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January 21, 2010

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

RE: Status Update/Groundwater Monitoring Report; Enbridge's South Cass Lake Pumping Station, Cass Lake, Minnesota

Dear Karl:

This letter report documents groundwater monitoring activities conducted for the above referenced site in June and October 2009. Figure 1 shows the site location, and Figure 2 depicts the layout of the station, property boundaries, and monitoring well network (from hereon simply referred to as the "Site"). In addition to the Enbridge wells, four USGS wells were incorporated into the monitoring network in October 2009.

2009 Activities:

During each 2009 sampling event, static water level and, where present, crude oil (non-aqueous phase) thickness measurements were collected from the monitoring wells associated with the Site. In June 2009, groundwater samples were collected from Enbridge monitoring wells free of crude oil (MW-1, MW-2, MW-4, MW-6, MW-7, MW-8, MW-9, and MW-10) and submitted for laboratory analysis of BTEX and ERDRO concentrations. Monitoring wells MW-14 and MW-15 are not part of the Sampling Plan. Monitoring well construction specifics are included in Appendix A. In October 2009, four USGS monitoring wells (USGS 1-A, USGS 2-A, USGS 3-A, and USGS 4-A) were incorporated into the Sampling Plan along with the Enbridge monitoring wells. Groundwater samples collected in the fall of 2009 were submitted for laboratory analysis of BTEX, ERDRO, nitrate, sulfate, methane, and iron concentrations. Dissolved oxygen measurements were also collected from wells free of crude oil during the October 2009 sampling event. The Sampling Plan (locations, frequency, parameters) was developed in consultation with Enbridge's Environment Department. During pipeline construction activities in the area in 2009, monitoring wells MW-2 and MW-14 were abandoned prior to the October 2009 sampling event.

In August 2009, the locations of monitoring wells associated with the site (Enbridge and USGS wells) were surveyed and tied into a common benchmark. In addition, property to the south of the station owned by Enbridge was surveyed to establish property boundaries.

Aquifer Hydraulics:

Prior to purging and sample collection activities, depth to groundwater measurements were collected. A comprehensive summary of groundwater elevation data is included in Table 1. Figure 3 depicts the groundwater flow regime as observed during the most recent sampling event (October 2009). Locally, the piezometric surface and distribution of compounds dissolved in the groundwater indicated groundwater flows under unconfined conditions with a southeast to east flow direction. Regionally, groundwater flow is to the southeast toward Fox Creek (part of the Pike Bay drainage), a local sink for shallow groundwater flow.

Dissolved Phase:

Organic carbon content (TOC) in the aquifer matrix was previously analyzed from a soil sample collected at the upgradient well location (MW-1). The TOC concentration from this sample was 920 mg/kg (0.09%). The hydraulic conductivity appears to be log-normally distributed about a geometric mean of 32 feet/day and the hydraulic gradient is approximately 0.04%. Assuming an effective porosity typical of clean sand (0.25), the mean groundwater flow velocity was calculated at approximately 20 feet per year.

The velocity of crude oil and benzene were also evaluated. Benzene was chosen since this compound typically is the first to arrive on the downgradient edge of the groundwater plume and is the primary compound of concern. Assuming a kinematic viscosity of 500 cSt at 5 C (the approximate temperature of the groundwater), the velocity of crude oil in the source area is approximately 0.5 ft/year. The velocity of the benzene front is approximately 12 ft/yr (retarded by a factor of 1.59). Note that other loss mechanisms limit the migration of the plume, which the USGS states to be stable. These calculations were included in a *Status Update/Feasibility Report* that was submitted to the Minnesota Pollution Control Agency (MPCA) in May 2004.

Non-Aqueous Phase Liquid:

Crude oil 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 crude oil thickness observed on the water table. During the most recent sampling event in October 2009, the crude oil thickness ranged from a sheen at monitoring well MW-3 to 0.35 feet at monitoring well MW-11. Figure 4 depicts the approximate lateral extent of crude oil observed on the water table at the Site. As discussed in the May 2004 submittal to the MPCA, the crude oil characteristics showed a wide range of viscosities ranging from 23 centistokes (cSt) at MW-13 to 421 cSt at MW-5 (both measured at 10^{o}C).

During the June and October 2009 sampling events, crude oil was recovered with a disposable bailer from monitoring wells MW-3, MW-5, MW-11, and MW-13 and placed in a drum located on-site. Between the two sampling events in 2009, approximately two pints of crude oil (0.25 gallons) were recovered.

Groundwater Quality:

Excluding wells containing crude oil, five monitoring wells at the Site (MW-10, USGS-1A, USGS-2A, USGS-3A, and USGS-4A) contained dissolved concentrations of crude oil related compounds in October 2009. At these locations, benzene has been the only volatile organic compound detected at concentrations above the Minnesota Department of Health Health Risk Limit (HRL) of 10 μg/L. During the most recent sampling event in October 2009, the highest benzene concentration was detected at monitoring well USGS-1A (776 μg/L). Figure 5 depicts the approximate lateral extent of dissolved phase benzene in the groundwater in exceedance of the HRL of 10 μg/L (based on October 2009 analytical data).

ERDRO concentrations at the Site ranged from below the laboratory detection limit to 50.8 mg/L at MW-10 in June 2009. In October 2009, ERDRO concentrations at the Site ranged from below the laboratory detection limit to 22.4 mg/L at MW-10.

Monitoring wells free of crude oil (except monitoring well MW-15) were also submitted for laboratory analysis of nitrate, sulfate, methane, and iron concentrations during the October 2009 sampling event in an ongoing effort to evaluate the process of natural attenuation. To further evaluate the occurrence of natural attenuation, dissolved oxygen concentrations in the groundwater were measured in the field from each monitoring well not containing crude oil. The availability of dissolved oxygen in upgradient wells and along the peripheral edge of the plume indicates an aerobic environment. In the source area, dissolved oxygen readings were lower, averaging approximately 2.3 mg/L. Given these conditions, active biodegradation within the contaminant plume is

occurring under aerobic conditions. Tables 2 and 3 provide a comprehensive summary of laboratory analytical data collected at the Site to date. The complete analytical laboratory reports for the June and October 2009 sampling events are included in Appendix B.

Recommendations:

To further evaluate dissolved phase contaminant trends as well as the process of natural attenuation, groundwater monitoring will continue to be conducted on a semi-annual basis in June and October 2010. Activities conducted on-site will be consistent with previous groundwater sampling events. In summer 2010, MW-2 will be reinstalled. Based on the location of MW-14, this well does not appear to be beneficial to future activities and therefore is not proposed to be reinstalled. The current monitoring well network does not provide a clean downgradient monitoring point(s). Upon review of the groundwater analytical data collected in 2009 in conjunction with the USGS's report for this Site, Enbridge will evaluate the necessity of additional monitoring wells to supplement the current monitoring well network.

Please do not hesitate to call me if you have any comments or questions – I can be reached at (715) 399-3250.

Sincerely,

Barry Power

Barry Power, P.E.
President

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
MW-2	662110	06-Jun-01	99.57	25.87				73.70	77.07	3.37
		10-May-02		None Recorded						
		14-May-02		27.25				72.32	77.07	4.75
		21-Jul-03		27.71				71.86	77.07	5.21
		06-Jan-04		28.12				71.45	77.07	5.62
		02-Apr-04		28.11				71.46	77.07	5.61
		12-May-04		28.28				71.29	77.07	5.78
		26-Aug-04		27.60				71.97	77.07	5.10
		30-Dec-04		26.62				72.95	77.07	4.12
		06-Apr-05		26.92				72.65	77.07	4.42
		26-Jun-08		27.13				72.44	77.07	4.63
		25-Nov-08		26.86				72.71	77.07	4.36
		04-Jun-09		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		27.19	26.51	0.68	26.57	73.03	78.10	5.07
		14-May-02		27.22	26.6	0.62	26.66	72.94	78.10	5.16
		21-Jul-03		28.30	27.77	0.53	27.82	71.78	78.10	6.32
		5-Jan-04		29.12	28.05	1.07	28.15	71.45	78.10	6.65
		2-Apr-04		28.77	28.09	0.68	28.15	71.45	78.10	6.65
		12-May-04		29.15	28.2	0.95	28.29	71.31	78.10	6.79
		26-Aug-04		28.05	27.62	0.43	27.66	71.94	78.10	6.16
		30-Dec-04		26.99	26.7	0.29	26.73	72.87	78.10	5.23
		06-Apr-05		27.51	26.97	0.54	27.02	72.58	78.10	5.52
		26-Jun-08		27.29	27.15	0.14	27.16	72.44	78.10	5.66
		25-Nov-08		27.10	26.87	0.23	26.89	72.71	78.10	5.39
		06-Feb-09		27.92	27.67	0.25	27.69	71.91	78.10	6.19
		04-Jun-09		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
MW-4	662112	06-Jun-01	100.39	26.68				73.71	77.89	4.18
		10-May-02		27.92				72.47	77.89	5.42
		14-May-02		27.96				72.43	77.89	5.46
		21-Jul-03		28.35				72.04	77.89	5.85
		06-Jan-04		28.75				71.64	77.89	6.25
		02-Apr-04		28.80				71.59	77.89	6.30
		12-May-04		28.85				71.54	77.89	6.35
		26-Aug-04		28.22				72.17	77.89	5.72
		30-Dec-04		27.36				73.03	77.89	4.86
		06-Apr-05		27.71				72.68	77.89	5.21
		26-Jun-08		27.76				72.63	77.89	5.26
		25-Nov-08		27.56				72.83	77.89	5.06
		04-Jun-09		27.21				73.18	77.89	4.71
		26-Oct-09	1340.58	27.59				1312.99	1318.08	5.09
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		29.72	28.47	1.25	28.55	71.03	76.08	5.05
		12-May-04		29.75	28.14	1.61	28.24	71.34	76.08	4.74
		26-Aug-04		28.05	27.6	0.45	27.63	71.95	76.08	4.13
		30-Dec-04		27.20	26.65	0.55	26.68	72.90	76.08	3.18
		06-Apr-05		28.03	26.94	1.09	27.01	72.57	76.08	3.51
		26-Jun-08		28.05	27.1	0.95	27.16	72.42	76.08	3.66
		25-Nov-08		27.17	26.9	0.27	26.92	72.66	76.08	3.42
		06-Feb-09		28.90	28.56	0.34	28.58	71.00	76.08	5.08
		04-Jun-09		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

Table 1: Groundwater Elevations/Crude Oil Thickness Measurements
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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-6	680691	21-Jul-03	100.71	28.75				71.96	72.71	0.75
		06-Jan-04		29.05				71.66	72.71	1.05
		02-Apr-04		29.15				71.56	72.71	1.15
		12-May-04		29.15				71.56	72.71	1.15
		26-Aug-04		28.62				72.09	72.71	0.62
		30-Dec-04		27.76				72.95	72.71	-0.24
		06-Apr-05		28.09				72.62	72.71	0.09
		26-Jun-08		28.17				72.54	72.71	0.17
		25-Nov-08		28.43				72.28	72.71	0.43
		04-Jun-09		27.60				73.11	72.71	-0.40
		26-Oct-09	1340.90	27.98				1312.92	1311.90	-1.02
MW-7	680692	21-Jul-03	99.83	28.09				71.74	73.33	1.59
		06-Jan-04		28.34				71.49	73.33	1.84
		02-Apr-04		28.43				71.40	73.33	1.93
		12-May-04		28.46				71.37	73.33	1.96
		26-Aug-04		28.00				71.83	73.33	1.50
		30-Dec-04		27.05				72.78	73.33	0.55
		06-Apr-05		27.34				72.49	73.33	0.84
		26-Jun-08		27.15				72.68	73.33	0.65
		25-Nov-08		27.28				72.55	73.33	0.78
		04-Jun-09		26.87				72.96	73.33	0.37
		26-Oct-09	1340.03	27.24				1312.79	1313.53	0.74
MW-8	680693	21-Jul-03	101.00	29.37				71.63	74.50	2.87
		06-Jan-04		29.70				71.30	74.50	3.20
		02-Apr-04		29.77				71.23	74.50	3.27
		12-May-04		29.85				71.15	74.50	3.35
		26-Aug-04		29.21				71.79	74.50	2.71
		30-Dec-04		28.20				72.80	74.50	1.70
		06-Apr-05		28.54				72.46	74.50	2.04
		26-Jun-08		28.73				72.27	74.50	2.23
		25-Nov-08		28.45				72.55	74.50	1.95
		04-Jun-09		28.09				72.91	74.50	1.59
		26-Oct-09	1341.21	28.45				1312.76	1315.16	2.40
MW-9	680694	21-Jul-03	98.25	26.41				71.84	73.75	1.91
		21-Jul-03		26.79				71.46	73.75	2.29
		02-Apr-04		26.81				71.44	73.75	2.31
		12-May-04		26.91				71.34	73.75	2.41
		26-Aug-04		26.29				71.96	73.75	1.79
		30-Dec-04		25.35				72.90	73.75	0.85
		06-Apr-05		25.65				72.60	73.75	1.15
		26-Jun-08		25.83				72.42	73.75	1.33
		25-Nov-08		25.57				72.68	73.75	1.07
		04-Jun-09		25.22				73.03	73.75	0.72
		26-Oct-09	1338.45	25.59				1312.86	1314.38	1.52
MW-10	705513	05-Jan-04	99.66	28.38				71.28	77.16	5.88
		2-Apr-04		28.30				71.36	77.16	5.80
		12-May-04		28.36				71.30	77.16	5.86
		26-Aug-04		27.76				71.90	77.16	5.26
		30-Dec-04		27.72				71.94	77.16	5.22
		06-Apr-05		27.02				72.64	77.16	4.52
		26-Jun-08		27.20				72.46	77.16	4.70
		25-Nov-08		26.94				72.72	77.16	4.44
		04-Jun-09		26.61				73.05	77.16	4.11
		26-Oct-09	1339.87	26.96				1312.91	1317.87	4.96
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		29.70	28.49	1.21	28.60	71.39	76.49	5.10
		2-Apr-04		29.78	28.45	1.33	28.57	71.42	76.49	5.07
		12-May-04		29.75	28.5	1.25	28.61	71.38	76.49	5.11
		26-Aug-04		28.68	27.94	0.74	28.01	71.98	76.49	4.51
		30-Dec-04		27.60	27.06	0.54	27.11	72.88	76.49	3.61
		06-Apr-05		28.07	27.38	0.69	27.44	72.55	76.49	3.94
		26-Jun-08		27.79	27.58	0.21	27.60	72.39	76.49	4.10
		25-Nov-08		27.59	27.28	0.31	27.31	72.68	76.49	3.81
		29-Jan-09		28.20	27.32	0.88	27.40	72.59	76.49	3.90
		06-Feb-09		28.28	27.53	0.75	27.60	72.39	76.49	4.10
		04-Jun-09		27.13	26.95	0.18	26.97	73.02	76.49	3.47
		26-Oct-09	1340.18	27.65	27.3	0.35	27.33	1312.85	1316.68	3.83

