	06/02/17 12:52
Surr: 4-Bromofluorobenzene	*96.0*			*80-110*	*%REC*	1	06/02/17 12:52
Surr: Dibromofluoromethane	*96.0*			*85-115*	*%REC*	1	06/02/17 12:52
Surr: Toluene-d8	*99.6*			*85-110*	*%REC*	1	06/02/17 12:52

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-21B
Collection Date: 05/23/17 12:05 PM

Work Order: 17051581
Lab ID: 17051581-10
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/02/17 01:08
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/02/17 01:08
Benzene	U		0.30	1.0	µg/L	1	06/02/17 01:08
Ethylbenzene	U		0.40	1.0	µg/L	1	06/02/17 01:08
m,p-Xylene	U		0.98	2.0	µg/L	1	06/02/17 01:08
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/02/17 01:08
Naphthalene	U		0.18	5.0	µg/L	1	06/02/17 01:08
o-Xylene	U		0.35	1.0	µg/L	1	06/02/17 01:08
Toluene	U		0.37	1.0	µg/L	1	06/02/17 01:08
Xylenes, Total	U		1.3	3.0	µg/L	1	06/02/17 01:08
Surr: 1,2-Dichloroethane-d4	*99.8*			*75-120*	*%REC*	1	06/02/17 01:08
Surr: 4-Bromofluorobenzene	*96.0*			*80-110*	*%REC*	1	06/02/17 01:08
Surr: Dibromofluoromethane	*97.0*			*85-115*	*%REC*	1	06/02/17 01:08
Surr: Toluene-d8	*102*			*85-110*	*%REC*	1	06/02/17 01:08

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-21A
Collection Date: 05/23/17 12:41 PM

Work Order: 17051581
Lab ID: 17051581-11
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/02/17 01:25
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/02/17 01:25
Benzene	U		0.30	1.0	µg/L	1	06/02/17 01:25
Ethylbenzene	U		0.40	1.0	µg/L	1	06/02/17 01:25
m,p-Xylene	U		0.98	2.0	µg/L	1	06/02/17 01:25
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/02/17 01:25
Naphthalene	U		0.18	5.0	µg/L	1	06/02/17 01:25
o-Xylene	U		0.35	1.0	µg/L	1	06/02/17 01:25
Toluene	U		0.37	1.0	µg/L	1	06/02/17 01:25
Xylenes, Total	U		1.3	3.0	µg/L	1	06/02/17 01:25
Surr: 1,2-Dichloroethane-d4	*98.2*			*75-120*	*%REC*	1	06/02/17 01:25
Surr: 4-Bromofluorobenzene	*94.2*			*80-110*	*%REC*	1	06/02/17 01:25
Surr: Dibromofluoromethane	*98.0*			*85-115*	*%REC*	1	06/02/17 01:25
Surr: Toluene-d8	*99.4*			*85-110*	*%REC*	1	06/02/17 01:25

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-6B
Collection Date: 05/23/17 02:10 PM

Work Order: 17051581
Lab ID: 17051581-12
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/02/17 01:41
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/02/17 01:41
Benzene	U		0.30	1.0	µg/L	1	06/02/17 01:41
Ethylbenzene	U		0.40	1.0	µg/L	1	06/02/17 01:41
m,p-Xylene	U		0.98	2.0	µg/L	1	06/02/17 01:41
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/02/17 01:41
Naphthalene	U		0.18	5.0	µg/L	1	06/02/17 01:41
o-Xylene	U		0.35	1.0	µg/L	1	06/02/17 01:41
Toluene	U		0.37	1.0	µg/L	1	06/02/17 01:41
Xylenes, Total	U		1.3	3.0	µg/L	1	06/02/17 01:41
Surr: 1,2-Dichloroethane-d4	*101*			*75-120*	*%REC*	1	06/02/17 01:41
Surr: 4-Bromofluorobenzene	*90.8*			*80-110*	*%REC*	1	06/02/17 01:41
Surr: Dibromofluoromethane	*96.8*			*85-115*	*%REC*	1	06/02/17 01:41
Surr: Toluene-d8	*98.8*			*85-110*	*%REC*	1	06/02/17 01:41

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-6A
Collection Date: 05/23/17 02:43 PM

Work Order: 17051581
Lab ID: 17051581-13
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/02/17 01:57
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/02/17 01:57
Benzene	U		0.30	1.0	µg/L	1	06/02/17 01:57
Ethylbenzene	U		0.40	1.0	µg/L	1	06/02/17 01:57
m,p-Xylene	U		0.98	2.0	µg/L	1	06/02/17 01:57
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/02/17 01:57
Naphthalene	U		0.18	5.0	µg/L	1	06/02/17 01:57
o-Xylene	U		0.35	1.0	µg/L	1	06/02/17 01:57
Toluene	U		0.37	1.0	µg/L	1	06/02/17 01:57
Xylenes, Total	U		1.3	3.0	µg/L	1	06/02/17 01:57
Surr: 1,2-Dichloroethane-d4	*98.8*			*75-120*	*%REC*	1	06/02/17 01:57
Surr: 4-Bromofluorobenzene	*93.3*			*80-110*	*%REC*	1	06/02/17 01:57
Surr: Dibromofluoromethane	*96.7*			*85-115*	*%REC*	1	06/02/17 01:57
Surr: Toluene-d8	*102*			*85-110*	*%REC*	1	06/02/17 01:57

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-10
Collection Date: 05/23/17 03:47 PM

Work Order: 17051581
Lab ID: 17051581-14
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/02/17 02:13
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/02/17 02:13
Benzene	U		0.30	1.0	µg/L	1	06/02/17 02:13
Ethylbenzene	U		0.40	1.0	µg/L	1	06/02/17 02:13
m,p-Xylene	U		0.98	2.0	µg/L	1	06/02/17 02:13
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/02/17 02:13
Naphthalene	U		0.18	5.0	µg/L	1	06/02/17 02:13
o-Xylene	U		0.35	1.0	µg/L	1	06/02/17 02:13
Toluene	U		0.37	1.0	µg/L	1	06/02/17 02:13
Xylenes, Total	U		1.3	3.0	µg/L	1	06/02/17 02:13
Surr: 1,2-Dichloroethane-d4	*101*			*75-120*	*%REC*	1	06/02/17 02:13
Surr: 4-Bromofluorobenzene	*92.7*			*80-110*	*%REC*	1	06/02/17 02:13
Surr: Dibromofluoromethane	*97.2*			*85-115*	*%REC*	1	06/02/17 02:13
Surr: Toluene-d8	*98.2*			*85-110*	*%REC*	1	06/02/17 02:13

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-11B
Collection Date: 05/23/17 04:34 PM

Work Order: 17051581
Lab ID: 17051581-15
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/02/17 02:30
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/02/17 02:30
Benzene	U		0.30	1.0	µg/L	1	06/02/17 02:30
Ethylbenzene	U		0.40	1.0	µg/L	1	06/02/17 02:30
m,p-Xylene	U		0.98	2.0	µg/L	1	06/02/17 02:30
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/02/17 02:30
Naphthalene	U		0.18	5.0	µg/L	1	06/02/17 02:30
o-Xylene	U		0.35	1.0	µg/L	1	06/02/17 02:30
Toluene	U		0.37	1.0	µg/L	1	06/02/17 02:30
Xylenes, Total	U		1.3	3.0	µg/L	1	06/02/17 02:30
Surr: 1,2-Dichloroethane-d4	*102*			*75-120*	*%REC*	1	06/02/17 02:30
Surr: 4-Bromofluorobenzene	*93.0*			*80-110*	*%REC*	1	06/02/17 02:30
Surr: Dibromofluoromethane	*96.0*			*85-115*	*%REC*	1	06/02/17 02:30
Surr: Toluene-d8	*99.2*			*85-110*	*%REC*	1	06/02/17 02:30

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-11
Collection Date: 05/23/17 04:58 PM

Work Order: 17051581
Lab ID: 17051581-16
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/02/17 02:46
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/02/17 02:46
Benzene	U		0.30	1.0	µg/L	1	06/02/17 02:46
Ethylbenzene	U		0.40	1.0	µg/L	1	06/02/17 02:46
m,p-Xylene	U		0.98	2.0	µg/L	1	06/02/17 02:46
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/02/17 02:46
Naphthalene	U		0.18	5.0	µg/L	1	06/02/17 02:46
o-Xylene	U		0.35	1.0	µg/L	1	06/02/17 02:46
Toluene	U		0.37	1.0	µg/L	1	06/02/17 02:46
Xylenes, Total	U		1.3	3.0	µg/L	1	06/02/17 02:46
Surr: 1,2-Dichloroethane-d4	*99.0*			*75-120*	*%REC*	1	06/02/17 02:46
Surr: 4-Bromofluorobenzene	*94.2*			*80-110*	*%REC*	1	06/02/17 02:46
Surr: Dibromofluoromethane	*96.4*			*85-115*	*%REC*	1	06/02/17 02:46
Surr: Toluene-d8	*102*			*85-110*	*%REC*	1	06/02/17 02:46

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-23B
Collection Date: 05/24/17 08:33 AM

Work Order: 17051581
Lab ID: 17051581-17
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/02/17 03:02
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/02/17 03:02
Benzene	U		0.30	1.0	µg/L	1	06/02/17 03:02
Ethylbenzene	U		0.40	1.0	µg/L	1	06/02/17 03:02
m,p-Xylene	U		0.98	2.0	µg/L	1	06/02/17 03:02
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/02/17 03:02
Naphthalene	U		0.18	5.0	µg/L	1	06/02/17 03:02
o-Xylene	U		0.35	1.0	µg/L	1	06/02/17 03:02
Toluene	U		0.37	1.0	µg/L	1	06/02/17 03:02
Xylenes, Total	U		1.3	3.0	µg/L	1	06/02/17 03:02
Surr: 1,2-Dichloroethane-d4	*99.1*			*75-120*	*%REC*	1	06/02/17 03:02
Surr: 4-Bromofluorobenzene	*91.8*			*80-110*	*%REC*	1	06/02/17 03:02
Surr: Dibromofluoromethane	*98.4*			*85-115*	*%REC*	1	06/02/17 03:02
Surr: Toluene-d8	*100*			*85-110*	*%REC*	1	06/02/17 03:02

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-5B
Collection Date: 05/24/17 09:34 AM

Work Order: 17051581
Lab ID: 17051581-18
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/02/17 03:18
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/02/17 03:18
Benzene	U		0.30	1.0	µg/L	1	06/02/17 03:18
Ethylbenzene	U		0.40	1.0	µg/L	1	06/02/17 03:18
m,p-Xylene	U		0.98	2.0	µg/L	1	06/02/17 03:18
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/02/17 03:18
Naphthalene	U		0.18	5.0	µg/L	1	06/02/17 03:18
o-Xylene	U		0.35	1.0	µg/L	1	06/02/17 03:18
Toluene	U		0.37	1.0	µg/L	1	06/02/17 03:18
Xylenes, Total	U		1.3	3.0	µg/L	1	06/02/17 03:18
Surr: 1,2-Dichloroethane-d4	*102*			*75-120*	*%REC*	1	06/02/17 03:18
Surr: 4-Bromofluorobenzene	*94.8*			*80-110*	*%REC*	1	06/02/17 03:18
Surr: Dibromofluoromethane	*97.0*			*85-115*	*%REC*	1	06/02/17 03:18
Surr: Toluene-d8	*100*			*85-110*	*%REC*	1	06/02/17 03:18

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-5
Collection Date: 05/24/17 10:12 AM

Work Order: 17051581
Lab ID: 17051581-19
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/02/17 03:35
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/02/17 03:35
Benzene	U		0.30	1.0	µg/L	1	06/02/17 03:35
Ethylbenzene	U		0.40	1.0	µg/L	1	06/02/17 03:35
m,p-Xylene	U		0.98	2.0	µg/L	1	06/02/17 03:35
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/02/17 03:35
Naphthalene	U		0.18	5.0	µg/L	1	06/02/17 03:35
o-Xylene	U		0.35	1.0	µg/L	1	06/02/17 03:35
Toluene	U		0.37	1.0	µg/L	1	06/02/17 03:35
Xylenes, Total	U		1.3	3.0	µg/L	1	06/02/17 03:35
Surr: 1,2-Dichloroethane-d4	*99.6*			*75-120*	*%REC*	1	06/02/17 03:35
Surr: 4-Bromofluorobenzene	*90.8*			*80-110*	*%REC*	1	06/02/17 03:35
Surr: Dibromofluoromethane	*95.2*			*85-115*	*%REC*	1	06/02/17 03:35
Surr: Toluene-d8	*98.3*			*85-110*	*%REC*	1	06/02/17 03:35

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-17B
Collection Date: 05/24/17 10:54 AM

Work Order: 17051581
Lab ID: 17051581-20
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **AK**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/02/17 03:51
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/02/17 03:51
Benzene	U		0.30	1.0	µg/L	1	06/02/17 03:51
Ethylbenzene	U		0.40	1.0	µg/L	1	06/02/17 03:51
m,p-Xylene	U		0.98	2.0	µg/L	1	06/02/17 03:51
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/02/17 03:51
Naphthalene	U		0.18	5.0	µg/L	1	06/02/17 03:51
o-Xylene	U		0.35	1.0	µg/L	1	06/02/17 03:51
Toluene	U		0.37	1.0	µg/L	1	06/02/17 03:51
Xylenes, Total	U		1.3	3.0	µg/L	1	06/02/17 03:51
Surr: 1,2-Dichloroethane-d4	*101*			*75-120*	*%REC*	1	06/02/17 03:51
Surr: 4-Bromofluorobenzene	*95.0*			*80-110*	*%REC*	1	06/02/17 03:51
Surr: Dibromofluoromethane	*98.0*			*85-115*	*%REC*	1	06/02/17 03:51
Surr: Toluene-d8	*102*			*85-110*	*%REC*	1	06/02/17 03:51

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-17A
Collection Date: 05/24/17 11:17 AM

Work Order: 17051581
Lab ID: 17051581-21
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **BG**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/03/17 09:26
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/03/17 09:26
Benzene	U		0.30	1.0	µg/L	1	06/03/17 09:26
Ethylbenzene	U		0.40	1.0	µg/L	1	06/03/17 09:26
m,p-Xylene	U		0.98	2.0	µg/L	1	06/03/17 09:26
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/03/17 09:26
Naphthalene	U		0.18	5.0	µg/L	1	06/03/17 09:26
o-Xylene	U		0.35	1.0	µg/L	1	06/03/17 09:26
Toluene	U		0.37	1.0	µg/L	1	06/03/17 09:26
Xylenes, Total	U		1.3	3.0	µg/L	1	06/03/17 09:26
Surr: 1,2-Dichloroethane-d4	*103*			*75-120*	*%REC*	1	06/03/17 09:26
Surr: 4-Bromofluorobenzene	*91.9*			*80-110*	*%REC*	1	06/03/17 09:26
Surr: Dibromofluoromethane	*99.0*			*85-115*	*%REC*	1	06/03/17 09:26
Surr: Toluene-d8	*98.8*			*85-110*	*%REC*	1	06/03/17 09:26

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

ALS Group, USA

Date: *05-Jun-17*

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-18
Collection Date: 05/24/17 11:49 AM

Work Order: 17051581
Lab ID: 17051581-22
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **BG**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/03/17 09:52
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/03/17 09:52
Benzene	U		0.30	1.0	µg/L	1	06/03/17 09:52
Ethylbenzene	U		0.40	1.0	µg/L	1	06/03/17 09:52
m,p-Xylene	U		0.98	2.0	µg/L	1	06/03/17 09:52
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/03/17 09:52
Naphthalene	U		0.18	5.0	µg/L	1	06/03/17 09:52
o-Xylene	U		0.35	1.0	µg/L	1	06/03/17 09:52
Toluene	U		0.37	1.0	µg/L	1	06/03/17 09:52
Xylenes, Total	U		1.3	3.0	µg/L	1	06/03/17 09:52
Surr: 1,2-Dichloroethane-d4	*105*			*75-120*	*%REC*	1	06/03/17 09:52
Surr: 4-Bromofluorobenzene	*91.4*			*80-110*	*%REC*	1	06/03/17 09:52
Surr: Dibromofluoromethane	*103*			*85-115*	*%REC*	1	06/03/17 09:52
Surr: Toluene-d8	*100*			*85-110*	*%REC*	1	06/03/17 09:52

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-25B
Collection Date: 05/24/17 12:48 PM

Work Order: 17051581
Lab ID: 17051581-23
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **BG**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/03/17 10:18
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/03/17 10:18
Benzene	U		0.30	1.0	µg/L	1	06/03/17 10:18
Ethylbenzene	U		0.40	1.0	µg/L	1	06/03/17 10:18
m,p-Xylene	U		0.98	2.0	µg/L	1	06/03/17 10:18
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/03/17 10:18
Naphthalene	U		0.18	5.0	µg/L	1	06/03/17 10:18
o-Xylene	U		0.35	1.0	µg/L	1	06/03/17 10:18
Toluene	U		0.37	1.0	µg/L	1	06/03/17 10:18
Xylenes, Total	U		1.3	3.0	µg/L	1	06/03/17 10:18
Surr: 1,2-Dichloroethane-d4	*106*			*75-120*	*%REC*	1	06/03/17 10:18
Surr: 4-Bromofluorobenzene	*91.4*			*80-110*	*%REC*	1	06/03/17 10:18
Surr: Dibromofluoromethane	*101*			*85-115*	*%REC*	1	06/03/17 10:18
Surr: Toluene-d8	*98.4*			*85-110*	*%REC*	1	06/03/17 10:18

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-25A
Collection Date: 05/24/17 01:18 PM

Work Order: 17051581
Lab ID: 17051581-24
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **BG**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/03/17 10:44
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/03/17 10:44
Benzene	U		0.30	1.0	µg/L	1	06/03/17 10:44
Ethylbenzene	U		0.40	1.0	µg/L	1	06/03/17 10:44
m,p-Xylene	U		0.98	2.0	µg/L	1	06/03/17 10:44
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/03/17 10:44
Naphthalene	U		0.18	5.0	µg/L	1	06/03/17 10:44
o-Xylene	U		0.35	1.0	µg/L	1	06/03/17 10:44
Toluene	U		0.37	1.0	µg/L	1	06/03/17 10:44
Xylenes, Total	U		1.3	3.0	µg/L	1	06/03/17 10:44
Surr: 1,2-Dichloroethane-d4	*106*			*75-120*	*%REC*	1	06/03/17 10:44
Surr: 4-Bromofluorobenzene	*91.5*			*80-110*	*%REC*	1	06/03/17 10:44
Surr: Dibromofluoromethane	*102*			*85-115*	*%REC*	1	06/03/17 10:44
Surr: Toluene-d8	*98.8*			*85-110*	*%REC*	1	06/03/17 10:44

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-26
Collection Date: 05/24/17 01:54 PM

Work Order: 17051581
Lab ID: 17051581-25
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **BG**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/03/17 11:10
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/03/17 11:10
Benzene	U		0.30	1.0	µg/L	1	06/03/17 11:10
Ethylbenzene	U		0.40	1.0	µg/L	1	06/03/17 11:10
m,p-Xylene	U		0.98	2.0	µg/L	1	06/03/17 11:10
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/03/17 11:10
Naphthalene	U		0.18	5.0	µg/L	1	06/03/17 11:10
o-Xylene	U		0.35	1.0	µg/L	1	06/03/17 11:10
Toluene	U		0.37	1.0	µg/L	1	06/03/17 11:10
Xylenes, Total	U		1.3	3.0	µg/L	1	06/03/17 11:10
Surr: 1,2-Dichloroethane-d4	*104*			*75-120*	*%REC*	1	06/03/17 11:10
Surr: 4-Bromofluorobenzene	*91.4*			*80-110*	*%REC*	1	06/03/17 11:10
Surr: Dibromofluoromethane	*100*			*85-115*	*%REC*	1	06/03/17 11:10
Surr: Toluene-d8	*97.5*			*85-110*	*%REC*	1	06/03/17 11:10

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: Dup-2
Collection Date: 05/24/17 08:33 AM

Work Order: 17051581
Lab ID: 17051581-26
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **BG**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/03/17 11:36
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/03/17 11:36
Benzene	U		0.30	1.0	µg/L	1	06/03/17 11:36
Ethylbenzene	U		0.40	1.0	µg/L	1	06/03/17 11:36
m,p-Xylene	U		0.98	2.0	µg/L	1	06/03/17 11:36
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/03/17 11:36
Naphthalene	U		0.18	5.0	µg/L	1	06/03/17 11:36
o-Xylene	U		0.35	1.0	µg/L	1	06/03/17 11:36
Toluene	U		0.37	1.0	µg/L	1	06/03/17 11:36
Xylenes, Total	U		1.3	3.0	µg/L	1	06/03/17 11:36
Surr: 1,2-Dichloroethane-d4	*106*			*75-120*	*%REC*	1	06/03/17 11:36
Surr: 4-Bromofluorobenzene	*91.4*			*80-110*	*%REC*	1	06/03/17 11:36
Surr: Dibromofluoromethane	*103*			*85-115*	*%REC*	1	06/03/17 11:36
Surr: Toluene-d8	*99.2*			*85-110*	*%REC*	1	06/03/17 11:36

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-12
Collection Date: 05/24/17 02:28 PM

Work Order: 17051581
Lab ID: 17051581-27
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **BG**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/03/17 12:02
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/03/17 12:02
Benzene	U		0.30	1.0	µg/L	1	06/03/17 12:02
Ethylbenzene	U		0.40	1.0	µg/L	1	06/03/17 12:02
m,p-Xylene	U		0.98	2.0	µg/L	1	06/03/17 12:02
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/03/17 12:02
Naphthalene	U		0.18	5.0	µg/L	1	06/03/17 12:02
o-Xylene	U		0.35	1.0	µg/L	1	06/03/17 12:02
Toluene	U		0.37	1.0	µg/L	1	06/03/17 12:02
Xylenes, Total	U		1.3	3.0	µg/L	1	06/03/17 12:02
Surr: 1,2-Dichloroethane-d4	*108*			*75-120*	*%REC*	1	06/03/17 12:02
Surr: 4-Bromofluorobenzene	*91.5*			*80-110*	*%REC*	1	06/03/17 12:02
Surr: Dibromofluoromethane	*105*			*85-115*	*%REC*	1	06/03/17 12:02
Surr: Toluene-d8	*99.2*			*85-110*	*%REC*	1	06/03/17 12:02

