

**Real Time Water Quality Monthly Report  
Rattling Brook below Bridge (VBNC)  
December – January 2008**

**General**

- The Water Resources Management Division staff monitors the real-time web page on a daily basis
- Voisey’s Bay Nickel Company (VBNC) will be informed of any significant water quality events in the future in the form of a monthly report
- The initial installation of the RTWQ instrumentation at Rattling Brook below Bridge occurred on December 12<sup>th</sup>, 2006

**Maintenance and Calibration of Instrumentation**

- The instrument at Rattling Brook was removed on December 11<sup>th</sup>, 2007 for cleaning and calibration and then reinstalled on December 13<sup>th</sup>, 2007.
- The results of comparing the Minisonde values to Datasonde values during removal and installation on December 11 and 13<sup>th</sup>, 2007 can be seen in **Table 1**.

**Table 1: QA/QC Data Comparison Rankings upon reinstallation on December 13<sup>th</sup>, 2007**

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Rattling Brook (Long Harbour)	Dec. 11, 2007	Removal	Excellent	Excellent	Excellent	Excellent
	Dec. 13, 2007	Installation	Excellent	Good	Excellent	Excellent

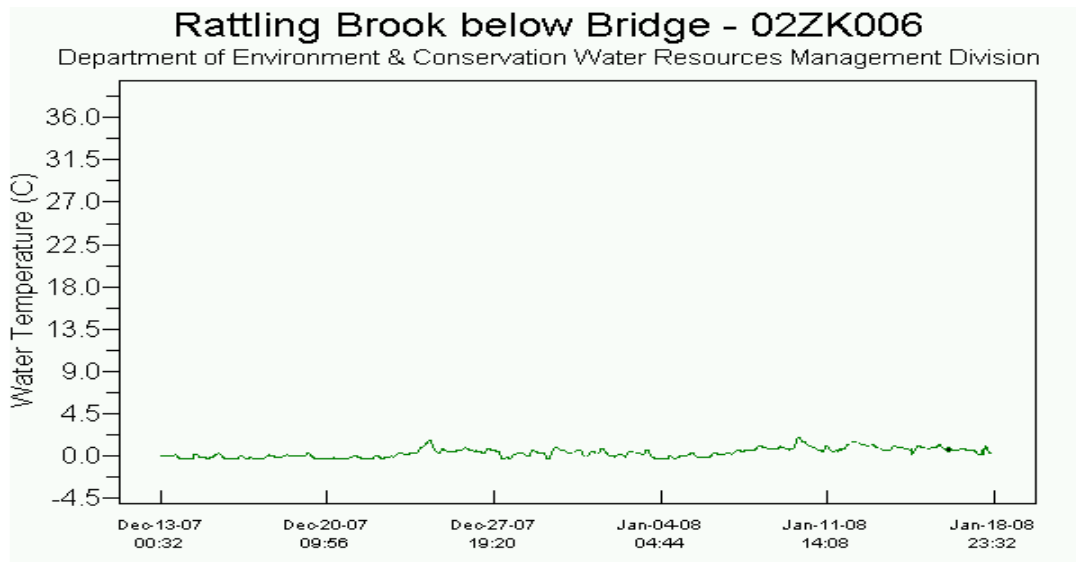
- The instrument was deployed until January 18<sup>th</sup>, 2008 (36-day deployment period) at which point it was removed for maintenance and calibration.
- The results of comparing the Minisonde values to the Datasonde values during removal on January 18<sup>th</sup>, 2008 can be seen in **Table 2**.

**Table 2: QA/QC Data Comparison Rankings upon removal on January 18<sup>th</sup>, 2008**

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Rattling Brook (Long Harbour)	Jan. 18, 2008	Removal	Excellent	Good	Fair	Excellent

