Real Time Water Quality Deployment Report
NF02ZK0023 - Rattling Brook below Bridge (Vale Inco)
August – September 2008

General

- The Water Resources Management Division staff monitors the real-time web page on a daily basis.
- Vale Inco will be informed of any significant water quality events in the form of a monthly report.
- This monthly report interprets the data from the Rattling Brook River RTWQ station for the period of August 18th to September 11th, 2008.

Maintenance and Calibration of Instrumentation

- The Rattling Brook instrument was deployed on August 18th, 2008. A second set of data readings were collected at the time of installation, using a similar, freshly calibrated instrument. Data readings from both instruments were compared and their variability was ranked, as part of QA/QC protocol.
- The QA/QC rankings upon comparing water quality data from both instruments for the removal before the start of the deployment period and the installation at the start of the deployment period are both indicated in **Table 1.** Rankings of "good" and "excellent" were achieved on installation for all parameters.

Table 1: QA/QC Data Comparison Rankings upon removal on August 13th, 2008 and installation on August 18th, 2008

Station	Date	Action	Instrument Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Rattling Brook (Long Harbour)	Aug. 13, 2008	Removal	Excellent	Good	Excellent	Excellent
	Aug. 18, 2008	Installation	Excellent	Good	Excellent	Good

- The Rattling Brook instrument was deployed for the period of August 18th – September 11th (a period of 25 days). A second set of data readings were collected at the time of removal, using a similar, freshly calibrated instrument. Data readings from both instruments were compared and their variability was ranked, as part of QA/QC protocol.
- The QA/QC rankings upon comparing water quality data from both instruments for the removal at the end of the deployment period and the installation after the deployment period are both indicated in **Table 2.** The "excellent" and "good" rankings on removal indicate a high degree of accuracy in the data obtained for all parameters. Upon installation, all parameters with the exception of pH fell in the "excellent" and "good" categories; the pH ranking fell in the "fair" category.

Table 2: QA/QC Data Comparison Rankings upon removal on September 11th, 2008 and installation on September 15th, 2008

Station	Date	Action	Instrument Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Rattling Brook (Long Harbour)	Sep. 11, 2008	Removal	Good	Good	Excellent	Excellent
	Sep.15, 2008	Installation	Good	Fair	Excellent	Excellent

Data Interpretation

- Please note that the data is graphed from **August 21st – September 11th**. The instruments were redeployed on August 18th, however, due to transmission problems on-site, the data was not transmitting onto the web page until August 21st.

- Water temperature values **(Figure 1)** for the deployment period displayed diurnal fluctuations and remained consistent, typical for the summer season. Water temperature ranged between 16.19 and 21.93°C.