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-24B
Collection Date: 05/24/17 03:27 PM

Work Order: 17051581
Lab ID: 17051581-28
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **BG**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/03/17 12:28
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/03/17 12:28
Benzene	U		0.30	1.0	µg/L	1	06/03/17 12:28
Ethylbenzene	U		0.40	1.0	µg/L	1	06/03/17 12:28
m,p-Xylene	U		0.98	2.0	µg/L	1	06/03/17 12:28
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/03/17 12:28
Naphthalene	U		0.18	5.0	µg/L	1	06/03/17 12:28
o-Xylene	U		0.35	1.0	µg/L	1	06/03/17 12:28
Toluene	U		0.37	1.0	µg/L	1	06/03/17 12:28
Xylenes, Total	U		1.3	3.0	µg/L	1	06/03/17 12:28
Surr: 1,2-Dichloroethane-d4	*108*			*75-120*	*%REC*	1	06/03/17 12:28
Surr: 4-Bromofluorobenzene	*89.8*			*80-110*	*%REC*	1	06/03/17 12:28
Surr: Dibromofluoromethane	*103*			*85-115*	*%REC*	1	06/03/17 12:28
Surr: Toluene-d8	*97.2*			*85-110*	*%REC*	1	06/03/17 12:28

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-24A
Collection Date: 05/24/17 03:59 PM

Work Order: 17051581
Lab ID: 17051581-29
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **BG**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/03/17 12:54
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/03/17 12:54
Benzene	U		0.30	1.0	µg/L	1	06/03/17 12:54
Ethylbenzene	U		0.40	1.0	µg/L	1	06/03/17 12:54
m,p-Xylene	U		0.98	2.0	µg/L	1	06/03/17 12:54
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/03/17 12:54
Naphthalene	U		0.18	5.0	µg/L	1	06/03/17 12:54
o-Xylene	U		0.35	1.0	µg/L	1	06/03/17 12:54
Toluene	U		0.37	1.0	µg/L	1	06/03/17 12:54
Xylenes, Total	U		1.3	3.0	µg/L	1	06/03/17 12:54
Surr: 1,2-Dichloroethane-d4	*106*			*75-120*	*%REC*	1	06/03/17 12:54
Surr: 4-Bromofluorobenzene	*91.4*			*80-110*	*%REC*	1	06/03/17 12:54
Surr: Dibromofluoromethane	*104*			*85-115*	*%REC*	1	06/03/17 12:54
Surr: Toluene-d8	*98.2*			*85-110*	*%REC*	1	06/03/17 12:54

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: MW-22B
Collection Date: 05/24/17 05:00 PM

Work Order: 17051581
Lab ID: 17051581-30
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **BG**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/03/17 13:20
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/03/17 13:20
Benzene	U		0.30	1.0	µg/L	1	06/03/17 13:20
Ethylbenzene	U		0.40	1.0	µg/L	1	06/03/17 13:20
m,p-Xylene	U		0.98	2.0	µg/L	1	06/03/17 13:20
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/03/17 13:20
Naphthalene	U		0.18	5.0	µg/L	1	06/03/17 13:20
o-Xylene	U		0.35	1.0	µg/L	1	06/03/17 13:20
Toluene	U		0.37	1.0	µg/L	1	06/03/17 13:20
Xylenes, Total	U		1.3	3.0	µg/L	1	06/03/17 13:20
Surr: 1,2-Dichloroethane-d4	*104*			*75-120*	*%REC*	1	06/03/17 13:20
Surr: 4-Bromofluorobenzene	*91.3*			*80-110*	*%REC*	1	06/03/17 13:20
Surr: Dibromofluoromethane	*101*			*85-115*	*%REC*	1	06/03/17 13:20
Surr: Toluene-d8	*99.1*			*85-110*	*%REC*	1	06/03/17 13:20

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

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: Dup-3
Collection Date: 05/24/17 03:59 PM

Work Order: 17051581
Lab ID: 17051581-31
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **BG**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/03/17 13:46
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/03/17 13:46
Benzene	U		0.30	1.0	µg/L	1	06/03/17 13:46
Ethylbenzene	U		0.40	1.0	µg/L	1	06/03/17 13:46
m,p-Xylene	U		0.98	2.0	µg/L	1	06/03/17 13:46
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/03/17 13:46
Naphthalene	U		0.18	5.0	µg/L	1	06/03/17 13:46
o-Xylene	U		0.35	1.0	µg/L	1	06/03/17 13:46
Toluene	U		0.37	1.0	µg/L	1	06/03/17 13:46
Xylenes, Total	U		1.3	3.0	µg/L	1	06/03/17 13:46
Surr: 1,2-Dichloroethane-d4	*107*			*75-120*	*%REC*	1	06/03/17 13:46
Surr: 4-Bromofluorobenzene	*88.6*			*80-110*	*%REC*	1	06/03/17 13:46
Surr: Dibromofluoromethane	*103*			*85-115*	*%REC*	1	06/03/17 13:46
Surr: Toluene-d8	*98.0*			*85-110*	*%REC*	1	06/03/17 13:46

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

ALS Group, USA

Date: *05-Jun-17*

Client: Barr Engineering Company
Project: 2017 Enbridge GW (49161385.00)
Sample ID: Trip Blank
Collection Date: 05/22/17

Work Order: 17051581
Lab ID: 17051581-32
Matrix: WATER

Analyses	Result	Qual	MDL	PQL	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: **SW8260B**					Analyst: **BG**
1,2,4-Trimethylbenzene	U		0.37	1.0	µg/L	1	06/03/17 09:00
1,3,5-Trimethylbenzene	U		0.29	1.0	µg/L	1	06/03/17 09:00
Benzene	U		0.30	1.0	µg/L	1	06/03/17 09:00
Ethylbenzene	U		0.40	1.0	µg/L	1	06/03/17 09:00
m,p-Xylene	U		0.98	2.0	µg/L	1	06/03/17 09:00
Methyl tert-butyl ether	U		0.12	1.0	µg/L	1	06/03/17 09:00
Naphthalene	**1.9**	J	**0.18**	**5.0**	**µg/L**	1	06/03/17 09:00
o-Xylene	U		0.35	1.0	µg/L	1	06/03/17 09:00
Toluene	U		0.37	1.0	µg/L	1	06/03/17 09:00
Xylenes, Total	U		1.3	3.0	µg/L	1	06/03/17 09:00
Surr: 1,2-Dichloroethane-d4	*104*			*75-120*	*%REC*	1	06/03/17 09:00
Surr: 4-Bromofluorobenzene	*92.5*			*80-110*	*%REC*	1	06/03/17 09:00
Surr: Dibromofluoromethane	*99.4*			*85-115*	*%REC*	1	06/03/17 09:00
Surr: Toluene-d8	*98.3*			*85-110*	*%REC*	1	06/03/17 09:00

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

QC BATCH REPORT

Batch ID: **R213103** Instrument ID **VMS8** Method: **SW8260B**

MBLK Sample ID: **VBLKW2-170601-R213103** Units: **µg/L** Analysis Date: **06/01/17 10:26 PM**

Client ID: Run ID: **VMS8_170601A** SeqNo: **4460634** Prep Date: 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	0.37	1.0								
1,3,5-Trimethylbenzene	U	0.29	1.0								
Benzene	U	0.3	1.0								
Ethylbenzene	U	0.4	1.0								
m,p-Xylene	U	0.98	2.0								
Methyl tert-butyl ether	U	0.12	1.0								
Naphthalene	U	0.18	5.0								
o-Xylene	U	0.35	1.0								
Toluene	U	0.37	1.0								
Xylenes, Total	U	1.3	3.0								
Surr: 1,2-Dichloroethane-d4	*19.85*	0	0	*20*	0	*99.2*	*75-120*	0			
Surr: 4-Bromofluorobenzene	*18.7*	0	0	*20*	0	*93.5*	*80-110*	0			
Surr: Dibromofluoromethane	*19.25*	0	0	*20*	0	*96.2*	*85-115*	0			
Surr: Toluene-d8	*19.64*	0	0	*20*	0	*98.2*	*85-110*	0			

LCS Sample ID: **VLCSW1-170601-R213103** Units: **µg/L** Analysis Date: **06/01/17 09:53 PM**

Client ID: Run ID: **VMS8_170601A** SeqNo: **4460633** Prep Date: 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	19.11	0.37	1.0	20	0	95.6	75-130	0			
1,3,5-Trimethylbenzene	19.15	0.29	1.0	20	0	95.8	75-130	0			
Benzene	19.71	0.3	1.0	20	0	98.6	85-125	0			
Ethylbenzene	18.59	0.4	1.0	20	0	93	85-125	0			
m,p-Xylene	36.99	0.98	2.0	40	0	92.5	75-130	0			
Methyl tert-butyl ether	20.38	0.12	1.0	20	0	102	80-130	0			
Naphthalene	15.28	0.18	5.0	20	0	76.4	55-160	0			
o-Xylene	18.74	0.35	1.0	20	0	93.7	80-125	0			
Toluene	18.21	0.37	1.0	20	0	91	85-125	0			
Xylenes, Total	55.73	1.3	3.0	60	0	92.9	80-126	0			
Surr: 1,2-Dichloroethane-d4	*19.9*	0	0	*20*	0	*99.5*	*75-120*	0			
Surr: 4-Bromofluorobenzene	*20.14*	0	0	*20*	0	*101*	*80-110*	0			
Surr: Dibromofluoromethane	*20*	0	0	*20*	0	*100*	*85-115*	0			
Surr: Toluene-d8	*19.77*	0	0	*20*	0	*98.8*	*85-110*	0			

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

Client: Barr Engineering Company
Work Order: 17051581
Project: 2017 Enbridge GW (49161385.00)

QC BATCH REPORT

Batch ID: **R213103** Instrument ID **VMS8** Method: **SW8260B**

MS Sample ID: **17051581-13A MS** Units: **µg/L** Analysis Date: **06/02/17 04:07 AM**
Client ID: **MW-6A** Run ID: **VMS8_170601A** SeqNo: **4460651** Prep Date: DF: **10**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	199.2	3.7	10	200	0	99.6	75-130	0			
1,3,5-Trimethylbenzene	202.7	2.9	10	200	0	101	75-130	0			
Benzene	206.5	3	10	200	0	103	85-125	0			
Ethylbenzene	195.4	4	10	200	0	97.7	85-125	0			
m,p-Xylene	387.5	9.8	20	400	0	96.9	75-130	0			
Methyl tert-butyl ether	207	1.2	10	200	0	104	80-130	0			
Naphthalene	132.3	1.8	50	200	0	66.2	55-160	0			
o-Xylene	196.2	3.5	10	200	0	98.1	80-125	0			
Toluene	191.5	3.7	10	200	0	95.8	85-125	0			
Xylenes, Total	583.7	13	30	600	0	97.3	80-126	0			
Surr: 1,2-Dichloroethane-d4	*198.5*	0	0	*200*	0	*99.2*	*75-120*	0			
Surr: 4-Bromofluorobenzene	*196.9*	0	0	*200*	0	*98.4*	*80-110*	0			
Surr: Dibromofluoromethane	*198.8*	0	0	*200*	0	*99.4*	*85-115*	0			
Surr: Toluene-d8	*199.9*	0	0	*200*	0	*100*	*85-110*	0			

MSD Sample ID: **17051581-13A MSD** Units: **µg/L** Analysis Date: **06/02/17 04:23 AM**
Client ID: **MW-6A** Run ID: **VMS8_170601A** SeqNo: **4460652** Prep Date: DF: **10**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	198.8	3.7	10	200	0	99.4	75-130	199.2	0.201	30	
1,3,5-Trimethylbenzene	201.9	2.9	10	200	0	101	75-130	202.7	0.395	30	
Benzene	204.7	3	10	200	0	102	85-125	206.5	0.875	30	
Ethylbenzene	195.8	4	10	200	0	97.9	85-125	195.4	0.204	30	
m,p-Xylene	392.6	9.8	20	400	0	98.2	75-130	387.5	1.31	30	
Methyl tert-butyl ether	203.5	1.2	10	200	0	102	80-130	207	1.71	30	
Naphthalene	124.1	1.8	50	200	0	62	55-160	132.3	6.4	30	
o-Xylene	196.1	3.5	10	200	0	98	80-125	196.2	0.051	30	
Toluene	195.3	3.7	10	200	0	97.6	85-125	191.5	1.96	30	
Xylenes, Total	588.7	13	30	600	0	98.1	80-126	583.7	0.853	30	
Surr: 1,2-Dichloroethane-d4	*196.5*	0	0	*200*	0	*98.2*	*75-120*	198.5	*1.01*	*30*	
Surr: 4-Bromofluorobenzene	*201.7*	0	0	*200*	0	*101*	*80-110*	196.9	*2.41*	*30*	
Surr: Dibromofluoromethane	*198.2*	0	0	*200*	0	*99.1*	*85-115*	198.8	*0.302*	*30*	
Surr: Toluene-d8	*198.9*	0	0	*200*	0	*99.4*	*85-110*	199.9	*0.502*	*30*	

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

Client: Barr Engineering Company
Work Order: 17051581
Project: 2017 Enbridge GW (49161385.00)

QC BATCH REPORT

Batch ID: **R213103** Instrument ID **VMS8** Method: **SW8260B**

The following samples were analyzed in this batch:

17051581-01A	17051581-02A	17051581-03A
17051581-04A	17051581-05A	17051581-06A
17051581-07A	17051581-08A	17051581-09A
17051581-10A	17051581-11A	17051581-12A
17051581-13A	17051581-14A	17051581-15A
17051581-16A	17051581-17A	17051581-18A
17051581-19A	17051581-20A	

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

Client: Barr Engineering Company
Work Order: 17051581
Project: 2017 Enbridge GW (49161385.00)

QC BATCH REPORT

Batch ID: **R213156a** Instrument ID **VMS5** Method: **SW8260B**

MBLK Sample ID: **VBLKW2-170602-R213156a** Units: **µg/L** Analysis Date: **06/03/17 05:32 AM**
Client ID: Run ID: **VMS5_170602B** SeqNo: **4462869** Prep Date: 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	0.37	1.0								
1,3,5-Trimethylbenzene	U	0.29	1.0								
Benzene	U	0.3	1.0								
Ethylbenzene	U	0.4	1.0								
m,p-Xylene	U	0.98	2.0								
Methyl tert-butyl ether	U	0.12	1.0								
Naphthalene	U	0.18	5.0								
o-Xylene	U	0.35	1.0								
Toluene	U	0.37	1.0								
Xylenes, Total	U	1.3	3.0								
Surr: 1,2-Dichloroethane-d4	*20.75*	0	0	*20*	0	*104*	*75-120*	0			
Surr: 4-Bromofluorobenzene	*18.57*	0	0	*20*	0	*92.8*	*80-110*	0			
Surr: Dibromofluoromethane	*20.35*	0	0	*20*	0	*102*	*85-115*	0			
Surr: Toluene-d8	*20.01*	0	0	*20*	0	*100*	*85-110*	0			

LCS Sample ID: **VLCSW2-170602-R213156a** Units: **µg/L** Analysis Date: **06/03/17 04:41 AM**
Client ID: Run ID: **VMS5_170602B** SeqNo: **4462868** Prep Date: 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	21.96	0.37	1.0	20	0	110	75-130	0			
1,3,5-Trimethylbenzene	21.93	0.29	1.0	20	0	110	75-130	0			
Benzene	18.81	0.3	1.0	20	0	94	85-125	0			
Ethylbenzene	20.82	0.4	1.0	20	0	104	85-125	0			
m,p-Xylene	42.36	0.98	2.0	40	0	106	75-130	0			
Methyl tert-butyl ether	19.32	0.12	1.0	20	0	96.6	80-130	0			
Naphthalene	20.33	0.18	5.0	20	0	102	55-160	0			
o-Xylene	21.2	0.35	1.0	20	0	106	80-125	0			
Toluene	20.09	0.37	1.0	20	0	100	85-125	0			
Xylenes, Total	63.56	1.3	3.0	60	0	106	80-126	0			
Surr: 1,2-Dichloroethane-d4	*20.22*	0	0	*20*	0	*101*	*75-120*	0			
Surr: 4-Bromofluorobenzene	*19.33*	0	0	*20*	0	*96.6*	*80-110*	0			
Surr: Dibromofluoromethane	*20.04*	0	0	*20*	0	*100*	*85-115*	0			
Surr: Toluene-d8	*20.54*	0	0	*20*	0	*103*	*85-110*	0			

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

Client: Barr Engineering Company
Work Order: 17051581
Project: 2017 Enbridge GW (49161385.00)

QC BATCH REPORT

Batch ID: **R213156a** Instrument ID **VMS5** Method: **SW8260B**

MS Sample ID: **17051646-01A MS** Units: **µg/L** Analysis Date: **06/03/17 02:38 PM**
Client ID: Run ID: **VMS5_170602B** SeqNo: **4462883** Prep Date: DF: **10**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	209.5	3.7	10	200	18.4	95.6	75-130	0			
1,3,5-Trimethylbenzene	189.4	2.9	10	200	4.3	92.6	75-130	0			
Benzene	285	3	10	200	117.8	83.6	85-125	0			S
Ethylbenzene	195.7	4	10	200	11.6	92	85-125	0			
m,p-Xylene	407.2	9.8	20	400	34.3	93.2	75-130	0			
Methyl tert-butyl ether	183.8	1.2	10	200	0	91.9	80-130	0			
Naphthalene	201.7	1.8	50	200	0	101	55-160	0			
o-Xylene	212.9	3.5	10	200	20	96.4	80-125	0			
Toluene	286	3.7	10	200	103.6	91.2	85-125	0			
Xylenes, Total	620.1	13	30	600	54.3	94.3	80-126	0			
Surr: 1,2-Dichloroethane-d4	*210.8*	0	0	*200*	0	*105*	*75-120*	0			
Surr: 4-Bromofluorobenzene	*190.7*	0	0	*200*	0	*95.4*	*80-110*	0			
Surr: Dibromofluoromethane	*203*	0	0	*200*	0	*102*	*85-115*	0			
Surr: Toluene-d8	*204.7*	0	0	*200*	0	*102*	*85-110*	0			

MSD Sample ID: **17051646-01A MSD** Units: **µg/L** Analysis Date: **06/03/17 03:04 PM**
Client ID: Run ID: **VMS5_170602B** SeqNo: **4462884** Prep Date: DF: **10**

Analyte	Result	MDL	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,2,4-Trimethylbenzene	225.9	3.7	10	200	18.4	104	75-130	209.5	7.53	30	
1,3,5-Trimethylbenzene	206.9	2.9	10	200	4.3	101	75-130	189.4	8.83	30	
Benzene	299.7	3	10	200	117.8	91	85-125	285	5.03	30	
Ethylbenzene	216	4	10	200	11.6	102	85-125	195.7	9.86	30	
m,p-Xylene	444.7	9.8	20	400	34.3	103	75-130	407.2	8.8	30	
Methyl tert-butyl ether	191.4	1.2	10	200	0	95.7	80-130	183.8	4.05	30	
Naphthalene	208.7	1.8	50	200	0	104	55-160	201.7	3.41	30	
o-Xylene	227.9	3.5	10	200	20	104	80-125	212.9	6.81	30	
Toluene	304.5	3.7	10	200	103.6	100	85-125	286	6.27	30	
Xylenes, Total	672.6	13	30	600	54.3	103	80-126	620.1	8.12	30	
Surr: 1,2-Dichloroethane-d4	*200.8*	0	0	*200*	0	*100*	*75-120*	210.8	*4.86*	*30*	
Surr: 4-Bromofluorobenzene	*189.6*	0	0	*200*	0	*94.8*	*80-110*	190.7	*0.578*	*30*	
Surr: Dibromofluoromethane	*197.8*	0	0	*200*	0	*98.9*	*85-115*	203	*2.59*	*30*	
Surr: Toluene-d8	*201.3*	0	0	*200*	0	*101*	*85-110*	204.7	*1.67*	*30*	

The following samples were analyzed in this batch:

17051581-21A	17051581-22A	17051581-23A
17051581-24A	17051581-25A	17051581-26A
17051581-27A	17051581-28A	17051581-29A
17051581-30A	17051581-31A	17051581-32A

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

1705158 1

Barr Engineering Co. Chain of Custody

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

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

COC Number: 53829

COC 1 of 4

REPORT TO	INVOICE TO
Company: Barr Engineering	Company: Same
Address: 325 S. Lake Ave	Address:
Name: Lynette Carney	Name:
email: LMC@Barr.com	email:
Copy to: datamgt@barr.com	P.O.
Project Name: 2017 Enbridge GW	Barr Project No: 49161385.00 001 200

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

	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: PVOCs & Naphthalene-3 (Water)	% Solids (Soil)	Preservative Code	Field Filtered Y/N
1.	MW-14	–	–	–	05/22/2017	12:46	GW	N	3	3		PVOCs &	
2.	MW-15					13:32						Naphthalene-3	
3.	MW-2					14:57							
4.	MW-1					15:44							
5.	MW-19B					16:53							
6.	MW-19A					17.24							
7.	~~MW-19A~~ DUP-1 Pre					17:24							
8.													
9.													
10.													

