

Real Time Water Quality Deployment Report
NF02ZK0023 - Rattling Brook below Bridge (Vale Inco)
June – July 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 June 13 to July 9, 2008.

Maintenance and Calibration of Instrumentation

- The Rattling Brook instrument was deployed on June 13, 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 temperature and ph respectively, conductivity and dissolved oxygen sensors were not giving stable readings on the QA sonde, as a result they were not included for rankings.

Table 1: QA/QC Data Comparison Rankings upon removal on June 11th, 2008 and installation on June 13th, 2008

Station	Date	Action	Instrument Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Rattling Brook (Long Harbour)	Jun. 11, 2008	Removal	Good	Excellent	Excellent	Poor
	Jun. 13, 2008	Installation	Good	Excellent	NA	NA

- Due to problems with site transmission, data was not available on-line past mid-April. The Rattling Brook instrument was subsequently removed July 9th after a period of 26 days for regular maintenance and calibration activities. 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**. Rankings of “excellent” and “good” on removal were achieved for all parameters. The “excellent” and “good” rankings on removal indicate a high degree of accuracy in the data obtained for all parameters.

Table 2: QA/QC Data Comparison Rankings upon removal on July 9th, 2008 and installation on July 11th, 2008

Station	Date	Action	Instrument Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Rattling Brook (Long Harbour)	Jul. 9, 2008	Removal	Good	Good	Excellent	Excellent
	Jul. 11, 2008	Installation	Good	Good	Excellent	Excellent

Data Interpretation

- Water temperature values (**Figure 1**) for the deployment period displayed diurnal fluctuations and generally increased, typical for the spring to summer seasons. Water temperature ranged between 11.5 and 22.0°C.

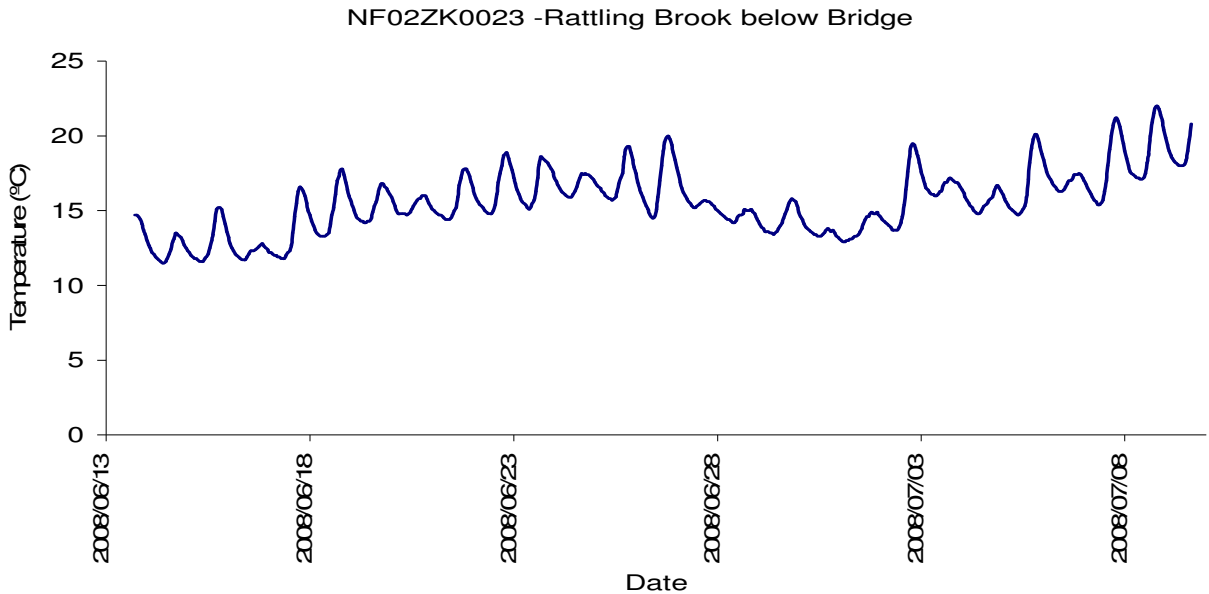


Figure 1

- Dissolved oxygen (DO) values (**Figure 2**) for the deployment period generally decreased, corresponding with the increase in water temperature. DO values ranged from 8.44 to 10.44 mg/L, most above the minimum DO concentrations recommended by the Canadian Council of Ministers of the Environment (CCME) Protection of Freshwater Aquatic Life Guidelines (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 – above 9.5 mg/L).