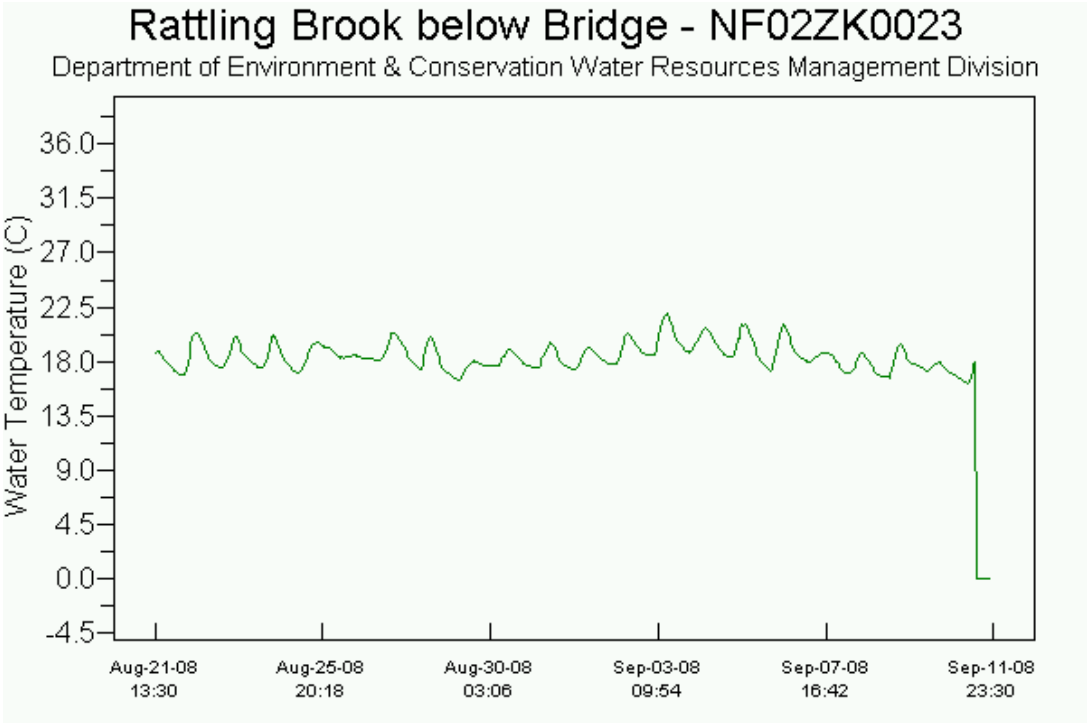

Figure 1

- Dissolved oxygen (DO) values (**Figure 2**) for the deployment period remained consistent. The minimum DO value for the deployment period was 8.35 mg/L.

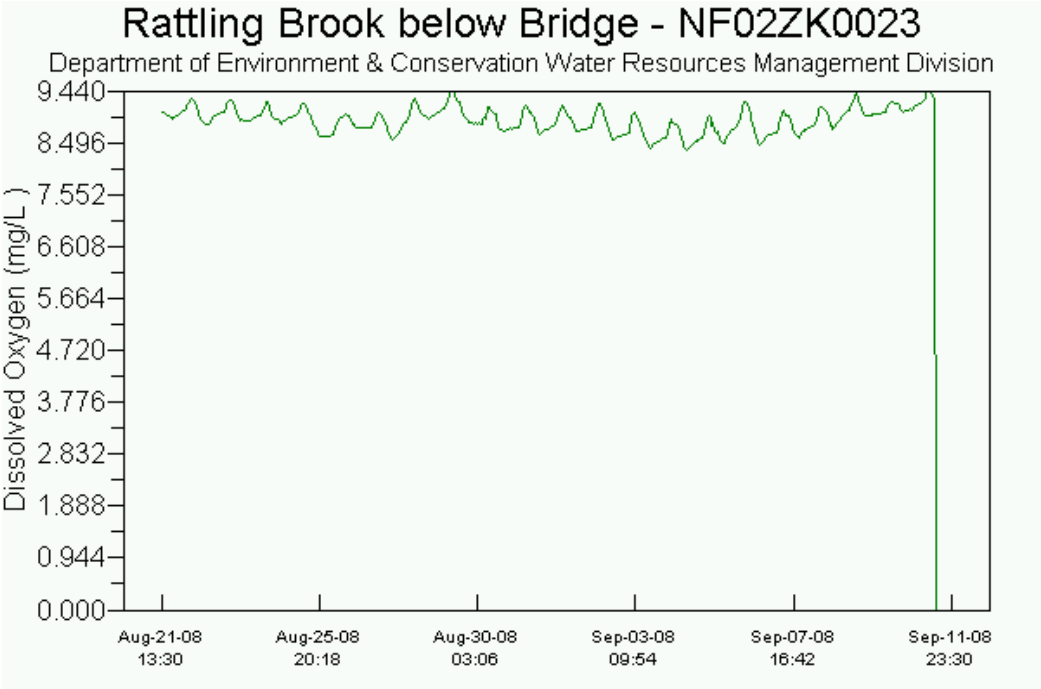

Figure 2

- pH values **(Figure 3)** and specific conductance values (**Figure 4**) were consistent over the deployment period. pH values ranged between 5.79 and 6.4, all values fell below the minimum pH level of 6.5 recommended by the CCME Guidelines for the Protection of Freshwater Aquatic Life (due to the naturally acidic nature of NL waters). Specific conductance ranged from 30.4 to 33.5µS/cm. There was a slight drop in pH and a slight increase in specific conductance towards the end of the deployment period on September 8th most possibly due to the increase in precipitation at that same time (**Appendix A**) as seen as an increase on the stage graph (**Figure 5**).

