Real Time Water Quality Deployment Report
NF02ZK0023 - Rattling Brook below Bridge (Vale Inco)
September - October 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 September 15th, 2008 to October 14th, 2008.

Maintenance and Calibration of Instrumentation

- The Rattling Brook instrument was deployed on September 15th, 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 with the exception of a "fair" ranking for pH.

Table 1: 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)	Sept. 11, 2008	Removal	Good	Good	Excellent	Excellent
	Sept. 15, 2008	Installation	Good	Fair	Excellent	Excellent

- The Rattling Brook instrument was deployed for the period of September 15th to October 14th (a period of 30 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 with the exception of conductivity which received a "poor" ranking. In this particular instance, the problem was a result of the QA sonde used which did not calibrate for conductivity accurately. The conductivity readings being taken at the end of the deployment period by the sonde installed in the river were still very accurate (as compared to expected levels) even after a 30 day deployment. Upon installation, all parameters fell in the "excellent" and "good" categories.

Table 2: QA/QC Data Comparison Rankings upon removal on October 14th, 2008 and installation on October 17th, 2008

Station	Date	Action	Instrument Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Rattling Brook (Long Harbour)	Oct. 14, 2008	Removal	Good	Good	Poor	Excellent
	Oct. 17, 2008	Installation	Good	Good	Good	Excellent

Data Interpretation

▪ Water temperature values (**Figure 1**) for the deployment period displayed diurnal fluctuations and showed a slight decrease as expected for the fall season. Water temperature ranged between 7.61 and 18.68°C.
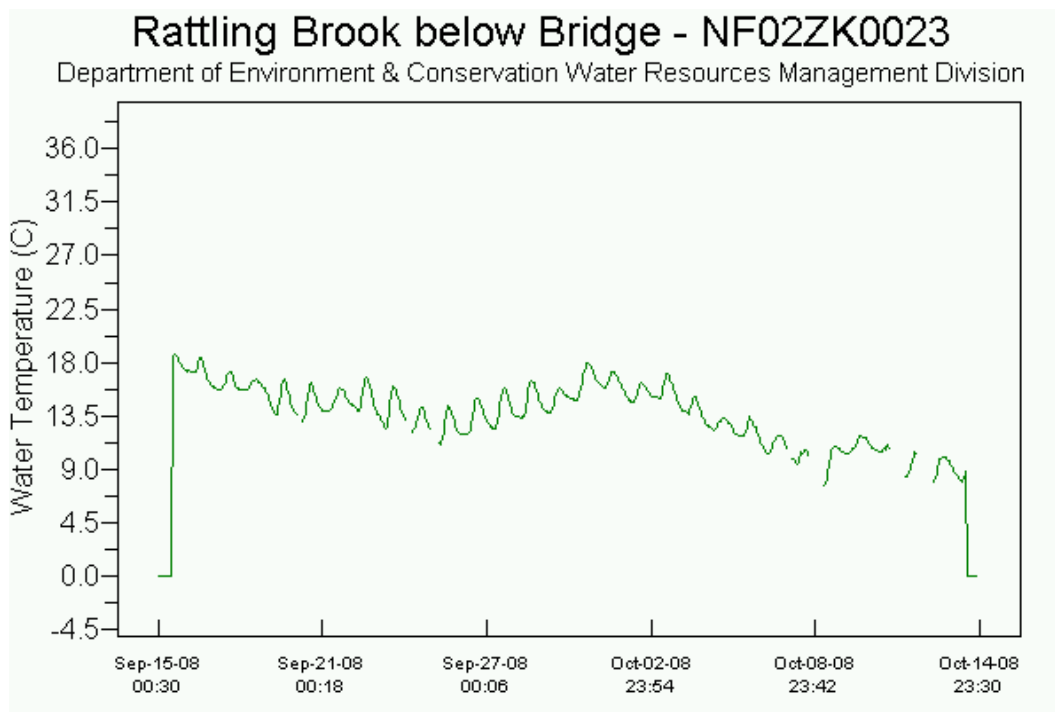
Figure 1