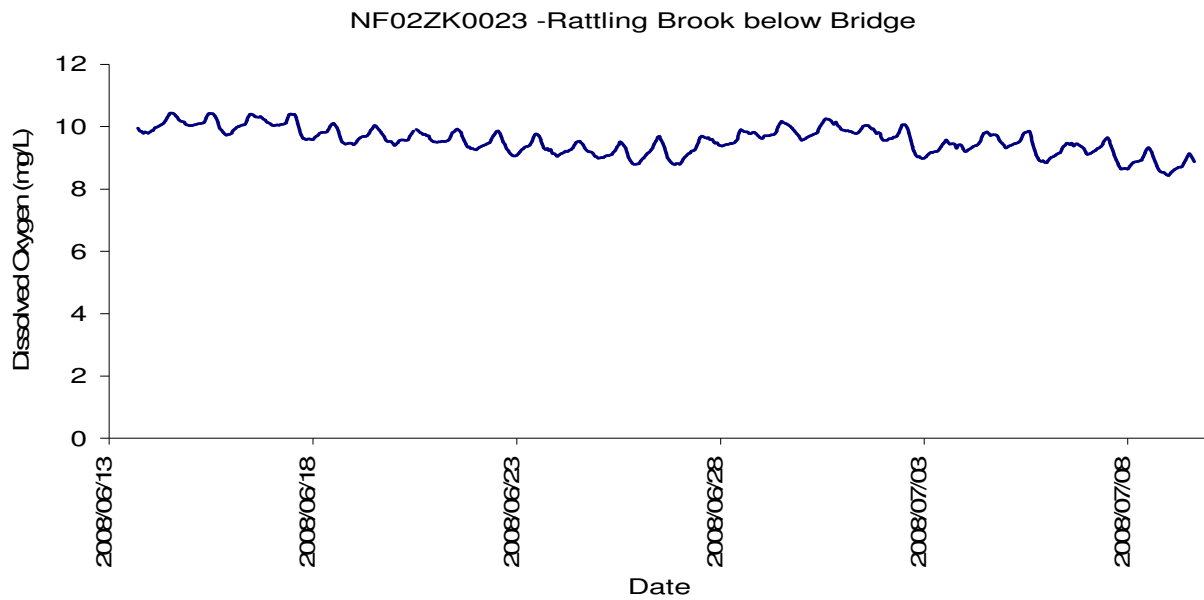


Figure 2

- pH values (**Figure 3**) were consistent over the deployment period. pH values ranged between 6.08 and 6.39, all values 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).

