

**Real Time Water Quality Monthly Report  
Peter's River near Botwood  
June– July 2006**

**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 June 22<sup>nd</sup>, 2006 for cleaning and calibration and then reinstalled on June 23<sup>rd</sup>. The results from comparing the Minisonde values to the Datasonde values during removal and reinstallation on June 22<sup>nd</sup>/23<sup>rd</sup>, 2006 can be seen in **Table 1**.

**Table 1: QA/QC Data Comparison Rankings upon removal/reinstallation on June 22<sup>nd</sup>/23<sup>rd</sup>, 2006**

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Peter's River near Botwood	June 22 <sup>nd</sup> , 2006	Removal	Excellent	Good	Poor	Poor
	June 23 <sup>rd</sup> , 2006	Installation	Fair	Excellent	Good	Excellent

- The instrument was deployed until July 19<sup>th</sup> (27-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 July 19<sup>th</sup>, 2006 can be seen in **Table 2**.

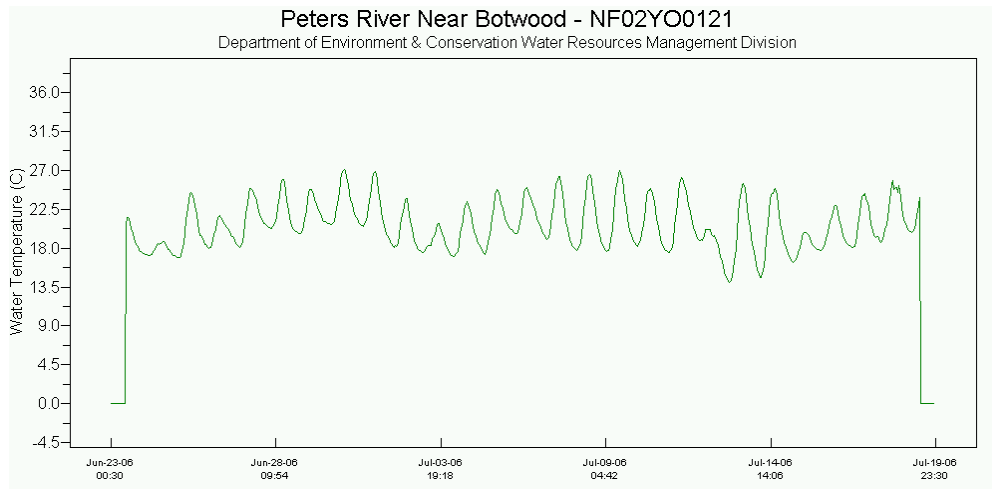
**Table 2: QA/QC Data Comparison Rankings upon removal on July 19<sup>th</sup>, 2006**

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Peter's River near Botwood	July 19 <sup>th</sup> , 2006	Removal	Fair	Excellent	Poor	Fair

