2019 Groundwater Monitoring Program Report

Superior, WI Terminal

Prepared for
Enbridge Energy

January 2020

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ENBRIDGE ENERGY LIMITED PARTNERSHIP
GROUNDWATER MONITORING PROGRAM - REPORT FORM
(Superior Terminal – Superior, WI)
Sample Dates: May 27 - 30 and October 28 - 31, 2019

I. Site Location

Site Name/Address: *Superior Terminal, 2800 East 21st Street, Superior, WI, 54880*
Milepost: *1098* 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*
 # Private Wells: 3 *Site Map with Private 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-1R	N *46° 41' 13.469"* W *92° 4' 9.188"*	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"* *W 92° 3' 3.276"*	MW-6	N *46° 41' 2.130"* W *92° 3' 42.639"*
MW-6B	*N 46° 41' 2.101"* *W 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	*N 46° 41' 0.582"* *W 92° 3' 11.2788"*	MW-23B	*N 46° 41' 11.6916"* *W 92° 3' 2.5344"*
MW-24A	*N 46° 41' 25.3356"* *W 92° 3' 22.4172"*	MW-24B	*N 46° 41' 25.386"* *W 92° 3' 22.3308"*	MW-25A	*N 46° 41' 40.1676"* *W 92° 2' 45.6936"*
MW-25B	*46° 41' 40.2036"* *W 92° 2' 45.744"*	MW-26	*N 46° 41' 48.6024"* *W 92° 3' 3.9554"*		

Average Groundwater Depth (Shallow Wells): *4.69 feet below grade*
Average Groundwater Depth (Deep Wells): *13.75 feet below grade*

Groundwater Elevation and Survey Data Attached? ☒ Yes ☐ No *See Table 1 and Table 3*

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

Analytical Laboratory Name & Location: *Pace Analytical, Green Bay, WI (spring event). Pace Analytical, Minneapolis, MN (fall event).*

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.
Private Wells: BETX (benzene; ethylbenzene; toluene; total xylenes); chloride; iron; nitrate plus nitrite; total coliform; fecal coliform as E. coli; pH (spring event only).

Analytical Laboratory Reports Attached? ☒ Yes ☐ No - *See Appendix A (Monitoring Wells –spring and fall) / Appendix D (Private Wells – spring only)*
Analytes Detected?
Groundwater: ☐ Yes ☒ No *See Appendix A*
Private Wells: ☒ Yes ☐ No *See Appendix D (Iron detection of 1.950 mg/L in PW-1 and 1.290 mg/L in PW-3; pH detection of 8.6 in PW-1, 8.8 in PW-2, and 8.9 in PW-3.)*

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

IV. Conclusions

- Each monitoring well was photographed and the general condition of each well was documented during the spring and fall events. Photographs of each monitoring well from the spring and fall are provided in Appendix B.
- Barr measured water levels and well depths in existing wells prior to groundwater sample collection.
- Field water quality parameters were measured prior to well purging using an YSI 556 down-well probe during the spring event. 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 located in Appendix C. Groundwater samples were collected from each well using new disposable bailers.

- Groundwater sampling in 2019 occurred between May 27 and 30 (spring event) and October 28 - 31 (fall event).
- Groundwater 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 from the monitoring wells (Table 2).
- Groundwater contours of the shallow and deep wells are provided in Figures 3 through 6.
- The following well locks were replaced during the spring event: MW-1, MW-5, MW-6, MW-11B, MW-12, MW-19, MW-19B, MW-20A, and MW-20B.
- The following wells were painted with low VOC, high visibility yellow paint during the spring event: MW-2, MW-11, MW-11B, MW-17B, MW-19A, MW-19B, MW21A, and MW21B.
- All monitoring wells were resurvey on August 29, 2019. New survey data is provided in Table 3.
- Private well sampling was only completed during the spring event. Sampling documentation and results are provided in Appendix D.
- MW-1 was abandoned on June 18, 2019 due to construction of a new laydown yard. A replacement well (MW-1R) was installed on August 22, 2019. A memo documenting the abandonment of MW-1 and installation of MW-1R is provided in Appendix E.

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 spring or fall event and should therefore be considered for replacement in the future: MW-10, MW-21A, MW-21B, MW-25A, and MW-25B.
- The following well had faded paint and/or was rusty: MW-10. Enbridge may want to consider repainting this well in 2020 with low VOC, high visibility, yellow paint.
- MW-1R needs an Enbridge monitoring well sticker.
- MW-12 has no locking mechanism on top of well. The closing cover on the protective casing is missing. The opening to the protective casing is currently being covered with a j-plug. Enbridge may want to consider repairing or replacing this protective casing in the future.
- Continue to clear / mow the area around MW-6 and MW-6B prior to the fall event due to overgrown burdock and thistles bushes.

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

- MW-1 was in good condition, recovery rate was poor, purged water was clear, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-2 was in good condition, recovery rate was poor, purged water was clear, 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, 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. A duplicate sample was collected from this well. No analytes were detected in the sample or the duplicate.
- 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, slight effervescence when the sample was collected, 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 to slightly turbid, 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, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-14 was in good condition, recovery rate was poor, purged water was clear, some small brown 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, 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, 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, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-19B was in good condition, recovery rate was poor, purged water was clear, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-20A was in good condition, recovery rate was poor, purged water was clear, no evidence of contamination (odor, discoloration, sheen) was observed. A duplicate sample was collected from this well. No analytes were detected in the sample or the duplicate.
- 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, no evidence of contamination (odor, discoloration, sheen) was observed.

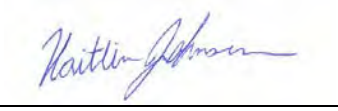
- MW-21B was in good condition, recovery rate was poor, purged water was clear to turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-22B was in good condition (however, contractors are using the area around MW-22B for parking and equipment storage). Recovery rate was poor, slight effervescence when the sample was collected, 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, 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.
- MW-24B 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-25A was in good condition, recovery rate was poor, purged water was 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 turbid 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 turbid, no evidence of contamination (odor, discoloration, sheen) was observed. A duplicate sample was collected from this well. No analytes were detected in the sample or the duplicate.

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

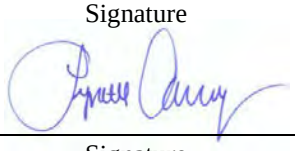
- MW-1R was in good condition, recovery rate was poor, purged water was clear to slightly turbid, no evidence of contamination (odor, discoloration, or sheen) was observed.
- MW-2 was in good condition, recovery rate was poor, slight effervescence when the sample was collected, purged water was clear, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-5 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-5B was in good condition, recovery rate was poor, purged water was clear, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-6 was in good condition, recovery rate was poor, purged water was slightly turbid to 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, slight effervescence when the sample was collected, purged water was clear, 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, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-12 was in good condition, recovery rate was poor, purged water was clear, no evidence of contamination (odor, discoloration, sheen) was observed. A duplicate sample was collected from this well. No analytes were detected in the sample or the duplicate.

- MW-14 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-15 was in good condition, recovery rate was poor, purged water was clear, some small plant roots were observed in the purge water, slight effervescence when the sample was collected, no evidence of contamination (odor, discoloration, sheen) was observed. A duplicate sample was collected from this well. No analytes were detected in the sample or the duplicate.
- 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, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-18 was in good condition, recovery rate was poor, purged water was clear, 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-19A was in good condition, recovery rate was poor, purged water was clear, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-19B was in good condition, recovery rate was poor, purged water was clear, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-20A was in good condition, recovery rate was poor, purged water was clear, 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, 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, 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 light 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.
- MW-24B 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-25A was in good condition, recovery rate was poor, purged water was very turbid, no evidence of contamination (odor, discoloration, sheen) was observed.
- MW-25B was in good condition, recovery rate was poor, purged water was 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 turbid, no evidence of contamination (odor, discoloration, sheen) was observed.

Company Name: Barr Engineering Co.

Prepared By: Kaitlin Johnson  01/31/2020

Printed Name Signature Date

Reviewed By: Lynette Carney  01/31/2020

Printed Name Signature Date

Tables

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

Location	Date	TOC Elevation (feet)	Grade Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)
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
	29-May-18			5.13	660.09
	15-Nov-18			6.54	658.68
	27-May-19			4.98	660.24
MW-1 Abandonded on June 18, 2019					
MW-1R	29-Oct-19	663.90	660.95	12.1	651.80
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
	29-May-18			3.72	655.65
	14-Nov-18			3.30	656.07
	30-May-19			3.51	655.86
	29-Oct-19	657.33	654.98	3.28	654.05
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
	31-May-18			2.79	642.58
	15-Nov-18			3.19	642.18
	29-May-19			3.00	642.37
	30-Oct-19	643.41	640.69	3.16	640.25

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

Location	Date	TOC Elevation (feet)	Grade Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)
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
	31-May-18			6.53	637.67
	15-Nov-18			6.80	637.40
	29-May-19			6.82	637.38
	30-Oct-19	644.31	640.82	7.04	637.27
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
	30-May-18			7.14	640.87
	16-Nov-18			7.47	640.54
	28-May-19			7.37	640.64
	29-Oct-19	646.04	643.73	7.51	638.53
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
	30-May-18			8.91	637.86
	16-Nov-18			9.00	637.77
	28-May-19			9.00	637.77
	29-Oct-19	646.77	644.06	9.98	636.79
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
	30-May-18			6.28	655.73
	16-Nov-18			5.24	656.77
	28-May-19			5.00	657.01
	29-Oct-19	660.05	658.65	4.22	655.83
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
	30-May-18			7.75	648.58
	16-Nov-18			8.09	648.24
	29-May-19			8.06	648.27
	31-Oct-19	654.38	651.83	8.10	646.28

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

Location	Date	TOC Elevation (feet)	Grade Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)
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
	30-May-18			22.31	633.60
	16-Nov-18			24.70	631.21
	29-May-19			23.00	632.91
	28-Oct-19	653.97	651.85	25.60	628.37
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
	31-May-18			4.62	644.55
	19-Nov-18			4.64	644.53
	29-May-19			4.32	644.85
	28-Oct-19	647.15	643.25	4.57	642.58
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
	29-May-18			5.25	655.90
	14-Nov-18			4.91	656.24
	27-May-19			4.67	656.48
	29-Oct-19	659.11	657.06	5.01	654.10
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
	29-May-18			3.92	656.96
	14-Nov-18			2.91	657.97
	27-May-19			3.07	657.81
	29-Oct-19	659.03	657.20	3.04	655.99
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
	31-May-18			5.95	637.24
	15-Nov-18			3.88	639.31
	29-May-19			3.79	639.40
	30-Oct-19	641.10	638.72	4.06	637.04

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

Location	Date	TOC Elevation (feet)	Grade Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)
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
	31-May-18			16.50	626.77
	15-Nov-18			20.10	623.17
	29-May-19			18.11	625.16
	30-Oct-19	641.27	638.89	20.45	620.82
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
	31-May-18			7.64	636.59
	15-Nov-18			5.43	638.80
	29-May-19			5.73	638.50
	30-Oct-19	642.25	639.83	5.39	636.86
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
	29-May-18			3.53	654.59
	14-Nov-18			3.15	654.97
	27-May-19			3.51	654.61
	29-Oct-19	656.06	654.76	2.91	653.15
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
	29-May-18			12.52	645.70
	14-Nov-18			8.76	649.46
	27-May-19			7.47	650.75
	29-Oct-19	656.19	654.79	7.56	648.63
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
	30-May-18			5.28	645.76
	16-Nov-18			4.46	646.58
	28-May-19			4.09	646.95
	30-Oct-10	649.16	647.10	4.88	644.28

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

Location	Date	TOC Elevation (feet)	Grade Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)
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
	30-May-18			17.04	634.30
	16-Nov-18			18.33	633.01
	28-May-19			17.68	633.66
	30-Oct-19	649.44	647.47	18.57	630.87
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
	30-May-18			4.11	644.73
	16-Nov-18			3.89	644.95
	28-May-19			4.64	644.20
	31-Oct-19	646.82	644.72	4.04	642.78
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
	30-May-18			17.81	631.02
	16-Nov-18			18.90	629.93
	28-May-19			17.99	630.84
	31-Oct-19	646.80	644.63	19.06	627.74
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
	30-May-18			17.91	640.44
	16-Nov-18			17.93	640.42
	28-May-19			18.39	639.96
	28-Oct-19	658.48	655.55	18.58	639.90
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
	31-May-18			7.90	638.32
	15-Nov-18			7.23	638.99
	29-May-19			6.71	639.51
	30-Oct-19	646.32	643.82	6.57	639.75

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

Location	Date	TOC Elevation (feet)	Grade Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)
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
	31-May-18			4.51	647.18
	15-Nov-18			3.85	647.84
	27-May-19			3.68	648.01
	28-Oct-19	652.32	649.48	3.97	648.35
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
	31-May-18			10.82	640.63
	15-Nov-18			11.03	640.42
	27-May-19			14.95	636.50
	28-Oct-19	651.91	649.09	11.32	640.59
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
	31-May-18			2.99	635.32
	19-Nov-18			3.59	634.72
	30-May-19			3.33	634.98
	28-Oct-19	639.16	636.57	3.45	635.71
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-17			8.50	630.02
	31-May-18			7.62	630.90
	19-Nov-18			8.69	629.83
	30-May-19			8.32	630.20
	28-Oct-19	638.81	636.59	9.32	629.49
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
	31-May-18			7.65	638.52
	19-Nov-18			6.90	639.27
	30-May-19			7.55	638.62
	28-Oct-19	646.44	643.64	6.88	639.56

Notes:
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
	29-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	15-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	27-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
MW-1 Abandonded on June 18, 2019									
MW-1R	29-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	29-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	14-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	30-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	29-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	31-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	15-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	29-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	30-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41

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-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
	31-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	15-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	29-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	30-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	30-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	16-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	28-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	29-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	30-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	16-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	28-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	29-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	30-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	16-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	28-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	31-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41

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-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
	30-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	16-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	29-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	28-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	30-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	16-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	29-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	28-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	31-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	19-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	29-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	28-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	29-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	14-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	27-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	29-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41

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-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
	29-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	14-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	27-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	29-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	31-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	15-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	29-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	30-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	31-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	15-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	29-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	30-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	31-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	15-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	29-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	30-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41

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-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
	29-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	14-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	27-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	29-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	29-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	14-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	27-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	29-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	30-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	16-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	28-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	30-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	30-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	16-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	28-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	30-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	30-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	16-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	28-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	31-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41

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-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
	30-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	16-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	28-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	31-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	30-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	16-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	28-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	28-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	31-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	15-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	29-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	30-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	31-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	15-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	27-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	28-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	31-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	15-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	27-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	28-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	31-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	19-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	30-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	28-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41

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-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
	31-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	19-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	30-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	28-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	31-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	19-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	30-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	28-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
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
	29-May-18	<0.34	<0.46	<0.28	<1.0	NS	<1.6	<0.65	<0.41
	14-Nov-18	<1.0	<1.0	<1.0	<3.0	NS	<4.0	<1.0	<1.0
	27-May-19	<1.0	<1.0	<5.0	<3.0	NS	<5.0	<2.8	<2.9
	31-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	<5.5	<0.65	<0.41
	31-Oct-19	<0.34	<0.46	<0.28	<1.0	NS	0.15J	<0.65	<0.41
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

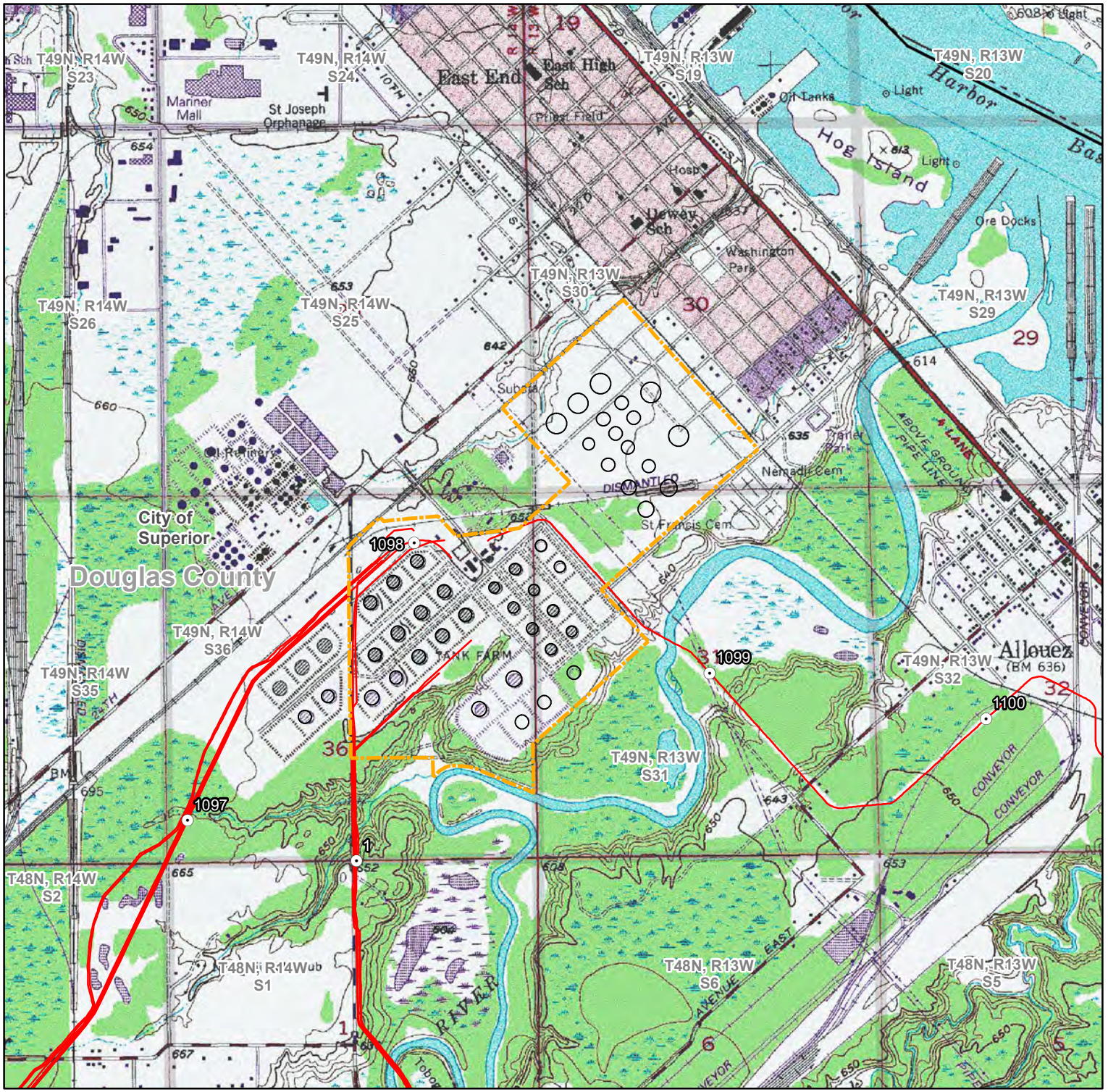
J = Estimated concentration at or above the Limit of Detection and below the Limit of Quantitation

Table 3
Monitoring Well Survey Information (Updated 2019)
Enbridge Energy Limited Partnership - Superior, WI Terminal

Location	Date Installed	Northing*	Easting*	Elevations		Screen Length (feet)	Screened Interval (feet)	Total Depth+ (feet)
				TOC (feet‡)	Ground Surface (feet‡)			
MW-1R	8/22/2019	561194.642	1449235.802	663.90	660.95	10	656.36 - 646.36	17.54
MW-2	10/15/1999	558850.015	1449812.584	657.33	654.98	10	640.15 - 630.15	27.18
MW-5	10/15/1999	561471.874	1453830.936	643.41	640.69	10	626.38 - 616.38	27.03
MW-5B	11/3/2015	561474.505	1453836.694	644.31	640.82	5	591.36 - 586.36	57.95
MW-6	11/10/1999	559986.546	1451050.75	646.04	643.73	10	629.34 - 619.34	26.70
MW-6B	11/27/2015	559994.042	1451047.193	646.77	644.06	5	593.52 - 588.52	58.25
MW-10	2010	559029.699	1452261.646	660.05	658.65	10	639.61 - 629.61	30.44
MW-11	2010	560029.157	1453465.978	654.38	651.83	10	646.19 - 636.19	18.19
MW-11B	11/19/2013	560025.558	1453460.258	653.97	651.85	5	601.14 - 596.14	57.83
MW-12	2010	562339.445	1453851.608	647.15	643.25	10	634.96 - 624.96	22.19
MW-14	2010	559894.136	1449814.122	659.11	657.06	10	650.77 - 640.77	18.34
MW-15	2010	560265.034	1449715.605	659.03	657.20	10	651.73 - 641.73	17.30
MW-17	9/25/2012	562039.893	1454509.738	641.10	638.72	10	633.63 - 623.63	17.47
MW-17B	11/18/2013	562036.682	1454506.341	641.27	638.89	3	599.33 - 596.33	44.94
MW-18	9/25/2012	562408.634	1454931.084	642.25	639.83	10	635.00 - 625.00	17.25
MW-19A	11/25/2013	562276.167	1450545.456	656.06	654.76	10	641.93 - 631.93	24.13
MW-19B	11/22/2013	562276.302	1450550.164	656.19	654.79	5	601.25 - 596.25	59.94
MW-20A	11/21/2013	560593.189	1452185.647	649.16	647.10	10	634.97 - 624.97	24.19
MW-20B	11/21/2013	560591.522	1452190.365	649.44	647.47	5	594.26 - 589.26	60.18
MW-21A	11/20/2013	559243.192	1451300.787	646.82	644.72	10	632.32 - 622.32	24.50
MW-21B	11/20/2013	559248.155	1451302.583	646.80	644.63	5	591.15 - 586.15	60.65
MW-22B	10/21/2015	559783.393	1453234.94	658.48	655.55	5	605.13 - 600.13	58.35
MW-23B	10/20/2015	560893.026	1453873.494	646.32	643.82	5	594.04 - 589.04	57.28
MW-24A	10/22/2015	562311.127	1452523.429	652.32	649.48	10	643.30 - 633.30	19.02
MW-24B	10/26/2015	562315.852	1452529.895	651.91	649.09	5	607.54 - 602.54	49.37
MW-25A	10/28/2015	563746.628	1455121.608	639.16	636.57	10	629.93 - 619.93	19.23
MW-25B	10/29/2015	563750.719	1455117.671	638.81	636.59	5	594.39 - 589.39	49.42
MW-26	10/28/2015	564633.234	1453873.877	646.44	643.64	10	637.54 - 627.54	18.90

Notes:
TOC = Top of Casing
* =Northing and Easting in Wisconsin State Plane (North), NAD83 (2011)
‡ = Feet in NAVD88 (North America Verticle Datum)
+ = Total well depth measured from TOC between October 28 - 31, 2019
Survey Data collected on August 29, 2019

Figures



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

N

0 2,000 4,000

Feet

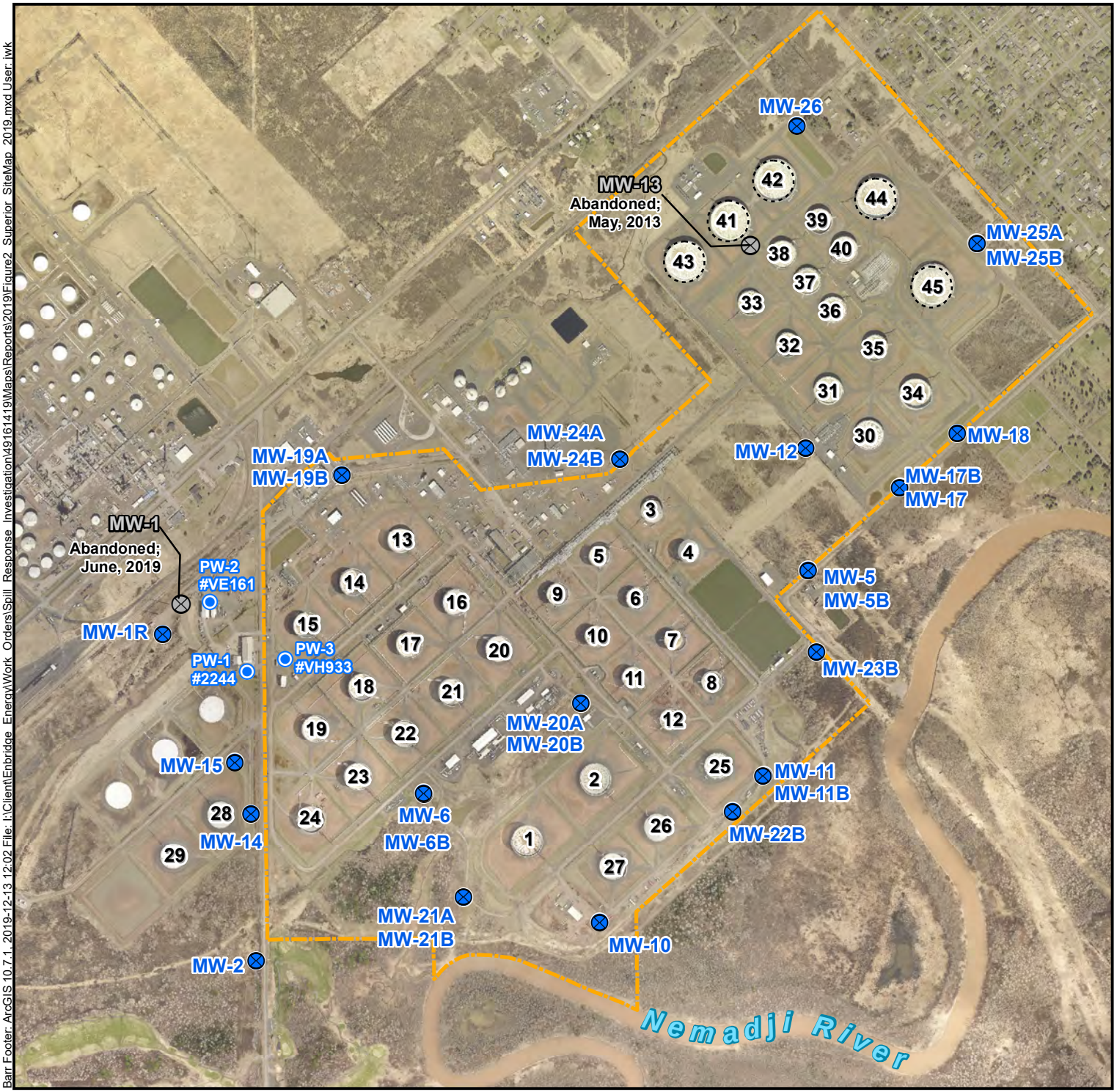
1 Inch = 2,000 Feet

Figure 1

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

ENBRIDGE

Barr Footer: ArcGIS 10.6, 2019-01-02 11:51 File: I:\Client\Enbridge_Energy\Work_Orders\Spill_Response_Investigation\49161419\Maps\Reports\Figure1_SuperiorTerminal_Site_Location.mxd User: jwk



Monitoring Well Location

Private Well Location

Abandonend Monitoring Well

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, 2019

Figure 2

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

ENBRIDGE

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
5/27/19, 5/28/19, 5/29/19, and 5/30/19

N

0 1,000 2,000

Feet

1 Inch = 1,000 Feet

Figure 3

SPRING 2019
SHALLOW GROUNDWATER
ELEVATION CONTOURS

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

ENBRIDGE

Barr Footer: ArcGIS 10.7.1, 2019-12-13 13:46 File: I:\Client\Enbridge_Energy\Work_Orders\Spill_Response_Investigation\49161419\Maps\Reports\2019\01_Spring2019\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
5/27/19, 5/28/19, 5/29/19, and 5/30/19

N

0 1,000 2,000

Feet

1 Inch = 1,000 Feet

Figure 4

SPRING 2019
DEEP GROUNDWATER
ELEVATION CONTOURS

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

ENBRIDGE

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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

Monitoring well location MW-1R was newly installed and therefore not used in groundwater contour modeling.

