Real Time Water Quality Monthly Report
Peter's River near Botwood
November 2006 – January 2007

General

- The Water Resources Management Division staff monitors the real-time web page on a daily basis.

Maintenance and Calibration of Instrumentation

- The instrument at Peter's River was removed on October 23rd, 2006 for cleaning and calibration and then reinstalled on November 15th. The period of time the instrument was out of the water was longer than normal due to staff workload constraints. The results from comparing the Minisonde values to the Datasonde values during removal and reinstallation on October 23rd /November 15th, 2006 can be seen in **Table 1**.

Table 1: QA/QC Data Comparison Rankings upon removal/reinstallation on Oct.23rd/Nov.15th, 2006

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Peter's River near Botwood	October 23rd, 2006	Removal	Excellent	Excellent	Fair	Poor
	November 15th, 2006	Installation	Excellent	Good	Marginal	Excellent

- The instrument was deployed until January 4th (43-day deployment period) at which point it was removed for maintenance and calibration. The results from comparing the Minisonde values to the Datasonde values during removal on January 4th, 2007 can be seen in **Table 2**.

Table 2: QA/QC Data Comparison Rankings upon removal on January 4th, 2006

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Peter's River near Botwood	January 4th, 2007	Removal	Excellent	Poor	Marginal	Fair

- A water sample was taken for laboratory analysis as part of QA/QC procedures upon reinstallation.

Data Interpretation

- During the deployment period of November 13th, 2006 – January 4th, 2007 the water quality remained relatively stable for most parameters.

- The water temperature (**Figure 1**) increased and then decreased at the end of November. The remainder of the deployment period showed temperatures that were stable until the instrument was removed on January 4th. There was a range from 10.3°C to -0.2°C over the deployment period.

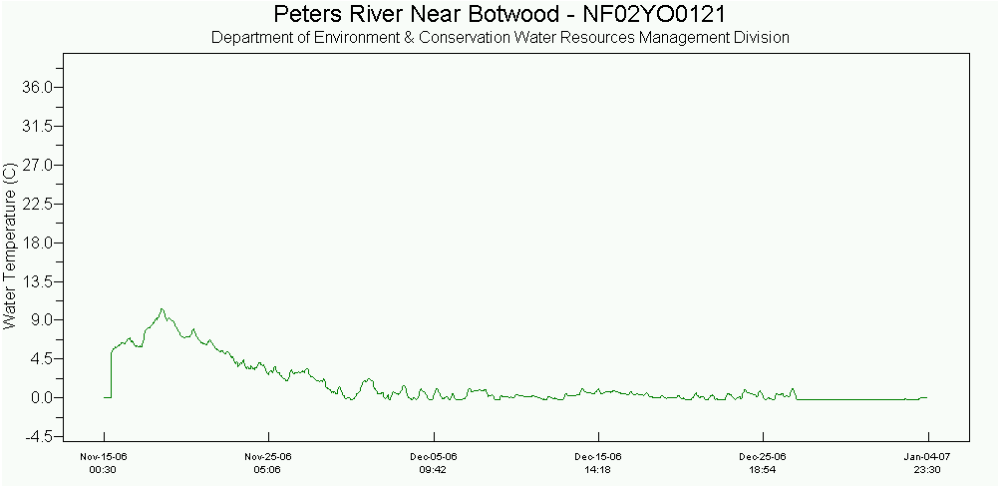

Figure 1

- The dissolved oxygen graph (**Figure 2**) showed a decrease and then increase in dissolved oxygen values over the deployment period. This corresponds to the same pattern seen in **Figure 1**. The dissolved oxygen values ranged from 10.13mg/L to 13.29mg/L. These values fall within the recommended 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).