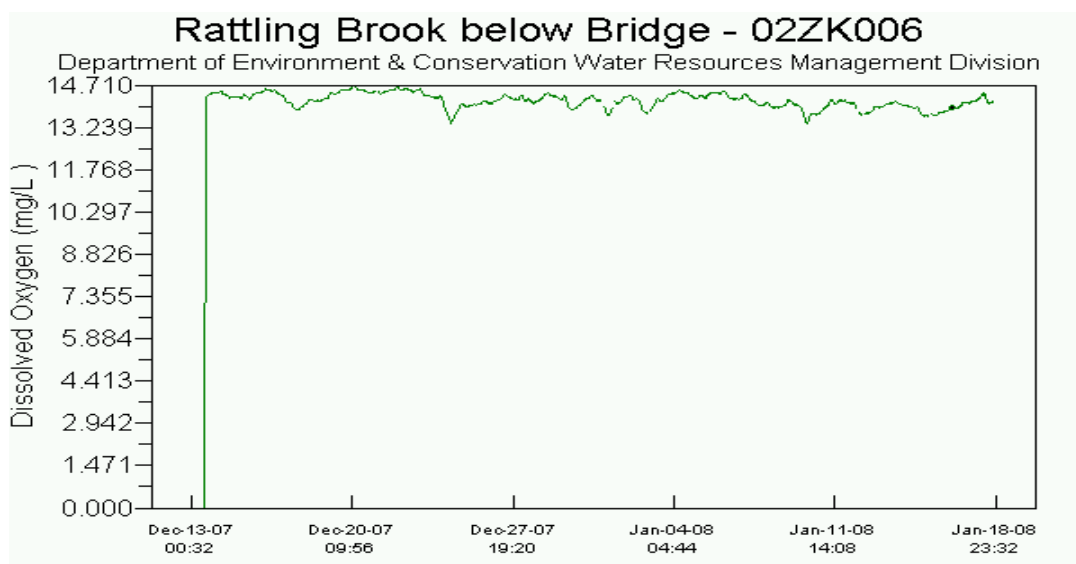
## Data Interpretation

- The water temperature (**Figure 1**) remained relatively stable over the deployment period. Typical for this time of year, the temperature ranged from -0.28 to 1.98°C.



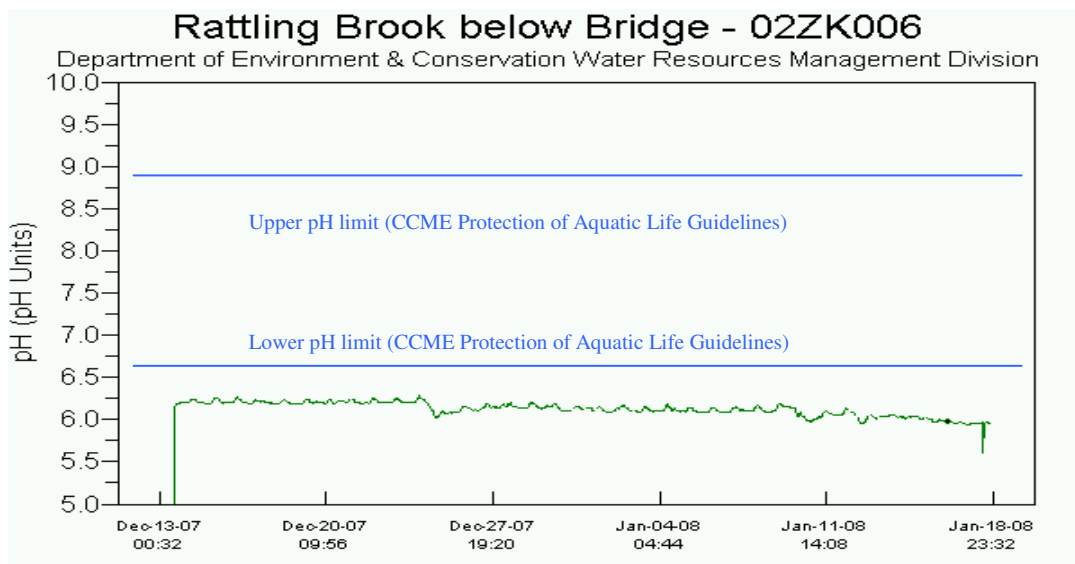
**Figure 1**

- The dissolved oxygen (DO) values (**Figure 2**) remained relatively stable over the deployment period, consistent with stable temperature. DO values ranged from 13.38 to 14.71 mg/L, all values above the most conservative values in the CCME Protection of Aquatic Life guidelines for dissolved oxygen (cold water/other life stages – above 6.5; warm water/other life stages – above 5.5; warm water/early life stages – above 6; cold water/early life stages – 9.5 mg/L).



