Government of Newfoundland and Labrador

Real Time Water Quality Monthly Report
For Peter's River
April-May 2006

General

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

Maintenance and Calibration of Instrumentation

- The datasonde was installed in Peter's River on April 5, 2006 after it received routine cleaning, maintenance and calibration. The turbidity sensor on the datasonde would not calibrate successfully prior to installation, and turbidity data is therefore unreliable for the duration of this deployment. All other sensors calibrated successfully. The datasonde remained in Peter's River for an extended period totalling about 49 days, instead of the typical 25-30 day duration. QA/QC results for this period indicate that there was no excessive drifting of data for any of the parameters due to this lengthy deployment. The datasonde was removed from Peter's River on May 24. Comparative water quality readings were taken with a minisonde during removal and installation of the datasonde. This procedure is required as part of QA/QC protocol. Water samples were collected for laboratory analysis at the time of installation as part of QA/QC protocol.

Data Interpretation

- All water quality parameters displayed normal behaviour reflective of environmental conditions during the period of measure, with the exception of the turbidity sensor, which did not calibrate successfully prior to installation.
- Environment Canada reported the following daily air temperatures, precipitation and wind gusts for the Central NL region (Gander)during April 2006 in **table 1,** and during May 2006 in **table 2** below:

Table 1: Daily Climate Data April 2006

Day	Max Temp (°C)	Min Temp (°C)	Mean Temp (°C)	Total Precip (mm)	Max Wind (km/hr)	Day	Max Temp (°C)	Min Temp (°C)	Mean Temp (°C)	Total Precip (mm)	Max Wind (km/hr)
1	7.5	-1.3	3.1	trace	41	16	7.5	1.7	4.6	23.2	<31
2	5.4	2.5	4.0	3.6	57	17	4.4	2.2	3.3	33.4	46
3	4.0	-1.3	1.4	1.0	<31	18	4.5	1.8	3.2	15.2	33
4	0.2	-1.4	-0.6	1.2	<31	19	6.2	1.9	4.1	6.4	48
5	5.6	-2.4	1.6	0.2	<31	20	5.1	-1.2	2.0	4.2	52
6	4.2	-0.4	1.9	5.4	32	21	1.9	-1.5	0.2	0.0	50
7	4.8	0.8	2.8	0.2	57	22	3.1	-1.0	1.1	0.4	44
8	6.6	0.9	3.8	0.4	83	23	8.5	-2.1	3.2	0.0	35
9	7.5	0.8	4.2	0.0	35	24	18.6	-3.0	7.8	0.0	35
10	2.6	-1.2	0.7	25.8	39	25					
11	6.6	-1.5	2.6	0.6	<31	26					
12	6.9	-2.5	2.2	0.0	<31	27					
13	12.3	-0.9	5.7	0.0	46	28					
14	10.2	0.3	5.3	0.0	39	29					
15	6.6	0.2	3.4	9.8	<31	30					
						31					

***Data extracted from Environment Canada http://www.climate.weatheroffice.ec.gc.ca/climateData/canada_e.html**

Table 2: Daily Climate Data May 2006

Day	Max	Min	Mean	Total	Max	Day	Max	Min	Mean	Total	Max

	Temp (°C)	Temp (°C)	Temp (°C)	Precip (mm)	Wind (km/hr)		Temp (°C)	Temp (°C)	Temp (°C)	Precip (mm)	Wind (km/hr)
1	18.3	-3.1	7.6	0.0	32	16	10.7	3.2	7.0	0.0	<31
2	22.6	2.5	12.6	0.0	37	17	5.0	2.2	3.6	8.2	37
3	22.3	2.2	12.3	0.0	<31	18	5.4	2.3	3.9	1.4	<31
4	22.3	6.9	14.6	0.0	44	19	12.1	3.3	7.7	T	<31
5	16.3	8.0	12.2	T	44	20	14.3	3.5	8.9	1.0	48
6	22.2	10.6	16.4	T	<31	21	9.6	6.3	8.0	20.0	44
7	16.4	10.3	13.4	7.0	37	22	12.5	5.5	9.0	10.0	46
8	17.1	4.4	10.8	0.0	37	23	8.3	2.5	5.4	3.4	41
9	14.8	2.5	8.7	0.0	<31	24	4.9	2.0	3.5	2.0	48
10	15.7	2.2	9.0	0.0	<31	25	12.7	2.2	7.5	1.0	37
11	15.3	1.6	8.5	0.0	35	26	15.3	2.5	8.9	T	41
12	11.5	2.5	7.0	0.6	39	27	14.4	6.6	10.5	7.6	61
13	7.5	2.4	5.0	0.2	<31	28	16.9	4.5	10.7	7.8	<31
14	15.7	2.2	9.0	T	<31	29	18.2	3.4	10.8	5.2	56
15	27.0	5.4	16.2	0.0	37	30	9.6	1.2	5.4	1.6	56
						31	16.8	3.5	10.2	0.0	<31

***Data extracted from Environment Canada** http://www.climate.weatheroffice.ec.gc.ca/climateData/canada_e.html
† =data has undergone only preliminary checking; T=trace amount

- **Stage height** fluctuated between 0.96 and 2.454m during the period of measure as seen in **figure 1** below. Stage height was impacted by daily precipitation levels that were recorded for the region, as seen in **tables 1 and 2** above. About 92.2mm of rain fell in the area between April 15-20 (**table 1**), resulting in a peak in stage height during this period as seen in **figure 1** below.
- **Water temperatures showed** an increasing trend as seen in **figure 2** below. This is in response to the seasonal increasing trend in daily air temperatures, as seen in **tables 1 and 2** above.