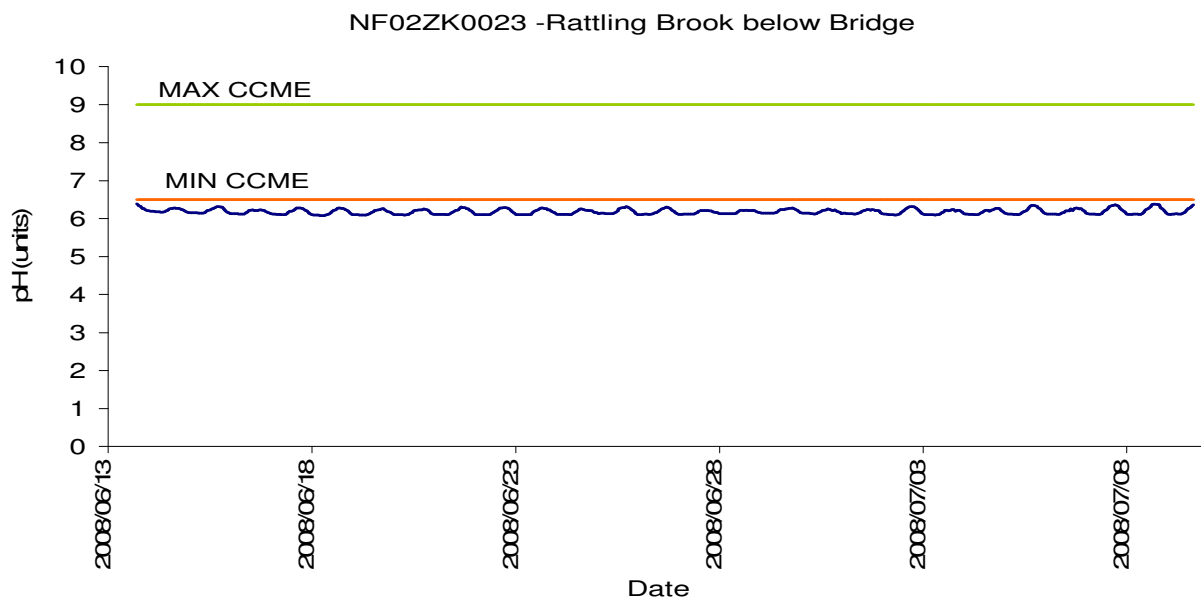


Figure 3

- Specific conductance values (**Figure 4**) were consistent over the most of the deployment period but then increased towards the end of the deployment period, coinciding with a spike in turbidity values and a rise in stage. Specific conductance ranged from 28.8 to 31.7 $\mu\text{S}/\text{cm}$.

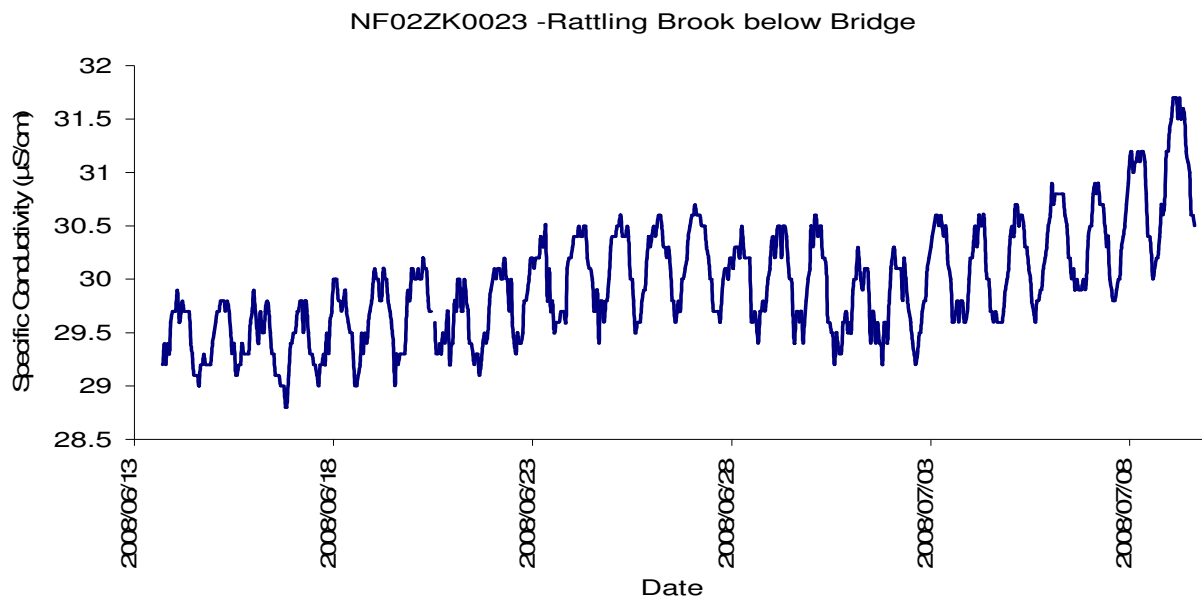


Figure 4

- Except for the end of the deployment period turbidity values (**Figure 5**) were at zero NTU. Towards the end of the deployment period, non-zero values were achieved towards for turbidity, consistent with a rise in stage and a precipitation event. The maximum turbidity value recorded for the deployment period was 51.9 NTU.