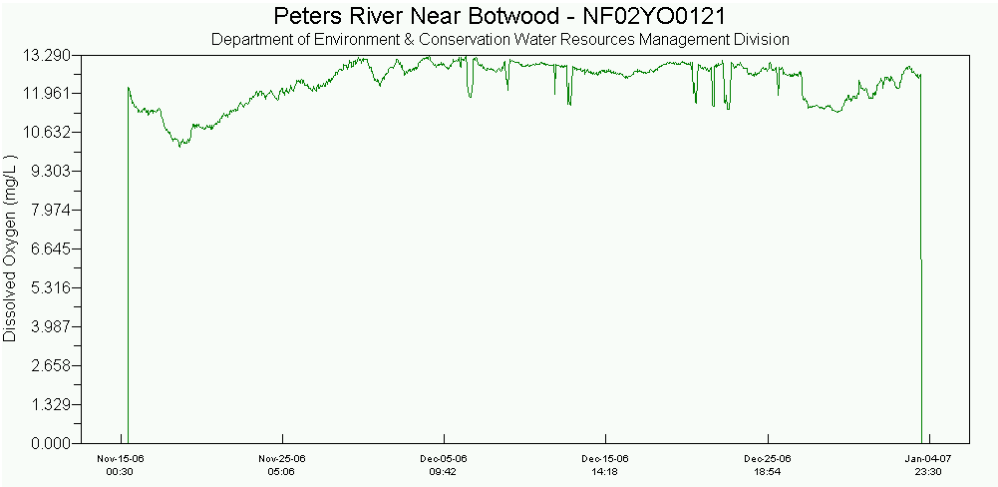

Figure 2

- pH values (**Figure 3**) remained fairly consistent throughout the deployment period with a slight decrease during the time period. pH values ranged from 5.7 to 6.8 with most values falling outside of the recommended range (6.5 – 9.0) for the CCME Protection of Aquatic Life guidelines.

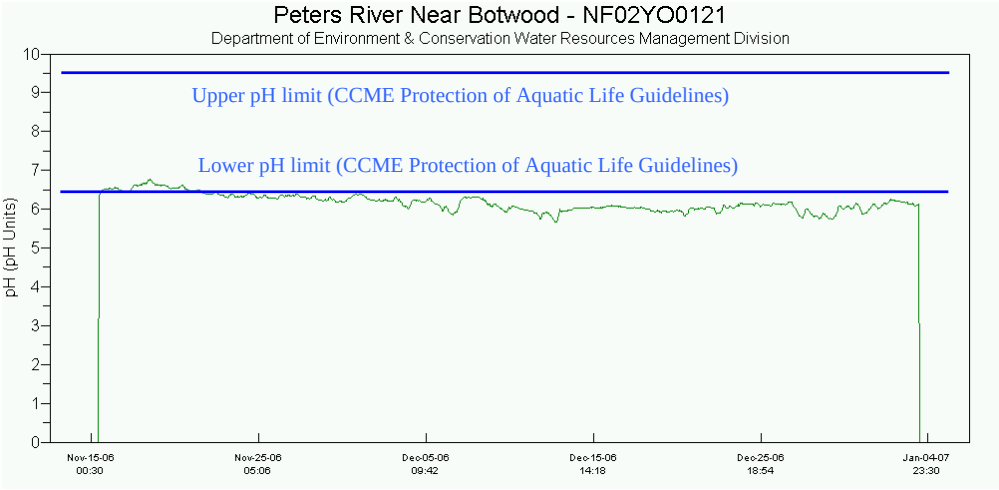

Figure 3

- The majority of the turbidity values (**Figure 4**) remained below 3 NTU which is the typical background concentration for this station. There were two small spikes of 6 NTU; December 6th and 14th that occurred for only one hour time periods. These small spikes were likely due to a slight disturbance of the turbidity sensor.

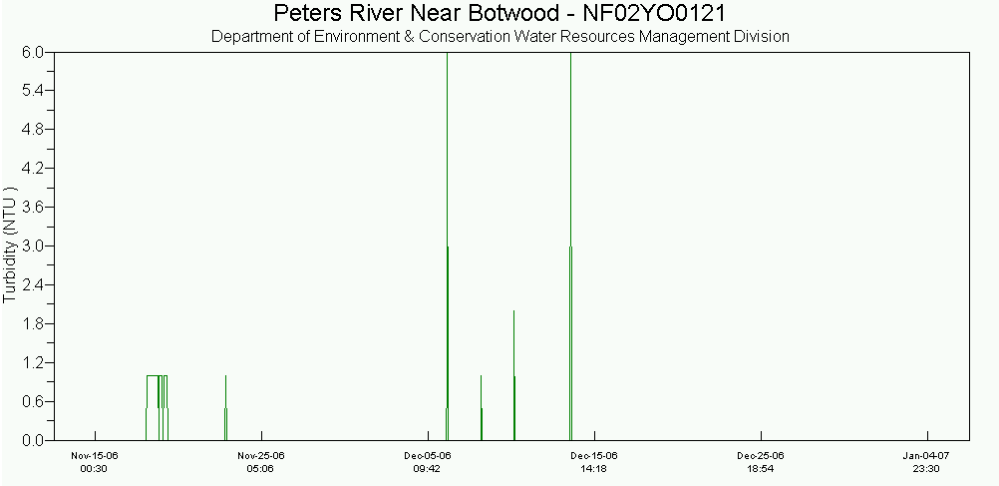

Figure 4

- Conductivity (**Figure 5**) shows four time periods where conductivity values significantly drop during the deployment period. These water quality events correspond to increased stage (**Figure 6**) and significant rainfall (**Appendix A**) during that period of time.