BARR USE ONLY		Relinquished by:	On Ice? Y N	Date	Time	Received by:	Date	Time
Sampled by:	PLH + MAB							
Barr Proj. Manager:	LMC	Relinquished by:	On Ice? Y N	Date	Time	Received by:	Date	Time
Barr DQ Manager:	~~AAN~~ AAN						5/26/17	0930
Lab Name:	ALS	Samples Shipped VIA: ☐ Courier ☒ Federal Express ☐ Sampler ☐ Other:				Air Bill Number:	Requested Due Date: ☒ Standard Turn Around Time ☐ Rush (mm/dd/yyyy)	
Lab Location:	Holland, MI	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.

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SR2 3.4°C

1705158 1

Barr Engineering Co. Chain of Custody

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

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

COC Number: 53832

COC 2 of 4

REPORT TO	INVOICE TO
Company: Barr Engineering Co.	Company: Same
Address: 325 S Lake Ave	Address:
Name: Lynette Carney	Name:
email: LMC@barr.com	email:
Copy to: datamgt@barr.com	P.O.
Project Name: 2017 Enh. GW	Barr Project No: 49161385.00 001 200

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

	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: PVOC + Naphthalene-3	Soil: % Solids	Preservative Code	Field Filtered Y/N
8	1. MW-20B	–	–	–	5/23/2017	10:30	GW	N	3			PVOC &	
9	2. MW-20A					11:01						Naphthalene -3	
10	3. MW-21B					12:05							
11	4. MW-21A					12:41							
12	5. MW-6B					14:10							
13	6. MW-6A					14:43							
14	7. MW-10					15:47							
15	8. MW-11B					16:34							
16	9. MW-11					16:58							
	10.												

BARR USE ONLY		Relinquished by:	On Ice? Y N	Date	Time	Received by:	Date	Time
Sampled by:	PLL		Y	5/25/17	0915			
Barr Proj. Manager:	LMC	Relinquished by:	On Ice? Y N	Date	Time	Received by:	Date	Time
Barr DQ Manager:	AAN						5/26/17	0930
Lab Name:	ALS	Samples Shipped VIA: ☐ Courier ☒ Federal Express ☐ Sampler ☐ Other:				Air Bill Number:	Requested Due Date: ☒ Standard Turn Around Time ☐ Rush (mm/dd/yyyy)	
Lab Location:	Holland, MI	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.

SR2 24.

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17051581

Barr Engineering Co. Chain of Custody

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

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

COC Number: 53830
COC 3 of 4

REPORT TO	INVOICE TO
Company: Barr Engineering Co.	Company: Same
Address: 325 S. Lake Ave.	Address:
Name: Lynette Carney	Name:
email: LMC@Barr.com	email:
Copy to: datamgt@barr.com	P.O.
Project Name: 2017 Enbridge GW	Barr Project No: 49161385.00 001 200

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

	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: PVOC + Naphthalene-3	Soil: % Solids	Preservative Code	Field Filtered Y/N
7	1. MW-23B	—	—	—	5/24/2017	08:33	GW	N	3	3		PVOC +	
8	2. MW-5B					09:34						Naphthalene-3	
9	3. MW-5					10:12							
20	4. MW-17B					10:54							
21	5. MW-17A					11:17							
22	6. MW-18					11:49							
23	7. MW-25B					12:48							
24	8. MW-25A					13:18							
25	9. MW-26					13:54							
26	10. DUP-2					08:33							

BARR USE ONLY		Relinquished by:	On Ice? (Y) N	Date	Time	Received by:	Date	Time
Sampled by:	PLL			5/25/17	0915			
Barr Proj. Manager:	LMC	Relinquished by:	On Ice? Y N	Date	Time	Received by:	Date	Time
Barr DQ Manager:	AAN						5/26/17	0930
Lab Name:	ALS	Samples Shipped VIA: ☐ Courier ☒ Federal Express ☐ Sampler ☐ Other:				Air Bill Number:		
Lab Location:	Holland, MI	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.

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SDZ 3.4°C

TBB

1705158]

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: 53831

COC 4 of 4

REPORT TO	INVOICE TO
Company: Barr Engineering Co.	Company: Same
Address: 325 S. Lake Ave.	Address:
Name: Lynette Carney	Name:
email: Lmc@Barr.com	email:
Copy to: datamgt@barr.com	P.O.
Project Name: 2017 Enbridge GW	Barr Project No: 49161385.00 001 200

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

	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: PVOC & Naphthalene-3	Soil: % Solids	Preservative Code	Field Filtered Y/N
27	1. MW-12	–	–	–	5/24/2017	14:28	GW	N	3	3		PVOC &	
28	2. MW-24B					15:27						Naphthalene-3	
29	3. MW-24A					15:59							
30	4. MW-22B					17:00							
31	5. DUP-3					15:59							
32	6. Trip Blank												
	7.												
	8.												
	9.												
	10.												

BARR USE ONLY							
Sampled by:	PLL	Relinquished by:	On Ice? (Y) N	Date 5/25/17	Time 0915	Received by:	Date	Time
Barr Proj. Manager:	LMC	Relinquished by:	On Ice? Y N	Date	Time	Received by:	Date 5/26/17	Time 0930
Barr DQ Manager:	AAN	Samples Shipped VIA: ☐ Courier ☒ Federal Express ☐ Sampler ☐ Other:		Air Bill Number:		Requested Due Date: ☒ Standard Turn Around Time ☐ Rush (mm/dd/yyyy)	
Lab Name:	ALS						
Lab Location:	Holland, MI	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.

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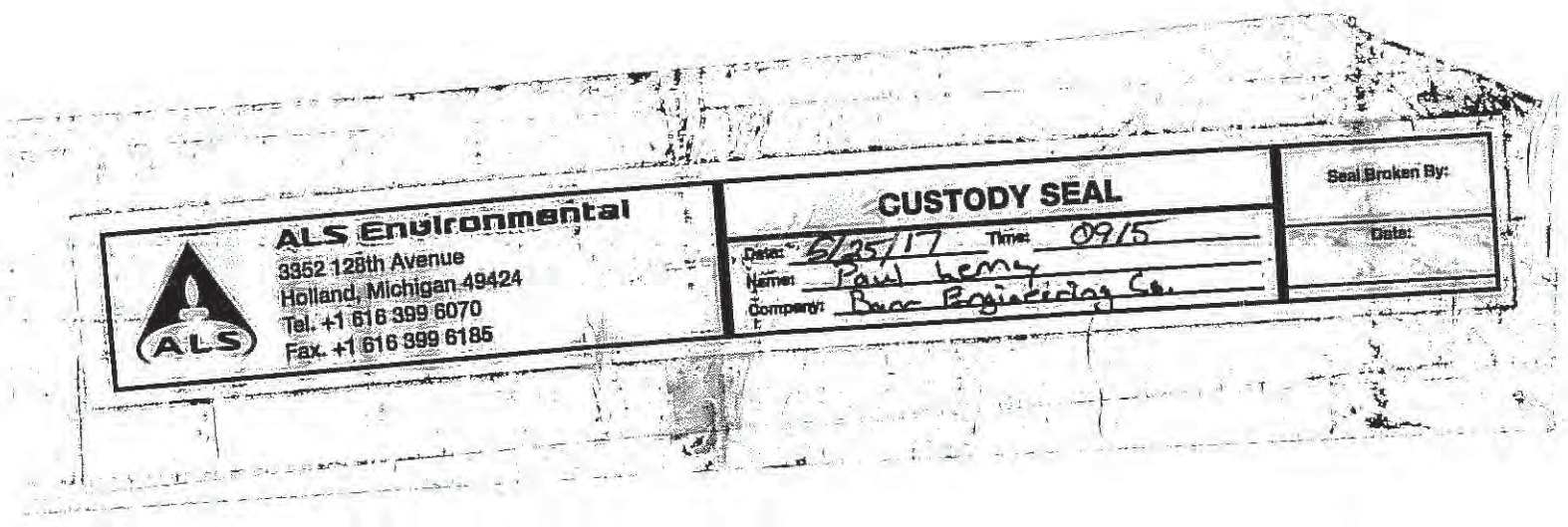
ALS Environmental
3352 128th Avenue
Holland, Michigan 49424
Tel. +1 616 399 6070
Fax. +1 616 399 6185
ALS
CUSTODY SEAL
Date: 5/25/17 Time: 0915
Name: Paul Lemy
Company: Barr Engineering Co.
Seal Broken By:
Date:

ALS Group, USA

Sample Receipt Checklist

Client Name: **BARRENG-MN** Date/Time Received: **26-May-17 09:30**

Work Order: **17051581** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 26-May-17 (Date) Reviewed by: Tom Bramish (eSignature) 26-May-17 (Date)

Matrices: Groundwater

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):	3.4/3.4 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	5/26/2017 1:43:18 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:

Fall 2017 Laboratory Analytical Reports

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

October 19, 2017

Jim Taraldsen
Barr Engineering
332 W. Superior St.
Suite 600
Duluth, MN 55802

RE: Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Dear Jim Taraldsen:
Enclosed are the analytical results for sample(s) received by the laboratory on October 06, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC 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,

Amanda J Albrecht

Amanda Albrecht
amanda.albrecht@pacelabs.com
(612)607-6382
Project Manager

Enclosures

cc: BarrDM, Barr Engineering

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Minnesota Certification IDs

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414-2485
A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas Certification #: 88-0680
California Certification #: 2929
CNMI Saipan Certification #:MP0003
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605
Georgia Certification #: 959
Guam EPA Certification #: MN00064
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: 03086
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064
Maryland Certification #: 322
Massachusetts Certification #: M-MN064
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: MN00064
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081
New Jersey Certification #: MN002
New York Certification #: 11647
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification #: CL101
Oklahoma Certification #: 9507
Oregon NwTPH Certification #: MN300001
Oregon Secondary Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192
Utah Certification #: MN00064
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DW Certification #: 9952 C
West Virginia DEP Certification #: 382
Wisconsin Certification #: 999407970
Wyoming via EPA Region 8 Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10406326001	MW-14	Water	10/02/17 13:05	10/06/17 20:00
10406326002	MW-15	Water	10/02/17 14:00	10/06/17 20:00
10406326003	MW-2	Water	10/02/17 15:00	10/06/17 20:00
10406326004	MW-1	Water	10/02/17 16:00	10/06/17 20:00
10406326005	MW-24A	Water	10/03/17 10:30	10/06/17 20:00
10406326006	MW-24B	Water	10/03/17 11:30	10/06/17 20:00
10406326007	MW-20A	Water	10/03/17 12:55	10/06/17 20:00
10406326008	MW-20B	Water	10/03/17 13:33	10/06/17 20:00
10406326009	MW-6B	Water	10/03/17 15:10	10/06/17 20:00
10406326010	MW-6	Water	10/03/17 15:50	10/06/17 20:00
10406326011	MW-21A	Water	10/03/17 18:25	10/06/17 20:00
10406326012	MW-21B	Water	10/03/17 17:55	10/06/17 20:00
10406326013	Dup-1	Water	10/03/17 00:00	10/06/17 20:00
10406326014	Dup-2	Water	10/03/17 00:00	10/06/17 20:00
10406326015	MW-10	Water	10/04/17 10:05	10/06/17 20:00
10406326016	MW-22B	Water	10/04/17 11:00	10/06/17 20:00
10406326017	MW-11B	Water	10/04/17 12:40	10/06/17 20:00
10406326018	MW-11	Water	10/04/17 13:00	10/06/17 20:00
10406326019	MW-26	Water	10/04/17 14:00	10/06/17 20:00
10406326020	MW-25A	Water	10/04/17 15:15	10/06/17 20:00
10406326021	MW-25B	Water	10/04/17 15:25	10/06/17 20:00
10406326022	MW-12	Water	10/04/17 16:05	10/06/17 20:00
10406326023	Dup-3	Water	10/04/17 00:00	10/06/17 20:00
10406326024	MW-19	Water	10/05/17 09:15	10/06/17 20:00
10406326025	MW-19B	Water	10/05/17 10:10	10/06/17 20:00
10406326026	MW-18	Water	10/05/17 11:15	10/06/17 20:00
10406326027	MW-17A	Water	10/05/17 12:00	10/06/17 20:00
10406326028	MW-17B	Water	10/05/17 12:35	10/06/17 20:00
10406326029	MW-5	Water	10/05/17 14:55	10/06/17 20:00
10406326030	MW-5B	Water	10/05/17 14:10	10/06/17 20:00
10406326031	MW-23B	Water	10/05/17 15:55	10/06/17 20:00
10406326032	Trip Blank	Water	10/05/17 00:00	10/06/17 20:00

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SAMPLE ANALYTE COUNT

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10406326001	MW-14	EPA 8260B	MRB	11	PASI-M
10406326002	MW-15	EPA 8260B	MRB	11	PASI-M
10406326003	MW-2	EPA 8260B	AEZ	11	PASI-M
10406326004	MW-1	EPA 8260B	AEZ	11	PASI-M
10406326005	MW-24A	EPA 8260B	AEZ	11	PASI-M
10406326006	MW-24B	EPA 8260B	AEZ	11	PASI-M
10406326007	MW-20A	EPA 8260B	AEZ	11	PASI-M
10406326008	MW-20B	EPA 8260B	AEZ	11	PASI-M
10406326009	MW-6B	EPA 8260B	AEZ	11	PASI-M
10406326010	MW-6	EPA 8260B	AEZ	11	PASI-M
10406326011	MW-21A	EPA 8260B	AEZ	11	PASI-M
10406326012	MW-21B	EPA 8260B	AEZ	11	PASI-M
10406326013	Dup-1	EPA 8260B	AEZ	11	PASI-M
10406326014	Dup-2	EPA 8260B	AEZ	11	PASI-M
10406326015	MW-10	EPA 8260B	AEZ	11	PASI-M
10406326016	MW-22B	EPA 8260B	AEZ	11	PASI-M
10406326017	MW-11B	EPA 8260B	AEZ	11	PASI-M
10406326018	MW-11	EPA 8260B	AEZ	11	PASI-M
10406326019	MW-26	EPA 8260B	AEZ	11	PASI-M
10406326020	MW-25A	EPA 8260B	AEZ	11	PASI-M
10406326021	MW-25B	EPA 8260B	AEZ	11	PASI-M
10406326022	MW-12	EPA 8260B	AEZ	11	PASI-M
10406326023	Dup-3	EPA 8260B	AEZ	11	PASI-M
10406326024	MW-19	EPA 8260B	AEZ	11	PASI-M
10406326025	MW-19B	EPA 8260B	AEZ	11	PASI-M
10406326026	MW-18	EPA 8260B	AEZ	11	PASI-M
10406326027	MW-17A	EPA 8260B	AEZ	11	PASI-M
10406326028	MW-17B	EPA 8260B	AEZ	11	PASI-M
10406326029	MW-5	EPA 8260B	AEZ	11	PASI-M
10406326030	MW-5B	EPA 8260B	AEZ	11	PASI-M
10406326031	MW-23B	EPA 8260B	AEZ	11	PASI-M
10406326032	Trip Blank	EPA 8260B	AEZ	11	PASI-M

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-14 **Lab ID: 10406326001** Collected: 10/02/17 13:05 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.1	0.34	1		10/12/17 18:13	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.45	0.14	1		10/12/17 18:13	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.3	0.40	1		10/12/17 18:13	1634-04-4	
Naphthalene	**<0.42**	ug/L	1.4	0.42	1		10/12/17 18:13	91-20-3	M1
Toluene	**<0.17**	ug/L	0.57	0.17	1		10/12/17 18:13	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	0.45	0.14	1		10/12/17 18:13	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	0.60	0.18	1		10/12/17 18:13	108-67-8	
Xylene (Total)	**<0.24**	ug/L	0.81	0.24	1		10/12/17 18:13	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	116	%.	75-137		1		10/12/17 18:13	17060-07-0	
Toluene-d8 (S)	102	%.	75-125		1		10/12/17 18:13	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125		1		10/12/17 18:13	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-15 **Lab ID: 10406326002** Collected: 10/02/17 14:00 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.1	0.34	1		10/12/17 18:29	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.45	0.14	1		10/12/17 18:29	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.3	0.40	1		10/12/17 18:29	1634-04-4	
Naphthalene	**<0.42**	ug/L	1.4	0.42	1		10/12/17 18:29	91-20-3	
Toluene	**<0.17**	ug/L	0.57	0.17	1		10/12/17 18:29	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	0.45	0.14	1		10/12/17 18:29	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	0.60	0.18	1		10/12/17 18:29	108-67-8	
Xylene (Total)	**<0.24**	ug/L	0.81	0.24	1		10/12/17 18:29	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	114	%.	75-137		1		10/12/17 18:29	17060-07-0	
Toluene-d8 (S)	103	%.	75-125		1		10/12/17 18:29	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	75-125		1		10/12/17 18:29	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-2 **Lab ID: 10406326003** Collected: 10/02/17 15:00 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/16/17 10:56	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/16/17 10:56	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/16/17 10:56	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/16/17 10:56	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/16/17 10:56	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/16/17 10:56	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/16/17 10:56	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/16/17 10:56	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	108	%.	75-137		1		10/16/17 10:56	17060-07-0	HS
Toluene-d8 (S)	108	%.	75-125		1		10/16/17 10:56	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		10/16/17 10:56	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-1 **Lab ID: 10406326004** Collected: 10/02/17 16:00 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/16/17 15:53	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/16/17 15:53	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/16/17 15:53	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/16/17 15:53	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/16/17 15:53	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/16/17 15:53	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/16/17 15:53	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/16/17 15:53	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	109	%.	75-137		1		10/16/17 15:53	17060-07-0	HS
Toluene-d8 (S)	107	%.	75-125		1		10/16/17 15:53	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		10/16/17 15:53	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-24A **Lab ID: 10406326005** Collected: 10/03/17 10:30 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/16/17 13:33	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/16/17 13:33	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/16/17 13:33	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/16/17 13:33	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/16/17 13:33	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/16/17 13:33	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/16/17 13:33	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/16/17 13:33	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	109	%.	75-137		1		10/16/17 13:33	17060-07-0	HS
Toluene-d8 (S)	105	%.	75-125		1		10/16/17 13:33	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		10/16/17 13:33	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-24B **Lab ID: 10406326006** Collected: 10/03/17 11:30 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/13/17 23:35	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/13/17 23:35	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/13/17 23:35	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/13/17 23:35	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/13/17 23:35	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/13/17 23:35	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/13/17 23:35	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/13/17 23:35	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	104	%.	75-137		1		10/13/17 23:35	17060-07-0	
Toluene-d8 (S)	104	%.	75-125		1		10/13/17 23:35	2037-26-5	
4-Bromofluorobenzene (S)	108	%.	75-125		1		10/13/17 23:35	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-20A **Lab ID: 10406326007** Collected: 10/03/17 12:55 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/16/17 13:51	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/16/17 13:51	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/16/17 13:51	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/16/17 13:51	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/16/17 13:51	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/16/17 13:51	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/16/17 13:51	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/16/17 13:51	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	109	%.	75-137		1		10/16/17 13:51	17060-07-0	HS
Toluene-d8 (S)	107	%.	75-125		1		10/16/17 13:51	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		10/16/17 13:51	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-20B **Lab ID: 10406326008** Collected: 10/03/17 13:33 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/16/17 14:43	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/16/17 14:43	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/16/17 14:43	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/16/17 14:43	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/16/17 14:43	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/16/17 14:43	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/16/17 14:43	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/16/17 14:43	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	109	%.	75-137		1		10/16/17 14:43	17060-07-0	HS
Toluene-d8 (S)	108	%.	75-125		1		10/16/17 14:43	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125		1		10/16/17 14:43	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-6B **Lab ID: 10406326009** Collected: 10/03/17 15:10 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/14/17 01:39	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/14/17 01:39	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/14/17 01:39	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/14/17 01:39	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/14/17 01:39	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/14/17 01:39	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/14/17 01:39	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/14/17 01:39	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%.	75-137		1		10/14/17 01:39	17060-07-0	HS
Toluene-d8 (S)	103	%.	75-125		1		10/14/17 01:39	2037-26-5	
4-Bromofluorobenzene (S)	105	%.	75-125		1		10/14/17 01:39	460-00-4	

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-6 **Lab ID: 10406326010** Collected: 10/03/17 15:50 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/14/17 01:56	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/14/17 01:56	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/14/17 01:56	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/14/17 01:56	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/14/17 01:56	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/14/17 01:56	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/14/17 01:56	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/14/17 01:56	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%.	75-137		1		10/14/17 01:56	17060-07-0	HS
Toluene-d8 (S)	105	%.	75-125		1		10/14/17 01:56	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125		1		10/14/17 01:56	460-00-4	

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-21A **Lab ID: 10406326011** Collected: 10/03/17 18:25 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/16/17 14:26	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/16/17 14:26	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/16/17 14:26	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/16/17 14:26	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/16/17 14:26	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/16/17 14:26	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/16/17 14:26	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/16/17 14:26	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	110	%.	75-137		1		10/16/17 14:26	17060-07-0	HS
Toluene-d8 (S)	107	%.	75-125		1		10/16/17 14:26	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125		1		10/16/17 14:26	460-00-4	

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-21B **Lab ID: 10406326012** Collected: 10/03/17 17:55 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/14/17 02:32	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/14/17 02:32	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/14/17 02:32	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/14/17 02:32	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/14/17 02:32	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/14/17 02:32	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/14/17 02:32	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/14/17 02:32	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	104	%.	75-137		1		10/14/17 02:32	17060-07-0	HS
Toluene-d8 (S)	102	%.	75-125		1		10/14/17 02:32	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		10/14/17 02:32	460-00-4	

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: Dup-1 **Lab ID: 10406326013** Collected: 10/03/17 00:00 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/16/17 14:08	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/16/17 14:08	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/16/17 14:08	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/16/17 14:08	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/16/17 14:08	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/16/17 14:08	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/16/17 14:08	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/16/17 14:08	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	109	%.	75-137		1		10/16/17 14:08	17060-07-0	HS
Toluene-d8 (S)	106	%.	75-125		1		10/16/17 14:08	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		10/16/17 14:08	460-00-4	