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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		30.57	29.53	1.04	29.68	71.34	74.52	3.18
		12-May-04		31.22	29.59	1.63	29.83	71.19	74.52	3.33
		26-Aug-04		29.20	29.07	0.13	29.09	71.93	74.52	2.59
		30-Dec-04		28.20	28.11	0.09	28.12	72.90	74.52	1.62
		06-Apr-05		28.80	28.38	0.42	28.44	72.58	74.52	1.94
		26-Jun-08		28.70	28.62	0.08	28.63	72.39	74.52	2.13
		25-Nov-08		28.35	28.35	0.00	28.35	72.67	74.52	1.85
		06-Feb-09		28.62	28.61	0.01	28.61	72.41	74.52	2.11
		04-Jun-09		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
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		26.66				72.69		
		04-Jun-09		25.64				73.71		
		26-Oct-09	1339.61	26.70				1312.91		
USGS 1A		26-Oct-09	1341.60	28.78				1312.82	1312.60	-0.22
USGS 2A		26-Oct-09	1342.37	29.60				1312.77	1311.97	-0.80
USGS 3A		26-Oct-09	1341.26	28.54				1312.72	1311.92	-0.80
USGS 4A		26-Oct-09	1339.63	26.95				1312.68	1311.49	-1.19

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

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)
Health Risk Limit (ug/L)		**10**	**700**	**1,000**	**10,000**		
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-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-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-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

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)
Health Risk Limit (ug/L)		**10**	**700**	**1,000**	**10,000**		
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-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-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
USGS 1A	10/26/2009	**776**	142	< 1.8	< 3.7	< 1.8	4,930
USGS 2A	10/26/2009	**705**	< 2.0	< 1.8	< 3.7	< 1.8	5,520
USGS 3A	10/26/2009	**147**	0.74	< 0.36	1.5	< 0.36	4,060
USGS 4A	10/26/2009	**13.8**	< 0.40	< 0.36	< 0.74	< 0.36	1,670
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
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	

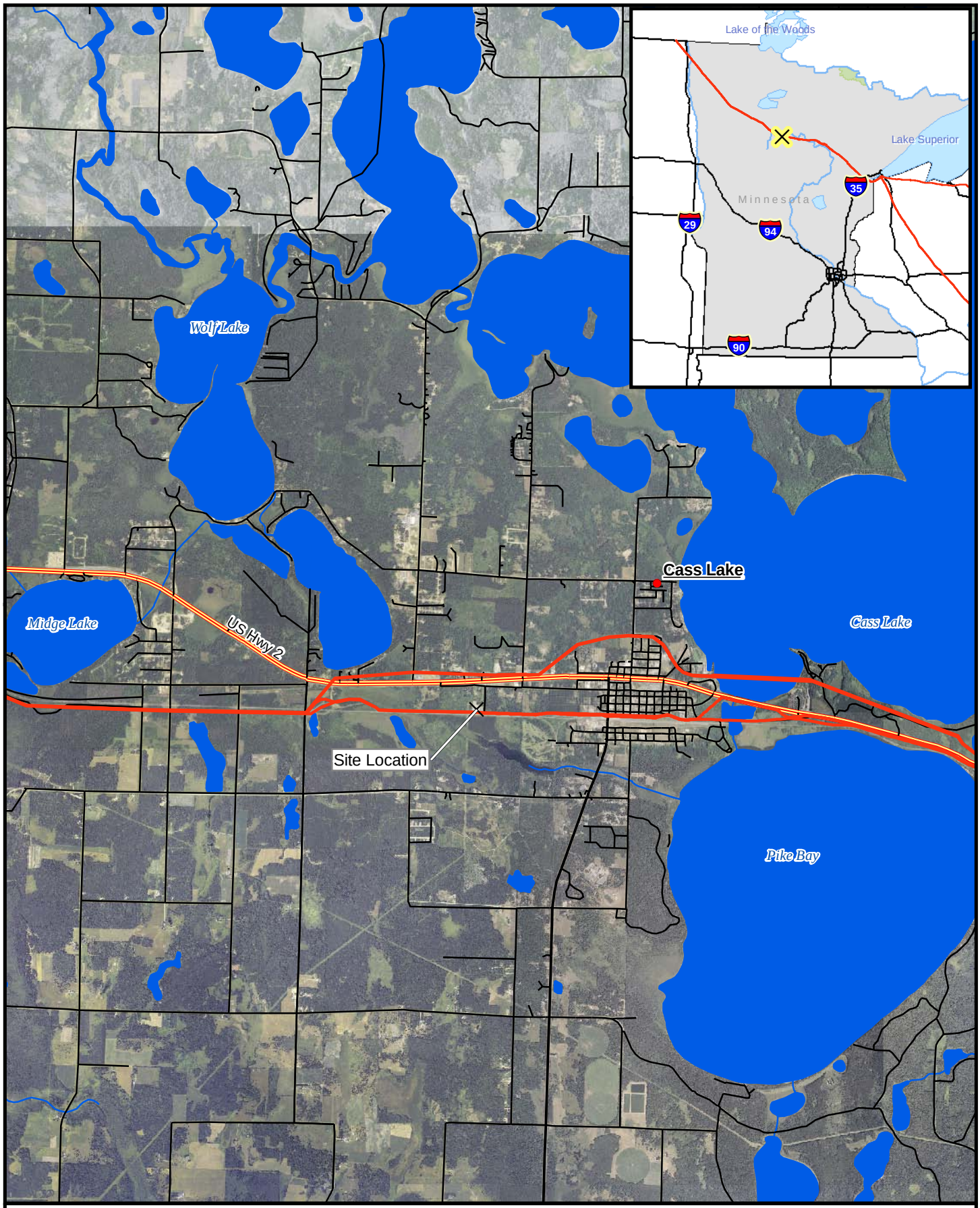
Table 3: Groundwater Sampling Results: Natural Attenuation Parameters
Enbridge Energy, Limited Partnership - South Cass Lake Station

Location	Collection Date	Nitrate (mg/L)	Sulfate (mg/L)	Methane (ug/L)	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
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
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
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
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
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

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

Location	Collection Date	Nitrate (mg/L)	Sulfate (mg/L)	Methane (ug/L)	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
USGS-1A	10/26/2009	< 0.20	2.1	11,700	1.5	< 0.018
USGS-2A	10/26/2009	< 0.20	2.5	5,480	1.7	< 0.018
USGS-3A	10/26/2009	< 0.20	2.3	3,240	3.7	< 0.018
USGS-4A	10/26/2009	< 0.20	4.2	665	13.5	< 0.018
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

FIGURES



ENBRIDGE

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Figure 1: Site Location Map
South Cass Lake Pumping Station

0 0.5 1 2 3 Miles

Legend
- City/Town
- Pipelines
- U.S. Highway
- County Hwy
- County Road

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Legend

- Enbridge Monitoring Wells
- USGS Monitoring Wells
- Pipelines

Figure 2: Site Layout Map

Enbridge's South Cass Lake Pumping Station

Cass Lake, Minnesota

DATE ISSUED: November 18, 2009	
DATE REVISED:	
SCALE: 1:2,500	
DRAWN BY: JPM	
SERIES: South Cass Lake	

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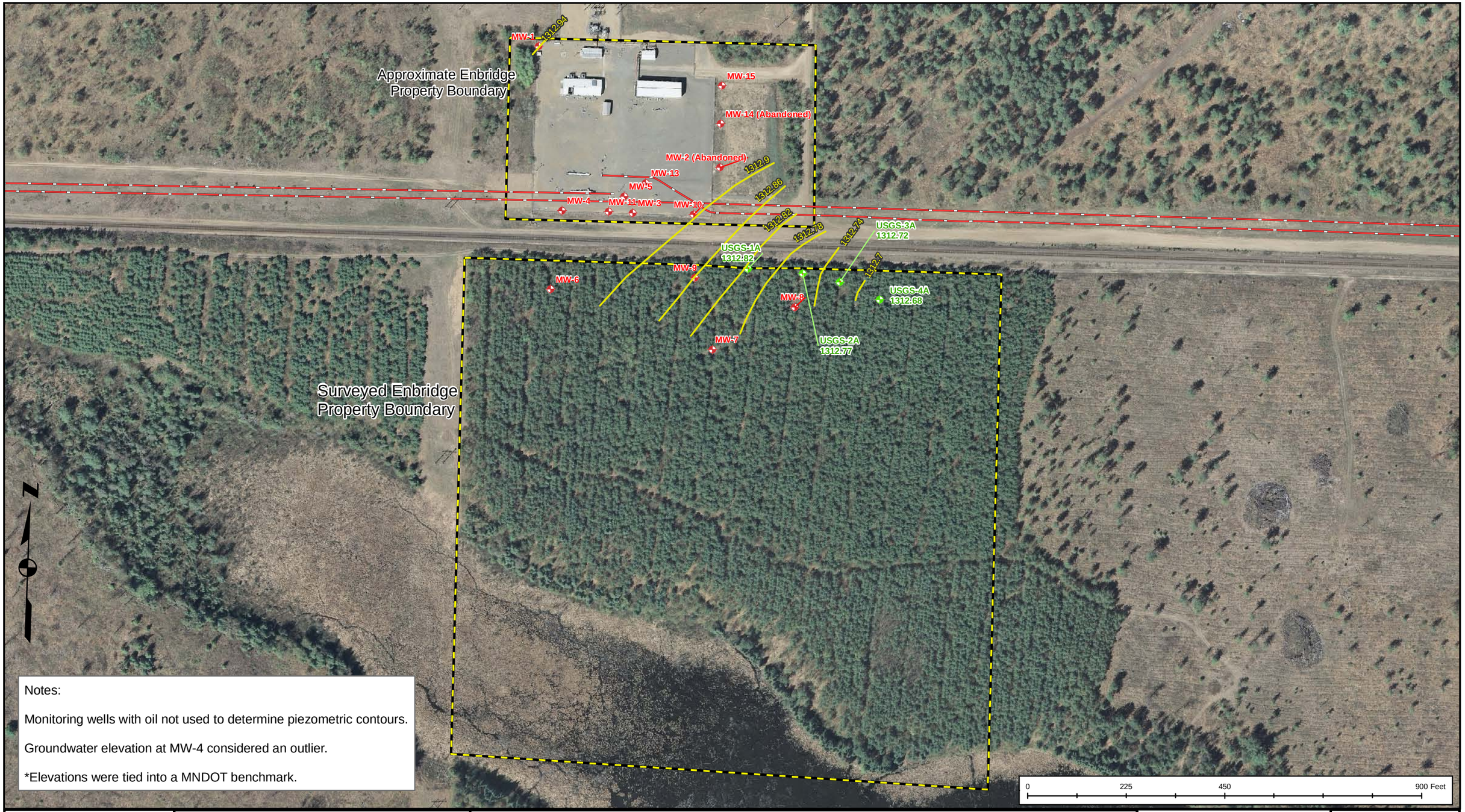

Notes:

Monitoring wells with oil not used to determine piezometric contours.

Groundwater elevation at MW-4 considered an outlier.

*Elevations were tied into a MNDOT benchmark.

Legend

(1312.82) Groundwater Elevation (ft)*
Piezometric Contour
Enbridge Monitoring Wells
USGS Monitoring Wells
Pipeline

Figure 3: Groundwater Flow Map (October 2009)

Enbridge's South Cass Lake Pumping Station

Cass Lake, Minnesota

DATE ISSUED: November 5, 2009
DATE REVISED:
SCALE: 1:2,500
DRAWN BY: JPM
SERIES: South Cass Lake

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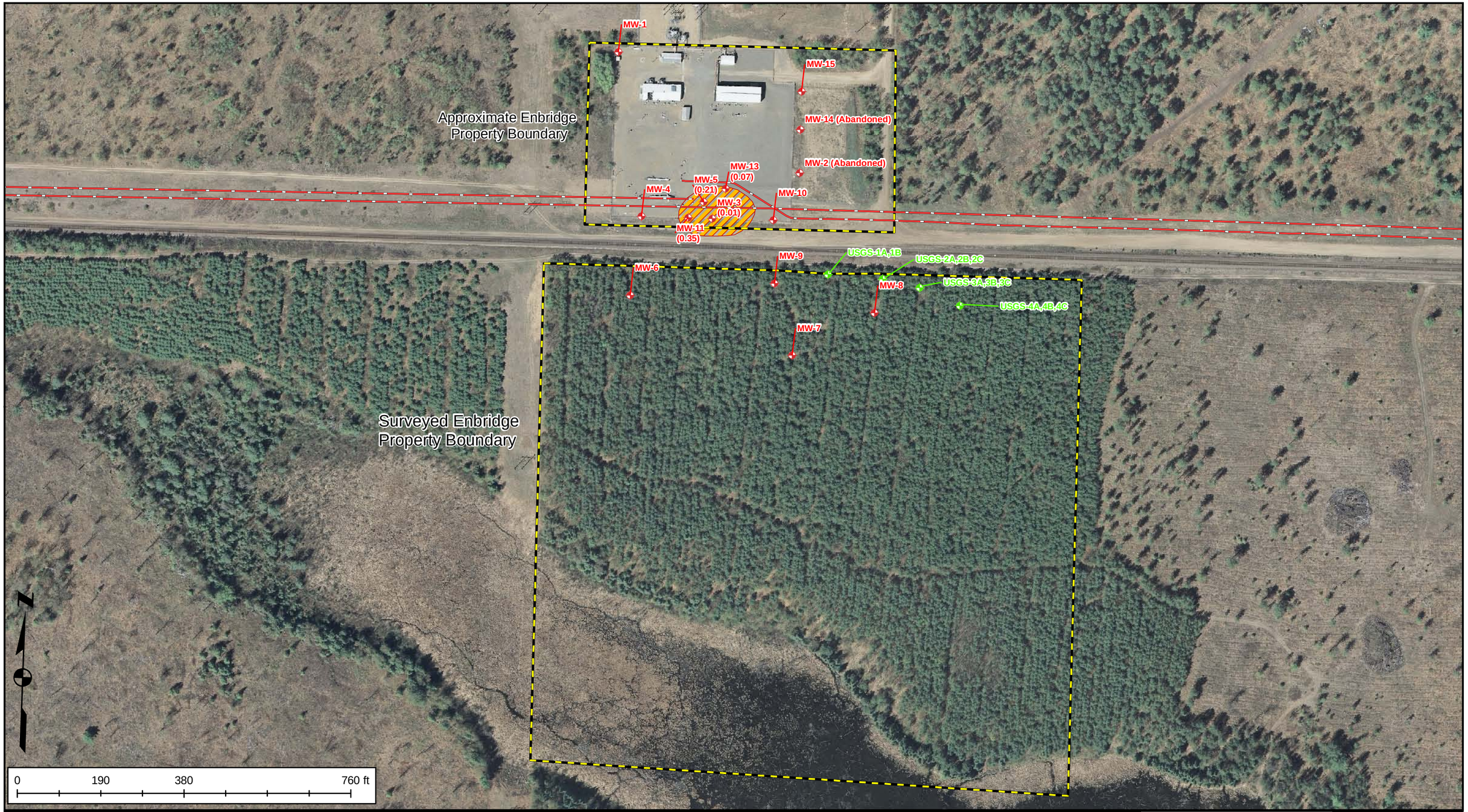

Legend

- Enbridge Monitoring Wells
- USGS Monitoring Wells
- (0.25) Crude Oil Thickness (ft)
- Inferred Extent of Crude Oil (October 2009)
- Pipelines

Figure 4: Inferred Extent of Crude Oil (October 2009)

Enbridge's South Cass Lake Pumping Station

Cass Lake, Minnesota

DATE ISSUED:	November 18, 2009
DATE REVISED:	
SCALE:	1:2,500
DRAWN BY:	JPM
SERIES:	South Cass Lake