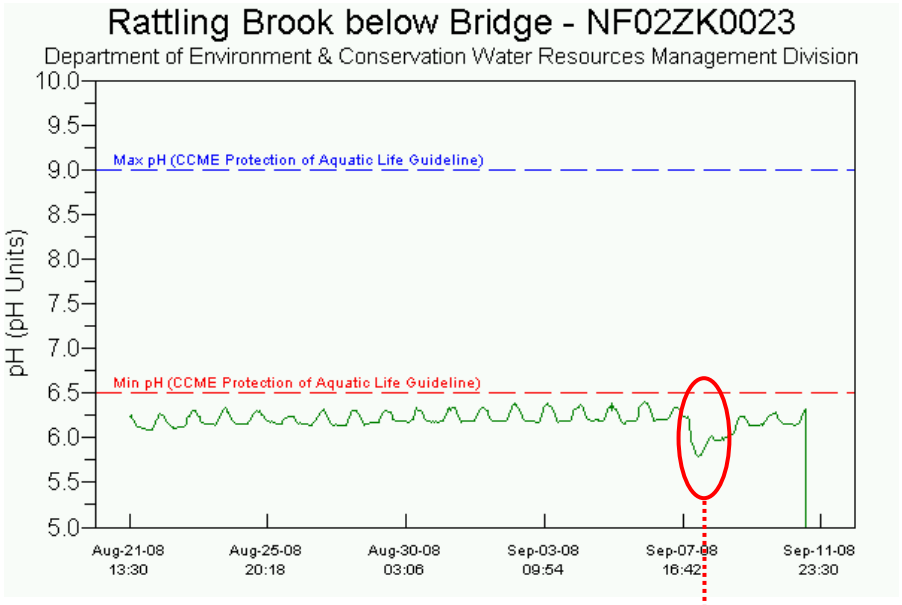

Figure 3

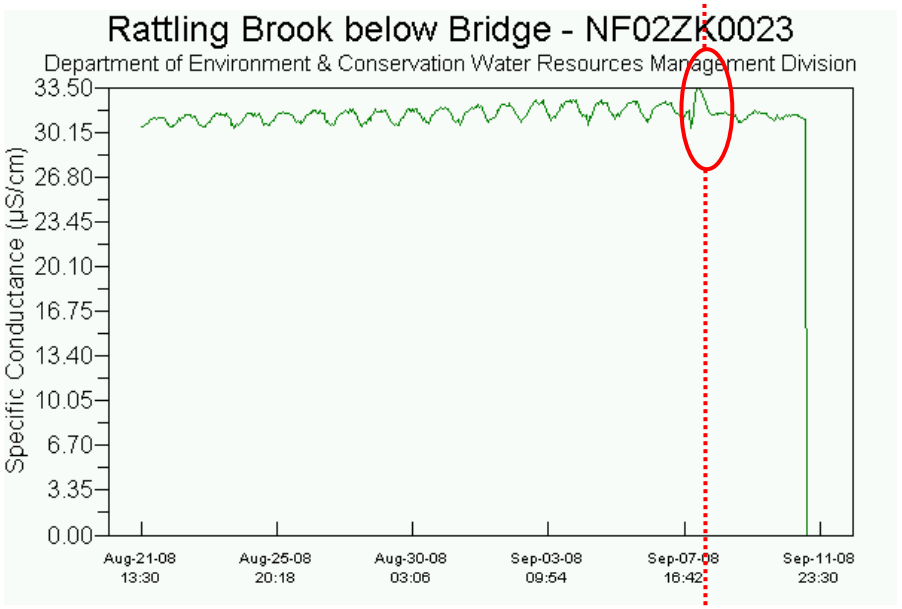

Figure 4

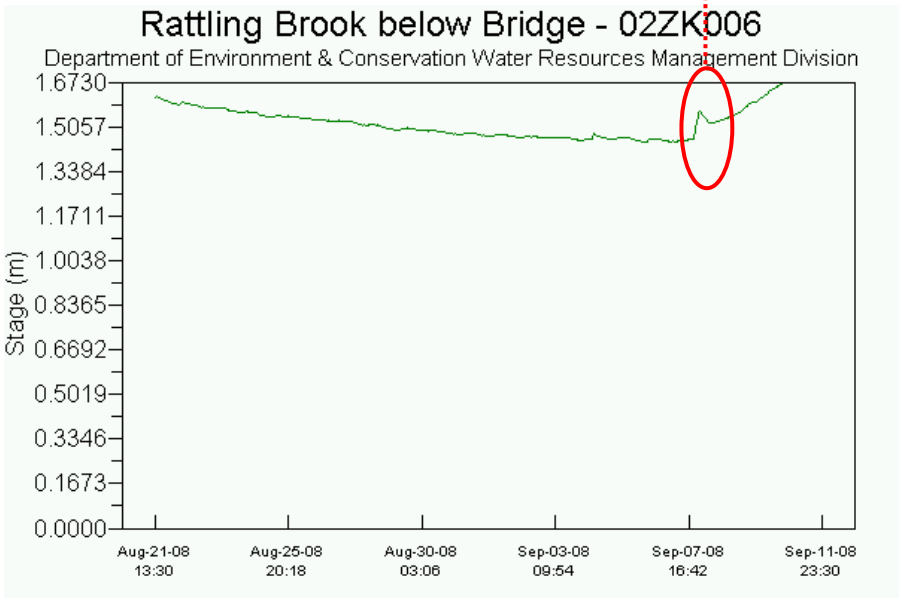

Figure 5

- Turbidity values (**Figure 6**) were at zero NTU for most of the deployment period. There were two turbidity spikes above 10 NTU (first spike was on Aug. 21st at 16 NTU; second spike was on Sept. 10th at 11 NTU) which is consistent with precipitation events (**Appendix