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: Dup-2 **Lab ID: 10406326014** Collected: 10/03/17 00:00 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/14/17 00:10	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/14/17 00:10	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/14/17 00:10	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/14/17 00:10	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/14/17 00:10	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/14/17 00:10	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/14/17 00:10	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/14/17 00:10	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	102	%.	75-137		1		10/14/17 00:10	17060-07-0	
Toluene-d8 (S)	106	%.	75-125		1		10/14/17 00:10	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		10/14/17 00:10	460-00-4	

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-10 **Lab ID: 10406326015** Collected: 10/04/17 10:05 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/16/17 15:35	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/16/17 15:35	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/16/17 15:35	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/16/17 15:35	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/16/17 15:35	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/16/17 15:35	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/16/17 15:35	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/16/17 15:35	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	111	%.	75-137		1		10/16/17 15:35	17060-07-0	HS
Toluene-d8 (S)	107	%.	75-125		1		10/16/17 15:35	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		10/16/17 15:35	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-22B **Lab ID: 10406326016** Collected: 10/04/17 11:00 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/16/17 11:48	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/16/17 11:48	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/16/17 11:48	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/16/17 11:48	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/16/17 11:48	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/16/17 11:48	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/16/17 11:48	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/16/17 11:48	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	111	%.	75-137		1		10/16/17 11:48	17060-07-0	
Toluene-d8 (S)	104	%.	75-125		1		10/16/17 11:48	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		10/16/17 11:48	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-11B **Lab ID: 10406326017** Collected: 10/04/17 12:40 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/16/17 11:13	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/16/17 11:13	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/16/17 11:13	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/16/17 11:13	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/16/17 11:13	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/16/17 11:13	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/16/17 11:13	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/16/17 11:13	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	109	%.	75-137		1		10/16/17 11:13	17060-07-0	
Toluene-d8 (S)	105	%.	75-125		1		10/16/17 11:13	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		10/16/17 11:13	460-00-4	

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-11 **Lab ID: 10406326018** Collected: 10/04/17 13:00 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/16/17 17:03	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/16/17 17:03	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/16/17 17:03	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/16/17 17:03	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/16/17 17:03	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/16/17 17:03	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/16/17 17:03	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/16/17 17:03	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	111	%.	75-137		1		10/16/17 17:03	17060-07-0	
Toluene-d8 (S)	107	%.	75-125		1		10/16/17 17:03	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		10/16/17 17:03	460-00-4	

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-26 **Lab ID: 10406326019** Collected: 10/04/17 14:00 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/16/17 17:21	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/16/17 17:21	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/16/17 17:21	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/16/17 17:21	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/16/17 17:21	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/16/17 17:21	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/16/17 17:21	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/16/17 17:21	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	111	%.	75-137		1		10/16/17 17:21	17060-07-0	HS
Toluene-d8 (S)	105	%.	75-125		1		10/16/17 17:21	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		10/16/17 17:21	460-00-4	

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-25A **Lab ID: 10406326020** Collected: 10/04/17 15:15 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/16/17 16:11	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/16/17 16:11	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/16/17 16:11	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/16/17 16:11	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/16/17 16:11	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/16/17 16:11	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/16/17 16:11	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/16/17 16:11	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	111	%.	75-137		1		10/16/17 16:11	17060-07-0	
Toluene-d8 (S)	106	%.	75-125		1		10/16/17 16:11	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		10/16/17 16:11	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-25B **Lab ID: 10406326021** Collected: 10/04/17 15:25 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/16/17 16:29	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/16/17 16:29	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/16/17 16:29	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/16/17 16:29	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/16/17 16:29	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/16/17 16:29	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/16/17 16:29	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/16/17 16:29	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	111	%.	75-137		1		10/16/17 16:29	17060-07-0	
Toluene-d8 (S)	104	%.	75-125		1		10/16/17 16:29	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		10/16/17 16:29	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-12 **Lab ID: 10406326022** Collected: 10/04/17 16:05 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/16/17 16:46	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/16/17 16:46	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/16/17 16:46	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/16/17 16:46	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/16/17 16:46	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/16/17 16:46	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/16/17 16:46	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/16/17 16:46	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	111	%.	75-137		1		10/16/17 16:46	17060-07-0	
Toluene-d8 (S)	105	%.	75-125		1		10/16/17 16:46	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		10/16/17 16:46	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: Dup-3 **Lab ID: 10406326023** Collected: 10/04/17 00:00 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/16/17 17:38	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/16/17 17:38	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/16/17 17:38	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/16/17 17:38	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/16/17 17:38	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/16/17 17:38	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/16/17 17:38	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/16/17 17:38	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	111	%.	75-137		1		10/16/17 17:38	17060-07-0	HS
Toluene-d8 (S)	105	%.	75-125		1		10/16/17 17:38	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		10/16/17 17:38	460-00-4	

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-19 **Lab ID: 10406326024** Collected: 10/05/17 09:15 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/18/17 13:30	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/18/17 13:30	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/18/17 13:30	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/18/17 13:30	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/18/17 13:30	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/18/17 13:30	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/18/17 13:30	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/18/17 13:30	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	104	%.	75-137		1		10/18/17 13:30	17060-07-0	HS
Toluene-d8 (S)	104	%.	75-125		1		10/18/17 13:30	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		10/18/17 13:30	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-19B **Lab ID: 10406326025** Collected: 10/05/17 10:10 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/18/17 13:48	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/18/17 13:48	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/18/17 13:48	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/18/17 13:48	91-20-3	
Toluene	**0.22J**	ug/L	1.0	0.17	1		10/18/17 13:48	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/18/17 13:48	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/18/17 13:48	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/18/17 13:48	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	106	%.	75-137		1		10/18/17 13:48	17060-07-0	HS
Toluene-d8 (S)	103	%.	75-125		1		10/18/17 13:48	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		10/18/17 13:48	460-00-4	

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-18 **Lab ID: 10406326026** Collected: 10/05/17 11:15 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/18/17 14:06	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/18/17 14:06	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/18/17 14:06	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/18/17 14:06	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/18/17 14:06	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/18/17 14:06	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/18/17 14:06	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/18/17 14:06	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%.	75-137		1		10/18/17 14:06	17060-07-0	
Toluene-d8 (S)	102	%.	75-125		1		10/18/17 14:06	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125		1		10/18/17 14:06	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-17A **Lab ID: 10406326027** Collected: 10/05/17 12:00 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/18/17 14:23	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/18/17 14:23	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/18/17 14:23	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/18/17 14:23	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/18/17 14:23	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/18/17 14:23	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/18/17 14:23	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/18/17 14:23	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	108	%.	75-137		1		10/18/17 14:23	17060-07-0	HS
Toluene-d8 (S)	104	%.	75-125		1		10/18/17 14:23	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		10/18/17 14:23	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-17B **Lab ID: 10406326028** Collected: 10/05/17 12:35 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/18/17 14:41	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/18/17 14:41	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/18/17 14:41	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/18/17 14:41	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/18/17 14:41	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/18/17 14:41	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/18/17 14:41	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/18/17 14:41	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	109	%.	75-137		1		10/18/17 14:41	17060-07-0	
Toluene-d8 (S)	102	%.	75-125		1		10/18/17 14:41	2037-26-5	
4-Bromofluorobenzene (S)	104	%.	75-125		1		10/18/17 14:41	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-5 **Lab ID: 10406326029** Collected: 10/05/17 14:55 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/18/17 14:58	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/18/17 14:58	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/18/17 14:58	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/18/17 14:58	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/18/17 14:58	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/18/17 14:58	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/18/17 14:58	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/18/17 14:58	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	107	%.	75-137		1		10/18/17 14:58	17060-07-0	HS
Toluene-d8 (S)	103	%.	75-125		1		10/18/17 14:58	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125		1		10/18/17 14:58	460-00-4	

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-5B **Lab ID: 10406326030** Collected: 10/05/17 14:10 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/18/17 15:16	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/18/17 15:16	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/18/17 15:16	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/18/17 15:16	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/18/17 15:16	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/18/17 15:16	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/18/17 15:16	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/18/17 15:16	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	106	%.	75-137		1		10/18/17 15:16	17060-07-0	
Toluene-d8 (S)	102	%.	75-125		1		10/18/17 15:16	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125		1		10/18/17 15:16	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: MW-23B **Lab ID: 10406326031** Collected: 10/05/17 15:55 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/18/17 15:34	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/18/17 15:34	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/18/17 15:34	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/18/17 15:34	91-20-3	
Toluene	**<0.17**	ug/L	1.0	0.17	1		10/18/17 15:34	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/18/17 15:34	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/18/17 15:34	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/18/17 15:34	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	108	%.	75-137		1		10/18/17 15:34	17060-07-0	HS
Toluene-d8 (S)	102	%.	75-125		1		10/18/17 15:34	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125		1		10/18/17 15:34	460-00-4	

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ANALYTICAL RESULTS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Sample: Trip Blank **Lab ID: 10406326032** Collected: 10/05/17 00:00 Received: 10/06/17 20:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.34**	ug/L	1.0	0.34	1		10/18/17 11:10	71-43-2	
Ethylbenzene	**<0.14**	ug/L	1.0	0.14	1		10/18/17 11:10	100-41-4	
Methyl-tert-butyl ether	**<0.40**	ug/L	1.0	0.40	1		10/18/17 11:10	1634-04-4	
Naphthalene	**<0.42**	ug/L	10.0	0.42	1		10/18/17 11:10	91-20-3	
Toluene	**0.17J**	ug/L	1.0	0.17	1		10/18/17 11:10	108-88-3	
1,2,4-Trimethylbenzene	**<0.14**	ug/L	4.0	0.14	1		10/18/17 11:10	95-63-6	
1,3,5-Trimethylbenzene	**<0.18**	ug/L	1.0	0.18	1		10/18/17 11:10	108-67-8	
Xylene (Total)	**<0.24**	ug/L	3.0	0.24	1		10/18/17 11:10	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	102	%.	75-137		1		10/18/17 11:10	17060-07-0	
Toluene-d8 (S)	104	%.	75-125		1		10/18/17 11:10	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125		1		10/18/17 11:10	460-00-4	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

QC Batch: 502252 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10406326001, 10406326002

METHOD BLANK: 2729801 Matrix: Water
Associated Lab Samples: 10406326001, 10406326002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.14	0.45	10/12/17 16:35	
1,3,5-Trimethylbenzene	ug/L	<0.18	0.60	10/12/17 16:35	
Benzene	ug/L	<0.34	1.1	10/12/17 16:35	
Ethylbenzene	ug/L	<0.14	0.45	10/12/17 16:35	
Methyl-tert-butyl ether	ug/L	<0.40	1.3	10/12/17 16:35	
Naphthalene	ug/L	<0.42	1.4	10/12/17 16:35	
Toluene	ug/L	<0.17	0.57	10/12/17 16:35	
Xylene (Total)	ug/L	<0.24	0.81	10/12/17 16:35	
1,2-Dichloroethane-d4 (S)	%.	110	75-137	10/12/17 16:35	
4-Bromofluorobenzene (S)	%.	99	75-125	10/12/17 16:35	
Toluene-d8 (S)	%.	102	75-125	10/12/17 16:35	

LABORATORY CONTROL SAMPLE & LCSD: 2729802 2729803

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/L	50	50.4	52.4	101	105	69-135	4	20	
1,3,5-Trimethylbenzene	ug/L	50	50.4	51.5	101	103	71-129	2	20	
Benzene	ug/L	50	51.9	51.5	104	103	74-125	1	20	
Ethylbenzene	ug/L	50	52.5	52.1	105	104	73-125	1	20	
Methyl-tert-butyl ether	ug/L	50	59.0	58.4	118	117	70-130	1	20	
Naphthalene	ug/L	50	48.3	47.8	97	96	66-129	1	20	
Toluene	ug/L	50	46.6	47.3	93	95	75-125	2	20	
Xylene (Total)	ug/L	150	157	155	105	104	75-125	1	20	
1,2-Dichloroethane-d4 (S)	%.				102	103	75-137			
4-Bromofluorobenzene (S)	%.				91	94	75-125			
Toluene-d8 (S)	%.				98	99	75-125			

MATRIX SPIKE SAMPLE: 2729804

Parameter	Units	10406326001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.14	20	16.8	84	73-141	
1,3,5-Trimethylbenzene	ug/L	<0.18	20	16.7	83	75-139	
Benzene	ug/L	<0.34	20	18.3	91	74-134	
Ethylbenzene	ug/L	<0.14	20	18.2	91	75-136	
Methyl-tert-butyl ether	ug/L	<0.40	20	21.4	107	75-128	
Naphthalene	ug/L	<0.42	20	12.0	60	61-138	M1
Toluene	ug/L	<0.17	20	17.0	84	71-138	
Xylene (Total)	ug/L	<0.24	60	50.2	84	75-131	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

MATRIX SPIKE SAMPLE: 2729804

Parameter	Units	10406326001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane-d4 (S)	%.				107	75-137	
4-Bromofluorobenzene (S)	%.				95	75-125	
Toluene-d8 (S)	%.				98	75-125	

SAMPLE DUPLICATE: 2729805

Parameter	Units	10406326002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.14	<0.14		30	
1,3,5-Trimethylbenzene	ug/L	<0.18	<0.18		30	
Benzene	ug/L	<0.34	<0.34		30	
Ethylbenzene	ug/L	<0.14	<0.14		30	
Methyl-tert-butyl ether	ug/L	<0.40	<0.40		30	
Naphthalene	ug/L	<0.42	<0.42		30	
Toluene	ug/L	<0.17	<0.17		30	
Xylene (Total)	ug/L	<0.24	<0.24		30	
1,2-Dichloroethane-d4 (S)	%.	114	114	0		
4-Bromofluorobenzene (S)	%.	97	100	2		
Toluene-d8 (S)	%.	103	105	2		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

QC Batch: 502532 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10406326006, 10406326009, 10406326010, 10406326012, 10406326014

METHOD BLANK: 2731159 Matrix: Water
Associated Lab Samples: 10406326006, 10406326009, 10406326010, 10406326012, 10406326014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.14	4.0	10/13/17 20:39	MN
1,3,5-Trimethylbenzene	ug/L	<0.18	1.0	10/13/17 20:39	
Benzene	ug/L	<0.34	1.0	10/13/17 20:39	
Ethylbenzene	ug/L	<0.14	1.0	10/13/17 20:39	
Methyl-tert-butyl ether	ug/L	<0.40	1.0	10/13/17 20:39	
Naphthalene	ug/L	<0.42	10.0	10/13/17 20:39	MN
Toluene	ug/L	0.30J	1.0	10/13/17 20:39	
Xylene (Total)	ug/L	<0.24	3.0	10/13/17 20:39	
1,2-Dichloroethane-d4 (S)	%.	101	75-137	10/13/17 20:39	
4-Bromofluorobenzene (S)	%.	101	75-125	10/13/17 20:39	
Toluene-d8 (S)	%.	107	75-125	10/13/17 20:39	

LABORATORY CONTROL SAMPLE & LCSD: 2731160 2731263

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/L	50	53.2	52.4	106	105	69-135	2	20	
1,3,5-Trimethylbenzene	ug/L	50	54.8	54.4	110	109	71-129	1	20	
Benzene	ug/L	50	43.2	42.2	86	84	74-125	2	20	
Ethylbenzene	ug/L	50	51.6	50.4	103	101	73-125	2	20	
Methyl-tert-butyl ether	ug/L	50	41.7	41.5	83	83	70-130	1	20	
Naphthalene	ug/L	50	50.4	51.0	101	102	66-129	1	20	
Toluene	ug/L	50	51.4	49.8	103	100	75-125	3	20	
Xylene (Total)	ug/L	150	150	146	100	97	75-125	3	20	
1,2-Dichloroethane-d4 (S)	%.				92	93	75-137			
4-Bromofluorobenzene (S)	%.				97	101	75-125			
Toluene-d8 (S)	%.				108	111	75-125			

MATRIX SPIKE SAMPLE: 2732910

Parameter	Units	10406326014 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.14	20	20.4	102	73-141	
1,3,5-Trimethylbenzene	ug/L	<0.18	20	21.8	109	75-139	
Benzene	ug/L	<0.34	20	17.3	87	74-134	
Ethylbenzene	ug/L	<0.14	20	20.5	102	75-136	
Methyl-tert-butyl ether	ug/L	<0.40	20	15.6	78	75-128	
Naphthalene	ug/L	<0.42	20	19.2	96	61-138	
Toluene	ug/L	<0.17	20	20.7	103	71-138	
Xylene (Total)	ug/L	<0.24	60	58.9	98	75-131	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

MATRIX SPIKE SAMPLE: 2732910

Parameter	Units	10406326014 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane-d4 (S)	%.				91	75-137	
4-Bromofluorobenzene (S)	%.				99	75-125	
Toluene-d8 (S)	%.				110	75-125	

SAMPLE DUPLICATE: 2732909

Parameter	Units	10406326006 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.14	<0.14		30	
1,3,5-Trimethylbenzene	ug/L	<0.18	<0.18		30	
Benzene	ug/L	<0.34	<0.34		30	
Ethylbenzene	ug/L	<0.14	<0.14		30	
Methyl-tert-butyl ether	ug/L	<0.40	<0.40		30	
Naphthalene	ug/L	<0.42	<0.42		30	
Toluene	ug/L	<0.17	<0.17		30	
Xylene (Total)	ug/L	<0.24	<0.24		30	
1,2-Dichloroethane-d4 (S)	%.	104	103	1		
4-Bromofluorobenzene (S)	%.	108	106	2		
Toluene-d8 (S)	%.	104	102	2		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

QC Batch: 502702 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10406326003, 10406326004, 10406326005, 10406326007, 10406326008, 10406326011, 10406326013, 10406326015, 10406326016, 10406326017, 10406326018, 10406326019, 10406326020, 10406326021, 10406326022, 10406326023

METHOD BLANK: 2732541 Matrix: Water
Associated Lab Samples: 10406326003, 10406326004, 10406326005, 10406326007, 10406326008, 10406326011, 10406326013, 10406326015, 10406326016, 10406326017, 10406326018, 10406326019, 10406326020, 10406326021, 10406326022, 10406326023

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.14	4.0	10/16/17 10:02	MN
1,3,5-Trimethylbenzene	ug/L	<0.18	1.0	10/16/17 10:02	
Benzene	ug/L	<0.34	1.0	10/16/17 10:02	
Ethylbenzene	ug/L	<0.14	1.0	10/16/17 10:02	
Methyl-tert-butyl ether	ug/L	<0.40	1.0	10/16/17 10:02	
Naphthalene	ug/L	<0.42	10.0	10/16/17 10:02	MN
Toluene	ug/L	<0.17	1.0	10/16/17 10:02	
Xylene (Total)	ug/L	<0.24	3.0	10/16/17 10:02	
1,2-Dichloroethane-d4 (S)	%.	107	75-137	10/16/17 10:02	
4-Bromofluorobenzene (S)	%.	103	75-125	10/16/17 10:02	
Toluene-d8 (S)	%.	105	75-125	10/16/17 10:02	

LABORATORY CONTROL SAMPLE & LCSD: 2732543 2732656

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/L	50	51.6	49.1	103	98	69-135	5	20	
1,3,5-Trimethylbenzene	ug/L	50	53.6	51.6	107	103	71-129	4	20	
Benzene	ug/L	50	42.5	41.8	85	84	74-125	2	20	
Ethylbenzene	ug/L	50	50.9	49.3	102	99	73-125	3	20	
Methyl-tert-butyl ether	ug/L	50	41.4	40.7	83	81	70-130	2	20	
Naphthalene	ug/L	50	48.9	47.2	98	94	66-129	4	20	
Toluene	ug/L	50	49.3	48.5	99	97	75-125	2	20	
Xylene (Total)	ug/L	150	145	140	97	93	75-125	3	20	
1,2-Dichloroethane-d4 (S)	%.				93	96	75-137			
4-Bromofluorobenzene (S)	%.				97	98	75-125			
Toluene-d8 (S)	%.				108	109	75-125			

MATRIX SPIKE SAMPLE: 2732657

Parameter	Units	10406326016 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.14	20	17.8	89	73-141	
1,3,5-Trimethylbenzene	ug/L	<0.18	20	19.5	97	75-139	
Benzene	ug/L	<0.34	20	16.2	81	74-134	
Ethylbenzene	ug/L	<0.14	20	18.9	95	75-136	
Methyl-tert-butyl ether	ug/L	<0.40	20	15.2	76	75-128	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

MATRIX SPIKE SAMPLE: 2732657

Parameter	Units	10406326016 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/L	<0.42	20	15.4	77	61-138	
Toluene	ug/L	<0.17	20	18.8	94	71-138	
Xylene (Total)	ug/L	<0.24	60	53.2	89	75-131	
1,2-Dichloroethane-d4 (S)	%.				95	75-137	
4-Bromofluorobenzene (S)	%.				96	75-125	
Toluene-d8 (S)	%.				106	75-125	

SAMPLE DUPLICATE: 2732658

Parameter	Units	10406326017 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.14	<0.14		30	
1,3,5-Trimethylbenzene	ug/L	<0.18	<0.18		30	
Benzene	ug/L	<0.34	<0.34		30	
Ethylbenzene	ug/L	<0.14	<0.14		30	
Methyl-tert-butyl ether	ug/L	<0.40	<0.40		30	
Naphthalene	ug/L	<0.42	<0.42		30	
Toluene	ug/L	<0.17	<0.17		30	
Xylene (Total)	ug/L	<0.24	<0.24		30	
1,2-Dichloroethane-d4 (S)	%.	109	108	1		
4-Bromofluorobenzene (S)	%.	102	101	1		
Toluene-d8 (S)	%.	105	105	0		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

QC Batch: 503183 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10406326024, 10406326025, 10406326026, 10406326027, 10406326028, 10406326029, 10406326030, 10406326031, 10406326032

METHOD BLANK: 2735096 Matrix: Water
Associated Lab Samples: 10406326024, 10406326025, 10406326026, 10406326027, 10406326028, 10406326029, 10406326030, 10406326031, 10406326032

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.14	4.0	10/18/17 10:35	MN
1,3,5-Trimethylbenzene	ug/L	<0.18	1.0	10/18/17 10:35	
Benzene	ug/L	<0.34	1.0	10/18/17 10:35	
Ethylbenzene	ug/L	<0.14	1.0	10/18/17 10:35	
Methyl-tert-butyl ether	ug/L	<0.40	1.0	10/18/17 10:35	
Naphthalene	ug/L	<0.42	10.0	10/18/17 10:35	MN
Toluene	ug/L	<0.17	1.0	10/18/17 10:35	
Xylene (Total)	ug/L	<0.24	3.0	10/18/17 10:35	
1,2-Dichloroethane-d4 (S)	%.	101	75-137	10/18/17 10:35	
4-Bromofluorobenzene (S)	%.	101	75-125	10/18/17 10:35	
Toluene-d8 (S)	%.	105	75-125	10/18/17 10:35	

LABORATORY CONTROL SAMPLE: 2735097

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	50	53.7	107	69-135	
1,3,5-Trimethylbenzene	ug/L	50	56.0	112	71-129	
Benzene	ug/L	50	46.1	92	74-125	
Ethylbenzene	ug/L	50	53.9	108	73-125	
Methyl-tert-butyl ether	ug/L	50	42.6	85	70-130	
Naphthalene	ug/L	50	48.9	98	66-129	
Toluene	ug/L	50	54.0	108	75-125	
Xylene (Total)	ug/L	150	154	103	75-125	
1,2-Dichloroethane-d4 (S)	%.			89	75-137	
4-Bromofluorobenzene (S)	%.			98	75-125	
Toluene-d8 (S)	%.			108	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2735566 2735567

Parameter	Units	50181497015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trimethylbenzene	ug/L	ND	100	100	112	110	112	110	73-141	2	30	
1,3,5-Trimethylbenzene	ug/L	ND	100	100	118	117	118	116	75-139	1	30	
Benzene	ug/L	444	100	100	520	514	76	71	74-134	1	30	M1
Ethylbenzene	ug/L	ND	100	100	117	113	112	109	75-136	3	30	
Methyl-tert-butyl ether	ug/L	6.6	100	100	99.7	96.3	93	90	75-128	3	30	
Naphthalene	ug/L	ND	100	100	102	103	102	103	61-138	1	30	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2735566 2735567

Parameter	Units	50181497015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Toluene	ug/L	8.8	100	100	117	115	108	107	71-138	1	30	
Xylene (Total)	ug/L	ND	300	300	329	321	110	107	75-131	2	30	
1,2-Dichloroethane-d4 (S)	%.						93	96	75-137			
4-Bromofluorobenzene (S)	%.						96	99	75-125			
Toluene-d8 (S)	%.						106	105	75-125			

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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 at or above the adjusted LOD.