Groundwater elevations measured on 10/28/19, 10/29/19, 10/30/19, and 10/31/19

N

0 1,000 2,000

Feet

1 Inch = 1,000 Feet

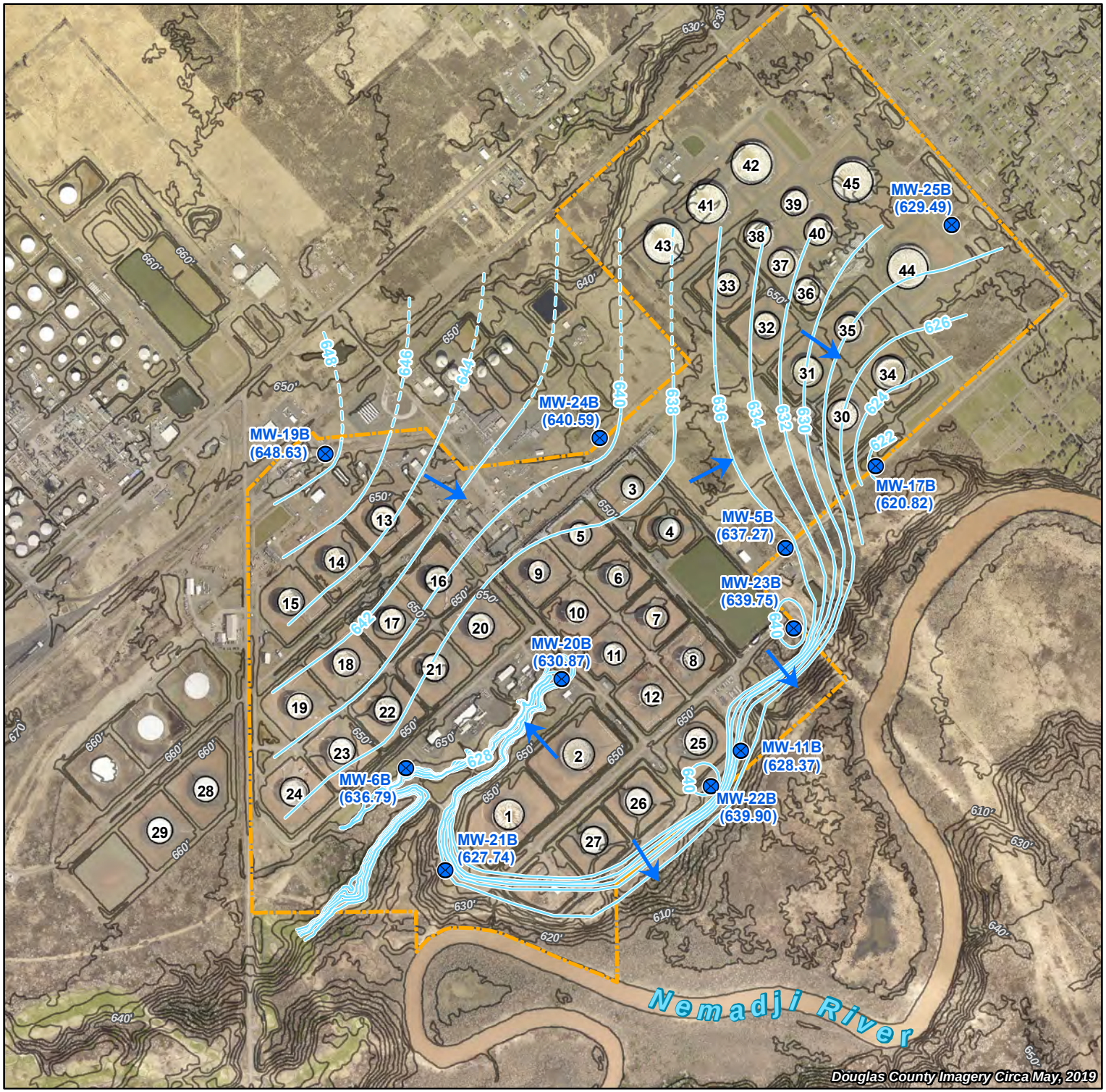
Figure 5

FALL 2019
SHALLOW GROUNDWATER ELEVATION CONTOURS

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

ENBRIDGE

Barr Footer: ArcGIS 10.7.1, 2019-12-13 13:47 File: I:\Client\Enbridge_Energy\Work_Orders\Spill_Response_Investigation\49161419\Maps\Reports\2019\02_Fall2019\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
10/28/19, 10/29/19, 10/30/19, and 10/31/19

N

0 1,000 2,000

Feet

1 Inch = 1,000 Feet

Figure 6

FALL 2019
DEEP GROUNDWATER
ELEVATION CONTOURS

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

ENBRIDGE

Barr Footer: ArcGIS 10.7.1, 2019-12-13 13:47 File: I:\Client\Enbridge_Energy\Work_Orders\Spill_Response_Investigation\49161419\Maps\Reports\2019\02_Fall2019\Figure6_Superior_Fall_Deep_GroundwaterElevation_Contours.mxd User: jwk

Appendices

Appendix A

Laboratory Analytical Reports

Spring 2019 Laboratory Analytical Reports

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

June 05, 2019

Jim Taraldsen
Barr Engineering Company
325 S Lake Ave
Duluth, MN 55802

RE: Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Dear Jim Taraldsen:
Enclosed are the analytical results for sample(s) received by the laboratory on May 30, 2019. 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
Accounts Payable, Barr Engineering

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

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SAMPLE SUMMARY

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10477047001	**MW-24A**	Water	05/27/19 09:55	05/30/19 19:00
10477047002	**MW-24B**	Water	05/27/19 10:32	05/30/19 19:00
10477047003	**MW-15**	Water	05/27/19 11:30	05/30/19 19:00
10477047004	**MW-14**	Water	05/27/19 12:15	05/30/19 19:00
10477047005	**MW-1**	Water	05/27/19 13:10	05/30/19 19:00
10477047006	**MW-19A**	Water	05/27/19 14:00	05/30/19 19:00
10477047007	**MW-19B**	Water	05/27/19 14:45	05/30/19 19:00
10477047008	**MW-20A**	Water	05/28/19 09:25	05/30/19 19:00
10477047009	**MW-20B**	Water	05/28/19 10:05	05/30/19 19:00
10477047010	**MW-6**	Water	05/28/19 11:15	05/30/19 19:00
10477047011	**MW-6B**	Water	05/28/19 11:50	05/30/19 19:00
10477047012	**MW-21A**	Water	05/28/19 13:15	05/30/19 19:00
10477047013	**MW-21B**	Water	05/28/19 13:45	05/30/19 19:00
10477047014	**MW-10**	Water	05/28/19 14:50	05/30/19 19:00
10477047015	**MW-22B**	Water	05/28/19 15:55	05/30/19 19:00
10477047016	**MW-11**	Water	05/29/19 08:30	05/30/19 19:00
10477047017	**MW-11B**	Water	05/29/19 09:05	05/30/19 19:00
10477047018	**MW-18**	Water	05/29/19 09:55	05/30/19 19:00
10477047019	**MW-17**	Water	05/29/19 10:40	05/30/19 19:00
10477047020	**MW-17B**	Water	05/29/19 11:05	05/30/19 19:00
10477047021	**MW-5**	Water	05/29/19 12:15	05/30/19 19:00
10477047022	**MW-23B**	Water	05/29/19 13:20	05/30/19 19:00
10477047023	**MW-5B**	Water	05/29/19 14:05	05/30/19 19:00
10477047024	**MW-12**	Water	05/29/19 15:15	05/30/19 19:00
10477047025	**MW-26**	Water	05/30/19 08:50	05/30/19 19:00
10477047026	**MW-25A**	Water	05/30/19 10:00	05/30/19 19:00
10477047027	**MW-25B**	Water	05/30/19 10:20	05/30/19 19:00
10477047028	**MW-2**	Water	05/30/19 11:10	05/30/19 19:00
10477047029	**Trip Blank**	Water	05/27/19 00:00	05/30/19 19:00
10477047030	**Dup-1**	Water	05/28/19 00:00	05/30/19 19:00
10477047031	**Dup-2**	Water	05/28/19 00:00	05/30/19 19:00
10477047032	**Dup-3**	Water	05/30/19 00:00	05/30/19 19:00

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SAMPLE ANALYTE COUNT

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10477047001	MW-24A	EPA 8260	LAP	13	PASI-G
10477047002	MW-24B	EPA 8260	LAP	13	PASI-G
10477047003	MW-15	EPA 8260	LAP	13	PASI-G
10477047004	MW-14	EPA 8260	LAP	13	PASI-G
10477047005	MW-1	EPA 8260	LAP	13	PASI-G
10477047006	MW-19A	EPA 8260	LAP	13	PASI-G
10477047007	MW-19B	EPA 8260	LAP	13	PASI-G
10477047008	MW-20A	EPA 8260	LAP	13	PASI-G
10477047009	MW-20B	EPA 8260	LAP	13	PASI-G
10477047010	MW-6	EPA 8260	LAP	13	PASI-G
10477047011	MW-6B	EPA 8260	LAP	13	PASI-G
10477047012	MW-21A	EPA 8260	LAP	13	PASI-G
10477047013	MW-21B	EPA 8260	LAP	13	PASI-G
10477047014	MW-10	EPA 8260	LAP	13	PASI-G
10477047015	MW-22B	EPA 8260	LAP	13	PASI-G
10477047016	MW-11	EPA 8260	LAP	13	PASI-G
10477047017	MW-11B	EPA 8260	LAP	13	PASI-G
10477047018	MW-18	EPA 8260	LAP	13	PASI-G
10477047019	MW-17	EPA 8260	LAP	13	PASI-G
10477047020	MW-17B	EPA 8260	LAP	13	PASI-G
10477047021	MW-5	EPA 8260	HNW	13	PASI-G
10477047022	MW-23B	EPA 8260	HNW	13	PASI-G
10477047023	MW-5B	EPA 8260	HNW	13	PASI-G
10477047024	MW-12	EPA 8260	HNW	13	PASI-G
10477047025	MW-26	EPA 8260	HNW	13	PASI-G
10477047026	MW-25A	EPA 8260	HNW	13	PASI-G
10477047027	MW-25B	EPA 8260	HNW	13	PASI-G
10477047028	MW-2	EPA 8260	HNW	13	PASI-G
10477047029	Trip Blank	EPA 8260	HNW	13	PASI-G
10477047030	Dup-1	EPA 8260	HNW	13	PASI-G
10477047031	Dup-2	EPA 8260	HNW	13	PASI-G
10477047032	Dup-3	EPA 8260	HNW	13	PASI-G

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-24A **Lab ID: 10477047001** Collected: 05/27/19 09:55 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/04/19 00:03	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/04/19 00:03	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/04/19 00:03	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/04/19 00:03	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/04/19 00:03	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/04/19 00:03	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/04/19 00:03	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/04/19 00:03	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/04/19 00:03	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/04/19 00:03	95-47-6	
Surrogates									
Dibromofluoromethane (S)	112	%	70-130		1		06/04/19 00:03	1868-53-7	HS
Toluene-d8 (S)	98	%	70-130		1		06/04/19 00:03	2037-26-5	
4-Bromofluorobenzene (S)	105	%	70-130		1		06/04/19 00:03	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-24B **Lab ID: 10477047002** Collected: 05/27/19 10:32 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 18:49	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 18:49	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 18:49	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 18:49	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 18:49	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 18:49	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 18:49	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 18:49	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 18:49	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 18:49	95-47-6	
Surrogates									
Dibromofluoromethane (S)	110	%	70-130		1		06/03/19 18:49	1868-53-7	HS
Toluene-d8 (S)	96	%	70-130		1		06/03/19 18:49	2037-26-5	
4-Bromofluorobenzene (S)	107	%	70-130		1		06/03/19 18:49	460-00-4	

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-15 **Lab ID: 10477047003** Collected: 05/27/19 11:30 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 19:12	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 19:12	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 19:12	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 19:12	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 19:12	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 19:12	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 19:12	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 19:12	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 19:12	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 19:12	95-47-6	
Surrogates									
Dibromofluoromethane (S)	111	%	70-130		1		06/03/19 19:12	1868-53-7	HS
Toluene-d8 (S)	99	%	70-130		1		06/03/19 19:12	2037-26-5	
4-Bromofluorobenzene (S)	105	%	70-130		1		06/03/19 19:12	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-14 **Lab ID: 10477047004** Collected: 05/27/19 12:15 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 19:34	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 19:34	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 19:34	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 19:34	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 19:34	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 19:34	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 19:34	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 19:34	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 19:34	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 19:34	95-47-6	
Surrogates									
Dibromofluoromethane (S)	113	%	70-130		1		06/03/19 19:34	1868-53-7	HS
Toluene-d8 (S)	100	%	70-130		1		06/03/19 19:34	2037-26-5	
4-Bromofluorobenzene (S)	104	%	70-130		1		06/03/19 19:34	460-00-4	

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-1 **Lab ID: 10477047005** Collected: 05/27/19 13:10 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/04/19 00:26	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/04/19 00:26	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/04/19 00:26	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/04/19 00:26	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/04/19 00:26	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/04/19 00:26	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/04/19 00:26	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/04/19 00:26	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/04/19 00:26	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/04/19 00:26	95-47-6	
Surrogates									
Dibromofluoromethane (S)	111	%	70-130		1		06/04/19 00:26	1868-53-7	HS
Toluene-d8 (S)	98	%	70-130		1		06/04/19 00:26	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130		1		06/04/19 00:26	460-00-4	

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-19A **Lab ID: 10477047006** Collected: 05/27/19 14:00 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 18:27	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 18:27	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 18:27	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 18:27	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 18:27	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 18:27	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 18:27	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 18:27	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 18:27	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 18:27	95-47-6	
Surrogates									
Dibromofluoromethane (S)	108	%	70-130		1		06/03/19 18:27	1868-53-7	HS
Toluene-d8 (S)	98	%	70-130		1		06/03/19 18:27	2037-26-5	
4-Bromofluorobenzene (S)	104	%	70-130		1		06/03/19 18:27	460-00-4	

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-19B **Lab ID: 10477047007** Collected: 05/27/19 14:45 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 19:57	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 19:57	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 19:57	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 19:57	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 19:57	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 19:57	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 19:57	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 19:57	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 19:57	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 19:57	95-47-6	
Surrogates									
Dibromofluoromethane (S)	109	%	70-130		1		06/03/19 19:57	1868-53-7	HS
Toluene-d8 (S)	95	%	70-130		1		06/03/19 19:57	2037-26-5	
4-Bromofluorobenzene (S)	107	%	70-130		1		06/03/19 19:57	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-20A **Lab ID: 10477047008** Collected: 05/28/19 09:25 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/04/19 00:48	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/04/19 00:48	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/04/19 00:48	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/04/19 00:48	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/04/19 00:48	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/04/19 00:48	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/04/19 00:48	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/04/19 00:48	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/04/19 00:48	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/04/19 00:48	95-47-6	
Surrogates									
Dibromofluoromethane (S)	110	%	70-130		1		06/04/19 00:48	1868-53-7	HS
Toluene-d8 (S)	99	%	70-130		1		06/04/19 00:48	2037-26-5	
4-Bromofluorobenzene (S)	105	%	70-130		1		06/04/19 00:48	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-20B **Lab ID: 10477047009** Collected: 05/28/19 10:05 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 20:19	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 20:19	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 20:19	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 20:19	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 20:19	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 20:19	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 20:19	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 20:19	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 20:19	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 20:19	95-47-6	
Surrogates									
Dibromofluoromethane (S)	105	%	70-130		1		06/03/19 20:19	1868-53-7	HS
Toluene-d8 (S)	94	%	70-130		1		06/03/19 20:19	2037-26-5	
4-Bromofluorobenzene (S)	108	%	70-130		1		06/03/19 20:19	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-6 **Lab ID: 10477047010** Collected: 05/28/19 11:15 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 20:42	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 20:42	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 20:42	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 20:42	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 20:42	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 20:42	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 20:42	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 20:42	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 20:42	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 20:42	95-47-6	
Surrogates									
Dibromofluoromethane (S)	108	%	70-130		1		06/03/19 20:42	1868-53-7	HS
Toluene-d8 (S)	94	%	70-130		1		06/03/19 20:42	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130		1		06/03/19 20:42	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-6B **Lab ID: 10477047011** Collected: 05/28/19 11:50 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 21:04	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 21:04	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 21:04	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 21:04	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 21:04	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 21:04	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 21:04	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 21:04	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 21:04	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 21:04	95-47-6	
Surrogates									
Dibromofluoromethane (S)	108	%	70-130		1		06/03/19 21:04	1868-53-7	HS
Toluene-d8 (S)	97	%	70-130		1		06/03/19 21:04	2037-26-5	
4-Bromofluorobenzene (S)	108	%	70-130		1		06/03/19 21:04	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-21A **Lab ID: 10477047012** Collected: 05/28/19 13:15 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 21:27	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 21:27	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 21:27	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 21:27	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 21:27	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 21:27	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 21:27	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 21:27	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 21:27	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 21:27	95-47-6	
Surrogates									
Dibromofluoromethane (S)	109	%	70-130		1		06/03/19 21:27	1868-53-7	HS
Toluene-d8 (S)	99	%	70-130		1		06/03/19 21:27	2037-26-5	
4-Bromofluorobenzene (S)	105	%	70-130		1		06/03/19 21:27	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-21B **Lab ID: 10477047013** Collected: 05/28/19 13:45 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 21:49	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 21:49	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 21:49	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 21:49	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 21:49	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 21:49	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 21:49	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 21:49	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 21:49	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 21:49	95-47-6	
Surrogates									
Dibromofluoromethane (S)	109	%	70-130		1		06/03/19 21:49	1868-53-7	HS
Toluene-d8 (S)	99	%	70-130		1		06/03/19 21:49	2037-26-5	
4-Bromofluorobenzene (S)	104	%	70-130		1		06/03/19 21:49	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-10 **Lab ID: 10477047014** Collected: 05/28/19 14:50 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 22:12	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 22:12	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 22:12	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 22:12	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 22:12	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 22:12	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 22:12	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 22:12	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 22:12	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 22:12	95-47-6	
Surrogates									
Dibromofluoromethane (S)	111	%	70-130		1		06/03/19 22:12	1868-53-7	HS
Toluene-d8 (S)	96	%	70-130		1		06/03/19 22:12	2037-26-5	
4-Bromofluorobenzene (S)	106	%	70-130		1		06/03/19 22:12	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-22B **Lab ID: 10477047015** Collected: 05/28/19 15:55 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/04/19 01:11	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/04/19 01:11	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/04/19 01:11	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/04/19 01:11	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/04/19 01:11	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/04/19 01:11	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/04/19 01:11	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/04/19 01:11	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/04/19 01:11	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/04/19 01:11	95-47-6	
Surrogates									
Dibromofluoromethane (S)	112	%	70-130		1		06/04/19 01:11	1868-53-7	HS
Toluene-d8 (S)	97	%	70-130		1		06/04/19 01:11	2037-26-5	
4-Bromofluorobenzene (S)	102	%	70-130		1		06/04/19 01:11	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-11 **Lab ID: 10477047016** Collected: 05/29/19 08:30 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/04/19 01:33	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/04/19 01:33	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/04/19 01:33	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/04/19 01:33	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/04/19 01:33	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/04/19 01:33	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/04/19 01:33	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/04/19 01:33	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/04/19 01:33	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/04/19 01:33	95-47-6	
Surrogates									
Dibromofluoromethane (S)	112	%	70-130		1		06/04/19 01:33	1868-53-7	HS
Toluene-d8 (S)	97	%	70-130		1		06/04/19 01:33	2037-26-5	
4-Bromofluorobenzene (S)	102	%	70-130		1		06/04/19 01:33	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-11B **Lab ID: 10477047017** Collected: 05/29/19 09:05 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 22:34	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 22:34	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 22:34	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 22:34	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 22:34	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 22:34	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 22:34	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 22:34	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 22:34	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 22:34	95-47-6	
Surrogates									
Dibromofluoromethane (S)	110	%	70-130		1		06/03/19 22:34	1868-53-7	HS
Toluene-d8 (S)	93	%	70-130		1		06/03/19 22:34	2037-26-5	
4-Bromofluorobenzene (S)	106	%	70-130		1		06/03/19 22:34	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-18 **Lab ID: 10477047018** Collected: 05/29/19 09:55 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 22:56	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 22:56	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 22:56	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 22:56	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 22:56	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 22:56	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 22:56	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 22:56	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 22:56	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 22:56	95-47-6	
Surrogates									
Dibromofluoromethane (S)	108	%	70-130		1		06/03/19 22:56	1868-53-7	HS
Toluene-d8 (S)	94	%	70-130		1		06/03/19 22:56	2037-26-5	
4-Bromofluorobenzene (S)	105	%	70-130		1		06/03/19 22:56	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-17 **Lab ID: 10477047019** Collected: 05/29/19 10:40 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 23:19	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 23:19	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 23:19	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 23:19	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 23:19	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 23:19	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 23:19	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 23:19	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 23:19	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 23:19	95-47-6	
Surrogates									
Dibromofluoromethane (S)	108	%	70-130		1		06/03/19 23:19	1868-53-7	HS
Toluene-d8 (S)	93	%	70-130		1		06/03/19 23:19	2037-26-5	
4-Bromofluorobenzene (S)	106	%	70-130		1		06/03/19 23:19	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-17B **Lab ID: 10477047020** Collected: 05/29/19 11:05 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 23:41	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 23:41	100-41-4	L3
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 23:41	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 23:41	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 23:41	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 23:41	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 23:41	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 23:41	1330-20-7	LS
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 23:41	179601-23-1	L3
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 23:41	95-47-6	
Surrogates									
Dibromofluoromethane (S)	110	%	70-130		1		06/03/19 23:41	1868-53-7	HS
Toluene-d8 (S)	97	%	70-130		1		06/03/19 23:41	2037-26-5	
4-Bromofluorobenzene (S)	105	%	70-130		1		06/03/19 23:41	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-5 **Lab ID: 10477047021** Collected: 05/29/19 12:15 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 11:21	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 11:21	100-41-4	
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 11:21	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 11:21	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 11:21	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 11:21	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 11:21	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 11:21	1330-20-7	
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 11:21	179601-23-1	
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 11:21	95-47-6	
Surrogates									
Dibromofluoromethane (S)	110	%	70-130		1		06/03/19 11:21	1868-53-7	HS
Toluene-d8 (S)	89	%	70-130		1		06/03/19 11:21	2037-26-5	
4-Bromofluorobenzene (S)	85	%	70-130		1		06/03/19 11:21	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-23B **Lab ID: 10477047022** Collected: 05/29/19 13:20 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 11:42	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 11:42	100-41-4	
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 11:42	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 11:42	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 11:42	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 11:42	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 11:42	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 11:42	1330-20-7	
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 11:42	179601-23-1	
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 11:42	95-47-6	
Surrogates									
Dibromofluoromethane (S)	113	%	70-130		1		06/03/19 11:42	1868-53-7	HS
Toluene-d8 (S)	88	%	70-130		1		06/03/19 11:42	2037-26-5	
4-Bromofluorobenzene (S)	86	%	70-130		1		06/03/19 11:42	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-5B **Lab ID: 10477047023** Collected: 05/29/19 14:05 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 12:04	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 12:04	100-41-4	
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 12:04	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 12:04	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 12:04	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 12:04	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 12:04	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 12:04	1330-20-7	
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 12:04	179601-23-1	
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 12:04	95-47-6	
Surrogates									
Dibromofluoromethane (S)	110	%	70-130		1		06/03/19 12:04	1868-53-7	HS
Toluene-d8 (S)	90	%	70-130		1		06/03/19 12:04	2037-26-5	
4-Bromofluorobenzene (S)	86	%	70-130		1		06/03/19 12:04	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-12 **Lab ID: 10477047024** Collected: 05/29/19 15:15 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 12:25	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 12:25	100-41-4	
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 12:25	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 12:25	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 12:25	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 12:25	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 12:25	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 12:25	1330-20-7	
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 12:25	179601-23-1	
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 12:25	95-47-6	
Surrogates									
Dibromofluoromethane (S)	112	%	70-130		1		06/03/19 12:25	1868-53-7	HS
Toluene-d8 (S)	90	%	70-130		1		06/03/19 12:25	2037-26-5	
4-Bromofluorobenzene (S)	85	%	70-130		1		06/03/19 12:25	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-26 **Lab ID: 10477047025** Collected: 05/30/19 08:50 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 12:47	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 12:47	100-41-4	
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 12:47	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 12:47	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 12:47	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 12:47	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 12:47	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 12:47	1330-20-7	
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 12:47	179601-23-1	
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 12:47	95-47-6	
Surrogates									
Dibromofluoromethane (S)	110	%	70-130		1		06/03/19 12:47	1868-53-7	HS
Toluene-d8 (S)	90	%	70-130		1		06/03/19 12:47	2037-26-5	
4-Bromofluorobenzene (S)	86	%	70-130		1		06/03/19 12:47	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-25A **Lab ID: 10477047026** Collected: 05/30/19 10:00 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 15:46	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 15:46	100-41-4	
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 15:46	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 15:46	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 15:46	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 15:46	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 15:46	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 15:46	1330-20-7	
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 15:46	179601-23-1	
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 15:46	95-47-6	
Surrogates									
Dibromofluoromethane (S)	114	%	70-130		1		06/03/19 15:46	1868-53-7	HS
Toluene-d8 (S)	89	%	70-130		1		06/03/19 15:46	2037-26-5	
4-Bromofluorobenzene (S)	84	%	70-130		1		06/03/19 15:46	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-25B **Lab ID: 10477047027** Collected: 05/30/19 10:20 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 16:07	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 16:07	100-41-4	
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 16:07	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 16:07	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 16:07	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 16:07	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 16:07	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 16:07	1330-20-7	
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 16:07	179601-23-1	
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 16:07	95-47-6	
Surrogates									
Dibromofluoromethane (S)	113	%	70-130		1		06/03/19 16:07	1868-53-7	HS
Toluene-d8 (S)	89	%	70-130		1		06/03/19 16:07	2037-26-5	
4-Bromofluorobenzene (S)	86	%	70-130		1		06/03/19 16:07	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: MW-2 **Lab ID: 10477047028** Collected: 05/30/19 11:10 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 16:29	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 16:29	100-41-4	
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 16:29	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 16:29	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 16:29	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 16:29	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 16:29	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 16:29	1330-20-7	
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 16:29	179601-23-1	
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 16:29	95-47-6	
Surrogates									
Dibromofluoromethane (S)	114	%	70-130		1		06/03/19 16:29	1868-53-7	HS
Toluene-d8 (S)	90	%	70-130		1		06/03/19 16:29	2037-26-5	
4-Bromofluorobenzene (S)	85	%	70-130		1		06/03/19 16:29	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: Trip Blank **Lab ID: 10477047029** Collected: 05/27/19 00:00 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 15:24	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 15:24	100-41-4	
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 15:24	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 15:24	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 15:24	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 15:24	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 15:24	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 15:24	1330-20-7	
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 15:24	179601-23-1	
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 15:24	95-47-6	
Surrogates									
Dibromofluoromethane (S)	112	%	70-130		1		06/03/19 15:24	1868-53-7	HS
Toluene-d8 (S)	91	%	70-130		1		06/03/19 15:24	2037-26-5	
4-Bromofluorobenzene (S)	88	%	70-130		1		06/03/19 15:24	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street - Suite 200
Minneapolis, MN 55414
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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: Dup-1 **Lab ID: 10477047030** Collected: 05/28/19 00:00 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 16:50	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 16:50	100-41-4	
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 16:50	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 16:50	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 16:50	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 16:50	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 16:50	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 16:50	1330-20-7	
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 16:50	179601-23-1	
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 16:50	95-47-6	
Surrogates									
Dibromofluoromethane (S)	113	%	70-130		1		06/03/19 16:50	1868-53-7	HS
Toluene-d8 (S)	90	%	70-130		1		06/03/19 16:50	2037-26-5	
4-Bromofluorobenzene (S)	85	%	70-130		1		06/03/19 16:50	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: Dup-2 **Lab ID: 10477047031** Collected: 05/28/19 00:00 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 17:12	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 17:12	100-41-4	
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 17:12	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 17:12	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 17:12	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 17:12	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 17:12	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 17:12	1330-20-7	
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 17:12	179601-23-1	
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 17:12	95-47-6	
Surrogates									
Dibromofluoromethane (S)	113	%	70-130		1		06/03/19 17:12	1868-53-7	HS
Toluene-d8 (S)	90	%	70-130		1		06/03/19 17:12	2037-26-5	
4-Bromofluorobenzene (S)	84	%	70-130		1		06/03/19 17:12	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Sample: Dup-3 **Lab ID: 10477047032** Collected: 05/30/19 00:00 Received: 05/30/19 19:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		06/03/19 17:33	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		06/03/19 17:33	100-41-4	
Methyl-tert-butyl ether	**<1.2**	ug/L	4.2	1.2	1		06/03/19 17:33	1634-04-4	
Naphthalene	**<1.2**	ug/L	5.0	1.2	1		06/03/19 17:33	91-20-3	
Toluene	**<0.17**	ug/L	5.0	0.17	1		06/03/19 17:33	108-88-3	
1,2,4-Trimethylbenzene	**<0.84**	ug/L	2.8	0.84	1		06/03/19 17:33	95-63-6	
1,3,5-Trimethylbenzene	**<0.87**	ug/L	2.9	0.87	1		06/03/19 17:33	108-67-8	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		06/03/19 17:33	1330-20-7	
m&p-Xylene	**<0.47**	ug/L	2.0	0.47	1		06/03/19 17:33	179601-23-1	
o-Xylene	**<0.26**	ug/L	1.0	0.26	1		06/03/19 17:33	95-47-6	
Surrogates									
Dibromofluoromethane (S)	112	%	70-130		1		06/03/19 17:33	1868-53-7	HS
Toluene-d8 (S)	91	%	70-130		1		06/03/19 17:33	2037-26-5	
4-Bromofluorobenzene (S)	86	%	70-130		1		06/03/19 17:33	460-00-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

QC Batch: 323064 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 10477047001, 10477047002, 10477047003, 10477047004, 10477047005, 10477047006, 10477047007, 10477047008, 10477047009, 10477047010, 10477047011, 10477047012, 10477047013, 10477047014, 10477047015, 10477047016, 10477047017, 10477047018, 10477047019, 10477047020