A**) over the periods of Aug. 14th – 17th and Sept. 7th. The maximum turbidity value recorded for the deployment period was 16 NTU.

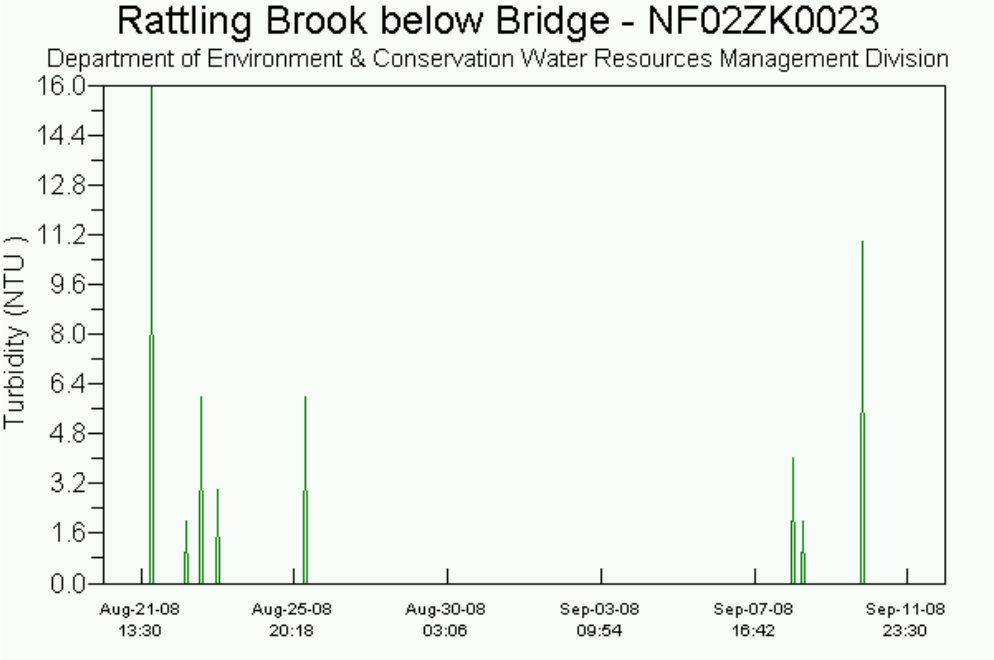

Figure 6

Prepared by: Renée Paterson
Real-Time Water Quality Coordinator
Department of Environment and Conservation
Phone: (709) 729-1159
Fax: (709) 729-0320
E-mail: reneepaterson@gov.nl.ca

Appendix A – Climate Data for Argentia, NL (August & September 2008)