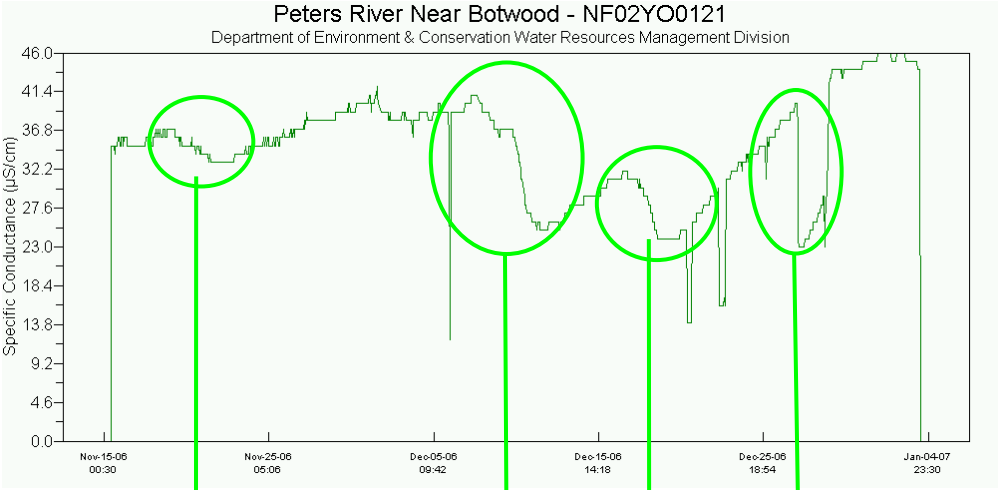

Figure 5

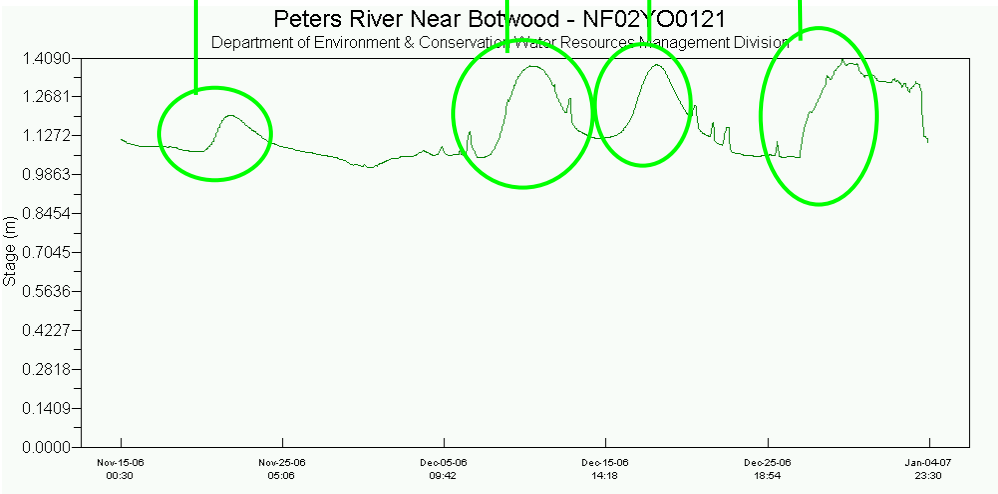

Figure 6

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Appendix A – Climate Data for Gander (November, December 206 & January 2007)