METHOD BLANK: 1876533 Matrix: Water
Associated Lab Samples: 10477047001, 10477047002, 10477047003, 10477047004, 10477047005, 10477047006, 10477047007, 10477047008, 10477047009, 10477047010, 10477047011, 10477047012, 10477047013, 10477047014, 10477047015, 10477047016, 10477047017, 10477047018, 10477047019, 10477047020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	06/03/19 16:34	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	06/03/19 16:34	
Benzene	ug/L	<0.25	1.0	06/03/19 16:34	
Ethylbenzene	ug/L	<0.22	1.0	06/03/19 16:34	
m&p-Xylene	ug/L	<0.47	2.0	06/03/19 16:34	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	06/03/19 16:34	
Naphthalene	ug/L	<1.2	5.0	06/03/19 16:34	
o-Xylene	ug/L	<0.26	1.0	06/03/19 16:34	
Toluene	ug/L	<0.17	5.0	06/03/19 16:34	
Xylene (Total)	ug/L	<1.5	3.0	06/03/19 16:34	
4-Bromofluorobenzene (S)	%	109	70-130	06/03/19 16:34	
Dibromofluoromethane (S)	%	109	70-130	06/03/19 16:34	
Toluene-d8 (S)	%	94	70-130	06/03/19 16:34	

LABORATORY CONTROL SAMPLE: 1876534

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	60.8	122	70-130	
Ethylbenzene	ug/L	50	63.7	127	80-124	L1
m&p-Xylene	ug/L	100	131	131	70-130	L1
Methyl-tert-butyl ether	ug/L	50	54.2	108	54-137	
o-Xylene	ug/L	50	64.5	129	70-130	
Toluene	ug/L	50	57.3	115	80-126	
Xylene (Total)	ug/L	150	195	130	70-130	LS
4-Bromofluorobenzene (S)	%			113	70-130	
Dibromofluoromethane (S)	%			106	70-130	
Toluene-d8 (S)	%			102	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1877019 1877020

Parameter	Units	10477047006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	<0.25	50	50	55.9	57.3	112	115	70-130	2	20	
Ethylbenzene	ug/L	<0.22	50	50	58.5	57.7	117	115	80-125	1	20	
m&p-Xylene	ug/L	<0.47	100	100	118	119	118	119	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1877019 1877020

Parameter	Units	10477047006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl-tert-butyl ether	ug/L	<1.2	50	50	51.7	52.2	103	104	51-145	1	20	
o-Xylene	ug/L	<0.26	50	50	59.2	58.3	118	117	70-130	1	20	
Toluene	ug/L	<0.17	50	50	52.5	53.7	105	107	80-131	2	20	
Xylene (Total)	ug/L	<1.5	150	150	177	177	118	118	70-130	0	20	
4-Bromofluorobenzene (S)	%						113	113	70-130			
Dibromofluoromethane (S)	%						108	108	70-130			HS
Toluene-d8 (S)	%						98	102	70-130			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

QC Batch: 323066 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 10477047021, 10477047022, 10477047023, 10477047024, 10477047025, 10477047026, 10477047027, 10477047028, 10477047029, 10477047030, 10477047031, 10477047032

METHOD BLANK: 1876535 Matrix: Water
Associated Lab Samples: 10477047021, 10477047022, 10477047023, 10477047024, 10477047025, 10477047026, 10477047027, 10477047028, 10477047029, 10477047030, 10477047031, 10477047032

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	06/03/19 07:03	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	06/03/19 07:03	
Benzene	ug/L	<0.25	1.0	06/03/19 07:03	
Ethylbenzene	ug/L	<0.22	1.0	06/03/19 07:03	
m&p-Xylene	ug/L	<0.47	2.0	06/03/19 07:03	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	06/03/19 07:03	
Naphthalene	ug/L	<1.2	5.0	06/03/19 07:03	
o-Xylene	ug/L	<0.26	1.0	06/03/19 07:03	
Toluene	ug/L	<0.17	5.0	06/03/19 07:03	
Xylene (Total)	ug/L	<1.5	3.0	06/03/19 07:03	
4-Bromofluorobenzene (S)	%	86	70-130	06/03/19 07:03	
Dibromofluoromethane (S)	%	107	70-130	06/03/19 07:03	
Toluene-d8 (S)	%	90	70-130	06/03/19 07:03	

LABORATORY CONTROL SAMPLE: 1876536

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	44.7	89	70-130	
Ethylbenzene	ug/L	50	51.1	102	80-124	
m&p-Xylene	ug/L	100	109	109	70-130	
Methyl-tert-butyl ether	ug/L	50	39.4	79	54-137	
o-Xylene	ug/L	50	54.1	108	70-130	
Toluene	ug/L	50	48.6	97	80-126	
Xylene (Total)	ug/L	150	163	108	70-130	
4-Bromofluorobenzene (S)	%			97	70-130	
Dibromofluoromethane (S)	%			106	70-130	
Toluene-d8 (S)	%			91	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1876553 1876554

Parameter	Units	40188522001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	<0.25	50	50	45.7	46.7	91	93	70-130	2	20	
Ethylbenzene	ug/L	<0.22	50	50	52.7	52.4	105	105	80-125	0	20	
m&p-Xylene	ug/L	<0.47	100	100	114	112	114	112	70-130	1	20	
Methyl-tert-butyl ether	ug/L	<1.2	50	50	40.5	41.4	81	83	51-145	2	20	
o-Xylene	ug/L	<0.26	50	50	55.3	55.1	111	110	70-130	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1876553 1876554

Parameter	Units	40188522001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Toluene	ug/L	<0.17	50	50	50.1	50.3	100	100	80-131	0	20	
Xylene (Total)	ug/L	<1.5	150	150	169	168	113	112	70-130	1	20	
4-Bromofluorobenzene (S)	%						99	99	70-130			
Dibromofluoromethane (S)	%						106	110	70-130			
Toluene-d8 (S)	%						93	92	70-130			

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

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, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

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-G	Pace Analytical Services - Green Bay

ANALYTE QUALIFIERS

HS	Results are from sample aliquot taken from VOA vial with headspace (air bubble greater than 6 mm diameter).
L1	Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results may be biased high.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples.
LS	Analyte recovery in the laboratory control sample (LCS) was outside QC limits for one or more of the constituent analytes used in the calculated result.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 49161446.00 ENB Superior Term
Pace Project No.: 10477047

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10477047001	**MW-24A**	EPA 8260	323064		
10477047002	**MW-24B**	EPA 8260	323064		
10477047003	**MW-15**	EPA 8260	323064		
10477047004	**MW-14**	EPA 8260	323064		
10477047005	**MW-1**	EPA 8260	323064		
10477047006	**MW-19A**	EPA 8260	323064		
10477047007	**MW-19B**	EPA 8260	323064		
10477047008	**MW-20A**	EPA 8260	323064		
10477047009	**MW-20B**	EPA 8260	323064		
10477047010	**MW-6**	EPA 8260	323064		
10477047011	**MW-6B**	EPA 8260	323064		
10477047012	**MW-21A**	EPA 8260	323064		
10477047013	**MW-21B**	EPA 8260	323064		
10477047014	**MW-10**	EPA 8260	323064		
10477047015	**MW-22B**	EPA 8260	323064		
10477047016	**MW-11**	EPA 8260	323064		
10477047017	**MW-11B**	EPA 8260	323064		
10477047018	**MW-18**	EPA 8260	323064		
10477047019	**MW-17**	EPA 8260	323064		
10477047020	**MW-17B**	EPA 8260	323064		
10477047021	**MW-5**	EPA 8260	323066		
10477047022	**MW-23B**	EPA 8260	323066		
10477047023	**MW-5B**	EPA 8260	323066		
10477047024	**MW-12**	EPA 8260	323066		
10477047025	**MW-26**	EPA 8260	323066		
10477047026	**MW-25A**	EPA 8260	323066		
10477047027	**MW-25B**	EPA 8260	323066		
10477047028	**MW-2**	EPA 8260	323066		
10477047029	**Trip Blank**	EPA 8260	323066		
10477047030	**Dup-1**	EPA 8260	323066		
10477047031	**Dup-2**	EPA 8260	323066		
10477047032	**Dup-3**	EPA 8260	323066		

Barr Engineering Co. Chain of Custody

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

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

COC Number: 58094
COC 1 of 4

REPORT TO	INVOICE TO
Company: Barr Engineering	Company: Barr
Address: 325 S. Lake Ave. Duluth MN	Address:
Name: Lynette Carney	Name:
email: lmc@barr.com	email:
Copy to: datamgt@barr.com	P.O. —
Project Name: ENB Superior Terminal GMP	Barr Project No: 49161446.00

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 40ml VOA vials	Water B	Water 1	Soil	% Solids	Preservative Code / Field Filtered Y/N
1. MW-24A				05/27/19	0955	GW	N	3	3			001		PVOC + Naphthalene
2. MW-24B					1032			3	3			002		
3. MW-15					1130			3	3			003		
4. MW-14					1215			3	3			004		
5. MW-1					1310			3	3			005		
6. MW-19A					1400			3	3			006		
7. MW-19B					1445			3	3			007		
8. MW-20A				05/28/19	0925			3	3			008		
9. MW-20B					1005			3	3			009		
10. MW-6					1115			3	3			010		

WO#: 10477047
10477047

BARR USE ONLY	Relinquished by:	On Ice? Y / N	Date	Time	Received by:	Date	Time
Sampled by: KMTJ3		Y	5/30/19	1206		5/30/19	12:06
Barr Proj. Manager: LMC	Relinquished by:	On Ice? Y / N	Date	Time	Received by:	Date	Time
Barr DQ Manager: LMC			5-30-19	1845	GW Pace T=1.2°C	5.30.19	1900
Lab Name: Pace	Samples Shipped VIA: ☐ Courier ☐ Federal Express ☑ Sampler ☐ Other:				Air Bill Number:		
Lab Location: MSP	Lab WO:		Temperature on Receipt (°C): 4.1		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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Barr Engineering Co. Chain of Custody

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

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

COC Number: **58095**
COC 2 of 4

REPORT TO	INVOICE TO
Company: Barr Engineering	Company: Barr
Address: 325 S. Lake Ave, Duluth MN	Address:
Name: Lynette Carney	Name:
email: lmc@barr.com	email:
Copy to: datamgt@barr.com	P.O. —
Project Name: ENB superior terminal GMP	Barr Project No: 49161446.06

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	40 ml VOA Vials	B	1	% Solids	Preservative Code	Field Filtered Y/N
1. MW-6B				05/28/19	1150	GW	N	3	3			011	PVOC + Naphthalene	
2. MW-21A					1315			3	3			012		
3. MW-21B					1345			3	3			013		
4. MW-10					1450			3	3			014		
5. MW-22B					1555			3	3			015		
6. MW-11				05/29/19	0830			3	3			016		
7. MW-11B					0905			3	3			017		
8. MW-18					0955			3	3			018		
9. MW-17					1040			3	3			019		
10. MW-17B					1105			3	3			020		

BARR USE ONLY

Sampled by: MMJ
Barr Proj. Manager: LMC
Barr DQ Manager: LMC
Lab Name: Pace
Lab Location: MSP

Relinquished by: [signature] — On Ice? (Y) N — Date 5/30/19 — Time 1206
Received by: [signature] — Date 5/30/19 — Time 12:06

Relinquished by: [signature] — On Ice? Y N — Date 5-30-19 — Time 1845
Received by: GW Pace T = 1.2°C — Date 5.30.19 — Time 1900

Samples Shipped VIA: ☐ Courier ☐ Federal Express ☑ Sampler ☐ Other: ____
Air Bill Number:

Lab WO: Temperature on Receipt (°C): 4.1 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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Barr Engineering Co. Chain of Custody

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

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

COC Number: **58096**
COC 3 of 4

REPORT TO	INVOICE TO
Company: Barr Engineering	Company: Barr
Address: 325 S. Lake Ave. Duluth	Address:
Name: Lynette Larvay	Name:
email: lmc@barr.com	email:
Copy to: datamgt@barr.com	P.O. —
Project Name: ENB Superior Terminal CMP	Barr Project No: 49164446.00

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	40ml VOA Vials	% Solids	Preservative Code	Field Filtered Y/N
1. MW-5	—	—	—	05/29/19	1215	GW	N	3	3	021	PAH + Naphthalene	
2. MW-23B	—	—	—		1320			3	3	022		
3. MW-5B	—	—	—		1405			3	3	023		
4. MW-12	—	—	—	↓	1515			3	3	024		
5. MW-26	—	—	—	05/30/19	0850			3	3	025		
6. MW-25A	—	—	—		1000			3	3	026		
7. MW-25B	—	—	—		1020			3	3	027		
8. MW-2	—	—	—	↓	1110	↓		3	3	028		
9. Trip Blank	—	—	—	—	—	—		2	2	029		
10. Dup-1	—	—	—	05/20/19	—	—	↓	3	3	030	↓	

BARR USE ONLY

Sampled by: KMJ3
Barr Proj. Manager: LMC
Barr DQ Manager: LMC
Lab Name: Pace
Lab Location: MISP

Relinquished by: [signature] — On Ice? (Y) N — Date 5/30/19 — Time 1206
Received by: [signature] — Date 5/30/19 — Time 12:06

Relinquished by: [signature] — On Ice? Y N — Date 5/30/19 — Time 1845
Received by: COMPACE — T=1.2°C — Date 5.30.19 — Time 1900

Samples Shipped VIA: ☐ Courier ☐ Federal Express ☑ Sampler ☐ Other: ____
Air Bill Number:

Lab WO: Temperature on Receipt (°C): 4.1 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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Barr Engineering Co. Chain of Custody

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

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

COC Number: **58098**
COC 4 of 4

REPORT TO	INVOICE TO
Company: Barr Engineering	Company: Barr
Address: 325 S. Lake Ave. Duluth MN	Address:
Name: Lynette Carney	Name:
email: LMC@barr.com	email:
Copy to: datamgt@barr.com	P.O. —
Project Name: ENB Superior Terminal CMP	Barr Project No: 49161446.00

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: 40 mL VOA vials	Water: B	Water: 1	Soil: % Solids	Preservative Code	Field Filtered Y/N
1. Dup-2	—	—	—	05/28/19	—	—	N	3	3			031	PVOC + Naphthalene	
2. Dup-3	—	—	—	05/30/19	—	—	N	3	3			032	↓	
3.														
4.														
5.														
6.														
7.														
8.														
9.														
10.														

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

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

BARR USE ONLY

Sampled by: KMJ
Barr Proj. Manager: LMC
Barr DQ Manager: LMC
Lab Name: Pace
Lab Location: MSP

Relinquished by: [signature] — On Ice? 0 N — Date 5/30/19 — Time 1206 — Received by: [signature] — Date 5/30/19 — Time 12:06

Relinquished by: [signature] — On Ice? Y N — Date 5.30.19 — Time 1645 — Received by: Cold Space T=1.2°C — Date 5.30.19 — Time 1900

Samples Shipped VIA: ☐ Courier ☐ Federal Express ☑ Sampler ☐ Other: ____ — Air Bill Number:

Lab WO: — Temperature on Receipt (°C): 4.1 — 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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Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 09May2019 Page 1 of 1
	Document No.: F-MN-L-213-rev.28	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Barr Engineering

Project #: WO#: 10477047

PM: AA1 Due Date: 06/07/19

CLIENT: BARR

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☒Pace ☐SpeeDee ☐Commercial See Exception ☐

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐Yes ☒No **Seals Intact?** ☐Yes ☒No **Biological Tissue Frozen?** ☐Yes ☐No ☒N/A

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

Thermometer: ☐T1(0461) ☒T2(1336) ☐T3(0459) ☐T4(0254) ☐T5(0489) **Type of Ice:** ☒Wet ☐Blue ☐None ☐Dry ☐Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C	Cooler Temp Read w/temp blank: 1.1 °C	Average Corrected Temp (no temp blank only): °C See Exceptions ☐
Correction Factor: +0.1	Cooler Temp Corrected w/temp blank: 1.2 °C	

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

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

Date/Initials of Person Examining Contents: GN 5/30/19

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 and Filled Out?	☒Yes	☐No		1.
Chain of Custody Relinquished?	☒Yes	☐No		2.
Sampler Name and/or Signature on COC?	☒Yes	☐No	☐N/A	3.
Samples Arrived within Hold Time?	☒Yes	☐No		4.
Short Hold Time Analysis (<72 hr)?	☐Yes	☒No		5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☐Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other_____
Rush Turn Around Time Requested?	☐Yes	☒No		6.
Sufficient Volume?	☒Yes	☐No		7.
Correct Containers Used?	☒Yes	☐No		8.
-Pace Containers Used?	☒Yes	☐No		
Containers Intact?	☒Yes	☐No		9.
Field Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☒N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC?	☒Yes	☐No		11. **If no, write ID/ Date/Time on Container Below:** See Exception ☐
Matrix: ☒Water ☐Soil ☐Oil ☐Other_____				
All containers needing acid/base preservation have been checked?	☐Yes	☐No	☒N/A	12. Sample #
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)	☐Yes	☐No	☒N/A	☐NaOH ☐HNO_3 ☐H_2SO_4 ☐Zinc Acetate
Exceptions: VOA Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☒Yes	☐No	☐N/A	Positive for Res. Chlorine? ☐Yes ☐No pH Paper Lot# See Exception ☐
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Headspace in VOA Vials (greater than 6mm)?	☒Yes	☐No	☐N/A	13. See Exception ☒
Trip Blank Present?	☒Yes	☐No	☐N/A	14.
Trip Blank Custody Seals Present?	☒Yes	☐No	☐N/A	Pace Trip Blank Lot # (if purchased): 207700

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

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: Amanda J Albrecht Date: 5/31/19

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).

Labeled by: _____

Pace Analytical	Document Name: **Headspace Exception**	Document Revised: 17Dec2018 Page 1 of 1
	Document No.: **F-MN-C-276-Rev.01**	Issuing Authority: Pace Minnesota Quality Office

Sample ID	Headspace greater than 6mm	Headspace less than 6mm	No Headspace	Total Vials	Sediment Present?
MW-24A	0	3	0	3	Yes
MW-24B	1	2	0	3	Yes
MW-15	1	1	1	3	Yes
MW-14	0	3	0	3	Yes
MW-1	0	3	0	3	Yes
MW-19A	0	3	0	3	Yes
MW-19B	0	3	0	3	Yes
MW-20A	0	3	0	3	Yes
MW-20B	0	3	0	3	Yes
MW-6	0	3	0	3	Yes
MW-6B	0	3	0	3	Yes
MW-21A	0	3	0	3	Yes

Pace Analytical	Document Name: **Headspace Exception**	Document Revised: 17Dec2018 Page 1 of 1
	Document No.: **F-MN-C-276-Rev.01**	Issuing Authority: Pace Minnesota Quality Office

Sample ID	Headspace greater than 6mm	Headspace less than 6mm	No Headspace	Total Vials	Sediment Present?
MW-21B	0	3	0	3	Yes
MW-10	1	2	0	3	Yes
MW-22B	3	0	0	3	Yes
MW-11	2	1	0	3	Yes
MW-11B	1	2	0	3	Yes
MW-18	0	3	0	3	Yes
MW-17	0	3	0	3	Yes
MW-17B	0	2	1	3	Yes
MW-5 ~~MW-15~~ GW 25/30/19	0	3	0	3	Yes
MW-23B	2	1	0	3	Yes
MW-5B	1	1	1	3	Yes
MW-12	3	0	0	3	Yes

Pace Analytical	Document Name: **Headspace Exception**	Document Revised: 17Dec2018 Page 1 of 1
	Document No.: **F-MN-C-276-Rev.01**	Issuing Authority: Pace Minnesota Quality Office

Sample ID	Headspace greater than 6mm	Headspace less than 6mm	No Headspace	Total Vials	Sediment Present?
MW-26	0	1	2	3	Yes
MW-25A	0	3	0	3	Yes
MW-25B	0	3	0	3	Yes
MW-2	0	3	0	3	Yes
Trip Blank	2	0	0	2	NO
DUP-1	1	2	0	3	Yes
DUP-2	2	1	0	3	Yes
DUP-3	0	1	2	3	Yes

Barr Engineering Co. Chain of Custody

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

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

COC Number: **58095**

COC 2 of 4

REPORT TO		INVOICE TO	
Company:	Barr Engineering	Company:	Barr
Address:	325 S. Lake Ave, Duluth MN	Address:	↓
Name:	Lynette Carney	Name:	↓
email:	lmc@barr.com	email:	↓
Copy to:	datamgt@barr.com	P.O.	—
Project Name:	EWB Superior Terminal GMP	Barr Project No:	49161446.06

Analysis Requested: Water / Soil — 40 ml VOA Vials; Preservative Code: B; Field Filtered Y/N: —; % Solids

	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	40 ml VOA Vials	Comments
1.	MW-6B	—	—	—	05/28/19	1150	GW	N	3	3	PVOC + Naphthalene
2.	MW-21A	—	—	—	↓	1315	↓		3	3	↓
3.	MW-21B	—	—	—	↓	1345	↓		3	3	↓
4.	MW-10	—	—	—	↓	1450	↓		3	3	↓
5.	MW-22B	—	—	—	↓	1555	↓		3	3	↓
6.	MW-11	—	—	—	05/29/19	0830	↓		3	3	↓
7.	MW-11B	—	—	—	↓	0905	↓		3	3	↓
8.	MW-18	—	—	—	↓	0955	↓		3	3	↓
9.	MW-17	—	—	—	↓	1040	↓		3	3	↓
10.	MW-17B	—	—	—	↓	1105	↓		3	3	↓

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

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

BARR USE ONLY

Sampled by: WMTJ
Barr Proj. Manager: LMC
Barr DQ Manager: LMC
Lab Name: PACE
Lab Location: MPLS

Relinquished by:	On Ice?	Date	Time	Received by:	Date	Time
[signature]	ⓨ N	5/30/19	1206	[signature]	5/30/19	12:06
	Y N					

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

Air Bill Number:

Lab WO:

Temperature on Receipt (°C): 4.1 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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Barr Engineering Co. Chain of Custody

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

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

COC Number: **58096**

COC 3 of 4

REPORT TO	INVOICE TO
Company: Barr Engineering	Company: Barr
Address: 325 S. Lake Ave. Duluth	Address:
Name: Lynette Carney	Name:
email: lmc@barr.com	email:
Copy to: datamgt@barr.com	P.O. —
Project Name: ENB Superior Terminal GWP	Barr Project No: 49164446.00

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	Water: 40ml VOA HCl	Water	Water	Water	Water	Water	Soil	Soil	Soil	Soil	Soil	Soil	% Solids	Preservative Code	Field Filtered Y/N
1. MW-5	—	—		05/29/19	1215	GW	N	3	3													pVOC + Naphthalene	
2. MW-23B	—	—			1320			3	3														
3. MW-5B	—	—			1405			3	3														
4. MW-12	—	—		↓	1515			3	3														
5. MW-26	—	—		05/30/19	0850			3	3														
6. MW-25A	—	—			1000			3	3														
7. MW-25B	—	—			1020			3	3														
8. MW-2	—	—		↓	1110	↓		3	3														
9. Trip Blank	—	—		—	—	—		2	2														
10. Dup-1	—	—		05/28/19	—	—		3	3													↓	

BARR USE ONLY

Sampled by: KMJ3

Barr Proj. Manager: LMC

Barr DQ Manager: LMC

Lab Name: Pace

Lab Location: MIDP

	On Ice? (Y) N	Date	Time		Date	Time
Relinquished by:		5/30/19	1206	Received by:	5/30/19	12:06
Relinquished by:	On Ice? Y N	Date	Time	Received by:	Date	Time

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

Air Bill Number:

Lab WO: Temperature on Receipt (°C): 4.1 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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Barr Engineering Co. Chain of Custody

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

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

COC Number: **58098**

COC 4 of 4

REPORT TO	INVOICE TO
Company: Barr Engineering	Company: Barr
Address: 325 S. Lake Ave. Duluth MN	Address:
Name: Lynette Carney	Name:
email: LMC@barr.com	email:
Copy to: datamgt@barr.com	P.O. —
Project Name: ENB Superior Terminal CMP	Barr Project No: 49161446.00

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 — 40 ml VOA vial	Soil — % Solids	Preservative Code	Field Filtered Y/N
1. Dup-2	—	—	—	05/28/19	—	—	N	3	3		pVOC + Naphthalene	
2. Dup-3	—	—	—	05/30/19	—	—	N	3	3		↓	
3.												
4.												
5.												
6.												
7.												
8.												
9.												
10.												

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

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

BARR USE ONLY

Sampled by: [illegible]

Barr Proj. Manager: LMC

Barr DQ Manager: LMC

Lab Name: Pace

Lab Location: MSP

Relinquished by: [signature] — On Ice? Y (0) N — Date 5/30/19 — Time 1206

Received by: [signature] — Date 5/30/19 — Time 12:06

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

Received by: — Date — Time

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

Air Bill Number:

Lab WO: — Temperature on Receipt (°C): 4.1 — Custody Seal Intact? ☐ Y ☐ N ☑ None

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

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

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

40188692

Chain of Custody

MSC

Pace Analytical
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: WI
Cert. Needed: ☑ Yes ☐ No
Owner Received Date: 5/30/2019 Results Requested By: 6/14/2019

Workorder: 10477047 **Workorder Name:** 49161446.00 ENB Superior Term

Report To	Subcontract To
Amanda Albrecht Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6382	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers						Requested Analysis													LAB USE ONLY
							HCL	VG9H				PVOC by 8260 (Pace-Green Bay)														
1	MW-24A	PS	5/27/2019 09:55	10477047001	Water	3						X													001
2	MW-24B	PS	5/27/2019 10:32	10477047002	Water	3						X													002
3	MW-15	PS	5/27/2019 11:30	10477047003	Water	3						X													003
4	MW-14	PS	5/27/2019 12:15	10477047004	Water	3						X													004
5	MW-1	PS	5/27/2019 13:10	10477047005	Water	3						X													005
6	MW-19A	PS	5/27/2019 14:00	10477047006	Water	3						X													006
7	MW-19B	PS	5/27/2019 14:45	10477047007	Water	3						X													007
8	MW-20A	PS	5/28/2019 09:25	10477047008	Water	3						X													008
9	MW-20B	PS	5/28/2019 10:05	10477047009	Water	3						X													009
10	MW-6	PS	5/28/2019 11:15	10477047010	Water	3						X													010
11	MW-6B	PS	5/28/2019 11:50	10477047011	Water	3						X													011
12	MW-21A	PS	5/28/2019 13:15	10477047012	Water	3						X													012
13	MW-21B	PS	5/28/2019 13:45	10477047013	Water	3						X													013
14	MW-10	PS	5/28/2019 14:50	10477047014	Water	3						X													014
15	MW-22B	PS	5/28/2019 15:55	10477047015	Water	3						X													015
16	MW-11	PS	5/29/2019 08:30	10477047016	Water	3						X													016
17	MW-11B	PS	5/29/2019 09:05	10477047017	Water	3						X													017
18	MW-18	PS	5/29/2019 09:55	10477047018	Water	3						X													018
19	MW-17	PS	5/29/2019 10:40	10477047019	Water	3						X													019

40188692

Chain of Custody

Pace Analytical
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: WI
Cert. Needed: ☒ Yes ☐ No
Owner Received Date: 5/30/2019 **Results Requested By:** 6/14/2019

Workorder: 10477047 **Workorder Name:** 49161446.00 ENB Superior Term

Report To	Subcontract To
Amanda Albrecht Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6382	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HCL	Preserved Containers: VG9H	PVOC by 8260 (Pace-Green Bay)	LAB USE ONLY
20	MW-17B	PS	5/29/2019 11:05	10477047020	Water	3		X	020
21	MW-5	PS	5/29/2019 12:15	10477047021	Water	3		X	021
22	MW-23B	PS	5/29/2019 13:20	10477047022	Water	3		X	022
23	MW-5B	PS	5/29/2019 14:05	10477047023	Water	3		X	023
24	MW-12	PS	5/29/2019 15:15	10477047024	Water	3		X	024
25	MW-26	PS	5/30/2019 08:50	10477047025	Water	3		X	025
26	MW-25A	PS	5/30/2019 10:00	10477047026	Water	3		X	026
27	MW-25B	PS	5/30/2019 10:20	10477047027	Water	3		X	027
28	MW-2	PS	5/30/2019 11:10	10477047028	Water	3		X	028
29	Trip Blank	PS	5/27/2019 00:00	10477047029	Water	2		X	029
30	Dup-1	PS	5/28/2019 00:00	10477047030	Water	3		X	030
31	Dup-2	PS	5/28/2019 00:00	10477047031	Water	3		X	031
32	Dup-3	PS	5/30/2019 00:00	10477047032	Water	3		X	032

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] Pace	5/31/19 1440	Walt CO	5/31/19 1440
2	Walt CO	6/1/19 855	Jose Pace	6/1/2019 855
3				

Comments

BTEX, MTBE, 124 and 135 TMB, Naphthalene
*total xylenes, speciated xylenes

Cooler Temperature on Receipt 3.7 °C **Custody Seal** Y or N **Received on Ice** Y or N **Samples Intact** Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

40188692

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 09May2019 Page 1 of 1
	Document No.: F-MN-L-213-rev.28	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt Client Name: Barr Engineering Project #: **WO#: 10477047**

PM: AA1 **Due Date: 06/07/19** **CLIENT: BARR**

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☒Pace ☐SpeeDee ☐Commercial See Exception ☐

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐Yes ☒No Seals Intact? ☐Yes ☒No Biological Tissue Frozen? ☐Yes ☐No ☒N/A

Packing Material: ☐Bubble Wrap ☒Bubble Bags ☐None ☐Other: _____ Temp Blank? ☒Yes ☐No

Thermometer: ☐T1(0461) ☒T2(1336) ☐T3(0459) ☐T4(0254) ☐T5(0489) Type of Ice: ☒Wet ☐Blue ☐None ☐Dry ☐Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C	Cooler Temp Read w/temp blank: 1.1 °C	Average Corrected Temp (no temp blank only): °C See Exceptions ☐
Correction Factor: +0.1	Cooler Temp Corrected w/temp blank: 1.2 °C	

USDA Regulated Soil: (☒N/A, water sample/Other: _____) Date/Initials of Person Examining Contents: GN 5/30/19

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 and Filled Out?	☒Yes ☐No	1.
Chain of Custody Relinquished?	☒Yes ☐No	2.
Sampler Name and/or Signature on COC?	☒Yes ☐No ☐N/A	3.
Samples Arrived within Hold Time?	☒Yes ☐No	4.
Short Hold Time Analysis (<72 hr)?	☐Yes ☒No	5. ☐Fecal Coliform ☐HPC ☐Total Coliform/E coli ☐BOD/cBOD ☐Hex Chrome ☐Turbidity ☐Nitrate ☐Nitrite ☐Orthophos ☐Other
Rush Turn Around Time Requested?	☐Yes ☒No	6.
Sufficient Volume?	☒Yes ☐No	7.
Correct Containers Used? -Pace Containers Used?	☒Yes ☐No ☒Yes ☐No	8.
Containers Intact?	☒Yes ☐No	9.
Field Filtered Volume Received for Dissolved Tests?	☐Yes ☐No ☒N/A	10. Is sediment visible in the dissolved container? ☐Yes ☐No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☒Water ☐Soil ☐Oil ☐Other	☒Yes ☐No	11. If no, write ID/ Date/Time on Container Below: See Exception ☐
All containers needing acid/base preservation have been checked?	☐Yes ☐No ☒N/A	12. Sample #
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)	☐Yes ☐No ☒N/A	☐NaOH ☐HNO_3 ☐H_2SO_4 ☐Zinc Acetate
Exceptions: VOA Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☒Yes ☐No ☐N/A	Positive for Res. Chlorine? ☐Yes ☐No pH Paper Lot# See Exception ☐
		Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Headspace in VOA Vials (greater than 6mm)?	☒Yes ☐No ☐N/A	13. See Exception ☒
Trip Blank Present?	☒Yes ☐No ☐N/A	14.
Trip Blank Custody Seals Present?	☒Yes ☐No ☐N/A	Pace Trip Blank Lot # (if purchased): 207700

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: _____ Date/Time: _____ Field Data Required? ☐Yes ☐No

Comments/Resolution: _____

Project Manager Review: Amanda J Albrecht Date: 5/31/19

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).