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

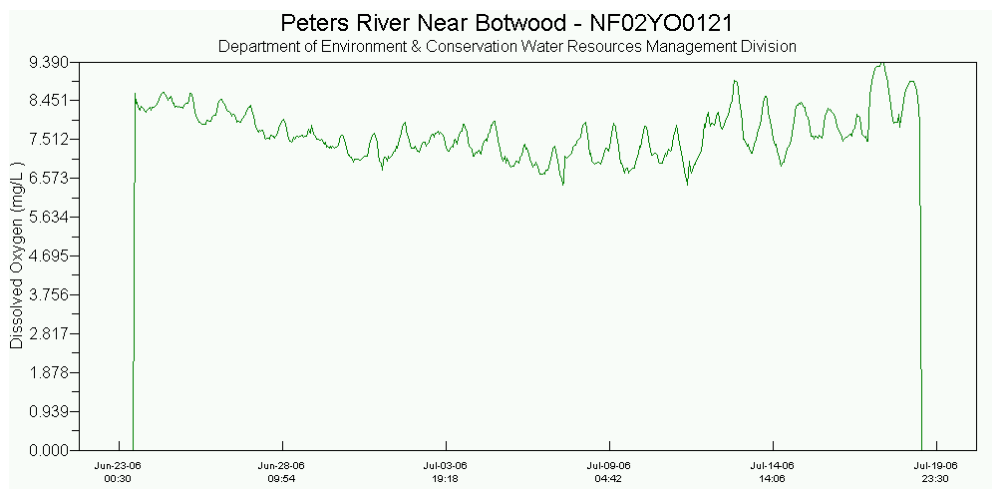
## Data Interpretation

- During the deployment period of June 23<sup>rd</sup> – July 19<sup>th</sup>, 2006 the water quality remained relatively stable for most parameters.
- The water temperature (**Figure 1**) fluctuated throughout the deployment period with a range from 14.0°C to 27.1°C. This was a very strong diurnal pattern detected in the data throughout the months of June and July.



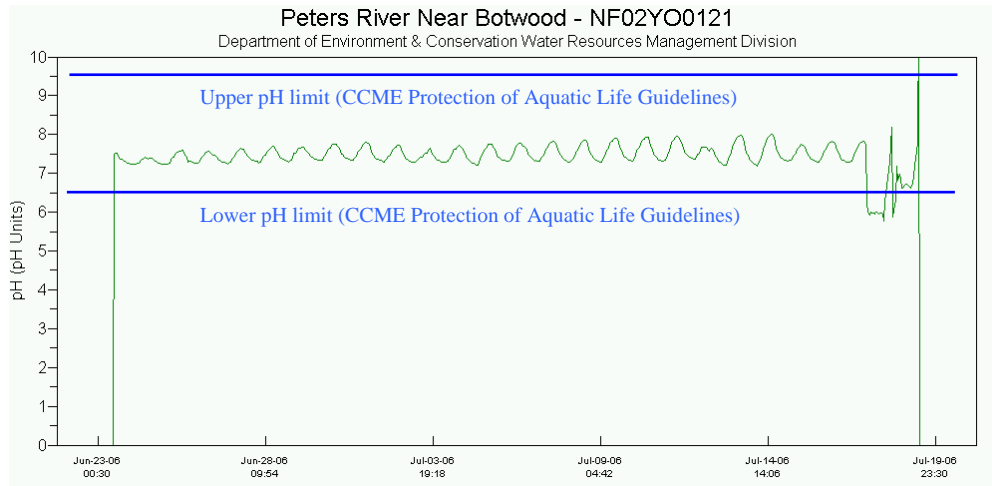
**Figure 1**

- The dissolved oxygen graph (**Figure 2**) showed fluctuations in dissolved oxygen values over the deployment period. This corresponds to the fluctuations seen in **Figure 1**. The dissolved oxygen values ranged from 6.4mg/L to 9.39mg/L. The maximum value for dissolved oxygen (9.39mg/L) occurred on July 18<sup>th</sup>. Similar effects were seen in other parameters (ie. pH and conductivity) during the same time period due to unknown events. All dissolved oxygen values fall within the recommended CCME Protection of Aquatic Life guidelines for dissolved oxygen in most cases (cold water/other life stages – above 6.5; warm water/other life stages – above 5.5; warm water/early life stages – above 6); however, most values fall below the most conservative limit for cold water/early life stages – 9.5 mg/L.