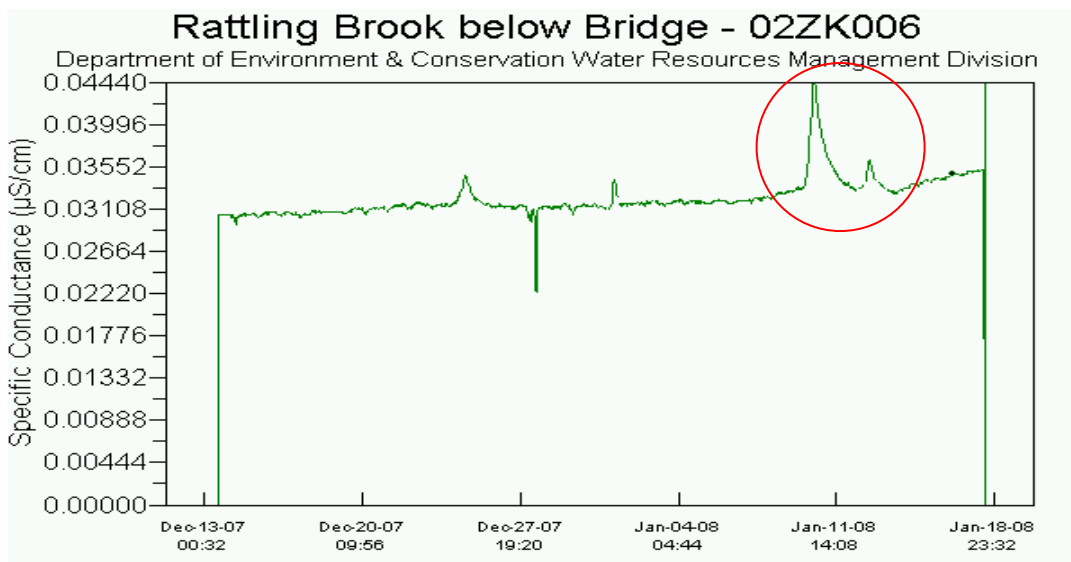
**Figure 2**

- The pH values (**Figure 3**) experienced downwards drift over the deployment period. Values ranged from 5.61 to 6.28, all below the recommended range (6.5 – 9.0) for the CCME Protection of Aquatic Life guidelines (due to the naturally acidic nature of NL waters).



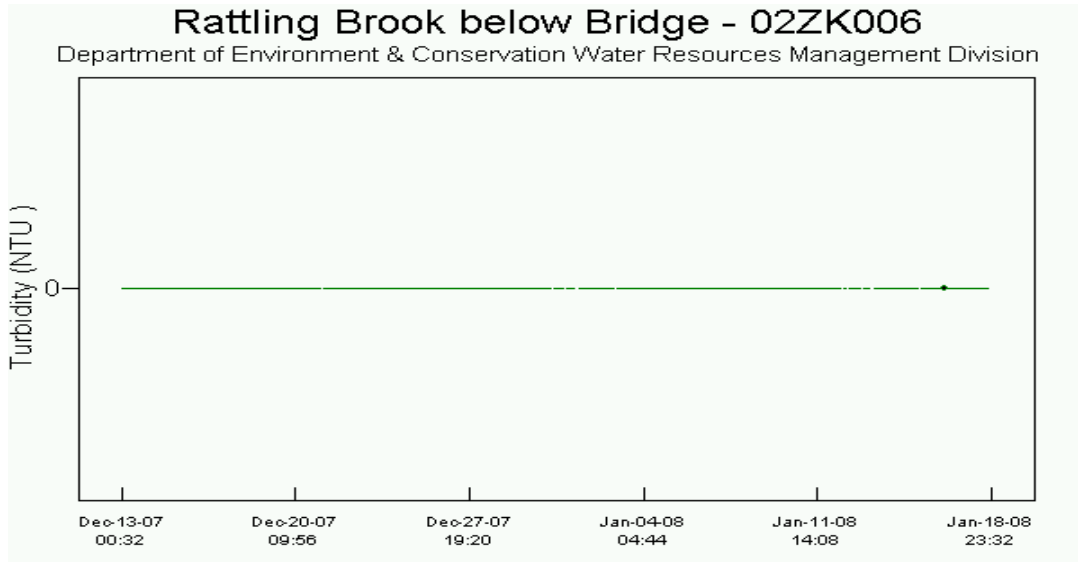
**Figure 3**

- The specific conductivity values (**Figure 4**) drifted upwards over the deployment period. There was an upwards spike at the time of a precipitation event which occurred towards the end of the deployment period. Values were recorded in mS/cm which resulted in values being off by a factor of  $10^3$ . After correction, values ranged from 22.4 to 44.4  $\mu\text{S/cm}$ .



