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January 3, 2012

Mr. Karl F. Beaster, P.G.
Environmental Analyst, Liquids Pipelines Environment
Enbridge Energy
119 North 25th Street East
Superior, Wisconsin 54880

Subject: Annual Report - 2011; Enbridge's South Cass Lake Pumping Station, Cass Lake, Minnesota

Dear Mr. Beaster:

This letter report documents groundwater monitoring activities conducted for the above referenced site in June and December 2011. Figure 1 shows the site location. Figure 2 depicts the layout of the pumping station, property boundaries, and the monitoring well network (Site). Consistent with previous groundwater sampling events, both Enbridge and USGS wells were included in the monitoring network during the June and December 2011 sampling events. The sampling plan (i.e., locations, frequency, and parameters) utilized in 2011 is consistent with previous sampling events and was developed in consultation with Enbridge's Environment Department.

2011 Activities

Aquifer Hydraulics

Depth to groundwater measurements were collected from the monitoring well network prior to purging and groundwater sample collection activities in June and December 2011. Table 1 provides a comprehensive summary of groundwater elevation data collected at the Site. Figure 3 depicts the groundwater flow direction based on the data collected during the most recent sampling event in December 2011. Locally, the configuration of the water table and the distribution of compounds dissolved in the groundwater, indicate that groundwater flows under unconfined conditions with a southeast to east flow direction. Regionally, groundwater flow is to the southeast toward Fox Creek which is part of the Pike Bay drainage (refer to Figure 1).

Light Non-Aqueous Phase Liquid (LNAPL)

During both the June and December 2011 monitoring events, LNAPL thickness measurements were collected with an oil/water interface probe from monitoring wells MW-3, MW-5, MW-11 and MW-13. Table 1 provides a comprehensive summary of the LNAPL thickness measurements observed from these four monitoring locations. During the most recent sampling event in December 2011, the crude oil thickness ranged from a sheen at monitoring wells MW-3 and MW-13 to 0.66 feet at monitoring well MW-11. Figure 4 depicts the approximate lateral extent of LNAPL observed on the water table at the Site. Based on information in a May 2004 submittal from Natural Resources Engineering Company (NREC), the crude oil characteristics showed a wide range of viscosities ranging from 23 centistokes (cSt) at MW-13 to 421 cSt at MW-5 (i.e., both measured at 10°C).

During the June and December 2011 sampling events, crude oil was manually recovered with a disposable bailer from monitoring wells MW-3, MW-5, MW-11, and MW-13 and placed in a sealed drum located within the fenced station yard. During the two sampling events conducted in 2011, a minimal total volume of LNAPL was recovered from the 2-inch diameter monitoring wells (i.e., approximately 0.25 gallons).

Groundwater Quality

Table 2 provides a comprehensive summary of groundwater analytical data collected at the Site. In June 2011, samples from five monitoring wells at the Site (i.e., MW-8, MW-9, MW-10, USGS-1A, and USGS-2A) exhibited one or more BTEX parameters above the laboratory reporting limit (excluding wells containing LNAPL). At these locations, benzene was the only volatile organic compound detected at concentrations above 10 µg/L. The highest benzene concentration detected during the June 2011 sampling event was at monitoring well USGS-1A (i.e., 1,590 µg/L).

During the most recent sampling event in December 2011, samples from four wells exhibited benzene above 10 µg/L. The highest benzene concentration detected in December 2011 was at monitoring well MW-9 (i.e., 500 µg/L). Consistent with analytical results observed in June 2011 (and during the 2010 sampling events), the five downgradient monitoring wells installed in June 2010 (i.e., MW-16A, MW-16B, MW-17, MW-18, and MW-19) did not exhibit detections of any BTEX parameters. Figure 5 depicts the inferred lateral extent of dissolved phase benzene concentrations in exceedance of 10 µg/L (i.e., based on December 2011 analytical results).

Extended Range Diesel Range Organic (ERDRO) concentrations at the Site ranged from below the laboratory detection limit to 15,500 µg/L at MW-10 in June 2011. In December 2011, ERDRO concentrations at the Site ranged from below the laboratory detection limit to 12,900 µg/L at MW-10. The complete analytical laboratory reports for the June and December 2011 sampling events are included as Attachment I.

Water samples collected from monitoring wells, noted to be free of LNAPL, were also submitted for the laboratory analysis of nitrate, sulfate, and methane during the December 2011 sampling event. The field measurements of dissolved oxygen, oxidation-reduction potential, and conductivity concentrations were also collected from the Site monitoring wells. These laboratory and field data were collected to support the evaluation of biodegradation processes potentially occurring in groundwater at the Site. Table 3 summarizes the results of these data collection activities. The availability of dissolved oxygen in upgradient wells and along the periphery of the plume indicates an aerobic environment. In the source area, dissolved oxygen readings were lower, averaging approximately 0.5 mg/L, relative to levels outside of the source area. Given these conditions, active biodegradation within the contaminant plume appears to be occurring under aerobic conditions. A more detailed discussion of the biodegradation parameter analytical results will be included in the Annual Report submitted in December 2012.

Recommendations

To further evaluate dissolved phase contaminant trends, as well as biodegradation processes, it is proposed that groundwater monitoring continue at the Site on a semi-annual basis in June and December 2012. The scope of the monitoring activities (i.e., locations, procedures, and analytical parameters) will be consistent with previous groundwater sampling events. Biodegradation evaluation parameters will continue to be collected on an annual basis in December of each year. In addition to groundwater sample collection, LNAPL thickness measurements will continue to be collected from monitoring wells MW-3, -5, -11, and -13 and LNAPL will be recovered via hand

bailing on a semi-annual basis. In December 2012, an Annual Report will be submitted to Enbridge documenting the activities discussed above. In addition, a more detailed discussion of biodegradation processes will be included in the Annual Report submitted in 2012.

Should you have any questions or comments related to the information provided in this submittal, please call Brian Hill at (218) 625-8768. AECOM appreciates the opportunity to assist Enbridge with this important assignment.

Yours sincerely,

Brian Hill
Project Engineer
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BH:agg

Tables

Table 1: Groundwater Elevations/Crude Oil Thickness Measurements
Enbridge Energy, Limited Partnership - South Cass Lake Station

Well ID	Unique Well No.	Date	Top of Inner Casing Elevation (feet NGVD)	Depth to Groundwater (feet)	Depth to Oil (feet)	Oil Thickness (feet)	Equivalent Depth to Groundwater (feet)	Groundwater Elevation (feet NGVD)	Top of Screen (feet NGVD)	Top of Screen Above Groundwater (feet)
MW-1	662109	06-Jun-01	100.00	26.29				73.71	77.00	3.29
		10-May-02	100.00	27.57				72.43	77.00	4.57
		14-May-02	100.00	27.60				72.40	77.00	4.60
		21-Jul-03	100.00	28.07				71.93	77.00	5.07
		06-Jan-04	100.00	28.50				71.50	77.00	5.50
		02-Apr-04	100.00	28.53				71.47	77.00	5.53
		12-May-04	100.00	28.55				71.45	77.00	5.55
		26-Aug-04	100.00	27.97				72.03	77.00	4.97
		30-Dec-04	100.00	27.00				73.00	77.00	4.00
		06-Apr-05	100.00	27.35				72.65	77.00	4.35
		26-Jun-08	100.00	27.33				72.67	77.00	4.33
		25-Nov-08	100.00	27.22				72.78	77.00	4.22
		04-Jun-09	100.00	26.75				73.25	77.00	3.75
		26-Oct-09	1340.19	27.25				1312.94	1317.19	4.25
		29-Jun-10	1340.19	27.52				1312.67	1317.19	4.52
		01-Dec-10	1340.19	27.10				1313.09	1317.19	4.10
		01-Dec-11	1340.19	27.18				1313.01	1317.19	4.18
MW-2	662110	06-Jun-01	99.57	25.87				73.70	77.07	3.37
		10-May-02	99.57	None Recorded						
		14-May-02	99.57	27.25				72.32	77.07	4.75
		21-Jul-03	99.57	27.71				71.86	77.07	5.21
		06-Jan-04	99.57	28.12				71.45	77.07	5.62
		02-Apr-04	99.57	28.11				71.46	77.07	5.61
		12-May-04	99.57	28.28				71.29	77.07	5.78
		26-Aug-04	99.57	27.60				71.97	77.07	5.10
		30-Dec-04	99.57	26.62				72.95	77.07	4.12
		06-Apr-05	99.57	26.92				72.65	77.07	4.42
		26-Jun-08	99.57	27.13				72.44	77.07	4.63
		25-Nov-08	99.57	26.86				72.71	77.07	4.36
		04-Jun-09	99.57	26.52				73.05	77.07	4.02
WELL ABANDONED										
MW-3	662111	06-Jun-01	99.60	25.92	25.32	0.60	25.37	74.23	78.10	3.87
		10-May-02	99.60	27.19	26.51	0.68	26.57	73.03	78.10	5.07
		14-May-02	99.60	27.22	26.6	0.62	26.66	72.94	78.10	5.16
		21-Jul-03	99.60	28.30	27.77	0.53	27.82	71.78	78.10	6.32
		5-Jan-04	99.60	29.12	28.05	1.07	28.15	71.45	78.10	6.65
		2-Apr-04	99.60	28.77	28.09	0.68	28.15	71.45	78.10	6.65
		12-May-04	99.60	29.15	28.2	0.95	28.29	71.31	78.10	6.79
		26-Aug-04	99.60	28.05	27.62	0.43	27.66	71.94	78.10	6.16
		30-Dec-04	99.60	26.99	26.7	0.29	26.73	72.87	78.10	5.23
		06-Apr-05	99.60	27.51	26.97	0.54	27.02	72.58	78.10	5.52
		26-Jun-08	99.60	27.29	27.15	0.14	27.16	72.44	78.10	5.66
		25-Nov-08	99.60	27.10	26.87	0.23	26.89	72.71	78.10	5.39
		06-Feb-09	99.60	27.92	27.67	0.25	27.69	71.91	78.10	6.19
		04-Jun-09	99.60	26.57	26.56	0.01	26.56	73.04	78.10	5.06
		26-Oct-09	1339.79	26.92	26.91	0.01	26.91	1312.88	1318.29	5.41
		29-Jun-10	1339.79	27.95	27.25	0.70	27.31	1312.48	1318.29	5.81
		02-Dec-10	1339.79	27.19	26.8	0.39	26.83	1312.96	1318.29	5.33
		02-Dec-11	1339.79	26.68	26.68	0.00	26.68	1313.11	1318.29	5.18
MW-4	662112	06-Jun-01	100.39	26.68				73.71	77.89	4.18
		10-May-02	100.39	27.92				72.47	77.89	5.42
		14-May-02	100.39	27.96				72.43	77.89	5.46
		21-Jul-03	100.39	28.35				72.04	77.89	5.85
		06-Jan-04	100.39	28.75				71.64	77.89	6.25
		02-Apr-04	100.39	28.80				71.59	77.89	6.30
		12-May-04	100.39	28.85				71.54	77.89	6.35
		26-Aug-04	100.39	28.22				72.17	77.89	5.72
		30-Dec-04	100.39	27.36				73.03	77.89	4.86
		06-Apr-05	100.39	27.71				72.68	77.89	5.21
		26-Jun-08	100.39	27.76				72.63	77.89	5.26
		25-Nov-08	100.39	27.56				72.83	77.89	5.06
		04-Jun-09	100.39	27.21				73.18	77.89	4.71
		26-Oct-09	1340.58	27.59				1312.99	1318.08	5.09
		29-Jun-10	1340.58	27.90				1312.68	1318.08	5.40
		01-Dec-10	1340.58	27.45				1313.13	1318.08	4.95
		01-Dec-11	1340.58	27.53				1313.05	1318.08	5.03
MW-5	705515	05-Jan-04	99.58	29.65	28.18	1.47	28.27	71.31	76.08	4.77
		2-Apr-04	99.58	29.72	28.47	1.25	28.55	71.03	76.08	5.05
		12-May-04	99.58	29.75	28.14	1.61	28.24	71.34	76.08	4.74
		26-Aug-04	99.58	28.05	27.6	0.45	27.63	71.95	76.08	4.13
		30-Dec-04	99.58	27.20	26.65	0.55	26.68	72.90	76.08	3.18
		06-Apr-05	99.58	28.03	26.94	1.09	27.01	72.57	76.08	3.51
		26-Jun-08	99.58	28.05	27.1	0.95	27.16	72.42	76.08	3.66
		25-Nov-08	99.58	27.17	26.9	0.27	26.92	72.66	76.08	3.42
		06-Feb-09	99.58	28.90	28.56	0.34	28.58	71.00	76.08	5.08
		04-Jun-09	99.58	26.82	26.56	0.26	26.58	73.00	76.08	3.08
		26-Oct-09	1339.78	27.11	26.9	0.21	26.91	1312.87	1316.28	3.41
		29-Jun-10	1339.78	28.86	27.24	1.62	27.34	1312.44	1316.28	3.84
		01-Dec-10	1339.78	26.95						
		02-Dec-11	1339.78	27.05	26.67	0.38	26.69	1313.09	1316.28	3.28

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MW-6	680691	21-Jul-03	100.71	28.75				71.96	72.71	0.75
		06-Jan-04	100.71	29.05				71.66	72.71	1.05
		02-Apr-04	100.71	29.15				71.56	72.71	1.15
		12-May-04	100.71	29.15				71.56	72.71	1.15
		26-Aug-04	100.71	28.62				72.09	72.71	0.62
		30-Dec-04	100.71	27.76				72.95	72.71	-0.24
		06-Apr-05	100.71	28.09				72.62	72.71	0.09
		26-Jun-08	100.71	28.17				72.54	72.71	0.17
		25-Nov-08	100.71	28.43				72.28	72.71	0.43
		04-Jun-09	100.71	27.60				73.11	72.71	-0.40
		26-Oct-09	1340.90	27.98				1312.92	1311.90	-1.02
		29-Jun-10	1340.90	28.28				1312.62	1311.90	-0.72
		01-Dec-10	1340.90	27.89				1313.01	1311.90	-1.11
		01-Dec-11	1340.90	27.89				1313.01	1311.90	-1.11
MW-7	680692	21-Jul-03	99.83	28.09				71.74	73.33	1.59
		06-Jan-04	99.83	28.34				71.49	73.33	1.84
		02-Apr-04	99.83	28.43				71.40	73.33	1.93
		12-May-04	99.83	28.46				71.37	73.33	1.96
		26-Aug-04	99.83	28.00				71.83	73.33	1.50
		30-Dec-04	99.83	27.05				72.78	73.33	0.55
		06-Apr-05	99.83	27.34				72.49	73.33	0.84
		26-Jun-08	99.83	27.15				72.68	73.33	0.65
		25-Nov-08	99.83	27.28				72.55	73.33	0.78
		04-Jun-09	99.83	26.87				72.96	73.33	0.37
		26-Oct-09	1340.03	27.24				1312.79	1313.53	0.74
		29-Jun-10	1340.03	27.61				1312.42	1313.53	1.11
		01-Dec-10	1340.03	27.21				1312.82	1313.53	0.71
		01-Dec-11	1340.03	27.11				1312.92	1313.53	0.61
MW-8	680693	21-Jul-03	101.00	29.37				71.63	74.50	2.87
		06-Jan-04	101.00	29.70				71.30	74.50	3.20
		02-Apr-04	101.00	29.77				71.23	74.50	3.27
		12-May-04	101.00	29.85				71.15	74.50	3.35
		26-Aug-04	101.00	29.21				71.79	74.50	2.71
		30-Dec-04	101.00	28.20				72.80	74.50	1.70
		06-Apr-05	101.00	28.54				72.46	74.50	2.04
		26-Jun-08	101.00	28.73				72.27	74.50	2.23
		25-Nov-08	101.00	28.45				72.55	74.50	1.95
		04-Jun-09	101.00	28.09				72.91	74.50	1.59
		26-Oct-09	1341.21	28.45				1312.76	1315.16	2.40
		29-Jun-10	1341.21	28.83				1312.38	1315.16	2.78
		01-Dec-10	1341.21	28.34				1312.87	1315.16	2.29
		01-Dec-11	1341.21	28.27				1312.94	1315.16	2.22
MW-9	680694	21-Jul-03	98.25	26.41				71.84	73.75	1.91
		21-Jul-03	98.25	26.79				71.46	73.75	2.29
		02-Apr-04	98.25	26.81				71.44	73.75	2.31
		12-May-04	98.25	26.91				71.34	73.75	2.41
		26-Aug-04	98.25	26.29				71.96	73.75	1.79
		30-Dec-04	98.25	25.35				72.90	73.75	0.85
		06-Apr-05	98.25	25.65				72.60	73.75	1.15
		26-Jun-08	98.25	25.83				72.42	73.75	1.33
		25-Nov-08	98.25	25.57				72.68	73.75	1.07
		04-Jun-09	98.25	25.22				73.03	73.75	0.72
		26-Oct-09	1338.45	25.59				1312.86	1314.38	1.52
		29-Jun-10	1338.45	25.94				1312.51	1314.38	1.87
		01-Dec-10	1338.45	25.49				1312.96	1314.38	1.42
		01-Dec-11	1338.45	25.45				1313.00	1314.38	1.38
MW-10	705513	05-Jan-04	99.66	28.38				71.28	77.16	5.88
		2-Apr-04	99.66	28.30				71.36	77.16	5.80
		12-May-04	99.66	28.36				71.30	77.16	5.86
		26-Aug-04	99.66	27.76				71.90	77.16	5.26
		30-Dec-04	99.66	27.72				71.94	77.16	5.22
		06-Apr-05	99.66	27.02				72.64	77.16	4.52
		26-Jun-08	99.66	27.20				72.46	77.16	4.70
		25-Nov-08	99.66	26.94				72.72	77.16	4.44
		04-Jun-09	99.66	26.61				73.05	77.16	4.11
		26-Oct-09	1339.87	26.96				1312.91	1317.87	4.96
		29-Jun-10	1339.87	27.33				1312.54	1317.87	5.33
		01-Dec-10	1339.87	26.84				1313.03	1317.87	4.84
		01-Dec-11	1339.87	26.83				1313.04	1317.87	4.83
MW-11	705514	17-Dec-04	99.99	28.66	28.5	0.16	28.51	71.48	76.49	5.01
		05-Jan-04	99.99	29.70	28.49	1.21	28.60	71.39	76.49	5.10
		2-Apr-04	99.99	29.78	28.45	1.33	28.57	71.42	76.49	5.07
		12-May-04	99.99	29.75	28.5	1.25	28.61	71.38	76.49	5.11
		26-Aug-04	99.99	28.68	27.94	0.74	28.01	71.98	76.49	4.51
		30-Dec-04	99.99	27.60	27.06	0.54	27.11	72.88	76.49	3.61
		06-Apr-05	99.99	28.07	27.38	0.69	27.44	72.55	76.49	3.94
		26-Jun-08	99.99	27.79	27.58	0.21	27.60	72.39	76.49	4.10
		25-Nov-08	99.99	27.59	27.28	0.31	27.31	72.68	76.49	3.81
		29-Jan-09	99.99	28.20	27.32	0.88	27.40	72.59	76.49	3.90
		06-Feb-09	99.99	28.28	27.53	0.75	27.60	72.39	76.49	4.10
		04-Jun-09	99.99	27.13	26.95	0.18	26.97	73.02	76.49	3.47
		26-Oct-09	1340.18	27.65	27.30	0.35	27.33	1312.85	1316.68	3.83
		29-Jun-10	1340.18	28.13	27.62	0.51	27.67	1312.51	1316.68	4.17
		02-Dec-10	1340.18	27.50	26.61	0.89	26.69	1313.49	1316.68	3.19
		02-Dec-11	1340.18	27.68	27.02	0.66	27.08	1313.10	1316.68	3.58