- Dissolved oxygen (DO) values (**Figure 2**) for the deployment period remained consistent. As the water temperature decreased the dissolved oxygen concentration increased. The minimum DO value for the deployment period was 8.8 mg/L.
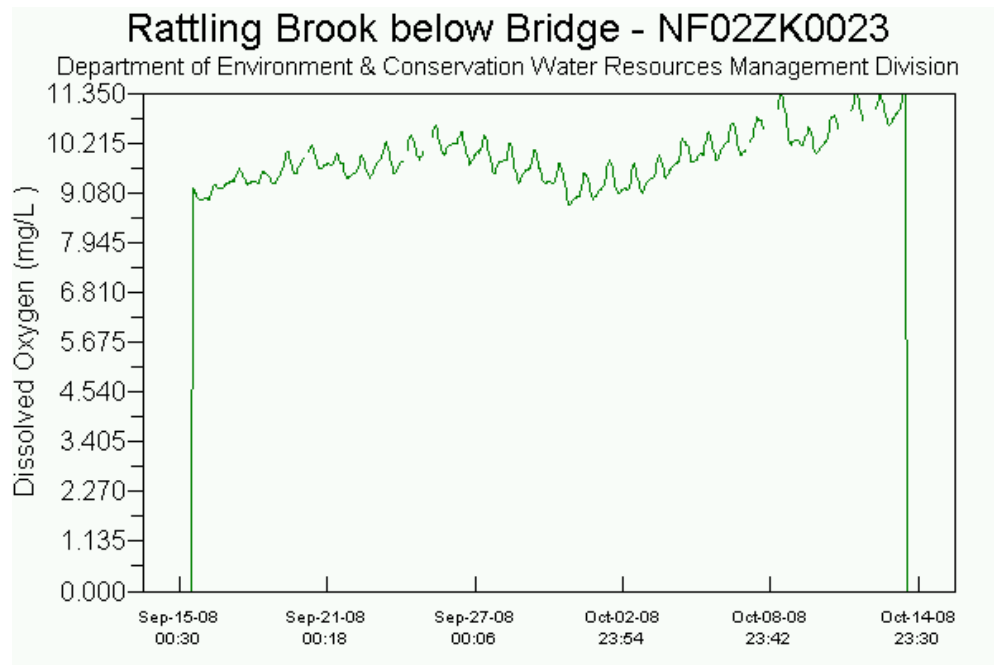
Figure 2

- pH values (**Figure 3**) were consistent over the deployment period. pH values ranged between 6.11 and 6.5. All values fell just below/at 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).
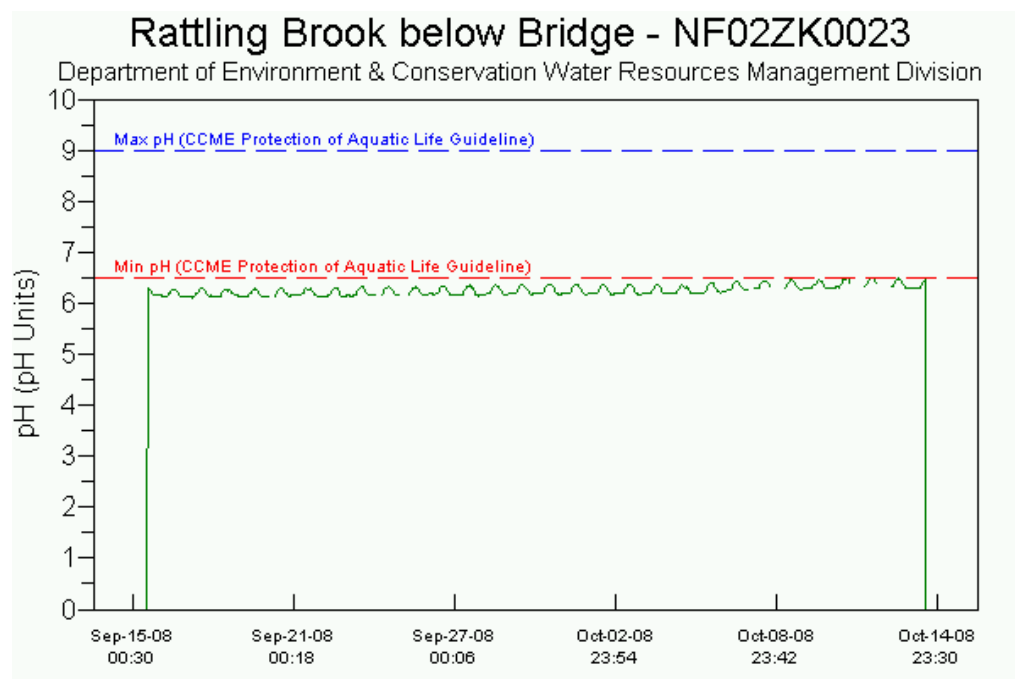
Figure 3