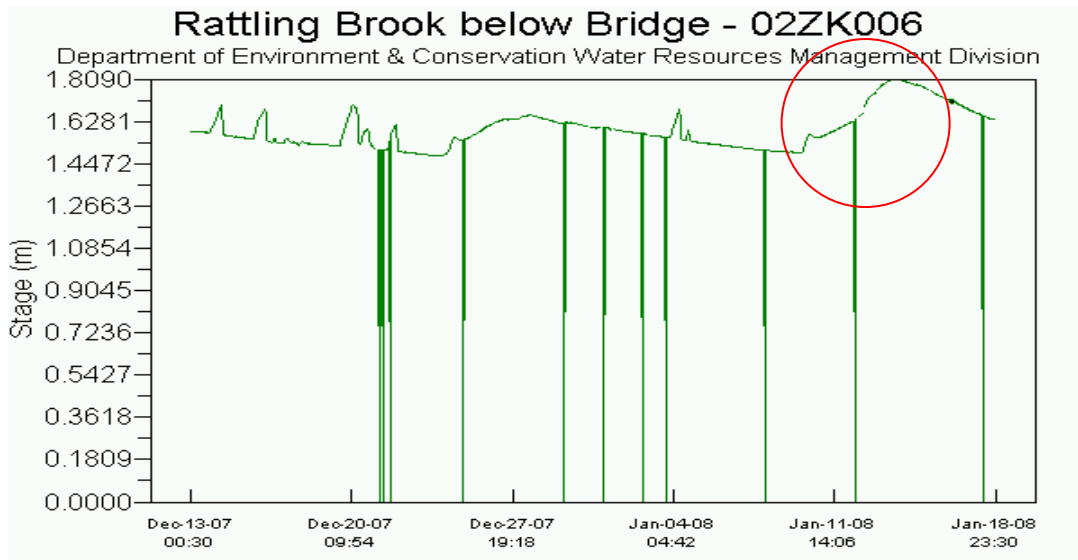
**Figure 4**

- Turbidity values (**Figure 5**) were recorded at zero NTU throughout the deployment period indicating there were no fouling events.



**Figure 5**

- Stage values (**Figure 6**) ranged from 1.57 to 1.98m during the deployment period. Stage values were variable and increased with precipitation events (see **Appendix A** for climatological data).













**Figure 6**

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## Appendix A – Climate Data for Argentina, NL (December 1 - January 18, 2008)