Labeled by: _____

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: Pace MN Project # 40188692

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☒N/A Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass							Plastic							Vials						Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3B	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN							
001																		3									3						2.5 / 5 / 10
002																		3									3						2.5 / 5 / 10
003																		3									3						2.5 / 5 / 10
004																		3									3						2.5 / 5 / 10
005																		3									3						2.5 / 5 / 10
006																		3									3						2.5 / 5 / 10
007																		3									3						2.5 / 5 / 10
008																		3									3						2.5 / 5 / 10
009																		3									3						2.5 / 5 / 10
010																		3									3						2.5 / 5 / 10
011																		3									3						2.5 / 5 / 10
012																		3									3						2.5 / 5 / 10
013																		3									3						2.5 / 5 / 10
014																		3									3						2.5 / 5 / 10
015																		3									3						2.5 / 5 / 10
016																		3									3						2.5 / 5 / 10
017																		3									3						2.5 / 5 / 10
018																		3									3						2.5 / 5 / 10
019																		3									3						2.5 / 5 / 10
020																		3									2						2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm): ☒Yes ☐No ☐N/A ***If yes look in headspace column**

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3B	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			GN:	

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: Pace MN Project #: 40188692

Pace Lab #	Glass AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	Plastic BP1U	BP2N	BP2Z	BP3U	BP3B	BP3N	BP3S	Vials DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	Jars JGFU	WGFU	WPFU	General SP5T	ZPLC	GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
021																		3									3						2.5 / 5 / 10
022																		3									3						2.5 / 5 / 10
023																		3									3						2.5 / 5 / 10
024																		3									3						2.5 / 5 / 10
025																		3									3						2.5 / 5 / 10
026																		3									3						2.5 / 5 / 10
027																		3									3						2.5 / 5 / 10
028																		3									3						2.5 / 5 / 10
029																		2									2						2.5 / 5 / 10
030																		5									3						2.5 / 5 / 10
031																		3									3						2.5 / 5 / 10
032																		3															2.5 / 5 / 10
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																																	2.5 / 5 / 20

6/11/2019
JP

Page 2 of 3

Pace Analytical™ 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 25Apr2018
	Document No.: F-GB-C-031-Rev.07	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #: WO# : 40188692

Client Name: Pace MN

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☒ Waltco ☐ Client ☐ Pace Other: _____

Tracking #: 20729191

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____

Thermometer Used SR - 62 **Type of Ice:** (Wet) Blue Dry None ☐ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 3 /Corr: 3.5

Temp Blank Present: ☒ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents: Date: 6/1/2019 Initials: JV

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☐No ☒N/A	4. IRUO 6/1/2019 JV
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	☐Yes ☒No	7.
Sufficient Volume: For Analysis: ☒Yes ☐No MS/MSD: ☐Yes ☒No ☐N/A		8.
Correct Containers Used:	☒Yes ☐No	9.
-Pace Containers Used:	☐Yes ☐No ☒N/A	
-Pace IR Containers Used:	☒Yes ☐No ☐N/A	
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: W	☒Yes ☐No ☐N/A	12.
Trip Blank Present:	☒Yes ☐No ☐N/A	13.
Trip Blank Custody Seals Present	☒Yes ☐No ☐N/A	
Pace Trip Blank Lot # (if purchased): 042919-3 CYR		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: CA **Date:** 6/3/19

Fall 2019 Laboratory Analytical Reports

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

November 12, 2019

Jim Taraldsen
Barr Engineering Company
325 S Lake Ave
Duluth, MN 55802

RE: Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Dear Jim Taraldsen:
Enclosed are the analytical results for sample(s) received by the laboratory on October 31, 2019. 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,

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

Enclosures

cc: BarrDM, Barr Engineering
Accounts Payable, Barr Engineering

REPORT OF LABORATORY ANALYSIS

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

CERTIFICATIONS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Minnesota Certification IDs

A2LA Certification #: 2926.01
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014
Arkansas DW Certification #: MN00064
Arkansas WW 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
Massachusetts DWP Certification #: via MN 027-053-137
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
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 Primary 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
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

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

SAMPLE SUMMARY

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10497744001	**MW-24A**	Water	10/28/19 09:15	10/31/19 18:10
10497744002	**MW-24B**	Water	10/28/19 09:50	10/31/19 18:10
10497744003	**MW-12**	Water	10/28/19 10:35	10/31/19 18:10
10497744004	**MW-25A**	Water	10/28/19 11:15	10/31/19 18:10
10497744005	**MW-25B**	Water	10/28/19 11:40	10/31/19 18:10
10497744006	**MW-26**	Water	10/28/19 12:30	10/31/19 18:10
10497744007	**MW-11**	Water	10/28/19 13:20	10/31/19 18:10
10497744008	**MW-11B**	Water	10/28/19 13:45	10/31/19 18:10
10497744009	**MW-22B**	Water	10/28/19 15:20	10/31/19 18:10
10497744010	**MW-1R**	Water	10/29/19 08:35	10/31/19 18:10
10497744011	**MW-2**	Water	10/29/19 11:00	10/31/19 18:10
10497744012	**MW-15**	Water	10/29/19 11:35	10/31/19 18:10
10497744013	**MW-14**	Water	10/29/19 12:15	10/31/19 18:10
10497744014	**MW-19A**	Water	10/29/19 13:10	10/31/19 18:10
10497744015	**MW-19B**	Water	10/29/19 13:45	10/31/19 18:10
10497744016	**MW-6**	Water	10/29/19 14:45	10/31/19 18:10
10497744017	**MW-6B**	Water	10/29/19 15:25	10/31/19 18:10
10497744018	**MW-20A**	Water	10/30/19 09:50	10/31/19 18:10
10497744019	**MW-20B**	Water	10/30/19 10:20	10/31/19 18:10
10497744020	**MW-18**	Water	10/30/19 11:10	10/31/19 18:10
10497744021	**MW-17A**	Water	10/30/19 11:45	10/31/19 18:10
10497744022	**MW-17B**	Water	10/30/19 12:15	10/31/19 18:10
10497744023	**MW-5**	Water	10/30/19 13:00	10/31/19 18:10
10497744024	**MW-5B**	Water	10/30/19 14:05	10/31/19 18:10
10497744025	**MW-23B**	Water	10/30/19 14:50	10/31/19 18:10
10497744026	**MW-21A**	Water	10/31/19 10:35	10/31/19 18:10
10497744027	**MW-21B**	Water	10/31/19 11:05	10/31/19 18:10
10497744028	**MW-10**	Water	10/31/19 11:40	10/31/19 18:10
10497744029	**Dup-1**	Water	10/28/19 00:00	10/31/19 18:10
10497744030	**Dup-2**	Water	10/29/19 00:00	10/31/19 18:10
10497744031	**Dup-3**	Water	10/30/19 00:00	10/31/19 18:10
10497744032	**Trip Blank-1**	Water	10/28/19 00:00	10/31/19 18:10
10497744033	**Trip Blank-2**	Water	10/28/19 00:00	10/31/19 18:10

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SAMPLE ANALYTE COUNT

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10497744001	MW-24A	EPA 8260B	MM3	11	PASI-M
10497744002	MW-24B	EPA 8260B	ML4	11	PASI-M
10497744003	MW-12	EPA 8260B	ML4	11	PASI-M
10497744004	MW-25A	EPA 8260B	ML4	11	PASI-M
10497744005	MW-25B	EPA 8260B	ML4	11	PASI-M
10497744006	MW-26	EPA 8260B	ML4	11	PASI-M
10497744007	MW-11	EPA 8260B	ML4	11	PASI-M
10497744008	MW-11B	EPA 8260B	ML4	11	PASI-M
10497744009	MW-22B	EPA 8260B	MM3	11	PASI-M
10497744010	MW-1R	EPA 8260B	MM3	11	PASI-M
10497744011	MW-2	EPA 8260B	MM3	11	PASI-M
10497744012	MW-15	EPA 8260B	MM3	11	PASI-M
10497744013	MW-14	EPA 8260B	MM3	11	PASI-M
10497744014	MW-19A	EPA 8260B	MM3	11	PASI-M
10497744015	MW-19B	EPA 8260B	MM3	11	PASI-M
10497744016	MW-6	EPA 8260B	MM3	11	PASI-M
10497744017	MW-6B	EPA 8260B	MM3	11	PASI-M
10497744018	MW-20A	EPA 8260B	MM3	11	PASI-M
10497744019	MW-20B	EPA 8260B	MM3	11	PASI-M
10497744020	MW-18	EPA 8260B	MM3	11	PASI-M
10497744021	MW-17A	EPA 8260B	MM3	11	PASI-M
10497744022	MW-17B	EPA 8260B	MM3	11	PASI-M
10497744023	MW-5	EPA 8260B	MM3	11	PASI-M
10497744024	MW-5B	EPA 8260B	MM3	11	PASI-M
10497744025	MW-23B	EPA 8260B	MM3	11	PASI-M
10497744026	MW-21A	EPA 8260B	MM3	11	PASI-M
10497744027	MW-21B	EPA 8260B	ML4	11	PASI-M
10497744028	MW-10	EPA 8260B	ML4	11	PASI-M
10497744029	Dup-1	EPA 8260B	AEZ	11	PASI-M
10497744030	Dup-2	EPA 8260B	ML4	11	PASI-M
10497744031	Dup-3	EPA 8260B	ML4	11	PASI-M
10497744032	Trip Blank-1	EPA 8260B	ML4	11	PASI-M
10497744033	Trip Blank-2	EPA 8260B	ML4	11	PASI-M

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-24A **Lab ID: 10497744001** Collected: 10/28/19 09:15 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 14:51	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 14:51	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 14:51	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 14:51	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 14:51	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 14:51	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 14:51	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 14:51	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	107	%.	75-125		1		11/09/19 14:51	17060-07-0	
Toluene-d8 (S)	102	%.	75-125		1		11/09/19 14:51	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		11/09/19 14:51	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-24B **Lab ID: 10497744002** Collected: 10/28/19 09:50 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/07/19 05:09	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/07/19 05:09	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/07/19 05:09	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/07/19 05:09	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/07/19 05:09	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/07/19 05:09	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/07/19 05:09	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/07/19 05:09	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	96	%.	75-125		1		11/07/19 05:09	17060-07-0	
Toluene-d8 (S)	98	%.	75-125		1		11/07/19 05:09	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125		1		11/07/19 05:09	460-00-4	

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-12 **Lab ID: 10497744003** Collected: 10/28/19 10:35 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/07/19 05:26	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/07/19 05:26	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/07/19 05:26	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/07/19 05:26	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/07/19 05:26	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/07/19 05:26	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/07/19 05:26	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/07/19 05:26	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	97	%.	75-125		1		11/07/19 05:26	17060-07-0	
Toluene-d8 (S)	99	%.	75-125		1		11/07/19 05:26	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		11/07/19 05:26	460-00-4	

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-25A **Lab ID: 10497744004** Collected: 10/28/19 11:15 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/07/19 05:43	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/07/19 05:43	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/07/19 05:43	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/07/19 05:43	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/07/19 05:43	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/07/19 05:43	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/07/19 05:43	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/07/19 05:43	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	99	%.	75-125		1		11/07/19 05:43	17060-07-0	
Toluene-d8 (S)	98	%.	75-125		1		11/07/19 05:43	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		11/07/19 05:43	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-25B **Lab ID: 10497744005** Collected: 10/28/19 11:40 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/07/19 06:00	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/07/19 06:00	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/07/19 06:00	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/07/19 06:00	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/07/19 06:00	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/07/19 06:00	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/07/19 06:00	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/07/19 06:00	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	98	%.	75-125		1		11/07/19 06:00	17060-07-0	
Toluene-d8 (S)	98	%.	75-125		1		11/07/19 06:00	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125		1		11/07/19 06:00	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-26 **Lab ID: 10497744006** Collected: 10/28/19 12:30 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/07/19 06:17	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/07/19 06:17	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/07/19 06:17	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/07/19 06:17	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/07/19 06:17	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/07/19 06:17	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/07/19 06:17	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/07/19 06:17	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	99	%.	75-125		1		11/07/19 06:17	17060-07-0	
Toluene-d8 (S)	98	%.	75-125		1		11/07/19 06:17	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125		1		11/07/19 06:17	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-11 **Lab ID: 10497744007** Collected: 10/28/19 13:20 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/07/19 06:34	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/07/19 06:34	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/07/19 06:34	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/07/19 06:34	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/07/19 06:34	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/07/19 06:34	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/07/19 06:34	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/07/19 06:34	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	98	%.	75-125		1		11/07/19 06:34	17060-07-0	
Toluene-d8 (S)	100	%.	75-125		1		11/07/19 06:34	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125		1		11/07/19 06:34	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-11B **Lab ID: 10497744008** Collected: 10/28/19 13:45 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/07/19 06:51	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/07/19 06:51	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/07/19 06:51	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/07/19 06:51	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/07/19 06:51	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/07/19 06:51	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/07/19 06:51	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/07/19 06:51	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	99	%.	75-125		1		11/07/19 06:51	17060-07-0	
Toluene-d8 (S)	98	%.	75-125		1		11/07/19 06:51	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125		1		11/07/19 06:51	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-22B **Lab ID: 10497744009** Collected: 10/28/19 15:20 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 15:08	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 15:08	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 15:08	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 15:08	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 15:08	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 15:08	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 15:08	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 15:08	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%.	75-125		1		11/09/19 15:08	17060-07-0	
Toluene-d8 (S)	103	%.	75-125		1		11/09/19 15:08	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		11/09/19 15:08	460-00-4	

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-1R **Lab ID: 10497744010** Collected: 10/29/19 08:35 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 15:25	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 15:25	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 15:25	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 15:25	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 15:25	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 15:25	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 15:25	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 15:25	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	107	%.	75-125		1		11/09/19 15:25	17060-07-0	
Toluene-d8 (S)	99	%.	75-125		1		11/09/19 15:25	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		11/09/19 15:25	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-2 **Lab ID: 10497744011** Collected: 10/29/19 11:00 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 15:42	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 15:42	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 15:42	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 15:42	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 15:42	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 15:42	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 15:42	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 15:42	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%.	75-125		1		11/09/19 15:42	17060-07-0	
Toluene-d8 (S)	102	%.	75-125		1		11/09/19 15:42	2037-26-5	
4-Bromofluorobenzene (S)	105	%.	75-125		1		11/09/19 15:42	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-15 **Lab ID: 10497744012** Collected: 10/29/19 11:35 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 15:59	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 15:59	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 15:59	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 15:59	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 15:59	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 15:59	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 15:59	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 15:59	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	109	%.	75-125		1		11/09/19 15:59	17060-07-0	
Toluene-d8 (S)	102	%.	75-125		1		11/09/19 15:59	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		11/09/19 15:59	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-14 **Lab ID: 10497744013** Collected: 10/29/19 12:15 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 16:16	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 16:16	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 16:16	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 16:16	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 16:16	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 16:16	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 16:16	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 16:16	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	103	%.	75-125		1		11/09/19 16:16	17060-07-0	
Toluene-d8 (S)	101	%.	75-125		1		11/09/19 16:16	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125		1		11/09/19 16:16	460-00-4	

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-19A **Lab ID: 10497744014** Collected: 10/29/19 13:10 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 16:33	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 16:33	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 16:33	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 16:33	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 16:33	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 16:33	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 16:33	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 16:33	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	108	%.	75-125		1		11/09/19 16:33	17060-07-0	
Toluene-d8 (S)	103	%.	75-125		1		11/09/19 16:33	2037-26-5	
4-Bromofluorobenzene (S)	103	%.	75-125		1		11/09/19 16:33	460-00-4	

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-19B **Lab ID: 10497744015** Collected: 10/29/19 13:45 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 16:50	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 16:50	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 16:50	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 16:50	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 16:50	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 16:50	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 16:50	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 16:50	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%.	75-125		1		11/09/19 16:50	17060-07-0	
Toluene-d8 (S)	104	%.	75-125		1		11/09/19 16:50	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		11/09/19 16:50	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-6 **Lab ID: 10497744016** Collected: 10/29/19 14:45 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 17:07	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 17:07	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 17:07	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 17:07	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 17:07	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 17:07	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 17:07	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 17:07	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	106	%.	75-125		1		11/09/19 17:07	17060-07-0	
Toluene-d8 (S)	102	%.	75-125		1		11/09/19 17:07	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	75-125		1		11/09/19 17:07	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-6B **Lab ID: 10497744017** Collected: 10/29/19 15:25 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 17:24	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 17:24	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 17:24	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 17:24	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 17:24	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 17:24	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 17:24	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 17:24	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	109	%.	75-125		1		11/09/19 17:24	17060-07-0	
Toluene-d8 (S)	103	%.	75-125		1		11/09/19 17:24	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		11/09/19 17:24	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-20A **Lab ID: 10497744018** Collected: 10/30/19 09:50 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 17:41	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 17:41	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 17:41	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 17:41	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 17:41	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 17:41	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 17:41	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 17:41	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	107	%.	75-125		1		11/09/19 17:41	17060-07-0	
Toluene-d8 (S)	104	%.	75-125		1		11/09/19 17:41	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125		1		11/09/19 17:41	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-20B **Lab ID: 10497744019** Collected: 10/30/19 10:20 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 17:58	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 17:58	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 17:58	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 17:58	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 17:58	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 17:58	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 17:58	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 17:58	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	109	%.	75-125		1		11/09/19 17:58	17060-07-0	
Toluene-d8 (S)	104	%.	75-125		1		11/09/19 17:58	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125		1		11/09/19 17:58	460-00-4	

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-18 **Lab ID: 10497744020** Collected: 10/30/19 11:10 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 18:15	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 18:15	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 18:15	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 18:15	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 18:15	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 18:15	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 18:15	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 18:15	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	109	%.	75-125		1		11/09/19 18:15	17060-07-0	
Toluene-d8 (S)	102	%.	75-125		1		11/09/19 18:15	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125		1		11/09/19 18:15	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-17A **Lab ID: 10497744021** Collected: 10/30/19 11:45 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 18:32	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 18:32	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 18:32	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 18:32	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 18:32	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 18:32	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 18:32	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 18:32	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	108	%.	75-125		1		11/09/19 18:32	17060-07-0	
Toluene-d8 (S)	104	%.	75-125		1		11/09/19 18:32	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		11/09/19 18:32	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-17B **Lab ID: 10497744022** Collected: 10/30/19 12:15 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 18:49	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 18:49	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 18:49	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 18:49	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 18:49	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 18:49	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 18:49	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 18:49	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%.	75-125		1		11/09/19 18:49	17060-07-0	
Toluene-d8 (S)	104	%.	75-125		1		11/09/19 18:49	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		11/09/19 18:49	460-00-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-5 **Lab ID: 10497744023** Collected: 10/30/19 13:00 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 19:06	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 19:06	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 19:06	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 19:06	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 19:06	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 19:06	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 19:06	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 19:06	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	108	%.	75-125		1		11/09/19 19:06	17060-07-0	
Toluene-d8 (S)	104	%.	75-125		1		11/09/19 19:06	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125		1		11/09/19 19:06	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-5B **Lab ID: 10497744024** Collected: 10/30/19 14:05 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 19:23	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 19:23	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 19:23	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 19:23	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 19:23	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 19:23	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 19:23	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 19:23	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	111	%.	75-125		1		11/09/19 19:23	17060-07-0	
Toluene-d8 (S)	105	%.	75-125		1		11/09/19 19:23	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125		1		11/09/19 19:23	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-23B **Lab ID: 10497744025** Collected: 10/30/19 14:50 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 19:40	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 19:40	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 19:40	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 19:40	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 19:40	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 19:40	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 19:40	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 19:40	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%.	75-125		1		11/09/19 19:40	17060-07-0	
Toluene-d8 (S)	106	%.	75-125		1		11/09/19 19:40	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125		1		11/09/19 19:40	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-21A **Lab ID: 10497744026** Collected: 10/31/19 10:35 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 19:57	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 19:57	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 19:57	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 19:57	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 19:57	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 19:57	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 19:57	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 19:57	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	106	%.	75-125		1		11/09/19 19:57	17060-07-0	
Toluene-d8 (S)	98	%.	75-125		1		11/09/19 19:57	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125		1		11/09/19 19:57	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-21B **Lab ID: 10497744027** Collected: 10/31/19 11:05 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 23:04	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 23:04	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 23:04	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 23:04	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 23:04	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 23:04	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 23:04	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 23:04	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	109	%.	75-125		1		11/09/19 23:04	17060-07-0	
Toluene-d8 (S)	101	%.	75-125		1		11/09/19 23:04	2037-26-5	
4-Bromofluorobenzene (S)	99	%.	75-125		1		11/09/19 23:04	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: MW-10 **Lab ID: 10497744028** Collected: 10/31/19 11:40 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/09/19 23:21	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/09/19 23:21	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/09/19 23:21	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/09/19 23:21	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/09/19 23:21	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/09/19 23:21	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/09/19 23:21	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/09/19 23:21	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	107	%.	75-125		1		11/09/19 23:21	17060-07-0	
Toluene-d8 (S)	103	%.	75-125		1		11/09/19 23:21	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125		1		11/09/19 23:21	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: Dup-1 **Lab ID: 10497744029** Collected: 10/28/19 00:00 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/10/19 20:38	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/10/19 20:38	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/10/19 20:38	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/10/19 20:38	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/10/19 20:38	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/10/19 20:38	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/10/19 20:38	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/10/19 20:38	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	101	%.	75-125		1		11/10/19 20:38	17060-07-0	
Toluene-d8 (S)	98	%.	75-125		1		11/10/19 20:38	2037-26-5	
4-Bromofluorobenzene (S)	101	%.	75-125		1		11/10/19 20:38	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: Dup-2 **Lab ID: 10497744030** Collected: 10/29/19 00:00 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/10/19 03:02	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/10/19 03:02	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/10/19 03:02	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/10/19 03:02	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/10/19 03:02	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/10/19 03:02	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/10/19 03:02	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/10/19 03:02	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	113	%.	75-125		1		11/10/19 03:02	17060-07-0	
Toluene-d8 (S)	109	%.	75-125		1		11/10/19 03:02	2037-26-5	
4-Bromofluorobenzene (S)	113	%.	75-125		1		11/10/19 03:02	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: Dup-3 **Lab ID: 10497744031** Collected: 10/30/19 00:00 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/10/19 03:19	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/10/19 03:19	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/10/19 03:19	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/10/19 03:19	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/10/19 03:19	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/10/19 03:19	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/10/19 03:19	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/10/19 03:19	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	115	%.	75-125		1		11/10/19 03:19	17060-07-0	
Toluene-d8 (S)	105	%.	75-125		1		11/10/19 03:19	2037-26-5	
4-Bromofluorobenzene (S)	120	%.	75-125		1		11/10/19 03:19	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: Trip Blank-1 **Lab ID: 10497744032** Collected: 10/28/19 00:00 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/07/19 03:11	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/07/19 03:11	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/07/19 03:11	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/07/19 03:11	91-20-3	
Toluene	**<0.083**	ug/L	0.28	0.083	1		11/07/19 03:11	108-88-3	
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/07/19 03:11	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/07/19 03:11	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/07/19 03:11	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	100	%.	75-125		1		11/07/19 03:11	17060-07-0	
Toluene-d8 (S)	99	%.	75-125		1		11/07/19 03:11	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125		1		11/07/19 03:11	460-00-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Sample: Trip Blank-2 **Lab ID: 10497744033** Collected: 10/28/19 00:00 Received: 10/31/19 18:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		11/07/19 02:37	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		11/07/19 02:37	100-41-4	
Methyl-tert-butyl ether	**<0.16**	ug/L	0.54	0.16	1		11/07/19 02:37	1634-04-4	
Naphthalene	**<1.6**	ug/L	5.5	1.6	1		11/07/19 02:37	91-20-3	
Toluene	**0.15J**	ug/L	0.28	0.083	1		11/07/19 02:37	108-88-3	B
1,2,4-Trimethylbenzene	**<0.20**	ug/L	0.65	0.20	1		11/07/19 02:37	95-63-6	
1,3,5-Trimethylbenzene	**<0.12**	ug/L	0.41	0.12	1		11/07/19 02:37	108-67-8	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		11/07/19 02:37	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	99	%.	75-125		1		11/07/19 02:37	17060-07-0	
Toluene-d8 (S)	98	%.	75-125		1		11/07/19 02:37	2037-26-5	
4-Bromofluorobenzene (S)	102	%.	75-125		1		11/07/19 02:37	460-00-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

QC Batch: 643431 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10497744002, 10497744003, 10497744004, 10497744005, 10497744006, 10497744007, 10497744008, 10497744032, 10497744033

METHOD BLANK: 3464302 Matrix: Water
Associated Lab Samples: 10497744002, 10497744003, 10497744004, 10497744005, 10497744006, 10497744007, 10497744008, 10497744032, 10497744033

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.20	0.65	11/07/19 02:03	
1,3,5-Trimethylbenzene	ug/L	<0.12	0.41	11/07/19 02:03	
Benzene	ug/L	0.13J	0.34	11/07/19 02:03	
Ethylbenzene	ug/L	<0.14	0.46	11/07/19 02:03	
Methyl-tert-butyl ether	ug/L	<0.16	0.54	11/07/19 02:03	
Naphthalene	ug/L	<1.6	5.5	11/07/19 02:03	
Toluene	ug/L	0.26J	0.28	11/07/19 02:03	
Xylene (Total)	ug/L	<0.31	1.0	11/07/19 02:03	
1,2-Dichloroethane-d4 (S)	%.	96	75-125	11/07/19 02:03	
4-Bromofluorobenzene (S)	%.	100	75-125	11/07/19 02:03	
Toluene-d8 (S)	%.	98	75-125	11/07/19 02:03	

LABORATORY CONTROL SAMPLE: 3464303

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	18.7	94	73-127	
1,3,5-Trimethylbenzene	ug/L	20	18.7	93	75-125	
Benzene	ug/L	20	18.4	92	75-125	
Ethylbenzene	ug/L	20	18.8	94	75-125	
Methyl-tert-butyl ether	ug/L	20	18.8	94	75-125	
Naphthalene	ug/L	20	18.9	94	63-125	
Toluene	ug/L	20	18.2	91	75-125	
Xylene (Total)	ug/L	60	55.8	93	75-125	
1,2-Dichloroethane-d4 (S)	%.			97	75-125	
4-Bromofluorobenzene (S)	%.			101	75-125	
Toluene-d8 (S)	%.			101	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3464434 3464435