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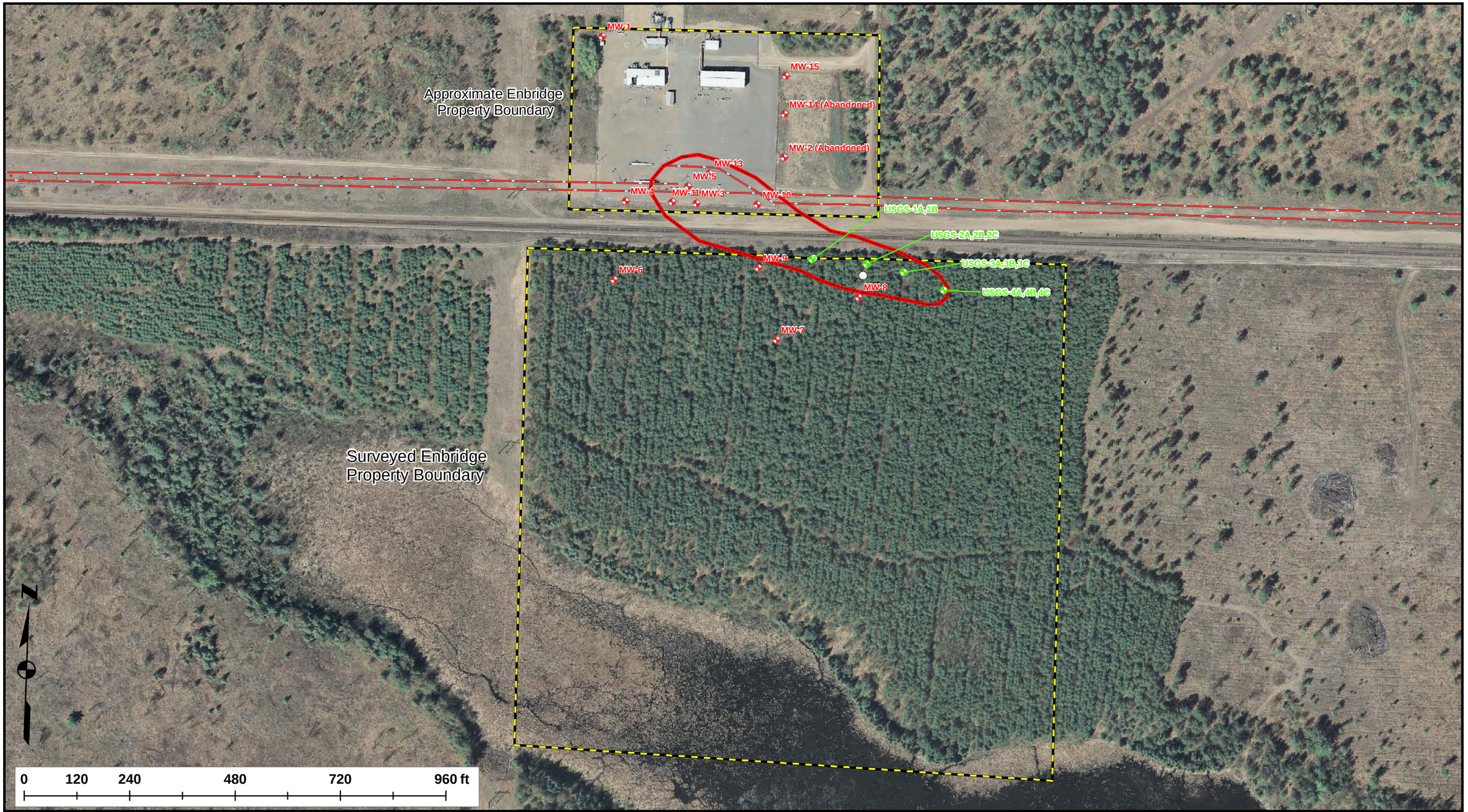


Legend

- Pipelines
- Enbridge Monitoring Wells
- USGS Monitoring Wells
- Soil Boring Site
- Approximate Extent of Benzene >10 µg/L (MDH Health Risk Limit) — Based on Sampling Data October 2009

Figure 5: Dissolved Phase Benzene Concentrations in Groundwater >10 µg/L (October 2009)

Enbridge's South Cass Lake Pumping Station
Cass Lake, Minnesota

DATE ISSUED:	November 18, 2009
DATE REVISED:	
SCALE:	1:2,500
DRAWN BY:	WLW
SERIES:	South Cass Lake

Natural Resources Engineering Co.
715-395-5680

APPENDIX A – WELL CONSTRUCTION LOGS

Monitoring Well Construction Information

WELL DESIGNATION MW-1 **PROJECT** EEC - South Cass Lake

DRILLER Thein Well Company **COMPLETION DATE** 5/22/2001

Elev.(± 0.01') (Grade Elevation)

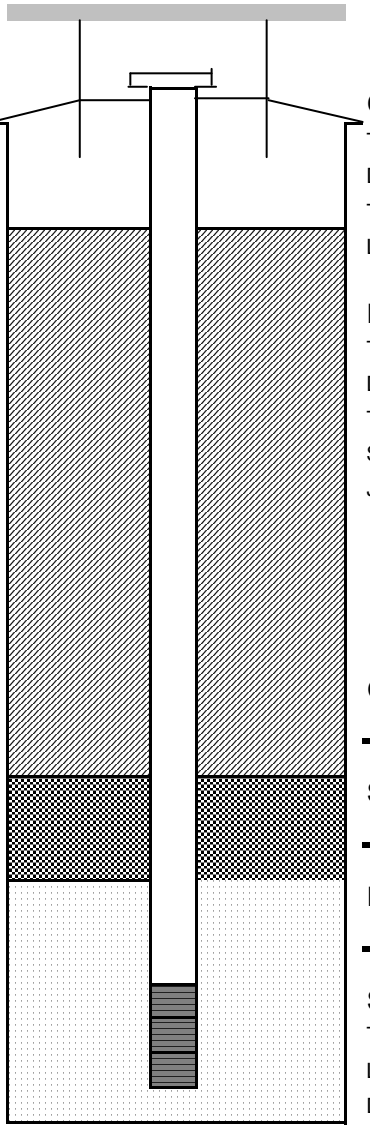
Elev.(± 0.01') 1337.88
(Top of Inner Casing w/o Cover)

State Plane Coord.: N 652316.8167, E 2243499.933

Method of Advance: Hollow Stem Auger

Borehole Diameter: 8 inches

Drilling Fluid: None



Depth to Bottom of Grout : 16.5 feet

Depth to Bottom of Seal : 18.5 feet

Depth to top of Screen : 20.5 feet

Depth to Bottom of Boring : 30.5 feet

Depth to First Water Encountered during Drilling : 24.5 feet

Depth to Water Level before Installation : 24.5 feet

CONCRETE SURFACE SEAL:

Y/N: Y

OUTER CASING:

Type	Carbon Steel
Diameter	4 inches
Total Length	5 feet
Lock	Yes

INNER CASING:

Type	PVC
Diameter	2-inch
Total Length	18 feet
Sections Used	2
Joints	1

GROUT ABOVE SEAL: Neat Cement Grout

SEALING MATERIAL: Bentonite Chips

FILTER MATERIAL: # 30 Red Flint Sand

SCREEN:

Type	PVC
Length	10 feet
Diameter	2-inch
Slot Size	0.01-inch

PUMP:

Type	N/A
Length	N/A
Diameter	N/A

**Note: All depths are from Ground Level

METHOD OF DEVELOPMENT: Surge with weighted bailer and dewater with Brainard-Kilman Pump

CONSTRUCTION NOTES:

Monitoring Well Construction Information

WELL DESIGNATION MW-2 **PROJECT** EEC - South Cass Lake

DRILLER Thein Well Company **COMPLETION DATE** 5/22/2001

Elev.(± 0.01') (Grade Elevation)

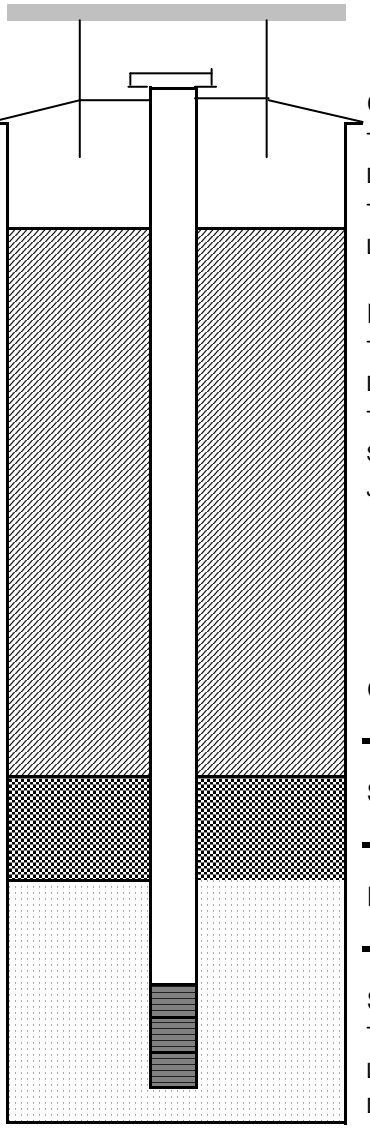
Elev.(± 0.01') 1337.29
(Top of Inner Casing w/o Cover)

State Plane Coord.: N 652039.7540
E 2243905.527

Method of Advance: Hollow Stem Auger

Borehole Diameter: 8 inches

Drilling Fluid: None



Depth to Bottom of Grout : 16 feet

Depth to Bottom of Seal : 18 feet

Depth to top of Screen : 20 feet

Depth to Bottom of Boring : 30 feet

Depth to First Water Encountered during Drilling : 24 feet

Depth to Water Level before Installation : 24 feet

**Note: All depths are from Ground Level

CONCRETE SURFACE SEAL:
Y/N Y

OUTER CASING:

Type	Carbon Steel
Diameter	4 inches
Total Length	5 feet
Lock	Yes

INNER CASING:

Type	PVC
Diameter	2-inch
Total Length	20 feet
Sections Used	2
Joints	1

GROUT ABOVE SEAL:
Neat Cement Grout

SEALING MATERIAL:
Bentonite Chips

FILTER MATERIAL:
30 Red Flint Sand

SCREEN:

Type	PVC
Length	10 feet
Diameter	2-inch
Slot Size	0.01-inch

PUMP:

Type	N/A
Length	N/A
Diameter	N/A

METHOD OF DEVELOPMENT: Surge with weighted bailer and dewater with Brainard-Kilman Pump

CONSTRUCTION NOTES:

Monitoring Well Construction Information

WELL DESIGNATION MW-3 **PROJECT** EEC - South Cass Lake

DRILLER Thein Well Company **COMPLETION DATE** 5/22/2001

Elev.(± 0.01') (Grade Elevation)

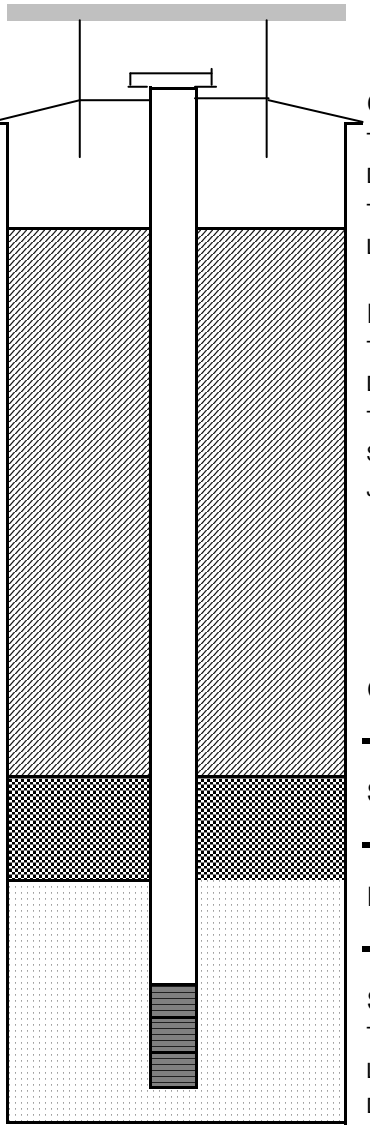
Elev.(± 0.01') 1337.27
(Top of Inner Casing w/o Cover)

State Plane Coord.: N 651936.1793 E 2243713.883

Method of Advance: Hollow Stem Auger

Borehole Diameter: 8 inches

Drilling Fluid: None



Depth to Bottom of Grout : 15 feet

Depth to Bottom of Seal : 17 feet

Depth to top of Screen : 19 feet

Depth to Bottom of Boring : 29 feet

Depth to First Water Encountered during Drilling : 24 feet

Depth to Water Level before Installation : 24 feet

**Note: All depths are from Ground Level

CONCRETE SURFACE SEAL:
Y/N Y

OUTER CASING:

Type	Carbon Steel
Diameter	4 inches
Total Length	5 feet
Lock	Yes

INNER CASING:

Type	PVC
Diameter	2-inch
Total Length	19 feet
Sections Used	2
Joints	1

GROUT ABOVE SEAL:
Neat Cement Grout

SEALING MATERIAL:
Bentonite Chips

FILTER MATERIAL:
30 Red Flint Sand

SCREEN:

Type	PVC
Length	10 feet
Diameter	2-inch
Slot Size	0.01-inch

PUMP:

Type	N/A
Length	N/A
Diameter	N/A

METHOD OF DEVELOPMENT: Surge with weighted bailer and dewater with Brainard-Kilman Pump

CONSTRUCTION NOTES:

Monitoring Well Construction Information

WELL DESIGNATION MW-4 **PROJECT** EEC - South Cass Lake

DRILLER Thein Well Company **COMPLETION DATE** 5/21/2001

Elev.(± 0.01') _____
(Grade Elevation)

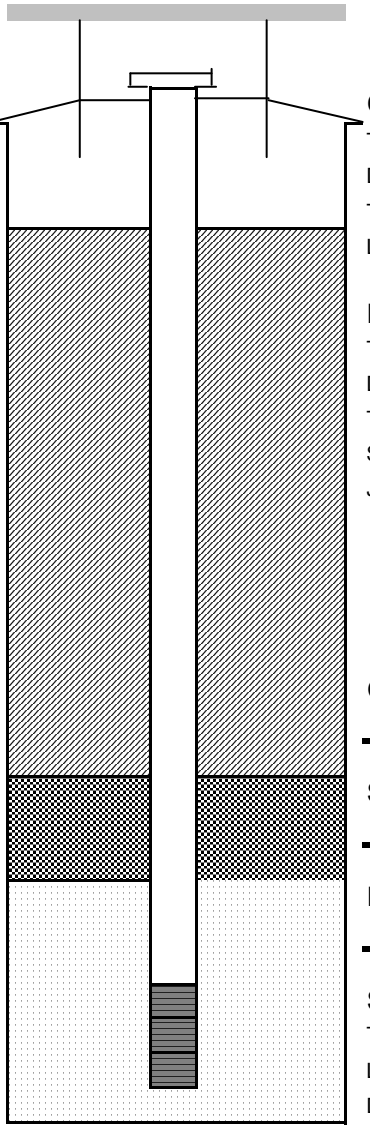
Elev.(± 0.01') 1338.50
(Top of Inner Casing w/o Cover)