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Well ID	Unique Well No.	Date	Top of Inner Casing Elevation (feet NGVD)	Depth to Groundwater (feet)	Depth to Oil (feet)	Oil Thickness (feet)	Equivalent Depth to Groundwater (feet)	Groundwater Elevation (feet NGVD)	Top of Screen (feet NGVD)	Top of Screen Above Groundwater (feet)
MW-13	705516	05-Jan-04	101.02	29.92	29.52	0.40	29.58	71.44	74.52	3.08
		2-Apr-04	101.02	30.57	29.53	1.04	29.68	71.34	74.52	3.18
		12-May-04	101.02	31.22	29.59	1.63	29.83	71.19	74.52	3.33
		26-Aug-04	101.02	29.20	29.07	0.13	29.09	71.93	74.52	2.59
		30-Dec-04	101.02	28.20	28.11	0.09	28.12	72.90	74.52	1.62
		06-Apr-05	101.02	28.80	28.38	0.42	28.44	72.58	74.52	1.94
		26-Jun-08	101.02	28.70	28.62	0.08	28.63	72.39	74.52	2.13
		25-Nov-08	101.02	28.35	28.35	0.00	28.35	72.67	74.52	1.85
		06-Feb-09	101.02	28.62	28.61	0.01	28.61	72.41	74.52	2.11
		04-Jun-09	101.02	28.01	28.01	0.00	28.01	73.01	74.52	1.51
		26-Oct-09	1341.23	28.42	28.35	0.07	28.36	1312.87	1314.73	1.86
		29-Jun-10	1341.23	28.84	28.72	0.12	28.74	1312.49	1314.73	2.24
		02-Dec-10	1341.23	28.27	28.23	0.04	28.24	1312.99	1314.73	1.74
		02-Dec-11	1341.23	28.13	28.13	0.00	28.13	1313.10	1314.73	1.63
MW-14		26-Jun-08	98.73	26.93				71.80		
		25-Nov-08		25.99				72.74		
		04-Jun-09		26.31				72.42		
WELL ABANDONED										
MW-15		26-Jun-08	99.35	26.27				73.08		
		25-Nov-08	99.35	26.66				72.69		
		04-Jun-09	99.35	25.64				73.71		
		26-Oct-09	1339.61	26.70				1312.91		
		29-Jun-10	1339.61	27.05				1312.56		
		01-Dec-10	1339.61	not collected						
		01-Dec-11	1339.61	26.54				1313.07		
MW-16A		29-Jun-10	1338.97	26.70				1312.27	1315.47	3.20
		01-Dec-10	1338.97	26.20				1312.77	1315.47	2.70
		01-Dec-11	1338.97	26.15				1312.82	1315.47	2.65
MW-16B		29-Jun-10	1339.52	27.26				1312.26	1301.02	-11.24
		01-Dec-10	1339.52	26.78				1312.74	1301.02	-11.72
		01-Dec-11	1339.52	26.71				1312.81	1301.02	-11.79
MW-17		29-Jun-10	1338.79	26.56				1312.23	1315.29	3.06
		01-Dec-10	1338.79	26.08				1312.71	1315.29	2.58
		01-Dec-11	1338.79	26.00				1312.79	1315.29	2.50
MW-18		29-Jun-10	1340.29	27.92				1312.37	1316.79	4.42
		01-Dec-10	1340.29	27.41				1312.88	1316.79	3.91
		01-Dec-11	1340.29	27.35				1312.94	1316.79	3.85
MW-19		29-Jun-10	1334.72	22.54				1312.18	1315.22	3.04
		01-Dec-10	1334.72	22.03				1312.69	1315.22	2.53
		01-Dec-11	1334.72	21.97				1312.75	1315.22	2.47
USGS 1A		26-Oct-09	1341.60	28.78				1312.82	1312.60	-0.22
		29-Jun-10	1341.60	29.15				1312.45	1312.60	0.15
		02-Dec-10	1341.60	28.70				1312.90	1312.60	-0.30
		01-Dec-11	1341.60	28.64				1312.96	1312.60	-0.36
USGS 2A		26-Oct-09	1342.37	29.60				1312.77	1311.97	-0.80
		29-Jun-10	1342.37	29.97				1312.40	1311.97	-0.43
		02-Dec-10	1342.37	29.49				1312.88	1311.97	-0.91
		01-Dec-11	1342.37	29.42				1312.95	1311.97	-0.98
USGS 3A		26-Oct-09	1341.26	28.54				1312.72	1311.92	-0.80
		29-Jun-10	1341.26	28.93				1312.33	1311.92	-0.41
		02-Dec-10	1341.26	28.44				1312.82	1311.92	-0.90
		01-Dec-11	1341.26	28.36				1312.90	1311.92	-0.98
USGS 4A		26-Oct-09	1339.63	26.95				1312.68	1311.49	-1.19
		29-Jun-10	1339.63	27.32				1312.31	1311.49	-0.82
		02-Dec-10	1339.63	26.85				1312.78	1311.49	-1.29
		01-Dec-11	1339.63	26.76				1312.87	1311.49	-1.38

* Note: A re-survey was conducted in August 2009 to tie in the Enbridge and USGS monitoring wells to a common benchmark (MNDOT). Prior to that, top of inner casing elevations were based on an assumed inner casing elevation of 100.00 at monitoring well MW-1.

** Note: In June 2010, monitoring wells MW-16A, -16B, -17, -18, and -19 were surveyed by NREC. The wells were tied into a known elevation from monitoring well USGS-4A.

Table 2: Groundwater Sampling Results - BTEX and ERDRO
Enbridge Energy, Limited Partnership - South Cass Lake Station

Location	Date	Benzene (ug/l)	Ethylbenzene (ug/l)	Toluene (ug/l)	Xylenes, -m, -p (ug/L)	Xylenes, -o (ug/L)	ERDRO (ug/L)
MW-1	6/6/2001	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-1	7/16/2003	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-1	1/6/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 110
MW-1	5/12/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-1	8/26/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-1	12/30/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-1	4/6/2005	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-1	6/26/2008	< 0.14	< 0.40	< 0.36	< 0.74	< 0.36	< 100
MW-1	11/25/2008	< 0.23	< 0.40	< 0.36	< 0.74	< 0.36	< 100
MW-1	6/4/2009	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	91.6
MW-1	10/26/2009	< 0.23	< 0.40	< 0.36	< 0.74	< 0.36	< 23.1
MW-1	6/29/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 75.5
MW-1	12/1/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 76.9
MW-1	6/14/2011	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	157
MW-1	12/1/2011	< 1.0	< 1.0	< 1.0	< 3.0		< 68
MW-2	6/6/2001	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-2	7/16/2003	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-2	1/6/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-2	5/12/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-2	8/26/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	140
MW-2	12/30/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-2	4/6/2005	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-2	6/26/2008	< 0.14	< 0.40	< 0.36	< 0.74	< 0.36	114
MW-2	11/25/2008	< 0.23	< 0.40	< 0.36	< 0.74	< 0.36	242
MW-2	6/4/2009	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	159
MW-2	10/26/2009	Well was abandoned due to new construction.					
MW-4	6/6/2001	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-4	7/16/2003	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-4	1/6/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-4	5/12/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-4	8/26/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-4	12/30/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-4	4/6/2005	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-4	6/26/2008	< 0.14	< 0.40	< 0.36	< 0.74	< 0.36	< 100
MW-4	11/25/2008	< 0.23	< 0.40	< 0.36	< 0.74	< 0.36	276
MW-4	6/4/2009	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	137
MW-4	10/26/2009	< 0.23	< 0.40	< 0.36	< 0.74	< 0.36	<23.1
MW-4	6/29/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 75.5
MW-4	12/1/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 75.5
MW-4	6/14/2011	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 75.5
MW-4	12/1/2011	< 1.0	2.1	< 1.0	< 3.0		230
MW-5	1/6/2004	**6,500**	530	<50	1,800	<50	
MW-6	7/16/2003	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-6	1/6/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-6	5/12/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-6	8/26/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	130
MW-6	12/30/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-6	4/6/2005	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-6	6/26/2008	< 0.14	< 0.40	< 0.36	< 0.74	< 0.36	188
MW-6	11/25/2008	< 0.23	< 0.40	< 0.36	< 0.74	< 0.36	128
MW-6	6/4/2009	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	209
MW-6	10/26/2009	< 0.23	< 0.40	< 0.36	< 0.74	< 0.36	<23.1
MW-6	6/29/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 75.5
MW-6	12/1/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 76.9
MW-6	6/14/2011	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	290
MW-6	12/1/2011	< 1.0	< 1.0	< 1.0	< 3.0		< 71
MW-7	7/16/2003	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-7	1/6/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-7	5/12/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-7	8/26/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-7	12/30/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-7	4/6/2005	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-7	6/26/2008	< 0.14	< 0.40	< 0.36	< 0.74	< 0.36	118
MW-7	11/25/2008	< 0.23	< 0.40	< 0.36	< 0.74	< 0.36	< 100
MW-7	6/4/2009	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	134
MW-7	10/26/2009	< 0.23	< 0.40	< 0.36	< 0.74	< 0.36	<23.1
MW-7	6/29/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 75.5
MW-7	12/1/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 76.9
MW-7	6/14/2011	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	180
MW-7	12/1/2011	< 1.0	< 1.0	< 1.0	< 3.0		< 71

Table 2: Groundwater Sampling Results - BTEX and ERDRO
Enbridge Energy, Limited Partnership - South Cass Lake Station

Location	Date	Benzene (ug/l)	Ethylbenzene (ug/l)	Toluene (ug/l)	Xylenes, -m, -p (ug/L)	Xylenes, -o (ug/L)	ERDRO (ug/L)
MW-8	7/16/2003	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-8	1/6/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-8	5/12/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	150
MW-8	8/26/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-8	12/30/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-8	4/6/2005	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-8	6/26/2008	< 0.14	< 0.40	< 0.36	< 0.74	< 0.36	149
MW-8	11/25/2008	< 0.23	< 0.40	< 0.36	< 0.74	< 0.36	< 100
MW-8	6/4/2009	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	143
MW-8	10/26/2009	< 0.23	< 0.40	< 0.36	< 0.74	< 0.36	<23.1
MW-8	6/29/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 75.5
MW-8	12/1/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	114
MW-8	6/14/2011	**273**	< 1.0	< 1.0	< 2.0	< 1.0	2,050
MW-8	12/1/2011	< 1.0	< 1.0	< 1.0	< 3.0		230
MW-9	7/16/2003	0.51	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-9	1/6/2004	<1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-9	5/12/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
MW-9	8/26/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	210
MW-9	12/30/2004	7.5	3.7	< 1.0	< 2.0	< 1.0	260
MW-9	4/6/2005	**18**	< 1.0	< 1.0	< 2.0	< 1.0	230
MW-9	6/26/2008	< 0.14	< 0.40	< 0.36	< 0.74	< 0.36	101
MW-9	11/25/2008	**25.7**	2.6	< 0.36	< 0.74	< 0.36	364
MW-9	6/4/2009	**132**	< 1.0	< 1.0	< 2.0	< 1.0	1,860
MW-9	10/26/2009	< 0.23	< 0.40	< 0.36	< 0.74	< 0.36	831
MW-9	6/29/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 75.5
MW-9	12/1/2010	**573**	95.4	< 5.0	18.1	< 5.0	3,690
MW-9	6/14/2011	**573**	7.0	< 5.0	< 10.0	< 5.0	3,460
MW-9	12/1/2011	**500**	5.5	2.7	< 3.0		6,400
MW-9 Duplicate	12/1/2011	**498**	4.8	2.5	< 6.0		10,300
MW-10	1/5/2004	**1,100**	110	<5.0	520	<5.0	30,000
MW-10	5/12/2004	**2,100**	210	< 10	350	< 10	6,500
MW-10	8/26/2004	**2,600**	240	< 25	180	< 25	7,800
MW-10	12/30/2004	**1,400**	160	< 10	61	< 10	6,500
MW-10	4/6/2005	**1,100**	220	< 10	62	< 10	6,500
MW-10	6/26/2008	**1,830**	44.2	< 3.6	< 7.4	< 3.6	9,000
MW-10	11/25/2008	**595**	18.1	< 0.71	3.3	< 0.72	65,900
MW-10	6/4/2009	**305**	15	<1.0	3.4	<1.0	50,800
MW-10	10/26/2009	**159**	5.6	< 0.36	3	< 0.36	22,400
MW-10	6/29/2010	**2,180**	< 25.0	< 25.0	< 50.0	< 25.0	33,700
MW-10	12/1/2010	**193**	4.8	< 1.0	10.5	< 1.0	28,100
MW-10	6/14/2011	**35.2**	< 2.0	< 2.0	< 4.0	< 2.0	15,500
MW-10	12/1/2011	**38.3**	1.6	4.4	4.1		12,900
MW-15	12/1/2011	< 1.0	< 1.0	< 1.0	< 3.0		< 330
MW-16A	6/29/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	234
MW-16A	12/1/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	1,150
MW-16A	6/14/2011	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	413
MW-16A	12/1/2011	< 1.0	< 1.0	< 1.0	< 3.0		670
MW-16B	6/29/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	1,310
MW-16B	12/1/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	9,470
MW-16B	6/14/2011	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	2,790
MW-16B	12/1/2011	< 1.0	< 1.0	< 1.0	< 3.0		1,580
MW-17	6/29/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	75.7
MW-17	12/1/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 76.2
MW-17	6/14/2011	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	184
MW-17	12/1/2011	< 1.0	< 1.0	< 1.0	< 3.0		110
MW-18	6/29/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 77.7
MW-18	12/1/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 75.5
MW-18	6/14/2011	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	134
MW-18	12/1/2011	< 1.0	< 1.0	< 1.0	< 3.0		< 330
MW-19	6/29/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	347
MW-19	12/1/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	843
MW-19	6/14/2011	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	608
MW-19	12/1/2011	< 1.0	< 1.0	< 1.0	< 3.0		< 330
USGS 1A	10/26/2009	**776**	142	< 1.8	< 3.7	< 1.8	4,930
USGS 1A	6/29/2010	**39.7**	< 1.0	< 1.0	< 2.0	< 1.0	2,990
USGS 1A	12/2/2010	**791**	< 10.0	< 10.0	< 20.0	< 10.0	5,370
USGS 1A	6/14/2011	**1,590**	< 10.0	< 10.0	< 20.0	< 10.0	5,410
USGS 1A	12/1/2011	**67.8**	1.2	3.2	< 3.0		8,200

Table 2: Groundwater Sampling Results - BTEX and ERDRO
Enbridge Energy, Limited Partnership - South Cass Lake Station