- Specific conductance values **(Figure 4)** were consistent over the deployment period. Values ranged from 31 to 33.4µS/cm.
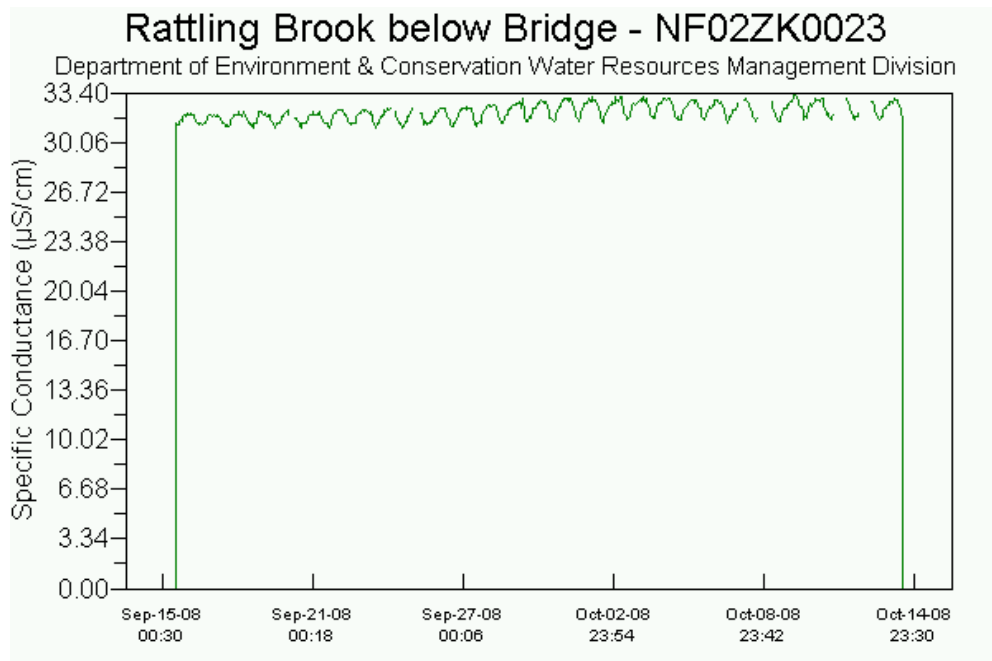
Figure 4

- Turbidity values (**Figure 5**) were at zero NTU for the entire deployment period. On Oct. 6th, the turbidity only increased to 1 NTU for one reading. This turbidity graph is an indication that this water body has remained clear throughout the past 30 days.