State Plane Coord.: N 651941.0708, E 2243552.654

Method of Advance: Hollow Stem Auger

Borehole Diameter: 8 inches

Drilling Fluid: None



Depth to Bottom of Grout : 16 feet

Depth to Bottom of Seal : 18 feet

Depth to top of Screen : 20 feet

Depth to Bottom of Boring : 30 feet

Depth to First Water Encountered during Drilling : 24.5 feet

Depth to Water Level before Installation : 24.5 feet

**Note: All depths are from Ground Level

CONCRETE SURFACE SEAL:
Y/N Y

OUTER CASING:

Type	Carbon Steel
Diameter	4 inches
Total Length	5 feet
Lock	Yes

INNER CASING:

Type	PVC
Diameter	2-inch
Total Length	18 feet
Sections Used	2
Joints	1

GROUT ABOVE SEAL:
Neat Cement Grout

SEALING MATERIAL:
Bentonite Chips

FILTER MATERIAL:
30 Red Flint Sand

SCREEN:

Type	PVC
Length	10 feet
Diameter	2-inch
Slot Size	0.01-inch

PUMP:

Type	N/A
Length	N/A
Diameter	N/A

METHOD OF DEVELOPMENT: Surge with weighted bailer and dewater with Brainard-Kilman Pump

CONSTRUCTION NOTES:

Monitoring Well Construction Information

WELL DESIGNATION MW-5

PROJECT EEC - South Cass Lake

DRILLER Thein Well Company

COMPLETION DATE 12/17/2003

Elev.(± 0.01') _____
(Grade Elevation)

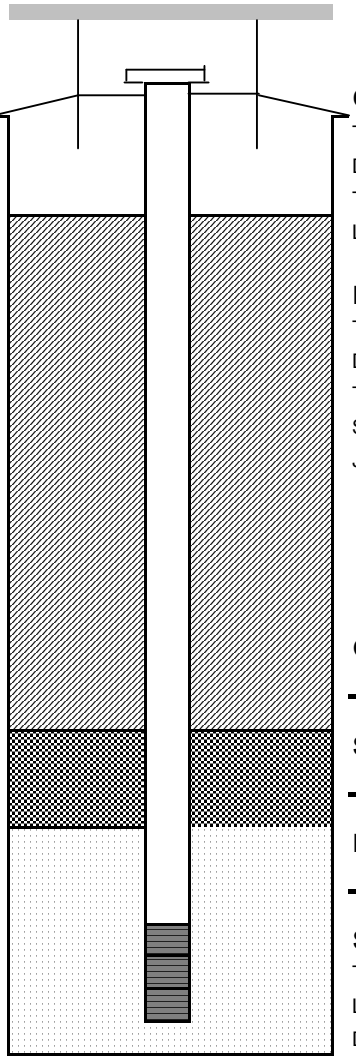
Elev.(± 0.01') _____
(Top of Inner Casing w/o Cover)

State Plane Coord.: N 651974.3570, E 2243693.9200

Method of Advance: Hollow Stem Auger

Borehole Diameter: 8 inches

Drilling Fluid: None



Depth to Bottom of Grout : 17 feet

Depth to Bottom of Seal : 19 feet

Depth to top of Screen : 21 feet

Depth to Bottom of Boring : 31 feet

Depth to First Water Encountered during Drilling : 25 feet

Depth to Water Level before Installation : 25 feet

**Note: All depths are from Ground Level

CONCRETE SURFACE SEAL:
Y/N: Y

OUTER CASING:

Type	Carbon Steel
Diameter	4 inches
Total Length	5 feet
Lock	Yes

INNER CASING:

Type	PVC
Diameter	2-inch
Total Length	21 feet
Sections Used	3
Joints	2

GROUT ABOVE SEAL: Neat Cement Grout

SEALING MATERIAL: Bentonite Chips

FILTER MATERIAL: # 30 Red Flint Sand

SCREEN:

Type	PVC
Length	10 feet
Diameter	2-inch
Slot Size	0.01-inch

PUMP:

Type	N/A
Length	N/A
Diameter	N/A

METHOD OF DEVELOPMENT: Surge with weighted bailer and bailed.

CONSTRUCTION NOTES:

Monitoring Well Construction Information

WELL DESIGNATION MW-6 **PROJECT** EEC - South Cass Lake

DRILLER Thein Well Company **COMPLETION DATE** 11/19/2002

Elev.(± 0.01') 1321.60
(Grade Elevation)

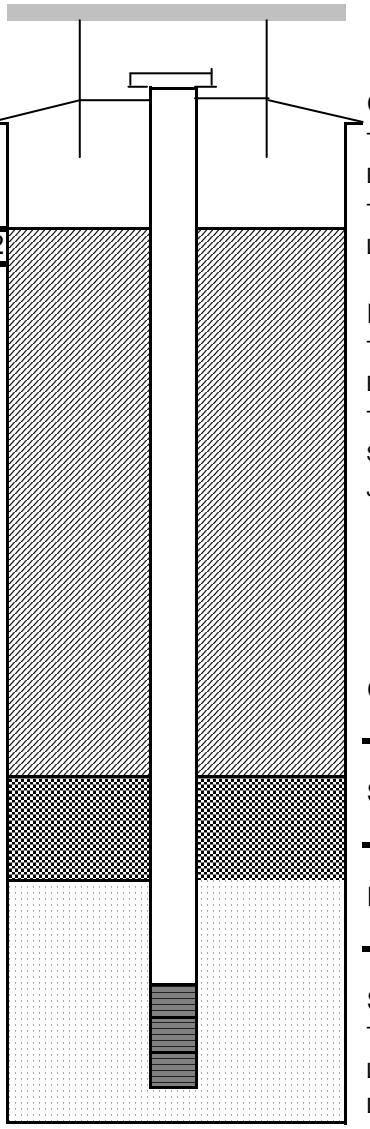
Elev.(± 0.01') 1323.55
(Top of Inner Casing w/o Cover)

State Plane Coord.: N 651762.4858 E 2243525.5902

Method of Advance: Hollow Stem Auger

Borehole Diameter: 8 inches

Drilling Fluid: None



Depth to Bottom of Grout : 20 feet

Depth to Bottom of Seal : 22 feet

Depth to top of Screen : 24 feet

Depth to Bottom of Boring : 36 feet

Depth to First Water Encountered during Drilling : 30 feet

Depth to Water Level before Installation : 30 feet

**Note: All depths are from Ground Level

CONCRETE SURFACE SEAL:
Y/N Y

OUTER CASING:

Type	Carbon Steel
Diameter	4 inches
Total Length	5 feet
Lock	Yes

INNER CASING:

Type	PVC
Diameter	2-inch
Total Length	24 feet
Sections Used	3
Joints	2

GROUT ABOVE SEAL:
Neat Cement Grout

SEALING MATERIAL:
Bentonite Chips

FILTER MATERIAL:
30 Red Flint Sand

SCREEN:

Type	PVC
Length	10 feet
Diameter	2-inch
Slot Size	0.01-inch

PUMP:

Type	N/A
Length	N/A
Diameter	N/A

METHOD OF DEVELOPMENT: Surge with weighted bailer and dewater with Brainard-Kilman Pump

CONSTRUCTION NOTES:

Monitoring Well Construction Information

WELL DESIGNATION MW-7 **PROJECT** EEC - South Cass Lake

DRILLER Thein Well Company **COMPLETION DATE** 11/19/2002

Elev.(± 0.01') 1322.70
(Grade Elevation)

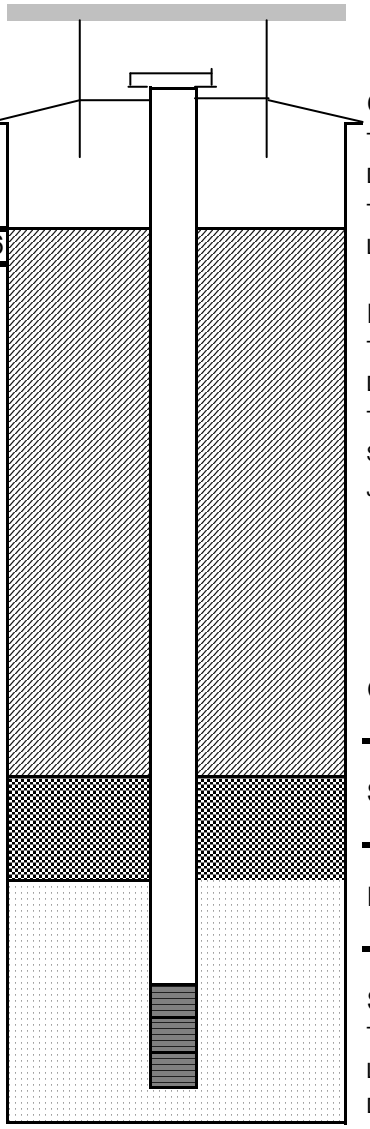
Elev.(± 0.01') 1320.78
(Top of Inner Casing w/o Cover)

State Plane Coord.: N 651624.2608
E 2243894.5676

Method of Advance: Hollow Stem Auger

Borehole Diameter: 8 inches

Drilling Fluid: None



Depth to Bottom of Grout : 19 feet

Depth to Bottom of Seal : 21 feet

Depth to top of Screen : 24 feet

Depth to Bottom of Boring : 34 feet

Depth to First Water Encountered during Drilling : 28 feet

Depth to Water Level before Installation : 28 feet

**Note: All depths are from Ground Level

CONCRETE SURFACE SEAL:
Y/N Y

OUTER CASING:

Type	Carbon Steel
Diameter	4 inches
Total Length	5 feet
Lock	Yes

INNER CASING:

Type	PVC
Diameter	2-inch
Total Length	24 feet
Sections Used	3
Joints	2

GROUT ABOVE SEAL:
Neat Cement Grout

SEALING MATERIAL:
Bentonite Chips

FILTER MATERIAL:
30 Red Flint Sand

SCREEN:

Type	PVC
Length	10 feet
Diameter	2-inch
Slot Size	0.01-inch

PUMP:

Type	N/A
Length	N/A
Diameter	N/A

METHOD OF DEVELOPMENT: Surge with weighted bailer and dewater with Brainard-Kilman Pump

CONSTRUCTION NOTES:

Monitoring Well Construction Information

WELL DESIGNATION MW-8 **PROJECT** EEC - South Cass Lake

DRILLER Thein Well Company **COMPLETION DATE** 11/20/2002

Elev.(± 0.01') 1321.80
(Grade Elevation)

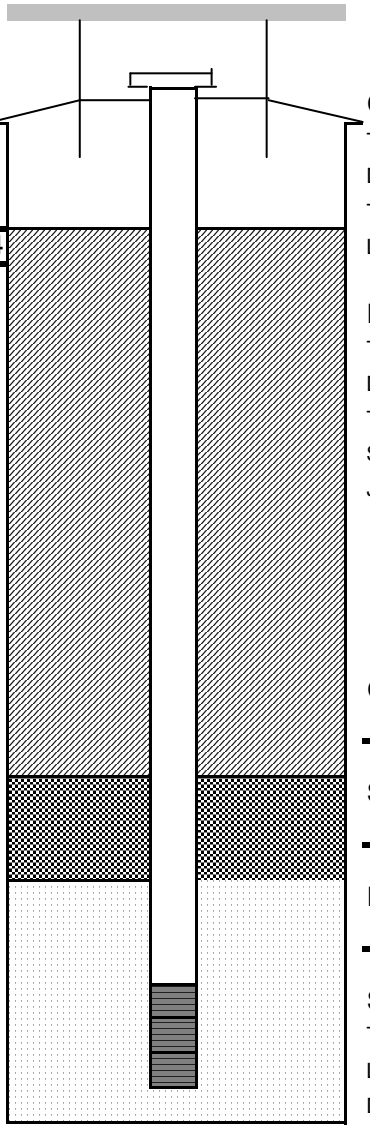
Elev.(± 0.01') 1323.85
(Top of Inner Casing w/o Cover)

State Plane Coord.: N 651721.0749 E 2244083.1014

Method of Advance: Hollow Stem Auger

Borehole Diameter: 8 inches

Drilling Fluid: None



Depth to Bottom of Grout : 19 feet

Depth to Bottom of Seal : 21 feet

Depth to top of Screen : 24 feet

Depth to Bottom of Boring : 34 feet

Depth to First Water Encountered during Drilling : 28 feet

Depth to Water Level before Installation : 28 feet

**Note: All depths are from Ground Level

CONCRETE SURFACE SEAL:

Y/N Y

OUTER CASING:

Type	Carbon Steel
Diameter	4 inches
Total Length	5 feet
Lock	Yes

INNER CASING:

Type	PVC
Diameter	2-inch
Total Length	24 feet
Sections Used	3
Joints	2

GROUT ABOVE SEAL: Neat Cement Grout

SEALING MATERIAL: Bentonite Chips

FILTER MATERIAL: # 30 Red Flint Sand

SCREEN:

Type	PVC
Length	10 feet
Diameter	2-inch
Slot Size	0.01-inch

PUMP:

Type	N/A
Length	N/A
Diameter	N/A

METHOD OF DEVELOPMENT: Surge with weighted bailer and dewater with Brainard-Kilman Pump

CONSTRUCTION NOTES:

Monitoring Well Construction Information

WELL DESIGNATION MW-9

PROJECT EEC - South Cass Lake

DRILLER Thein Well Company

COMPLETION DATE 11/19/2002

Elev.(± 0.01') 1319.03
(Grade Elevation)

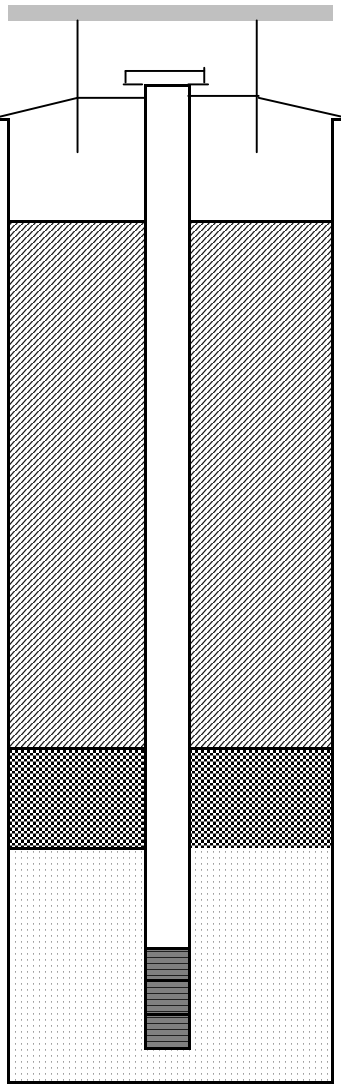
Elev.(± 0.01') 1321.10
(Top of Inner Casing w/o Cover)

State Plane Coord.: N 651788.2945, E 2243854.9881

Method of Advance: Hollow Stem Auger

Borehole Diameter: 8 inches

Drilling Fluid: None



Depth to Bottom of Grout : 17 feet

Depth to Bottom of Seal : 19 feet

Depth to top of Screen : 22 feet

Depth to Bottom of Boring : 32 feet

Depth to First Water Encountered during Drilling : 26 feet

Depth to Water Level before Installation : 26 feet

**Note: All depths are from Ground Level

CONCRETE SURFACE SEAL:

Y/N: Y

OUTER CASING:

Type	Carbon Steel
Diameter	4 inches
Total Length	5 feet
Lock	Yes

INNER CASING:

Type	PVC
Diameter	2-inch
Total Length	22 feet
Sections Used	3
Joints	2

GROUT ABOVE SEAL: Neat Cement Grout

SEALING MATERIAL: Bentonite Chips

FILTER MATERIAL: # 30 Red Flint Sand

SCREEN:

Type	PVC
Length	10 feet
Diameter	2-inch
Slot Size	0.01-inch

PUMP:

Type	N/A
Length	N/A
Diameter	N/A

METHOD OF DEVELOPMENT: Surge with weighted bailer and dewater with Brainard-Kilman Pump

CONSTRUCTION NOTES:

Monitoring Well Construction Information

WELL DESIGNATION MW-10

PROJECT EEC - South Cass Lake

DRILLER Thein Well Company

COMPLETION DATE 12/16/2003

Elev.(± 0.01') _____
(Grade Elevation)

Elev.(± 0.01') _____
(Top of Inner Casing w/o Cover)

State Plane Coord.: N 651932.6480, E 2243852.6260

Method of Advance: Hollow Stem Auger

Borehole Diameter: 8 inches

Drilling Fluid: None

Depth to Bottom of Grout : 16 feet

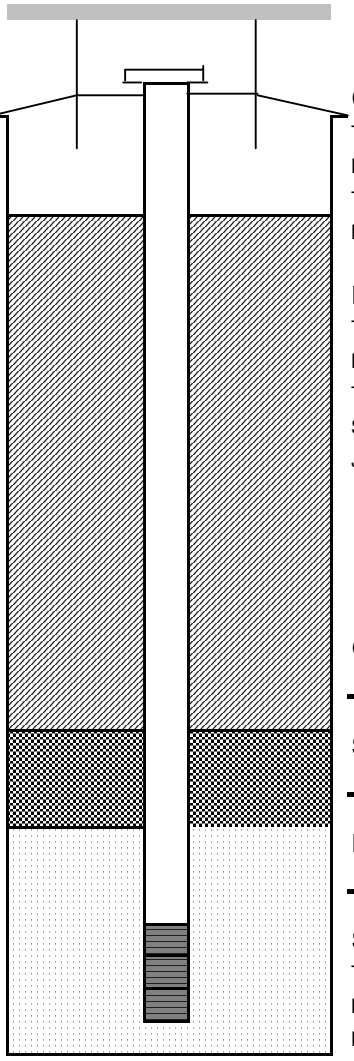
Depth to Bottom of Seal : 18 feet

Depth to top of Screen : 20 feet

Depth to Bottom of Boring : 30 feet

Depth to First Water Encountered during Drilling : 24 feet

Depth to Water Level before Installation : 24 feet



**Note: All depths are from Ground Level

CONCRETE SURFACE SEAL:
Y/N: Y

OUTER CASING:

Type	Carbon Steel
Diameter	4 inches
Total Length	5 feet
Lock	Yes

INNER CASING:

Type	PVC
Diameter	2-inch
Total Length	20 feet
Sections Used	3
Joints	2

GROUT ABOVE SEAL:
Neat Cement Grout

SEALING MATERIAL:
Bentonite Chips

FILTER MATERIAL:
30 Red Flint Sand

SCREEN:

Type	PVC
Length	10 feet
Diameter	2-inch
Slot Size	0.01-inch

PUMP:

Type	N/A
Length	N/A
Diameter	N/A

METHOD OF DEVELOPMENT: Surge with weighted bailer and bailed.

CONSTRUCTION NOTES:

Monitoring Well Construction Information

WELL DESIGNATION MW-11

PROJECT EEC - South Cass Lake

DRILLER Thein Well Company

COMPLETION DATE 12/16/2003

Elev.(± 0.01') _____
(Grade Elevation)

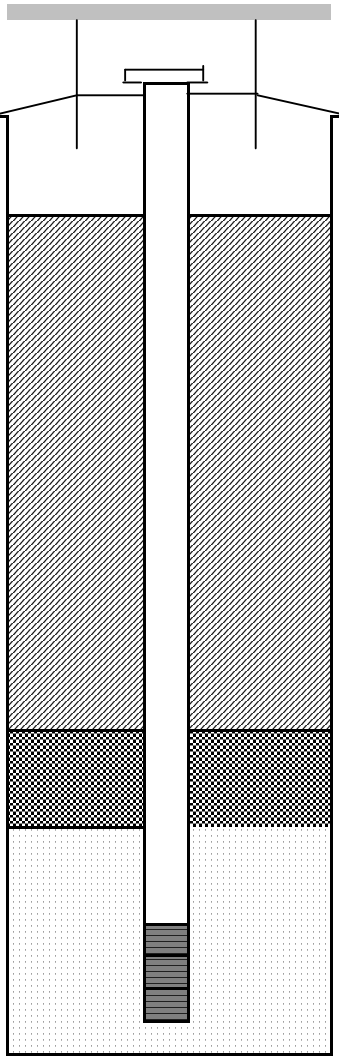
Elev.(± 0.01') _____
(Top of Inner Casing w/o Cover)

State Plane Coord.: N 651938.5230, E 2243658.4770

Method of Advance: Hollow Stem Auger

Borehole Diameter: 8 inches

Drilling Fluid: None



Depth to Bottom of Grout : 17 feet

Depth to Bottom of Seal : 19 feet

Depth to top of Screen : 21 feet

Depth to Bottom of Boring : 31 feet

Depth to First Water Encountered during Drilling : 25 feet

Depth to Water Level before Installation : 25 feet

**Note: All depths are from Ground Level

CONCRETE SURFACE SEAL:
Y/N: Y

OUTER CASING:

Type	Carbon Steel
Diameter	4 inches
Total Length	5 feet
Lock	Yes

INNER CASING:

Type	PVC
Diameter	2-inch
Total Length	21 feet
Sections Used	3
Joints	2

GROUT ABOVE SEAL: Neat Cement Grout

SEALING MATERIAL: Bentonite Chips

FILTER MATERIAL: # 30 Red Flint Sand

SCREEN:

Type	PVC
Length	10 feet
Diameter	2-inch
Slot Size	0.01-inch

PUMP:

Type	N/A
Length	N/A
Diameter	N/A

METHOD OF DEVELOPMENT: Surge with weighted bailer and bailed.

CONSTRUCTION NOTES:

Monitoring Well Construction Information

WELL DESIGNATION MW-13

PROJECT EEC - South Cass Lake

DRILLER Thein Well Company

COMPLETION DATE 12/18/2003

Elev.(± 0.01') _____
(Grade Elevation)

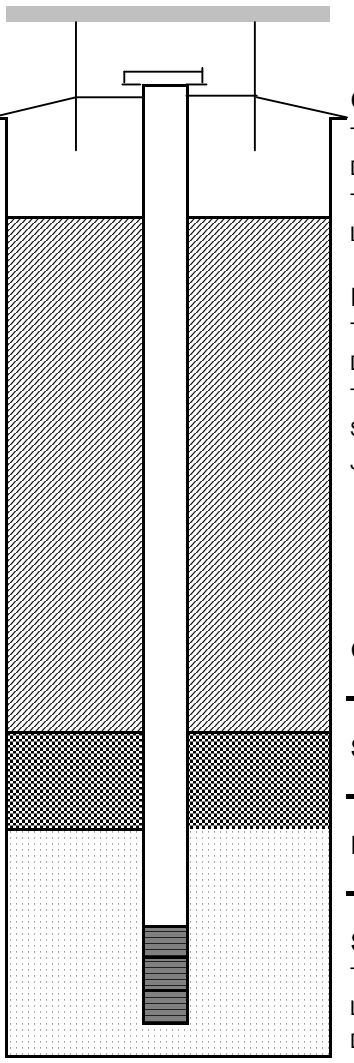
Elev.(± 0.01') _____
(Top of Inner Casing w/o Cover)

State Plane Coord.: N 652003.9910, E 2243743.3980

Method of Advance: Hollow Stem Auger

Borehole Diameter: 8 inches

Drilling Fluid: None



Depth to Bottom of Grout : 20 feet

Depth to Bottom of Seal : 22 feet

Depth to top of Screen : 24 feet

Depth to Bottom of Boring : 34 feet

Depth to First Water Encountered during Drilling : 28 feet

Depth to Water Level before Installation : 28 feet

**Note: All depths are from Ground Level

CONCRETE SURFACE SEAL:
Y/N: Y

OUTER CASING:

Type	Carbon Steel
Diameter	4 inches
Total Length	5 feet
Lock	Yes

INNER CASING:

Type	PVC
Diameter	2-inch
Total Length	24 feet
Sections Used	3
Joints	2

GROUT ABOVE SEAL: Neat Cement Grout

SEALING MATERIAL: Bentonite Chips

FILTER MATERIAL: # 30 Red Flint Sand

SCREEN:

Type	PVC
Length	10 feet
Diameter	2-inch
Slot Size	0.01-inch

PUMP:

Type	N/A
Length	N/A
Diameter	N/A

METHOD OF DEVELOPMENT: Surge with weighted bailer and bailed.

CONSTRUCTION NOTES:

APPENDIX B – ANALYTICAL LABORATORY REPORTS

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

June 18, 2009

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

RE: Project: SOUTH CASS LAKE
Pace Project No.: 4018193

Dear Barry Power:
Enclosed are the analytical results for sample(s) received by the laboratory on June 05, 2009. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC 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,

Steven Mleczko for
Brian Basten
brian.basten@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.: 4018193

Green Bay Certification IDs

Wisconsin DATCP Certification #: 105-444
Wisconsin DATCP Certification #: 105-444
Wisconsin Certification #: 405132750
Wisconsin Certification #: 405132750
South Carolina Certification #: 83006001
South Carolina Certification #: 83006001
North Dakota Certification #: R-200
North Dakota Certification #: R-150
North Carolina Certification #: 503
North Carolina Certification #: 503
New York Certification #: 11887
New York Certification #: 11888
Minnesota Certification #: 055-999-334
Minnesota Certification #: 055-999-334
Louisiana Certification #: 04169
Louisiana Certification #: 04168
Kentucky Certification #: 83
Kentucky Certification #: 82
Illinois Certification #: 200051
Illinois Certification #: 200050
Florida/NELAP Certification #: E87951
Florida/NELAP Certification #: E87948

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Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: SOUTH CASS LAKE
Pace Project No.: 4018193

Lab ID	Sample ID	Matrix	Date Collected	Date Received
4018193001	**MW-1**	Water	06/04/09 00:00	06/05/09 08:50
4018193002	**MW-2**	Water	06/04/09 00:00	06/05/09 08:50
4018193003	**MW-4**	Water	06/04/09 00:00	06/05/09 08:50
4018193004	**MW-6**	Water	06/04/09 00:00	06/05/09 08:50
4018193005	**MW-7**	Water	06/04/09 00:00	06/05/09 08:50
4018193006	**MW-8**	Water	06/04/09 00:00	06/05/09 08:50
4018193007	**MW-9**	Water	06/04/09 00:00	06/05/09 08:50
4018193008	**MW-10**	Water	06/04/09 00:00	06/05/09 08:50
4018193009	**FIELD BLANK**	Water	06/04/09 00:00	06/05/09 08:50
4018193010	**TRIP BLANK**	Water	06/04/09 00:00	06/05/09 08:50

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SAMPLE ANALYTE COUNT

Project: SOUTH CASS LAKE
Pace Project No.: 4018193

Lab ID	Sample ID	Method	Analysts	Analytes Reported
4018193001	**MW-1**	Extended Range DRO	DAL	1
		WI MOD GRO	SES	6
4018193002	**MW-2**	Extended Range DRO	DAL	1
		WI MOD GRO	SES	6
4018193003	**MW-4**	Extended Range DRO	DAL	1
		WI MOD GRO	SES	6
4018193004	**MW-6**	Extended Range DRO	DAL	1
		WI MOD GRO	SES	6
4018193005	**MW-7**	Extended Range DRO	DAL	1
		WI MOD GRO	SES	6
4018193006	**MW-8**	Extended Range DRO	DAL	1
		WI MOD GRO	SES	6
4018193007	**MW-9**	Extended Range DRO	DAL	1
		WI MOD GRO	SES	6
4018193008	**MW-10**	Extended Range DRO	DAL	1
		WI MOD GRO	SES	6
4018193009	**FIELD BLANK**	Extended Range DRO	DAL	1
		WI MOD GRO	SES	6
4018193010	**TRIP BLANK**	WI MOD GRO	SES	6

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ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4018193

Sample: MW-1 **Lab ID: 4018193001** Collected: 06/04/09 00:00 Received: 06/05/09 08:50 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)	**91.6**	ug/L	75.5	1	06/11/09 15:06	06/17/09 12:30		
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/09/09 19:28	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/09/09 19:28	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/09/09 19:28	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/09/09 19:28	1330-20-7	
o-Xylene	**<1.0**	ug/L	1.0	1		06/09/09 19:28	95-47-6	
a,a,a-Trifluorotoluene (S)	99	%	80-120	1		06/09/09 19:28	98-08-8	

Sample: MW-2 **Lab ID: 4018193002** Collected: 06/04/09 00:00 Received: 06/05/09 08:50 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)	**159**	ug/L	75.5	1	06/11/09 15:14	06/17/09 13:07		
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/09/09 19:54	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/09/09 19:54	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/09/09 19:54	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/09/09 19:54	1330-20-7	
o-Xylene	**<1.0**	ug/L	1.0	1		06/09/09 19:54	95-47-6	
a,a,a-Trifluorotoluene (S)	98	%	80-120	1		06/09/09 19:54	98-08-8	

Sample: MW-4 **Lab ID: 4018193003** Collected: 06/04/09 00:00 Received: 06/05/09 08:50 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)	**137**	ug/L	76.2	1	06/11/09 15:14	06/17/09 13:19		
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/09/09 20:19	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/09/09 20:19	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/09/09 20:19	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/09/09 20:19	1330-20-7	
o-Xylene	**<1.0**	ug/L	1.0	1		06/09/09 20:19	95-47-6	
a,a,a-Trifluorotoluene (S)	99	%	80-120	1		06/09/09 20:19	98-08-8	

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

ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4018193

Sample: MW-6 **Lab ID: 4018193004** Collected: 06/04/09 00:00 Received: 06/05/09 08:50 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)	**209**	ug/L	76.9	1	06/11/09 15:15	06/17/09 13:31		
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/09/09 20:45	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/09/09 20:45	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/09/09 20:45	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/09/09 20:45	1330-20-7	
o-Xylene	**<1.0**	ug/L	1.0	1		06/09/09 20:45	95-47-6	
a,a,a-Trifluorotoluene (S)	99	%	80-120	1		06/09/09 20:45	98-08-8	

Sample: MW-7 **Lab ID: 4018193005** Collected: 06/04/09 00:00 Received: 06/05/09 08:50 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	75.5	1	06/11/09 15:15	06/17/09 13:43		
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/09/09 21:10	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/09/09 21:10	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/09/09 21:10	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/09/09 21:10	1330-20-7	
o-Xylene	**<1.0**	ug/L	1.0	1		06/09/09 21:10	95-47-6	
a,a,a-Trifluorotoluene (S)	100	%	80-120	1		06/09/09 21:10	98-08-8	