Location	Date	Benzene (ug/l)	Ethylbenzene (ug/l)	Toluene (ug/l)	Xylenes, -m, -p (ug/L)	Xylenes, -o (ug/L)	ERDRO (ug/L)
USGS 2A	10/26/2009	**705**	< 2.0	< 1.8	< 3.7	< 1.8	5,520
USGS 2A	6/29/2010	**63.5**	< 1.0	< 1.0	< 2.0	< 1.0	2,150
USGS 2A	12/2/2010	**239**	< 1.0	< 1.0	< 2.0	< 1.0	3,370
USGS 2A	6/14/2011	**81.7**	< 1.0	< 1.0	< 2.0	< 1.0	2,670
USGS 2A	12/1/2011	**21.1**	< 1.0	1.4	< 3.0		3,600
USGS 3A	10/26/2009	**147**	0.74	< 0.36	1.5	< 0.36	4,060
USGS 3A	6/29/2010	**202**	< 1.0	< 1.0	< 2.0	< 1.0	2,470
USGS 3A	12/2/2010	6.2	< 1.0	< 1.0	< 2.0	< 1.0	1,810
USGS 3A	6/14/2011	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	1,420
USGS 3A	12/1/2011	< 1.0	< 1.0	1.1	< 3.0		2,400
USGS 4A	10/26/2009	**13.8**	< 0.40	< 0.36	< 0.74	< 0.36	1,670
USGS 4A	6/29/2010	**44.8**	< 1.0	< 1.0	< 2.0	< 1.0	4,130
USGS 4A	12/2/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	2,010
USGS 4A	6/14/2011	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	2,420
USGS 4A	12/1/2011	< 1.0	< 1.0	< 1.0	< 3.0		1,320
SCDW	9/21/2011	< 1.0	< 1.0	< 1.0	< 3.0		< 300
SCDW	12/1/2011	< 1.0	< 1.0	< 1.0	< 3.0		< 330
Field Blank	12/30/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
Field Blank	4/6/2005	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 100
Field Blank	6/26/2008	< 0.14	< 0.40	< 0.36	< 0.74	< 0.36	< 100
Field Blank	11/25/2008	< 0.23	< 0.40	< 0.36	< 0.74	< 0.36	< 100
Field Blank	6/4/2009	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	106
Field Blank	10/26/2009	< 0.23	< 0.40	< 0.36	< 0.74	< 0.36	NA
Field Blank	6/29/2010	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 75.5
Field Blank	12/1/2010						389
Field Blank	6/14/2011	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	< 75.5
Field Blank	12/1/2011	< 1.0	< 1.0	< 1.0	< 3.0		< 300
Trip Blank	7/16/2003	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	
Trip Blank	1/6/2004			Froze during the sampling event.			
Trip Blank	5/12/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	
Trip Blank	8/26/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	
Trip Blank	12/30/2004	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	
Trip Blank	4/6/2005	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	
Trip Blank	6/26/2008	< 0.14	< 0.40	< 0.36	< 0.74	< 0.36	
Trip Blank	11/25/2008	< 0.23	< 0.40	< 0.36	< 0.74	< 0.36	
Trip Blank	6/4/2009	< 1.0	< 1.0	< 1.0	< 2.0	< 1.0	
Trip Blank	10/26/2009	< 0.23	< 0.40	< 0.36	< 0.74	< 0.36	
Trip Blank	12/1/2011	< 1.0	< 1.0	< 1.0	< 3.0		

Notes:

During the December 2011 sampling event, xylenes were reported as xylene (total).

Benzene analytical results in bold indicate a concentration greater then 10 ug/L.

Table 3: Groundwater Sampling Results: Biodegradation Evaluation Parameters
Enbridge Energy, Limited Partnership - South Cass Lake Station

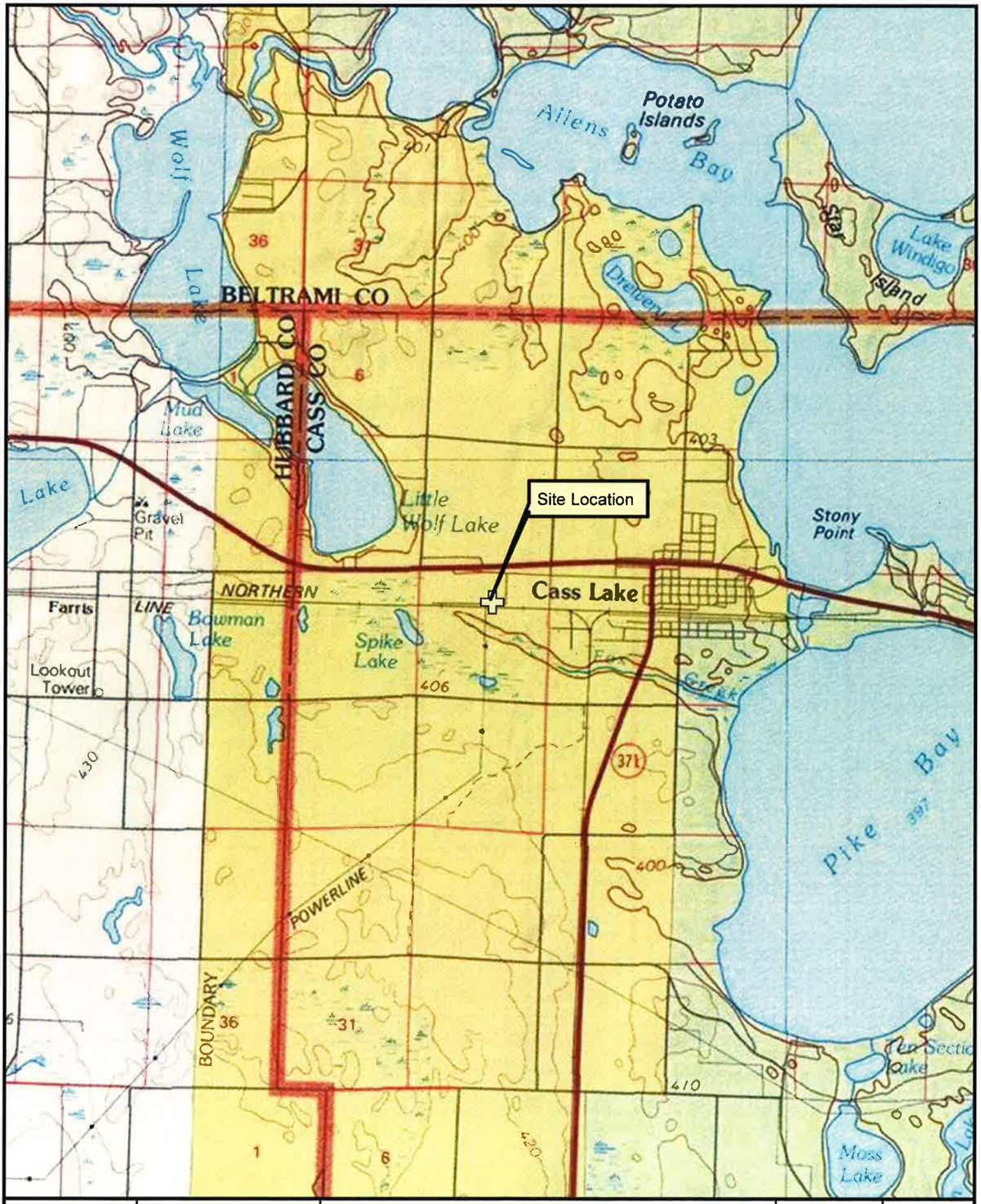
Location	Collection Date	Nitrite (mg/L)	Sulfate (mg/L)	Methane (ug/L)	ORP	Conductivity (mS/cm^3)	Disolved Oxygen (mg/L)	Fe^{+2} (mg/L)
MW-1	7/16/2003						5.4	<0.1
	1/6/2004	2.1	6.3				5.2	<0.1
	5/12/2004						5.0	<0.1
	8/26/2004	0.69	< 4.0	< 10			7.0	<0.1
	12/30/2004	0.81	< 4.0	< 10			6.5	<0.1
	4/6/2005	0.58	< 4.0	< 10			6.0	<0.1
	11/25/2008	0.62	3.6	4.9			11.4	516
	10/26/2009	0.2	3.3	< 0.93			11.8	0.024
	12/1/2010	0.61	< 4.0	< 2.8			11.1	< 0.12
	12/1/2011	< 0.10	< 2.5	< 10	210.8	0.381	9.9	NM
MW-2	7/16/2003						4.1	<0.1
	1/6/2004	4.1	< 4.0				4.5	<0.1
	5/12/2004						4.3	<0.1
	11/25/2008	9.7	9.8	< 2.0			7.0	1.52
	10/26/2009	Well was removed due to new construction						
MW-4	7/16/2003						3.8	<0.1
	1/6/2004	1.0	< 4.0				5.5	<0.1
	5/12/2004						5.7	<0.1
	11/25/2008	5.8	6.3	< 2.0			7.7	2.12
	10/26/2009	6.2	6.6	< 0.93			10.6	< 0.018
	12/1/2010	4.8	5.9	< 2.8			9.8	< 0.05
	12/1/2011	< 0.10	6.1	< 10	217.7	0.505	8.6	NM
MW-6	7/16/2003						2.0	<0.1
	1/6/2004	1.9	5.4				2.6	<0.1
	5/12/2004						2.2	<0.1
	11/25/2008	2.8	7.0	4.2			9.3	22.9
	10/26/2009	2	5.9	< 0.93			11.4	< 0.018
	12/1/2010	1.8	4.9	< 2.8			10.7	< 0.12
	12/1/2011	< 0.10	3.3	< 10	221.5	0.366	9.7	NM
MW-7	7/16/2003						3.4	<0.1
	1/6/2004	< 0.25	5.7				4.3	<0.1
	5/12/2004						5.5	<0.1
	11/25/2008	0.46	8.3	< 2.0			8.7	9.2
	10/26/2009	0.61	7.8	< 0.93			11.5	< 0.018
	12/1/2010	1.1	7.6	< 2.8			9.3	< 0.05
	12/1/2011	< 0.10	5.6	< 10	247.6	0.430	9.4	NM
MW-8	7/16/2003						2.5	<0.1
	1/6/2004	0.34	5.5				2.8	<0.1
	5/12/2004						2.0	<0.1
	8/26/2004	0.31	5.2	< 10			6.0	<0.1
	12/30/2004	< 0.25	7.5	< 10			5.0	<0.1
	4/6/2005	< 0.25	11	< 10			5.0	<0.1
	11/25/2008	0.26	9.5	< 2.0			8.3	22.2
	10/26/2009	0.33	10	< 0.93			12.8	< 0.018
	12/1/2010	< 0.40	7.4	< 2.8			8.9	< 0.05
	12/1/2011	< 0.10	5.0	< 10	NM	NM	NM	NM
MW-9	7/16/2003						2.8	<0.1
	1/6/2004	< 0.25	6.3				2.0	<0.1
	5/12/2004						1.5	<0.1
	8/26/2004	< 0.25	7.2	< 10			1.5	<0.1
	12/30/2004	< 0.25	< 4.0	1,800			2.0	<0.1
	4/6/2005	< 0.25	4.7	280			2.0	<0.1
	11/25/2008	0.2	4.0	968			2.5	39.8
	10/26/2009	< 0.20	4.6	543			5.7	0.021
	12/1/2010	< 0.40	< 4.0	3,590			0.9	0.09
	12/1/2011	< 0.10	< 2.5	8,710	-132.3		0.7	NM
MW-9 Duplicate	12/1/2011	< 0.10	< 2.5	8,830	NM	NM	NM	NM

Table 3: Groundwater Sampling Results: Biodegradation Evaluation Parameters
Enbridge Energy, Limited Partnership - South Cass Lake Station

Location	Collection Date	Nitrite (mg/L)	Sulfate (mg/L)	Methane (ug/L)	ORP	Conductivity (mS/cm^3)	Disolved Oxygen (mg/L)	Fe^{+2} (mg/L)
MW-10	1/5/2004	< 0.25	< 4.0				1.5	<0.1
	5/12/2004						1.0	<0.1
	8/26/2004	< 0.25	< 4.0	4,900			0.8	<0.1
	12/30/2004	2.9	4.2	6,100			1.0	<0.1
	4/6/2005	0.51	< 4.0	2,600			1.5	<0.1
	11/25/2008	1.10	3.3	2,290			2.7	54.8
	10/26/2009	0.30	2.9	5,100			2.5	1.3
	12/1/2010	2.40	4.3	7,030			0.7	5.1
	12/1/2011	< 0.10	< 2.5	3,720	-56.0		0.3	NM
MW-15	12/1/2011	< 0.10	< 2.5	< 10	202.7	0.328	9.5	NM
MW-16A	12/1/2010	< 0.40	< 4.0	528			1.4	0.09
	12/1/2011	< 0.10	3.1	81	-178.2	0.540	2.3	NM
MW-16B	12/1/2010	< 0.40	< 4.0	9.5			0.6	< 0.05
	12/1/2011	< 0.10	7.8	< 10	-143.0	0.620	1.5	NM
MW-17	12/1/2010	< 0.40	9.5	6.9			8.2	<0.12
	12/1/2011	< 0.10	5.6	< 10	256.0	0.503	7.9	NM
MW-18	12/1/2010	4.20	5.8	4.4			10.0	<0.05
	12/1/2011	< 0.10	3.7	< 10	-117.0	0.363	9.7	NM
MW-19	12/1/2010	<0.40	5.2	187			2.1	<0.05
	12/1/2011	< 0.10	6.9	< 10	220.9	0.530	2.1	NM
USGS-1A	10/26/2009	< 0.20	2.1	11,700			1.5	< 0.018
	12/2/2010	< 0.40	< 4.0	10,200			1.2	12.3
	12/1/2011	< 0.10	< 2.5	5,970	-142.0	0.715	0.5	NM
USGS-2A	10/26/2009	< 0.20	2.5	5,480			1.7	< 0.018
	12/2/2010	< 0.40	< 4.0	2,310			1.2	2.8
	12/1/2011	< 0.10	< 2.5	1,730	-136.0	0.569	0.8	NM
USGS-3A	10/26/2009	< 0.20	2.3	3,240			3.7	< 0.018
	12/2/2010	< 0.40	< 4.0	1,180			0.7	1.8
	12/1/2011	< 0.10	< 2.5	800	-156.1	0.544	0.4	NM
USGS-4A	10/26/2009	< 0.20	4.2	665			13.5	< 0.018
	12/2/2010	< 0.40	< 4.0	398			1.9	< 0.05
	12/1/2011	< 0.10	< 2.5	214	-157.0	0.525	1.2	NM
SCDW	12/1/2011	< 0.10	< 2.5	< 10	NM	NM	NM	NM
Field Blank	12/30/2004	< 0.25	< 4.0	< 10				
	4/6/2005	< 0.25	< 4.0	< 10				
	11/25/2008	< 0.085	< 0.51	< 2.0				0.0115
	12/1/2011	< 0.10	< 2.5	19.8	NM	NM	NM	NM

NM - Not measured

Figures



ENBRIDGE

LEGEND

Site Location

Enbridge Energy, Limited Partnership
Figure 1: Site Location Map
South Cass Lake Pumping Station

0 1 2 3 Miles

AECOM

11 East Superior Street
Suite 560
Duluth, MN 55802
www.aecom.com

Drawn:	JDK 12/6/2011
Approved:	
Scale:	1:60,000
PROJECT NUMBER	60238283
FIGURE NUMBER	1

LEGEND

- Release Location
- Monitoring Well
- USGS Monitoring Well
- Drinking Water Well
- Enbridge Pipeline

N

Enbridge Energy, Limited Partnership
Figure 2: Site Layout Map
South Cass Lake Pumping Station

0 — 700 — 1,400 Feet

AECOM
11 East Superior Street
Suite 560
Duluth, MN 55802
www.aecom.com

Drawn:	JDK 12/6/2011
Approved:	
Scale:	1:2,600
PROJECT NUMBER	60238283
FIGURE NUMBER	2

Approximate Enbridge Property Boundary

MW-1 (1313.01)

SCDW

MW-15 (1313.07)

MW-14 (Abandoned)

MW-2 (Abandoned)

MW-13 (LNAPL)

MW-5 (LNAPL)

MW-4 (1313.05)

MW-11 (LNAPL)

MW-3 (LNAPL)

MW-10 (1313.04)

1313.05

Flow

MW-18 (1312.94)

MW-9 (1313.00)

USGS-3A (1312.90)

MW-6 (1313.01)

USGS-1A (1312.96)

USGS-2A (1312.95)

USGS-4A (1312.87)

1313.00

MW-16A (1312.82)

MW-8 (1312.94)

1312.95

MW-7 (1312.92)

1312.90

1312.85

1312.80

MW-19 (1312.75)

MW-17 (1312.79)

Surveyed Enbridge Property Boundary

Groundwater elevation at monitoring well MW-1 considered an outlier. An obstruction was observed in the well during the December 2011 sampling event.