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

BATCH QUALIFIERS

Batch: 502252

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: 502532

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

Batch: 502702

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

HS	Results are from sample aliquot taken from VOA vial with headspace (air bubble greater than 6 mm diameter).
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
MN	The reporting limit has been raised in accordance with Minnesota Statutes 4740.2100 Subpart 8. C, D. Reporting Limit Evaluation Rule.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 49161385.00 ENB SPT GMP
Pace Project No.: 10406326

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10406326001	**MW-14**	EPA 8260B	502252		
10406326002	**MW-15**	EPA 8260B	502252		
10406326003	**MW-2**	EPA 8260B	502702		
10406326004	**MW-1**	EPA 8260B	502702		
10406326005	**MW-24A**	EPA 8260B	502702		
10406326006	**MW-24B**	EPA 8260B	502532		
10406326007	**MW-20A**	EPA 8260B	502702		
10406326008	**MW-20B**	EPA 8260B	502702		
10406326009	**MW-6B**	EPA 8260B	502532		
10406326010	**MW-6**	EPA 8260B	502532		
10406326011	**MW-21A**	EPA 8260B	502702		
10406326012	**MW-21B**	EPA 8260B	502532		
10406326013	**Dup-1**	EPA 8260B	502702		
10406326014	**Dup-2**	EPA 8260B	502532		
10406326015	**MW-10**	EPA 8260B	502702		
10406326016	**MW-22B**	EPA 8260B	502702		
10406326017	**MW-11B**	EPA 8260B	502702		
10406326018	**MW-11**	EPA 8260B	502702		
10406326019	**MW-26**	EPA 8260B	502702		
10406326020	**MW-25A**	EPA 8260B	502702		
10406326021	**MW-25B**	EPA 8260B	502702		
10406326022	**MW-12**	EPA 8260B	502702		
10406326023	**Dup-3**	EPA 8260B	502702		
10406326024	**MW-19**	EPA 8260B	503183		
10406326025	**MW-19B**	EPA 8260B	503183		
10406326026	**MW-18**	EPA 8260B	503183		
10406326027	**MW-17A**	EPA 8260B	503183		
10406326028	**MW-17B**	EPA 8260B	503183		
10406326029	**MW-5**	EPA 8260B	503183		
10406326030	**MW-5B**	EPA 8260B	503183		
10406326031	**MW-23B**	EPA 8260B	503183		
10406326032	**Trip Blank**	EPA 8260B	503183		

10406326

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: 53379

COC 1 of 4

REPORT TO	INVOICE TO
Company: Barr Eng	Company: Same
Address: 325 S Lake Ave	Address:
Name: Lynette Carney	Name:
email: LMC@barr.com	email:
Copy to: datamgt@barr.com	P.O.
Project Name: ENB SPT GMP	Barr Project No: 49161385.00

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

Location	Sample Depth Start	Sample Depth Stop	Sample Depth 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: PVOC + Naphthalene	Analysis Requested: Soil: % Solids	Preservative Code	Field Filtered Y/N	
1. MW-14	N/A	N/A	N/A	10/2/17	1305	GW	N	3	3				PVOC + Naphthalene (BTEX, MTBE, Trimethyl-benzene, Naphthalene by EPA 8260) 001
2. MW-15					1400								002
3. MW-2					1500								003
4. MW-1					1600								004
5. MW-24A				10/3/17	1030								005
6. MW-24B					1130								006
7. MW-20A					1255								007
8. MW-20B					1333								008
9. MW-6B					1510								009
10. MW-6					1550								010

BARR USE ONLY

Sampled by: MOB

Barr Proj. Manager: LMC

Barr DQ Manager: JET

Lab Name: Pace

Lab Location: MPLS

Relinquished by: _____ On Ice? (Y) N Date 10/6/17 Time 1400

Received by: _____ Date 10/6/17 Time 1400

Relinquished by: _____ On Ice? Y N Date _____ Time _____

Received by: CB Date 10/7/17 Time 1725

Samples Shipped VIA: ☐ Courier ☐ Federal Express ☐ Sampler ☐ Other: _____

Air Bill Number:

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

Lab WO: Temperature on Receipt (°C): 3.0 Custody Seal Intact? ☐ Y ☐ N ☐ None

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

Rel. CB 10/6/17 ~2000 ☎ Paul 10/6/17 2000 +/- 0.4

Barr Engineering Co. Chain of Custody

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

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

COC Number: 53385

COC 2 of 4

REPORT TO	INVOICE TO
Company: Barr Eng	Company: Same
Address: 325 S Lake Ave	Address:
Name: Lynette Carney	Name:
email: LMC@barr.com	email:
Copy to: datamgt@barr.com	P.O.
Project Name: ENB SPT GMP	Barr Project No: 49161385.00

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

	Location	Sample Depth Start	Sample Depth Stop	Sample Depth 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: PVOC + Naphthalene	Analysis Requested: Water: B	Analysis Requested: Water: N	Analysis Requested: Soil: % Solids	Preservative Code	Field Filtered Y/N
1.	MW-21A	N/A	N/A	N/A	10/3/17	1825	GW	N	3	3				PVOC + Naphthalene	011
2.	MW-21B					1755								(BTEX, MTBE	012
3.	Dup-1					—								Trimethylbenzene, Naphthalen	013
4.	Dup-2					—								by EPA 8260)	014
5.	MW-10				10/4/17	1005									015
6.	MW-22B					1100									016
7.	MW-11B					1240									017
8.	MW-11					1300									018
9.	MW-26					1400									019
10.	MW-25A					1515									020

BARR USE ONLY	
Sampled by:	MAB
Barr Proj. Manager:	LMC
Barr DQ Manager:	JET
Lab Name:	Pace
Lab Location:	Mpls

	On Ice?	Date	Time		Date	Time
Relinquished by: MAB	☒ Y ☐ N	10/6/17	1400	Received by:	10/6/17	1400
Relinquished by:	☐ Y ☐ N	Date	Time	Received by: CB	10/6/17	1725

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

Air Bill Number:

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

Lab WO: Temperature on Receipt (°C): 3.0 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.

Rel. CB 10/4/17 - 2000 Rec'd 10/6/17 2000 T=0.4

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Barr Engineering Co. Chain of Custody

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

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

COC Number: 53386
COC 3 of 4

REPORT TO	INVOICE TO
Company: Barr Eng	Company: Same
Address: 325 S Lake Ave	Address:
Name: Lynette Carney	Name:
email: LMC@barr.com	email:
Copy to: datamgt@barr.com	P.O.
Project Name: ENB SPT GMP	Barr Project No: 49161385.00

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

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 PVOC + Naphthalene	Water B	Water Z	Soil	% Solids	Preservative Code	Field Filtered Y/N	
1. MW-25B	N/A	N/A	N/A	10/4/17	1525	GW	N	3	3					PVOC + Naphthalene		021
2. MW-12					1605									(BTEX, MTBE,		022
3. Dup-3					—									Trimethylbenzene, Naphthalene		023
4. MW-19				10/5/17	0915									by EPA 8260)		024
5. MW-19B					1010											025
6. MW-18					1115											026
7. MW-17A					1200											027
8. MW-17B					1235											028
9. MW-5					1455											029
10. MW-5B					1410											030

BARR USE ONLY	Relinquished by	On Ice?	Date	Time	Received by	Date	Time
Sampled by: MAB	[signature]	(Y) N	10/6/17	1400	[signature]	10/6/17	1400
Barr Proj. Manager: LMC	Relinquished by:	On Ice? Y N	Date	Time	Received by: [signature]	Date 10/10/17	Time 1225
Barr DQ Manager: JFT	Samples Shipped VIA: ☐ Courier ☐ Federal Express ☐ Sampler ☐ Other:				Air Bill Number:	Requested Due Date: ☒ Standard Turn Around Time ☐ Rush (mm/dd/yyyy)	
Lab Name: Pace							
Lab Location: MPLS	Lab WO:	Temperature on Receipt (°C): 3.0	Custody Seal Intact? ☐ Y ☐ N ☐ None				

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

Rec. CB 10/6/17 -2000 & Pace 10/6/17 2000 +=0.4

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Barr Engineering Co. Chain of Custody

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

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

COC Number: **53387**

COC 4 of 4

REPORT TO	INVOICE TO
Company: Barr Engineering	Company: Same
Address: 325 S Lake Ave	Address:
Name: Lynette Cremens	Name:
email: LMC@barr.com	email:
Copy to: datamgt@barr.com	P.O.
Project Name: ENB SPT GMP	Barr Project No: 49161385.00

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

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: PVOC + Naphthalene (Water)	Analysis Requested: % Solids (Soil)	Preservative Code	Field Filtered Y/N	
1. MW-23B	N/A	N/A	N/A	10/5/17	1555	GW	N	3	3				PVOC + Naphthalene 031
2. Trip Blank	—	—	—	—	—	—	N	2	2				(BTEX, MTBE 032
3.													Trimethylbenzene, Naphthalene
4.													by EPA 8260)
5.													
6.													
7.													
8.													
9.													
10.													

BARR USE ONLY

Sampled by: MAO

Barr Proj. Manager: LMC

Barr DQ Manager: JET

Lab Name: Pace

Lab Location: MPLS

Relinquished by: [signature] On Ice? Y N: 0 | Date: 10/6/17 | Time: 1400 | Received by: [signature]

Relinquished by: | On Ice? Y N | Date | Time | Received by: CB | Date: 10/6/17 | Time: 1725

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

Air Bill Number:

Lab WO: Temperature on Receipt (°C): 3.0 Custody Seal Intact? ☐ Y ☐ N ☐ None

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

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

Relinquished: CB 10/6/17 2000 [signature] 10/6/17 2000 T=0.4

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 30Aug2017 Page 1 of 2
	Document No.: **F-MN-L-213-rev.21**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Barr Eng. **Project #:** WO# : 10406326

10406326

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐Commercial ☒Pace ☐SpeeDee ☐Other:_____

Tracking Number: _____

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

Thermometer Used: ☐151401163 ☒G87A9155100842 **Type of Ice:** ☒Wet ☐Blue ☐None ☐Samples on ice, cooling process has begun

Cooler Temp Read (°C): 0.6 **Cooler Temp Corrected (°C):** 0.4 **Biological Tissue Frozen?** ☐Yes ☐No ☒N/A

Temp should be above freezing to 6°C **Correction Factor:** -0.2 **Date and Initials of Person Examining Contents:** BT 10/4/17

USDA Regulated Soil (☒ N/A, water sample)

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐Yes ☐No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐Yes ☐No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present?	☒Yes	☐No		1.
Chain of Custody Filled Out?	☒Yes	☐No		2.
Chain of Custody Relinquished?	☒Yes	☐No		3.
Sampler Name and/or Signature on COC?	☒Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time?	☒Yes	☐No		5.
Short Hold Time Analysis (<72 hr)?	☐Yes	☒No		6.
Rush Turn Around Time Requested?	☐Yes	☒No		7.
Sufficient Volume?	☒Yes	☐No		8.
Correct Containers Used?	☒Yes	☐No		9.
-Pace Containers Used?	☒Yes	☐No		
Containers Intact?	☒Yes	☐No		10.
Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☒N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☒Yes	☐No		12.
All containers needing acid/base preservation have been checked? All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>12 Cyanide) Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin.	☐Yes	☐No	☒N/A	13. ☐HNO_3 ☐H_2SO_4 ☐NaOH Positive for Res. Chlorine? Y N Sample # Initial when completed: Lot # of added preservative:
Headspace in VOA Vials (>6mm)?	☒Yes	☐No	☐N/A	14. See exception sheet
Trip Blank Present?	☒Yes	☐No	☐N/A	15.
Trip Blank Custody Seals Present? Pace Trip Blank Lot # (if purchased): 133566	☒Yes	☐No	☐N/A	

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

Person Contacted: J Taraldsen Date/Time: 10/10/17

Comments/Resolution: Notified of headspace.

Project Manager Review: Amanda J Albrecht **Date:** 10/10/17

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).

SCUR Exceptions: **Workorder #:**

Issue		Sample ID	Container Type/#	
headspace bigger than 6mm		MW-14	3/3	VG9H
"	"	MW-15	"	"
"	"	MW-2	"	"
"	"	MW-1	"	"
"	"	MW-24A	"	"
"	"	MW-20A	"	"
"	"	MW-20B	2/3	"
"	"	MW-6B	3/3	"
"	"	MW-6	2/3	"
"	"	MW-21A	3/3	"
"	"	MW-21B	3/3	"
"	"	Dup-1	"	"

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH Upon Receipt	Date Preservation Adjusted	Time Preservation Adjusted	Amount of Additional Preservative Added	Lot # of Preservative Added	pH After Adjustment	Initials

SCUR Exceptions: **Workorder #:**

Issue	Sample ID	Container Type/#
headspace	Dup 2	1/3 UHgH
" "	MW-10	1/3 "
" "	MW-26	2/3 "
" "	MW-25B	1/3 "
" "	MW-19B	3/3 "
" "	MW-23B	2/3 "

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH Upon Receipt	Date Preservation Adjusted	Time Preservation Adjusted	Amount of Additional Preservative Added	Lot # of Preservative Added	pH After Adjustment	Initials

Appendix B

Well Photos

Spring 2017 Well Photos

Superior Terminal Well Photos - Spring 2017

MW-1

MW-2

Superior Terminal Well Photos - Spring 2017

MW-5 and MW-5B

MW-6 and MW-6B

Superior Terminal Well Photos - Spring 2017

MW-10

MW-11 and MW-11B

Superior Terminal Well Photos - Spring 2017

MW-12

MW-14

Superior Terminal Well Photos - Spring 2017

MW-15

MW-17 and MW-17B

Superior Terminal Well Photos - Spring 2017

MW-18

MW-19A and MW-19B

Superior Terminal Well Photos - Spring 2017

MW-20A and MW-20B

MW-21A and MW-21B

Superior Terminal Well Photos - Spring 2017

MW-22B

MW-23B

Superior Terminal Well Photos - Spring 2017

MW-24A and MW-24B

MW-25A and MW-25B (continuted on next page)

Superior Terminal Well Photos - Spring 2017

MW-25B (continued)

MW-26

Fall 2017 Well Photos

Superior Terminal Well Photos - Fall 2017

MW-1

MW-2

Superior Terminal Well Photos - Fall 2017

MW-5

MW-5B

Superior Terminal Well Photos - Fall 2017

MW-6

MW-6B

Superior Terminal Well Photos - Fall 2017

MW-10

MW-11

Superior Terminal Well Photos - Fall 2017

MW-11B

MW-12

Superior Terminal Well Photos - Fall 2017

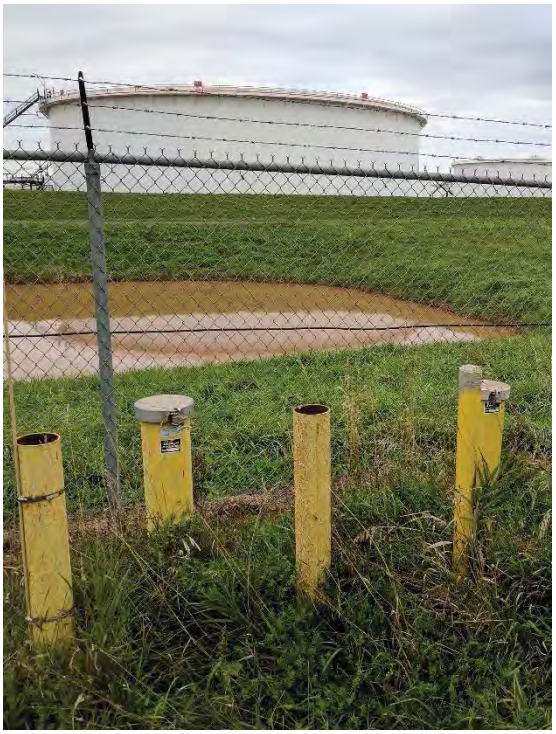
MW-14

MW-15

Superior Terminal Well Photos - Fall 2017

MW-17

MW-17B



Superior Terminal Well Photos - Fall 2017

MW-18

MW-19A

Superior Terminal Well Photos - Fall 2017

MW-19B

MW-20A

Superior Terminal Well Photos - Fall 2017

MW-20B

MW-21A

Superior Terminal Well Photos - Fall 2017

MW-21B

MW-22B

Superior Terminal Well Photos - Fall 2017

MW-23B

MW-24A

Superior Terminal Well Photos - Fall 2017

MW-24B

MW-25A

Superior Terminal Well Photos - Fall 2017

MW-25B

MW-26

Appendix C

Field Notes

Spring 2017 Field Notes

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-1
Location: Enbridge Terminal, Superior, WI	**Date:** 5/22/17
Project #: 49161385.00 001 200	**Sample time:** ~~13:44~~ PZ 1544

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2' pvc							
actual 22.28' → Total well depth:*	22.57 nom	NA	6.57	1002	7.31	212.4	0.02	—
Static well level:*	4.47	1431						
Water depth:*	18.10'							
Well volume: (gal)	2.95							
Purge method:	bailer							
Sample method:	bailer							
Start time:	1520	Odor: None						
Stop time:	1539	Purge Appearance: Slightly turbid, reddish brown						
Duration: (minutes)	19	Sample Appearance: Turbid, reddish brown						
Rate, gpm:	0.50	Comments: Well Purged dry						
Volume purged:	9.25	~~18.10'~~ 18.10' × 0.163 = 2.95 gal × 4 = 11.8 gal to purge						
Duplicate collected:	—							
Sample collection by:	PLL							

Others present: —

Well condition: good - minor rust

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-2
Location: Enbridge Terminal, Superior, WI	**Date:** 5/22/17
Project #: 49161385.00 001 200	**Sample time:** 1457

GENERAL DATA		STABILIZATION TEST						
~~Barr lock~~: Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
27.18' actual → Total well depth:*	27.26 from	NA						
Static well level:*	3.07'	1406	6.91	1431	7.52	218.6	3.18	—
Water depth:*	~~24.19'~~ 24.18'							
Well volume: (gal)	3.94							
Purge method:	bailer							
Sample method:	bailer							
Start time:	1425	Odor: none						
Stop time:	1452	Purge Appearance: Turbid, reddish brown						
Duration: (minutes)	27	Sample Appearance: Turbid, reddish brown						
Rate, gpm:	0.47	Comments: 24.19 × 0.163 = 3.94 gal × 4 = 15.77 gal to purge						
Volume purged:	12.75							
Duplicate collected:	none							
Sample collection by:	PLL							

Others present: —

Well condition: Good. minor surface rust

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-5
Location: Enbridge Terminal, Superior, WI	**Date:** 5/23/17
Project #: 49161385.00 001 200	**Sample time:** 10:12

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
actual: 27.02' → Total well depth:*	27.06' from	NA						
Static well level:*	2.87'	1509	6.87	1093	7.29	143.8	2.91	—
Water depth:*	24.15'							
Well volume: (gal)	3.94							
Purge method:	bailer							
Sample method:	bailer							
Start time:	0945	Odor: None						
Stop time:	1006	Purge Appearance: clear						
Duration: (minutes)	21	Sample Appearance: slightly turbid, reddish brown						
Rate, gpm:	0.6	Comments: 24.15 X 0.163 = 3.94 X 4 = 15.75 gal to purge						
Volume purged:	13.5							
Duplicate collected:	—	Well purged dry						
Sample collection by:	PHL							

Others present: —	Well condition: Good. Minor rusting.