It is important to note the scale on this graph; the range is between 0 and 1 NTU. All readings were 0 NTU with the exception of one reading at 1 NTU.
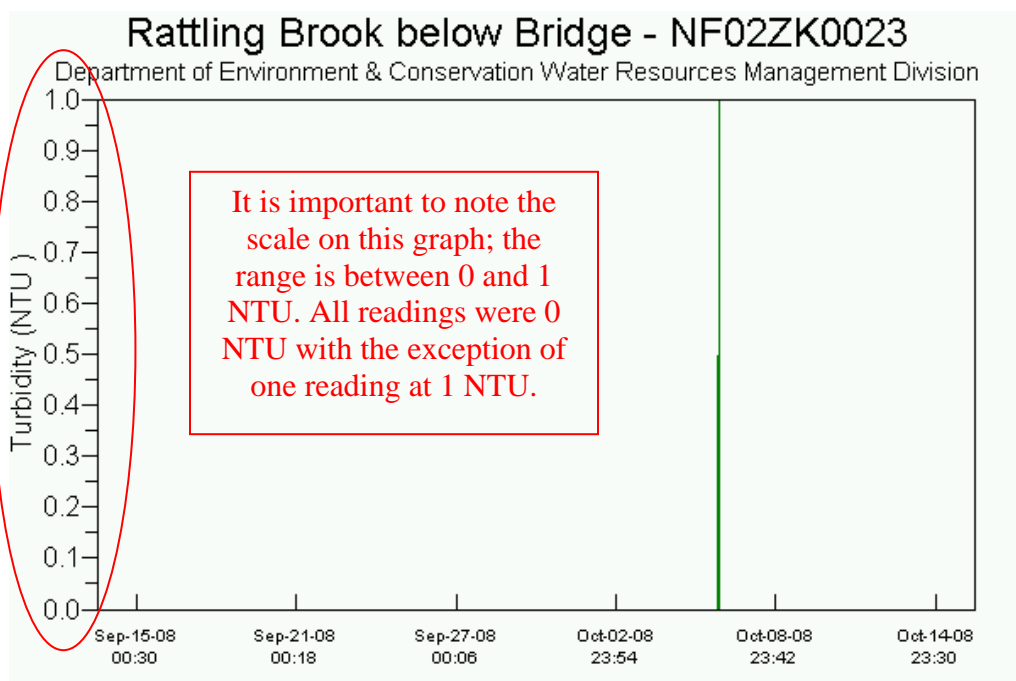
Figure 5

- Stage readings **(Figure 6)** were consistent with a slight decrease over the deployment period. The height of the river ranged from 1.392 to 1.605m. As can be seen from the climate data tables in Appendix A, there was very little precipitation in this area during the deployment period.

Rattling Brook below Bridge - 02ZK006
Department of Environment & Conservation Water Resources Management Division

Slight increase in stage due to increased precipitation

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 (September & October 2008)

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†	14.1	8.4	11.3	6.7	0.0	M	M	0.0		33	56
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
22†	14.8	8.2	11.5	6.5	0.0	M	M	1.0		35	46
23†	12.5	5.4	9.0	9.0	0.0	M	M	2.6		31	50
24†	11.5	4.3	7.9	10.1	0.0	M	M	0.7		36	50
25†	11.4	4.5	8.0	10.0	0.0	M	M	0.0		24	50
26†	14.9	11.3	13.1	4.9	0.0	M	M	0.0		24	52
27†	14.1	11.2	12.7	5.3	0.0	M	M	0.0		22	33
28†	13.6	9.0	11.3	6.7	0.0	M	M	0.0			<31
29†	16.2	9.6	12.9	5.1	0.0	M	M	0.0		13	41
30†	23.6	14.5	19.1	0.0	1.1	M	M	0.0			
Sum				122.1	2.6	M	M	58.6			
Avg	16.9	11.1	13.99								
Xtrm	23.6	4.3									