Daily Data Report for December 2007											
Day	Max Temp °C	Min Temp °C	Mean Temp °C	Heat Deg Days °C	Cool Deg Days °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow on Grnd cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
01†	2.0E	-0.2E	0.9E	17.1E	0.0E	M	M	M		27E	69E
02†	2.0	0.3	1.2	16.8	0.0	M	M	15.1		35	102
03†	3.2	-0.4	1.4	16.6	0.0	M	M	0.7		35	83
04†	3.9	-1.1	1.4	16.6	0.0	M	M	4.5		10	56
05†	4.8	1.5	3.2	14.8	0.0	M	M	0.6		26	54
06†	3.1	0.4	1.8	16.2	0.0	M	M	6.3		24	52
07†	1.0	-3.0	-1.0	19.0	0.0	M	M	0.0		29	46
08†	6.7	-0.9	2.9	15.1	0.0	M	M	2.6		26	74
09†	2.3	-7.3	-2.5	20.5	0.0	M	M	1.2		27	69
10†	-3.0	-6.8	-4.9	22.9	0.0	M	M	0.0		29	67
11†	-2.8	-4.8	-3.8	21.8	0.0	M	M	0.0		28	54
12†	1.6	-5.2	-1.8	19.8	0.0	0.0	6.0	3.2		34	80
13†	-0.3	-8.6	-4.5	22.5	0.0	M	M	0.0	5	30	67
14†	-6.8	-10.7	-8.8	26.8	0.0	M	M	0.0	3	32	41
15†	-6.1	-9.3	-7.7	25.7	0.0	M	M	0.0	4	36	39
16†	-5.7	-10.4	-8.1	26.1	0.0	M	M	0.0	4	11	54
17†	5.0	-6.5	-0.8	18.8	0.0	M	M	10.5		14	122
18†	0.1	-1.8	-0.9	18.9	0.0	M	M	0.0		26	83
19†	-0.9	-8.7	-4.8	22.8	0.0	M	M	0.0		31	52
20†	-6.2	-9.2	-7.7	25.7	0.0	M	M	0.0		5	43
21†	-2.2	-8.8	-5.5	23.5	0.0	M	M	0.0		3	57
22†	-1.8	-9.1	-5.5	23.5	0.0	M	M	0.0		26	44
23†	1.4	-2.3	-0.5	18.5	0.0	M	M	0.0		24	54
24†	10.5	1.3	5.9	12.1	0.0	0.0	M	5.9		21	106
25†	1.8	-0.7	0.6	17.4	0.0	M	M	0.0		26	89
26†	1.1	-0.3	0.4	17.6	0.0	M	M	0.0		26	57
27†	0.2	-4.2	-2.0	20.0	0.0	M	5.0	1.4		8	52
28†	-1.3	-4.3	-2.8	20.8	0.0	0.0	1.0	9.6	5	36	85
29†	-3.2	-6.0	-4.6	22.6	0.0	M	9.0	0.0	1	12	63
30†	3.3	-3.2	0.1	17.9	0.0	0.0	4.0	4.9	10	12	76
31†	3.2	-5.7	-1.3	19.3	0.0	M	M	4.3	6	13	95

**Daily Data Report for January 2008**

<b>D a y</b>	<b>Max Temp °C</b> 	<b>Min Temp °C</b> 	<b>Mean Temp °C</b> 	<b>Heat Deg Days °C</b> 	<b>Cool Deg Days °C</b> 	<b>Total Rain mm</b> 	<b>Total Snow cm</b> 	<b>Total Precip mm</b> 	<b>Snow on Grnd cm</b> 	<b>Dir of Max Gust 10's Deg</b>	<b>Spd of Max Gust km/h</b> 
<b>01†</b>	1.5	-3.0	-0.8	18.8	0.0	M	M	0.0	5	27	117
<b>02†</b>	2.7	-6.9	-2.1	20.1	0.0	M	M	1.4	5	11	109
<b>03†</b>	0.7	-10.3	-4.8	22.8	0.0	M	M	0.0	4	27	70
<b>04†</b>	-1.8	-12.1	-7.0	25.0	0.0	M	M	0.0	5	24	63
<b>05†</b>	-0.9	-5.9	-3.4	21.4	0.0	M	M	0.0	5	25	63
<b>06†</b>	-0.3	-5.5	-2.9	20.9	0.0	0.0	3.0	1.2	4	12	32
<b>07†</b>	1.4	-2.5	-0.6	18.6	0.0	M	M	0.6	7	21	54
<b>08†</b>	1.6	0.6	1.1	16.9	0.0	M	M	2.0	3	22	44
<b>09†</b>	6.5	0.1	3.3	14.7	0.0	M	M	2.6	3	13	54
<b>10†</b>	6.8	1.2	4.0	14.0	0.0	M	M	6.6		25	70
<b>11†</b>	1.6	-1.0	0.3	17.7	0.0	M	M	0.0		27	78
<b>12†</b>	6.9	-1.0	3.0	15.0	0.0	M	M	22.3		14	72
<b>13†</b>	2.2	-2.4	-0.1	18.1	0.0	M	M	0.0		27	63
<b>14†</b>	-1.5	-3.7	-2.6	20.6	0.0	0.0	2.0	2.2		28	50
<b>15†</b>	2.1	-2.2	-0.1	18.1	0.0	0.0	1.0	10.2		12	78
<b>16†</b>	0.9	-1.2	-0.2	18.2	0.0	M	M	0.7	3	3	67
<b>17†</b>	-0.6	-3.7	-2.2	20.2	0.0	M	M	0.0	2	36	61
<b>18†</b>	0.3	-4.8	-2.3	20.3	0.0	M	M	0.0		15	74