Sample: MW-8 **Lab ID: 4018193006** Collected: 06/04/09 00:00 Received: 06/05/09 08:50 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)	**143**	ug/L	76.9	1	06/11/09 15:15	06/17/09 13:55		
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/09/09 21:36	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/09/09 21:36	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/09/09 21:36	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/09/09 21:36	1330-20-7	
o-Xylene	**<1.0**	ug/L	1.0	1		06/09/09 21:36	95-47-6	
a,a,a-Trifluorotoluene (S)	100	%	80-120	1		06/09/09 21:36	98-08-8	

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ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4018193

Sample: MW-9 **Lab ID: 4018193007** Collected: 06/04/09 00:00 Received: 06/05/09 08:50 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)	**1860**	ug/L	75.5	1	06/11/09 15:15	06/17/09 14:07		
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**132**	ug/L	1.0	1		06/09/09 22:01	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/09/09 22:01	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/09/09 22:01	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/09/09 22:01	1330-20-7	
o-Xylene	**<1.0**	ug/L	1.0	1		06/09/09 22:01	95-47-6	
a,a,a-Trifluorotoluene (S)	96	%	80-120	1		06/09/09 22:01	98-08-8	

Sample: MW-10 **Lab ID: 4018193008** Collected: 06/04/09 00:00 Received: 06/05/09 08:50 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)	**50800**	ug/L	2260	30	06/11/09 15:16	06/17/09 14:20		
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**305**	ug/L	1.0	1		06/09/09 22:27	71-43-2	
Ethylbenzene	**15.0**	ug/L	1.0	1		06/09/09 22:27	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/09/09 22:27	108-88-3	
m&p-Xylene	**3.4**	ug/L	2.0	1		06/09/09 22:27	1330-20-7	
o-Xylene	**<1.0**	ug/L	1.0	1		06/09/09 22:27	95-47-6	
a,a,a-Trifluorotoluene (S)	112	%	80-120	1		06/09/09 22:27	98-08-8	

Sample: FIELD BLANK **Lab ID: 4018193009** Collected: 06/04/09 00:00 Received: 06/05/09 08:50 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)	**106**	ug/L	75.5	1	06/11/09 15:16	06/17/09 14:32		
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/09/09 22:52	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/09/09 22:52	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/09/09 22:52	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/09/09 22:52	1330-20-7	
o-Xylene	**<1.0**	ug/L	1.0	1		06/09/09 22:52	95-47-6	
a,a,a-Trifluorotoluene (S)	96	%	80-120	1		06/09/09 22:52	98-08-8	

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ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4018193

Sample: TRIP BLANK **Lab ID: 4018193010** Collected: 06/04/09 00:00 Received: 06/05/09 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
WIGRO GCV	Analytical Method: WI MOD GRO							
Benzene	**<1.0**	ug/L	1.0	1		06/09/09 23:18	71-43-2	
Ethylbenzene	**<1.0**	ug/L	1.0	1		06/09/09 23:18	100-41-4	
Toluene	**<1.0**	ug/L	1.0	1		06/09/09 23:18	108-88-3	
m&p-Xylene	**<2.0**	ug/L	2.0	1		06/09/09 23:18	1330-20-7	
o-Xylene	**<1.0**	ug/L	1.0	1		06/09/09 23:18	95-47-6	
a,a,a-Trifluorotoluene (S)	99	%	80-120	1		06/09/09 23:18	98-08-8	

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QUALITY CONTROL DATA

Project: SOUTH CASS LAKE
Pace Project No.: 4018193

QC Batch: GCV/3507 Analysis Method: WI MOD GRO
QC Batch Method: WI MOD GRO Analysis Description: WIGRO GCV Water
Associated Lab Samples: 4018193001, 4018193002, 4018193003, 4018193004, 4018193005, 4018193006, 4018193007, 4018193008, 4018193009, 4018193010

METHOD BLANK: 167437 Matrix: Water
Associated Lab Samples: 4018193001, 4018193002, 4018193003, 4018193004, 4018193005, 4018193006, 4018193007, 4018193008, 4018193009, 4018193010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	<1.0	1.0	06/09/09 13:56	
Ethylbenzene	ug/L	<1.0	1.0	06/09/09 13:56	
m&p-Xylene	ug/L	<2.0	2.0	06/09/09 13:56	
o-Xylene	ug/L	<1.0	1.0	06/09/09 13:56	
Toluene	ug/L	<1.0	1.0	06/09/09 13:56	
a,a,a-Trifluorotoluene (S)	%	101	80-120	06/09/09 13:56	

LABORATORY CONTROL SAMPLE & LCSD: 167438 167439

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	ug/L	20	19.4	19.3	97	96	80-120	.6	20	
Ethylbenzene	ug/L	20	18.6	18.6	93	93	80-120	.03	20	
m&p-Xylene	ug/L	40	37.3	37.4	93	93	80-120	.3	20	
o-Xylene	ug/L	20	18.8	18.8	94	94	80-120	.1	20	
Toluene	ug/L	20	18.9	18.9	95	94	80-120	.4	20	
a,a,a-Trifluorotoluene (S)	%				99	99	80-120			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 167910 167911

Parameter	Units	4018210004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	1130	400	400	1450	1490	80	91	28-167	3	20	
Ethylbenzene	ug/L	113	400	400	497	501	96	97	51-151	.9	20	
m&p-Xylene	ug/L	1100	800	800	1820	1860	91	96	23-175	2	20	
o-Xylene	ug/L	675	400	400	1030	1050	89	95	40-154	2	20	
Toluene	ug/L	2240	400	400	2510	2580	68	87	54-151	3	20	
a,a,a-Trifluorotoluene (S)	%						100	101	80-120			

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QUALITY CONTROL DATA

Project: SOUTH CASS LAKE
Pace Project No.: 4018193

QC Batch: OEXT/4456 Analysis Method: Extended Range DRO
QC Batch Method: Extended Range DRO Analysis Description: Extended Range DRO GCS
Associated Lab Samples: 4018193001, 4018193002, 4018193003, 4018193004, 4018193005, 4018193006, 4018193007, 4018193008, 4018193009

METHOD BLANK: 168471 Matrix: Water
Associated Lab Samples: 4018193001, 4018193002, 4018193003, 4018193004, 4018193005, 4018193006, 4018193007, 4018193008, 4018193009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Extended Range DRO (C10-C40)	ug/L	<80.0	80.0	06/17/09 12:30	

LABORATORY CONTROL SAMPLE & LCSD: 168472 168473

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	1500	1680	94	105	75-115	11	20	

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QUALIFIERS

Project: SOUTH CASS LAKE
Pace Project No.: 4018193

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.

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

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

Sample Condition Upon Receipt

Pace Analytical

Client Name: NREC Project # 4018193

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

Tracking #: _____

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 _____

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

Cooler Temperature 0.5 **Biological Tissue is Frozen:** Yes No

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 6/5/09 MRN

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:** 6-5-09

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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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

1158808

Section A Required Client Information:

Company: NREC
Address: 1409 HAMMOND AVE Ste 110
Superior, WI 54880
Email To: bpower@nrecompany.com
Phone: 7153993254 Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Barry Power
Copy To:
Purchase Order No.:
Project Name: South Cass Lake
Project Number:

Section C Invoice Information:

Attention: Barry Power
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	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)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																			Y/N: N	N	4018193
																			Analysis Test: BTEX	ERDRO	
1	MW-1	001	WT		6/4/09					4				X					X	X	1-1AgB, 3-40mlB
2	MW-2	002																			
3	MW-4	003																			
4	MW-6	004																			
5	MW-7	005																			
6	MW-8	006																			
7	MW-9	007																			
8	MW-10	008																			
9	FIELD BLANK	009																			
10	Trip Blank	010	WT		6/4/09					4				X					X		2-40mlT-B.
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)
	Jesse P. Martus	6/4/09	1417		6/4/09	1417				
		6/4/09	1600	PDS	6/4/09	1600				
	PDS/Walteo	6/5/09	850		6/5/09	850	0.5	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Jesse Martus
SIGNATURE of SAMPLER: Jesse P. Martus
DATE Signed (MM/DD/YY): 6/4/09

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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November 11, 2009

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

RE: Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Dear Barry Power:
Enclosed are the analytical results for sample(s) received by the laboratory on October 29, 2009. The results relate only to the samples included in this report. Results reported herein conform to the most current NELAC 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,

Brian Basten

brian.basten@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Green Bay Certification IDs

California Certification #: 09268CA
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 11887
New York Certification #: 11888
North Carolina Certification #: 503
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
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SAMPLE SUMMARY

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Lab ID	Sample ID	Matrix	Date Collected	Date Received
4024604001	**MW-1**	Water	10/26/09 00:00	10/29/09 08:45
4024604002	**MW-4**	Water	10/26/09 00:00	10/29/09 08:45
4024604003	**MW-6**	Water	10/26/09 00:00	10/29/09 08:45
4024604004	**MW-7**	Water	10/26/09 00:00	10/29/09 08:45
4024604005	**MW-8**	Water	10/26/09 00:00	10/29/09 08:45
4024604006	**MW-9**	Water	10/26/09 00:00	10/29/09 08:45
4024604007	**MW-10**	Water	10/26/09 00:00	10/29/09 08:45
4024604008	**USGS 1A**	Water	10/26/09 00:00	10/29/09 08:45
4024604009	**USGS 2A**	Water	10/26/09 00:00	10/29/09 08:45
4024604010	**USGS 3A**	Water	10/26/09 00:00	10/29/09 08:45
4024604011	**USGS 4A**	Water	10/26/09 00:00	10/29/09 08:45
4024604012	**SCL FIELD BLANK**	Water	10/26/09 00:00	10/29/09 08:45
4024604013	**TRIP BLANK**	Water	10/26/09 00:00	10/29/09 08:45

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SAMPLE ANALYTE COUNT

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
4024604001	**MW-1**	EPA 300.0	DDY	3	PASI-G
		EPA 8015B Modified	SES	1	PASI-G
		EPA 8021	SES	6	PASI-G
		Extended Range DRO	DAL	1	PASI-G
		HACH 8146	DEY	1	PASI-G
4024604002	**MW-4**	EPA 300.0	DDY	3	PASI-G
		EPA 8015B Modified	SES	1	PASI-G
		EPA 8021	SES	6	PASI-G
		Extended Range DRO	DAL	1	PASI-G
		HACH 8146	DEY	1	PASI-G
4024604003	**MW-6**	EPA 300.0	DDY	3	PASI-G
		EPA 8015B Modified	SES	1	PASI-G
		EPA 8021	SES	6	PASI-G
		Extended Range DRO	DAL	1	PASI-G
		HACH 8146	DEY	1	PASI-G
4024604004	**MW-7**	EPA 300.0	DDY	3	PASI-G
		EPA 8015B Modified	SES	1	PASI-G
		EPA 8021	SES	6	PASI-G
		Extended Range DRO	DAL	1	PASI-G
		HACH 8146	DEY	1	PASI-G
4024604005	**MW-8**	EPA 300.0	DDY	3	PASI-G
		EPA 8015B Modified	SES	1	PASI-G
		EPA 8021	SES	6	PASI-G
		Extended Range DRO	DAL	1	PASI-G
		HACH 8146	DEY	1	PASI-G
4024604006	**MW-9**	EPA 300.0	DDY	3	PASI-G
		EPA 8015B Modified	SES	1	PASI-G
		EPA 8021	SES	6	PASI-G
		Extended Range DRO	DAL	1	PASI-G
		HACH 8146	DEY	1	PASI-G
4024604007	**MW-10**	EPA 300.0	DDY	3	PASI-G
		EPA 8015B Modified	SES	1	PASI-G
		EPA 8021	SES	6	PASI-G
		Extended Range DRO	DAL	1	PASI-G
		HACH 8146	DEY	1	PASI-G
4024604008	**USGS 1A**	EPA 300.0	DDY	3	PASI-G
		EPA 8015B Modified	SES	1	PASI-G

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SAMPLE ANALYTE COUNT

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8021	SES	6	PASI-G
		Extended Range DRO	DAL	1	PASI-G
		HACH 8146	DEY	1	PASI-G
4024604009	**USGS 2A**	EPA 300.0	DDY	3	PASI-G
		EPA 8015B Modified	SES	1	PASI-G
		EPA 8021	SES	6	PASI-G
		Extended Range DRO	DAL	1	PASI-G
		HACH 8146	DEY	1	PASI-G
4024604010	**USGS 3A**	EPA 300.0	DDY	3	PASI-G
		EPA 8015B Modified	SES	1	PASI-G
		EPA 8021	SES	6	PASI-G
		Extended Range DRO	DAL	1	PASI-G
		HACH 8146	DEY	1	PASI-G
4024604011	**USGS 4A**	EPA 300.0	DDY	3	PASI-G
		EPA 8015B Modified	SES	1	PASI-G
		EPA 8021	SES	6	PASI-G
		Extended Range DRO	DAL	1	PASI-G
		HACH 8146	DEY	1	PASI-G
4024604012	**SCL FIELD BLANK**	EPA 8021	SES	6	PASI-G
4024604013	**TRIP BLANK**	EPA 8021	SES	6	PASI-G

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PROJECT NARRATIVE

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Method: **Extended Range DRO**
Description: Extended Range DRO GCS
Client: NATURAL RESOURCES ENGINEERING CO.
Date: November 11, 2009

General Information:
11 samples were analyzed for Extended Range DRO. 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 Extended Range DRO 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:

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PROJECT NARRATIVE

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Method: **EPA 8015B Modified**
Description: Methane, Ethane, Ethene GCV
Client: NATURAL RESOURCES ENGINEERING CO.
Date: November 11, 2009

General Information:
11 samples were analyzed for EPA 8015B Modified. All samples were received in acceptable condition with any exceptions noted below.

pH: Post-analysis pH measurement indicates insufficient VOA sample preservation.
- MW-4 (Lab ID: 4024604002)

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:

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PROJECT NARRATIVE

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Method: **EPA 8021**
Description: 8021 GCV Short List
Client: NATURAL RESOURCES ENGINEERING CO.
Date: November 11, 2009

General Information:
13 samples were analyzed for EPA 8021. 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:

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PROJECT NARRATIVE

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Method: **HACH 8146**
Description: Iron, Ferrous
Client: NATURAL RESOURCES ENGINEERING CO.
Date: November 11, 2009

General Information:
11 samples were analyzed for HACH 8146. 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.

H6: Analysis initiated more than 15 minutes after sample collection.
- MW-1 (Lab ID: 4024604001)
- MW-10 (Lab ID: 4024604007)
- MW-4 (Lab ID: 4024604002)
- MW-6 (Lab ID: 4024604003)
- MW-7 (Lab ID: 4024604004)
- MW-8 (Lab ID: 4024604005)
- MW-9 (Lab ID: 4024604006)
- USGS 1A (Lab ID: 4024604008)
- USGS 2A (Lab ID: 4024604009)
- USGS 3A (Lab ID: 4024604010)
- USGS 4A (Lab ID: 4024604011)

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.

QC Batch: WET/4893

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 4024604001

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
- MS (Lab ID: 228841)
  - Iron, Ferrous
- MSD (Lab ID: 228842)
  - Iron, Ferrous

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: SOUTH CASS LAKE
Pace Project No.: 4024604

Method: **EPA 300.0**
Description: 300.0 IC Anions
Client: NATURAL RESOURCES ENGINEERING CO.
Date: November 11, 2009

General Information:
11 samples were analyzed for EPA 300.0. 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.