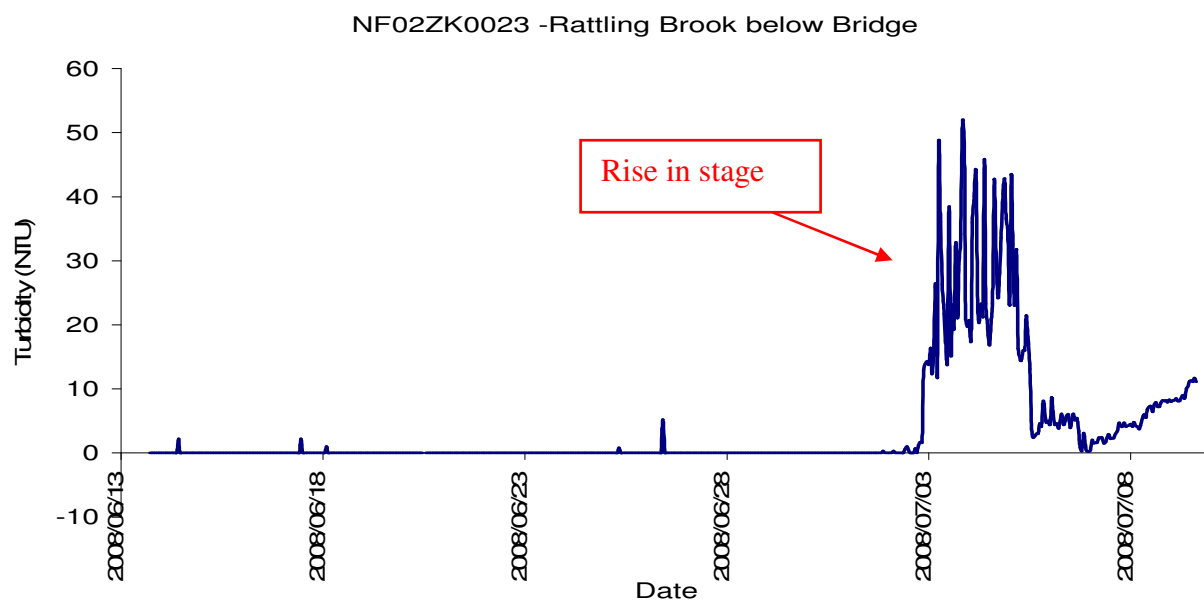


Figure 5

- Stage values (**Figure 6**) were consistent with precipitation events (**Appendix A**). Stage values ranged between 1.477 and 1.551 meters.