Parameter	Units	10497059006 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	358	10	10	322	322	-362	-362	30-150	0	30	E,M1
1,3,5-Trimethylbenzene	ug/L	47.9	10	10	62.1	61.6	143	137	30-150	1	30	
Benzene	ug/L	1120	10	10	1080	1020	-487	-1020	30-150	5	30	E,M1
Ethylbenzene	ug/L	344	10	10	359	339	151	-52	30-150	6	30	E,M1
Methyl-tert-butyl ether	ug/L	<0.16	10	10	9.7	9.3	97	93	30-150	5	30	
Naphthalene	ug/L	55.1	10	10	73.9	73.3	189	182	30-150	1	30	M1

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3464434 3464435

Parameter	Units	10497059006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Toluene	ug/L	1240	10	10	1110	1050	-1240	-1900	30-150	6	30	E,M1
Xylene (Total)	ug/L	1600	30	30	1410	1340	-629	-873	30-150	5	30	ES,MS
1,2-Dichloroethane-d4 (S)	%.						97	98	75-125			
4-Bromofluorobenzene (S)	%.						101	102	75-125			
Toluene-d8 (S)	%.						101	99	75-125			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

QC Batch: 643974 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10497744001, 10497744009, 10497744010, 10497744011, 10497744012, 10497744013, 10497744014, 10497744015, 10497744016, 10497744017, 10497744018, 10497744019, 10497744020, 10497744021, 10497744022, 10497744023, 10497744024, 10497744025, 10497744026

METHOD BLANK: 3467588 Matrix: Water
Associated Lab Samples: 10497744001, 10497744009, 10497744010, 10497744011, 10497744012, 10497744013, 10497744014, 10497744015, 10497744016, 10497744017, 10497744018, 10497744019, 10497744020, 10497744021, 10497744022, 10497744023, 10497744024, 10497744025, 10497744026

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.20	0.65	11/09/19 14:34	
1,3,5-Trimethylbenzene	ug/L	<0.12	0.41	11/09/19 14:34	
Benzene	ug/L	<0.10	0.34	11/09/19 14:34	
Ethylbenzene	ug/L	<0.14	0.46	11/09/19 14:34	
Methyl-tert-butyl ether	ug/L	<0.16	0.54	11/09/19 14:34	
Naphthalene	ug/L	<1.6	5.5	11/09/19 14:34	
Toluene	ug/L	<0.083	0.28	11/09/19 14:34	
Xylene (Total)	ug/L	<0.31	1.0	11/09/19 14:34	
1,2-Dichloroethane-d4 (S)	%.	104	75-125	11/09/19 14:34	
4-Bromofluorobenzene (S)	%.	101	75-125	11/09/19 14:34	
Toluene-d8 (S)	%.	103	75-125	11/09/19 14:34	

LABORATORY CONTROL SAMPLE: 3467589

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.4	97	73-127	
1,3,5-Trimethylbenzene	ug/L	20	19.4	97	75-125	
Benzene	ug/L	20	16.8	84	75-125	
Ethylbenzene	ug/L	20	18.8	94	75-125	
Methyl-tert-butyl ether	ug/L	20	19.4	97	75-125	
Naphthalene	ug/L	20	22.4	112	63-125	
Toluene	ug/L	20	17.7	89	75-125	
Xylene (Total)	ug/L	60	56.1	94	75-125	
1,2-Dichloroethane-d4 (S)	%.			106	75-125	
4-Bromofluorobenzene (S)	%.			100	75-125	
Toluene-d8 (S)	%.			103	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3468650 3468651

Parameter	Units	10498451002 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	20	20	19.1	20.3	96	101	30-150	6	30	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	19.2	20.6	96	103	30-150	7	30	
Benzene	ug/L	ND	20	20	16.8	16.8	84	84	30-150	0	30	
Ethylbenzene	ug/L	ND	20	20	18.4	19.1	92	96	30-150	4	30	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3468650 3468651

Parameter	Units	10498451002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methyl-tert-butyl ether	ug/L	ND	20	20	18.4	19.5	92	97	30-150	6	30	
Naphthalene	ug/L	ND	20	20	20.5	23.7	102	119	30-150	15	30	
Toluene	ug/L	ND	20	20	17.7	17.3	88	86	30-150	2	30	
Xylene (Total)	ug/L	ND	60	60	54.4	57.2	91	95	30-150	5	30	
1,2-Dichloroethane-d4 (S)	%.						102	105	75-125			
4-Bromofluorobenzene (S)	%.						101	102	75-125			
Toluene-d8 (S)	%.						104	101	75-125			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

QC Batch: 643983 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10497744027, 10497744028, 10497744030, 10497744031

METHOD BLANK: 3467918 Matrix: Water
Associated Lab Samples: 10497744027, 10497744028, 10497744030, 10497744031

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.20	0.65	11/09/19 22:30	
1,3,5-Trimethylbenzene	ug/L	<0.12	0.41	11/09/19 22:30	
Benzene	ug/L	<0.10	0.34	11/09/19 22:30	
Ethylbenzene	ug/L	<0.14	0.46	11/09/19 22:30	
Methyl-tert-butyl ether	ug/L	<0.16	0.54	11/09/19 22:30	
Naphthalene	ug/L	<1.6	5.5	11/09/19 22:30	
Toluene	ug/L	<0.083	0.28	11/09/19 22:30	
Xylene (Total)	ug/L	<0.31	1.0	11/09/19 22:30	
1,2-Dichloroethane-d4 (S)	%.	107	75-125	11/09/19 22:30	
4-Bromofluorobenzene (S)	%.	98	75-125	11/09/19 22:30	
Toluene-d8 (S)	%.	102	75-125	11/09/19 22:30	

LABORATORY CONTROL SAMPLE: 3467919

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	19.2	96	73-127	
1,3,5-Trimethylbenzene	ug/L	20	19.3	96	75-125	
Benzene	ug/L	20	17.0	85	75-125	
Ethylbenzene	ug/L	20	18.9	94	75-125	
Methyl-tert-butyl ether	ug/L	20	20.0	100	75-125	
Naphthalene	ug/L	20	21.2	106	63-125	
Toluene	ug/L	20	18.0	90	75-125	
Xylene (Total)	ug/L	60	56.7	94	75-125	
1,2-Dichloroethane-d4 (S)	%.			105	75-125	
4-Bromofluorobenzene (S)	%.			99	75-125	
Toluene-d8 (S)	%.			105	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3468707 3468708

Parameter	Units	10497484004 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	20	20	20.8	19.8	104	99	30-150	5	30	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	20.7	20.1	104	101	30-150	3	30	
Benzene	ug/L	ND	20	20	17.8	16.5	89	82	30-150	7	30	
Ethylbenzene	ug/L	ND	20	20	20.1	18.6	101	93	30-150	8	30	
Methyl-tert-butyl ether	ug/L	ND	20	20	20.7	19.3	104	97	30-150	7	30	
Naphthalene	ug/L	ND	20	20	22.6	22.5	113	112	30-150	0	30	
Toluene	ug/L	ND	20	20	19.2	17.3	96	86	30-150	11	30	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3468707 3468708

Parameter	Units	10497484004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Xylene (Total)	ug/L	ND	60	60	59.1	54.9	98	92	30-150	7	30	
1,2-Dichloroethane-d4 (S)	%.						107	109	75-125			
4-Bromofluorobenzene (S)	%.						102	101	75-125			
Toluene-d8 (S)	%.						106	104	75-125			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

QC Batch: 644006 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10497744029

METHOD BLANK: 3468006 Matrix: Water
Associated Lab Samples: 10497744029

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trimethylbenzene	ug/L	<0.20	0.65	11/10/19 18:56	
1,3,5-Trimethylbenzene	ug/L	<0.12	0.41	11/10/19 18:56	
Benzene	ug/L	<0.10	0.34	11/10/19 18:56	
Ethylbenzene	ug/L	<0.14	0.46	11/10/19 18:56	
Methyl-tert-butyl ether	ug/L	<0.16	0.54	11/10/19 18:56	
Naphthalene	ug/L	<1.6	5.5	11/10/19 18:56	
Toluene	ug/L	<0.083	0.28	11/10/19 18:56	
Xylene (Total)	ug/L	<0.31	1.0	11/10/19 18:56	
1,2-Dichloroethane-d4 (S)	%.	99	75-125	11/10/19 18:56	
4-Bromofluorobenzene (S)	%.	102	75-125	11/10/19 18:56	
Toluene-d8 (S)	%.	98	75-125	11/10/19 18:56	

LABORATORY CONTROL SAMPLE: 3468007

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trimethylbenzene	ug/L	20	21.2	106	73-127	
1,3,5-Trimethylbenzene	ug/L	20	21.5	107	75-125	
Benzene	ug/L	20	20.3	101	75-125	
Ethylbenzene	ug/L	20	21.0	105	75-125	
Methyl-tert-butyl ether	ug/L	20	20.2	101	75-125	
Naphthalene	ug/L	20	21.3	107	63-125	
Toluene	ug/L	20	20.8	104	75-125	
Xylene (Total)	ug/L	60	61.4	102	75-125	
1,2-Dichloroethane-d4 (S)	%.			99	75-125	
4-Bromofluorobenzene (S)	%.			103	75-125	
Toluene-d8 (S)	%.			103	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3468008 3468009

Parameter	Units	10497809004 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	20	20	16.1	19.8	81	99	30-150	21	30	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	16.6	20.4	83	102	30-150	21	30	
Benzene	ug/L	ND	20	20	18.0	19.7	90	99	30-150	9	30	
Ethylbenzene	ug/L	ND	20	20	17.2	19.9	86	100	30-150	15	30	
Methyl-tert-butyl ether	ug/L	ND	20	20	16.5	17.9	83	90	30-150	8	30	
Naphthalene	ug/L	ND	20	20	17.3	21.5	87	107	30-150	21	30	
Toluene	ug/L	ND	20	20	17.9	20.0	89	100	30-150	11	30	

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QUALITY CONTROL DATA

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3468008 3468009

Parameter	Units	10497809004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Xylene (Total)	ug/L	ND	60	60	49.9	60.2	83	100	30-150	19	30	
1,2-Dichloroethane-d4 (S)	%.						100	102	75-125			
4-Bromofluorobenzene (S)	%.						104	103	75-125			
Toluene-d8 (S)	%.						101	103	75-125			

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

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, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

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

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
ES	The reported result is estimated because one or more of the constituent results are qualified as such.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
MS	Analyte recovery in the matrix spike was outside QC limits for one or more of the constituent analytes used in the calculated result.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 49161446.00 100 102 2019 SPT G
Pace Project No.: 10497744

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10497744001	MW-24A	EPA 8260B	643974		
10497744002	MW-24B	EPA 8260B	643431		
10497744003	MW-12	EPA 8260B	643431		
10497744004	MW-25A	EPA 8260B	643431		
10497744005	MW-25B	EPA 8260B	643431		
10497744006	MW-26	EPA 8260B	643431		
10497744007	MW-11	EPA 8260B	643431		
10497744008	MW-11B	EPA 8260B	643431		
10497744009	MW-22B	EPA 8260B	643974		
10497744010	MW-1R	EPA 8260B	643974		
10497744011	MW-2	EPA 8260B	643974		
10497744012	MW-15	EPA 8260B	643974		
10497744013	MW-14	EPA 8260B	643974		
10497744014	MW-19A	EPA 8260B	643974		
10497744015	MW-19B	EPA 8260B	643974		
10497744016	MW-6	EPA 8260B	643974		
10497744017	MW-6B	EPA 8260B	643974		
10497744018	MW-20A	EPA 8260B	643974		
10497744019	MW-20B	EPA 8260B	643974		
10497744020	MW-18	EPA 8260B	643974		
10497744021	MW-17A	EPA 8260B	643974		
10497744022	MW-17B	EPA 8260B	643974		
10497744023	MW-5	EPA 8260B	643974		
10497744024	MW-5B	EPA 8260B	643974		
10497744025	MW-23B	EPA 8260B	643974		
10497744026	MW-21A	EPA 8260B	643974		
10497744027	MW-21B	EPA 8260B	643983		
10497744028	MW-10	EPA 8260B	643983		
10497744029	Dup-1	EPA 8260B	644006		
10497744030	Dup-2	EPA 8260B	643983		
10497744031	Dup-3	EPA 8260B	643983		
10497744032	Trip Blank-1	EPA 8260B	643431		
10497744033	Trip Blank-2	EPA 8260B	643431		

Barr Engineering Co. Chain of Custody

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

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

REPORT TO	INVOICE TO
Company: Barr Engineering	Company: Barr
Address: 325 S. Lake Ave. Duluth	Address:
Name: Lynette Carney	Name:
email: lcarney@barr.com	email:
Copy to: datamgt@barr.com	P.O. —
Project Name: 2019 Fall SPT GMP	Barr Project No: 49161446.00 100 102

Matrix Code: GW = Groundwater; SW = Surface Water; ... Preservative Code: A = None; ... J = NH_4Cl; K = Zn Acetate; O = Other

COC ____

WO#: 10497744

10497744

	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	Water: PVOC + Naphthalene	B	1	% Solid	Preservative Code	Field Filtered Y/N	
1.	MW-24A	—			10/29/19	0915	GW	N	3	3				PVOC + Naphthalene		001
2.	MW-24B	—				0950			3	3						002
3.	MW-12	—				1035			3	3						003
4.	MW-25A	—				1115			3	3						004
5.	MW-25B	—				1140			3	3						005
6.	MW-26	—				1230			3	3						006
7.	MW-11	—				1320			3	3						007
8.	MW-11B	—				1345			3	3						008
9.	MW-22B	—				1520			3	3						009
10.	MW-1R	—			10/29/19	0835			3	3						010

BARR USE ONLY		Relinquished by	On Ice? Y N	Date	Time	Received by	Date	Time
Sampled by:	KMJ3		Y	10/30/19	1220	PACE	10/31/19	12:20
Barr Proj. Manager:	LMC	Relinquished by:	On Ice? Y N	Date	Time	Received by:	Date	Time
Barr QQ Manager:	JET		N	10/31/19	1810	PACE T22-2	10/31/19	17:10
Lab Name:	Pace	Samples Shipped VIA: ☐ Courier ☐ Federal Express ☒ Sampler ☐ Other: ____		Air Bill Number:		Requested Due Date: ☒ Standard Turn Around Time ☐ Rush ____ (mm/dd/yyyy)		
Lab Location:	Minneapolis	Lab WO:	Temperature on Receipt (°C): 2.2	Custody Seal Intact? ☐ Y ☐ N ☒ None				

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Barr Engineering Co. Chain of Custody

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

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

COC Number: 56888

COC 2 of 4

REPORT TO	INVOICE TO
Company: Barr Engineering	Company: Barr
Address: 325 S. Lake Ave. Duluth	Address:
Name: Lyndie Carney	Name:
email: lcarney@barr.com	email:
Copy to: datamgt@barr.com	P.O. —
Project Name: 2019 Fall SPT GWMP	Barr Project No: 49161446.00 100 102

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	Soil: % Solids	Preservative Code	Field Filtered Y/N
1. MW-2				10/29/19	1100	GW	N	3	3		PVOC + Naphthalene	001
2. MW-15					1135			3	3			002
3. MW-14					1215			3	3			003
4. MW-19A					1310			3	3			004
5. MW-19B					1345			3	3			005
6. MW-6					1445			3	3			006
7. MW-6B					1525			3	3			007
8. MW-20A				10/30/19	0950			3	3			008
9. MW-20B					1020			3	3			009
10. MW-18					1110			3	3			020

BARR USE ONLY

Sampled by: KMT3

Barr Proj. Manager: LMC

Barr QQ Manager: JET

Lab Name: PACE

Lab Location: Minneapolis

Relinquished by: [signature] On Ice? Y (0) N — Date 10/31/19 — Time 1220 — Received by: [signature] PACE — Date 10/31/19 — Time 12:20

Relinquished by: [signature] On Ice? Y N — Date 10/31/19 — Time 1810 — Received by: [signature] Greyspace T=2.2 — Date 10/31/19 — Time 1810

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

Air Bill Number:

Lab WO:

Temperature on Receipt (°C): 2.2 Custody Seal Intact? ☐ Y ☐ N ☒ None

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

Page 4 of 13

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Barr Engineering Co. Chain of Custody

BARR

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

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

COC 4 of ____

REPORT TO	
Company:	Barr Engineering
Address:	325 S. Lake Ave. Duluth
Name:	Lynette Carney
email:	lcarney@barr.com
Copy to:	datamgt@barr.com
Project Name:	2019 Fall SPT Comp

INVOICE TO	
Company:	Barr
Address:	↓
Name:	
email:	
P.O.	—
Barr Project No:	49161446.00 100 102

Matrix Code:	Preservative Code:
GW = Groundwater	A = None
SW = Surface Water	B = HCl
WW = Waste Water	C = HNO_3
DW = Drinking Water	D = H_2SO_4
S = Soil/Solid	E = NaOH
SD = Sediment	F = MeOH
O = Other	G = $NaHSO_4$
	H = $Na_2S_2O_3$
	I = Ascorbic Acid
	J = NH_4Cl
	K = Zn Acetate
	O = Other

Water / Soil / % Solids

Preservative Code

Field Filtered Y/N

	Location	Sample Depth Start	Stop	Unit (m./ft. or in.)	Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix Code	Perform MS/MSD Y / (N)	Total Number Of Containers	(3) PVOC + Naphthalene	
1.	MW-17A	—	—	—	10/30/19	1145	GW	N	3	3	PVOC + Naphthalene 021
2.	MW-17B	—	—		↓	1215	↓		3	3	022
3.	MW-5	—	—			1300			3	3	023
4.	MW-5B	—	—			1405			3	3	024
5.	MW-23B	—	—		↓	1450			3	3	025
6.	MW-21A	—	—		10/31/19	1035			3	3	026
7.	MW-21B	—	—		↓	1105			3	3	027
8.	MW-10	—	—		↓	1140			3	3	028
9.	Dup-1	—	—		10/28/19	—			3	3	029
10.	Dup-2	—	—		10/29/19	—	↓		3	3	↓ 030

BARR USE ONLY	
Sampled by:	KMTJ3
Barr Proj. Manager:	LMC
Barr DQ Manager:	JET
Lab Name:	Pace
Lab Location:	Minneapolis

Relinquished by:	On Ice?	Date	Time	Received by:	Date	Time
[signature]	(Y) N	10/31/19	1220	[signature] /Pace	10/31/19	12:20
[signature]	Y N	10/31/19	1810	[signature] Pace T=2.2	10/31/19	1810

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

Air Bill Number:

Lab WO:

Temperature on Receipt (°C): 2.2 Custody Seal Intact? ☐ Y ☐ N ☑ None

Requested Due Date: ☒ Standard Turn Around Time ☐ Rush ____

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Barr Engineering Co. Chain of Custody

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

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

COC Number: 56890
COC 4 of 4

REPORT TO	INVOICE TO
Company: Barr Engineering	Company: Barr
Address: 325 S. Lake Ave. Duluth	Address:
Name: ~~325 S. Lake Ave~~ Lynette Carney	Name:
email: lcarney@barr.com	email:
Copy to: datamgt@barr.com	P.O. —
Project Name: 299 Fall SPT Gmp	Barr Project No: 49161446.00 100102

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	D	1	Analysis Requested: Water: PVOC + Naphthalene	Soil: % Solids	Preservative Code	Field Filtered Y/N
1. Dup-3	—	—		10/30/19	—	GW	N	3		3			PVOC + Naphthalene	
2. Trip Blank-1	—	—		—	—	—	N	2		2			031	
3. Trip Blank-2	—	—		—	—	—	N	2		2			032	
4.													033	
5.														
6.														
7.														
8.														
9.														
10.														

BARR USE ONLY

Sampled by: KMJ3
Barr Proj. Manager: LMC
Barr PDQ Manager: JET
Lab Name: Pace
Lab Location: Minneapolis

Relinquished by: [signature] On Ice? Y (N) Date 10/31/19 Time 1200
Received by: [signature] Date 10/31/19 Time 12:20

Relinquished by: [signature] On Ice? Y N Date 10/31/19 Time 1810
Received by: [signature] Pace T=2.2 Date 10/31/19 Time 1810

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

Lab WO: Temperature on Receipt (°C): 2.2 Custody Seal Intact? ☐ Y ☐ N ☒ None

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

Page 3 of 3

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Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 23Aug2019 Page 1 of 1
	Document No.: **F-MN-L-213-rev.29**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Barr Engineering Co.

Project #: **WO#: 10497744**

PM: AA1 **Due Date: 11/08/19**

CLIENT: BARR

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☒ Pace ☐ SpeeDee ☐ Commercial **See Exceptions** ☐

Tracking Number: _____

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

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

Thermometer: ☐ T1(0461) ☒ T2(1336) ☐ T3(0459) ☐ T4(0254) ☐ T5(0489) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 2.1 °C

Correction Factor: -0.1 **Cooler Temp Corrected w/temp blank:** 2.2 °C

Average Corrected Temp (no temp blank only): ☐ See Exceptions ☐ 1 Container _____ °C

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

Date/Initials of Person Examining Contents: GN2 10/31/19
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 and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other _____
Rush Turn Around Time Requested?	☐ Yes	☒ No		6.
Sufficient Volume?	☒ Yes	☐ No		7.
Correct Containers Used?	☒ Yes	☐ No		8.
-Pace Containers Used?	☒ Yes	☐ No		
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC?	☒ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** **See Exception** ☐
Matrix: ☒ Water ☐ Soil ☐ Oil ☐ Other _____				
All containers needing acid/base preservation have been checked?	☐ Yes	☐ No	☒ N/A	12. Sample #
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)	☐ Yes	☐ No	☒ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☒ Yes	☐ No	☐ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No **pH Paper Lot#** **See Exception** ☐
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☒ No	☐ N/A	13. **See Exception** ☒
Trip Blank Present?	☒ Yes	☐ No	☐ N/A	14. Pace Trip Blank Lot # (if purchased): 231077
Trip Blank Custody Seals Present?	☒ Yes	☐ No	☐ N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: _____ **Date:** 11/1/19

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).

Labeled by: CEG (2)

Pace Analytical	Document Name: **Headspace Exception**	Document Revised: 17Dec2018 Page 1 of 1
	Document No.: **F-MN-C-276-Rev.01**	Issuing Authority: Pace Minnesota Quality Office

Sample ID	Headspace greater than 6mm	Headspace less than 6mm	No Headspace	Total Vials	Sediment Present?
MW-25A	0	1	2	3	Y
MW-11	0	1	2	3	Y
MW-6	0	1	2	3	Y
MW-1713	0	1	2	3	Y
MW-10	0	1	2	3	Y

Appendix B

Well Photos

Spring 2019 Well Photos

Superior Terminal Well Photos Spring - 2019

MW-1

MW-2

MW-5 & MW-5B

Superior Terminal Well Photos Spring - 2019

MW-6 & MW-6B

MW-10

MW-11 & MW-11B

Superior Terminal Well Photos Spring - 2019

MW-12

MW-14

MW-15

Superior Terminal Well Photos Spring - 2019

MW-17 & MW-17B

MW-18

MW-19A & MW-19B

Superior Terminal Well Photos Spring - 2019

MW-20A & MW-20B

MW-21A & MW-21B

MW-22B

Superior Terminal Well Photos Spring - 2019

MW-23B

MW-24A & MW-24B

MW-25A & 25B

Superior Terminal Well Photos Spring - 2019

MW-26

Fall 2019 Well Photos

Superior Terminal Well Photos Fall - 2019

MW-1R

MW-2

MW-5 & MW-5B

Superior Terminal Well Photos Fall - 2019

MW-6 & MW-6B

MW-10

MW-11 & MW-11B

Superior Terminal Well Photos Fall - 2019

MW-12

MW-14

MW-15

Superior Terminal Well Photos Fall - 2019

MW-17 & MW-17B

MW-18

MW-19A & MW-19B

Superior Terminal Well Photos Fall - 2019

MW-20A & MW-20B

MW-21A & MW-21B

MW-22B

Superior Terminal Well Photos Fall - 2019

MW-23B

MW-24A & MW-24B

MW-25A & 25B

Superior Terminal Well Photos Fall - 2019

MW-26

Appendix C

Field Notes

Spring 2019 Field Notes

Barr Engineering Company
Field Log Data Sheet

Client: EW3	**Monitoring Point:** MW-1
Location: Superior Terminal	**Date:** 5/27/19
Project #: 49161446	**Sample Time:** 1310

GENERAL DATA		STABILIZATION TEST						
Barr lock:	EWB lock	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	22.30	1250	6.03	1093	6.91	93.6	2.61	
Static water level:*	4.98							
Water depth:*	17.32							
Well volume: (gal)	2.82							
Purge method:	Bail							
Sample method:	Bail							
Start time:	1259	Odor: none						
Stop time:	1308	Purge Appearance: clear, colorless						
Duration: (minutes)	~~5~~ 7	Sample Appearance: clear, colorless						
Rate, gpm:		Comments:						
Volume, purged:	4.5	Replace lock on 5/31/19						
Duplicate collected?	NO							
Sample collection by:	MMJ	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:

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
Field Log Data Sheet

Client: ENBlock	**Monitoring Point:** MW-2
Location: Superior Terminal	**Date:** 5/30/19
Project #: 49161496	**Sample Time:** 1110

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"	1051	5.74	1573	7.13	107.9	5.48	
Total well depth:*	27.17							
Static water level:*	3.51							
Water depth:*	23.66							
Well volume: (gal)	3.8							
Purge method:	Bail							
Sample method:	Bail							
Start time:	1050	Odor: none						
Stop time:	1105	Purge Appearance: clear, colorless						
Duration: (minutes)	15	Sample Appearance: clear, colorless						
Rate, gpm:		Comments:						
Volume, purged:	11	Paint on 5/31/19						
Duplicate collected?	no							
Sample collection by:	KMTJ	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** mw-5
Location: Superior Terminal	**Date:** 5/29/19
Project #: 4916165	**Sample Time:** 1215

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	27.03	1133	6.87	1211	7.32	147.4	3.77	
Static water level:*	3.00							
Water depth:*	24.03							
Well volume: (gal)	3.91							
Purge method:	Bail							
Sample method:	Bail							
Start time:	1150	Odor: none						
Stop time:	1215	Purge Appearance: clear, colorless						
Duration: (minutes)	25	Sample Appearance: clear, colorless						
Rate, gpm:		Comments: replace lock						
Volume, purged:	13							
Duplicate collected?	no							
Sample collection by:	KMJ3	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-58
Location: Superior Terminal	**Date:** 5/29/19
Project #: 4916/446	**Sample Time:** 1405

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	57.95	1144	6.71	748	7.22	129.0	3.15	
Static water level:*	6.82							
Water depth:*	51.13							
Well volume: (gal)	8.33							
Purge method:	Bail							
Sample method:	Bail							
Start time:	1340	Odor:	None					
Stop time:	1405	Purge Appearance:	clear, colorless					
Duration: (minutes)	25	Sample Appearance:	clear, colorless					
Rate, gpm:		Comments:						
Volume, purged:	13							
Duplicate collected?	No							
Sample collection by:	KMJ3	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:

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
Field Log Data Sheet

Client: EMB	**Monitoring Point:** MW-6
Location: Superior, Wisconsin	**Date:** 5/28/19
Project #: 49161446	**Sample Time:** 1115

GENERAL DATA	
Barr lock:	EMB lock
Casing diameter:	2"
Total well depth:*	26.70
Static water level:*	7.37
Water depth:*	19.33
Well volume: (gal)	3.15
Purge method:	Bail
Sample method:	Bail
Start time:	1100
Stop time:	1115
Duration: (minutes)	15
Rate, gpm:	
Volume, purged:	10
Duplicate collected?	Yes, Dup-2
Sample collection by:	KMTJ

STABILIZATION TEST

Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
1036	7.67	1526	7.13 ~~6.07~~ KMTJ	176.8	6.02 ~~7~~ KMTJ	

Odor: none

Purge Appearance: ~~clear~~ light brown

Sample Appearance: light brown

Comments: replace lock

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:

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
Field Log Data Sheet

Client:	EWB	**Monitoring Point:**	MW-6B
Location:	Superior Terminal	**Date:**	5/28/19
Project #:	4916496	**Sample Time:**	1150

GENERAL DATA		STABILIZATION TEST						
Barr lock:	Englisch							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	58.25	1050	7.95	829	7.39	158.1	4.16	
Static water level:*	9.00							
Water depth:*	49.25							
Well volume: (gal)	8.02							
Purge method:	Bail							
Sample method:	Bail							
Start time:	1125	Odor: none						
Stop time:	1148	Purge Appearance: light brown						
Duration: (minutes)	23	Sample Appearance: light brown						
Rate, gpm:		Comments:						
Volume, purged:	12							
Duplicate collected?	no							
Sample collection by:	[illegible]	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:

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
Field Log Data Sheet

Client: EnB	**Monitoring Point:** MW-10
Location: Superior Terminal	**Date:** 5/28/19
Project #: 49161446	**Sample Time:** 1450