H3: Sample was received outside the recognized method holding time.
- MW-1 (Lab ID: 4024604001)
- MW-10 (Lab ID: 4024604007)
- MW-4 (Lab ID: 4024604002)
- MW-6 (Lab ID: 4024604003)
- MW-7 (Lab ID: 4024604004)
- MW-8 (Lab ID: 4024604005)
- MW-9 (Lab ID: 4024604006)
- USGS 1A (Lab ID: 4024604008)
- USGS 2A (Lab ID: 4024604009)
- USGS 3A (Lab ID: 4024604010)
- USGS 4A (Lab ID: 4024604011)

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.

QC Batch: WETA/5118

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 4024604001,4024604011

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
- MS (Lab ID: 228297)
  - Nitrate as N
- MSD (Lab ID: 228298)
  - Nitrate as N

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

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PROJECT NARRATIVE

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Method: **EPA 300.0**
Description: 300.0 IC Anions
Client: NATURAL RESOURCES ENGINEERING CO.
Date: November 11, 2009

Additional Comments:

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PROJECT NARRATIVE

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: NATURAL RESOURCES ENGINEERING CO.
Date: November 11, 2009

General Information:
11 samples were analyzed for EPA 300.0. 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: SOUTH CASS LAKE
Pace Project No.: 4024604

Sample: MW-1 **Lab ID: 4024604001** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	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)	**<23.1**	ug/L	75.5	23.1	1	11/02/09 13:30	11/11/09 08:58		
8021 GCV Short List	Analytical Method: EPA 8021								
Benzene	**<0.23**	ug/L	1.0	0.23	1		10/31/09 01:19	71-43-2	
Ethylbenzene	**<0.40**	ug/L	1.0	0.40	1		10/31/09 01:19	100-41-4	
Toluene	**<0.36**	ug/L	1.0	0.36	1		10/31/09 01:19	108-88-3	
m&p-Xylene	**<0.74**	ug/L	2.0	0.74	1		10/31/09 01:19	1330-20-7	
o-Xylene	**<0.36**	ug/L	1.0	0.36	1		10/31/09 01:19	95-47-6	
a,a,a-Trifluorotoluene (S)	102	%	80-120		1		10/31/09 01:19	98-08-8	
Methane, Ethane, Ethene GCV	Analytical Method: EPA 8015B Modified								
Methane	**<0.93**	ug/L	2.8	0.93	1		11/06/09 07:31	74-82-8	
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**0.024J**	mg/L	0.050	0.018	1		10/30/09 09:00		H6,M0
300.0 IC Anions	Analytical Method: EPA 300.0								
Nitrate as N	**0.20J**	mg/L	0.40	0.20	1		10/29/09 19:01	14797-55-8	H3
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**2.7J**	mg/L	4.0	2.0	1		10/29/09 19:01	16887-00-6	
Sulfate	**3.3J**	mg/L	4.0	2.0	1		10/29/09 19:01	14808-79-8	

Sample: MW-4 **Lab ID: 4024604002** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	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)	**<23.1**	ug/L	75.5	23.1	1	11/02/09 13:30	11/11/09 09:09		
8021 GCV Short List	Analytical Method: EPA 8021								
Benzene	**<0.23**	ug/L	1.0	0.23	1		10/31/09 01:44	71-43-2	
Ethylbenzene	**<0.40**	ug/L	1.0	0.40	1		10/31/09 01:44	100-41-4	
Toluene	**<0.36**	ug/L	1.0	0.36	1		10/31/09 01:44	108-88-3	
m&p-Xylene	**<0.74**	ug/L	2.0	0.74	1		10/31/09 01:44	1330-20-7	
o-Xylene	**<0.36**	ug/L	1.0	0.36	1		10/31/09 01:44	95-47-6	
a,a,a-Trifluorotoluene (S)	102	%	80-120		1		10/31/09 01:44	98-08-8	
Methane, Ethane, Ethene GCV	Analytical Method: EPA 8015B Modified								
Methane	**<0.93**	ug/L	2.8	0.93	1		11/06/09 07:47	74-82-8	pH

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ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Sample: MW-4 **Lab ID: 4024604002** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.018**	mg/L	0.050	0.018	1		10/30/09 09:00		H6
300.0 IC Anions	Analytical Method: EPA 300.0								
Nitrate as N	**6.2**	mg/L	0.40	0.20	1		10/29/09 19:44	14797-55-8	H3
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**2.7J**	mg/L	4.0	2.0	1		10/29/09 19:44	16887-00-6	
Sulfate	**6.6**	mg/L	4.0	2.0	1		10/29/09 19:44	14808-79-8	

Sample: MW-6 **Lab ID: 4024604003** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	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)	**<23.1**	ug/L	75.5	23.1	1	11/02/09 13:30	11/11/09 09:20		
8021 GCV Short List	Analytical Method: EPA 8021								
Benzene	**<0.23**	ug/L	1.0	0.23	1		10/30/09 20:10	71-43-2	
Ethylbenzene	**<0.40**	ug/L	1.0	0.40	1		10/30/09 20:10	100-41-4	
Toluene	**<0.36**	ug/L	1.0	0.36	1		10/30/09 20:10	108-88-3	
m&p-Xylene	**<0.74**	ug/L	2.0	0.74	1		10/30/09 20:10	1330-20-7	
o-Xylene	**<0.36**	ug/L	1.0	0.36	1		10/30/09 20:10	95-47-6	
a,a,a-Trifluorotoluene (S)	101	%	80-120		1		10/30/09 20:10	98-08-8	
Methane, Ethane, Ethene GCV	Analytical Method: EPA 8015B Modified								
Methane	**<0.93**	ug/L	2.8	0.93	1		11/06/09 07:56	74-82-8	
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.018**	mg/L	0.050	0.018	1		10/30/09 09:00		H6
300.0 IC Anions	Analytical Method: EPA 300.0								
Nitrate as N	**2.0**	mg/L	0.40	0.20	1		10/29/09 19:58	14797-55-8	H3
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**2.9J**	mg/L	4.0	2.0	1		10/29/09 19:58	16887-00-6	
Sulfate	**5.9**	mg/L	4.0	2.0	1		10/29/09 19:58	14808-79-8	

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ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Sample: MW-7 **Lab ID: 4024604004** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	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)	**<23.1**	ug/L	75.5	23.1	1	11/02/09 13:30	11/11/09 09:31		
8021 GCV Short List	Analytical Method: EPA 8021								
Benzene	**<0.23**	ug/L	1.0	0.23	1		10/30/09 20:35	71-43-2	
Ethylbenzene	**<0.40**	ug/L	1.0	0.40	1		10/30/09 20:35	100-41-4	
Toluene	**<0.36**	ug/L	1.0	0.36	1		10/30/09 20:35	108-88-3	
m&p-Xylene	**<0.74**	ug/L	2.0	0.74	1		10/30/09 20:35	1330-20-7	
o-Xylene	**<0.36**	ug/L	1.0	0.36	1		10/30/09 20:35	95-47-6	
a,a,a-Trifluorotoluene (S)	101	%	80-120		1		10/30/09 20:35	98-08-8	
Methane, Ethane, Ethene GCV	Analytical Method: EPA 8015B Modified								
Methane	**<0.93**	ug/L	2.8	0.93	1		11/06/09 08:05	74-82-8	
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.018**	mg/L	0.050	0.018	1		10/30/09 09:00		H6
300.0 IC Anions	Analytical Method: EPA 300.0								
Nitrate as N	**0.61**	mg/L	0.40	0.20	1		10/29/09 20:12	14797-55-8	H3
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.1J**	mg/L	4.0	2.0	1		10/29/09 20:12	16887-00-6	
Sulfate	**7.8**	mg/L	4.0	2.0	1		10/29/09 20:12	14808-79-8	

Sample: MW-8 **Lab ID: 4024604005** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	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)	**<23.1**	ug/L	75.5	23.1	1	11/02/09 13:30	11/11/09 09:43		
8021 GCV Short List	Analytical Method: EPA 8021								
Benzene	**<0.23**	ug/L	1.0	0.23	1		10/30/09 21:02	71-43-2	
Ethylbenzene	**<0.40**	ug/L	1.0	0.40	1		10/30/09 21:02	100-41-4	
Toluene	**<0.36**	ug/L	1.0	0.36	1		10/30/09 21:02	108-88-3	
m&p-Xylene	**<0.74**	ug/L	2.0	0.74	1		10/30/09 21:02	1330-20-7	
o-Xylene	**<0.36**	ug/L	1.0	0.36	1		10/30/09 21:02	95-47-6	
a,a,a-Trifluorotoluene (S)	105	%	80-120		1		10/30/09 21:02	98-08-8	
Methane, Ethane, Ethene GCV	Analytical Method: EPA 8015B Modified								
Methane	**<0.93**	ug/L	2.8	0.93	1		11/06/09 08:14	74-82-8	

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ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Sample: MW-8 **Lab ID: 4024604005** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.018**	mg/L	0.050	0.018	1		10/30/09 09:00		H6
300.0 IC Anions	Analytical Method: EPA 300.0								
Nitrate as N	**0.33J**	mg/L	0.40	0.20	1		10/29/09 20:26	14797-55-8	H3
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.2J**	mg/L	4.0	2.0	1		10/29/09 20:26	16887-00-6	
Sulfate	**10**	mg/L	4.0	2.0	1		10/29/09 20:26	14808-79-8	

Sample: MW-9 **Lab ID: 4024604006** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	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)	**831**	ug/L	75.5	23.1	1	11/02/09 13:30	11/11/09 09:54		
8021 GCV Short List	Analytical Method: EPA 8021								
Benzene	**<0.23**	ug/L	1.0	0.23	1		10/31/09 02:10	71-43-2	
Ethylbenzene	**<0.40**	ug/L	1.0	0.40	1		10/31/09 02:10	100-41-4	
Toluene	**<0.36**	ug/L	1.0	0.36	1		10/31/09 02:10	108-88-3	
m&p-Xylene	**<0.74**	ug/L	2.0	0.74	1		10/31/09 02:10	1330-20-7	
o-Xylene	**<0.36**	ug/L	1.0	0.36	1		10/31/09 02:10	95-47-6	
a,a,a-Trifluorotoluene (S)	106	%	80-120		1		10/31/09 02:10	98-08-8	
Methane, Ethane, Ethene GCV	Analytical Method: EPA 8015B Modified								
Methane	**543**	ug/L	14.0	4.6	5		11/06/09 09:58	74-82-8	
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**0.021J**	mg/L	0.050	0.018	1		10/30/09 09:00		H6
300.0 IC Anions	Analytical Method: EPA 300.0								
Nitrate as N	**<0.20**	mg/L	0.40	0.20	1		10/29/09 20:40	14797-55-8	H3
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.9J**	mg/L	4.0	2.0	1		10/29/09 20:40	16887-00-6	
Sulfate	**4.6**	mg/L	4.0	2.0	1		10/29/09 20:40	14808-79-8	

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ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Sample: MW-10 **Lab ID: 4024604007** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	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)	**22400**	ug/L	1510	463	20	11/02/09 13:30	11/11/09 11:01		
8021 GCV Short List	Analytical Method: EPA 8021								
Benzene	**159**	ug/L	1.0	0.23	1		10/31/09 02:36	71-43-2	
Ethylbenzene	**5.6**	ug/L	1.0	0.40	1		10/31/09 02:36	100-41-4	
Toluene	**<0.36**	ug/L	1.0	0.36	1		10/31/09 02:36	108-88-3	
m&p-Xylene	**3.0**	ug/L	2.0	0.74	1		10/31/09 02:36	1330-20-7	
o-Xylene	**<0.36**	ug/L	1.0	0.36	1		10/31/09 02:36	95-47-6	
a,a,a-Trifluorotoluene (S)	103	%	80-120		1		10/31/09 02:36	98-08-8	
Methane, Ethane, Ethene GCV	Analytical Method: EPA 8015B Modified								
Methane	**5100**	ug/L	140	46.3	50		11/06/09 10:07	74-82-8	
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**1.3**	mg/L	0.25	0.090	5		10/30/09 09:00		H6
300.0 IC Anions	Analytical Method: EPA 300.0								
Nitrate as N	**0.30J**	mg/L	0.40	0.20	1		10/29/09 21:23	14797-55-8	H3
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.2J**	mg/L	4.0	2.0	1		10/29/09 21:23	16887-00-6	
Sulfate	**2.9J**	mg/L	4.0	2.0	1		10/29/09 21:23	14808-79-8	

Sample: USGS 1A **Lab ID: 4024604008** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	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)	**4930**	ug/L	267	81.7	3	11/02/09 13:30	11/11/09 11:12		
8021 GCV Short List	Analytical Method: EPA 8021								
Benzene	**776**	ug/L	5.0	1.1	5		10/31/09 00:01	71-43-2	
Ethylbenzene	**142**	ug/L	5.0	2.0	5		10/31/09 00:01	100-41-4	
Toluene	**<1.8**	ug/L	5.0	1.8	5		10/31/09 00:01	108-88-3	
m&p-Xylene	**<3.7**	ug/L	10.0	3.7	5		10/31/09 00:01	1330-20-7	
o-Xylene	**<1.8**	ug/L	5.0	1.8	5		10/31/09 00:01	95-47-6	
a,a,a-Trifluorotoluene (S)	102	%	80-120		5		10/31/09 00:01	98-08-8	
Methane, Ethane, Ethene GCV	Analytical Method: EPA 8015B Modified								
Methane	**11700**	ug/L	280	92.7	100		11/06/09 10:16	74-82-8	

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ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Sample: USGS 1A **Lab ID: 4024604008** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.018**	mg/L	0.050	0.018	1		10/30/09 09:00		H6
300.0 IC Anions	Analytical Method: EPA 300.0								
Nitrate as N	**<0.20**	mg/L	0.40	0.20	1		10/29/09 21:37	14797-55-8	H3
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.5J**	mg/L	4.0	2.0	1		10/29/09 21:37	16887-00-6	
Sulfate	**2.1J**	mg/L	4.0	2.0	1		10/29/09 21:37	14808-79-8	

Sample: USGS 2A **Lab ID: 4024604009** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	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)	**5520**	ug/L	302	92.5	4	11/02/09 13:30	11/11/09 11:23		
8021 GCV Short List	Analytical Method: EPA 8021								
Benzene	**705**	ug/L	5.0	1.1	5		11/02/09 08:56	71-43-2	
Ethylbenzene	**<2.0**	ug/L	5.0	2.0	5		11/02/09 08:56	100-41-4	
Toluene	**<1.8**	ug/L	5.0	1.8	5		11/02/09 08:56	108-88-3	
m&p-Xylene	**<3.7**	ug/L	10.0	3.7	5		11/02/09 08:56	1330-20-7	
o-Xylene	**<1.8**	ug/L	5.0	1.8	5		11/02/09 08:56	95-47-6	
a,a,a-Trifluorotoluene (S)	93	%	80-120		5		11/02/09 08:56	98-08-8	
Methane, Ethane, Ethene GCV	Analytical Method: EPA 8015B Modified								
Methane	**5480**	ug/L	140	46.3	50		11/06/09 10:24	74-82-8	
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.018**	mg/L	0.050	0.018	1		10/30/09 09:00		H6
300.0 IC Anions	Analytical Method: EPA 300.0								
Nitrate as N	**<0.20**	mg/L	0.40	0.20	1		10/29/09 21:51	14797-55-8	H3
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.7J**	mg/L	4.0	2.0	1		10/29/09 21:51	16887-00-6	
Sulfate	**2.5J**	mg/L	4.0	2.0	1		10/29/09 21:51	14808-79-8	