ENBRIDGE™

N

LEGEND

- Monitoring Well
- USGS Monitoring Well
- Drinking Water Well
- Enbridge Pipeline
- Piezometric Contour (ft NVGD)

Enbridge Energy, Limited Partnership
Figure 3: Groundwater Flow Map - December 2011
South Cass Lake Pumping Station

0 700 1,400 Feet

AECOM
11 East Superior Street
Suite 560
Duluth, MN 55802
www.aecom.com

Drawn:	JDK 12/6/2011
Approved:	
Scale:	1:2,600
PROJECT NUMBER	60238283
FIGURE NUMBER	3

ENBRIDGE™

N

LEGEND

- Monitoring Well
- USGS Monitoring Well
- Drinking Water Well
- Enbridge Pipeline
- LNAPL

Enbridge Energy, Limited Partnership
Figure 4: Inferred Lateral Extent of LNAPL - December 2011
South Cass Lake Pumping Station

0 — 700 — 1,400 Feet

AECOM

11 East Superior Street
Suite 560
Duluth, MN 55802
www.aecom.com

Drawn:	JDK 12/6/2011
Approved:	
Scale:	1:2,600
PROJECT NUMBER	60238283
FIGURE NUMBER	4

ENBRIDGE™

LEGEND

- Monitoring Well
- Drinking Water Well
- USGS Monitoring Well
- Enbridge Pipeline
- (ND) - Benzene Not Detected
- (38) - Benzene Concentration (µg/L)
- Inferred Extent of Benzene Concentrations >10 µg/L

N

Enbridge Energy, Limited Partnership
Figure 5: Dissolved Phase Benzene Concentrations in Groundwater >10 µg/L - December 2011
South Cass Lake Pumping Station

0 — 700 — 1,400 Feet

AECOM

11 East Superior Street
Suite 560
Duluth, MN 55802
www.aecom.com

Drawn:	JDK 12/6/2011
Approved:	
Scale:	1:2,600
PROJECT NUMBER	60238283
FIGURE NUMBER	5

Attachment I – Complete Analytical Laboratory Reports

Pace Analytical®
www.pacelabs.com

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Page 1 of

JBF

4047188

CHAIN OF CUSTODY

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	NREC
Branch/Location:	Superior, WI
Project Contact:	Barry Power
Phone:	715-395-5680
Project Number:	
Project Name:	South Cass Lake
Project State:	MN
Sampled By (Print):	Jesse Martens
Sampled By (Sign):	Jesse P. Martens
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Barry Power
Mail To Company:	NREC
Mail To Address:	1409 Hammond Ave Ste 110 Superior, WI 54880
Invoice To Contact:	Karl Beaster
Invoice To Company:	Enbridge Energy
Invoice To Address:	1100 Louisiana St. Suite 3000 Houston, TX 77002
Invoice To Phone:	715-394-1430

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes
A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

FILTERED? (YES/NO)
PRESERVATION (CODE)*

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Analyses Requested: Y/N	Pick Letter	BTEX	EDRO	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
							B	B			
001	MW-1	6/14/11	0935	GW			X	X		1-1Lag, 3-40ml B	
002	MW-4		0950								
003	MW-6		1010								
004	MW-7		1030								
005	MW-8		1050								
006	MW-19		1030								
007	MW-18		1050								
008	MW-17		1110								
009	MW-9		1110								
010	MW-16A		1125								
011	MW-16B		1140								
012	USGS-4A		1135								
013	USGS-3A		1200								

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	bpower@nrecompany.com
Email #2:	bhill@nrecompany.com
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Jesse P. Martens	6/16/11 10:30AM		
FedEx	6/17/11 09:55	[illegible]	6/17/11 09:55

PACE Project No.: 4047188
Receipt Temp = 5 °C (IR01)
Sample Receipt pH OK / Adjusted: N/a
Cooler Custody Seal: Present / Not Present
Intact / Not Intact

C019a(27Jun2006)
Version 6.0 06/14/06

Pace Analytical
www.pacelabs.com

UPPER MIDWEST REGION
MN: 612-607-1700 WI: 920-469-2436

Page 1 of

CHAIN OF CUSTODY

4047188

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	NREC
Branch/Location:	Superior, WI
Project Contact:	Barry Power
Phone:	715-395-5680
Project Number:	
Project Name:	South Cass Lake
Project State:	MN
Sampled By (Print):	Jesse Martinos
Sampled By (Sign):	Jesse P. Martinos
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Barry Power
Mail To Company:	NREC
Mail To Address:	1409 Hammond Ave Ste 110 Superior, WI 54880
Invoice To Contact:	Karl Beasler
Invoice To Company:	Enbridge Energy
Invoice To Address:	1100 Louisiana St. Suite 3000 Houston, TX 77002
Invoice To Phone:	715-394-1430

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes
A = Air; W = Water; B = Biota; DW = Drinking Water; C = Charcoal; GW = Ground Water; O = Oil; SW = Surface Water; S = Soil; WW = Waste Water; SI = Sludge; WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO)	PRESERVATION (CODE)*	Analyses Requested: BTEX	Analyses Requested: EDB/DBCP	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
					Y/N	Pick Letter					
014	USGS-2A	6/14/11	1205	GW	N	B	X	X		1-1AgB, 3-40mlB	
015	USGS-1A		1225	GW	N	B	X	X			
016	MW-10		1245	GW	N	B	X	X			
017	FIELD BLANK		0930	DW	N	B	X	X			

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):
Email #1: bpower@nrecompany.com
Email #2: bhill@nrecompany.com
Telephone:
Fax:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Jesse P. Martinos	6/16/11 10:00AM		
Fed Ex	6/17/11 09:55	A Christensen	6/17/11 09:55

PACE Project No.: 40471188
Receipt Temp = 5.01 °C
Sample Receipt pH: OK / Adjusted N/A
Cooler Custody Seal: Present / Not Present
Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

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

Pace Analytical

Sample Condition Upon Receipt

Client Name: NREC Project # 4047188

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

Tracking #:

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 JB Type of Ice: (Wet) Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature 5°C Biological Tissue is Frozen: ☐ yes ☐ no

Temp Blank Present: ☐ yes ☑ no

Optional
Proj. Due Date:
Proj. Name:

Person examining contents:
Date: 6/17/11
Initials: AKC

Temp should be above freezing to 6°C for all sample except Biota.
Biota Samples should be received ≤ 0°C.

		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 & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☑Yes ☐No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☑No ☐N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: W		
All containers needing preservation have been checked.	☐Yes ☐No ☑N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☐No	Initial when completed / Lot # of added preservative
Samples checked for dechlorination:	☐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? Y / N

Person Contacted: Date/Time:

Comments/ Resolution:

Project Manager Review: Date: 6/17/11

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)

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

July 01, 2011

Barry Power
Natural Resources Engineering Co.
1409 Hammond Avenue
Suite 110
Superior, WI 54880

RE: Project: SOUTH CASS LAKE
Pace Project No.: 4047188

Dear Barry Power:
Enclosed are the analytical results for sample(s) received by the laboratory on June 17, 2011. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Alee Her

alee.her@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: SOUTH CASS LAKE
Pace Project No.: 4047188

Green Bay Certification IDs
1241 Bellevue Street, Green Bay, WI 54302
California Certification #: 09268CA
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 11888
New York Certification #: 11888
North Carolina Certification #: 503
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
US Dept of Agriculture #: S-76505
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444

Pace Analytical Services, Inc.
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: SOUTH CASS LAKE
Pace Project No.: 4047188

Lab ID	Sample ID	Matrix	Date Collected	Date Received
4047188001	MW-1	Water	06/14/11 09:35	06/17/11 09:55
4047188002	MW-4	Water	06/14/11 09:50	06/17/11 09:55
4047188003	MW-6	Water	06/14/11 10:10	06/17/11 09:55
4047188004	MW-7	Water	06/14/11 10:30	06/17/11 09:55
4047188005	MW-8	Water	06/14/11 10:50	06/17/11 09:55
4047188006	MW-19	Water	06/14/11 10:30	06/17/11 09:55
4047188007	MW-18	Water	06/14/11 10:50	06/17/11 09:55
4047188008	MW-17	Water	06/14/11 11:10	06/17/11 09:55
4047188009	MW-9	Water	06/14/11 11:10	06/17/11 09:55
4047188010	MW-16A	Water	06/14/11 11:25	06/17/11 09:55
4047188011	MW-16B	Water	06/14/11 11:40	06/17/11 09:55
4047188012	USGS-4A	Water	06/14/11 11:35	06/17/11 09:55
4047188013	USGS-3A	Water	06/14/11 12:00	06/17/11 09:55
4047188014	USGS-2A	Water	06/14/11 12:05	06/17/11 09:55
4047188015	USGS-1A	Water	06/14/11 12:25	06/17/11 09:55
4047188016	MW-10	Water	06/14/11 12:45	06/17/11 09:55
4047188017	FIELD BLANK	Water	06/14/11 09:30	06/17/11 09:55

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SAMPLE ANALYTE COUNT

Project: SOUTH CASS LAKE
Pace Project No.: 4047188

Lab ID	Sample ID	Method	Analysts	Analytes Reported
4047188001	MW-1	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6
4047188002	MW-4	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6
4047188003	MW-6	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6
4047188004	MW-7	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6
4047188005	MW-8	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6
4047188006	MW-19	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6
4047188007	MW-18	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6
4047188008	MW-17	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6
4047188009	MW-9	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6
4047188010	MW-16A	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6
4047188011	MW-16B	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6
4047188012	USGS-4A	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6
4047188013	USGS-3A	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6
4047188014	USGS-2A	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6
4047188015	USGS-1A	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6
4047188016	MW-10	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6
4047188017	FIELD BLANK	Extended Range DRO	KHB	1
		WI MOD GRO	SES	6

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ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4047188

Sample: MW-1 **Lab ID: 4047188001** Collected: 06/14/11 09:35 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**157**	ug/L	75.5	1	06/20/11 12:00	07/01/11 12:44		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/20/11 16:35	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/20/11 16:35	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/20/11 16:35	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/20/11 16:35	179601-23-1	
o-Xylene	**<1.0**	ug/L	1.0	1		06/20/11 16:35	95-47-6	
a,a,a-Trifluorotoluene (S)	102	%.	80-120	1		06/20/11 16:35	98-08-8	

Sample: MW-4 **Lab ID: 4047188002** Collected: 06/14/11 09:50 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**<75.5**	ug/L	75.5	1	06/20/11 12:00	07/01/11 12:52		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/20/11 17:01	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/20/11 17:01	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/20/11 17:01	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/20/11 17:01	179601-23-1	
o-Xylene	**<1.0**	ug/L	1.0	1		06/20/11 17:01	95-47-6	
a,a,a-Trifluorotoluene (S)	101	%.	80-120	1		06/20/11 17:01	98-08-8	

Sample: MW-6 **Lab ID: 4047188003** Collected: 06/14/11 10:10 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**290**	ug/L	75.5	1	06/20/11 12:00	07/01/11 12:59		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/20/11 17:26	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/20/11 17:26	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/20/11 17:26	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/20/11 17:26	179601-23-1	
o-Xylene	**<1.0**	ug/L	1.0	1		06/20/11 17:26	95-47-6	
a,a,a-Trifluorotoluene (S)	101	%.	80-120	1		06/20/11 17:26	98-08-8	

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ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4047188

Sample: MW-7 **Lab ID: 4047188004** Collected: 06/14/11 10:30 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**180**	ug/L	75.5	1	06/20/11 12:00	07/01/11 13:07		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/20/11 17:52	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/20/11 17:52	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/20/11 17:52	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/20/11 17:52	179601-23-1	
o-Xylene	**<1.0**	ug/L	1.0	1		06/20/11 17:52	95-47-6	
a,a,a-Trifluorotoluene (S)	102	%.	80-120	1		06/20/11 17:52	98-08-8	

Sample: MW-8 **Lab ID: 4047188005** Collected: 06/14/11 10:50 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**2050**	ug/L	151	2	06/20/11 12:00	07/01/11 13:15		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**273**	ug/L	1.0	1		06/20/11 18:17	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/20/11 18:17	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/20/11 18:17	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/20/11 18:17	179601-23-1	
o-Xylene	**<1.0**	ug/L	1.0	1		06/20/11 18:17	95-47-6	
a,a,a-Trifluorotoluene (S)	95	%.	80-120	1		06/20/11 18:17	98-08-8	

Sample: MW-19 **Lab ID: 4047188006** Collected: 06/14/11 10:30 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**608**	ug/L	79.2	1	06/20/11 12:00	07/01/11 13:23		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/20/11 18:43	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/20/11 18:43	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/20/11 18:43	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/20/11 18:43	179601-23-1	
o-Xylene	**<1.0**	ug/L	1.0	1		06/20/11 18:43	95-47-6	
a,a,a-Trifluorotoluene (S)	102	%.	80-120	1		06/20/11 18:43	98-08-8	

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ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4047188

Sample: MW-18 **Lab ID: 4047188007** Collected: 06/14/11 10:50 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**134**	ug/L	77.7	1	06/20/11 12:00	07/01/11 13:31		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/20/11 19:09	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/20/11 19:09	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/20/11 19:09	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/20/11 19:09	179601-23-1	
o-Xylene	**<1.0**	ug/L	1.0	1		06/20/11 19:09	95-47-6	
a,a,a-Trifluorotoluene (S)	101	%.	80-120	1		06/20/11 19:09	98-08-8	

Sample: MW-17 **Lab ID: 4047188008** Collected: 06/14/11 11:10 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**184**	ug/L	76.9	1	06/20/11 12:00	07/01/11 13:39		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/20/11 19:34	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/20/11 19:34	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/20/11 19:34	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/20/11 19:34	179601-23-1	
o-Xylene	**<1.0**	ug/L	1.0	1		06/20/11 19:34	95-47-6	
a,a,a-Trifluorotoluene (S)	101	%.	80-120	1		06/20/11 19:34	98-08-8	

Sample: MW-9 **Lab ID: 4047188009** Collected: 06/14/11 11:10 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**3460**	ug/L	311	4	06/20/11 12:00	07/01/11 13:47		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**573**	ug/L	5.0	5		06/20/11 22:34	71-43-2	
Ethylbenzene	**7.0**	ug/L	5.0	5		06/20/11 22:34	100-41-4	
Toluene	**<5.0**	ug/L	5.0	5		06/20/11 22:34	108-88-3	
m&p-Xylene	**<10.0**	ug/L	10.0	5		06/20/11 22:34	179601-23-1	
o-Xylene	**<5.0**	ug/L	5.0	5		06/20/11 22:34	95-47-6	
a,a,a-Trifluorotoluene (S)	96	%.	80-120	5		06/20/11 22:34	98-08-8	

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ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4047188

Sample: MW-16A **Lab ID: 4047188010** Collected: 06/14/11 11:25 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**413**	ug/L	75.5	1	06/20/11 12:00	07/01/11 13:54		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/22/11 01:28	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/22/11 01:28	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/22/11 01:28	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/22/11 01:28	179601-23-1	
o-Xylene	**<1.0**	ug/L	1.0	1		06/22/11 01:28	95-47-6	
a,a,a-Trifluorotoluene (S)	102	%.	80-120	1		06/22/11 01:28	98-08-8	

Sample: MW-16B **Lab ID: 4047188011** Collected: 06/14/11 11:40 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**2790**	ug/L	151	2	06/20/11 12:00	07/01/11 14:02		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/22/11 01:53	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/22/11 01:53	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/22/11 01:53	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/22/11 01:53	179601-23-1	
o-Xylene	**<1.0**	ug/L	1.0	1		06/22/11 01:53	95-47-6	
a,a,a-Trifluorotoluene (S)	102	%.	80-120	1		06/22/11 01:53	98-08-8	

Sample: USGS-4A **Lab ID: 4047188012** Collected: 06/14/11 11:35 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**2420**	ug/L	157	2	06/20/11 12:00	07/01/11 14:10		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/22/11 02:18	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/22/11 02:18	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/22/11 02:18	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/22/11 02:18	179601-23-1	
o-Xylene	**<1.0**	ug/L	1.0	1		06/22/11 02:18	95-47-6	
a,a,a-Trifluorotoluene (S)	103	%.	80-120	1		06/22/11 02:18	98-08-8	

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ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4047188

Sample: USGS-3A **Lab ID: 4047188013** Collected: 06/14/11 12:00 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**1420**	ug/L	78.4	1	06/20/11 12:00	07/01/11 14:18		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/22/11 02:43	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/22/11 02:43	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/22/11 02:43	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/22/11 02:43	179601-23-1	
o-Xylene	**<1.0**	ug/L	1.0	1		06/22/11 02:43	95-47-6	
a,a,a-Trifluorotoluene (S)	104	%.	80-120	1		06/22/11 02:43	98-08-8	

Sample: USGS-2A **Lab ID: 4047188014** Collected: 06/14/11 12:05 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**2670**	ug/L	226	3	06/20/11 12:00	07/01/11 14:26		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**81.7**	ug/L	1.0	1		06/22/11 03:08	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/22/11 03:08	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/22/11 03:08	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/22/11 03:08	179601-23-1	
o-Xylene	**<1.0**	ug/L	1.0	1		06/22/11 03:08	95-47-6	
a,a,a-Trifluorotoluene (S)	102	%.	80-120	1		06/22/11 03:08	98-08-8	

Sample: USGS-1A **Lab ID: 4047188015** Collected: 06/14/11 12:25 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**5410**	ug/L	571	7	06/20/11 12:00	07/01/11 14:34		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**1590**	ug/L	10.0	10		06/22/11 03:58	71-43-2	
Ethylbenzene	**<10.0**	ug/L	10.0	10		06/22/11 03:58	100-41-4	
Toluene	**<10.0**	ug/L	10.0	10		06/22/11 03:58	108-88-3	
m&p-Xylene	**<20.0**	ug/L	20.0	10		06/22/11 03:58	179601-23-1	
o-Xylene	**<10.0**	ug/L	10.0	10		06/22/11 03:58	95-47-6	
a,a,a-Trifluorotoluene (S)	99	%.	80-120	10		06/22/11 03:58	98-08-8	

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ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4047188

Sample: MW-10 **Lab ID: 4047188016** Collected: 06/14/11 12:45 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**15500**	ug/L	1510	20	06/20/11 12:00	07/01/11 14:41		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**35.2**	ug/L	2.0	2		06/22/11 03:33	71-43-2	
Ethylbenzene	**<2.0**	ug/L	2.0	2		06/22/11 03:33	100-41-4	
Toluene	**<2.0**	ug/L	2.0	2		06/22/11 03:33	108-88-3	
m&p-Xylene	**<4.0**	ug/L	4.0	2		06/22/11 03:33	179601-23-1	
o-Xylene	**<2.0**	ug/L	2.0	2		06/22/11 03:33	95-47-6	
a,a,a-Trifluorotoluene (S)	105	%.	80-120	2		06/22/11 03:33	98-08-8	D3

