

**Real Time Water Quality Monthly Report
Southwest Brook below Southwest Pond (Conne River)
February - April 2007**

General

- The Water Resources Management Division staff monitors the real-time web page on a daily basis.
- The Miawpukek First Nation will be informed of any significant water quality events in the future in the form of a monthly report.

Maintenance and Calibration of Instrumentation

- The instrument at Southwest Brook was removed on February 22, 2007 for cleaning and calibration and then reinstalled. A second, freshly calibrated datasonde was used for QA/QC. The results from comparing the QA/QC datasonde values to the Southwest Brook datasonde values during removal and re-installation on February 22, 2007 can be seen in **Table 1**.

Table 1: QA/QC Data Comparison Rankings upon removal/reinstallation on February 22, 2007

Station	Date	Action	QA/QC Datasonde vs. Southwest Brook Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Southwest Brook below Southwest Pond	February 22, 2007	Removal	Good	Good	Good	Fair
	February 22, 2007	Installation	Excellent	Good	Excellent	Excellent

- The instrument was deployed until April 2nd (39-day deployment period) at which point it was removed for maintenance and calibration. The minisonde was used for QA/QC. The results from comparing the Minisonde values to the Southwest Brook datasonde values during removal on April 2, 2007 can be seen in **Table 2**.

Table 2: QA/QC Data Comparison Rankings upon removal on April 2, 2007

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Southwest Brook below Southwest Pond	April 2, 2007	Removal	Good	Good	Good	Excellent

Data Interpretation

- During the deployment period of February 22nd – April 2nd, 2007 the water quality remained relatively stable for most parameters.
- The water temperature (**Figure 1**) fluctuated between -0.13°C and 4.52°C but showed an increase in temperature readings over the deployment period. A strong diurnal pattern is detected in the data at the end of the deployment period.

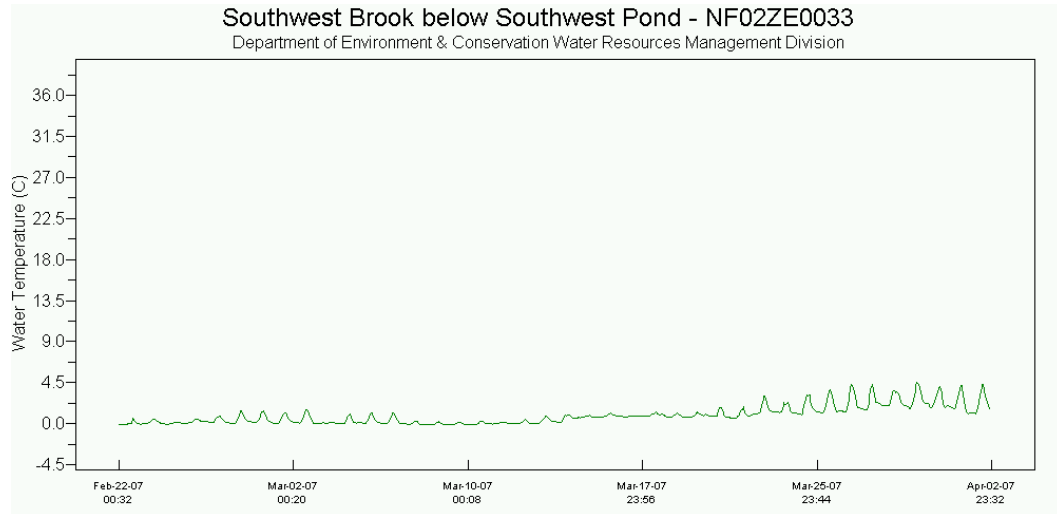


Figure 1

- The dissolved oxygen values fluctuated during the deployment period (**Figure 2**). The dissolved oxygen values ranged from 13.23 mg/L to 14.86 mg/L. The dissolved oxygen levels showed a decreasing trend over the deployment period in response to increasing water temperatures (**Figure 1**) during the same period. All dissolved oxygen values fell within the recommended CCME Protection of Aquatic Life guidelines for dissolved oxygen (cold water/other life stages – above 6.5 mg/L; cold water/early life stages – above 9.5 mg/L; warm water/other life stages – above 5.5 mg/L; warm water/early life stages – above 6 mg/L).