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-5B
Location: Enbridge Terminal, Superior, WI	**Date:** 5/23/17
Project #: 49161385.00 001 200	**Sample time:** 0934

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
Total well depth:*	57.78' nom	NA						
Static well level:*	8.15'	1520	6.63	821	7.29	140.1	2.60	—
Water depth:*	49.63'							
Well volume: (gal)	8.09							
Purge method:	bailer							
Sample method:	"							
Start time:	09:00	Odor: none						
Stop time:	0929	Purge Appearance: clear → slightly turbid, reddish brown						
Duration: (minutes)	29	Sample Appearance: slightly turbid, reddish brown						
Rate, gpm:	0.41	Comments: 49.63 X 0.163 = 8.09 X 4 = 32.36 gal to purge						
Volume purged:	12.1							
Duplicate collected:	—	Well purged dry						
Sample collection by:	PLH							

actual: 57.91' →

Others present: —	Well condition: Good.

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW 6A
Location: Enbridge Terminal, Superior, WI	**Date:** 5/22/17
Project #: 49161385.00 001 200	**Sample time:** 1443

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
actual: 26.68 → Total well depth:*	26.76 nom	NA						
Static well level:*	7.24	1708	7.75	1981	6.93	241.9	6.85	—
Water depth:*	19.44							
Well volume: (gal)	3.2							
Purge method:	Bailer							
Sample method:	"							

Start time:	~~1220~~ 1420
Stop time:	1438
Duration: (minutes)	18
Rate, gpm:	0.6
Volume purged:	11.0
Duplicate collected:	—
Sample collection by:	PLL

Odor: None

Purge Appearance: clear

Sample Appearance: slightly turbid, ~~brn~~ reddish brown

Comments:

19.44 x 0.163 = 3.2 x 4 = 12.8 gal to purge

Well purged dry

Others present: —	Well condition: Good, Minor rusting

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

(Others:) PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-6B
Location: Enbridge Terminal, Superior, WI	**Date:** 5/22/17
Project #: 49161385.00 001 200	**Sample time:** 1410

GENERAL DATA		STABILIZATION TEST						
~~Barr lock~~: Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
actual: 58.23' Total well depth:*	58.10' nom.	NA						
Static well level:*	9.12'	1718	7.73	796	7.16	228.6	3.50	—
Water depth:*	49.11'							
Well volume: (gal)	8.0							
Purge method:	Bailer							
Sample method:	"							
Start time:	13:35	Odor: None						
Stop time:	14:04	Purge Appearance: slightly turbid, reddish brown						
Duration: (minutes)	29	Sample Appearance: very turbid, reddish brown						
Rate, gpm:	~~1.5~~ 0.40	Comments: 49.11 x 0.163 = 8.0 x 4 = 32.0 gal to Purge						
Volume purged:	11.5	well purged dry						
Duplicate collected:	—							
Sample collection by:	PLL							

Others present: —	Well condition: Good. Minor rusting.

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

(Others): PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-10
Location: Enbridge Terminal, Superior, WI	**Date:** 5/23/17
Project #: 49161385.00 001 200	**Sample time:** 1542

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382							
Casing diameter:	2" PVC	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
actual: 30.43' → Total well depth:*	30.5 nom.	NA						
Static well level:*	5.20	953	7.63	2024	6.06	19.0	2.17	—
Water depth:*	25.23							
Well volume: (gal)	4.1							
Purge method:	bailer							
Sample method:	"							
Start time:	1513	Odor: None						
Stop time:	1542	Purge Appearance: clear, reddish brown						
Duration: (minutes)	29	Sample Appearance: slightly turbid, reddish brown						
Rate, gpm:	0.55	Comments: 25.23 x 0.163 = 4.1 x 4 = 16.4 gal to purge						
Volume purged:	16.1	Well purged dry						
Duplicate collected:	—							
Sample collection by:	PLL							

Others present: —	Well condition: Good. Minor rusting.

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-11
Location: Enbridge Terminal, Superior, WI	**Date:** 5/23/17
Project #: 49161385.00 001 200	**Sample time:** 1658

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
actual: 18.18 Total well depth:*	18.27 nom.	NA						
Static well level:*	7.80'	1022	6.29	1367	6.09	-26.6	1.95	-
Water depth:*	10.47							
Well volume: (gal)	1.71							
Purge method:	Bailer							
Sample method:	"							
Start time:	1644	Odor: None						
Stop time:	1653	Purge Appearance: clear						
Duration: (minutes)	9	Sample Appearance: clear						
Rate, gpm:	0.62	Comments: 10.47 x 0.163 = 1.71 x 4 = 6.83 gal to Purge						
Volume purged:	5.6							
Duplicate collected:	-	well purged dry						
Sample collection by:	PLH							

Others present: ———	Well condition:

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-11B
Location: Enbridge Terminal, Superior, WI	**Date:** 5/23/17
Project #: 49161385.00 001 200	**Sample time:** 1634

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
actual: 57.50 → Total well depth:*	57.5' from	NA						
Static well level:*	22.94'	1034	7.47	680	7.46	11.9	3.23	
Water depth:*	34.56'							
Well volume: (gal)	5.63							
Purge method:	bailer							
Sample method:	bailer							
Start time:	~~1600~~	Odor: None						
Stop time:	1630	Purge Appearance: clear						
Duration: (minutes)	30	Sample Appearance: slightly turbid, reddish brown						
Rate, gpm:	0.3	Comments:						
Volume purged:	9.0	34.56 × 0.163 = 5.63 gal × 4 = 22.53 gal to purge						
Duplicate collected:	—	bottom of well felt soft when measuring.						
Sample collection by:	PLL	well purged dry						
Others present:	—	Well condition: Good						

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

(Others): PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-12
Location: Enbridge Terminal, Superior, WI	**Date:** 5/23
Project #: 49161385.00 001 200	**Sample time:** 1428

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
Total well depth:*	22.57' (corrected: 22.47')	NA						
Static well level:*	4.75'	1352	5.98	1460	7.43	114.8	6.95	—
Water depth:*	17.82'							
Well volume: (gal)	2.90							
Purge method:	bailer							
Sample method:	"							
Start time:	1417	Odor: None						
Stop time:	1424	Purge Appearance: Clear → slightly turbid, reddish brown						
Duration: (minutes)	7	Sample Appearance: very slight turbidity, reddish brown						
Rate, gpm:	0.6	Comments: 17.82 X 0.163 = 2.90 X 4 = 11.62 gal to purge						
Volume purged:	4.2	Well purged dry.						
Duplicate collected:	—							
Sample collection by:	PLH							

Others present: —

Well condition: well casing cap broken & does not fit due to stick up is to high

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-14
Location: Enbridge Terminal, Superior, WI	**Date:** 5/22/17
Project #: 49161385.00 001 200	**Sample time:** 12:46

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" pvc							
Total well depth:*	18.42' measured	NA						
Static well level:*	3.40'	1212	6.28	1091	5.48	292.5	3.90	———
Water depth:*	15.02'							
Well volume: (gal)	2.45							
Purge method:	bailer							
Sample method:	"							
Start time:	12:23	Odor: none @ 8.65 gal						
Stop time:	12:40	Purge Appearance: clear @ 1 gal purged, slightly turbid @ 8.65 gal						
Duration: (minutes)	:23	Sample Appearance: slightly turbid - brownish red color						
Rate, gpm:	0.38 gpm	Comments: well purged dry after 3 full volumes						
Volume purged:	8.65 gal	15.02' x 0.163 = 2.45 gal x 4 = 9.79 gal to purge						
Duplicate collected:	no	roots / seaweed in well - see picture						
Sample collection by:	PLL							

15.35 - ← measurement today (actual)

Others present: MAB

Well condition: good. Many surface rust

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-15
Location: Enbridge Terminal, Superior, WI	**Date:** 5/22/17
Project #: 49161385.00 001 200	**Sample time:** 1332

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
Total well depth:*	17.43 nom	NA						
Static well level:*	2.92	1307	6.19	870	7.61	192.9	0.59	—
Water depth:*	14.51							
Well volume: (gal)	2.37							
Purge method:	bailer							
Sample method:	"							
Start time:	1313	Odor: none						
Stop time:	1326	Purge Appearance: clear, bio-growth, no smell						
Duration: (minutes)	13	Sample Appearance: clear, colorless						
Rate, gpm:	0.56 gpm	Comments:						
Volume purged:	7.25	14.51' x 0.163 = ~~16.95~~ 2.37 gal x 4 = ~~58.84~~ 9.46 gal to purge						
Duplicate collected:	NO							
Sample collection by:	MAB							

actual = 17.32'

Others present: PLL

Well condition: Good. Slight surface rust

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW 17A
Location: Enbridge Terminal, Superior, WI	**Date:** 5/23/17
Project #: 49161385.00 001 200	**Sample time:** 11:17

GENERAL DATA		STABILIZATION TEST						
~~Barr lock~~: Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
Total well depth:*	~~4.2~~ 17.44 corrected: 17.46'	NA						
Static well level:*	4.24'	~~1432~~	~~7.25~~	~~1251~~	~~7.48~~	~~144.1~~	~~8.39~~	— MW
Water depth:*	13.20'	1438	5.35	1258	7.30	148.3	5.86	
Well volume: (gal)	2.14							
Purge method:	bailer							
Sample method:	"							
Start time:	11:05	Odor: none						
Stop time:	11:12	Purge Appearance: clear, slight reddish brown color						
Duration: (minutes)	7	Sample Appearance: clear, slightly reddish brown color						
Rate, gpm:	0.7	Comments: 13.20 x 0.163 = 2.14 x 4 = 8.55 gal to purge						
Volume purged:	4.9	well purged dry						
Duplicate collected:	—							
Sample collection by:	PLL							

Others present: —

Well condition: Good. Minor rusting

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: (PVOC and Naphthalene - 3)

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-17B
Location: Enbridge Terminal, Superior, WI	**Date:** 5/23/17
Project #: 49161385.00 001 200	**Sample time:** 10:54

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
Total well depth:*	44.8 from TOC	NA						
Static well level:*	17.78'	1448	7.21	520	7.58	131.3	4.37	—
Water depth:*	27.02							
Well volume: (gal)	4.40							
Purge method:	bailer							
Sample method:	"							

Start time: 10:37	Odor: None
Stop time: 10:49	Purge Appearance: Clear → slightly turbid, reddish brown
Duration: (minutes) 12	Sample Appearance: slightly ~~turbid~~, reddish brown
Rate, gpm: ~~5.5~~ 0.45	Comments: 27.02 x 0.163 = 4.40 x 4 = 17.60 gal to purge
Volume purged: 5.5	
Duplicate collected: —	
Sample collection by: RLL	

Others present: —	Well condition: good. minor rusting.

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

(Others): PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

actual: 44.88 →

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-18
Location: Enbridge Terminal, Superior, WI	**Date:** 5/23/17
Project #: 49161385.00 001 200	**Sample time:** 11:49

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
actual: 17.22 → Total well depth:*	17.2' nom.	NA						
Static well level:*	5.55'	14:13	6.28	1078	7.43	131.6	6.49	—
Water depth:*	11.65'							
Well volume: (gal)	1.90							
Purge method:	bailer							
Sample method:	"							
Start time:	11:37	Odor: None						
Stop time:	11:44	Purge Appearance: clear → slightly turbid, reddish brown						
Duration: (minutes)	7	Sample Appearance: clear, no color						
Rate, gpm:	0.51	Comments: 11.65 X 0.163 = 1.90 X 4 = 7.60 gal to purge						
Volume purged:	3.6							
Duplicate collected:	—	Well purged dry						
Sample collection by:	PLL							

Others present: —	Well condition: Good, Minor rusting.

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

(Others:) PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-19A
Location: Enbridge Terminal, Superior, WI	**Date:** 5/22/17
Project #: 49161385.00 001 200	**Sample time:** 1724

GENERAL DATA		STABILIZATION TEST						
~~Barr lock~~: Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
24.14' → actual — Total well depth:*	26 nominal	NA						
Static well level:*	3.27'	1530	7.27	693	7.36	216.3	1.18	—
Water depth:*	22.73'							
Well volume: (gal)	3.70							
Purge method:	bailer							
Sample method:	"							
Start time:	1202	Odor: None						
Stop time:	1720	Purge Appearance: slightly turbid, reddish brown						
Duration: (minutes)	18	Sample Appearance: turbid, reddish brown						
Rate, gpm:	0.5	Comments:						
Volume purged:	9.0 gal	22.73' x 0.~~617~~ 163 = 3.70 gal x 4 = 14.82 gal to purge						
Duplicate collected:	DUP-1	well purged dry						
Sample collection by:	PLL							

Others present: —	Well condition: good, minor rusting

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-19B
Location: Enbridge Terminal, Superior, WI	**Date:** 5/22/17
Project #: 49161385.00 001 200	**Sample time:** 1653

GENERAL DATA		STABILIZATION TEST						
~~Barr lock~~: Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
actual 59.93' → Total well depth:*	59.8' nominal	NA						
Static well level:*	12.88'	1545	7.20	2.40	7.24	199.4	3.27	—
Water depth:*	46.92'							
Well volume: (gal)	7.65							
Purge method:	bailer							
Sample method:	bailer							
Start time:	1609	Odor: None						
Stop time:	1646	Purge Appearance: Slightly turbid, reddish brown						
Duration: (minutes)	37	Sample Appearance: turbid, reddish brown						
Rate, gpm:	0.30	Comments:						
Volume purged:	10.90	46.92 × 0.163 = 7.65 gal ×4 = 30.59 gal to purge						
Duplicate collected:	NO	60' ≈ 18m						
Sample collection by:	PLL	well purged dry						

Others present: —	Well condition: Good, minor rust

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-20A
Location: Enbridge Terminal, Superior, WI	**Date:** 5/22/17 - 5/23/17
Project #: 49161385.00 001 200	**Sample time:** 11:01

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
actual: 24.18 → Total well depth:*	24' nominal	NA						
Static well level:*	4.33'	1622	6.95	1365	6.97	230.7	2.18	—
Water depth:*	19.85							
Well volume: (gal)	3.2							
Purge method:	Bailer							
Sample method:	Bailer							
Start time:	10:40	Odor: None						
Stop time:	10:55	Purge Appearance: Slightly turbid, reddish brown						
Duration: (minutes)	15	Sample Appearance: Turbid, reddish brown						
Rate, gpm:	0.64	Comments: 19.85 X 0.163 = 3.2 X 4 = 12.8 gal to purge well purged dry						
Volume purged:	9.6							
Duplicate collected:	—							
Sample collection by:	PLL							

Others present: —

Well condition: Good. Minor rusting

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-20B
Location: Enbridge Terminal, Superior, WI	**Date:** 5/22/17
Project #: 49161385.00 001 200	**Sample time:** 10:30

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
Total well depth:*	57.55' nom	NA						
Static well level:*	17.72'	1635	6.94	463	7.18	218.7	3.03	—
Water depth:*	42.44							
Well volume: (gal)	6.92							
Purge method:	Bailer							
Sample method:	"							
Start time:	0954	Odor: None						
Stop time:	1022	Purge Appearance: clear						
Duration: (minutes)	28	Sample Appearance: slightly turbid, reddish brown						
Rate, gpm:	~~1.0~~ 0.35 psi	Comments:						
Volume purged:	10.0 gal	42.44 x 0.163 = 6.92 x 4 = 27.68 gal to purge well purged dry						
Duplicate collected:	—							
Sample collection by:	PLL							

original: 60.16' →

Others present: —	Well condition: Good, Minor rusting

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-21A
Location: Enbridge Terminal, Superior, WI	**Date:** 5/22/17
Project #: 49161385.00 001 200	**Sample time:** 12:41

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
actual: 24.55' → Total well depth:*	24.4' nom	NA						
Static well level:*	3.90	1752	7.05	1964	6.94	245.0	5.73	—
Water depth:*	20.5							
Well volume: (gal)	3.3							
Purge method:	Bailer							
Sample method:	Bailer							
Start time:	1220	Odor: None						
Stop time:	1233	Purge Appearance: slightly turbid, reddish brown						
Duration: (minutes)	13	Sample Appearance: , reddish brown						
Rate, gpm:	0.70	Comments: 20.5 X 0.163 = 3.3 x 4 = 13.2 gal to purge						
Volume purged:	9.0	well purged dry						
Duplicate collected:	—							
Sample collection by:	PLL							

Others present: →

Well condition: good, minor rusting

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-21B
Location: Enbridge Terminal, Superior, WI	**Date:** 5/22/17
Project #: 49161385.00 001 200	**Sample time:** 1205

GENERAL DATA		STABILIZATION TEST						
~~Barr lock~~: Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
Total well depth:*	60.7' ~~nom~~ actual: 60.65	NA						
Static well level:*	18.71	1803	6.81	616	7.20	245.8	2.87	—
Water depth:*	41.94							
Well volume: (gal)	6.8							
Purge method:	Bailer							
Sample method:	"							
Start time:	1133	Odor: None						
Stop time:	1159	Purge Appearance: Slightly turbid, reddish brown						
Duration: (minutes)	26	Sample Appearance: turbid, reddish brown						
Rate, gpm:	0.37	Comments: 41.94 x 0.163 = 6.8 x 4 = 27.2 gal to purge						
Volume purged:	9.6	Well purged dry						
Duplicate collected:	—							
Sample collection by:	PwL							

Others present: —	Well condition: Good. Minor rusting.

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

(Others): PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW 2213
Location: Enbridge Terminal, Superior, WI	**Date:** 5/23/17
Project #: 49161385.00 001 200	**Sample time:** 1700

GENERAL DATA		STABILIZATION TEST						
~~Barr lock~~: Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
Total well depth:*	57.55' from	NA						
Static well level:*	17.19'	1615	7.53	939	7.26	21.0	0.35	—
Water depth:*	40.36'							
Well volume: (gal)	6.58							
Purge method:	bailer							
Sample method:	"							
Start time:	1609	Odor: None						
Stop time:	1654	Purge Appearance: clear → very turbid, reddish brown						
Duration: (minutes)	25	Sample Appearance: very turbid, reddish brown						
Rate, gpm:	0.4	Comments: clear minnows & algae (?) on ~~bf~~ water level probe after taking water level measurements						
Volume purged:	10.0	26.3 gal to purge - Well purged dry						
Duplicate collected:	—							
Sample collection by:	PHL							

Others present: —

Well condition: Good. Contractor equipment crowded around well.

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

attempt: 57.70'

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-23B
Location: Enbridge Terminal, Superior, WI	**Date:** 5/23/17
Project #: 49161385.00 001 200	**Sample time:** 0833

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
Total well depth:*	57.11' from	NA						
Static well level:*	8.32'	1543	6.91	985	7.19	141.3	0.83	—
Water depth:*	48.79'							
Well volume: (gal)	7.95							
Purge method:	bailer							
Sample method:	"							
Start time:	08:00	Odor: None						
Stop time:	08:26	Purge Appearance: clear → slightly turbid, reddish brown						
Duration: (minutes)	26	Sample Appearance: Turbid, reddish brown						
Rate, gpm:	.45	Comments: 48.79 x 0.163 = 7.95 X4 = 31.8 gal to purge						
Volume purged:	11.6							
Duplicate collected:	DUP-2	Well purged dry						
Sample collection by:	PLL	no unique well ID						

actual: 58.27'

Others present: —	Well condition: Good.

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

(Others): PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-24A
Location: Enbridge Terminal, Superior, WI	**Date:** 5/23/17
Project #: 49161385.00 001 200	**Sample time:** 1559

GENERAL DATA		STABILIZATION TEST						
~~Barr lock~~: Enbridge Lock	3382							
Casing diameter:	2" PVC	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Total well depth:*	18.85' from	NA						
Static well level:*	3.74'	1117	6.41	826	7.17	99.9	1.39	—
Water depth:*	15.11'							
Well volume: (gal)	2.46							
Purge method:	bailer							
Sample method:	"							
Start time:	~~1341~~ 1546	Odor: None						
Stop time:	1557	Purge Appearance: slightly turbid → turbid → slightly turbid, reddish brown						
Duration: (minutes)	10	Sample Appearance: slightly turbid, reddish brown						
Rate, gpm:	0.7	Comments:						
Volume purged:	7.0	15.11 x 0.163 = 2.46 gal x 4 = 9.85 gal to purge						
Duplicate collected:	DUP-3	well purged dry						
Sample collection by:	PLL	Checked actual well depth with 2nd measurement						

actual: 19.03'

Others present: —	Well condition: Good.

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

(Others): PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-24B
Location: Enbridge Terminal, Superior, WI	**Date:** 5/23/17
Project #: 49161385.00 001 200	**Sample time:** 1527

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
actual: 49.35 → Total well depth:*	49.21' nom	NA						
Static well level:*	14.06'	1126	7.45	709	7.49	96.0	1.03	—
Water depth:*	35.15'							
Well volume: (gal)	5.73							
Purge method:	bailer							
Sample method:	"							
Start time:	1457	Odor: None						
Stop time:	1522	Purge Appearance: Clear → Turbid, reddish brown						
Duration: (minutes)	25	Sample Appearance: Turbid, reddish brown						
Rate, gpm:	0.42	Comments: 35.15 X 0.163 = 5.73 X 4 =						
Volume purged:	10.6	22.92 gal to purge						
Duplicate collected:	—	well purged dry						
Sample collection by:	PLH	bottom of well felt soft when measuring depth.						