Sample: FIELD BLANK **Lab ID: 4047188017** Collected: 06/14/11 09:30 Received: 06/17/11 09:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Extended Range DRO GCS	Analytical Method: Extended Range DRO Preparation Method: Extended Range DRO							
Extended Range DRO (C10-C40)	**<75.5**	ug/L	75.5	1	06/20/11 12:00	07/01/11 14:49		B
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/21/11 19:37	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/21/11 19:37	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/21/11 19:37	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/21/11 19:37	179601-23-1	
o-Xylene	**<1.0**	ug/L	1.0	1		06/21/11 19:37	95-47-6	
a,a,a-Trifluorotoluene (S)	102	%.	80-120	1		06/21/11 19:37	98-08-8	

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QUALITY CONTROL DATA

Project: SOUTH CASS LAKE
Pace Project No.: 4047188

QC Batch: OEXT/11447 Analysis Method: Extended Range DRO
QC Batch Method: Extended Range DRO Analysis Description: Extended Range DRO GCS
Associated Lab Samples: 4047188001, 4047188002, 4047188003, 4047188004, 4047188005, 4047188006, 4047188007, 4047188008, 4047188009, 4047188010, 4047188011, 4047188012, 4047188013, 4047188014, 4047188015, 4047188016, 4047188017

METHOD BLANK: 466167 Matrix: Water
Associated Lab Samples: 4047188001, 4047188002, 4047188003, 4047188004, 4047188005, 4047188006, 4047188007, 4047188008, 4047188009, 4047188010, 4047188011, 4047188012, 4047188013, 4047188014, 4047188015, 4047188016, 4047188017

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Extended Range DRO (C10-C40)	ug/L	<80.0	80.0	07/01/11 12:36	

LABORATORY CONTROL SAMPLE & LCSD: 466168 466169

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Extended Range DRO (C10-C40)	ug/L	1600	1600	1470	100	92	75-115	8	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: SOUTH CASS LAKE
Pace Project No.: 4047188

QC Batch: GCV/6857 Analysis Method: WI MOD GRO
QC Batch Method: WI MOD GRO Analysis Description: WIGRO GCV Water
Associated Lab Samples: 4047188001, 4047188002, 4047188003, 4047188004, 4047188005, 4047188006, 4047188007, 4047188008, 4047188009

METHOD BLANK: 466149 Matrix: Water
Associated Lab Samples: 4047188001, 4047188002, 4047188003, 4047188004, 4047188005, 4047188006, 4047188007, 4047188008, 4047188009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	<1.0	1.0	06/20/11 14:28	
Ethylbenzene	ug/L	<1.0	1.0	06/20/11 14:28	
m&p-Xylene	ug/L	<2.0	2.0	06/20/11 14:28	
o-Xylene	ug/L	<1.0	1.0	06/20/11 14:28	
Toluene	ug/L	<1.0	1.0	06/20/11 14:28	
a,a,a-Trifluorotoluene (S)	%.	101	80-120	06/20/11 14:28	

LABORATORY CONTROL SAMPLE & LCSD: 466150 466151

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	ug/L	20	20.4	20.2	102	101	80-120	.9	20	
Ethylbenzene	ug/L	20	19.9	19.7	99	99	80-120	.7	20	
m&p-Xylene	ug/L	40	39.3	39.0	98	98	80-120	.7	20	
o-Xylene	ug/L	20	19.9	19.8	100	99	80-120	.8	20	
Toluene	ug/L	20	20.0	19.9	100	99	80-120	.8	20	
a,a,a-Trifluorotoluene (S)	%.				101	102	80-120			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 466183 466184

Parameter	Units	4047168012 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	660	200	200	838	841	89	91	23-177	.4	20	
Ethylbenzene	ug/L	71.8	200	200	263	267	96	97	63-144	1	20	
m&p-Xylene	ug/L	4380	400	400	4120	4140	-67	-62	39-172	.5	20	M1
o-Xylene	ug/L	1650	200	200	1640	1650	-8	-2	60-150	.7	20	M1
Toluene	ug/L	1530	200	200	1660	1670	68	71	53-164	.3	20	
a,a,a-Trifluorotoluene (S)	%.						97	98	80-120			

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QUALITY CONTROL DATA

Project: SOUTH CASS LAKE
Pace Project No.: 4047188

QC Batch: GCV/6859 Analysis Method: WI MOD GRO
QC Batch Method: WI MOD GRO Analysis Description: WIGRO GCV Water
Associated Lab Samples: 4047188010, 4047188011, 4047188012, 4047188013, 4047188014, 4047188015, 4047188016, 4047188017

METHOD BLANK: 466317 Matrix: Water
Associated Lab Samples: 4047188010, 4047188011, 4047188012, 4047188013, 4047188014, 4047188015, 4047188016, 4047188017

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	<1.0	1.0	06/21/11 18:22	
Ethylbenzene	ug/L	<1.0	1.0	06/21/11 18:22	
m&p-Xylene	ug/L	<2.0	2.0	06/21/11 18:22	
o-Xylene	ug/L	<1.0	1.0	06/21/11 18:22	
Toluene	ug/L	<1.0	1.0	06/21/11 18:22	
a,a,a-Trifluorotoluene (S)	%.	102	80-120	06/21/11 18:22	

LABORATORY CONTROL SAMPLE & LCSD: 466318 466319

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	ug/L	20	21.8	22.7	109	114	80-120	4	20	
Ethylbenzene	ug/L	20	21.3	22.3	106	111	80-120	5	20	
m&p-Xylene	ug/L	40	42.0	43.9	105	110	80-120	5	20	
o-Xylene	ug/L	20	20.9	21.9	104	110	80-120	5	20	
Toluene	ug/L	20	21.5	22.4	107	112	80-120	4	20	
a,a,a-Trifluorotoluene (S)	%.				102	102	80-120			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 466486 466487

Parameter	Units	4047188015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	1590	200	200	1760	1730	82	70	23-177	1	20	
Ethylbenzene	ug/L	<10.0	200	200	223	215	111	107	63-144	4	20	
m&p-Xylene	ug/L	<20.0	400	400	434	421	109	105	39-172	3	20	
o-Xylene	ug/L	<10.0	200	200	214	208	107	104	60-150	3	20	
Toluene	ug/L	<10.0	200	200	219	212	110	106	53-164	3	20	
a,a,a-Trifluorotoluene (S)	%.						99	100	80-120			

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QUALIFIERS

Project: SOUTH CASS LAKE
Pace Project No.: 4047188

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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December 12, 2011

Brian Hill
AECOM
11 E. Superior Street, Suite 5
Duluth, MN 55802

RE: Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Dear Brian Hill:
Enclosed are the analytical results for sample(s) received by the laboratory on December 03, 2011. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carol Davy

carol.davy@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Minnesota Certification IDs
1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Idaho Certification #: MN00064
Illinois Certification #: 200011
Iowa Certification #: 368
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New Mexico Certification #: Pace
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: D9921
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Washington Certification #: C754
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10177322001	MW-1	Water	12/01/11 00:00	12/03/11 08:00
10177322002	MW-4	Water	12/01/11 00:00	12/03/11 08:00
10177322003	MW-6	Water	12/01/11 00:00	12/03/11 08:00
10177322004	MW-7	Water	12/01/11 00:00	12/03/11 08:00
10177322005	MW-8	Water	12/01/11 00:00	12/03/11 08:00
10177322006	MW-9	Water	12/01/11 00:00	12/03/11 08:00
10177322007	MW-10	Water	12/01/11 00:00	12/03/11 08:00
10177322008	MW-15	Water	12/01/11 00:00	12/03/11 08:00
10177322009	MW-16A	Water	12/01/11 00:00	12/03/11 08:00
10177322010	MW-16B	Water	12/01/11 00:00	12/03/11 08:00
10177322011	MW-17	Water	12/01/11 00:00	12/03/11 08:00
10177322012	MW-18	Water	12/01/11 00:00	12/03/11 08:00
10177322013	MW-19	Water	12/01/11 00:00	12/03/11 08:00
10177322014	USGS-1A	Water	12/01/11 00:00	12/03/11 08:00
10177322015	USGS-2A	Water	12/01/11 00:00	12/03/11 08:00
10177322016	USGS-3A	Water	12/01/11 00:00	12/03/11 08:00
10177322017	USGS-4A	Water	12/01/11 00:00	12/03/11 08:00
10177322018	SCDW	Water	12/01/11 00:00	12/03/11 08:00
10177322019	Dup-1	Water	12/01/11 00:00	12/03/11 08:00
10177322020	Field Blank	Water	12/01/11 00:00	12/03/11 08:00
10177322021	Trip Blank	Water	12/01/11 00:00	12/03/11 08:00

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SAMPLE ANALYTE COUNT

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10177322001	MW-1	RSK 175	SK4	1
		Diesel Range Organics	MT	4
		WI MOD GRO	KT1	5
10177322002	MW-4	RSK 175	SK4	1
		Diesel Range Organics	MT	4
		WI MOD GRO	KT1	5
10177322003	MW-6	RSK 175	SK4	1
		Diesel Range Organics	MT	4
		WI MOD GRO	KT1	5
10177322004	MW-7	RSK 175	SK4	1
		Diesel Range Organics	MT	4
		WI MOD GRO	KT1	5
10177322005	MW-8	RSK 175	SK4	1
		Diesel Range Organics	MT	4
		WI MOD GRO	KT1	5
10177322006	MW-9	RSK 175	SK4	1
		Diesel Range Organics	JRH	4
		WI MOD GRO	KT1	5
10177322007	MW-10	RSK 175	SK4	1
		Diesel Range Organics	JRH	4
		WI MOD GRO	KT1	5
10177322008	MW-15	RSK 175	SK4	1
		Diesel Range Organics	MT	4
		WI MOD GRO	KT1	5
10177322009	MW-16A	RSK 175	SK4	1
		Diesel Range Organics	MT	4
		WI MOD GRO	KT1	5
10177322010	MW-16B	RSK 175	SK4	1
		Diesel Range Organics	MT	4
		WI MOD GRO	KT1	5
10177322011	MW-17	RSK 175	SK4	1
		Diesel Range Organics	MT	4
		WI MOD GRO	KT1	5
10177322012	MW-18	RSK 175	SK4	1
		Diesel Range Organics	MT	4
		WI MOD GRO	KT1	5
10177322013	MW-19	RSK 175	SK4	1

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SAMPLE ANALYTE COUNT

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Lab ID	Sample ID	Method	Analysts	Analytes Reported
		Diesel Range Organics	MT	4
		WI MOD GRO	KT1	5
10177322014	**USGS-1A**	RSK 175	SK4	1
		Diesel Range Organics	JRH	4
		WI MOD GRO	KT1	5
10177322015	**USGS-2A**	RSK 175	SK4	1
		Diesel Range Organics	MT	4
		WI MOD GRO	KT1	5
10177322016	**USGS-3A**	RSK 175	SK4	1
		Diesel Range Organics	MT	4
		WI MOD GRO	KT1	5
10177322017	**USGS-4A**	RSK 175	SK4	1
		Diesel Range Organics	MT	4
		WI MOD GRO	KT1	5
10177322018	**SCDW**	RSK 175	SK4	1
		Diesel Range Organics	MT	4
		WI MOD GRO	KT1	5
10177322019	**Dup-1**	RSK 175	SK4	1
		Diesel Range Organics	JRH	4
		WI MOD GRO	KT1	5
10177322020	**Field Blank**	RSK 175	SK4	1
		Diesel Range Organics	MT	4
		WI MOD GRO	KT1	5
10177322021	**Trip Blank**	WI MOD GRO	KT1	5

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PROJECT NARRATIVE

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Method: **RSK 175**
Description: RSK 175 AIR Headspace
Client: AECOM
Date: December 12, 2011

General Information:
20 samples were analyzed for RSK 175. All samples were received in acceptable condition with any exceptions noted below.

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

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

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

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

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

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

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

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

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

Additional Comments:

Analyte Comments:

QC Batch: AIR/13755

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- Dup-1 (Lab ID: 10177322019)
  - Methane
- USGS-1A (Lab ID: 10177322014)
  - Methane

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PROJECT NARRATIVE

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Method: **Diesel Range Organics**
Description: WIDRO Extended GCS
Client: AECOM
Date: December 12, 2011

General Information:
20 samples were analyzed for Diesel Range Organics. All samples were received in acceptable condition with any exceptions noted below.

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

Sample Preparation:
The samples were prepared in accordance with Diesel Range Organics with any exceptions noted below.

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

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

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

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

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

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

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

Additional Comments:

Analyte Comments:

QC Batch: OEXT/17396

T7: Low boiling point hydrocarbons are present in the sample.

- Dup-1 (Lab ID: 10177322019)
  - WDRO C10-C28
- MW-10 (Lab ID: 10177322007)
  - WDRO C10-C28
- MW-9 (Lab ID: 10177322006)
  - WDRO C10-C28

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PROJECT NARRATIVE

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Method: **Diesel Range Organics**
Description: WIDRO Extended GCS
Client: AECOM
Date: December 12, 2011

Analyte Comments:

QC Batch: OEXT/17396

T7: Low boiling point hydrocarbons are present in the sample.
- USGS-1A (Lab ID: 10177322014)
  - WDRO C10-C28

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PROJECT NARRATIVE

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Method: **WI MOD GRO**
Description: WIGRO GCV
Client: AECOM
Date: December 12, 2011

General Information:
21 samples were analyzed for WI MOD GRO. All samples were received in acceptable condition with any exceptions noted below.

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

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

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

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

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

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

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

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

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

Additional Comments:

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

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: MW-1 **Lab ID: 10177322001** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	ND	ug/L	10.0	5.0	1		12/05/11 13:52	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	ND	mg/L	0.10	0.022	1	12/05/11 13:21	12/08/11 11:51		
WDRO C10-C28	ND	mg/L	0.10	0.023	1	12/05/11 13:21	12/08/11 11:51		
WDRO, Extended C10-C32	ND	mg/L	0.10	0.023	1	12/05/11 13:21	12/08/11 11:51		
Surrogates									
n-Triacontane (S)	70	%	50-150		1	12/05/11 13:21	12/08/11 11:51		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.17	1		12/06/11 01:27	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.15	1		12/06/11 01:27	100-41-4	
Toluene	ND	ug/L	1.0	0.10	1		12/06/11 01:27	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 01:27	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	80-125		1		12/06/11 01:27	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: MW-4 **Lab ID: 10177322002** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	ND	ug/L	10.0	5.0	1		12/05/11 14:42	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	**0.12**	mg/L	0.10	0.022	1	12/05/11 13:21	12/08/11 11:58		
WDRO C10-C28	ND	mg/L	0.10	0.023	1	12/05/11 13:21	12/08/11 11:58		
WDRO, Extended C10-C32	**0.11**	mg/L	0.10	0.023	1	12/05/11 13:21	12/08/11 11:58		
Surrogates									
n-Triacontane (S)	79	%	50-150		1	12/05/11 13:21	12/08/11 11:58		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.17	1		12/06/11 01:48	71-43-2	
Ethylbenzene	**2.1**	ug/L	1.0	0.15	1		12/06/11 01:48	100-41-4	
Toluene	ND	ug/L	1.0	0.10	1		12/06/11 01:48	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 01:48	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	80-125		1		12/06/11 01:48	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: MW-6 **Lab ID: 10177322003** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	ND	ug/L	10.0	5.0	1		12/05/11 15:03	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	ND	mg/L	0.11	0.023	1	12/05/11 13:21	12/08/11 12:05		
WDRO C10-C28	ND	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 12:05		
WDRO, Extended C10-C32	ND	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 12:05		
Surrogates									
n-Triacontane (S)	71	%	50-150		1	12/05/11 13:21	12/08/11 12:05		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.17	1		12/06/11 02:10	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.15	1		12/06/11 02:10	100-41-4	
Toluene	ND	ug/L	1.0	0.10	1		12/06/11 02:10	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 02:10	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	101	%	80-125		1		12/06/11 02:10	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: MW-7 **Lab ID: 10177322004** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	ND	ug/L	10.0	5.0	1		12/05/11 15:13	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	ND	mg/L	0.11	0.023	1	12/05/11 13:21	12/08/11 12:12		
WDRO C10-C28	ND	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 12:12		
WDRO, Extended C10-C32	ND	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 12:12		
Surrogates									
n-Triacontane (S)	80	%	50-150		1	12/05/11 13:21	12/08/11 12:12		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.17	1		12/06/11 03:14	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.15	1		12/06/11 03:14	100-41-4	
Toluene	ND	ug/L	1.0	0.10	1		12/06/11 03:14	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 03:14	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	100	%	80-125		1		12/06/11 03:14	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: MW-8 **Lab ID: 10177322005** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	ND	ug/L	10.0	5.0	1		12/05/11 15:24	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	**0.12**	mg/L	0.11	0.022	1	12/05/11 13:21	12/08/11 12:19		
WDRO C10-C28	ND	mg/L	0.11	0.023	1	12/05/11 13:21	12/08/11 12:19		
WDRO, Extended C10-C32	**0.11**	mg/L	0.11	0.023	1	12/05/11 13:21	12/08/11 12:19		
Surrogates									
n-Triacontane (S)	83	%	50-150		1	12/05/11 13:21	12/08/11 12:19		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.17	1		12/06/11 03:36	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.15	1		12/06/11 03:36	100-41-4	
Toluene	ND	ug/L	1.0	0.10	1		12/06/11 03:36	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 03:36	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	100	%	80-125		1		12/06/11 03:36	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: MW-9 **Lab ID: 10177322006** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	**8710**	ug/L	10.0	5.0	1		12/05/11 15:34	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	**2.2**	mg/L	0.11	0.024	1	12/05/11 13:21	12/09/11 12:39		
WDRO C10-C28	**2.1**	mg/L	0.11	0.025	1	12/05/11 13:21	12/09/11 12:39		T7
WDRO, Extended C10-C32	**2.1**	mg/L	0.11	0.025	1	12/05/11 13:21	12/09/11 12:39		
Surrogates									
n-Triacontane (S)	82	%	50-150		1	12/05/11 13:21	12/09/11 12:39		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	**500**	ug/L	2.0	0.34	2		12/06/11 18:13	71-43-2	
Ethylbenzene	**5.5**	ug/L	1.0	0.15	1		12/06/11 03:57	100-41-4	
Toluene	**2.7**	ug/L	1.0	0.10	1		12/06/11 03:57	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 03:57	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	101	%	80-125		1		12/06/11 03:57	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: MW-10 **Lab ID: 10177322007** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	**3720**	ug/L	10.0	5.0	1		12/05/11 15:45	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	**4.6**	mg/L	0.11	0.023	1	12/05/11 13:21	12/09/11 13:00		
WDRO C10-C28	**4.0**	mg/L	0.11	0.024	1	12/05/11 13:21	12/09/11 13:00		T7
WDRO, Extended C10-C32	**4.3**	mg/L	0.11	0.024	1	12/05/11 13:21	12/09/11 13:00		
Surrogates									
n-Triacontane (S)	90	%	50-150		1	12/05/11 13:21	12/09/11 13:00		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	**38.3**	ug/L	1.0	0.17	1		12/06/11 02:53	71-43-2	
Ethylbenzene	**1.6**	ug/L	1.0	0.15	1		12/06/11 02:53	100-41-4	
Toluene	**4.4**	ug/L	1.0	0.10	1		12/06/11 02:53	108-88-3	
Xylene (Total)	**4.1**	ug/L	3.0	0.48	1		12/06/11 02:53	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	102	%	80-125		1		12/06/11 02:53	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: MW-15 **Lab ID: 10177322008** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	ND	ug/L	10.0	5.0	1		12/05/11 15:56	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	ND	mg/L	0.11	0.023	1	12/05/11 13:21	12/08/11 13:22		
WDRO C10-C28	ND	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 13:22		
WDRO, Extended C10-C32	ND	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 13:22		
Surrogates									
n-Triacontane (S)	71	%	50-150		1	12/05/11 13:21	12/08/11 13:22		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.17	1		12/06/11 02:31	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.15	1		12/06/11 02:31	100-41-4	
Toluene	ND	ug/L	1.0	0.10	1		12/06/11 02:31	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 02:31	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	80-125		1		12/06/11 02:31	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: MW-16A **Lab ID: 10177322009** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	**81.0**	ug/L	10.0	5.0	1		12/05/11 08:44	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	**0.24**	mg/L	0.11	0.023	1	12/05/11 13:21	12/08/11 13:08		
WDRO C10-C28	**0.21**	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 13:08		
WDRO, Extended C10-C32	**0.22**	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 13:08		
Surrogates									
n-Triacontane (S)	77	%	50-150		1	12/05/11 13:21	12/08/11 13:08		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.17	1		12/06/11 04:19	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.15	1		12/06/11 04:19	100-41-4	
Toluene	ND	ug/L	1.0	0.10	1		12/06/11 04:19	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 04:19	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	100	%	80-125		1		12/06/11 04:19	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: MW-16B **Lab ID: 10177322010** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	ND	ug/L	10.0	5.0	1		12/05/11 09:05	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	**0.59**	mg/L	0.11	0.022	1	12/05/11 13:21	12/08/11 13:15		
WDRO C10-C28	**0.46**	mg/L	0.11	0.023	1	12/05/11 13:21	12/08/11 13:15		
WDRO, Extended C10-C32	**0.53**	mg/L	0.11	0.023	1	12/05/11 13:21	12/08/11 13:15		
Surrogates									
n-Triacontane (S)	72	%	50-150		1	12/05/11 13:21	12/08/11 13:15		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.17	1		12/06/11 04:40	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.15	1		12/06/11 04:40	100-41-4	
Toluene	ND	ug/L	1.0	0.10	1		12/06/11 04:40	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 04:40	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	101	%	80-125		1		12/06/11 04:40	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: MW-17 **Lab ID: 10177322011** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	ND	ug/L	10.0	5.0	1		12/05/11 09:16	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	**0.11**	mg/L	0.11	0.023	1	12/05/11 13:21	12/08/11 12:26		
WDRO C10-C28	ND	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 12:26		
WDRO, Extended C10-C32	ND	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 12:26		
Surrogates									
n-Triacontane (S)	74	%	50-150		1	12/05/11 13:21	12/08/11 12:26		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.17	1		12/06/11 05:02	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.15	1		12/06/11 05:02	100-41-4	
Toluene	ND	ug/L	1.0	0.10	1		12/06/11 05:02	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 05:02	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	101	%	80-125		1		12/06/11 05:02	98-08-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: MW-18 **Lab ID: 10177322012** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	ND	ug/L	10.0	5.0	1		12/05/11 09:27	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	ND	mg/L	0.11	0.023	1	12/05/11 13:21	12/08/11 12:33		
WDRO C10-C28	ND	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 12:33		
WDRO, Extended C10-C32	ND	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 12:33		
Surrogates									
n-Triacontane (S)	64	%	50-150		1	12/05/11 13:21	12/08/11 12:33		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.17	1		12/06/11 16:47	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.15	1		12/06/11 16:47	100-41-4	
Toluene	ND	ug/L	1.0	0.10	1		12/06/11 16:47	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 16:47	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	80-125		1		12/06/11 16:47	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: MW-19 **Lab ID: 10177322013** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	ND	ug/L	10.0	5.0	1		12/05/11 09:37	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	ND	mg/L	0.11	0.022	1	12/05/11 13:21	12/08/11 12:40		
WDRO C10-C28	ND	mg/L	0.11	0.023	1	12/05/11 13:21	12/08/11 12:40		
WDRO, Extended C10-C32	ND	mg/L	0.11	0.023	1	12/05/11 13:21	12/08/11 12:40		
Surrogates									
n-Triacontane (S)	70	%	50-150		1	12/05/11 13:21	12/08/11 12:40		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.17	1		12/06/11 16:04	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.15	1		12/06/11 16:04	100-41-4	
Toluene	ND	ug/L	1.0	0.10	1		12/06/11 16:04	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 16:04	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	98	%	80-125		1		12/06/11 16:04	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: USGS-1A **Lab ID: 10177322014** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	**5970**	ug/L	10.0	5.0	1		12/05/11 09:48	74-82-8	E
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	**2.9**	mg/L	0.10	0.022	1	12/05/11 13:21	12/09/11 12:46		
WDRO C10-C28	**2.6**	mg/L	0.10	0.023	1	12/05/11 13:21	12/09/11 12:46		T7
WDRO, Extended C10-C32	**2.7**	mg/L	0.10	0.023	1	12/05/11 13:21	12/09/11 12:46		
Surrogates									
n-Triacontane (S)	88	%	50-150		1	12/05/11 13:21	12/09/11 12:46		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	**67.8**	ug/L	1.0	0.17	1		12/07/11 14:11	71-43-2	
Ethylbenzene	**1.2**	ug/L	1.0	0.15	1		12/07/11 14:11	100-41-4	
Toluene	**3.2**	ug/L	1.0	0.10	1		12/07/11 14:11	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/07/11 14:11	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	100	%	80-125		1		12/07/11 14:11	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: USGS-2A **Lab ID: 10177322015** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	**1730**	ug/L	10.0	5.0	1		12/05/11 09:59	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	**1.3**	mg/L	0.13	0.027	1	12/05/11 13:21	12/08/11 13:29		
WDRO C10-C28	**1.1**	mg/L	0.13	0.028	1	12/05/11 13:21	12/08/11 13:29		
WDRO, Extended C10-C32	**1.2**	mg/L	0.13	0.028	1	12/05/11 13:21	12/08/11 13:29		
Surrogates									
n-Triacontane (S)	78	%	50-150		1	12/05/11 13:21	12/08/11 13:29		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	**21.1**	ug/L	1.0	0.17	1		12/06/11 19:18	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.15	1		12/06/11 19:18	100-41-4	
Toluene	**1.4**	ug/L	1.0	0.10	1		12/06/11 19:18	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 19:18	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	80-125		1		12/06/11 19:18	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: USGS-3A **Lab ID: 10177322016** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	**800**	ug/L	10.0	5.0	1		12/05/11 10:10	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	**0.87**	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 13:36		
WDRO C10-C28	**0.72**	mg/L	0.11	0.025	1	12/05/11 13:21	12/08/11 13:36		
WDRO, Extended C10-C32	**0.81**	mg/L	0.11	0.025	1	12/05/11 13:21	12/08/11 13:36		
Surrogates									
n-Triacontane (S)	75	%	50-150		1	12/05/11 13:21	12/08/11 13:36		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.17	1		12/06/11 19:39	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.15	1		12/06/11 19:39	100-41-4	
Toluene	**1.1**	ug/L	1.0	0.10	1		12/06/11 19:39	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 19:39	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	97	%	80-125		1		12/06/11 19:39	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: USGS-4A **Lab ID: 10177322017** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	**214**	ug/L	10.0	5.0	1		12/05/11 10:20	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	**0.47**	mg/L	0.11	0.023	1	12/05/11 13:21	12/08/11 12:47		
WDRO C10-C28	**0.41**	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 12:47		
WDRO, Extended C10-C32	**0.44**	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 12:47		
Surrogates									
n-Triacontane (S)	70	%	50-150		1	12/05/11 13:21	12/08/11 12:47		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.17	1		12/06/11 20:01	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.15	1		12/06/11 20:01	100-41-4	
Toluene	ND	ug/L	1.0	0.10	1		12/06/11 20:01	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 20:01	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	100	%	80-125		1		12/06/11 20:01	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: SCDW **Lab ID: 10177322018** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	ND	ug/L	10.0	5.0	1		12/05/11 11:40	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	ND	mg/L	0.11	0.023	1	12/05/11 13:21	12/08/11 12:54		
WDRO C10-C28	ND	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 12:54		
WDRO, Extended C10-C32	ND	mg/L	0.11	0.024	1	12/05/11 13:21	12/08/11 12:54		
Surrogates									
n-Triacontane (S)	66	%	50-150		1	12/05/11 13:21	12/08/11 12:54		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.17	1		12/06/11 20:22	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.15	1		12/06/11 20:22	100-41-4	
Toluene	ND	ug/L	1.0	0.10	1		12/06/11 20:22	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 20:22	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	99	%	80-125		1		12/06/11 20:22	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: Dup-1 **Lab ID: 10177322019** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	**8830**	ug/L	10.0	5.0	1		12/05/11 12:01	74-82-8	E
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	**3.6**	mg/L	0.11	0.022	1	12/05/11 13:21	12/09/11 12:53		
WDRO C10-C28	**3.3**	mg/L	0.11	0.023	1	12/05/11 13:21	12/09/11 12:53		T7
WDRO, Extended C10-C32	**3.4**	mg/L	0.11	0.023	1	12/05/11 13:21	12/09/11 12:53		
Surrogates									
n-Triacontane (S)	100	%	50-150		1	12/05/11 13:21	12/09/11 12:53		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	**498**	ug/L	2.0	0.34	2		12/06/11 22:10	71-43-2	
Ethylbenzene	**4.8**	ug/L	2.0	0.30	2		12/06/11 22:10	100-41-4	
Toluene	**2.5**	ug/L	2.0	0.20	2		12/06/11 22:10	108-88-3	
Xylene (Total)	ND	ug/L	6.0	0.96	2		12/06/11 22:10	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	100	%	80-125		2		12/06/11 22:10	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: Field Blank **Lab ID: 10177322020** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 AIR Headspace	Analytical Method: RSK 175								
Methane	**19.8**	ug/L	10.0	5.0	1		12/05/11 12:12	74-82-8	
WIDRO Extended GCS	Analytical Method: Diesel Range Organics Preparation Method: Diesel Range Organics								
TEH (C10-C36), 8015	ND	mg/L	0.10	0.022	1	12/05/11 13:21	12/08/11 13:01		
WDRO C10-C28	ND	mg/L	0.10	0.023	1	12/05/11 13:21	12/08/11 13:01		
WDRO, Extended C10-C32	ND	mg/L	0.10	0.023	1	12/05/11 13:21	12/08/11 13:01		
Surrogates									
n-Triacontane (S)	79	%	50-150		1	12/05/11 13:21	12/08/11 13:01		
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.17	1		12/06/11 13:13	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.15	1		12/06/11 13:13	100-41-4	
Toluene	ND	ug/L	1.0	0.10	1		12/06/11 13:13	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 13:13	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	101	%	80-125		1		12/06/11 13:13	98-08-8	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Sample: Trip Blank **Lab ID: 10177322021** Collected: 12/01/11 00:00 Received: 12/03/11 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: WI MOD GRO								
Benzene	ND	ug/L	1.0	0.17	1		12/06/11 13:34	71-43-2	
Ethylbenzene	ND	ug/L	1.0	0.15	1		12/06/11 13:34	100-41-4	
Toluene	ND	ug/L	1.0	0.10	1		12/06/11 13:34	108-88-3	
Xylene (Total)	ND	ug/L	3.0	0.48	1		12/06/11 13:34	1330-20-7	
Surrogates									
a,a,a-Trifluorotoluene (S)	100	%	80-125		1		12/06/11 13:34	98-08-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

QC Batch: AIR/13755 Analysis Method: RSK 175
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
Associated Lab Samples: 10177322001, 10177322009, 10177322010, 10177322011, 10177322012, 10177322013, 10177322014, 10177322015, 10177322016, 10177322017, 10177322018, 10177322019, 10177322020

METHOD BLANK: 1109596 Matrix: Water
Associated Lab Samples: 10177322001, 10177322009, 10177322010, 10177322011, 10177322012, 10177322013, 10177322014, 10177322015, 10177322016, 10177322017, 10177322018, 10177322019, 10177322020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methane	ug/L	ND	10.0	12/05/11 08:09	

LABORATORY CONTROL SAMPLE & LCSD: 1109597 1109598

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Methane	ug/L	60.7	62.1	60.0	102	99	70-130	3	30	

SAMPLE DUPLICATE: 1110078

Parameter	Units	10177322009 Result	Dup Result	RPD	Max RPD	Qualifiers
Methane	ug/L	81.0	89.4	10	30	

SAMPLE DUPLICATE: 1110079

Parameter	Units	10177322018 Result	Dup Result	RPD	Max RPD	Qualifiers
Methane	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

QC Batch: AIR/13769 Analysis Method: RSK 175
QC Batch Method: RSK 175 Analysis Description: RSK 175 AIR HEADSPACE
Associated Lab Samples: 10177322002, 10177322003, 10177322004, 10177322005, 10177322006, 10177322007, 10177322008

METHOD BLANK: 1109973 Matrix: Water
Associated Lab Samples: 10177322002, 10177322003, 10177322004, 10177322005, 10177322006, 10177322007, 10177322008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methane	ug/L	ND	10.0	12/05/11 14:20	

LABORATORY CONTROL SAMPLE & LCSD: 1109974 1109975

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Methane	ug/L	60.7	60.0	63.7	99	105	70-130	6	30	

SAMPLE DUPLICATE: 1110151

Parameter	Units	10177322002 Result	Dup Result	RPD	Max RPD	Qualifiers
Methane	ug/L	ND	ND		30	

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QUALITY CONTROL DATA

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

QC Batch: GCV/8731 Analysis Method: WI MOD GRO
QC Batch Method: WI MOD GRO Analysis Description: WIGRO GCV Water
Associated Lab Samples: 10177322001, 10177322002, 10177322003, 10177322004, 10177322005, 10177322006, 10177322007, 10177322008, 10177322009, 10177322010, 10177322011

METHOD BLANK: 1109947 Matrix: Water
Associated Lab Samples: 10177322001, 10177322002, 10177322003, 10177322004, 10177322005, 10177322006, 10177322007, 10177322008, 10177322009, 10177322010, 10177322011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	12/05/11 20:26	
Ethylbenzene	ug/L	ND	1.0	12/05/11 20:26	
Toluene	ug/L	ND	1.0	12/05/11 20:26	
Xylene (Total)	ug/L	ND	3.0	12/05/11 20:26	
a,a,a-Trifluorotoluene (S)	%	101	80-125	12/05/11 20:26	

LABORATORY CONTROL SAMPLE & LCSD: 1109948 1109949

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	ug/L	100	97.1	91.6	97	92	80-120	6	20	
Ethylbenzene	ug/L	100	99.5	92.8	100	93	80-120	7	20	
Toluene	ug/L	100	98.4	92.2	98	92	80-120	7	20	
Xylene (Total)	ug/L	300	305	281	102	94	80-120	8	20	
a,a,a-Trifluorotoluene (S)	%				97	98	80-125			