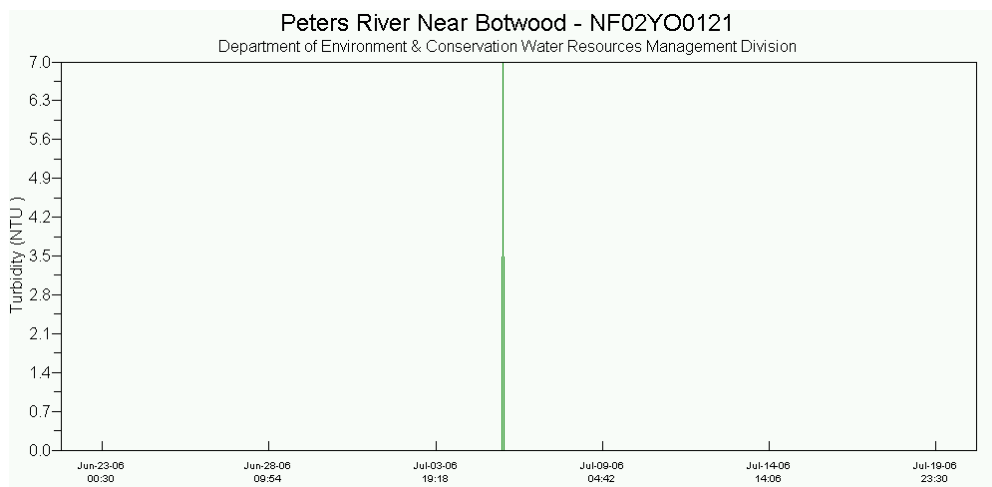
**Figure 2**

- pH values (**Figure 3**) remained consistent throughout the deployment period until July 17<sup>th</sup> when pH dropped to 5.77. All values before July 17<sup>th</sup> remain within the recommended range (6.5 – 9.0) for the CCME Protection of Aquatic Life guidelines. On July 17<sup>th</sup>, the pH dropped for a short period of time and then returned to background levels but continued to fluctuate until removal of the instrument. Similar effects were seen in other parameters (ie. dissolved oxygen and conductivity) during the same time period due to unknown events. The last pH value before removal was a maximum value of 10.93 which only occurred for that one hour. This value could have been affected by the removal of the instrument at the same time as the reading took place.



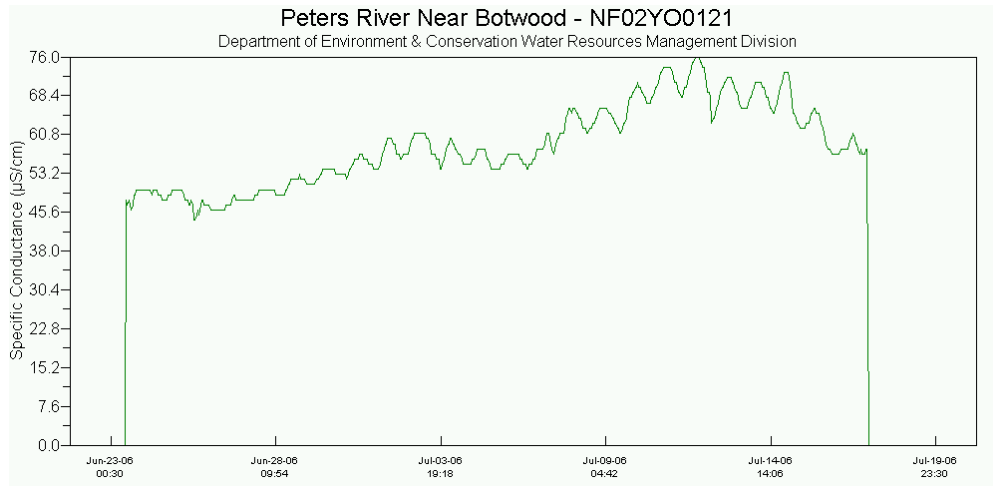
**Figure 3**

- The turbidity values (**Figure 4**) remained at 0 NTU with the exception of one spike seen on July 5<sup>th</sup>. This spike only occurred for one hour and immediately returned to 0 NTU. This spike was likely due to a disturbance of the turbidity probe and not a water quality event.