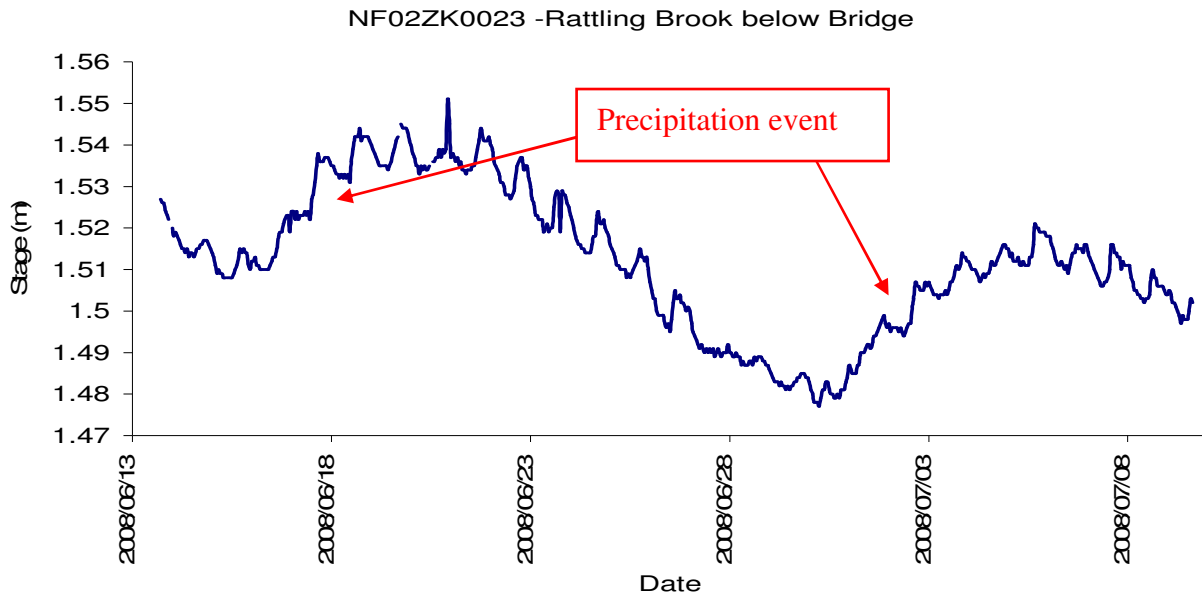


Figure 6

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Appendix A – Climate Data for Argentina, NL (June 13 to July 9, 2008)

Daily Data Report for June 2008											
D a y	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
13†	15.0	6.9	11.0	7.0	0.0	M	M	8.3		2	44
14†	13.2	7.0	10.1	7.9	0.0	M	M	5.9		4	41
15†	14.6	6.6	10.6	7.4	0.0	M	M	4.6		4	44
16†	11.3	5.9	8.6	9.4	0.0	M	M	6.1		1	39
17†	17.7	5.5	11.6	6.4	0.0	M	M	0.0			<31
18†	14.5	7.3	10.9	7.1	0.0	M	M	0.0			<31
19†	15.4	9.3	12.4	5.6	0.0	M	M	0.0			<31
20†	15.7	8.9	12.3	5.7	0.0	M	M	2.4			<31
21†	14.8	6.9	10.9	7.1	0.0	M	M	0.0		21	32
22†	11.8	6.8	9.3	8.7	0.0	M	M	0.0		20	37
23†	12.5	7.5	10.0	8.0	0.0	M	M	0.0		21	39
24†	16.8	9.2	13.0	5.0	0.0	M	M	3.1		22	33
25†	13.5	9.5	11.5	6.5	0.0	M	M	0.0		26	46
26†	13.9	9.3	11.6	6.4	0.0	M	M	0.7		25	48
27†	12.9	9.7	11.3	6.7	0.0	M	M	8.3			<31
28†	12.4	8.5	10.5	7.5	0.0	M	M	1.2		5	37
29†	15.0	8.5	11.8	6.2	0.0	M	M	0.0		11	33
30†	12.9	8.4	10.7	7.3	0.0	M	M	11.4		12	67

Daily Data Report for July 2008											
D a y	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†	13.1	9.8	11.5	6.5	0.0	M	M	2.3		20	46
02†	12.9	9.3	11.1	6.9	0.0	M	M	0.0		21	33
03†	14.2	9.9	12.1	5.9	0.0	M	M	4.8		21	44
04†	12.3	9.8	11.1	6.9	0.0	M	M	0.0		19	44
05†	14.9	9.7	12.3	5.7	0.0	M	M	0.0		22	32
06†	13.4	9.5	11.5	6.5	0.0	M	M	0.7		19	39
07†	15.5	9.8	12.7	5.3	0.0	M	M	0.0		20	33
08†	14.2	10.8	12.5	5.5	0.0	M	M	0.0		20	35
09†	15.7	11.8	13.8	4.2	0.0	M	M	0.0		22	33