GENERAL DATA		STABILIZATION TEST						
Barr lock:	EnB Lock	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	30.43	1418	7.45	2195	6.53	-21.7	1.58	
Static water level:*	5.00							
Water depth:*	25.43							
Well volume: (gal)	4.14							
Purge method:	Bail							
Sample method:	Bailer							
Start time:	1425	Odor: none						
Stop time:	1445	Purge Appearance: ~~Clear~~ kmjs clear, colorless						
Duration: (minutes)	20	Sample Appearance: clear, colorless						
Rate, gpm:		Comments: frothy, some bubbles when collected sample						
Volume, purged:	11							
Duplicate collected?	no							
Sample collection by:	kmjs	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-11
Location: Superior Terminal	**Date:** 5/29/19
Project #: 4916/4916	**Sample Time:** 0830

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	18.20		6.79	2188	6.70	-93.6	2.71	
Static water level:*	8.06							
Water depth:*	10.14							
Well volume: (gal)	1.65							
Purge method:	Bail							
Sample method:	Bail							
Start time:	0820	Odor: None						
Stop time:	0828	Purge Appearance: light pink						
Duration: (minutes)	18	Sample Appearance: light pink						
Rate, gpm:		Comments: slightly turbid						
Volume, purged:	4.5							
Duplicate collected?	no							
Sample collection by:	KMTB	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-11B
Location: Superior Terminal	**Date:** 5/29/19
Project #: 49161496	**Sample Time:** 0905

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	57.83		7.40	780	7.60	-11.5	3.16	
Static water level:*	23.00							
Water depth:*	34.83							
Well volume: (gal)	5.67							
Purge method:	Bail							
Sample method:	Bail							
Start time:	0835	Odor: none						
Stop time:	0900	Purge Appearance: clear, colorless						
Duration: (minutes)	25	Sample Appearance: clear, colorless						
Rate, gpm:		Comments: replaced lock						
Volume, purged:	8							
Duplicate collected?	no	Paint well on 5/31/19						
Sample collection by:	Lewis	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-12
Location: Superior Terminal	**Date:** 5/29/19
Project #: 4916446	**Sample Time:** 1515

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	22.18	0254	6.10	1630	7.57	141.3	6.04	
Static water level:*	4.32							
Water depth:*	17.86							
Well volume: (gal)	2.91							
Purge method:	Bail							
Sample method:	Bail							
Start time:	1500	Odor: None						
Stop time:	1513	Purge Appearance: Clear, colorless						
Duration: (minutes)	13	Sample Appearance: Clear, colorless						
Rate, gpm:		Comments: new lock, lock is not actually locking anything						
Volume, purged:	4.5							
Duplicate collected?	no							
Sample collection by:	KMTB	CO2-	Mn2-	Fe(T)-	Fe2-			

Others present: No	Well Condition: good

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

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-14
Location: Superior Terminal	**Date:** 5/27/19
Project #: 49161446.01	**Sample Time:** 1215

GENERAL DATA

Barr lock:	ENB lock
Casing diameter:	2"
Total well depth:*	18.35
Static water level:*	4.67
Water depth:*	~~15.75~~ 13.68
Well volume: (gal)	2.23
Purge method:	Bail
Sample method:	Bail
Start time:	1150
Stop time:	1210
Duration: (minutes)	20
Rate, gpm:	
Volume, purged:	7.5
Duplicate collected?	No
Sample collection by:	LMJ3
Others present:	None

STABILIZATION TEST

Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
1145	5.54	1190	6.76	1162	4.51	

Odor: none

Purge Appearance: clear, colorless

Sample Appearance: clear, colorless

Comments: few (~4) small (~2" long) aquatic insects/worms found in well

CO2- Mn2- Fe(T)- Fe2-

Well Condition: good

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

VOC- 8260 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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-15
Location: Superior Terminal	**Date:** 5/27/19
Project #: 4916446	**Sample Time:** 1130

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	17.32	1111	5.59	989	6.75	232.1	3.19	
Static water level:*	3.07							
Water depth:*	14.25							
Well volume: (gal)	2.32							
Purge method:	Bail							
Sample method:	Bail							
Start time:	1114	Odor: none						
Stop time:	1128	Purge Appearance: clear, colorless						
Duration: (minutes)	14	Sample Appearance: clear, colorless						
Rate, gpm:		Comments:						
Volume, purged:	7							
Duplicate collected?	no							
Sample collection by:	KenTB	CO2- Mn2- Fe(T)- Fe2-						

Others present:	Well Condition: good

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

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-17
Location: Superior Terminal	**Date:** 5/29/19
Project #: 4916446	**Sample Time:** 1040

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	17.47	1016	5.43	1371	7.44	127.9	5.49	
Static water level:*	3.79							
Water depth:*	13.68							
Well volume: (gal)	2.23							
Purge method:	Bail							
Sample method:	"							
Start time:	1032	Odor: none						
Stop time:	1039	Purge Appearance: clear, colorless						
Duration: (minutes)	7	Sample Appearance: clear, colorless						
Rate, gpm:		Comments:						
Volume, purged:	4							
Duplicate collected?	no							
Sample collection by:	KMJ	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:

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
Field Log Data Sheet

Client: EnB	**Monitoring Point:** MW-17B
Location: Superior Terminal	**Date:** 5/29/19
Project #: 49/6149/1	**Sample Time:** 1105

GENERAL DATA		STABILIZATION TEST						
Barr lock:	EnB lock	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	44.94	1025	7.32	546	7.50	112.3	4.58	
Static water level:*	18.11							
Water depth:*	26.79							
Well volume: (gal)	4.37							
Purge method:	Bail							
Sample method:	Bail							
Start time:	1045	Odor: none						
Stop time:	1100	Purge Appearance: clear, colorless						
Duration: (minutes)	15	Sample Appearance: clear, colorless						
Rate, gpm:		Comments:						
Volume, purged:	5	Point well on 5/31/19						
Duplicate collected?	no							
Sample collection by:	KMJS	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:

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
Field Log Data Sheet

Client: END	**Monitoring Point:** MW-18
Location: Superior Terminal	**Date:** 5/29/19
Project #: 4916/496	**Sample Time:** 0955

GENERAL DATA		STABILIZATION TEST						
Barr lock:	END lock							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	17.25	0941	5.50	1186	7.08	158.5	6.37	
Static water level:*	5.73 HAND							
Water depth:*	11.52							
Well volume: (gal)	1.88							
Purge method:	bail							
Sample method:	bail							
Start time:	0940	Odor: none						
Stop time:	0950	Purge Appearance: clear, colorless						
Duration: (minutes)	10	Sample Appearance: clear, colorless						
Rate, gpm:		Comments:						
Volume, purged:	4.5							
Duplicate collected?	no							
Sample collection by:	HAND	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:

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
Field Log Data Sheet

Client: EMB	**Monitoring Point:** MW-19 A
Location: Superior Terminal	**Date:** 5/27/19
Project #: 4916446	**Sample Time:** 1400

GENERAL DATA		STABILIZATION TEST						
Barr lock:	EMB	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	24.15	1330	6.10	801	7.25	200.4	0.48	
Static water level:*	3.51							
Water depth:*	20.64							
Well volume: (gal)	3.36							
Purge method:	bail							
Sample method:	bail							
Start time:	1340	Odor: none						
Stop time:	1355	Purge Appearance: clear, colorless						
Duration: (minutes)	15	Sample Appearance: clear, colorless						
Rate, gpm:		Comments: replace lock Paint well on 5/31/19						
Volume, purged:	9							
Duplicate collected?	no							
Sample collection by:	KMJS	CO2- Mn2- Fe(T)- Fe2-						
Others present:	no	Well Condition: good						

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

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
Field Log Data Sheet

Client: EWB	**Monitoring Point:** MW-19B
Location: Superior Terminal	**Date:** 5/27/19
Project #: 4916/446	**Sample Time:** 1445

GENERAL DATA		STABILIZATION TEST						
Barr lock:	EWB lock							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	68.30	1335	7.20	284	7.54	192.4	1.91	
Static water level:*	7.47							
Water depth:*	52.83							
Well volume: (gal)	8.61							
Purge method:	bail							
Sample method:	bail							
Start time:	1410	Odor: none						
Stop time:	1443	Purge Appearance: clear, colorless						
Duration: (minutes)	33	Sample Appearance: clear, colorless						
Rate, gpm:		Comments: replace lock						
Volume, purged:	11	Paint well on 5/31/19						
Duplicate collected?	no							
Sample collection by:	KMJB	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-20A
Location: Superior terminal	**Date:** 5/28/19
Project #: 49161496	**Sample Time:** 0925

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	24.19	0835	6.52	1518	6.74	249.7	5.14	
Static water level:*	4.09							
Water depth:*	20.1							
Well volume: (gal)	3.27							
Purge method:	Bail							
Sample method:	Bail							
Start time:	0905	Odor: None						
Stop time:	0925	Purge Appearance: clear, colorless						
Duration: (minutes)	20	Sample Appearance: clear, colorless						
Rate, gpm:		Comments: changed locks						
Volume, purged:	10 gallons							
Duplicate collected?	Yes, Dup-1							
Sample collection by:	KMJ3	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-20B
Location: Superior terminal	**Date:** 5/28/19
Project #: 49161446	**Sample Time:** 1005

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	60.15	0855	6.98	499	6.90	217	3.11	
Static water level:*	17.68							
Water depth:*	42.5							
Well volume: (gal)	6.93							
Purge method:	Bail							
Sample method:	Bail							
Start time:	0940	Odor: none						
Stop time:	1000	Purge Appearance: clear, colorless						
Duration: (minutes)	20	Sample Appearance: clear, colorless						
Rate, gpm:		Comments: replaced lock.						
Volume, purged:	9							
Duplicate collected?	no							
Sample collection by:	KMJB	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-21A
Location: Superior Terminal	**Date:** 5/28/19
Project #: 4916/496	**Sample Time:** 1315

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	24.50	1238	6.74	1595	7.32	81.7	6.84	
Static water level:*	4.64							
Water depth:*	19.86							
Well volume: (gal)	3.24							
Purge method:	Bail							
Sample method:	"							
Start time:	1255	Odor: none						
Stop time:	1313	Purge Appearance: clear, colorless						
Duration: (minutes)	18	Sample Appearance: clear, colorless						
Rate, gpm:		Comments: Lock getting rusty Paint well on 5/31/19						
Volume, purged:	7							
Duplicate collected?	ND							
Sample collection by:	KMJ3	CO2-	Mn2-	Fe(T)-	Fe2-			
Others present:	ND	Well Condition: good						

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

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

Barr Engineering Company
Field Log Data Sheet

Client: ENB	Monitoring Point: MW-21B
Location: Superior terminal	Date: 5/28/19
Project #: 4916446	Sample Time: 1345

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	60.65	1250	6.77	655	7.32	123.6	3.09	
Static water level:*	17.99							
Water depth:*	42.66							
Well volume: (gal)	6.95							
Purge method:	Bail							
Sample method:	"							

Start time:	1325	Odor: none	
Stop time:	1345	Purge Appearance: clear, colorless	
Duration: (minutes)	20	Sample Appearance: clear, colorless	
Rate, gpm:		Comments: lock getting rusty Paint well on 5/31/19	
Volume, purged:	9		
Duplicate collected?	no		
Sample collection by:	KMJ3	CO2- Mn2- Fe(T)- Fe2-	

Others present: no | Well Condition: good

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

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-22B
Location: Superior Terminal	**Date:** 5/28/19 BL
Project #: 49161496	**Sample Time:** 1555

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	57.71	1524	7.51	1024	6.89	-83.6	1.76	
Static water level:*	18.39							
Water depth:*	39.32							
Well volume: (gal)	6.41							
Purge method:	Bail							
Sample method:	Bail							
Start time:	1530	Odor: none						
Stop time:	1553	Purge Appearance: brown/pink						
Duration: (minutes)	23	Sample Appearance: pink						
Rate, gpm:		Comments: turbid, some bubbles when collected sample						
Volume, purged:	10.5							
Duplicate collected?	no							
Sample collection by:	BMTS	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-23B
Location: Superior Terminal	**Date:** 5/29/19
Project #: 49161946	**Sample Time:** 1320

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	57.28	1239	6.98	850	7.56	426	2.72	
Static water level:*	6.71							
Water depth:*	50.57							
Well volume: (gal)	8.24							
Purge method:	Bail							
Sample method:	Bail							
Start time:	1345	Odor: none						
Stop time:	1315	Purge Appearance: clear, colorless						
Duration: (minutes)	30	Sample Appearance: clear, colorless						
Rate, gpm:		Comments:						
Volume, purged:	12							
Duplicate collected?	NO							
Sample collection by:	KMJ3	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** 24-A
Location: Superior Terminal	**Date:** 5/27/19
Project #: 4916446	**Sample Time:** 0955

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	19.03	0941	6.03	930	6.39	143.3	5.66	
Static water level:*	3.68							
Water depth:*	15.35							
Well volume: (gal)	2.5							
Purge method:	bail							
Sample method:	"							
Start time:	0945	Odor: none						
Stop time:	0953	Purge Appearance: clear, very light brown at end						
Duration: (minutes)	13	Sample Appearance: light brown / clear						
Rate, gpm:		Comments:						
Volume, purged:	6							
Duplicate collected?	no							
Sample collection by:	[redacted]	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:

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:	EWB	**Monitoring Point:**	24-B
Location:	EWB Superior terminal	**Date:**	5/27/19
Project #:	49/61446	**Sample Time:**	1032

GENERAL DATA		**STABILIZATION TEST**						
Barr lock:	EWB lock	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter *(in.)*:	2"							
Total well depth *(ft.)*:*	49.38	1000	7.56	730	7.24	108.4	3.17	
Static water level *(ft.)*:*	14.95							
Water depth *(ft.)*:*	34.43							
Well volume *(gal.)*:	5.6							
Purge method:	Bail							
Sample method:	Bail							
Start time *(hh:mm:ss)*:	1000	Odor: none						
Stop time *(hh:mm:ss)*:	1028	Purge Appearance: clear, light brown						
Duration *(hh:mm:ss)*:	28	Sample Appearance: light brown						
Rate, gpm:		Comments:						
Volume, purged: *(note units)*	7							
Duplicate collected?	none							
Sample collection by:	KMJ3	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-257
Location: Superior terminal	**Date:** 05/30/19
Project #: 4916144	**Sample Time:** 1000

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	19.21	0934	6.46	924	6.57	140.2	1.22	
Static water level:*	3.33							
Water depth:*	15.88							
Well volume: (gal)	2.59							
Purge method:	Bail							
Sample method:	"							
Start time:	0950	Odor: none						
Stop time:	0958	Purge Appearance: very turbid, brownish red						
Duration: (minutes)	8	Sample Appearance: "						
Rate, gpm:		Comments: lots of sediment						
Volume, purged:	4							
Duplicate collected?	no							
Sample collection by:	KMJ3	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:

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
Field Log Data Sheet

Client: EnB	**Monitoring Point:** MW-2 TB
Location: Superior terminal	**Date:** 05/30/19
Project #: 4916/4916	**Sample Time:** 1020

GENERAL DATA		STABILIZATION TEST						
Barr lock:	EnB lock							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	49.42	0942	7.42	401	6.49	163.0	4.73	
Static water level:*	8.32							
Water depth:*	41.10							
Well volume: (gal)	6.7							
Purge method:	Bail							
Sample method:	Bail							
Start time:	1000	Odor: none						
Stop time:	1018	Purge Appearance: brownish/red turbid						
Duration: (minutes)	18	Sample Appearance: "						
Rate, gpm:		Comments: lock getting rusty						
Volume, purged:	6.5							
Duplicate collected?	no							
Sample collection by:	kmTB	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-26
Location: Superior Terminal	**Date:** 5/30/19
Project #: 49/6/446	**Sample Time:** ~~0845~~ KMJ3 0850

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB lock							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	18.91	0832	6.50	1011	6.37	242.2	5.87	
Static water level:*	7.55							
Water depth:*	11.36							
Well volume: (gal)	1.85							
Purge method:	Bail							
Sample method:	Bail							
Start time:	0837	Odor: none						
Stop time:	0845	Purge Appearance: light Brown/pink						
Duration: (minutes)	8	Sample Appearance: "						
Rate, gpm:		Comments:						
Volume, purged:	5							
Duplicate collected?	yes - Dup-3							
Sample collection by:	KMJ3	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:

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.

Fall 2019 Field Notes

Barr Engineering Company
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-1R
Location: SPT	**Date:** 10/2/19
Project #: 4916/4916.05	**Sample Time:** 0835

GENERAL DATA		**STABILIZATION TEST**						
Barr lock:	ENB 3382							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	17.54							
Static water level:*	12.00 12.10							
Water depth:*	5.44							
Well volume: (gal)	0.88							
Purge method:	bail							
Sample method:	bail							
Start time:	0820	Odor: none						
Stop time:	0833	Purge Appearance: light pink						
Duration: (minutes)	13	Sample Appearance:						
Rate, gpm:		Comments: Some turbidity						
Volume, purged:	3 gal	* well id sticker added to inside of outside PVC in well pad/cap						
Duplicate collected?	NO							
Sample collection by: KMT3		CO2- Mn2- Fe(T)- Fe2-						
Others present: none		Well Condition: good, no ENB sticker						

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

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-2
Location: SPT	**Date:** 10/29/19
Project #: 49/6144	**Sample Time:** 1100

GENERAL DATA		**STABILIZATION TEST**						
Barr lock:	ENB 33302	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2							
Total well depth:*	27.18							
Static water level:*	3.28							
Water depth:*	23.9							
Well volume: (gal)	3.89							
Purge method:	bail							
Sample method:	bail							
Start time:	1032	Odor: none						
Stop time:	1054	Purge Appearance: clear, colorless						
Duration: (minutes)		Sample Appearance: clear, colorless						
Rate, gpm:		Comments: rough bubbler on simple						
Volume, purged:	11 gal	Entrance road to well soft, have to backup through ditch, busy road, not enough room to pull over on shoulder consider putting down gravel. tall grasses & weeds in area.						
Duplicate collected?	no							
Sample collection by:	KMJ3	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:

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
Field Log Data Sheet

Client: END	**Monitoring Point:** MW-5
Location: SPT	**Date:** 10/30/19
Project #: 49161441	**Sample Time:** 1300

GENERAL DATA		STABILIZATION TEST						
Barr lock:	END 3382							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	27.03							
Static water level:*	3.16							
Water depth:*	23.87							
Well volume: (gal)	3.89							
Purge method:	bail							
Sample method:	bail							
Start time:	1237	Odor: none						
Stop time:	1257	Purge Appearance: clear → light brown						
Duration: (minutes)		Sample Appearance: light brown						
Rate, gpm:		Comments:						
Volume, purged:	13 gal							
Duplicate collected?	no							
Sample collection by:	KMFB	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-5B
Location: SPT	**Date:** 10/30/19
Project #: 49161446	**Sample Time:** 1405

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB 338							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	57.95							
Static water level:*	7.04							
Water depth:*	50.91							
Well volume: (gal)	8.27							
Purge method:	bail							
Sample method:	bail							
Start time:	1340	Odor: none						
Stop time:	1400	Purge Appearance: clear, colorless						
Duration: (minutes)	20	Sample Appearance: "						
Rate, gpm:		Comments:						
Volume, purged:	13 gal							
Duplicate collected?	NO							
Sample collection by:	KMTJ	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-6
Location: SPT	**Date:** 10/29/19
Project #: 49161446	**Sample Time:** 1445

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB 3382	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	26.70							
Static water level:*	7.51							
Water depth:*	19.19							
Well volume: (gal)	3.13							
Purge method:	bail							
Sample method:	bail							
Start time:	1425	Odor: none						
Stop time:	1442	Purge Appearance: light pink						
Duration: (minutes)		Sample Appearance: light pink, turbid						
Rate, gpm:		Comments:						
Volume, purged:	10 gal							
Duplicate collected?	no							
Sample collection by:	KMT3	CO2- Mn2- Fe(T)- Fe2-						

Others present: none

Well Condition: good, rusty

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

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** 6B
Location: SPT	**Date:** 10/29/09
Project #: 4916/4916	**Sample Time:** 1525

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB 3382							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	58.25							
Static water level:*	9.98							
Water depth:*	48.27							
Well volume: (gal)	7.86							
Purge method:	bail							
Sample method:	bail							
Start time:	1455	Odor: none						
Stop time:	1520	Purge Appearance: very light pink						
Duration: (minutes)	25	Sample Appearance: light pink						
Rate, gpm:		Comments: slightly turbid						
Volume, purged:	10.5							
Duplicate collected?	no							
Sample collection by: KMT3		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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** mw-10
Location: SPT	**Date:** 10/31/19
Project #: 49/16165	**Sample Time:** 1140

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB 3302							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	30.44							
Static water level:*	4.22							
Water depth:*	26.22							
Well volume: (gal)	4.27							
Purge method:	bail							
Sample method:	bail							
Start time:	1110	Odor: none						
Stop time:	1136	Purge Appearance: clear, colorless						
Duration: (minutes)		Sample Appearance: "						
Rate, gpm:		Comments: slight cuttings, bubbles in sample						
Volume, purged:	15 gal							
Duplicate collected?	no							
Sample collection by:	KMT3	CO2- Mn2- Fe(T)- Fe2-						
Others present:	none	Well Condition: good, rusty bollards & lock						

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

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
Field Log Data Sheet

Client:	ENB	**Monitoring Point:**	MW-11
Location:	SPT	**Date:**	10/28/19
Project #:	49161445	**Sample Time:**	1320

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB 3382							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	18.19							
Static water level:*	8.10							
Water depth:*	~~10.09~~ DMB 10.09							
Well volume: (gal)	1.64							
Purge method:	bail							
Sample method:	bail							
Start time:	1305	Odor:	none					
Stop time:	1317	Purge Appearance:	light brown/pink					
Duration: (minutes)		Sample Appearance:	11					
Rate, gpm:		Comments:	slightly turbid					
Volume, purged:	5 gal							
Duplicate collected?	no							
Sample collection by:	KMJ3	CO2-	Mn2-	Fe(T)-	Fe2-			
Others present:	no	Well Condition:	good					

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

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-11B
Location: SPT	**Date:** 10/28/19
Project #: 49161446	**Sample Time:** 1345

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB 3382	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	57.83							
Static water level:*	25.60							
Water depth:*	32.23							
Well volume: (gal)	5.25							
Purge method:	bail							
Sample method:	bail							
Start time:	1320	Odor: none						
Stop time:	1343	Purge Appearance: clear, colorless						
Duration: (minutes)		Sample Appearance: clear, colorless						
Rate, gpm:		Comments:						
Volume, purged:	8 gal							
Duplicate collected?	no							
Sample collection by:	~~KMJB~~ Bail KMJB	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-12
Location: SPT	**Date:** 10/23/19
Project #: 49161446	**Sample Time:** 1035

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB 3382							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	22.19							
Static water level:*	4.57							
Water depth:*	17.62							
Well volume: (gal)	2.87							
Purge method:	bail							
Sample method:	bail							
Start time:	1020	Odor: none						
Stop time:	1031	Purge Appearance: clear, colorless						
Duration: (minutes)	9	Sample Appearance: clear, colorless						
Rate, gpm:		Comments:						
Volume, purged:	4.5 gal							
Duplicate collected?	Dup-1							
Sample collection by:	KMS	CO2- Mn2- Fe(T)- Fe2-						
Others present:	None	Well Condition: good, no locking mechanism on top						

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

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
Field Log Data Sheet

Client: EnB	**Monitoring Point:** MW-14
Location: SPT	**Date:** 10/29/19
Project #: 4916/4916	**Sample Time:** 1215

GENERAL DATA		**STABILIZATION TEST** 1215						
Barr lock:	EnB 3382	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	18.34							
Static water level:*	5.01							
Water depth:*	13.33							
Well volume: (gal)	2.17							
Purge method:	bail							
Sample method:	bail							
Start time:	1202	Odor: none						
Stop time:	1213	Purge Appearance: clear, colorless						
Duration: (minutes)		Sample Appearance:						
Rate, gpm:		Comments: root mass in well						
Volume, purged:	7 gal							
Duplicate collected?	no							
Sample collection by:	KMJ3	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-15
Location: JPT	**Date:** 10/29/19
Project #: 4916446	**Sample Time:** 1135

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB 3382	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	17.30							
Static water level:*	3.04							
Water depth:*	14.26							
Well volume: (gal)	2.32							
Purge method:	bail							
Sample method:	bail							
Start time:	1125	Odor:	None					
Stop time:	1132	Purge Appearance:	Clear, Colorless					
Duration: (minutes)		Sample Appearance:	Clear, Colorless					
Rate, gpm:		Comments:	Slight bubbles in sample					
Volume, purged:	6.5 gal							
Duplicate collected?	Yes - Dup 2							
Sample collection by:	CMJJ	CO2-	Mn2-	Fe(T)-	Fe2-			
Others present:	None	Well Condition:	Good, Slightly Murky					

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

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-17
Location: SPT	**Date:** 10/30/19
Project #: 49161446	**Sample Time:** 1145

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB 3302	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	17.47							
Static water level:*	4.06							
Water depth:*	13.41							
Well volume: (gal)	2.18							
Purge method:	bail							
Sample method:	bail							
Start time:	1129	Odor: none						
Stop time:	1142	Purge Appearance: clear, colorless						
Duration: (minutes)		Sample Appearance: "						
Rate, gpm:		Comments:						
Volume, purged:	5 gal							
Duplicate collected?	none							
Sample collection by:	KMTS	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:

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
Field Log Data Sheet

Client: EWB	**Monitoring Point:** MW-17B
Location: SPT	**Date:** 10/30/19
Project #: 49161446	**Sample Time:** 1215

GENERAL DATA		STABILIZATION TEST						
Barr lock:	EWB 3382							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	44.94							
Static water level:*	20.45							
Water depth:*	24.49							
Well volume: (gal)	3.99							
Purge method:	bail							
Sample method:	bail							
Start time:	1150	Odor: none						
Stop time:	1210	Purge Appearance: clear, colorless						
Duration: (minutes)		Sample Appearance: "						
Rate, gpm:		Comments:						
Volume, purged:	5.5							
Duplicate collected?	no							
Sample collection by:	KMJB	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-18
Location: SPT	**Date:** 10/30/19
Project #: 4916146	**Sample Time:** 1110

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB 3382	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	17.25							
Static water level:*	5.39							
Water depth:*	11.86							
Well volume: (gal)	1.9							
Purge method:	bail							
Sample method:	bail							
Start time:	1056	Odor: none						
Stop time:	1108	Purge Appearance: Clear, colorless						
Duration: (minutes)		Sample Appearance: "						
Rate, gpm:		Comments:						
Volume, purged:	4.5 gal							
Duplicate collected?	Yes - Dup-3							
Sample collection by:	KMTJ	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-194
Location: SPT	**Date:** 10/29/19
Project #: 49/6/446	**Sample Time:** 1310

GENERAL DATA		**STABILIZATION TEST**						
Barr lock:	ENB 3382							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	24.13							
Static water level:*	2.91							
Water depth:*	21.22							
Well volume: (gal)	3.45							
Purge method:	bail							
Sample method:	bail							
Start time:	1245	Odor: none						
Stop time:	13.05	Purge Appearance: clear, colorless						
Duration: (minutes)		Sample Appearance: clear, colorless						
Rate, gpm:		Comments:						
Volume, purged:	8.5 gal							
Duplicate collected?	NO							
Sample collection by:	KMH	CO2- Mn2- Fe(T)- Fe2-						
Others present:	3 employee contractor 1 ENB employee	Well Condition: good						

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

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
Field Log Data Sheet

Client: BNB	**Monitoring Point:** MW-19B
Location: SPT	**Date:** 10/29/19
Project #: 49/L/1496	**Sample Time:** 1341

GENERAL DATA		STABILIZATION TEST						
Barr lock:	EVB 3382	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:								
Total well depth:*	59.94							
Static water level:*	7.56							
Water depth:*	52.38							
Well volume: (gal)	8.5							
Purge method:	bail							
Sample method:	bail							
Start time:	1312	Odor: none						
Stop time:	1371	Purge Appearance: clear colorless						
Duration: (minutes)		Sample Appearance: "						
Rate, gpm:		Comments:						
Volume, purged:	17 gal							
Duplicate collected?	no							
Sample collection by:	CMJ	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:

VOC- 7 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
Field Log Data Sheet

Client: EWB	**Monitoring Point:** MW-20A
Location: SPT	**Date:** 10/30/19
Project #: 49161446	**Sample Time:** 0950

GENERAL DATA		STABILIZATION TEST						
Barr lock:	EWB 3382	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	24.19							
Static water level:*	4.88							
Water depth:*	19.31							
Well volume: (gal)	3.1							
Purge method:	bail							
Sample method:	bail							
Start time:	0933	Odor: none						
Stop time:	0947	Purge Appearance: clear, colorless						
Duration: (minutes)		Sample Appearance: 11						
Rate, gpm:		Comments:						
Volume, purged:	9.5 gal							
Duplicate collected?	no							
Sample collection by:	KMTB	CO2- Mn2- Fe(T)- Fe2-						

Others present: none	Well Condition: good, murky

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

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
Field Log Data Sheet

Client: EWB	**Monitoring Point:** MW-203
Location: SPT	**Date:** 10/30/19
Project #: 4916144	**Sample Time:** 1020