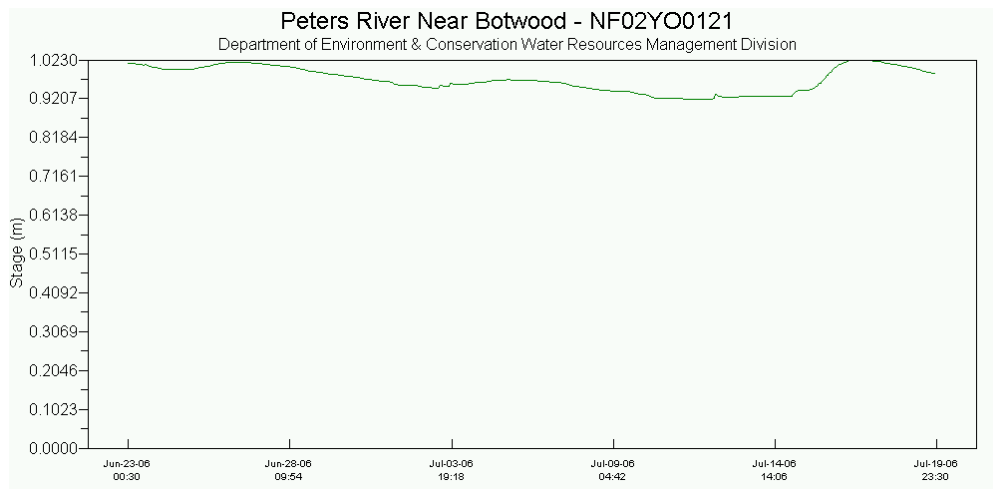


**Figure 4**

- Conductivity (**Figure 5**) increased from initial deployment on June 23<sup>rd</sup> to July 12<sup>th</sup> where it reached a maximum of 76  $\mu\text{S/cm}$ . Conductivity then decreased until July 17<sup>th</sup> at which point conductivity values dropped to 0  $\mu\text{S/cm}$  and remained at that level until removal of the instrument. Similar effects were seen in other parameters (ie. pH and dissolved oxygen) during the same time period (July 17<sup>th</sup> – July 19<sup>th</sup>) due to unknown events. The increase/decrease in conductivity noted above (June 23<sup>rd</sup> – July 17<sup>th</sup>) corresponds with a decrease/increase in stage (**Figure 6**). This was due to heavy rainfall in the area (Gander) as can be seen in **Appendix A**.



**Figure 5**



**Figure 6**

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## Appendix A: Climate Data for Gander (June & July 2006)

Daily Data Report for June 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	12.2	6.2	9.2	8.8	0.0	9.0	0.0	9.0	0	<31	
02	18.7	7.5	13.1	4.9	0.0	T	0.0	T	0	<31	
03	20.7	7.7	14.2	3.8	0.0	7.6	0.0	7.6	0	<31	
04	19.4	10.2	14.8	3.2	0.0	T	0.0	T	0	<31	
05	13.1	7.2	10.2	7.8	0.0	24.8	0.0	24.8	0	<31	
06	9.2	4.3	6.8	11.2	0.0	1.2	0.0	1.2	0	<31	
07	16.3	4.0	10.2	7.8	0.0	T	0.0	T	0	<31	
08	16.2	5.0	10.6	7.4	0.0	T	0.0	T	0	<31	
09	21.0	5.1	13.1	4.9	0.0	0.0	0.0	0.0	0	17E	32E
10	23.0	11.9	17.5	0.5	0.0	8.4	0.0	8.4	0	14E	32E
11	20.3	10.7	15.5	2.5	0.0	7.4	0.0	7.4	0	16E	41E
12	18.7	11.4	15.1	2.9	0.0	8.2	0.0	8.2	0	<31	
13	14.7	6.9	10.8	7.2	0.0	1.6	0.0	1.6	0	<31	
14	14.2	7.4	10.8	7.2	0.0	6.0	0.0	6.0	0	<31	
15	21.9	9.5	15.7	2.3	0.0	4.0	0.0	4.0	0	8E	46E
16	11.1	6.6	8.9	9.1	0.0	20.6	0.0	20.6	0	35E	59E
17	26.5	9.0	17.8	0.2	0.0	0.0	0.0	0.0	0	23E	54E
18	24.8	12.8	18.8	0.0	0.8	0.0	0.0	0.0	0	23E	54E
19	26.0	12.7	19.4	0.0	1.4	0.0	0.0	0.0	0	23E	61E
20	23.8	12.4	18.1	0.0	0.1	0.0	0.0	0.0	0	20E	54E
21	24.9	14.2	19.6	0.0	1.6	T	0.0	T	0	22E	44E
22	22.6	13.5	18.1	0.0	0.1	0.0	0.0	0.0	0	23E	39E
23	22.7	12.4	17.6	0.4	0.0	1.4	0.0	1.4	0	22E	41E
24	18.6	14.0	16.3	1.7	0.0	10.2	0.0	10.2	0	<31	
25	24.6	14.0	19.3	0.0	1.3	4.6	0.0	4.6	0	<31	
26	21.9	13.3	17.6	0.4	0.0	1.8	0.0	1.8	0	<31	
27	26.5	14.6	20.6	0.0	2.6	2.6	0.0	2.6	0	<31	
28	26.2	16.9	21.6	0.0	3.6	1.4	0.0	1.4	0	27E	44E
29	27.4	18.0	22.7	0.0	4.7	T	0.0	T	0	26E	41E
30	28.8	18.2	23.5	0.0	5.5	0.0	0.0	0.0	0	25E	35E
Sum				94.2	21.7	120.8	0.0	120.8			
Avg	20.5	10.6	15.6								
Xtbn	28.8	4.0								23E	61E