Daily Data Report for August 2008

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†	18.4	13.4	15.9	2.1	0.0	M	M	0.0		5	32
02†	18.6	12.9	15.8	2.2	0.0	M	M	0.0		4	33
03†	15.8	12.2	14.0	4.0	0.0	M	M	0.0			<31
04†	14.7	11.7	13.2	4.8	0.0	M	M	9.3			<31
05†	16.1	12.7	14.4	3.6	0.0	M	M	9.7		5	35
06†	14.9	11.7	13.3	4.7	0.0	M	M	13.9		4	33
07†	18.9	11.7	15.3	2.7	0.0	M	M	0.0		6	32
08†	17.0	12.6	14.8	3.2	0.0	M	M	0.0			<31
09†	16.7	13.2	15.0	3.0	0.0	M	M	5.9			<31
10†	17.1	14.4	15.8	2.2	0.0	M	M	0.0			<31
11†	20.4	15.4	17.9	0.1	0.0	M	M	0.0			<31
12†	23.1	15.1	19.1	0.0	1.1	M	M	1.6		21	39
13†	23.2	15.6	19.4	0.0	1.4	M	M	0.9		21	41
14†	18.4	15.2	16.8	1.2	0.0	M	M	10.6		24	46
15†	20.6	12.8	16.7	1.3	0.0	M	M	22.4		11	76
16†	17.6	13.2	15.4	2.6	0.0	M	M	0.0		22	39
17†	17.7	14.0	15.9	2.1	0.0	M	M	12.8		32	83
18†	18.2	11.4	14.8	3.2	0.0	M	M	0.7		20	44
19†	18.6	11.1	14.9	3.1	0.0	M	M	0.0		22	44
20†	18.7	13.9	16.3	1.7	0.0	M	M	1.6		20	43
21†	16.7	13.6	15.2	2.8	0.0	M	M	0.0		21	48
22†	17.8	13.6	15.7	2.3	0.0	M	M	0.0		20	39
23†	17.7	14.4	16.1	1.9	0.0	M	M	0.0		23	46
24†	18.2	14.4	16.3	1.7	0.0	M	M	0.0			
25†	21.0	15.2	18.1	0.0	0.1	M	M	1.3			
26†	17.3	15.6	16.5	1.5	0.0	M	M	0.0			
27†	23.1	15.1	19.1	0.0	1.1	M	M	0.0			
28†	18.6	13.1	15.9	2.1	0.0	M	M	0.0			
29†	18.7	12.7	15.7	2.3	0.0	M	M	1.1			
30†	20.3	13.5	16.9	1.1	0.0	M	M	4.0			
31†	17.4	12.8	15.1	2.9	0.0	M	M	0.0			
Sum				66.4	3.7	M	M	95.8			
Avg	18.4	13.5	15.96								
Xtrm	23.2	11.1									

Daily Data Report for September 2008

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†	20.6	12.9	16.8	1.2	0.0	M	M	0.0		10	32
02†	23.4	15.5	19.5	0.0	1.5	M	M	0.0			<31
03†	17.8	12.8	15.3	2.7	0.0	M	M	0.0			<31
04†	22.1	12.6	17.4	0.6	0.0	M	M	13.8		21	59
05†	20.8	13.2	17.0	1.0	0.0	M	M	0.0		27	44
06†	17.7	12.5	15.1	2.9	0.0	M	M	0.0		21	44
07†	20.4	15.1	17.8	0.2	0.0	M	M	34.1		21	69
08†	16.9	12.2	14.6	3.4	0.0	M	M	1.2		30	48
09†	15.9	11.5	13.7	4.3	0.0	M	M	0.0		21	41
10†	18.6	13.0	15.8	2.2	0.0	M	M	5.2		21	72
11†	16.5	12.5	14.5	3.5	0.0	M	M	0.0		26	44
12†	16.6	13.4	15.0	3.0	0.0	M	M	0.0		23	46
13†	16.8	12.5	14.7	3.3	0.0	M	M	0.0		23	37
14†	16.9	11.4	14.2	3.8	0.0	M	M	0.0		15	35
15†	20.1	14.0	17.1	0.9	0.0	M	M	0.0		22	50
16†	18.7	10.3	14.5	3.5	0.0	M	M	0.0		21	54
17†	13.8	10.2	12.0	6.0	0.0	M	M	0.0		22	33
18†	15.2	9.7	12.5	5.5	0.0	M	M	0.0		34	54
19											
20†	14.2	7.3	10.8	7.2	0.0	M	M	0.0		22	50
21†	17.9	12.9	15.4	2.6	0.0	M	M	0.0		20	35
Sum				57.8*	1.5*	M	M	54.3*			
Avg	18*	12.3*	15.2*								
Xtrm	23.4*	7.3*								21*	72*