GENERAL DATA		STABILIZATION TEST						
Barr lock:	EWB 3382	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	60.16							
Static water level:*	18.57							
Water depth:*	41.61							
Well volume: (gal)	6.78							
Purge method:	bail							
Sample method:	bail							
Start time:	0955	Odor: none						
Stop time:	1018	Purge Appearance: clear, colorless						
Duration: (minutes)		Sample Appearance: "						
Rate, gpm:		Comments: needed to use packed graphite to open well lock. just replaced lock spring 2019.						
Volume, purged:	10 gal							
Duplicate collected?	no							
Sample collection by:	KMTJ	CO2- Mn2- Fe(T)- Fe2-						
Others present:	none	Well Condition: Good, rusty						

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

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-21A
Location: SPT	**Date:** 10/31/19
Project #: 4916144	**Sample Time:** 1035

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB 3382	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	24.50							
Static water level:*	4.04							
Water depth:*	20.46							
Well volume: (gal)	3.33							
Purge method:	bail							
Sample method:	bail							
Start time:	1015	Odor: none						
Stop time:	1031	Purge Appearance: clear, colorless						
Duration: (minutes)		Sample Appearance: "						
Rate, gpm:		Comments:						
Volume, purged:	7 gal							
Duplicate collected?	no							
Sample collection by:	KMTJ	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:

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
Field Log Data Sheet

Client: EWB	**Monitoring Point:** MW-21B
Location: SPT	**Date:** 10/31/15
Project #: 49161446	**Sample Time:** 1105

GENERAL DATA		STABILIZATION TEST						
Barr lock:	EWB 3382	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	60.65							
Static water level:*	19.06							
Water depth:*	41.59							
Well volume: (gal)	6.77							
Purge method:	bail							
Sample method:	bail							
Start time:	1237	Odor: none						
Stop time:	1100	Purge Appearance: light brn						
Duration: (minutes)		Sample Appearance:						
Rate, gpm:		Comments:						
Volume, purged:	10 gal							
Duplicate collected?	No							
Sample collection by:	KMJ3	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-23B
Location: SPT	**Date:** 10/28/19
Project #: 4916144	**Sample Time:** 1520

GENERAL DATA		**STABILIZATION TEST**						
Barr lock:	ENB3332							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	58,35							
Static water level:*	18,58							
Water depth:*	39,77							
Well volume: (gal)	6,48							
Purge method:	bail							
Sample method:	bail							
Start time:	1455	Odor: none						
Stop time:	1518	Purge Appearance: pink / brown						
Duration: (minutes)		Sample Appearance: pink / brown						
Rate, gpm:		Comments: turbid						
Volume, purged:	10 gal							
Duplicate collected?	NO							
Sample collection by:	KMTS	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** mw-23B
Location: SPT	**Date:** 10/30/19
Project #: 49161446	**Sample Time:** 1450

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB 3382	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	57.29							
Static water level:*	6.57							
Water depth:*	50.71							
Well volume: (gal)	8.26							
Purge method:	bail							
Sample method:	bail							
Start time:	1435	Odor: none						
Stop time:	1448	Purge Appearance: light gray						
Duration: (minutes)		Sample Appearance: none						
Rate, gpm:		Comments:						
Volume, purged:	12 gal							
Duplicate collected?	NO							
Sample collection by:	KMTB	CO2- Mn2- Fe(T)- Fe2-						

Others present: none

Well Condition: good, lock is rusty but unlocked fine

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

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-24A
Location: STP	**Date:** 10/28/19
Project #: 4916/446	**Sample Time:** 0915

GENERAL DATA	
Barr lock:	ENB 3382
Casing diameter:	2"
Total well depth:*	19.02
Static water level:*	3.97
Water depth:*	15.05
Well volume: (gal)	2.45
Purge method:	bail
Sample method:	bail
Start time:	0857
Stop time:	0913
Duration: (minutes)	
Rate, gpm:	
Volume, purged:	6 gal
Duplicate collected?	no
Sample collection by:	KMTJ

STABILIZATION TEST

Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance

Odor: none

Purge Appearance: light brown to clear

Sample Appearance: light brown

Comments:

cement at base of well & bollards is coming out of ground

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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** 24B
Location: SPT	**Date:** 10/28/19
Project #: 49161446	**Sample Time:** 0950

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB 3382							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	49.37							
Static water level:*	11.32							
Water depth:*	38.05							
Well volume: (gal)	6.2							
Purge method:	Bail							
Sample method:	Bail							
Start time:	0925	Odor: none						
Stop time:	0947	Purge Appearance: light brown/pale tinged						
Duration: (minutes)		Sample Appearance: light brown						
Rate, gpm:		Comments:						
Volume, purged:	10 gal							
Duplicate collected?	no							
Sample collection by:	[illegible]	CO2- Mn2- Fe(T)- Fe2-						
Others present:	none	Well Condition: good - see MW-24A						

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

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-25A
Location: SPT	**Date:** 10/23/19
Project #: 49161446	**Sample Time:** 1115

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB 3382							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	19.23							
Static water level:*	3.45							
Water depth:*	15.78							
Well volume: (gal)	2.57							
Purge method:	bail							
Sample method:	bail							
Start time:	1050	Odor: none						
Stop time:	1113	Purge Appearance: pink/brown very turbid						
Duration: (minutes)	23	Sample Appearance: pink/brown						
Rate, gpm:		Comments:						
Volume, purged:	4.5 gal	replace lock						
Duplicate collected?	no							
Sample collection by:	KMB	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:

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
Field Log Data Sheet

Client: ENB	**Monitoring Point:** MW-23B
Location: SPT	**Date:** 10/28/19
Project #: 49/61446	**Sample Time:** 1140

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB 3342	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Casing diameter:	2"							
Total well depth:*	49.42							
Static water level:*	9.32							
Water depth:*	40.10							
Well volume: (gal)	6.53							
Purge method:	bail							
Sample method:	bail							
Start time:	1120	Odor: none						
Stop time:	1137	Purge Appearance: brown/pink						
Duration: (minutes)		Sample Appearance: brown / pink						
Rate, gpm:		Comments: very turbid						
Volume, purged:	7 gal							
Duplicate collected?	no							
Sample collection by: KMJB		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:

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
Field Log Data Sheet

Client:	ENB	**Monitoring Point:**	MW-26
Location:	SPT	**Date:**	10/28/19
Project #:	4916/446	**Sample Time:**	1230

GENERAL DATA		STABILIZATION TEST						
Barr lock:	ENB 3392							
Casing diameter:	2"	Time/ Volume	Temp. °C	Cond. @ 25	pH	Eh	D.O.	Turbidity Appearance
Total well depth:*	18.90							
Static water level:*	6.88							
Water depth:*	12.02							
Well volume: (gal)	1.96							
Purge method:	bail							
Sample method:	bail							
Start time:	1210	Odor: none						
Stop time:	1228	Purge Appearance: light brown						
Duration: (minutes)		Sample Appearance: light brown						
Rate, gpm:		Comments: slightly turbid						
Volume, purged:	7 gal							
Duplicate collected?	no							
Sample collection by:	KMTJ	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:

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.

Appendix D

Private Well Memo

resourceful. naturally.
engineering and environmental consultants

BARR

June 17, 2019

Mr. Karl F. Beaster, PG
Sr. Environmental Advisor
Enbridge Energy Environment Department
26 East Superior Street, Suite 309
Duluth, Minnesota 55802

Sent Via Email

Re: Potable Well Sampling Results – Superior Terminal
2019 Groundwater Monitoring Program

Dear Mr. Beaster:

On May 21, 2019, Barr Engineering Co (Barr) collected samples from the three potable wells located at the Enbridge Superior Terminal. Samples from potable well PW-1 and PW-3 were collected from spigots closest to each pressure tank. The sample from potable well PW-3 was collected from an outside spigot. Prior to sample collection at each well location, stagnant water was purged by allowing the faucet to run; approximately 20 minutes at PW-1 and 15 minutes at PW-2 and PW-3. This allowed the well pump to cycle on and helped ensure the sample was representative of the aquifer rather than from the well casing or plumbing system. Water samples from each well were collected into laboratory-supplied containers and submitted to Pace Analytical, Minneapolis, MN, for chemical analyses of benzene, ethylbenzene, toluene, xylenes (BETX), iron, chloride, pH, nitrate, and total and fecal coliform. A copy of the analytical laboratory report is attached.

		Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Chloride (mg/L)	Iron (mg/L)	Nitrate as N (mg/L)	Total Coliform	Fecal Coliform as E. coli	pH
Results	PW-1	<1.0	<5.0	<1.0	<3.0	73.9	**1.950**	0.068J	Absent	Absent	**8.6**
	PW-2	<0.34	<0.28	<0.46	<1.0	109	0.099	<0.020	Absent	Absent	**8.8**
	PW-3	<1.0	<5.0	<1.0	<3.0	60.4	**1.290**	<0.020	Absent	Absent	**8.9**
Criteria	NR 140 ES	5	800	700	2,000	250	0.3	10	--	--	--
	NR 140 PAL	0.5	140	160	400	125	0.15	2	--	--	--
	EPA Primary DW	5	1000	700	10,000	--	--	10	Pos/Neg	0	--
	EPA Secondary DW	--	--	--	--	250	0.3	--	--	--	6.5-8.5

-- = No standard established.

If you have any questions or require additional information, please contact me at (218) 529-7133 or Lynette Carney at (218) 529-7141.

Sincerely,
Barr Engineering Co.

Kaitlin Johnson
Geologist

Enclosure: Pace Analytical Laboratory Report

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

June 04, 2019

Jim Taraldsen
Barr Engineering Company
325 S Lake Ave
Duluth, MN 55802

RE: Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

Dear Jim Taraldsen:
Enclosed are the analytical results for sample(s) received by the laboratory on May 21, 2019. 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
Accounts Payable, Barr Engineering

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

CERTIFICATIONS

Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

Minnesota Certification IDs

1700 Elm Street SE, 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 DW Certification #: MN00064
Arkansas WW 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
Minnesota Dept of Ag Certifcation #: via MN 027-053-137
Minnesota Petrofund Certification #: 1240
Mississippi Certification #: MN00064
Missouri Certification #: 10100
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 Primary 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
Vermont Certification #: VT-027053137
Virginia Certification #: 460163
Washington Certification #: C486
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01

Virginia Minnesota Certification ID's

315 Chestnut Street, Virginia, MN 55792
Montana Certificate #CERT0103
Alaska Certification UST-107
Minnesota Dept of Health Certification #: 027-137-445
North Dakota Certification: # R-203
Wisconsin DNR Certification # : 998027470
WA Department of Ecology Lab ID# C1007

Duluth Minnesota Cerification ID's

4730 Oneota St., Duluth, MN 55807
Minnesota Dept of Health Certification #: 1610186
Montana DHHS Certification #: CERT0102
Wisconsin DNR Certification # : 999446800
North Dakota Certification #: R-105

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750

REPORT OF LABORATORY ANALYSIS

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

CERTIFICATIONS

Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

Green Bay Certification IDs

Wisconsin DATCP Certification #: 105-444
Federal Fish & Wildlife Permit #: LE51774A-0
USDA Soil Permit #: P330-16-00157

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

SAMPLE SUMMARY

Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10475770001	**PW-3**	Water	05/21/19 10:30	05/21/19 12:36
10475770002	**PW-1**	Water	05/21/19 11:15	05/21/19 12:36
10475770003	**PW-2**	Water	05/21/19 11:25	05/21/19 12:36
10475770004	**Trip Blank**	Water	05/21/19 00:00	05/21/19 12:36

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

SAMPLE ANALYTE COUNT

Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10475770001	**PW-3**	IDEXX Colilert-18	BT1	2	PASI-DUL
		EPA 200.7	AK1	1	PASI-V
		EPA 8260	LAP	7	PASI-G
		SM 4500-H+B	ZJT	1	PASI-V
		EPA 300.0	ZJT	2	PASI-V
10475770002	**PW-1**	IDEXX Colilert-18	BT1	2	PASI-DUL
		EPA 200.7	AK1	1	PASI-V
		EPA 8260	LAP	7	PASI-G
		SM 4500-H+B	ZJT	1	PASI-V
		EPA 300.0	ZJT	2	PASI-V
10475770003	**PW-2**	IDEXX Colilert-18	BT1	2	PASI-DUL
		EPA 200.7	AK1	1	PASI-V
		EPA 8260B	DS2	7	PASI-M
		SM 4500-H+B	ZJT	1	PASI-V
		EPA 300.0	ZJT	2	PASI-V
10475770004	**Trip Blank**	EPA 8260	LAP	7	PASI-G

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

ANALYTICAL RESULTS

Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

Sample: PW-3 **Lab ID: 10475770001** Collected: 05/21/19 10:30 Received: 05/21/19 12:36 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
9223B QT Total Coliform Duluth	Analytical Method: IDEXX Colilert-18 Preparation Method: IDEXX Colilert-18								
E.coli, Bacteria	**<1.0**	MPN/100mL	1.0	1.0	1	05/21/19 17:30	05/22/19 12:10		
Total Coliform Bacteria	**<1.0**	MPN/100mL	1.0	1.0	1	05/21/19 17:30	05/22/19 12:10		
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Iron	**1290**	ug/L	22.2	6.7	1	05/24/19 10:05	05/30/19 10:25	7439-89-6	
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		05/30/19 16:22	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		05/30/19 16:22	100-41-4	
Toluene	**<0.17**	ug/L	5.0	0.17	1		05/30/19 16:22	108-88-3	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		05/30/19 16:22	1330-20-7	
Surrogates									
Dibromofluoromethane (S)	109	%	70-130		1		05/30/19 16:22	1868-53-7	
Toluene-d8 (S)	106	%	70-130		1		05/30/19 16:22	2037-26-5	
4-Bromofluorobenzene (S)	82	%	70-130		1		05/30/19 16:22	460-00-4	
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**8.9**	Std. Units	0.10	0.10	1		05/23/19 16:33		H6
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**60.4**	mg/L	1.0	0.48	1		05/23/19 08:49	16887-00-6	
Nitrate as N	**<0.020**	mg/L	0.20	0.020	1		05/23/19 08:49	14797-55-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

Sample: PW-1 **Lab ID: 10475770002** Collected: 05/21/19 11:15 Received: 05/21/19 12:36 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
9223B QT Total Coliform Duluth	Analytical Method: IDEXX Colilert-18 Preparation Method: IDEXX Colilert-18								
E.coli, Bacteria	**<1.0**	MPN/100mL	1.0	1.0	1	05/21/19 17:30	05/22/19 12:10		
Total Coliform Bacteria	**<1.0**	MPN/100mL	1.0	1.0	1	05/21/19 17:30	05/22/19 12:10		
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Iron	**1950**	ug/L	22.2	6.7	1	05/24/19 10:05	05/30/19 10:29	7439-89-6	
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		05/30/19 12:45	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		05/30/19 12:45	100-41-4	
Toluene	**<0.17**	ug/L	5.0	0.17	1		05/30/19 12:45	108-88-3	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		05/30/19 12:45	1330-20-7	
Surrogates									
Dibromofluoromethane (S)	111	%	70-130		1		05/30/19 12:45	1868-53-7	
Toluene-d8 (S)	101	%	70-130		1		05/30/19 12:45	2037-26-5	
4-Bromofluorobenzene (S)	83	%	70-130		1		05/30/19 12:45	460-00-4	
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**8.6**	Std. Units	0.10	0.10	1		05/23/19 16:41		H6
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**73.9**	mg/L	1.0	0.48	1		05/23/19 09:10	16887-00-6	
Nitrate as N	**0.068J**	mg/L	0.20	0.020	1		05/23/19 09:10	14797-55-8	

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

Sample: PW-2 **Lab ID: 10475770003** Collected: 05/21/19 11:25 Received: 05/21/19 12:36 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
9223B QT Total Coliform Duluth	Analytical Method: IDEXX Colilert-18 Preparation Method: IDEXX Colilert-18								
E.coli, Bacteria	**<1.0**	MPN/100mL	1.0	1.0	1	05/21/19 17:30	05/22/19 12:10		
Total Coliform Bacteria	**<1.0**	MPN/100mL	1.0	1.0	1	05/21/19 17:30	05/22/19 12:10		
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Iron	**98.5**	ug/L	22.2	6.7	1	05/24/19 10:05	05/30/19 10:27	7439-89-6	
8260B MSV UST	Analytical Method: EPA 8260B								
Benzene	**<0.10**	ug/L	0.34	0.10	1		05/28/19 22:43	71-43-2	
Ethylbenzene	**<0.14**	ug/L	0.46	0.14	1		05/28/19 22:43	100-41-4	
Toluene	**<0.083**	ug/L	0.28	0.083	1		05/28/19 22:43	108-88-3	
Xylene (Total)	**<0.31**	ug/L	1.0	0.31	1		05/28/19 22:43	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	99	%.	75-125		1		05/28/19 22:43	17060-07-0	
Toluene-d8 (S)	99	%.	75-125		1		05/28/19 22:43	2037-26-5	
4-Bromofluorobenzene (S)	100	%.	75-125		1		05/28/19 22:43	460-00-4	
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B								
pH at 25 Degrees C	**8.8**	Std. Units	0.10	0.10	1		05/23/19 16:50		H6
300.0 IC Anions	Analytical Method: EPA 300.0								
Chloride	**109**	mg/L	1.0	0.48	1		05/23/19 09:31	16887-00-6	
Nitrate as N	**<0.020**	mg/L	0.20	0.020	1		05/23/19 09:31	14797-55-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

Sample: Trip Blank **Lab ID: 10475770004** Collected: 05/21/19 00:00 Received: 05/21/19 12:36 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV UST	Analytical Method: EPA 8260								
Benzene	**<0.25**	ug/L	1.0	0.25	1		05/30/19 10:54	71-43-2	
Ethylbenzene	**<0.22**	ug/L	1.0	0.22	1		05/30/19 10:54	100-41-4	
Toluene	**<0.17**	ug/L	5.0	0.17	1		05/30/19 10:54	108-88-3	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		05/30/19 10:54	1330-20-7	
Surrogates									
Dibromofluoromethane (S)	111	%	70-130		1		05/30/19 10:54	1868-53-7	
Toluene-d8 (S)	104	%	70-130		1		05/30/19 10:54	2037-26-5	
4-Bromofluorobenzene (S)	85	%	70-130		1		05/30/19 10:54	460-00-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

QC Batch: 166541 Analysis Method: IDEXX Colilert-18
QC Batch Method: IDEXX Colilert-18 Analysis Description: 9223B Quant Tray
Associated Lab Samples: 10475770001, 10475770002, 10475770003

METHOD BLANK: 656277 Matrix: Water
Associated Lab Samples: 10475770001, 10475770002, 10475770003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
E.coli, Bacteria	MPN/100mL	<1.0	1.0	05/22/19 12:10	
Total Coliform Bacteria	MPN/100mL	<1.0	1.0	05/22/19 12:10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

QC Batch: 166778 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET
Associated Lab Samples: 10475770001, 10475770002, 10475770003

METHOD BLANK: 657358 Matrix: Water
Associated Lab Samples: 10475770001, 10475770002, 10475770003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron	ug/L	<6.7	50.0	05/30/19 09:55	

LABORATORY CONTROL SAMPLE: 657359

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	5000	5000	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 657360 657361

Parameter	Units	12125406006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron	ug/L	ND	5000	5000	5030	4970	100	99	70-130	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 657362 657363

Parameter	Units	12125406005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron	ug/L	ND	5000	5000	4960	5100	99	102	70-130	3	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

QC Batch: 322708 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV UST-WATER
Associated Lab Samples: 10475770001, 10475770002, 10475770004

METHOD BLANK: 1874380 Matrix: Water
Associated Lab Samples: 10475770001, 10475770002, 10475770004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	<0.25	1.0	05/30/19 06:06	
Ethylbenzene	ug/L	<0.22	1.0	05/30/19 06:06	
Toluene	ug/L	<0.17	5.0	05/30/19 06:06	
Xylene (Total)	ug/L	<1.5	3.0	05/30/19 06:06	
4-Bromofluorobenzene (S)	%	87	70-130	05/30/19 06:06	
Dibromofluoromethane (S)	%	111	70-130	05/30/19 06:06	
Toluene-d8 (S)	%	105	70-130	05/30/19 06:06	

LABORATORY CONTROL SAMPLE: 1874381

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	56.1	112	70-130	
Ethylbenzene	ug/L	50	53.5	107	80-124	
Toluene	ug/L	50	52.5	105	80-126	
Xylene (Total)	ug/L	150	161	107	70-130	
4-Bromofluorobenzene (S)	%			95	70-130	
Dibromofluoromethane (S)	%			109	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1874695 1874696

Parameter	Units	40188355001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	<0.25	50	50	55.5	56.7	111	113	70-130	2	20	
Ethylbenzene	ug/L	<0.22	50	50	52.9	53.3	106	107	80-125	1	20	
Toluene	ug/L	<0.17	50	50	52.2	51.4	104	103	80-131	1	20	
Xylene (Total)	ug/L	<1.5	150	150	157	161	105	107	70-130	2	20	
4-Bromofluorobenzene (S)	%						94	95	70-130			
Dibromofluoromethane (S)	%						110	111	70-130			
Toluene-d8 (S)	%						99	98	70-130			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

QC Batch: 608744 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV UST-WATER
Associated Lab Samples: 10475770003

METHOD BLANK: 3290471 Matrix: Water
Associated Lab Samples: 10475770003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	<0.10	0.34	05/28/19 19:34	
Ethylbenzene	ug/L	<0.14	0.46	05/28/19 19:34	
Toluene	ug/L	<0.083	0.28	05/28/19 19:34	
Xylene (Total)	ug/L	<0.31	1.0	05/28/19 19:34	
1,2-Dichloroethane-d4 (S)	%.	98	75-125	05/28/19 19:34	
4-Bromofluorobenzene (S)	%.	102	75-125	05/28/19 19:34	
Toluene-d8 (S)	%.	101	75-125	05/28/19 19:34	

LABORATORY CONTROL SAMPLE: 3290472

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	20	24.4	122	75-125	
Ethylbenzene	ug/L	20	23.7	119	75-125	
Toluene	ug/L	20	23.4	117	75-125	
Xylene (Total)	ug/L	60	73.8	123	75-125	LS
1,2-Dichloroethane-d4 (S)	%.			101	75-125	
4-Bromofluorobenzene (S)	%.			101	75-125	
Toluene-d8 (S)	%.			99	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3293693 3293694

Parameter	Units	10475457016 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	24.9	20	20	46.9	47.8	110	114	30-150	2	30	
Ethylbenzene	ug/L	126	20	20	153	144	134	89	30-150	6	30	
Toluene	ug/L	219	20	20	357	319	688	501	30-150	11	30	E,M1
Xylene (Total)	ug/L	202	60	60	278	264	127	104	30-150	5	30	ES
1,2-Dichloroethane-d4 (S)	%.						98	102	75-125			
4-Bromofluorobenzene (S)	%.						102	104	75-125			
Toluene-d8 (S)	%.						98	98	75-125			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

QC Batch: 166721 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 10475770001, 10475770002, 10475770003

LABORATORY CONTROL SAMPLE: 657131

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
pH at 25 Degrees C	Std. Units	7	7.0	100	98-102	H6

SAMPLE DUPLICATE: 657132

Parameter	Units	12125134003 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.5	7.5	0	10	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

QC Batch: 166654 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 10475770001, 10475770002, 10475770003

METHOD BLANK: 656838 Matrix: Water
Associated Lab Samples: 10475770001, 10475770002, 10475770003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.48	1.0	05/23/19 08:29	
Nitrate as N	mg/L	<0.020	0.20	05/23/19 08:29	

LABORATORY CONTROL SAMPLE: 656839

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	51.3	103	90-110	
Nitrate as N	mg/L	5	5.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 656840 656841

Parameter	Units	10475770001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	60.4	50	50	111	111	102	102	90-110	0	20	
Nitrate as N	mg/L	<0.020	5	5	5.0	5.0	100	100	90-110	0	20	

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REPORT OF LABORATORY ANALYSIS

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(612)607-1700

QUALIFIERS

Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

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, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

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-DUL	Pace Analytical Services - Duluth
PASI-G	Pace Analytical Services - Green Bay
PASI-M	Pace Analytical Services - Minneapolis
PASI-V	Pace Analytical Services - Virginia

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
ES	The reported result is estimated because one or more of the constituent results are qualified as such.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
LS	Analyte recovery in the laboratory control sample (LCS) was outside QC limits for one or more of the constituent analytes used in the calculated result.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 49161446.00 100 102 ENB 2019
Pace Project No.: 10475770

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10475770001	**PW-3**	IDEXX Colilert-18	166541	IDEXX Colilert-18	166649
10475770002	**PW-1**	IDEXX Colilert-18	166541	IDEXX Colilert-18	166649
10475770003	**PW-2**	IDEXX Colilert-18	166541	IDEXX Colilert-18	166649
10475770001	**PW-3**	EPA 200.7	166778	EPA 200.7	167020
10475770002	**PW-1**	EPA 200.7	166778	EPA 200.7	167020
10475770003	**PW-2**	EPA 200.7	166778	EPA 200.7	167020
10475770001	**PW-3**	EPA 8260	322708		
10475770002	**PW-1**	EPA 8260	322708		
10475770003	**PW-2**	EPA 8260B	608744		
10475770004	**Trip Blank**	EPA 8260	322708		
10475770001	**PW-3**	SM 4500-H+B	166721		
10475770002	**PW-1**	SM 4500-H+B	166721		
10475770003	**PW-2**	SM 4500-H+B	166721		
10475770001	**PW-3**	EPA 300.0	166654		
10475770002	**PW-1**	EPA 300.0	166654		
10475770003	**PW-2**	EPA 300.0	166654		

Barr Engineering Co. Chain of Custody

BARR

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

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

COC Number: **58083**

COC 1 of 1

REPORT TO	
Company:	Barr Engineering
Address:	325 S. Lake Ave Duluth, MN
Name:	Lynette Carney
email:	lcarney@barr.com
Copy to:	datamgt@barr.com / lcarney@barr.com
Project Name:	ENB 2019 Superior Terminal

INVOICE TO	
Company:	Barr
Address:	↓
Name:	↓
email:	↓
P.O.	—
Barr Project No:	49161446.00 100 102

Analysis Requested — Water | ~~Soil~~ water

Containers (preservative code / field filtered):
- 40 ml VOA vials w/HCl (B / –)
- 250 ml plastic (A / –)
- 250 ml plastic w/HNO3 (C / –)
- 250 ml plastic (A / –)
- 250 ml plastic H2SO4 (D / –)
- 120 ml sterile Coliform sodium thiosulfate (H / –)
- 40 ml VOA vials (no HCl) (A / –)
- % Solids

	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/Ⓝ	Total Number Of Containers	40 ml VOA vials w/HCl	250 ml plastic	250 ml plastic w/HNO3	250 ml plastic	250 ml plastic H2SO4	120 ml sterile Coliform	40 ml VOA vials (no HCl)	% Solids
1.	PW-3	—	—	—	05/21/19	10:30	DW	N	8	3	1	1	1	1	1		
2.	PW-1	—	—	—	↓	11:15	DW	↓	8	3	1	1	1	1	1		
3.	PW-2	—	—	—	↓	11:25	DW	↓	11	3	1	1	1	1	1	3	
4.	Trip Blank	—	—	—	—	—	—	↓	2	2							
5.																	
6.																	
7.																	
8.																	
9.																	
10.																	

Sample IDs: 001, 002, 003, 004

Chloride (300.0); pH; Iron (200.7); BTEX (8260); Nitrate; TColi/EColi (9223B) Colilert – P/A

WO#: 10475770

10475770

* PW-2 has 3 VOA vials with HCl and 3 VOA vials without HCl. Air bubbles in samples. KMJ3

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

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

BARR USE ONLY	
Sampled by:	KMJ3
Barr Proj. Manager:	LMC
Barr DQ Manager:	LMC
Lab Name:	Pace
Lab Location:	

Relinquished by:	On Ice?	Date	Time	Received by:	Date	Time
[signature]	(Y) N	5/21/19	1236	[signature]	5/21/19	12:36
[signature]	Y N	5-21-19	1840	[signature] Pace T=1.2°C	5.21.19	1920

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

Air Bill Number:

Lab WO:

Temperature on Receipt (°C): 4.9

Custody Seal Intact? ☐ Y ☐ N ☑ None

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

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

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

Pace Analytical	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 05Apr2019 Page 1 of 1
	Document No.: **F-MN-L-213-rev.27**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Barr Engineering

Project #: WO#: 10475770 PM: HA1 Due Date: 05/29/19 CLIENT: BARR

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☒ Pace ☐ SpeeDee ☐ Commercial See Exception ☐

Tracking Number:

Custody Seal on Cooler/Box Present? ☐ Yes ☒ No **Seals Intact?** ☐ Yes ☒ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

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

Thermometer: ☐ T1(0461) ☒ T2(1336) ☐ T3(0459) ☐ T4(0254) ☐ T5(0048) **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Note: Each West Virginia Sample must have temp taken (no temp blanks)

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 1.1 °C **Average Corrected Temp (no temp blank only):** °C See Exceptions ☐

Correction Factor: +0.1 **Cooler Temp Corrected w/temp blank:** 1.2 °C

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

Date/Initials of Person Examining Contents: AMV 5/21/19
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 and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☒ Yes	☐ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☒ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other
Rush Turn Around Time Requested?	☐ Yes	☒ No		6.
Sufficient Volume?	☒ Yes	☐ No		7.
Correct Containers Used? -Pace Containers Used?	☒ Yes ☒ Yes	☐ No ☐ No		8.
Containers intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☒ Water ☐ Soil ☐ Oil ☐ Other	☒ Yes	☐ No		11. **If no, write ID/ Date/Time on Container Below:** See Exception ☐
All containers needing acid/base preservation have been checked?	☒ Yes	☐ No	☐ N/A	12. Sample #
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)	☒ Yes	☐ No	☐ N/A	☐ NaOH ☒ HNO_3 1-3 1/1 ☒ H_2SO_4 1-3 1/1 ☐ Zinc Acetate
Exceptions (VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (Water) and Dioxin/PFAS	☒ Yes	☐ No	☐ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No pH Paper Lot# See Exception ☐
				Res. Chlorine: 0-6 Roll 203619; 0-6 Strip; 0-14 Strip
Headspace in VOA Vials (greater than 6mm)?	☒ Yes	☐ No	☐ N/A	13. See Exception ☒
Trip Blank Present?	☒ Yes	☐ No	☐ N/A	14.
Trip Blank Custody Seals Present?	☒ Yes	☐ No	☐ N/A	Pace Trip Blank Lot # (if purchased): 206998

CLIENT NOTIFICATION/RESOLUTION

Person Contacted: Date/Time: **Field Data Required?** ☐ Yes ☐ No

Comments/Resolution:

Project Manager Review: Amanda J Albrecht **Date:** 5/22/19

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).