MATRIX SPIKE SAMPLE: 1110661

Parameter	Units	10177269007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	ND	100	104	104	80-120	
Ethylbenzene	ug/L	ND	100	107	107	80-120	
Toluene	ug/L	ND	100	105	105	80-120	
Xylene (Total)	ug/L	ND	300	322	107	80-120	
a,a,a-Trifluorotoluene (S)	%				98	80-125	

SAMPLE DUPLICATE: 1110662

Parameter	Units	10177269008 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/L	ND	ND		20	
Ethylbenzene	ug/L	ND	ND		20	
Toluene	ug/L	ND	ND		20	
Xylene (Total)	ug/L	ND	ND		20	
a,a,a-Trifluorotoluene (S)	%	99	100	1		

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QUALITY CONTROL DATA

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

QC Batch: GCV/8734 Analysis Method: WI MOD GRO
QC Batch Method: WI MOD GRO Analysis Description: WIGRO GCV Water
Associated Lab Samples: 10177322012, 10177322013, 10177322015, 10177322016, 10177322017, 10177322018, 10177322019, 10177322020, 10177322021

METHOD BLANK: 1110223 Matrix: Water
Associated Lab Samples: 10177322012, 10177322013, 10177322015, 10177322016, 10177322017, 10177322018, 10177322019, 10177322020, 10177322021

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	12/06/11 12:51	
Ethylbenzene	ug/L	ND	1.0	12/06/11 12:51	
Toluene	ug/L	ND	1.0	12/06/11 12:51	
Xylene (Total)	ug/L	ND	3.0	12/06/11 12:51	
a,a,a-Trifluorotoluene (S)	%	100	80-125	12/06/11 12:51	

LABORATORY CONTROL SAMPLE & LCSD: 1110224 1110225

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	ug/L	100	100	99.6	100	100	80-120	.8	20	
Ethylbenzene	ug/L	100	104	99.7	104	100	80-120	4	20	
Toluene	ug/L	100	102	99.7	102	100	80-120	3	20	
Xylene (Total)	ug/L	300	312	298	104	99	80-120	5	20	
a,a,a-Trifluorotoluene (S)	%				99	99	80-125			

MATRIX SPIKE SAMPLE: 1111159

Parameter	Units	10177322012 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	ND	100	102	102	80-120	
Ethylbenzene	ug/L	ND	100	105	105	80-120	
Toluene	ug/L	ND	100	103	103	80-120	
Xylene (Total)	ug/L	ND	300	312	104	80-120	
a,a,a-Trifluorotoluene (S)	%				98	80-125	

SAMPLE DUPLICATE: 1111160

Parameter	Units	10177322013 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/L	ND	ND		20	
Ethylbenzene	ug/L	ND	ND		20	
Toluene	ug/L	ND	ND		20	
Xylene (Total)	ug/L	ND	ND		20	
a,a,a-Trifluorotoluene (S)	%	98	99	1		

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QUALITY CONTROL DATA

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

QC Batch: GCV/8737
QC Batch Method: WI MOD GRO
Analysis Method: WI MOD GRO
Analysis Description: WIGRO GCV Water
Associated Lab Samples: 10177322014

METHOD BLANK: 1110971 Matrix: Water
Associated Lab Samples: 10177322014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	12/07/11 12:46	
Ethylbenzene	ug/L	ND	1.0	12/07/11 12:46	
Toluene	ug/L	ND	1.0	12/07/11 12:46	
Xylene (Total)	ug/L	ND	3.0	12/07/11 12:46	
a,a,a-Trifluorotoluene (S)	%	100	80-125	12/07/11 12:46	

LABORATORY CONTROL SAMPLE & LCSD: 1110972 1110973

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	ug/L	100	105	102	105	102	80-120	3	20	
Ethylbenzene	ug/L	100	107	104	107	104	80-120	3	20	
Toluene	ug/L	100	106	103	106	103	80-120	2	20	
Xylene (Total)	ug/L	300	320	314	107	105	80-120	2	20	
a,a,a-Trifluorotoluene (S)	%				100	100	80-125			

MATRIX SPIKE SAMPLE: 1112363

Parameter	Units	10177089001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	2.3	100	110	108	80-120	
Ethylbenzene	ug/L	5.0	100	117	112	80-120	
Toluene	ug/L	ND	100	110	110	80-120	
Xylene (Total)	ug/L	10.7	300	351	114	80-120	
a,a,a-Trifluorotoluene (S)	%				99	80-125	

SAMPLE DUPLICATE: 1112364

Parameter	Units	10177089002 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/L	8.4	8.1	3	20	
Ethylbenzene	ug/L	19.1	18.3	4	20	
Toluene	ug/L	2.0	2.0	2	20	
Xylene (Total)	ug/L	41.3	39.8	4	20	
a,a,a-Trifluorotoluene (S)	%	103	103	4		

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QUALITY CONTROL DATA

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

QC Batch: OEXT/17396 Analysis Method: Diesel Range Organics
QC Batch Method: Diesel Range Organics Analysis Description: WIDRO Extended GCS
Associated Lab Samples: 10177322001, 10177322002, 10177322003, 10177322004, 10177322005, 10177322006, 10177322007, 10177322008, 10177322009, 10177322010, 10177322011, 10177322012, 10177322013, 10177322014, 10177322015, 10177322016, 10177322017, 10177322018, 10177322019, 10177322020

METHOD BLANK: 1109908 Matrix: Water
Associated Lab Samples: 10177322001, 10177322002, 10177322003, 10177322004, 10177322005, 10177322006, 10177322007, 10177322008, 10177322009, 10177322010, 10177322011, 10177322012, 10177322013, 10177322014, 10177322015, 10177322016, 10177322017, 10177322018, 10177322019, 10177322020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
TEH (C10-C36), 8015	mg/L	ND	0.10	12/08/11 11:37	
WDRO C10-C28	mg/L	ND	0.10	12/08/11 11:37	
WDRO, Extended C10-C32	mg/L	ND	0.10	12/08/11 11:37	
n-Triacontane (S)	%	55	50-150	12/08/11 11:37	

LABORATORY CONTROL SAMPLE & LCSD: 1109909 1109910

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
WDRO C10-C28	mg/L	2	1.5	1.6	77	78	75-115	1	20	
n-Triacontane (S)	%				87	79	50-150			

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QUALIFIERS

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
T7	Low boiling point hydrocarbons are present in the sample.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10177322001	MW-1	RSK 175	AIR/13755		
10177322002	MW-4	RSK 175	AIR/13769		
10177322003	MW-6	RSK 175	AIR/13769		
10177322004	MW-7	RSK 175	AIR/13769		
10177322005	MW-8	RSK 175	AIR/13769		
10177322006	MW-9	RSK 175	AIR/13769		
10177322007	MW-10	RSK 175	AIR/13769		
10177322008	MW-15	RSK 175	AIR/13769		
10177322009	MW-16A	RSK 175	AIR/13755		
10177322010	MW-16B	RSK 175	AIR/13755		
10177322011	MW-17	RSK 175	AIR/13755		
10177322012	MW-18	RSK 175	AIR/13755		
10177322013	MW-19	RSK 175	AIR/13755		
10177322014	USGS-1A	RSK 175	AIR/13755		
10177322015	USGS-2A	RSK 175	AIR/13755		
10177322016	USGS-3A	RSK 175	AIR/13755		
10177322017	USGS-4A	RSK 175	AIR/13755		
10177322018	SCDW	RSK 175	AIR/13755		
10177322019	Dup-1	RSK 175	AIR/13755		
10177322020	Field Blank	RSK 175	AIR/13755		
10177322001	MW-1	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322002	MW-4	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322003	MW-6	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322004	MW-7	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322005	MW-8	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322006	MW-9	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322007	MW-10	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322008	MW-15	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322009	MW-16A	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322010	MW-16B	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322011	MW-17	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322012	MW-18	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322013	MW-19	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322014	USGS-1A	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322015	USGS-2A	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322016	USGS-3A	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322017	USGS-4A	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322018	SCDW	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322019	Dup-1	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322020	Field Blank	Diesel Range Organics	OEXT/17396	Diesel Range Organics	GCSV/8951
10177322001	MW-1	WI MOD GRO	GCV/8731		
10177322002	MW-4	WI MOD GRO	GCV/8731		
10177322003	MW-6	WI MOD GRO	GCV/8731		
10177322004	MW-7	WI MOD GRO	GCV/8731		
10177322005	MW-8	WI MOD GRO	GCV/8731		
10177322006	MW-9	WI MOD GRO	GCV/8731		
10177322007	MW-10	WI MOD GRO	GCV/8731		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60238283 Enbridge S Cass Lake
Pace Project No.: 10177322

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10177322008	**MW-15**	WI MOD GRO	GCV/8731		
10177322009	**MW-16A**	WI MOD GRO	GCV/8731		
10177322010	**MW-16B**	WI MOD GRO	GCV/8731		
10177322011	**MW-17**	WI MOD GRO	GCV/8731		
10177322012	**MW-18**	WI MOD GRO	GCV/8734		
10177322013	**MW-19**	WI MOD GRO	GCV/8734		
10177322014	**USGS-1A**	WI MOD GRO	GCV/8737		
10177322015	**USGS-2A**	WI MOD GRO	GCV/8734		
10177322016	**USGS-3A**	WI MOD GRO	GCV/8734		
10177322017	**USGS-4A**	WI MOD GRO	GCV/8734		
10177322018	**SCDW**	WI MOD GRO	GCV/8734		
10177322019	**Dup-1**	WI MOD GRO	GCV/8734		
10177322020	**Field Blank**	WI MOD GRO	GCV/8734		
10177322021	**Trip Blank**	WI MOD GRO	GCV/8734		

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HOLD 12/3/11 LC

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10177322

Page: 1 of 2

1504326

Section A Required Client Information:

Company: AECOM
Address: 11 E Superior St. Suite 560
Duluth, MN 55802
Email To: Brian.Hill2@aecom.com
Phone: 218-625-8768 Fax:
Requested Due Date/TAT: Standard

Section B Required Project Information:

Report To: Brian Hill
Copy To:
Purchase Order No.:
Project Name: Enbridge South Cass Lake
Project Number: 60238283

Section C Invoice Information:

Attention: Karl Beaster
Company Name: Enbridge Energy
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: MN

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes MATRIX / CODE

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	BTEX	ERDRO	methane	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1	WT	G			12/1/11			8	X			X					N	X	X	X		001
2	MW-4																	N	X	X	X		002
3	MW-6																	N	X	X	X		003
4	MW-7																	N	X	X	X		004
5	MW-8																	N	X	X	X		005
6	MW-9																	N	X	X	X		006
7	MW-10																	N	X	X	X		007
8	MW-15																	N	X	X	X		008
9	MW-16A																	N	X	X	X		009
10	MW-16B																	N	X	X	X		010
11	MW-17																	N	X	X	X		011
12	MW-18					12/1/11	H		8	X			X					N	X	X	X		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Brian Hill	12/2/11	3:00pm		12/2/11	1500	1.3	Y	Y	Y
		12/2/11	1515	L. Copy Pace	12/3/11	800	1.6			
							2.6			
							1.0			
							2.8			

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brian Hill

SIGNATURE of SAMPLER: Brian Hill

DATE Signed (MM/DD/YY): 12/2/11

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 2 of 2

1504327

Section A Required Client Information:

- Company: AECOM
- Address: 11 E. Superior St Suite 560, Duluth, MN 55802
- Email To: Brian.Hill2@aecom.com
- Phone: 218-625-8768 Fax:
- Requested Due Date/TAT: Standard

Section B Required Project Information:

- Report To: Brian Hill
- Copy To:
- Purchase Order No.:
- Project Name: Enbridge South Cass Lake
- Project Number: 60238283

Section C Invoice Information:

- Attention: Karl Beaster
- Company Name: Enbridge Energy
- Address:
- Pace Quote Reference:
- Pace Project Manager:
- Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER ______

Site Location STATE: MN

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	Composite Start DATE	Composite Start TIME	Composite End/Grab DATE	Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	BTEX (N)	ERDRO (N)	methane (N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-19	WT	G			12/1/11			8	X			X						X	X	X		013
2	USGS-1A	↓	↓			↓			↓	↓			↓						↓	↓	↓		014
3	USGS-2A	↓	↓			↓			↓	↓			↓						↓	↓	↓		015
4	USGS-3A	↓	↓			↓			↓	↓			↓						↓	↓	↓		016
5	USGS-4A	↓	↓			↓			↓	↓			↓						↓	↓	↓		017
6	SCDW	↓	↓			↓			↓	↓			↓						↓	↓	↓		018
7	Field Blank	↓	↓			↓			↓	↓			↓						↓	↓	↓		019
8	Trip Blank	↓	↓			↓			2				↓						↓				020
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Brian Hill	12/2/11	3:00pm	[signature]	12/2/11	1500	1.5	Y		
	[signature]	12/2/11	1515	R. [signature] / Pace	12/3/11	800	1.6 / 2.0 / 1.0 / 2.8	Y	Y	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

- PRINT Name of SAMPLER: Brian Hill
- SIGNATURE of SAMPLER: Brian Hill
- DATE Signed (MM/DD/YY): 12/2/11

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Revised Date: 02Jun2011 Page 1 of 1
	Document Number: F-L-213 Rev.01	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: AECOM Project # 10177322

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

Tracking #: look on Back

Optional: Proj. Due Date: Proj. Name:

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

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

Thermometer Used: 80344042 or 80512447 Type of Ice: Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature: 1.5, 1.6, 2.6, 1.0, 2.8 Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C Comments:

Date and Initials of person examining contents: 12/5/11 LO

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2. Times missing on COC and on Containers
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☑Yes ☐No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☐Yes ☑No ☐N/A	12. There are 4 extra samples the sample id is DUP 1 = 2 1L amber, 3 headspace, 3 VOC
-Includes date/time/ID/Analysis Matrix: WT		
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	☐Yes ☐No ☑N/A	13. ☐ HNO3 ☐ H2SO4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	Samp #
Exceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water)	☑Yes ☐No	Initial when completed: LO Lot # of added preservative
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☑Yes ☐No ☐N/A	15.
Trip Blank Present:	☑Yes ☐No ☐N/A	16. 2 wt trips
Trip Blank Custody Seals Present	☑Yes ☐No ☐N/A	
Pace Trip Blank Lot # (if purchased): 102111-1		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: Brian Hill Date/Time: 12-5-11 10:08A

Comments/ Resolution: Run DUP-1 for some tests

Project Manager Review: CRD **Date:** 12-5-11

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)

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December 06, 2011

Brian Hill
AECOM
11 E. Superior Street, Suite 5
Duluth, MN 55802

RE: Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Dear Brian Hill:
Enclosed are the analytical results for sample(s) received by the laboratory on December 02, 2011. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Carol Davy

Carol Davy

carol.davy@pacelabs.com
Project Manager

Enclosures

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Minneapolis, MN 55414
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CERTIFICATIONS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Minnesota Certification IDs
1700 Elm Street SE Suite 200, Minneapolis, MN 55414
A2LA Certification #: 2926.01
Alaska Certification #: UST-078
Alaska Certification #MN00064
Arizona Certification #: AZ-0014
Arkansas Certification #: 88-0680
California Certification #: 01155CA
EPA Region 8 Certification #: Pace
Florida/NELAP Certification #: E87605
Georgia Certification #: 959
Idaho Certification #: MN00064
Illinois Certification #: 200011
Iowa Certification #: 368
Kansas Certification #: E-10167
Louisiana Certification #: 03086
Louisiana Certification #: LA080009
Maine Certification #: 2007029
Maryland Certification #: 322
Michigan DEQ Certification #: 9909
Minnesota Certification #: 027-053-137
Mississippi Certification #: Pace
Montana Certification #: MT CERT0092
Nevada Certification #: MN_00064
Nebraska Certification #: Pace
New Jersey Certification #: MN-002
New Mexico Certification #: Pace
New York Certification #: 11647
North Carolina Certification #: 530
North Dakota Certification #: R-036
North Dakota Certification #: R-036A
Ohio VAP Certification #: CL101
Oklahoma Certification #: D9921
Oklahoma Certification #: 9507
Oregon Certification #: MN200001
Pennsylvania Certification #: 68-00563
Puerto Rico Certification
Tennessee Certification #: 02818
Texas Certification #: T104704192
Washington Certification #: C754
Wisconsin Certification #: 999407970

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SAMPLE SUMMARY

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10177174001	MW-1	Water	12/01/11 10:05	12/02/11 07:35
10177174002	MW-4	Water	12/01/11 13:50	12/02/11 07:35
10177174003	MW-6	Water	12/01/11 10:30	12/02/11 07:35
10177174004	MW-7	Water	12/01/11 10:40	12/02/11 07:35
10177174005	MW-8	Water	12/01/11 10:55	12/02/11 07:35
10177174006	MW-9	Water	12/01/11 13:30	12/02/11 07:35
10177174007	MW-10	Water	12/01/11 14:00	12/02/11 07:35
10177174008	MW-15	Water	12/01/11 13:40	12/02/11 07:35
10177174009	MW-16A	Water	12/01/11 11:40	12/02/11 07:35
10177174010	MW-16B	Water	12/01/11 11:55	12/02/11 07:35
10177174011	MW-17	Water	12/01/11 11:10	12/02/11 07:35
10177174012	MW-18	Water	12/01/11 11:30	12/02/11 07:35
10177174013	MW-19	Water	12/01/11 11:20	12/02/11 07:35
10177174014	USGS-1A	Water	12/01/11 12:35	12/02/11 07:35
10177174015	USGS-2A	Water	12/01/11 12:30	12/02/11 07:35
10177174016	USGS-3A	Water	12/01/11 12:15	12/02/11 07:35
10177174017	USGS-4A	Water	12/01/11 12:05	12/02/11 07:35
10177174018	DUP-1	Water	12/01/11 13:30	12/02/11 07:35
10177174019	SCDW	Water	12/01/11 14:45	12/02/11 07:35
10177174020	Field Blank	Water	12/01/11 14:30	12/02/11 07:35

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SAMPLE ANALYTE COUNT

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Lab ID	Sample ID	Method	Analysts	Analytes Reported
10177174001	MW-1	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174002	MW-4	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174003	MW-6	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174004	MW-7	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174005	MW-8	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174006	MW-9	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174007	MW-10	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174008	MW-15	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174009	MW-16A	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174010	MW-16B	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174011	MW-17	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174012	MW-18	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174013	MW-19	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174014	USGS-1A	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174015	USGS-2A	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174016	USGS-3A	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174017	USGS-4A	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174018	DUP-1	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1
10177174019	SCDW	ASTM D516-02	KEO	1

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SAMPLE ANALYTE COUNT

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Lab ID	Sample ID	Method	Analysts	Analytes Reported
		SM 4500-NO2 B	KEO	1
10177174020	**Field Blank**	ASTM D516-02	KEO	1
		SM 4500-NO2 B	KEO	1

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PROJECT NARRATIVE

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Method: **ASTM D516-02**
Description: ASTM D516-90 Sulfate Water
Client: AECOM
Date: December 06, 2011

General Information:
20 samples were analyzed for ASTM D516-02. All samples were received in acceptable condition with any exceptions noted below.