Others present: —	Well condition: Good

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-25-A
Location: Enbridge Terminal, Superior, WI	**Date:** 5/23/17
Project #: 49161385.00 001 200	**Sample time:** 1318

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
Total well depth:*	19.00' nom	NA						
Static well level:*	3.03'	1248	6.28	844	7.10	129.8	1.24	—
Water depth:*	16.97'							
Well volume: (gal)	2.68							
Purge method:	bailer							
Sample method:	bailer							
Start time:	1305	Odor: None						
Stop time:	1313	Purge Appearance: Slightly turbid → very turbid, reddish brown						
Duration: (minutes)	8	Sample Appearance: very turbid, reddish brown						
Rate, gpm:	0.5	Comments: Top of PVC casing very dirty. Bottom of well felt soft when measuring depth. Water level probe came up ~~wet~~ covered in clay. 10.41 gal to purge, well purged dry						
Volume purged:	4.0							
Duplicate collected:	—							
Sample collection by:	PLL							

actual: 19.22' →

Others present: —

Well condition:

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-253
Location: Enbridge Terminal, Superior, WI	**Date:** 5/23/17
Project #: 49161385.00 001 200	**Sample time:** 12:48

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" PVC							
actual: 49.43 → Total well depth:*	49.21' from	NA						
Static well level:*	7.60'	1301	6.88	933	7.63	126.7	4.23	—
Water depth:*	41.61'							
Well volume: (gal)	6.78							
Purge method:	bailer							
Sample method:	"							
Start time:	1222	Odor: None						
Stop time:	1243	Purge Appearance: clear → very turbid, reddish brown						
Duration: (minutes)	11	Sample Appearance: very turbid, reddish brown						
Rate, gpm:	0.7	Comments: Difficult to open protective casing, appears to be resting on PVC casing. Bentonite oozing up from bottom of protective casing						
Volume purged:	8.5	41.61 x 0.163 = 6.78 x 4 = 27.13 gal to purge						
Duplicate collected:	—							
Sample collection by:	PLL	Well purged dry						
Others present:	—	Well condition: Protective casing is sinking.						

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

BARR

Field Log Data Sheet

Client: Enbridge Energy	**Monitoring Point:** MW-26
Location: Enbridge Terminal, Superior, WI	**Date:** 5/23/17
Project #: 49161385.00 001 200	**Sample time:** 1354

GENERAL DATA		STABILIZATION TEST						
~~Barr lock:~~ Enbridge Lock	3382	Time/ Volume	Temp. °C	Cond. @ 25	PH	ORP mV	D.O.	Turbidity NTU (not appearance)
Casing diameter:	2" pvc							
actual: 18.90' → Total well depth:*	18.7' nom	NA						
Static well level:*	7.44'	1206	6.55	926	7.02	140.4	2.14	—
Water depth:*	11.26'							
Well volume: (gal)	1.84							
Purge method:	bailer							
Sample method:	bailer							
Start time:	1338	Odor: None						
Stop time:	1349	Purge Appearance: clear → slightly turbid, reddish brown						
Duration: (minutes)	11	Sample Appearance: slightly turbid, reddish brown						
Rate, gpm:	0.6	Comments: 11.26 X 0.163 = 1.84 X 4 = 7.34 gal to purge						
Volume purged:	6.8	well purged dry						
Duplicate collected:	—							
Sample collection by:	PLL							

Others present: —	Well condition: Good

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment Other: sump

VOC Semi-volatile General Nutrient Cyanide DRO Sulfide

Oil, grease Bacteria Total Metal Filtered Metal Methane Filter

Others: PVOC and Naphthalene - 3

* Measurements are referenced from the top of riser pipe, unless otherwise indicated.

Fall 2017 Field Notes

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW-14
Location: Superior Terminal	**Date:** 11/02/17
Project #: 49161385	**Sample Time:** 1305

GENERAL DATA

~~Barr~~ en bridge lock:	yes
Casing diameter *(in.)*:	2" PVC
Total well depth *(ft.)*:*	18.42'
Static water level *(ft.)*:*	4.82'
Water depth *(ft.)*:*	13.6'
Well volume *(gal.)*:	2.2 gal
Purge method:	bailer
Sample method:	"
Start time *(hh:mm:ss)*:	1245
Stop time *(hh:mm:ss)*:	13 00
Duration *(hh:mm:ss)*:	:15
Rate, gpm:	0.5
Volume, purged: *(note units)*	6.5
Duplicate collected?	no
Sample collection by: MAB	

STABILIZATION TEST

Time/ Volume	Temp. °C	Cond. @ 25	pH	ORP Eh	D.O.	Turbidity Appearance
1244	13.10	1054	6.92	273.7	5.45	—

Odor: none detected

Purge Appearance: reddish gray, w/ fuzzy brown roots

Sample Appearance: slightly red silty

Comments:
2.2 x 4 = 8.8 gal to purge
purged dry @ 6.5 gallons

CO2- Mn2- Fe(T)- Fe2-

Others present: none

Well Condition: good, faded paint

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

VOC- semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others: PVOC & naphthalene - 3

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: Enbridge	**Monitoring Point:** MW-15
Location: SPT	**Date:** 10/2/17
Project #: 49161385	**Sample Time:** 1400

GENERAL DATA		STABILIZATION TEST						
~~Barr~~ lock: Enbridge	yes	Time/ Volume	Temp. °C	Cond. @ 25	pH	ORP Eh	D.O.	Turbidity Appearance
Casing diameter *(in.)*:	2" PVC							
Total well depth *(ft.)*:*	17.43	1339	11.58	848	7.28	328.4	5.02	—
Static water level *(ft.)*:*	2.82							
Water depth *(ft.)*:*	14.61							
Well volume *(gal.)*:	2.4 gal							
Purge method:	bailer							
Sample method:	"							
Start time *(hh:mm:ss)*:	1345	Odor: none detected						
Stop time *(hh:mm:ss)*:	1355	Purge Appearance: slightly turbid - red silt						
Duration *(hh:mm:ss)*:	:10	Sample Appearance: some red silt / clear, colorless						
Rate, gpm:	0.65	Comments: 2.4x4 = 9.6 gal to purge						
Volume, purged: *(note units)*	6.5	purged 1 dry @ 6.5 gallons						
Duplicate collected?	no	fuzzy root hairs - brown - fewer than in spring. very little silt on bottom of well (felt)						
Sample collection by: MAB		CO2- Mn2- Fe(T)- Fe2-						

Others present: none

Well Condition: good

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

BTEX + naphthalene VOC-3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: Enbridge	**Monitoring Point:** MW-2
Location: SPT	**Date:** 11/2/17
Project #: 49161385	**Sample Time:** ~~14~~ 1500

GENERAL DATA		STABILIZATION TEST						
Barr lock: enbridge	key	Time/ Volume	Temp. °C	Cond. @ 25	pH	ORP Eh	D.O.	Turbidity Appearance
Casing diameter *(in.)*:	2" PVC							
Total well depth *(ft.)*:*	27.26	1430	10.04	1486	7.43	335.0	2.45	—
Static water level *(ft.)*:*	3.14							
Water depth *(ft.)*:*	24.12							
Well volume *(gal.)*:	3.9							
Purge method:	bailer							
Sample method:	bailer							
Start time *(hh:mm:ss)*:	1435	Odor: none detected						
Stop time *(hh:mm:ss)*:	1455	Purge Appearance: clear then red turbid						
Duration *(hh:mm:ss)*:	:20	Sample Appearance: red turbid						
Rate, gpm:	0.55	Comments: 3.9x4 = 15.6 gal to purge						
Volume, purged: *(note units)*	1 l							
Duplicate collected?	no							
Sample collection by: MAB		CO2-	Mn2-	Fe(T)-	Fe2-			
Others present: none		Well Condition: good						

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

replace BTEX+ VOC-3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW-1
Location: SPT	**Date:** 10/02/17
Project #: 49/13785	**Sample Time:** 1600

GENERAL DATA		STABILIZATION TEST						
Barr lock: (unbr/bye)	yes	Time/ Volume	Temp. °C	Cond. @ 25	pH	ORP Eh	D.O.	Turbidity Appearance
Casing diameter *(in.)*:	2" PVC							
Total well depth *(ft.)*:*	22.57'	1533	9.85	1012	7.03	325.3	3.28	—
Static water level *(ft.)*:*	5.12'							
Water depth *(ft.)*:*	17.45'							
Well volume *(gal.)*:	2.8							
Purge method:	bailer							
Sample method:	bailer							
Start time *(hh:mm:ss)*:	1535	Odor: none detected						
Stop time *(hh:mm:ss)*:	1555	Purge Appearance: clear then red turbid						
Duration *(hh:mm:ss)*:	20'	Sample Appearance: red turbid						
Rate, gpm:	.43	Comments: 2.8 x 4 = 11.4 sent to purge						
Volume, purged: *(note units)*	8.5	Purged dry at 8.5 gal.						
Duplicate collected?	no	lock very difficult to open lubricated w/ non-toxic o-ring Si. cone "grease" lubricant paste						
Sample collection by: MPB		CO2- Mn2- Fe(T)- Fe2-						

Others present: none

Well Condition: good

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

BTEX + naphthalene VOC- 3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

BARR

Client: ENB		**Monitoring Point:** MW-24A	
Location: SYT		**Date:** 10/3/17	
Project #: 49161385		**Sample Time:** 1030	

GENERAL DATA		STABILIZATION TEST						
Barr lock:	unbridge #1	Time/ Volume	Temp. °C	Cond. @ 25	pH	ORP Eh	D.O.	Turbidity Appearance
Casing diameter *(in.)*:	2" PVC							
Total well depth *(ft.)*:*	18.85	1004	12.48	863	6.99	334.4	2.62	—
Static water level *(ft.)*:*	3.65							
Water depth *(ft.)*:*	15.2							
Well volume *(gal.)*:	2.3							
Purge method:	bailer							
Sample method:	"							
Start time *(hh:mm:ss)*:	1015	Odor: none detected						
Stop time *(hh:mm:ss)*:	1025	Purge Appearance: clear then red silty						
Duration *(hh:mm:ss)*:	:10	Sample Appearance: turbid red						
Rate, gpm:	0.7 gpm	Comments: 2.3 x 4 = 9.2 gal to purge; purged dry @ 7 gal						
Volume, purged: *(note units)*	7 gal							
Duplicate collected?	~~no~~ Dup-1							
Sample collection by:	MAB	CO2-		Mn2-		Fe(T)-		Fe2-

Others present: none	Well Condition: good

(MW:) groundwater monitoring well   WS: water supply well   SW: surface water   SE: sediment   other:

+ Napthalene
P VOC-6   semi-volatile-   general-   nutrient-   cyanide-   DRO-   Sulfide-

oil,grease-   bacteria-   total metal-   filtered metal-   methane-   filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client:	**Monitoring Point:** MW -24B
Location:	**Date:** 10/3/17
Project #:	**Sample Time:** 1130

GENERAL DATA		STABILIZATION TEST						
Barr lock:	yes	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter *(in.)*:	2" PVC							
Total well depth *(ft.)*:*	49.21	1046	7.39	730	7.47	188.8	1.18	—
Static water level *(ft.)*:*	13.52							
Water depth *(ft.)*:*	35.69							
Well volume *(gal.)*:	5.8							
Purge method:	bailer							
Sample method:	bailer							
Start time *(hh:mm:ss)*:	1050	Odor: none detected						
Stop time *(hh:mm:ss)*:	1120	Purge Appearance: clear, colorless → turb.'d red						
Duration *(hh:mm:ss)*:	:30	Sample Appearance: turb.'d red						
Rate, gpm:	.3 gpm	Comments: 23.2 gal to purge						
Volume, purged: *(note units)*	11 gal	purged dry @ 11 gal						
Duplicate collected?	no							
Sample collection by:	MAB	CO2-	Mn2-	Fe(T)-	Fe2-			

Others present: none

Well Condition: good

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

PVOC & methane VOC- 3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: END	**Monitoring Point:** MW-20A
Location: SPT	**Date:** 10/3/17
Project #: 49161385	**Sample Time:** 1255

GENERAL DATA		STABILIZATION TEST						
Barr lock:	enter type	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter *(in.)*:	2" PVC							
Total well depth *(ft.)*:*	24'	1220	8.08	1428	7.37	301.5	3.56	-
Static water level *(ft.)*:*	4.67							
Water depth *(ft.)*:*	19.3							
Well volume *(gal.)*:	3.2							
Purge method:	bailer							
Sample method:	"							
Start time *(hh:mm:ss)*:	1225	Odor: none detected						
Stop time *(hh:mm:ss)*:	1245	Purge Appearance: clear, colorless						
Duration *(hh:mm:ss)*:	:20	Sample Appearance: slightly red, ~~clear~~ turbid						
Rate, gpm:	.45 gpm	Comments: 12.6 gal to purge						
Volume, purged: *(note units)*	9 gal	purged dry @ 9 gal						
Duplicate collected?	no							
Sample collection by:	MAB	CO2-	Mn2-	Fe(T)-	Fe2-			

Others present: none

Well Condition: good, overgrown

MW groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+ routine PVOC- 3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW-20B
Location: SPT	**Date:** 10/3/17
Project #: 49161385	**Sample Time:** 1333

GENERAL DATA

Barr lock:	Bronze
Casing diameter *(in.)*:	2" PVC
Total well depth *(ft.)*:*	57.55'
Static water level *(ft.)*:*	19.97'
Water depth *(ft.)*:*	37.58'
Well volume *(gal.)*:	6.1
Purge method:	bailer
Sample method:	"
Start time *(hh:mm:ss)*:	1300
Stop time *(hh:mm:ss)*:	1330
Duration *(hh:mm:ss)*:	:30
Rate, gpm:	.3 gpm
Volume, purged: *(note units)*	9 gal
Duplicate collected?	no
Sample collection by:	MJB

STABILIZATION TEST

Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
1246	6.89	476	7.48	204.5	1.81	—

Odor: none detected

Purge Appearance: clear, colorless

Sample Appearance: as above

Comments: 24.5 gal to purge
purged dry at 9 gallons

CO2- Mn2- Fe(T)- Fe2-

Others present: none

Well Condition: good, overgrown

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

4 Methane
PVOC-3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: END	**Monitoring Point:** MW - 6B
Location: SPT	**Date:** 10/3/17
Project #: 49161385	**Sample Time:** 1510

GENERAL DATA		STABILIZATION TEST						
Barr lock:	yes	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter *(in.)*:	2" PVC							
Total well depth *(ft.)*:*	58.1	1424	7.88	842	7.37	290.7	3.22	—
Static water level *(ft.)*:*	9.15							
Water depth *(ft.)*:*	48.95							
Well volume *(gal.)*:	8.0							
Purge method:	bailer							
Sample method:	"							
Start time *(hh:mm:ss)*:	1430	Odor:	hydrocarbons					
Stop time *(hh:mm:ss)*:	1500	Purge Appearance:	clear → red turbid					
Duration *(hh:mm:ss)*:	:30	Sample Appearance:	red turbid					
Rate, gpm:	.4 gpm	Comments:	1/2 screen = 16.53 m					
Volume, purged: *(note units)*	12 gal		34 gal to purge					
Duplicate collected?	no		purged dry					
Sample collection by:	MAG	CO2-	Mn2-	Fe(T)-	Fe2-			
Others present:	MW	Well Condition:	good; overgrown w/ burdock & thistles					

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+ nonchlorinated
pVOC-3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW-6
Location: SPT	**Date:** 10/3/17
Project #: 49161385	**Sample Time:** 1550

GENERAL DATA

Barr lock:	embossed yes
Casing diameter *(in.)*:	2" PVC
Total well depth *(ft.)*:*	26.76
Static water level *(ft.)*:*	6.65
Water depth *(ft.)*:*	20.11
Well volume *(gal.)*:	3.3
Purge method:	bailer
Sample method:	"
Start time *(hh:mm:ss)*:	1520
Stop time *(hh:mm:ss)*:	1540
Duration *(hh:mm:ss)*:	:20
Rate, gpm:	.55 gpm
Volume, purged: *(note units)*	11 gal
Duplicate collected?	no
Sample collection by:	MAB

STABILIZATION TEST

Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
1505	8.34	~~218.0~~	7.33	217.8	5.36	—
		1517				

Odor: none detected

Purge Appearance: clear, colorless → slightly pink turbid

Sample Appearance: pink turbid

Comments: 11ft screen = 22'
13.2 gal to purge
purged dry

CO2- Mn2- Fe(T)- Fe2-

Others present: none

Well Condition: good

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+ heptanone
pVOC-3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW-21B
Location: SPT	**Date:** 10/3/17
Project #: 49161385	**Sample Time:** 1755

GENERAL DATA

Barr lock:	yes
Casing diameter (in.):	2" pvc
Total well depth (ft.):*	60.7
Static water level (ft.):*	20.03
Water depth (ft.):*	40.67
Well volume (gal.):	6.6
Purge method:	bailer
Sample method:	"
Start time (hh:mm:ss):	1720
Stop time (hh:mm:ss):	1750
Duration (hh:mm:ss):	:30
Rate, gpm:	.30 gpm
Volume, purged: (note units)	9 gal
Duplicate collected?	no
Sample collection by:	MAB

STABILIZATION TEST

Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
1715	6.87	638	7.55	288.0	1.24	—

Odor: none detected

Purge Appearance: clear → pink turbid

Sample Appearance:

Comments: 5ft = 17.4 gal
6.6 x 4 = 26.4 gal to purge

CO2- Mn2- Fe(T)- Fe2-

Others present: none

Well Condition: good

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+ Nature

PVOC- 3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW-21A
Location: SPT	**Date:** 10/3/17
Project #: 49161385	**Sample Time:** 1825

GENERAL DATA

Barr lock:	yes
Casing diameter *(in.)*:	2" PVC
Total well depth *(ft.)*:*	24.4'
Static water level *(ft.)*:*	4.00'
Water depth *(ft.)*:*	19.6'
Well volume *(gal.)*:	3.2
Purge method:	bailer
Sample method:	"
Start time *(hh:mm:ss)*:	1800
Stop time *(hh:mm:ss)*:	1810
Duration *(hh:mm:ss)*:	10
Rate, gpm:	1 gpm
Volume, purged: *(note units)*	10
Duplicate collected?	yes Dup-2
Sample collection by:	MAB

STABILIZATION TEST

Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
1753	7.56	1517	7.36	229.3	4.13	—

Odor:

Purge Appearance:

Sample Appearance:

Comments: waxy pinkish flakes on water level probe
3.2 x 4 = 12.8 gal to purge
purged dry at 10 gallons

CO2- Mn2- Fe(T)- Fe2-

Others present: none

Well Condition: good

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+ matrix spike

P VOC- 6 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW-10
Location: SPT	**Date:** 10/4/17
Project #: 49161385	**Sample Time:** 1005

GENERAL DATA		STABILIZATION TEST						
Barr lock: unbr'dge	yes	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter *(in.)*:	2" PVC							
Total well depth *(ft.)*:*	30.5	934	7.68	2027	6.44	-17.2	1.79	—
Static water level *(ft.)*:*	4.75							
Water depth *(ft.)*:*	25.75							
Well volume *(gal.)*:	4.2							
Purge method:	bailer							
Sample method:	"							
Start time *(hh:mm:ss)*:	0940	Odor: none detected						
Stop time *(hh:mm:ss)*:	1000	Purge Appearance: clear, yellowish gray						
Duration *(hh:mm:ss)*:	:20	Sample Appearance: as above, weak fizz						
Rate, gpm:	.75 gpm	Comments: 16.8 gal to purge						
Volume, purged: *(note units)*	15 gal	waxy white/gray flakes on water level probe - see photo						
Duplicate collected?	no	8.1 m for stabilization - probe hit bottom						
Sample collection by:	MAB	purged dry @ 15 gal; not stabilize ~15 mins; CO2- Mn2- Fe(T)- Fe2-						

Others present: none	Well Condition: good

(MW circled): groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+ Northstar
VOC- 3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client:	END	**Monitoring Point:**	MW-22B
Location:	SPT	**Date:**	10/4/17
Project #:	49161385	**Sample Time:**	1100

GENERAL DATA

Barr lock: (Initials)	yes
Casing diameter *(in.)*:	2" PVC
Total well depth *(ft.)*:*	57.55
Static water level *(ft.)*:*	17.83
Water depth *(ft.)*:*	
Well volume *(gal.)*:	
Purge method:	bailer
Sample method:	"
Start time *(hh:mm:ss)*:	1040
Stop time *(hh:mm:ss)*:	1100
Duration *(hh:mm:ss)*:	:20
Rate, gpm:	~ 10 gal
Volume, purged: *(note units)*	~ 0.5 gpm
Duplicate collected?	Dup-3
Sample collection by:	MAB

STABILIZATION TEST

Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
1035	7.56	935	6.98	-5.6	2.39	-

Odor: none detected

Purge Appearance: clear → dark red/brown turbid

Sample Appearance: red/brown turbid

Comments: minor apparent algae on water level tube
55' = 16.5m
purged dry @ 10 gal

CO2- Mn2- Fe(T)- Fe2-

Others present: none

Well Condition: good

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+ naphthalene
VOC- semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW-11B
Location: SPT	**Date:** 11/4/17
Project #: 49161385	**Sample Time:** 1240

GENERAL DATA		STABILIZATION TEST						
Barr lock:		Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter *(in.)*:								
Total well depth *(ft.)*:*	57.5'	1203	7.72	707	7.39	244.0	2.62	—
Static water level *(ft.)*:*	26.95'							
Water depth *(ft.)*:*	30.55							
Well volume *(gal.)*:	~5.0							
Purge method:	bailer							
Sample method:	"							
Start time *(hh:mm:ss)*:	1205	Odor: none detected						
Stop time *(hh:mm:ss)*:	1235	Purge Appearance: clear → pink/brown turbid						
Duration *(hh:mm:ss)*:	:30	Sample Appearance: pink turbid						
Rate, gpm:	.39 gpm	Comments: 55' = 16.5 m lock rusty lubricated w/ silicone o-ring lubricant 2 gal to purge						
Volume, purged: *(note units)*	8 gal							
Duplicate collected?	no							
Sample collection by:	Mark MAB	CO2-	Mn2-	Fe(T)-	Fe2-			

Others present: none

Well Condition: good

(MW) groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

& matrix spike

P VOC-3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

BARR

Client: ENB		**Monitoring Point:** MW-11	
Location: SPT		**Date:** 10/4/17	
Project #: 49161385		**Sample Time:** 1300	

GENERAL DATA		STABILIZATION TEST						
Barr lock: (Chubwhye)	yes	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter *(in.)*:	2" pvc							
Total well depth *(ft.)*:*	18.27	1238	10.57	1266	6.78	-112.8	1.79	—
Static water level *(ft.)*:*	7.69							
Water depth *(ft.)*:*	10.31							
Well volume *(gal.)*:	1.7 gal							
Purge method:	bailer							
Sample method:	"							

Start time *(hh:mm:ss)*:	1245	Odor: none detected
Stop time *(hh:mm:ss)*:	1255	Purge Appearance: yellowish gray → pink; clear
Duration *(hh:mm:ss)*:	:10	Sample Appearance: clear, colorless
Rate, gpm:	.45 gpm	Comments: lock rusty. lubricated w/ silicone o-ring lube. 6.8 gal to purge. Purged dry @ 4.5 gal
Volume, purged: *(note units)*	4.5 gal	
Duplicate collected?	no	
Sample collection by:	MAB	CO2- Mn2- Fe(T)- Fe2-

Others present: none	Well Condition: good

(MW): groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+ trimethylbenzene
VOC-3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW-26
Location: SPT	**Date:** 10/4/17
Project #: 49161385	**Sample Time:** 1400

GENERAL DATA

Barr lock:	yes
Casing diameter *(in.)*:	2" PVC
Total well depth *(ft.)*:*	18.7
Static water level *(ft.)*:*	7.10
Water depth *(ft.)*:*	11.6
Well volume *(gal.)*:	1.9
Purge method:	bailer
Sample method:	bailer
Start time *(hh:mm:ss)*:	1345
Stop time *(hh:mm:ss)*:	1355
Duration *(hh:mm:ss)*:	:10
Rate, gpm:	.65 gpm
Volume, purged: *(note units)*	6.5 gal
Duplicate collected?	no
Sample collection by:	MAB

STABILIZATION TEST

Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
~~12.01~~ 1344	12.01	978	7.08	187.2	2.40	—

Odor: none detected

Purge Appearance: clear, colorless → turbid orange/brown.