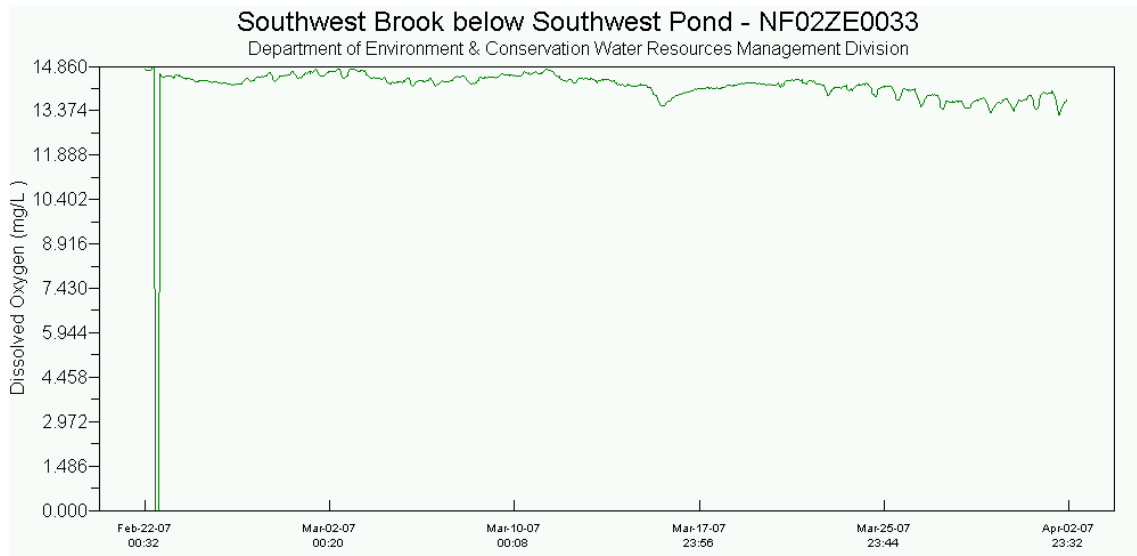


Figure 2

- pH values (**Figure 3**) indicated a decreasing trend during the deployment period. There is a significant drop in pH between March 12th and 18th; corresponding to an increase in stage height (**Figure 6**) over this same period. Higher air temperatures experienced in the region (**Appendix A**) from March 14th-18th resulted in snow and ice melt with naturally acidic pH values. pH values ranged from 4.55 to 5.25 with all the values falling below the recommended range (6.5 – 9.0) for the CCME Protection of Aquatic Life Guidelines due to the naturally acidic nature of Southwest Brook.

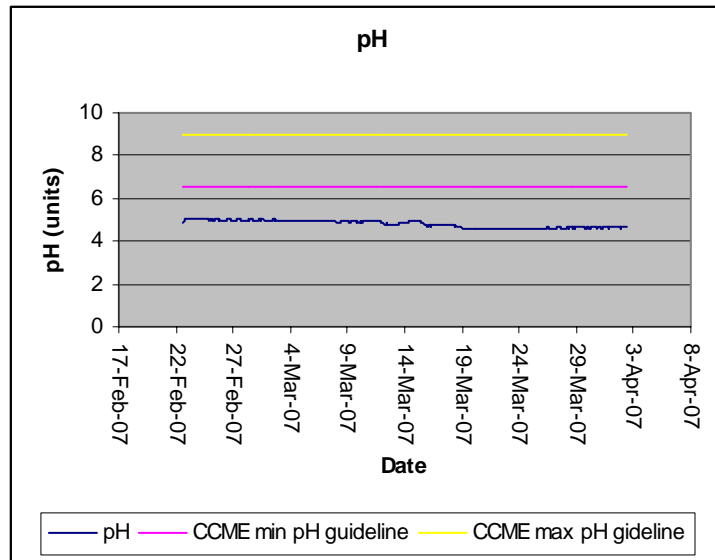


Figure 3

- The turbidity values (**Figure 4**) remained constant during the first half of the deployment period. There were a number of turbidity spikes from March 16th to the end of the deployment period on April 2nd. These turbidity spikes correspond with heavy precipitation (**Appendix A**) over the same time period. Turbidity values ranged from 0 to 158.4 NTU.