Daily Data Report for November 2006

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	9.3	1.4	5.4	12.6	0.0	0.8	0.0	0.8	0		
02	12.6	4.8	8.7	9.3	0.0	1.8	0.0	1.8	0		
03	12.8	0.1	6.5	11.5	0.0	28.0	0.0	28.0	0		
04	5.4	-1.1	2.2	15.8	0.0	0.0	0.0	0.0	0		
05	5.0	-2.3	1.4	16.6	0.0	0.0	T	T	0		
06	3.7	-4.2	-0.3	18.3	0.0	0.0	0.0	0.0	0		
07	4.0	-4.4	-0.2	18.2	0.0	0.0	0.0	0.0	0		
08	8.2	1.5	4.9	13.1	0.0	T	0.0	T	0		
09	9.1	1.4	5.3	12.7	0.0	8.2	0.0	8.2	0		
10	13.6	5.8	9.7	8.3	0.0	8.2	0.0	8.2	0		
11	8.1	1.8	5.0	13.0	0.0	0.0	0.0	0.0	0		
12	5.4	-0.2	2.6	15.4	0.0	0.2	T	0.2	0		
13	2.8	-3.6	-0.4	18.4	0.0	0.0	0.0	0.0	0		
14	5.6	-4.4	0.6	17.4	0.0	0.0	0.0	0.0	0		
15	13.8	5.4	9.6	8.4	0.0	1.2	0.0	1.2	0		
16	12.6	7.0	9.8	8.2	0.0	T	0.0	T	0		
17	15.7	6.3	11.0	7.0	0.0	T	0.0	T	0		
18	16.9	10.1	13.5	4.5	0.0	1.6	0.0	1.6	0		
19	10.1	5.7	7.9	10.1	0.0	7.4	0.0	7.4	0		
20	12.6	2.9	7.8	10.2	0.0	3.2	0.0	3.2	0		
21	6.2	-0.8	2.7	15.3	0.0	T	0.0	T	0		
22	4.2	-2.5	0.9	17.1	0.0	0.0	0.0	0.0	0		
23	4.7	-4.7	0.0	18.0	0.0	0.0	0.0	0.0	0		
24	4.8	-2.6	1.1	16.9	0.0	6.2	1.4	7.6	0		
25	-1.0	-3.6	-2.3	20.3	0.0	0.0	T	T	1		
26	4.6	-2.0	1.3	16.7	0.0	0.2	0.0	0.2	1		
27	4.1	-3.1	0.5	17.5	0.0	0.0	0.0	0.0	0		
28	-1.8	-5.9	-3.9	21.9	0.0	0.0	T	T	0		
29	-2.9	-7.7	-5.3	23.3	0.0	0.0	0.0	0.0	T		
30	8.6	-7.3	0.7	17.3	0.0	1.4	4.8	5.4	3		
Sum				**433.3**	**0.0**	**68.4**	**6.2**	**73.8**			
Avg	**7.3**	**-0.2**	**3.6**								
Xtrm	**16.9**	**-7.7**									

Daily Data Report for December 2006

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	9.0	-3.6	2.7	15.3	0.0	2.6	0.0	2.6	T		
02	-1.4	-4.7	-3.1	21.1	0.0	0.4	15.2	16.6	3		
03	-1.5	-8.2	-4.9	22.9	0.0	0.0	5.6	4.0	18		
04	-1.2	-8.0	-4.6	22.6	0.0	0.0	9.2	9.2	20		
05	-1.0	-4.6	-2.8	20.8	0.0	0.0	16.8	15.0	37		
06	-4.5	-8.9	-6.7	24.7	0.0	0.0	2.2	1.8	44		
07	4.5	-7.3	-1.4	19.4	0.0	1.2	T	1.2	42		
08	5.0	-2.6	1.2	16.8	0.0	31.6	5.0	36.6	30		
09	-2.6	-11.2	-6.9	24.9	0.0	0.0	T	T	26		
10	2.6	-7.7	-2.6	20.6	0.0	0.4	0.2	0.6	26		
11	1.8	-8.1	-3.2	21.2	0.0	0.0	0.4	0.4	22		
12	-4.1	-10.2	-7.2	25.2	0.0	0.0	0.4	0.4	21		
13	-0.1	-9.1	-4.6	22.6	0.0	0.0	T	T	21		
14	6.3	-0.2	3.1	14.9	0.0	T	0.0	T	20		
15	5.0	1.9	3.5	14.5	0.0	0.0	0.0	0.0	10		
16	3.1	0.1	1.6	16.4	0.0	14.4	0.6	15.0	4		
17	2.7	-1.9	0.4	17.6	0.0	0.2	1.0	1.2	2		
18	3.3	-6.3	-1.5	19.5	0.0	0.0	1.2	1.2	4		
19	-3.5	-7.3	-5.4	23.4	0.0	T	4.0	3.0	4		
20	-4.0	-7.7	-5.9	23.9	0.0	T	T	T	7		
21	-0.4	-6.7	-3.6	21.6	0.0	0.0	0.4	0.4	7		
22	-2.0	-8.7	-5.4	23.4	0.0	T	6.0	3.4	7		
23	-1.2	-8.7	-5.0	23.0	0.0	0.0	T	T	13		
24	4.8	-6.5	-0.9	18.9	0.0	3.2	0.4	3.6	13		
25	2.0	-3.0	-0.5	18.5	0.0	0.0	T	T	10		
26	0.1	-3.8	-1.9	19.9	0.0	0.0	1.8	1.2	10		
27	-3.1	-10.3	-6.7	24.7	0.0	T	1.4	1.2	13		
28	-7.2	-11.4	-9.3	27.3	0.0	0.0	0.0	0.0	13		
29	-10.7	-14.0	-12.4	30.4	0.0	0.0	0.2	0.2	13		
30	-5.0	-12.8	-8.9	26.9	0.0	0.0	T	T	13		
31	-3.8	-10.0	-6.9	24.9	0.0	0.0	2.8	1.4	13		
Sum				**667.8**	**0.0**	**54.0**	**74.8**	**120.2**			
Avg	**-0.2**	**-6.8**	**-3.5**								
Xtrm	**9.0**	**-14.0**									