Daily Data Report for July 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	25.4	13.4	19.4	0.0	1.4	1.0	0.0	1.0	0	23E	54E
02	20.7	12.1	16.4	1.6	0.0	3.2	0.0	3.2	0	21E	63E
03	19.3	10.9	15.1	2.9	0.0	1.4	0.0	1.4	0	32E	44E
04	21.2	9.8	15.5	2.5	0.0	1.2	0.0	1.2	0	28E	41E
05	24.1	12.0	18.1	0.0	0.1	T	0.0	T	0	17E	32E
06	25.8	16.3	21.1	0.0	3.1	0.6	0.0	0.6	0	22E	32E
07	25.0	10.4	17.7	0.3	0.0	0.0	0.0	0.0	0	30E	44E
08	24.2	9.7	17.0	1.0	0.0	T	0.0	T	0	25E	43E
09	29.8	17.1	23.5	0.0	5.5	0.0	0.0	0.0	0	22E	57E
10	24.6	11.5	18.1	0.0	0.1	0.6	0.0	0.6	0	23E	33E
11	25.8	11.9	18.9	0.0	0.9	2.2	0.0	2.2	0	<31	
12	21.0	5.5	13.3	4.7	0.0	13.0	0.0	13.0	0	27E	44E
13	20.6	6.1	13.4	4.6	0.0	0.0	0.0	0.0	0	<31	
14	17.9	7.1	12.5	5.5	0.0	0.2	0.0	0.2	0	<31	
15	14.2	10.4	12.3	3.7	0.0	13.0	0.0	13.0	0	<31	
16	21.5	11.4	16.5	1.5	0.0	0.4	0.0	0.4	0	22E	37E
17	24.2	13.5	18.9	0.0	0.9	0.2	0.0	0.2	0	20E	33E
18	27.0	17.3	22.2	0.0	4.2	0.2	0.0	0.2	0	18E	44E
19	28.7	14.2	21.5	0.0	3.5	0.0	0.0	0.0	0	23E	35E
20	26.4	12.8	19.6	0.0	1.6	0.0	0.0	0.0	0	35E	39E
21	28.1	14.0	21.1	0.0	3.1	T	0.0	T	0	21E	39E
22	22.3	15.1	18.7	0.0	0.7	8.6	0.0	8.6	0	29E	44E
23	18.5	12.9	15.7	2.3	0.0	7.2	0.0	7.2	0	<31	
24	18.6	12.4	15.5	2.5	0.0	25.4	0.0	25.4	0	<31	
25	19.6	12.0	15.8	2.2	0.0	29.8	0.0	29.8	0	35E	44E
26	17.3	14.5	15.9	2.1	0.0	5.2	0.0	5.2	0	25E	32E
27	23.1	12.7	17.9	0.1	0.0	T	0.0	T	0	<31	
28	20.3	13.9	17.1	0.9	0.0	T	0.0	T	0	<31	
29	18.4	15.0	16.7	1.3	0.0	31.6	0.0	31.6	0	17E	35E
30	26.3	12.9	19.6	0.0	1.6	0.0	0.0	0.0	0	32E	37E
31	22.1	10.8	16.5	1.5	0.0	1.8	0.0	1.8	0	29E	48E
Sum				43.2	26.7	148.8	0.0	148.8			
Avg	22.6	12.2	17.5								
Xtbn	29.8	5.5								21E	63E

Days when heavy precipitation was recorded during the deployment period