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ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Sample: USGS 3A **Lab ID: 4024604010** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	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)	**4060**	ug/L	229	70.0	3	11/02/09 13:30	11/11/09 11:35		
8021 GCV Short List	Analytical Method: EPA 8021								
Benzene	**147**	ug/L	1.0	0.23	1		10/30/09 21:53	71-43-2	
Ethylbenzene	**0.74J**	ug/L	1.0	0.40	1		10/30/09 21:53	100-41-4	
Toluene	**<0.36**	ug/L	1.0	0.36	1		10/30/09 21:53	108-88-3	
m&p-Xylene	**1.5J**	ug/L	2.0	0.74	1		10/30/09 21:53	1330-20-7	
o-Xylene	**<0.36**	ug/L	1.0	0.36	1		10/30/09 21:53	95-47-6	
a,a,a-Trifluorotoluene (S)	102	%	80-120		1		10/30/09 21:53	98-08-8	
Methane, Ethane, Ethene GCV	Analytical Method: EPA 8015B Modified								
Methane	**3240**	ug/L	70.0	23.2	25		11/06/09 10:33	74-82-8	
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.018**	mg/L	0.050	0.018	1		10/30/09 09:00		H6
300.0 IC Anions	Analytical Method: EPA 300.0								
Nitrate as N	**<0.20**	mg/L	0.40	0.20	1		10/29/09 22:06	14797-55-8	H3
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.5J**	mg/L	4.0	2.0	1		10/29/09 22:06	16887-00-6	
Sulfate	**2.3J**	mg/L	4.0	2.0	1		10/29/09 22:06	14808-79-8	

Sample: USGS 4A **Lab ID: 4024604011** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	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)	**1670**	ug/L	83.3	25.5	1	11/02/09 13:30	11/11/09 10:50		
8021 GCV Short List	Analytical Method: EPA 8021								
Benzene	**13.8**	ug/L	1.0	0.23	1		10/30/09 22:18	71-43-2	
Ethylbenzene	**<0.40**	ug/L	1.0	0.40	1		10/30/09 22:18	100-41-4	
Toluene	**<0.36**	ug/L	1.0	0.36	1		10/30/09 22:18	108-88-3	
m&p-Xylene	**<0.74**	ug/L	2.0	0.74	1		10/30/09 22:18	1330-20-7	
o-Xylene	**<0.36**	ug/L	1.0	0.36	1		10/30/09 22:18	95-47-6	
a,a,a-Trifluorotoluene (S)	102	%	80-120		1		10/30/09 22:18	98-08-8	
Methane, Ethane, Ethene GCV	Analytical Method: EPA 8015B Modified								
Methane	**665**	ug/L	14.0	4.6	5		11/06/09 10:42	74-82-8	

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ANALYTICAL RESULTS

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

Sample: USGS 4A **Lab ID: 4024604011** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Iron, Ferrous	Analytical Method: HACH 8146								
Iron, Ferrous	**<0.018**	mg/L	0.050	0.018	1		10/30/09 09:00		H6
300.0 IC Anions	Analytical Method: EPA 300.0								
Nitrate as N	**0.20J**	mg/L	0.40	0.20	1		10/29/09 22:20	14797-55-8	H3,M0
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**3.3J**	mg/L	4.0	2.0	1		10/29/09 22:20	16887-00-6	
Sulfate	**4.2**	mg/L	4.0	2.0	1		10/29/09 22:20	14808-79-8	

Sample: SCL FIELD BLANK **Lab ID: 4024604012** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List	Analytical Method: EPA 8021								
Benzene	**<0.23**	ug/L	1.0	0.23	1		10/30/09 22:44	71-43-2	
Ethylbenzene	**<0.40**	ug/L	1.0	0.40	1		10/30/09 22:44	100-41-4	
Toluene	**<0.36**	ug/L	1.0	0.36	1		10/30/09 22:44	108-88-3	
m&p-Xylene	**<0.74**	ug/L	2.0	0.74	1		10/30/09 22:44	1330-20-7	
o-Xylene	**<0.36**	ug/L	1.0	0.36	1		10/30/09 22:44	95-47-6	
a,a,a-Trifluorotoluene (S)	100	%	80-120		1		10/30/09 22:44	98-08-8	

Sample: TRIP BLANK **Lab ID: 4024604013** Collected: 10/26/09 00:00 Received: 10/29/09 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8021 GCV Short List	Analytical Method: EPA 8021								
Benzene	**<0.23**	ug/L	1.0	0.23	1		10/30/09 23:09	71-43-2	
Ethylbenzene	**<0.40**	ug/L	1.0	0.40	1		10/30/09 23:09	100-41-4	
Toluene	**<0.36**	ug/L	1.0	0.36	1		10/30/09 23:09	108-88-3	
m&p-Xylene	**<0.74**	ug/L	2.0	0.74	1		10/30/09 23:09	1330-20-7	
o-Xylene	**<0.36**	ug/L	1.0	0.36	1		10/30/09 23:09	95-47-6	
a,a,a-Trifluorotoluene (S)	102	%	80-120		1		10/30/09 23:09	98-08-8	

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QUALITY CONTROL DATA

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

QC Batch: GCV/4209 Analysis Method: EPA 8021
QC Batch Method: EPA 8021 Analysis Description: 8021 GCV BTEX
Associated Lab Samples: 4024604001, 4024604002, 4024604003, 4024604004, 4024604005, 4024604006, 4024604007, 4024604008, 4024604009, 4024604010, 4024604011, 4024604012, 4024604013

METHOD BLANK: 227833 Matrix: Water
Associated Lab Samples: 4024604001, 4024604002, 4024604003, 4024604004, 4024604005, 4024604006, 4024604007, 4024604008, 4024604009, 4024604010, 4024604011, 4024604012, 4024604013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/L	<0.23	1.0	10/30/09 18:53	
Ethylbenzene	ug/L	<0.40	1.0	10/30/09 18:53	
m&p-Xylene	ug/L	<0.74	2.0	10/30/09 18:53	
o-Xylene	ug/L	<0.36	1.0	10/30/09 18:53	
Toluene	ug/L	<0.36	1.0	10/30/09 18:53	
a,a,a-Trifluorotoluene (S)	%	102	80-120	10/30/09 18:53	

LABORATORY CONTROL SAMPLE & LCSD: 227834 227835

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzene	ug/L	20	20.8	20.8	104	104	80-120	.2	20	
Ethylbenzene	ug/L	20	19.4	21.4	97	107	80-120	10	20	
m&p-Xylene	ug/L	40	37.8	42.0	95	105	80-120	10	20	
o-Xylene	ug/L	20	19.1	21.1	95	106	80-120	10	20	
Toluene	ug/L	20	19.9	21.2	99	106	80-120	7	20	
a,a,a-Trifluorotoluene (S)	%				102	107	80-120			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 228492 228493

Parameter	Units	4024604008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	776	100	100	816	837	40	61	28-167	3	20	
Ethylbenzene	ug/L	142	100	100	245	232	103	90	51-151	6	20	
m&p-Xylene	ug/L	<3.7	200	200	220	206	110	103	23-175	7	20	
o-Xylene	ug/L	<1.8	100	100	107	102	107	102	40-154	5	20	
Toluene	ug/L	<1.8	100	100	107	104	107	104	54-151	3	20	
a,a,a-Trifluorotoluene (S)	%						103	100	80-120			

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QUALITY CONTROL DATA

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

QC Batch: WETA/5118 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 4024604001, 4024604002, 4024604003, 4024604004, 4024604005, 4024604006, 4024604007, 4024604008, 4024604009, 4024604010, 4024604011

METHOD BLANK: 228293 Matrix: Water
Associated Lab Samples: 4024604001, 4024604002, 4024604003, 4024604004, 4024604005, 4024604006, 4024604007, 4024604008, 4024604009, 4024604010, 4024604011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrate as N	mg/L	<0.20	0.40	10/29/09 18:33	

LABORATORY CONTROL SAMPLE: 228294

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrate as N	mg/L	2	2.1	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 228295 228296

Parameter	Units	4024604001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrate as N	mg/L	0.20J	2	2	2.2	2.2	98	100	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 228297 228298

Parameter	Units	4024604011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrate as N	mg/L	0.20J	2	2	1.9	2.0	86	88	90-110	2	20	M0

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QUALITY CONTROL DATA

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

QC Batch: WETA/5119 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 4024604001, 4024604002, 4024604003, 4024604004, 4024604005, 4024604006, 4024604007, 4024604008, 4024604009, 4024604010, 4024604011

METHOD BLANK: 228299 Matrix: Water
Associated Lab Samples: 4024604001, 4024604002, 4024604003, 4024604004, 4024604005, 4024604006, 4024604007, 4024604008, 4024604009, 4024604010, 4024604011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<2.0	4.0	10/29/09 18:33	
Sulfate	mg/L	<2.0	4.0	10/29/09 18:33	

LABORATORY CONTROL SAMPLE: 228300

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.2	101	90-110	
Sulfate	mg/L	20	20.7	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 228301 228302

Parameter	Units	4024604001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.7J	20	20	20.9	21.2	91	92	90-110	1	20	
Sulfate	mg/L	3.3J	20	20	22.4	22.6	96	97	90-110	.8	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 228303 228304

Parameter	Units	4024604011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.3J	20	20	21.6	22.0	91	93	90-110	2	20	
Sulfate	mg/L	4.2	20	20	23.7	24.0	97	99	90-110	2	20	

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QUALITY CONTROL DATA

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

QC Batch: WET/4893 Analysis Method: HACH 8146
QC Batch Method: HACH 8146 Analysis Description: Iron, Ferrous
Associated Lab Samples: 4024604001, 4024604002, 4024604003, 4024604004, 4024604005, 4024604006, 4024604007, 4024604008, 4024604009, 4024604010, 4024604011

METHOD BLANK: 228839 Matrix: Water
Associated Lab Samples: 4024604001, 4024604002, 4024604003, 4024604004, 4024604005, 4024604006, 4024604007, 4024604008, 4024604009, 4024604010, 4024604011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Iron, Ferrous	mg/L	<0.018	0.050	10/30/09 09:00	

LABORATORY CONTROL SAMPLE: 228840

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron, Ferrous	mg/L	.6	0.65	109	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 228841 228842

Parameter	Units	4024604001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron, Ferrous	mg/L	0.024J	.6	.6	0.41	0.45	64	71	80-120	10	20	M0

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QUALITY CONTROL DATA

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

QC Batch: OEXT/6017 Analysis Method: Extended Range DRO
QC Batch Method: Extended Range DRO Analysis Description: Extended Range DRO GCS
Associated Lab Samples: 4024604001, 4024604002, 4024604003, 4024604004, 4024604005, 4024604006, 4024604007, 4024604008, 4024604009, 4024604010, 4024604011

METHOD BLANK: 229454 Matrix: Water
Associated Lab Samples: 4024604001, 4024604002, 4024604003, 4024604004, 4024604005, 4024604006, 4024604007, 4024604008, 4024604009, 4024604010, 4024604011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Extended Range DRO (C10-C40)	ug/L	<24.5	80.0	11/11/09 08:47	

LABORATORY CONTROL SAMPLE & LCSD: 229455 229456

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	1570	1620	98	101	75-115	3	20	

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QUALITY CONTROL DATA

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

QC Batch: GCV/4226 Analysis Method: EPA 8015B Modified
QC Batch Method: EPA 8015B Modified Analysis Description: Methane, Ethane, Ethene GCV
Associated Lab Samples: 4024604001, 4024604002, 4024604003, 4024604004, 4024604005, 4024604006, 4024604007, 4024604008, 4024604009, 4024604010, 4024604011

METHOD BLANK: 229578 Matrix: Water
Associated Lab Samples: 4024604001, 4024604002, 4024604003, 4024604004, 4024604005, 4024604006, 4024604007, 4024604008, 4024604009, 4024604010, 4024604011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Methane	ug/L	<0.93	2.8	11/06/09 05:54	

LABORATORY CONTROL SAMPLE & LCSD: 229579 229580

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Methane	ug/L	28.4	26.4	27.0	93	95	70-130	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 231660 231661

Parameter	Units	4024473017 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methane	ug/L	2.8 U	28.4	28.4	27.2	27.8	96	98	42-169	2	20	

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

QUALIFIERS

Project: SOUTH CASS LAKE
Pace Project No.: 4024604

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.

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

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

LABORATORIES

PASI-G	Pace Analytical Services - Green Bay

ANALYTE QUALIFIERS

H3	Sample was received outside the recognized method holding time.
H6	Analysis initiated more than 15 minutes after sample collection.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
pH	Post-analysis pH measurement indicates insufficient VOA sample preservation.

Pace Analytical

Sample Condition Upon Receipt

Client Name: NPE Project # 4024604

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

Optional
Proj. Due Date:
Proj. Name:

Thermometer Used 9b

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

Cooler Temperature 0.5°C

Biological Tissue is Frozen: ☐ yes ☐ no

Temp Blank Present: ☒ yes ☐ no

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

Person examining contents:
Date: 10/29/09
Initials: AE

		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. OK to run past hold per BH 10-29-09
Short Hold Time Analysis (<72hr):	☒Yes ☐No ☐N/A	6. Nitrate / Ferrous Iron AE 10/29/09
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. No times 10/29/09 AE
-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:** 10-29-09

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®
www.pacelabs.com

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

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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:	NRE
Branch/Location:	Superior, WI
Project Contact:	Brian Hill
Phone:	715-399-3251
Project Number:	
Project Name:	South Cass Lake
Project State:	MN
Sampled By (Print):	Brian Hill / Wayne Wolf
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Brian Hill
Mail To Company:	NRE
Mail To Address:	
Invoice To Contact:	Barry Power
Invoice To Company:	Enbridge Energy
Invoice To Address:	
Invoice To Phone:	

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, Sl = Sludge, WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO)	PRESERVATION (CODE)*	BTEX	EPDRO	Nitrate	Sulfate	Fe+2	Methane	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
	Analyses Requested: Y/N				N	N	N	N	N	N					
	Pick Letter				B	B	A	A	A	B					
001	MW-1	10/26/09		GW			X	X	X	X	X	X		1-LABB 1-250mlA 6-40mlB	
002	MW-4							X	X	X	X	X			
003	MW-6							X	X	X	X	X			
004	MW-7							X	X	X	X	X			
005	MW-8							X	X	X	X	X			
006	MW-9							X	X	X	X	X			
007	MW-10							X	X	X	X	X			
008	USGS 1A							X	X	X	X	X			
009	USGS 2A							X	X	X	X	X			
010	USGS 3A							X	X	X	X	X			
011	USGS 4A							X	X	X	X	X			
012	SCL Field Blank			W										2-40mlB	
013	Trip Blank			W										2-40mlB	

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

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

Email #1:	
Email #2:	
Telephone:	
Fax:	

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

Relinquished By:	Date/Time:	Received By:	Date/Time:
	10/28/09 8:30		10/28/09 8:30
	10/29/09 0845		10/29/09 0845

PACE Project No.: 4024604

Receipt Temp = 3.5 °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