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

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

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Method: **SM 4500-NO2 B**
Description: SM4500NO2-B, Nitrite, unpres
Client: AECOM
Date: December 06, 2011

General Information:
20 samples were analyzed for SM 4500-NO2 B. All samples were received in acceptable condition with any exceptions noted below.

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

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

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

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

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

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

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

Additional Comments:

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

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: MW-1 **Lab ID: 10177174001** Collected: 12/01/11 10:05 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	ND	mg/L	2.5	0.27	1		12/02/11 11:33	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:03	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: MW-4 **Lab ID: 10177174002** Collected: 12/01/11 13:50 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	**6.1**	mg/L	2.5	0.27	1		12/02/11 11:35	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:03	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: MW-6 **Lab ID: 10177174003** Collected: 12/01/11 10:30 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	**3.3**	mg/L	2.5	0.27	1		12/02/11 11:35	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:03	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: MW-7 **Lab ID: 10177174004** Collected: 12/01/11 10:40 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	**5.6**	mg/L	2.5	0.27	1		12/02/11 11:35	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:03	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: MW-8 **Lab ID: 10177174005** Collected: 12/01/11 10:55 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	**5.0**	mg/L	2.5	0.27	1		12/02/11 11:38	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:03	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: MW-9 **Lab ID: 10177174006** Collected: 12/01/11 13:30 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	ND	mg/L	2.5	0.27	1		12/02/11 11:38	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:03	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: MW-10 **Lab ID: 10177174007** Collected: 12/01/11 14:00 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	ND	mg/L	2.5	0.27	1		12/02/11 11:38	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:08	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: MW-15 **Lab ID: 10177174008** Collected: 12/01/11 13:40 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	ND	mg/L	2.5	0.27	1		12/02/11 11:38	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:08	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: MW-16A **Lab ID: 10177174009** Collected: 12/01/11 11:40 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	**3.1**	mg/L	2.5	0.27	1		12/02/11 11:41	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:08	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: MW-16B **Lab ID: 10177174010** Collected: 12/01/11 11:55 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	**7.8**	mg/L	2.5	0.27	1		12/02/11 11:41	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:08	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: MW-17 **Lab ID: 10177174011** Collected: 12/01/11 11:10 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	**5.6**	mg/L	2.5	0.27	1		12/02/11 11:41	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:08	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: MW-18 **Lab ID: 10177174012** Collected: 12/01/11 11:30 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	**3.7**	mg/L	2.5	0.27	1		12/02/11 11:43	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:08	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: MW-19 **Lab ID: 10177174013** Collected: 12/01/11 11:20 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	**6.9**	mg/L	2.5	0.27	1		12/02/11 11:43	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:08	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: USGS-1A **Lab ID: 10177174014** Collected: 12/01/11 12:35 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	ND	mg/L	2.5	0.27	1		12/02/11 11:43	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:08	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: USGS-2A **Lab ID: 10177174015** Collected: 12/01/11 12:30 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	ND	mg/L	2.5	0.27	1		12/02/11 11:43	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:11	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: USGS-3A **Lab ID: 10177174016** Collected: 12/01/11 12:15 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	ND	mg/L	2.5	0.27	1		12/02/11 11:44	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:11	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: USGS-4A **Lab ID: 10177174017** Collected: 12/01/11 12:05 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	ND	mg/L	2.5	0.27	1		12/02/11 11:46	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:11	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: DUP-1 **Lab ID: 10177174018** Collected: 12/01/11 13:30 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	ND	mg/L	2.5	0.27	1		12/02/11 11:46	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:11	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: SCDW **Lab ID: 10177174019** Collected: 12/01/11 14:45 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	ND	mg/L	2.5	0.27	1		12/02/11 11:46	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:11	14797-65-0	

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ANALYTICAL RESULTS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Sample: Field Blank **Lab ID: 10177174020** Collected: 12/01/11 14:30 Received: 12/02/11 07:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
ASTM D516-90 Sulfate Water	Analytical Method: ASTM D516-02								
Sulfate	ND	mg/L	2.5	0.27	1		12/02/11 11:46	14808-79-8	
SM4500NO2-B, Nitrite, unpres	Analytical Method: SM 4500-NO2 B								
Nitrite as N	ND	mg/L	0.10	0.050	1		12/02/11 13:11	14797-65-0	

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QUALITY CONTROL DATA

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

QC Batch: WETA/11521 Analysis Method: ASTM D516-02
QC Batch Method: ASTM D516-02 Analysis Description: ASTM D516-9002 Sulfate Water
Associated Lab Samples: 10177174001, 10177174002, 10177174003, 10177174004, 10177174005, 10177174006, 10177174007, 10177174008, 10177174009, 10177174010, 10177174011, 10177174012, 10177174013, 10177174014, 10177174015, 10177174016, 10177174017, 10177174018, 10177174019, 10177174020

METHOD BLANK: 1108653 Matrix: Water
Associated Lab Samples: 10177174001, 10177174002, 10177174003, 10177174004, 10177174005, 10177174006, 10177174007, 10177174008, 10177174009, 10177174010, 10177174011, 10177174012, 10177174013, 10177174014, 10177174015, 10177174016, 10177174017, 10177174018, 10177174019, 10177174020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	2.5	12/02/11 11:33	

LABORATORY CONTROL SAMPLE: 1108654

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	7.5	6.8	90	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1108655 1108656

Parameter	Units	10177174001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	ND	20	20	20.4	20.5	92	92	80-120	.6	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1108657 1108658

Parameter	Units	10177174011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	5.6	20	20	26.0	26.0	102	102	80-120	.3	30	

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QUALITY CONTROL DATA

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

QC Batch: WETA/11522 Analysis Method: SM 4500-NO2 B
QC Batch Method: SM 4500-NO2 B Analysis Description: SM4500NO2-B, Nitrite, unpres
Associated Lab Samples: 10177174001, 10177174002, 10177174003, 10177174004, 10177174005, 10177174006, 10177174007, 10177174008, 10177174009, 10177174010, 10177174011, 10177174012, 10177174013, 10177174014, 10177174015, 10177174016, 10177174017, 10177174018, 10177174019, 10177174020

METHOD BLANK: 1108719 Matrix: Water
Associated Lab Samples: 10177174001, 10177174002, 10177174003, 10177174004, 10177174005, 10177174006, 10177174007, 10177174008, 10177174009, 10177174010, 10177174011, 10177174012, 10177174013, 10177174014, 10177174015, 10177174016, 10177174017, 10177174018, 10177174019, 10177174020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrite as N	mg/L	ND	0.10	12/02/11 13:03	

LABORATORY CONTROL SAMPLE: 1108720

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrite as N	mg/L	.3	0.30	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1108721 1108722

Parameter	Units	10177174001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrite as N	mg/L	ND	.3	.3	0.30	0.30	100	101	80-120	2	30	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1108723 1108724

Parameter	Units	10177174011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrite as N	mg/L	ND	.3	.3	0.31	0.31	102	103	80-120	.2	30	

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

QUALIFIERS

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

Pace Analytical®
www.pacelabs.com

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 60238283 Enbridge S. Cass Lake
Pace Project No.: 10177174

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10177174001	MW-1	ASTM D516-02	WETA/11521		
10177174002	MW-4	ASTM D516-02	WETA/11521		
10177174003	MW-6	ASTM D516-02	WETA/11521		
10177174004	MW-7	ASTM D516-02	WETA/11521		
10177174005	MW-8	ASTM D516-02	WETA/11521		
10177174006	MW-9	ASTM D516-02	WETA/11521		
10177174007	MW-10	ASTM D516-02	WETA/11521		
10177174008	MW-15	ASTM D516-02	WETA/11521		
10177174009	MW-16A	ASTM D516-02	WETA/11521		
10177174010	MW-16B	ASTM D516-02	WETA/11521		
10177174011	MW-17	ASTM D516-02	WETA/11521		
10177174012	MW-18	ASTM D516-02	WETA/11521		
10177174013	MW-19	ASTM D516-02	WETA/11521		
10177174014	USGS-1A	ASTM D516-02	WETA/11521		
10177174015	USGS-2A	ASTM D516-02	WETA/11521		
10177174016	USGS-3A	ASTM D516-02	WETA/11521		
10177174017	USGS-4A	ASTM D516-02	WETA/11521		
10177174018	DUP-1	ASTM D516-02	WETA/11521		
10177174019	SCDW	ASTM D516-02	WETA/11521		
10177174020	Field Blank	ASTM D516-02	WETA/11521		
10177174001	MW-1	SM 4500-NO2 B	WETA/11522		
10177174002	MW-4	SM 4500-NO2 B	WETA/11522		
10177174003	MW-6	SM 4500-NO2 B	WETA/11522		
10177174004	MW-7	SM 4500-NO2 B	WETA/11522		
10177174005	MW-8	SM 4500-NO2 B	WETA/11522		
10177174006	MW-9	SM 4500-NO2 B	WETA/11522		
10177174007	MW-10	SM 4500-NO2 B	WETA/11522		
10177174008	MW-15	SM 4500-NO2 B	WETA/11522		
10177174009	MW-16A	SM 4500-NO2 B	WETA/11522		
10177174010	MW-16B	SM 4500-NO2 B	WETA/11522		
10177174011	MW-17	SM 4500-NO2 B	WETA/11522		
10177174012	MW-18	SM 4500-NO2 B	WETA/11522		
10177174013	MW-19	SM 4500-NO2 B	WETA/11522		
10177174014	USGS-1A	SM 4500-NO2 B	WETA/11522		
10177174015	USGS-2A	SM 4500-NO2 B	WETA/11522		
10177174016	USGS-3A	SM 4500-NO2 B	WETA/11522		
10177174017	USGS-4A	SM 4500-NO2 B	WETA/11522		
10177174018	DUP-1	SM 4500-NO2 B	WETA/11522		
10177174019	SCDW	SM 4500-NO2 B	WETA/11522		
10177174020	Field Blank	SM 4500-NO2 B	WETA/11522		

SHORT
Pace Analytical
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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10177174

Page: 1 of 2

1524727

Section A Required Client Information:

Company: AECOM
Address: 11. Superior St. Duluth, MN 55802
Email To: Brian.Hill@AECOM.com
Phone: 218.625.8768 Fax: 218.625.3201
Requested Due Date/TAT: STD

Section B Required Project Information:

Report To: Brian.Hill2@AECOM.com
Copy To: Jon.Kopetsky@AECOM.com
Purchase Order No.: 60238283
Project Name: Enbridge South Cass Lake
Project Number: 60238283

Section C Invoice Information:

Attention: Brian. Hill
Company Name: AECOM
Address:
Pace Quote Reference:
Pace Project Manager: Carol Davy
Pace Profile #: 25780

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: MN

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes — MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Analysis Test: Sulfate	Analysis Test: Nitrite	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1					12/1	1005		2	1									X	X		10177174001
2	MW-4						1350															002
3	MW-6						1030															003
4	MW-7						1040															004
5	MW-8						1055															005
6	MW-9						1320															006
7	MW-10						1400															007
8	MW-15						1340															008
9	MW-16A						1140															009
10	MW-16B						1158															010
11	MW-17						1110															011
12	MW-18					↓	1130	↓	↓	↓									↓	↓		012

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS		
	Brian Hill	12/1/11	4:45pm	[illegible] PACE	12-2-11	07:35	0.6	X	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brian Hill
SIGNATURE of SAMPLER: Brian Hill
DATE Signed (MM/DD/YY): 12/1/11

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10177174

Page: 2 of 2

1524728

Section A Required Client Information:

Company: AECOM
Address: 11 Superior St. Duluth, MN 55802
Email To: Brian.Hill2@AECOM.com
Phone: 625.8768 Fax: 218.625.2201
Requested Due Date/TAT: STD

Section B Required Project Information:

Report To: Brian.Hill2@AECOM.com
Copy To: Jon.Kopetzky@AECOM.com
Purchase Order No.: 60238283
Project Name: Enbridge South Cass Lake
Project Number: 60238283

Section C Invoice Information:

Attention: Brian Hill
Company Name: AECOM
Address:
Pace Quote Reference:
Pace Project Manager: Carol Davy
Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: MN

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes MATRIX / CODE

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: Sulfate	Analysis Test: Nitrite	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-19					12/1	1120		1	1									X	X		10177174013
2	USGS-1A						1235															014
3	USGS-2A						1230															015
4	USGS-3A						1215															016
5	USGS-4A						1205		↓													017
6	DUP-1					↓	1330		↓	↓									↓	↓		018
7	SCDW					↓	1445		↓	↓									↓	↓		019
8	Field Blank					↓	1430		↓	↓									↓	↓		020
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Brian Hill	12/1/11	4:45pm	Jeff Peterka PAS	12-2-11	07:25	0.6	Y	N	X

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Brian Hill
SIGNATURE of SAMPLER: Brian Hill DATE Signed 12/1/11

Pace Analytical®	Document Name: Sample Condition Upon Receipt Form	Revised Date: 02Jun2011 Page 1 of 1
	Document Number: F-L-213 Rev.01	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: AECOM Project # 10177174

Courier: [X] Fed Ex [ ] UPS [ ] USPS [ ] Client [ ] Commercial [ ] Pace Other _____

Tracking #: 8758 1569 8310

Optional: Proj. Due Date: Proj. Name:

Custody Seal on Cooler/Box Present: [ ] yes [X] no Seals Intact: [ ] yes [ ] no

Packing Material: [X] Bubble Wrap [ ] Bubble Bags [ ] None [ ] Other _____ Temp Blank: Yes [X] No [ ]

Thermometer Used 80344042 ~~or 80512447~~ Type of Ice: (Wet) Blue None [ ] Samples on ice, cooling process has begun

Cooler Temperature 0.6 Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 12-2-11 A

Temp should be above freezing to 6°C

		Comments:
Chain of Custody Present:	[X]Yes [ ]No [ ]N/A	1.
Chain of Custody Filled Out:	[X]Yes [ ]No [ ]N/A	2.
Chain of Custody Relinquished:	[X]Yes [ ]No [ ]N/A	3.
Sampler Name & Signature on COC:	[X]Yes [ ]No [ ]N/A	4.
Samples Arrived within Hold Time:	[X]Yes [ ]No [ ]N/A	5.
Short Hold Time Analysis (<72hr):	[X]Yes [ ]No [ ]N/A	6. NITRITE
Rush Turn Around Time Requested:	[ ]Yes [X]No [ ]N/A	7.
Sufficient Volume:	[X]Yes [ ]No [ ]N/A	8.
Correct Containers Used:	[X]Yes [ ]No [ ]N/A	9.
-Pace Containers Used:	[X]Yes [ ]No [ ]N/A	
Containers Intact:	[X]Yes [ ]No [ ]N/A	10.
Filtered volume received for Dissolved tests	[ ]Yes [ ]No [X]N/A	11.
Sample Labels match COC:	[X]Yes [ ]No [ ]N/A	12. No Time on COC or Samples
-Includes date/time/ID/Analysis Matrix: WT		
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	[ ]Yes [ ]No [X]N/A	13. [ ] HNO3 [ ] H2SO4 [ ] NaOH [ ] HCl Samp #
All containers needing preservation are found to be in compliance with EPA recommendation.	[ ]Yes [ ]No [X]N/A	
Exceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water)	[ ]Yes [ ]No	Initial when completed / Lot # of added preservative
Samples checked for dechlorination:	[ ]Yes [ ]No [X]N/A	14.
Headspace in VOA Vials (>6mm):	[ ]Yes [ ]No [X]N/A	15.
Trip Blank Present:	[ ]Yes [ ]No [X]N/A	16.
Trip Blank Custody Seals Present	[ ]Yes [ ]No [X]N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: Brian Hill Date/Time: 12-2-11 10:20A

Comments/ Resolution: Times of collection received verbally

Project Manager Review: ORP **Date:** 12-7-11

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)