Sample Appearance: slightly turbid orange-brown

Comments: 7.5 gal to purge
purges dry after 6.5 gal

CO2- Mn2- Fe(T)- Fe2-

Others present: none

Well Condition: good

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+ naphthalene
pVOC- ? semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW-25A
Location: SPT	**Date:** 10/4/17
Project #: 49161385	**Sample Time:** 1515

GENERAL DATA	
Barr lock: ember dye	yes
Casing diameter *(in.)*:	2" PVC
Total well depth *(ft.)*:*	19.00
Static water level *(ft.)*:*	3.05
Water depth *(ft.)*:*	15.95
Well volume *(gal.)*:	2.6
Purge method:	bailer
Sample method:	"
Start time *(hh:mm:ss)*:	1430
Stop time *(hh:mm:ss)*:	1440
Duration *(hh:mm:ss)*:	:10
Rate, gpm:	.45 gpm
Volume, purged: *(note units)*	4.5
Duplicate collected?	no
Sample collection by:	MAB

STABILIZATION TEST

Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
1430	9.61	904	7.00	-13.9	0.45	—

Odor: none detected

Purge Appearance: very turbid red-brown

Sample Appearance: as above

Comments: 10.4 gal to purge
purged dry

CO2- Mn2- Fe(T)- Fe2-

Others present: none

Well Condition: good

(MW) groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+ nitrate
VOC-3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW-25B
Location: SPT	**Date:** 10/4/17
Project #: 43161385	**Sample Time:** 1525

GENERAL DATA

~~Barr~~lock:	enbridge
Casing diameter *(in.)*:	2" PVC
Total well depth *(ft.)*:*	49.21
Static water level *(ft.)*:*	8.50
Water depth *(ft.)*:*	40.71
Well volume *(gal.)*:	6.6
Purge method:	bailer
Sample method:	"
Start time *(hh:mm:ss)*:	1445
Stop time *(hh:mm:ss)*:	1510
Duration *(hh:mm:ss)*:	:25
Rate, gpm:	~0.3 gpm
Volume, purged: *(note units)*	9 gal
Duplicate collected?	no
Sample collection by:	MAB

STABILIZATION TEST

Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
1440	6.94	425	7.43	-184.5	0.55	—

Odor: none detected

Purge Appearance: clear → turbid red-brown

Sample Appearance: turbid red-brown

Comments: 38.4 gal to purge
purged dry @ 9 gal.

CO2- Mn2- Fe(T)- Fe2-

Others present: none

Well Condition: good

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+ naphthalene
pVOC- 3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW-12
Location: SPT	**Date:** 10/4/17
Project #: 61916385	**Sample Time:** 1605

GENERAL DATA

Barr lock:	absent / yes
Casing diameter *(in.)*:	2" PVC
Total well depth *(ft.)*:*	22.57
Static water level *(ft.)*:*	4.42
Water depth *(ft.)*:*	18.15
Well volume *(gal.)*:	2.95
Purge method:	bailer
Sample method:	"
Start time *(hh:mm:ss)*:	1550
Stop time *(hh:mm:ss)*:	1600
Duration *(hh:mm:ss)*:	:10
Rate, gpm:	0.4 gpm
Volume, purged: *(note units)*	4 gal
Duplicate collected?	no
Sample collection by:	MAB

STABILIZATION TEST

Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
1548	8.36	1533	7.31	128.8	7.18	–

Odor: none detected

Purge Appearance: clear → slightly pink turbid

Sample Appearance: clear slightly pink

Comments: 11.8 gal to purge
purged dry at 4 gal.

CO2- Mn2- Fe(T)- Fe2-

Others present: none

Well Condition: broken cap

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+ nutrient
P VOC- 3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: GNB	**Monitoring Point:** MW-19
Location: SPT	**Date:** 10/5/17
Project #: 49161385	**Sample Time:** 0915

GENERAL DATA		STABILIZATION TEST						
Barr lock: enlarge		Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter *(in.)*:	2" PVC							
Total well depth *(ft.)*:*	26	850	9.90	764	6.70	212.7	0.76	—
Static water level *(ft.)*:*	3.08							
Water depth *(ft.)*:*	23							
Well volume *(gal.)*:	3.7							
Purge method:	bailer							
Sample method:	"							
Start time *(hh:mm:ss)*:	0900	Odor: none detected						
Stop time *(hh:mm:ss)*:	0910	Purge Appearance: clear slightly yellow-green						
Duration *(hh:mm:ss)*:	:10	Sample Appearance: as above						
Rate, gpm:	.85 gpm	Comments: purged dry at 8.5 gallons						
Volume, purged: *(note units)*	8.5 gal							
Duplicate collected?	N							
Sample collection by:	MAD	CO2-		Mn2-		Fe(T)-		Fe2-
Others present:	none	Well Condition: good						

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+ nature

pVOC- semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW 19B
Location: SPT	**Date:** 10/5/17
Project #: 49161385	**Sample Time:** 1010

GENERAL DATA

Barr lock:	yes
Casing diameter *(in.)*:	2" PVC
Total well depth *(ft.)*:*	59.8'
Static water level *(ft.)*:*	13.46
Water depth *(ft.)*:*	46.34
Well volume *(gal.)*:	7.6
Purge method:	bailer
Sample method:	"
Start time *(hh:mm:ss)*:	0925
Stop time *(hh:mm:ss)*:	1005
Duration *(hh:mm:ss)*:	:40
Rate, gpm:	.25gpm
Volume, purged: *(note units)*	11 gallons
Duplicate collected?	no
Sample collection by:	MAB

STABILIZATION TEST

Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
924	7.21	250	7.23	135.2	1.32	-

Odor: none detected

Purge Appearance: clear slightly gray

Sample Appearance: as above

Comments: rock very rusty. lubricated w/ silicone o ring lube & WD40
purge water foamy
purged dry at 11 gallons

CO2- Mn2- Fe(T)- Fe2-

Others present: none

Well Condition: good

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

6 containers

VOC- 3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW-18
Location: SPT	**Date:** ~~5/2~~ 10/5/17
Project #: 41916385	**Sample Time:** 1115

GENERAL DATA		STABILIZATION TEST						
Barr lock:	yes	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter *(in.)*:	2" PVC							
Total well depth *(ft.)*:*	17.2	1057	11.24	1145	7.38	286.7	3.59	—
Static water level *(ft.)*:*	5.25							
Water depth *(ft.)*:*	11.95							
Well volume *(gal.)*:	1.9							
Purge method:	bailer							
Sample method:	"							
Start time *(hh:mm:ss)*:	1100	Odor: none detected						
Stop time *(hh:mm:ss)*:	1110	Purge Appearance: ~~4.5~~ clear → slightly Pink clear						
Duration *(hh:mm:ss)*:	:10	Sample Appearance: as above						
Rate, gpm:	.75 gpm	Comments: ~~for~~ lock rusty lubricated w/ silicone						
Volume, purged: *(note units)*	4.5 gal	O-ring lubricated						
Duplicate collected?	no	7.6 gal to purge						
Sample collection by: MAB		purged dry at 4.5 gal.						
		CO2- Mn2- Fe(T)- Fe2-						

Others present: none

Well Condition: good

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+nutrient

pVOC-3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW-17A
Location: SPT	**Date:** 10/5/17
Project #: 49161855	**Sample Time:** 1200

GENERAL DATA		STABILIZATION TEST						
Barr lock:	yes	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter *(in.)*:	2" PVC							
Total well depth *(ft.)*:*	17.44	1138	9.30	1331	7.14	285.0	4.90	—
Static water level *(ft.)*:*	3.93							
Water depth *(ft.)*:*	13.51							
Well volume *(gal.)*:	2.2							
Purge method:	bailer							
Sample method:	4							
Start time *(hh:mm:ss)*:	1145	Odor: none detected						
Stop time *(hh:mm:ss)*:	1155	Purge Appearance: clear, colorless						
Duration *(hh:mm:ss)*:	:10	Sample Appearance: as above						
Rate, gpm:	.5 gpm	Comments: purged dry @ 5 gal						
Volume, purged: *(note units)*	5 gal							
Duplicate collected?	no							
Sample collection by:	MAB	CO2-	Mn2-	Fe(T)-	Fe2-			
Others present:	none	Well Condition: good						

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+ matrix spike

VOC-3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: GNB	**Monitoring Point:** MW-17B
Location: SPT	**Date:** 10/5/17
Project #: 49161385.00	**Sample Time:** 1235

GENERAL DATA		STABILIZATION TEST						
~~Barr~~ enbridge lock:	yes	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter *(in.)*:	2" PVC							
Total well depth *(ft.)*:*	44.8	1206	7.28	543	7.40	186.5	2.42	—
Static water level *(ft.)*:*	22.30							
Water depth *(ft.)*:*	22.5							
Well volume *(gal.)*:	3.7							
Purge method:	bailer							
Sample method:	"							

Start time *(hh:mm:ss)*:	1200	Odor: none detected
Stop time *(hh:mm:ss)*:	1230	Purge Appearance: clear → slightly pink foamy
Duration *(hh:mm:ss)*:	:30	Sample Appearance: slightly pink clear
Rate, gpm:	.17 gpm	Comments: lock very rusty lubricated w/ silicone O-ring ~~grease~~ lubricant 14.8 gal to purge purged dry at 5 gallons
Volume, purged: *(note units)*	5	
Duplicate collected?	no	
Sample collection by: MAB		CO2- Mn2- Fe(T)- Fe2-

Others present: none	Well Condition: good

(MW) groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

three-liter VOC-3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW-5
Location: SPT	**Date:** 10/5/17
Project #: 40161385	**Sample Time:** 1455

GENERAL DATA		STABILIZATION TEST						
Barr lock: Enbridge type	yes	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter *(in.)*:	2" PVC							
Total well depth *(ft.)*:*	27.06	1420	8.46	1147	7.46	158.3	5.85	—
Static water level *(ft.)*:*	2.80							
Water depth *(ft.)*:*	24.26							
Well volume *(gal.)*:	4.0							
Purge method:	bailer							
Sample method:	"							
Start time *(hh:mm:ss)*:	1425	Odor: none detected						
Stop time *(hh:mm:ss)*:	1450	Purge Appearance: clear, colorless → pink						
Duration *(hh:mm:ss)*:	:25	Sample Appearance: clear, pink						
Rate, gpm:	0.5 gpm	Comments: purged dry at 13 gallons						
Volume, purged: *(note units)*	13 gallons							
Duplicate collected?	no							
Sample collection by: MAB		CO2-	Mn2-	Fe(T)-	Fe2-			

Others present: none

Well Condition: good

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

(tentative) pVOC- 3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: Enbridge	**Monitoring Point:** MW-5B
Location: SPT	**Date:** ~~5/4~~ 10/5/17
Project #: 49161385	**Sample Time:** 1410

GENERAL DATA

Barr lock: Enbridge	yes
Casing diameter *(in.)*:	2" PVC
Total well depth *(ft.)*:*	57.78
Static water level *(ft.)*:*	7.18
Water depth *(ft.)*:*	50.60
Well volume *(gal.)*:	8.2
Purge method:	bailer
Sample method:	"
Start time *(hh:mm:ss)*:	1330
Stop time *(hh:mm:ss)*:	1405
Duration *(hh:mm:ss)*:	:35
Rate, gpm:	.4 gpm
Volume, purged: *(note units)*	~~8.5~~ 13.5
Duplicate collected?	no
Sample collection by:	MAB

STABILIZATION TEST

Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
1320	6.74	864	6.92	295.0	0.80	—

Odor: none detected

Purge Appearance: foamy, clear → colorless → pink

Sample Appearance: pink, clear

Comments: bailed dry at ~~8.5~~ 13.5 gallons

CO2- Mn2- Fe(T)- Fe2-

Others present: none

Well Condition: good

MW groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+ nitrate VOC-3 semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Barr Engineering Company
Well Sampling/Stabilization Data Sheet

Client: ENB	**Monitoring Point:** MW-23B
Location: SPT	**Date:** 10/5/17
Project #: 49161385	**Sample Time:** 1555

GENERAL DATA	
Barr lock: ~~embridge~~	yes
Casing diameter *(in.)*:	2" PVC
Total well depth *(ft.)*:*	57.11
Static water level *(ft.)*:*	6.36
Water depth *(ft.)*:*	50.75
Well volume *(gal.)*:	8.3
Purge method:	bail
Sample method:	"
Start time *(hh:mm:ss)*:	1520
Stop time *(hh:mm:ss)*:	1550
Duration *(hh:mm:ss)*:	:30
Rate, gpm:	.4 gpm
Volume, purged: *(note units)*	12.5 gal
Duplicate collected?	no
Sample collection by:	MWH

STABILIZATION TEST

Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
1520	6.97	921	7.13	259.0	0.39	–

Odor: none detected

Purge Appearance: clear slightly yellow-gray → slightly pink

Sample Appearance: clear, slightly pink

Comments: 16.5 m to stabilize

CO2- Mn2- Fe(T)- Fe2-

Others present: none

Well Condition: good

MW: groundwater monitoring well WS: water supply well SW: surface water SE: sediment other:

+ nutrients VOC- semi-volatile- general- nutrient- cyanide- DRO- Sulfide-

oil,grease- bacteria- total metal- filtered metal- methane- filter-

Others:

*Measurements are referenced from top of riser pipe, unless otherwise indicated.

Appendix D

2017 Well Maintenance Memo

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BARR

Memorandum

To: Karl Beaster
From: Barr Engineering
Subject: 2017 Superior Terminal Monitoring Well Maintenance Activities
Date: January 31, 2018
Project: 2017 Superior Terminal Groundwater Monitoring Program

This memorandum summarizes the monitoring well maintenance activities conducted by Barr Engineering (Barr) at the request of Enbridge Energy at the Superior Terminal in Superior Wisconsin on June 27, 2017. Maintenance activities included 1) cutting and resurveying the riser of MW-12 and 2) cleaning wells MW-11, MW-14, MW-15, and MW-22B. The original project scope also included cutting and resurveying the riser of MW-25B; instead, it was decided to reset the protective casing. This task was ultimately performed by Enbridge pipeline maintenance staff (PLM).

Well Repair

During annual monitoring well sampling in 2016, riser caps at MW-12 and MW-25B sat above the protective outer casing, which prevented the casings from being locked. As a result, these wells were targeted for repair in 2017. At MW-12, the PVC well casing was cut down to an elevation lower than the protective casing cover using an internal PVC pipe cutting tool drill bit attachment (Photo 1). The new top of casing (TOC) elevation was surveyed using an auto level. Although it was not clear if the protective cover was unable to close due to the PVC riser heaving or the protective casing settling, we assumed the PVC riser elevation was unchanged. As a result, the known elevation of the riser was used as a benchmark to establish control for the survey prior to cutting down the riser. The new TOC elevation for MW-12 was measured to be 649.17 feet above mean sea level (msl). Survey data have been summarized below in Table 1. While the riser cap is now below the top of the protective casing, the protective casing does not have a locking cap, so the well remains unlocked.

Table 1: New TOC elevation of MW-12 after maintenance activity.

Station	Backshot (ft)	Height of instrument (ft)	Elevation (ft msl)
MW-12 (old TOC)	0.6	650.06	649.46
TBM (metal base of light pole footing)	4.63	650.06	645.43
MW-12 (new TOC)	0.89	650.06	649.17
TP-1	4.64	650.07	645.43
MW-12 (new TOC)	0.9	650.07	649.17
MW-12 new TOC elevation			649.17

Maintenance and survey performed on June 27, 2017.

Monitoring well MW-25B is located in a drainage ditch with soft, wet soils. As the well was being sampled in May, 2017, the protective casing at MW-25B settled approximately one foot into the soft soil while the protective casing cap was open. It was not known whether the casing would continue to settle into the soil, so the approach used at MW-12 (to cut the PVC riser pipe) was not used at MW-25B. Instead, the protective casing was lifted above the elevation of the TOC and the base was reinforced to prevent future settling. Enbridge PLM performed the protective casing maintenance in July 2017. A skid steer was used to mechanically lift the protective casing above the riser pipe without disturbing the PVC riser pipe. Metal plates were welded to the exterior of the protective casing at MW-25B and MW-25 to help prevent them from settling again in the future. A culvert was installed in the ditch to maintain site drainage and gravel was placed around the base of both protective casings to provide a firm substrate (Photo 3).

Well Cleaning

Well maintenance activities were conducted at the Superior Terminal on June 27, 2017. Wells MW-11, MW-14 and MW-15 were targeted for cleaning following the discovery of bacterial and/or biological growth in the wells during the 2016 sampling event. Monitoring well MW-22B was added to the list after small black flecks were identified in the well during the spring 2017 event. The well screens were scrubbed with a 2.5-inch diameter nylon brush attached to an extension rod with threaded fittings. A surge block was used to surge the water column inside each well at least 50 times in an attempt to loosen any biological growth that may have been attached to the well screen. The wells were then purged dry with a submersible pump and then refilled with a municipal water source (from Four Star Construction across Stinson Avenue from the Terminal) to the top of the well casing in an attempt to flush any remaining biological growth from the well. The pumping and fillings (i.e. flushing) of the wells occurred at least three times at each well. The wells were purged dry at the conclusion of the well cleaning activity. All purge water was discharged to the ground surface adjacent to the well being cleaned. All well cleaning equipment (brushes, surge bailer, submersible pump) was decontaminated with a phosphate-free detergent and mild bleach solution in between wells.

A summary of the well cleaning activities is provided in Table 2. The MW-22B well screen was not scrubbed with the brush because the handle extension was not long enough to reach the deeper well screen. The biological growth which was observed in all four wells during sampling activity in May of 2017 was not observed during well cleaning activity. One possible explanation is that the purging of the wells during spring groundwater sampling activities removed the biological growth from the well casing, and there was not enough time in between sampling and cleaning for new growth to occur. During the fall 2017 event, MW-11 had no evidence of bacterial growth, and MW-14 and MW-15 had apparent root hairs observed, but in fewer numbers than in the spring. Similarly, fewer algae-like flakes and no slime was observed in MW-22B.

Table 2: Well cleaning activity summary

	MW-11	MW-14	MW-15	MW-22B
Spring 2017 sampling observations	Evidence of bacterial and/or biological growth	Evidence of bacterial and/or biological growth, some small plant roots observed.	Evidence of bacterial and/or biological growth, some small plant roots observed.	Small black flecks (possibly algae) and clear slime was observed on top of the water column during water level measurements
Well screen scrubbed with down-hole brush	Yes	Yes	Yes	No
Well surged	Yes	Yes	Yes	Yes
Well casing water volume (gal)	3	6	4	7
Total water volume added (gal) during 3 separate flushing events	12	24	18	20
Total water volume removed (gal) during 3 separate flushing events	15	30	22	27
Observations during well cleaning	No visible organic material on brush, surge bailer, or pump during cleaning activities.	No visible organic material on brush, surge bailer, or pump during cleaning activities.	No visible organic material on brush, surge bailer, or pump during cleaning activities.	Brush handle not long enough to reach well screen. No visible organic material on brush, surge bailer, or pump during cleaning activities.

Site Photos

Photo 1

Photo 2

Photo 1: MW-12 riser pipe cut with PVC pipe cutter tool. Photo taken June 27, 2017
Photo 2: Well cleaning activities at MW-15. Photo taken facing southeast on June 27, 2017

Photo 3

Photo 3: MW-25B (left) repair work completed. Photo taken facing southeast on July 19, 2017