Daily Data Report for January 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†	-4.3	-10.0	-7.2	25.2	0.0	0.0	0.6	0.6	15	33	48
02†	4.4	-5.9	-0.8	18.8	0.0	10.8	1.6	13.4	15	29	63
03†	-0.6	-8.0	-4.3	22.3	0.0	0.0	T	T	9	27	69
04†	1.3	-3.7	-1.2	19.2	0.0	0.0	0.0	0.0	9	23	48
05†	3.7	0.3	2.0	16.0	0.0	2.6	T	2.6	8	22	41
06†	6.2	2.6	4.4	13.6	0.0	14.0	0.0	14.0	6	24	35
07†	7.0	0.0	3.5	14.5	0.0	4.4	1.0	5.4	2	28	76
08†	1.9	-1.1	0.4	17.6	0.0	1.8	3.8	6.4	2	16	65
09†	8.6	0.0	4.3	13.7	0.0	0.8	0.0	0.8	1	18	56
10†	1.8	-1.9	-0.1	18.1	0.0	0.0	0.0	0.0	T	23	44
11†	-1.7	-4.7	-3.2	21.2	0.0	0.0	0.4	0.4	T	28	44
12†	0.2	-5.5	-2.7	20.7	0.0	0.0	1.6	1.4	T	23	46
13†	-0.2	-8.9	-4.6	22.6	0.0	0.0	13.4	11.4	2	36	50
14†	-5.9	-11.9	-8.9	26.9	0.0	0.0	T	T	14	22	39
15†	-6.0	-13.7	-9.9	27.9	0.0	0.0	T	T	13	28	52
16†	-10.3	-15.6	-13.0	31.0	0.0	0.0	15.6	4.2	14	28	33
17†	-14.3	-20.0	-17.2	35.2	0.0	0.0	0.0	0.0	29	27	41
18†	-9.8	-20.3	-15.1	33.1	0.0	0.0	0.0	0.0	29	28	44
19†	0.7	-9.9	-4.6	22.6	0.0	0.0	0.4	0.4	29	15	59
20†	2.9	-2.5	0.2	17.8	0.0	9.4	T	9.4	27	14	70
21†	-0.9	-5.2	-3.1	21.1	0.0	0.0	15.0	14.2	19	30	56
22†	-4.8	-12.9	-8.9	26.9	0.0	0.0	0.8	0.6	35	27	48
23†	-7.4	-13.6	-10.5	28.5	0.0	0.0	0.0	0.0	34		<31
24†	0.2	-10.8	-5.3	23.3	0.0	0.8	22.6	22.6	37	2	59
25†	0.2	-8.1	-4.0	22.0	0.0	0.0	5.4	5.4	58	23	46
26†	0.6	-11.2	-5.3	23.3	0.0	0.4	16.4	16.0	57	5	80
27†	0.9	-4.0	-1.6	19.6	0.0	0.2	8.0	7.2	73	9	54
28†	-4.0	-7.5	-5.8	23.8	0.0	0.0	0.4	0.4	80	27	54
29†	-6.8	-10.8	-8.8	26.8	0.0	0.0	2.6	2.2	79	23	33
30†	-7.8	-12.3	-10.1	28.1	0.0	0.0	17.0	15.4	96	26	57
31†	-8.0	-14.1	-11.1	29.1	0.0	0.0	0.0	0.0	97	23	52
Sum				**710.5**	**0.0**	**45.2**	**126.6**	**154.4**			
Avg	**-1.7**	**-8.1**	**-4.9**								
Xtrm	**8.6**	**-20.3**								**5**	**80**

Days when heavy precipitation was recorded during the deployment period are highlighted in red