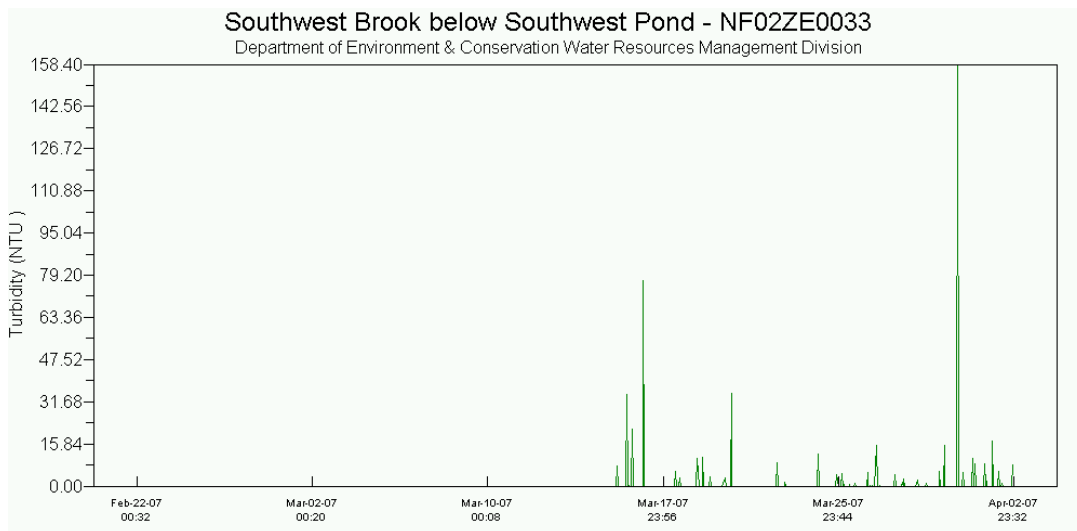


Figure 4

- Conductivity values (**Figure 5**) showed significant fluctuations between March 12th and March 18th. These fluctuations corresponded to changes in stage height during the same period(**Figure 6**), resulting from Spring runoff and precipitation. The conductivity values range from 16.2 μ S/cm to 20.9 μ S/cm.

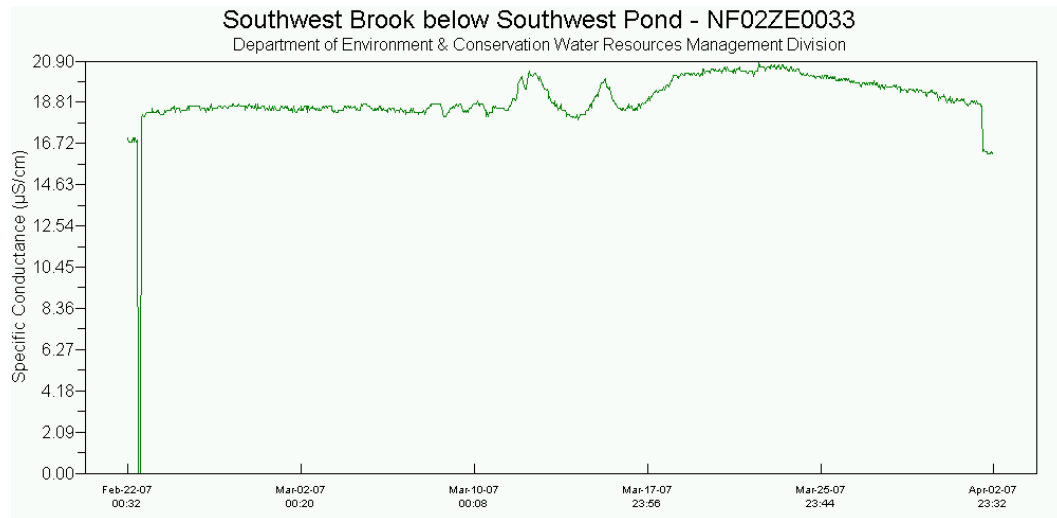


Figure 5

- The stage height chart (**Figure 6**, below) shows 2 significant peaks during this deployment period. The first peak occurred on March 8th when water levels rose sharply over about a 9-hour period, then quickly returned to previous levels. This type of quick increase and resolution is usually an indication that water was backing up behind an ice and snow jam, and quickly returned to previous levels as soon as the ice and snow broke free. The second peak spanned from March 12 to March 20 when water levels increased as a result of warmer temperatures and precipitation (**Appendix A**), causing Spring run-off conditions.