Daily Data Report for October 2008

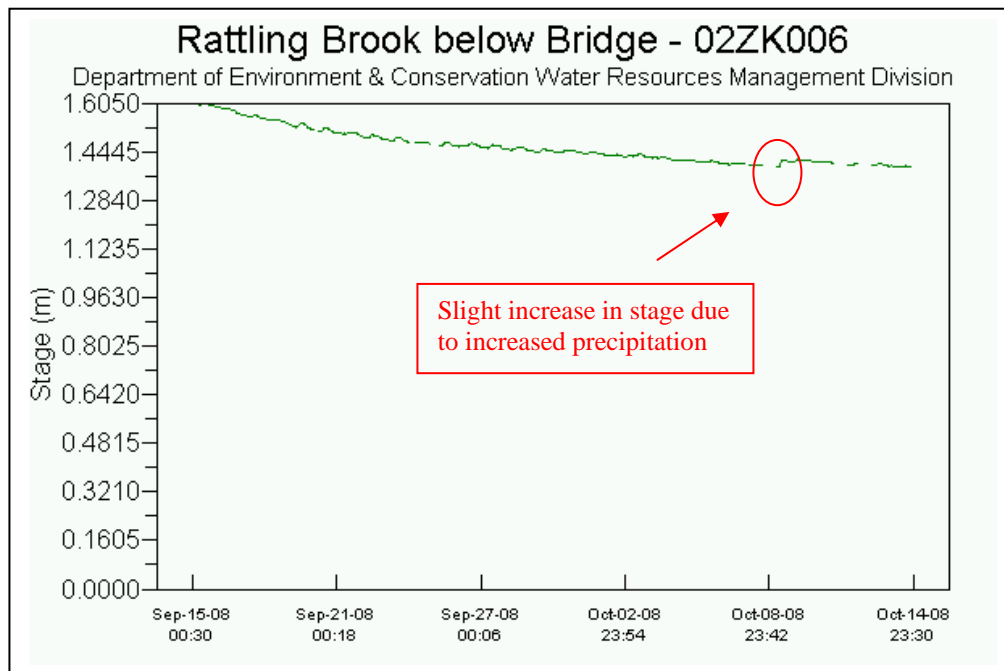| Day	Max Temp °C	Min Temp °C	Mean Temp °C	Heat Deg Days °C	Cool Deg Days °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow on Grnd cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
01†	16.4	11.9	14.2	3.8	0.0	M	M	0.0		26	41
02†	16.1	10.1	13.1	4.9	0.0	M	M	0.0		20	37
03†	16.0	12.5	14.3	3.7	0.0	M	M	0.0		19	48
04†	14.6	10.3	12.5	5.5	0.0	M	M	0.8		25	80
05†	13.2	9.5	11.4	6.6	0.0	M	M	0.0		27	57
06†	12.5	8.9	10.7	7.3	0.0	M	M	0.0		27	56
07†	11.1	5.9	8.5	9.5	0.0	M	M	0.6		31	41
08†	8.7	5.3	7.0	11.0	0.0	M	M	0.7		25	56
09†	12.4	5.8	9.1	8.9	0.0	M	M	4.8		26	56
10†	13.5	10.1	11.8	6.2	0.0	M	M	2.3		26	57
11†	10.3	4.0	7.2	10.8	0.0	M	M	0.7		2	33
12†	9.6	3.5	6.6	11.4	0.0	M	M	0.0			<31
13†	12.0	5.1	8.6	9.4	0.0	M	M	0.0	2	4	46
14†	9.4	3.7	6.6	11.4	0.0	M	M	0.0		22	41
15†	12.3	9.0	10.7	7.3	0.0	M	M	0.0		20	59
16†	12.7	9.0	10.9	7.1	0.0	M	M	0.6		13	33
17											
18†	10.0	4.4	7.2	10.8	0.0	M	M	0.0		27	48
19											
Sum				135.6*	0.0*	M	M	10.5*			
Avg	12.4*	7.6*	10*								
Xtrm	16.4*	3.5*								25*	80*