Labeled by: GN

Pace Analytical	Document Name: **Headspace Exception**	Document Revised: 17Dec2018 Page 1 of 1
	Document No.: **F-MN-C-276-Rev.01**	Issuing Authority: Pace Minnesota Quality Office

Sample ID	Headspace greater than 6mm	Headspace less than 6mm	No Headspace	Total Vials	Sediment Present?
PW-3	0	0	3	3	NO
PW-1	0	0	3	3	NO
PW-2	4	2	0	6	NO
Trip Blank	0	2	0	2	NO

Chain of Custody

WO# : 12125246

PM: CLJ **Due Date: 05/29/19**

CLIENT: PACE MPLS

☑ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: WI

Cert. Needed: ☑ Yes

Workorder: 10475770 **Workorder Name:** 49161446.00 100 102 ENB 2019 **Owner Received Date:** 5/21/2019 **Results Requested By:** 5/29/2019

Report To	Subcontract To
Amanda Albrecht Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6382	Pace Analytical Duluth 4730 Oneota St. Duluth, MN 55807 Phone (218)727-6380

						Preserved Containers						Requested Analysis												
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	NA2S2O3						Total Coliform 9223B (Pace-Duluth)												LAB USE ONLY
1	PW-3	PS	5/21/2019 10:30	10475770001	Water	1						X												
2	PW-1	PS	5/21/2019 11:15	10475770002	Water	1						X												
3	PW-2	PS	5/21/2019 11:25	10475770003	Water	1						X												
4																								
5																								

Transfers	Released By	Date/Time	Received By	Date/Time
1	John Cliff	5/21/19 12:36		
2				
3				

Comments

Cooler Temperature on Receipt _____ °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 20Mar2019 Page 1 of 1
	Document No.: F-DUL-C-001-rev.06	Issuing Authority: Pace Duluth Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: BARR - ENBRIDGE 2019 SUPERIOR TERM. Project #:

WO#: 12125246

PM: CLJ **Due Date: 05/29/19**

CLIENT: PACE MPLS

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Commercial ☐ Pace ☐ 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: ☐ 01339252/1710 ☐ 170481599 Type of Ice: ☑ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temp Read °C: 4.9 Cooler Temp Corrected °C: 4.9 Biological Tissue Frozen? ☐ Yes ☐ No ☑ NA

Temp should be above freezing to 6 °C Correction Factor: 0.0 Date and Initials of Person Examining Contents: 5/21/19 JP

If temperature is ≤0 °C, is there evidence of ice formation? ☐ Yes ☐ No ☑ NA

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☑ Yes	☐ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5. If Fecal: ☑ <8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☑ Yes	☐ No	☐ N/A	6. T COLI / FECAL
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11. Note if sediment is visible in the dissolved containers.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	12.
-Includes Date/Time/ID/Analysis Matrix: DW				
All containers needing acid/base preservation properly preserved?	☐ Yes	☐ No	☑ N/A	13. Note samples needing adjustment:
Headspace in Methyl Mercury Container	☐ Yes	☐ No	☑ N/A	14.
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	16.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased):				

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

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE Y N TEMPERATURE WAIVER ON FILE Y N

Project Manager Review: Carrie Jensen Date: 5/21/19

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)

40188421

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: WI
Cert. Needed: ☑ Yes ☐ No
Owner Received Date: 5/21/2019 **Results Requested By:** 6/5/2019

Workorder: 10475770 **Workorder Name:** 49161446.00 100 102 ENB 2019

Report To	Subcontract To
Amanda Albrecht Pace Analytical Minnesota 1700 Elm Street Suite 200 Minneapolis, MN 55414 Phone (612)607-6382	Pace Analytical Green Bay 1241 Bellevue Street Suite 9 Green Bay, WI 54302 Phone (920)469-2436

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HCL	VG9H	VGAU	Unpres.			Requested Analysis: 8260 BTEX (Pace-Green Bay)	LAB USE ONLY
1	PW-3 001	PS	5/21/2019 10:30	10475770001	Water	3						X	
2	PW-1 002	PS	5/21/2019 11:15	10475770002	Water	3						X	
3	~~PW-2~~	~~PS~~	~~5/21/2019 11:25~~	~~10475770003~~	~~Water~~	~~3~~		3				X	AA 5/28/19
4	Trip Blank 003	PS	5/21/2019 00:00	10475770004	Water	2						X	
5													

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	5/21/19 16:55		
2	WC, FCD	5/29/19 0715	[signature]	5/29/19 0915
3				

Comments

Cooler Temperature on Receipt 3.5 °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: Pace MN Project # 40188921

All containers needing preservation have been checked and noted below: □Yes □No □N/A Initial when completed: Date/ Time:

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted):

	Glass							Plastic							Vials						Jars			General							
Pace Lab #	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3B	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001																		3															2.5 / 5 / 10
002																		2															2.5 / 5 / 10
003																		2															2.5 / 5 / 10
004																																	2.5 / 5 / 10
005																																	2.5 / 5 / 10
006																																	2.5 / 5 / 10
007																																	2.5 / 5 / 10
008																																	2.5 / 5 / 10
009																																	2.5 / 5 / 10
010																																	2.5 / 5 / 10
011																																	2.5 / 5 / 10
012																																	2.5 / 5 / 10
013																																	2.5 / 5 / 10
014																																	2.5 / 5 / 10
015																																	2.5 / 5 / 10
016																																	2.5 / 5 / 10
017																																	2.5 / 5 / 10
018																																	2.5 / 5 / 10
019																																	2.5 / 5 / 10
020																																	2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm): □Yes □No □N/A ***If yes look in headspace column**

AG1U	1 liter amber glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP2N	500 mL plastic HNO3
BP2Z	500 mL plastic NaOH, Znact
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

DG9A	40 mL amber ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres

SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN:	

Pace Analytical 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 25Apr2018
	Document No.: F-GB-C-031-Rev.07	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #: WO# : 40188421

40188421

Client Name: Pace MN

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☑ Waltco
☐ Client ☐ Pace Other: _____

Tracking #: 2069 131-2

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other _____

Thermometer Used SR - 40 **Type of Ice:** Wet Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 3 /Corr: 3.5

Temp Blank Present: ☑ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents:
Date: 5/29/19
Initials:

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☐No ☑N/A	4. IRWD 5/29/19
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD: ☐Yes ☑No ☐N/A		8.
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☐Yes ☐No ☑N/A	
-Pace IR Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: W	☑Yes ☐No ☐N/A	12.
Trip Blank Present:	☑Yes ☐No ☐N/A	13.
Trip Blank Custody Seals Present	☑Yes ☐No ☐N/A	
Pace Trip Blank Lot # (if purchased): 58225		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** 5/29/19

Page 2 of 2

Appendix E

MW-1 Replacement Memo

resourceful. naturally.
engineering and environmental consultants

BARR

Technical Memorandum

To: Karl Beaster, Enbridge Energy
From: Ryan Erickson
Subject: Superior Terminal MW-1 Monitoring Well Abandonment and Replacement
Date: October 17, 2019
Project: 49161092.07 004 001
c: John Bohrmann

This memorandum summarizes Barr Engineering's assistance with a monitoring well abandonment and replacement monitoring well installation at the Enbridge Energy (Enbridge) Superior Terminal (Figure 1) in June 2019 and August 2019, respectively.

Background

A new Enbridge Pipe Line Maintenance (PLM) laydown yard was constructed west of the existing PLM yard (Figure 2) during the summer of 2019. To complete this work, Enbridge's monitoring well MW-1 had to be relocated. Enbridge requested that Barr assist with the abandonment of the existing MW-1 and the construction of the MW-1R replacement well.

Project Activities

Barr subcontracted Twin Ports Testing (TPT) to complete monitoring well abandonment, construction, and associated utility locate activities.

MW-1 Monitoring Well Abandonment

On June 18, 2019, Barr, TPT, and Enbridge contractors were on site to abandon MW-1 using the following methods:

- TPT filled the MW-1 PVC casing with bentonite chips and hydrated them with potable water.
- The Enbridge contractor pulled the metal pro-top out vertically using an excavator (Photo 1).
- The Enbridge contractor used the excavator bucket to cut the exposed PVC well riser at a depth greater than 2 feet below the planned laydown area ground surface (Photo 2).
- The Enbridge contractor placed and compacted fat clay over the bentonite-filled, abandoned well casing (Photo 3).
- On June 19, 2019, TPT submitted a *Well / Drillhole / Borehole Filling & Sealing Report* to the Wisconsin Department of Natural Resources for the MW-1 abandonment (Attachment A).
- Later that summer, the Enbridge contractor added additional fill and constructed a gravel laydown area in the historical MW-1 location.

MW-1R Monitoring Well Construction

In August of 2019, the following actions were completed:

- On August 19, a 4-way sweep was completed by Northwestern Surveying and Engineering, Inc. No buried utilities or infrastructure were identified within 16 feet of the proposed monitoring well location. The 4-way sweep map is provided in Attachment B.
- On August 22, TPT installed the MW-1R monitoring well and three steel bollards using a Geoprobe drill rig (Photos 4 and 5; Figure 2). The well boring was advanced to 15 feet below ground surface (bgs) and the 10 foot-long PVC well screen was installed from 4.5 to 14.5 feet bgs, as shown on the well and boring logs provided in Attachment C. MW-1R was assigned WDNR Unique well number WA731.
- On August 29, the monitoring well was painted and surveyed (Photo 6). No water was identified in the well at this time.
- On October 7, groundwater was identified in MW-1R at 9.17 feet bgs. The well was slowly pumped dry, thereby completing development requirements. The WDNR monitoring well development form is provided in Attachment C.

Monitoring well MW-1R is scheduled to be sampled in October of 2019 as part of the Superior Terminal Groundwater Monitoring Program.

Attachments:

Figure 1	Site Location
Figure 2	Site Layout
Attachment A	WDNR Well / Drillhole / Borehole Filling & Sealing Report
Attachment B	MW-1R 4-way Sweep Map
Attachment C	MW-1R Well and Boring Logs

PROJECT PHOTOS

MW-1 Abandonment

Photo 1

Photo 2

Photo 1: Enbridge contractor preparing to pull the MW-1 pro-top out with an excavator. Photo taken on June 18, 2019.
Photo 2: MW-1 after the removal of the pro-top. The exposed white PVC well casing was cut with the excavator bucket. Photo taken on June 18, 2019.

Photo 3: The former location of MW-1 with excavator-compacted clay over the abandoned and sealed casing. Photo taken on June 18, 2019.

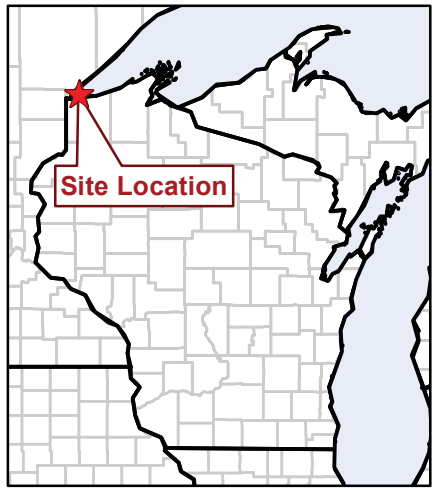
MW-1R Construction

Photo 4

Photo 5

Photo 4: TPT advancing the MW-1R boring. Photo taken on August 22, 2019.
Photo 5: The completed MW-1R monitoring well and bollards. Photo taken on August 22, 2019.

Photo 6: MW-1R after the pro-top was painted. Photo taken on August 29, 2019.



Site Location

Terminal Property Boundary

N

0 2,000 4,000

Feet

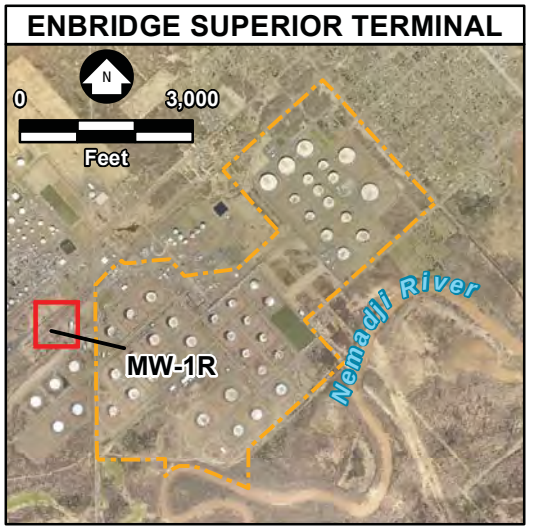
1 Inch = 2,000 Feet

Figure 1

SITE LOCATION
MW-1 ABANDONMENT AND REPLACEMENT
SUPERIOR TERMINAL
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE

Barr Footer: ArcGIS 10.7.1 2019-10-15 11:11 File: I:\Client\Enbridge_Energy\Work_Orders\Spill_Response_Investigation\49161092\Work_Orders\MW1_Replacement\Figure1_MW1R_Site_Location_8x11.mxd User: jwk



Enbridge Monitoring Well

MW-1 (abandoned 6/8/2019)

Terminal Property Boundary

N

0 100 200

Feet

1 Inch = 100 Feet

Douglas County Imagery Circa May, 2019

Figure 2

SITE LAYOUT
MW-1 ABANDONMENT AND REPLACEMENT
SUPERIOR TERMINAL
Enbridge Energy, L.P.
Superior, Wisconsin

ENBRIDGE

Attachment A

WDNR Well / Drillhole / Borehole Filling & Sealing Report

State of Wis., Dept. of Natural Resources
dnr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ **Verification Only of Fill and Seal**

Route to DNR Bureau:
☐ Drinking Water ☐ Watershed/Wastewater ☐ Remediation/Redevelopment
☐ Waste Management ☐ Other:

1. Well Location Information

County	WI Unique Well # of Removed Well	Hicap #
Douglas		

Latitude / Longitude (see instructions)	Format Code	Method Code
46.6877 N -92.0687 W	☒ DD ☐ DDM	☐ GPS008 ☐ SCR002 ☐ OTH001

¼ / ¼ NE/SW ¼ NW or Gov't Lot #	Section	Township	Range
	36	49 N	14 ☐ E ☒ W

Well Street Address: 2800 E 21st St

Well City, Village or Town	Well ZIP Code
Superior	54880

Subdivision Name	Lot #

Reason for Removal from Service	WI Unique Well # of Replacement Well
Replacement	

3. Filled & Sealed Well / Drillhole / Borehole Information

☒ Monitoring Well ☐ Water Well ☐ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 10/13/1999

If a Well Construction Report is available, please attach.

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (specify):

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
22	2

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
2	5

Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown

If yes, to what depth (feet)?	Depth to Water (feet)
—	6

2. Facility / Owner Information

Facility Name: Enbridge Superior Terminal

Facility ID (FID or PWS):

License/Permit/Monitoring #:

Original Well Owner: Lakehead Pipeline

Present Well Owner: Enbridge

Mailing Address of Present Owner: 2800 E 21st St,

City of Present Owner	State	ZIP Code
Superior	WI	54880

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☐ Yes	☐ No	☒ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Liner(s) perforated?	☐ Yes	☐ No	☒ N/A
Screen removed?	☐ Yes	☒ No	☐ N/A
Casing left in place?	☒ Yes	☐ No	☐ N/A
Was casing cut off below surface?	☒ Yes	☐ No	☐ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☐ Yes	☒ No	☐ N/A
If yes, was hole retopped?	☐ Yes	☐ No	☒ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☒ Yes	☐ No	☐ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain):

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☒ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☒ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole

Material	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Chips 3/8"	Surface	22	1/2 bag	

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Brett Carlson - Twin Ports Testing		6/18/19

Street or Route	Telephone Number
1301 N 3rd St	(715) 392-7114

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Superior	WI	54880	Brett C	6/19/19

DNR Use Only

Date Received	Noted By

Comments:

Attachment B

MW-1R 4-way Sweep Map

Prepared By:

NORTHWESTERN SURVEYING & ENGINEERING, INC.

P.O. Box 3067, Bemidji MN 56619
218-444-8384 www.nwsmn.com

Four Way Sweep Record of Pipe & Utility Location

Type of Facility	Enbridge ROW
One Call #	NO EVIDENCE
eDig #	.
Tract #	.
MP #	.

LEGEND

- 4 WAY SWEEP AREA
- PIPELINE
- OUT OF SERVICE
- UNK. UNDERGROUND

0 25 50 100
SCALE IN FEET

Prepared For:

ENBRIDGE

Facilities located at

N: 398043.7870 E: 2883396.0750

+/-20' Accuracy MN State Plane North Zone

Located By (Please Print)
A.HANSON / J.DEPPA

Date Located (YYYY/MM/DD)
2019/08/19

Inspector's Name
.

Proj #: 19069 Dwg: K. Nyhusmoen

REVISIONS

NO.	DATE	DESCRIPTION
.	.	.

Note: All locating is approximate. All depths marked in field or on map are approximate and for day lighting purposes only. Northwestern accepts no responsibility for any ground disturbance at or near shown facility. All facilities within 5m of ground disturbance must be day lighted. This drawing is for reference for this project only. Any changes in the scope of work will require more locating.

SHEET 1 OF 1 SHEETS

S:\Proj-19\19069 Twin Ports Testing 4WS Superior Terminal\19069 Twin Ports Testing Superior.dwg

Attachment C

MW-1R Well and Boring Logs

Barr Log of Boring

WDNR Soil Boring Information (4400/122)

WDNR Well Construction Form (4400/113A)

WDNR Well Development Form (4400/113B)

Barr Engineering Company
325 South Lake Avenue, Suite 700
Duluth, MN 55802
Telephone: 218-529-8200

LOG OF BORING MW-1R

Project:	Enbridge Superior Terminal GMP	Surface Elevation:	660.9 ft
Project No.:	49161092	Drilling Method:	Hollow Stem Auger
Location:	Near PLM shop	Sampling Method:	Blind-drilled
Coordinates:	UTM 15 N:561197.806m, E:449238.711m	Completion Depth:	15.0 ft
Datum:	NAD 83		

Unique Well No.: WA731

Depth, feet	Sample Type & Recovery	Sample No.	USCS	Graphic Log	LITHOLOGIC DESCRIPTION	WELL OR PIEZOMETER CONSTRUCTION DETAIL	Elevation, feet
0.0			CH		FAT CLAY (CH): red-brown; moist; medium stiff; high plasticity; no dilatancy; blind drilled to 15 ft, logged from cuttings.	PROTECTIVE CASING Diameter: 6 inches Type: steel Interval: -3 to 4.5 feet	660.0
2.5						SEAL Type: Bentonite 3/8" chips Interval: 0-2 feet	
						RISER Diameter: 2 inches Type: PVC Interval: -2.5-4.5 feet	657.5
5.0							655.0
7.5							652.5
10.0						SCREEN Diameter: 2 inches Type: #10 PVC screen Interval: 4.5-14.5 feet	650.0
12.5							647.5
15.0					End of boring 15.0 feet Target depth reached.	SANDPACK Type: #15 Red Flint Sand Interval: 2-3 feet Type: #40 Red Flint Sand Interval: 3-14.5 feet	
17.5							
20.0							

Date Boring Started:	8/22/19 10:00 am
Date Boring Completed:	8/22/19 12:00 pm
Logged By:	MAB
Drilling Contractor:	Twin Ports Testing
Drill Rig:	Geoprobe 3230DT

Remarks:
3 protective bollards

Additional data may have been collected in the field which is not included on this log.

P:\DULUTH\49 WI\16\49161092 SUPERIOR TERMINAL SOIL MANAGEMENT ACTIVITIES\WORKFILES\2019_06 MW-1 PROJECT\GINT\MW-1.GPJ BARRLIBRARY.GLB ENVIRO LOG BARR TEMPLATE.GDT

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Revelopment ☒ Other ☐ _____

Facility/Project Name: Enbridge Groundwater Monitoring Program	License/Permit/Monitoring Number: Enbridge Superior Terminal	Boring Number: MW-1R	
Boring Drilled By: Name of crew chief (first, last) and Firm — First Name: Sheridan Last Name: Dinnan — Firm: Twin Ports Testing	Date Drilling Started: 08/22/2019	Date Drilling Completed: 08/22/2019	Drilling Method: Hollow Stem Auger
WI Unique Well No.: WA731	DNR Well ID No.:	Well Name:	Final Static Water Level: TBD Feet MSL
Surface Elevation: 660.949 Feet MSL	Borehole Diameter: 8.0 inches		
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒ — State Plane 561197.806 N, 449238.711 E NAD83	Lat ° ' "	Local Grid Location: ☐ N ☐ E ☐ S ☐ W Feet	
____ 1/4 of ____ 1/4 of Section ____, T ____ N, R ____	Long ° ' "		
Facility ID	County: Douglas	County Code: 16	Civil Town/City/ or Village: Superior

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet (Below ground surface)	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			0	Fat Clay; red-brown; moist; high plasticity; no dilatancy; medium consistency; blind drilled to 15 ft; logged from cuttings.	CH									
			5											
			10											
			15	Well screen 4.5 to 14.5 feet below ground surface. End of boring 15 feet below ground surface.										
			20											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: Ryan Erickson Firm: Barr Engineering Co.

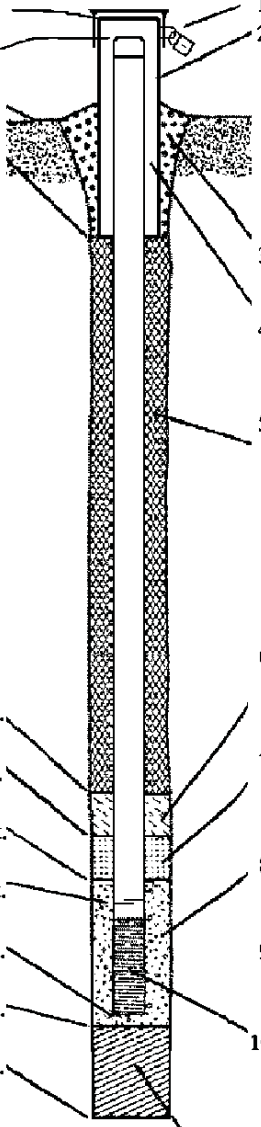
State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name Enbridge Groundwater Monitoring Program	**Local Grid Location of Well** ☐ N. ☐ S. _____ ft. ☐ E. ☐ W. _____ ft.	**Well Name** MW-1R
Facility License, Permit or Monitoring No. Enbridge Superior Terminal	**Local Grid Origin** ☐ (estimated: ☐) or **Well Location** ☒ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or	**Wis. Unique Well No.** WA731 — **DNR Well ID No.** ___
Facility ID 816010580	St. Plane 561197.806 ft. N, 449238.711 ft. E. ~~S/C/N~~	**Date Well Installed** 08/22/2019 (m m / d d / y y y y)
Type of Well Well Code 11 / mw	**Section Location of Waste/Source** ____ 1/4 of ____ 1/4 of Sec. ____, T. ____ N, R. ____ ☐ E ☐ W	**Well Installed By: Name (first, last) and Firm** Sheridan Dinnan Twin Ports Testing
Distance from Waste/ Source _____ ft. — **Enf. Stds. Apply** ☐	**Location of Well Relative to Waste/Source** u ☒ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	**Gov. Lot Number**



A. Protective pipe, top elevation 664 ft. MSL
B. Well casing, top elevation 663.898 ft. MSL
C. Land surface elevation 660.949 ft. MSL
D. Surface seal, bottom ___ ft. MSL or 4.0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☒
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50
Hollow Stem Auger ☒ 41
Other ☐ ___

15. Drilling fluid used: Water ☐ 02 Air ☐ 01
Drilling Mud ☐ 03 None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No
Describe _____

17. Source of water (attach analysis, if required):
N/A

E. Bentonite seal, top ___ ft. MSL or 0 ft.
F. Fine sand, top ___ ft. MSL or 2 ft.
G. Filter pack, top ___ ft. MSL or 3 ft.
H. Screen joint, top ___ ft. MSL or 4.5 ft.
I. Well bottom ___ ft. MSL or 14.5 ft.
J. Filter pack, bottom ___ ft. MSL or 15.0 ft.
K. Borehole, bottom ___ ft. MSL or 15.0 ft.
L. Borehole, diameter 8.0 in.
M. O.D. well casing 2.375 in.
N. I.D. well casing 2.05 in.

1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 6.0 in.
b. Length: 7.0 ft.
c. Material: Steel ☒ 04 Other ☐ ___
d. Additional protection? ☒ Yes ☐ No
If yes, describe: 3 Steel Bollards (3" diam. 7' long)
3. Surface seal: Bentonite ☐ 30 Concrete ☒ 01 Other ☐ ___
Concrete
4. Material between well casing and protective pipe: Bentonite ☐ 30 Other ☐ ___
Bentonite Cement Grout
5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ___ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ___ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ___ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 5.2 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☐ 02 Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☒ 33
b. ☐1/4 in. ☒3/8 in. ☐1/2 in. Bentonite chips ☐ 32
c. _____ Other ☐ ___
7. Fine sand material: Manufacturer, product name & mesh size
a. Red Flint, Filter Sand #15
b. Volume added 2 ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. Red flint, Filter Sand #40
b. Volume added 10 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23
Flush threaded PVC schedule 80 ☐ 24
Other ☐ ___
10. Screen material: PVC
a. Screen type: Factory cut ☒ 11 Continuous slot ☐ 01 Other ☐ ___
b. Manufacturer Hole Products
c. Slot size: 0.010 in.
d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒ 14 Other ☐ ___

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm
Ryan Erickson	Barr Engineering Co.

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐ _____

Facility/Project Name	County Name	Well Name
Enbridge Groundwater Monitoring Program	Douglas	MW-1R

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well ID Number
Enbridge Superior Terminal	16	WA731	

1. Can this well be purged dry? ☒ Yes ☐ No

2. Well development method

surged with bailer and bailed	☐	41
surged with bailer and pumped	☐	61
surged with block and bailed	☐	42
surged with block and pumped	☐	62
surged with block, bailed and pumped	☐	70
compressed air	☐	20
bailed only	☐	10
pumped only	☐	51
pumped slowly	☒	50
Other _____	☐	

3. Time spent developing well: 25 min.

4. Depth of well (from top of well casisng): 17.5 ft.

5. Inside diameter of well: 2.05 in.

6. Volume of water in filter pack and well casing: 1.3 gal.

7. Volume of water removed from well: 3.5 gal.

8. Volume of water added (if any): 0.0 gal.

9. Source of water added: _____

10. Analysis performed on water added? (If yes, attach results) ☐ Yes ☒ No

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 12.12 ft.	0.0 ft.
Date	b. 10 / 07 / 2019 (m m / d d / y y y y)	10 / 07 / 2019 (m m / d d / y y y y)
Time	c. 1:30 ☐ a.m. ☒ p.m.	1:55 ☐ a.m. ☒ p.m.
12. Sediment in well bottom	0.0 inches	0.0 inches
13. Water clarity	Clear ☐ 10 Turbid ☒ 15 (Describe)	Clear ☐ 20 Turbid ☒ 25 (Describe)
	Clear, slightly yellow turbid prior to and following development.	
14. Total suspended solids	____.__ mg/l	____.__ mg/l
15. COD	____.__ mg/l	____.__ mg/l

Fill in if drilling fluids were used and well is at solid waste facility:

16. Well developed by: Name (first, last) and Firm
First Name: James Last Name: Taraldsen
Firm: Barr Engineering

17. Additional comments on development: Purged dry with peristaltic pump.

Name and Address of Facility Contact /Owner/Responsible Party
First Name: Karl Last Name: Beaster
Facility/Firm: Enbridge Energy
Street: 26 East Superior St, Suite 309
City/State/Zip: Duluth, MN 55802

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: Ryan Erickson
Print Name: Ryan Erickson
Firm: Barr Engineering

NOTE: See instructions for more information including a list of county codes and well type codes.