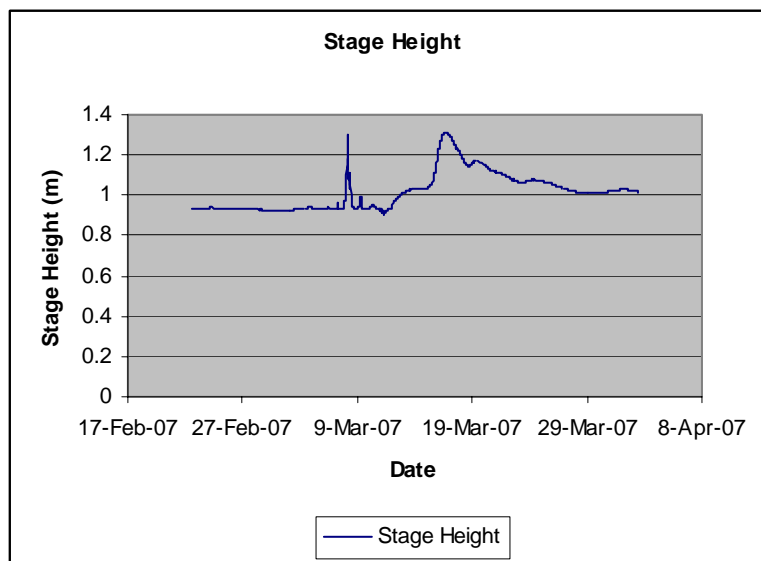


Figure 6

Appendix A: Climate Data for Argentina (February, March & April 2007)

Daily Data Report for February 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	-3.5	-10.0	-6.8	24.8	0.0			0.6	M		
02	5.8	-6.5	-0.4	18.4	0.0			23.2	M		
03	4.1	-0.5	1.8	16.2	0.0			4.1	M		
04	-2.5	-5.5	-4.0	22.0	0.0			0.0	M		
05	-3.1	-6.2	-4.7	22.7	0.0			1.3	M		
06	-6.9	-10.0	-8.5	26.5	0.0			0.0	M		
07	-4.8	-9.5	-7.2	25.2	0.0			0.0	M		
08	-6.0	-9.3	-7.7	25.7	0.0			0.7	M		
09	-5.8	-8.7	-7.3	25.3	0.0			0.0	M		
10	-4.6	-9.4	-7.0	25.0	0.0			1.3	M		
11	-4.9	-7.5	-6.2	24.2	0.0			0.0	M		
12	-3.9	-6.2	-5.1	23.1	0.0			0.6	M		
13	-0.8	-6.0	-3.4	21.4	0.0			0.0	M		
14	-0.8	-4.5	-2.7	20.7	0.0			0.0	M		
15	2.5	-5.5	-1.5	19.5	0.0			7.5	M		
16	0.3	-2.7	-1.2	19.2	0.0			0.0	M		
17	-2.5	-5.7	-4.1	22.1	0.0			0.6	M		
18	-1.2	-6.8	-4.0	22.0	0.0			6.9	M		
19	-1.4	-2.9	-2.2	20.2	0.0			8.0	M		
20	-0.2	-4.0	-2.1	20.1	0.0			0.0	M		
21	-2.8	-4.6	-3.7	21.7	0.0			0.0	M		
22	-3.0	-5.6	-4.3	22.3	0.0			0.0	M		
23	-2.1	-6.0	-4.1	22.1	0.0			2.6	14		
24	-1.5	-5.0	-3.3	21.3	0.0			0.0	13		
25	0.0	-3.6	-1.8	19.8	0.0			0.0	12		
26	1.5	-1.3	0.1	17.9	0.0			0.6	13		
27	-0.3	-2.1	-1.2	19.2	0.0			0.0	13		
28	0.0	-3.1	-1.6	19.6	0.0			0.0	13		
Sum				608.2	0.0			58.0			
Avg	-1.7	-5.7	-3.7								
Xbmn	5.8	-10.0S									

Daily Data Report for March 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†	-1.6	-6.6	-4.1	22.1	0.0	M	M	0.0	13		<31
02†	-0.6	-5.8	-3.2	21.2	0.0	M	M	0.0	13		<31
03†	1.7E	-6.5E	-2.4E	20.4E	0.0E	M	M	2.0E	13	M	M
04†	2.2	-3.7	-0.8	18.8	0.0	M	M	2.8	12	24	59
05†	-0.4	-1.6	-1.0	19.0	0.0	M	M	0.0	12	24	59
06†	-0.3	-4.1	-2.2	20.2	0.0	M	M	0.9	16	22	72
07†	-3.2	-8.9	-6.1	24.1	0.0	M	M	0.6	13	25	89
08†	-7.5	-10.8	-9.2	27.2	0.0	M	1.0	0.0	12	25	69
09†	-6.0	-12.0	-9.0	27.0	0.0	M	M	0.0	13	27	61
10†	-1.2	-8.2	-4.7	22.7	0.0	M	M	0.0	12	27	61
11†	4.8	-1.3	1.8	16.2	0.0	M	M	0.0	12	20	56
12†	5.3	-3.9	0.7	17.3	0.0	M	M	6.2	9	15	54
13†	-0.6	-4.5	-2.6	20.6	0.0	M	1.0	0.0	9	23	32
14†	5.0	-5.1	-0.1	18.1	0.0	M	M	0.0	9	21	72
15†	9.7	3.8	6.8	11.2	0.0	M	M	0.0	9	21	76
16†	6.7	-4.2	1.3	16.7	0.0	M	M	1.6	9	22	61
17†	2.6	-4.4	-0.9	18.9	0.0	M	M	0.0	9	10	61
18†	12.3	0.6	6.5	11.5	0.0	M	M	2.3	9	17	69
19†	2.1	-1.5	0.3	17.7	0.0	M	M	0.0	7	24	61
20†	4.6	-3.5	0.6	17.4	0.0	M	1.0	11.4	7	19	91
21†	0.5	-9.0	-4.3	22.3	0.0	M	5.0	0.0	8	32	70
22†	1.8	-7.8	-3.0	21.0	0.0	M	M	0.0	10	20	69
23†	2.2	0.1	1.2	16.8	0.0	0.0	1.0	1.7	8	22	59
24†	0.6	-7.2	-3.3	21.3	0.0	M	1.0	0.0	7	4	44
25†	0.0	-8.4	-4.2	22.2	0.0	M	M	0.0	8	6	39
26†	-0.5	-4.5	-2.5	20.5	0.0	M	3.0	0.0	8	3	59
27†	3.7	-0.9	1.4	16.6	0.0	M	3.0	0.0	10	1	70
28†	3.3	-0.9	1.2	16.8	0.0	M	M	1.3	15	22	37
29†	1.0	-1.5	-0.3	18.3	0.0	M	M	1.2	9	23	43
30†	3.3	-0.5	1.4	16.6	0.0	M	M	0.0	9	32	39
31†	2.0	-1.2	0.4	17.6	0.0	M	M	0.0	9	23	37
Sum				598.3E	0.0E	0.0*	16.0*	32.0E			
Avg	1.7E	-4.3E	-1.3E								
Xbmn	12.3E	-12.0E							19*	91*	

Daily Data Report for April 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†	0.0	-5.0	-2.5	20.5	0.0	M	M	0.0	10	34	57
02†	1.2	-5.2	-2.0	20.0	0.0	M	M	0.0	10	33	46
03†	1.0	-4.2	-1.6	19.6	0.0	M	1.0	1.4	9	3	63
Sum				60.1*	0.0*	M	1.0*	1.4*			
Avg	0.7*	-4.8*	-2*								
Xbmn	1.2*	-5.2*							3*	63*	

Prepared by: Joanne Sweeney
 Environmental Scientist
 Department of Environment and Conservation
 PH: (709) 292-4220
 FX: (709) 292-4365
joannesweeney@gov.nl.ca