Figure 1: Stage Height

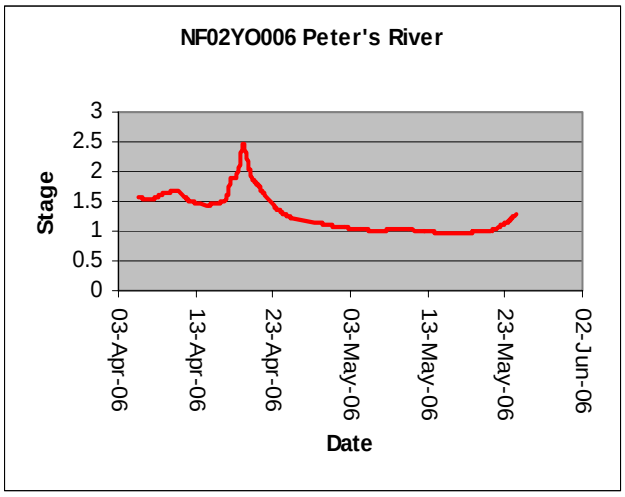
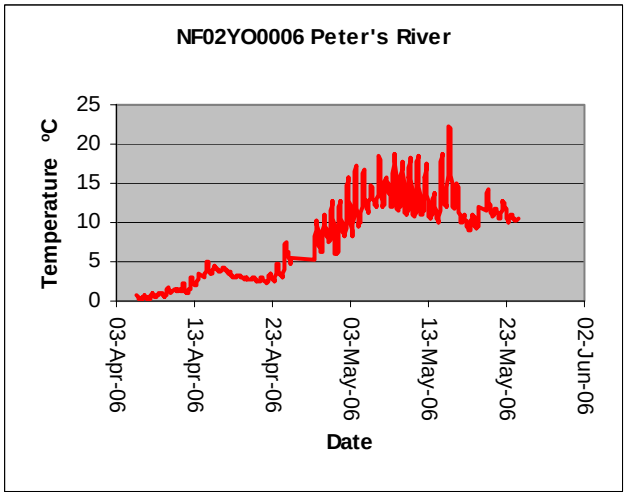


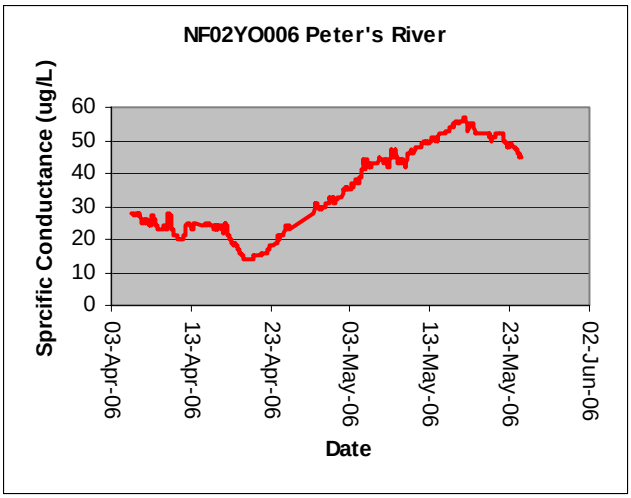
Figure 2: Water Temperature

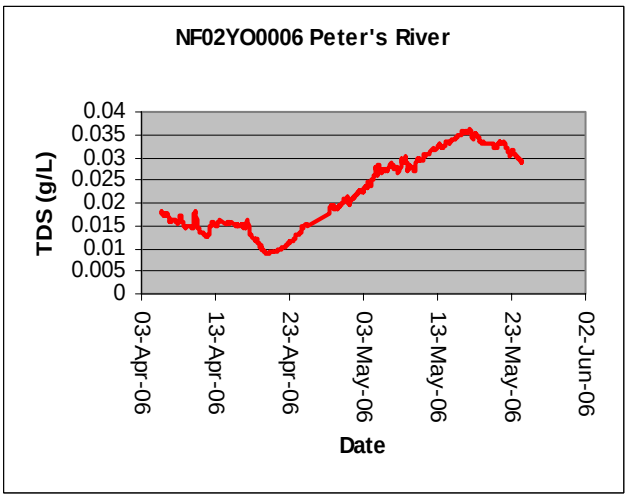


- **Specific conductivity** levels ranged from 14-57µS/cm during the period of measure, as indicated in **figure 3** below. This range is reflective of natural background conditions in Peter's River.
- **Total dissolved solids** reflect the close relationship between specific conductance and total dissolved solids, as seen in **figure 4**. Conductivity measurements are a good indication of total dissolved solids and total dissolved ion concentrations, although this is not an exact linear relationship.

Figure 3: Specific Conductance

Figure 4: Total Dissolved Solids





- **pH** levels periodically fell slightly below the minimum recommended CCME guideline of 6.5 pH units for the protection of freshwater aquatic life, as seen in **figure 5**, below. These values reflect the natural background pH range for Peter's River.
- **Dissolved oxygen (DO)** levels showed a decreasing trend during this period of measure, ranging from 7.13-13.49 mg/L, as seen in **figure 6**, below. It is typical for DO levels to decrease as water temperature increases.

Figure 5: pH

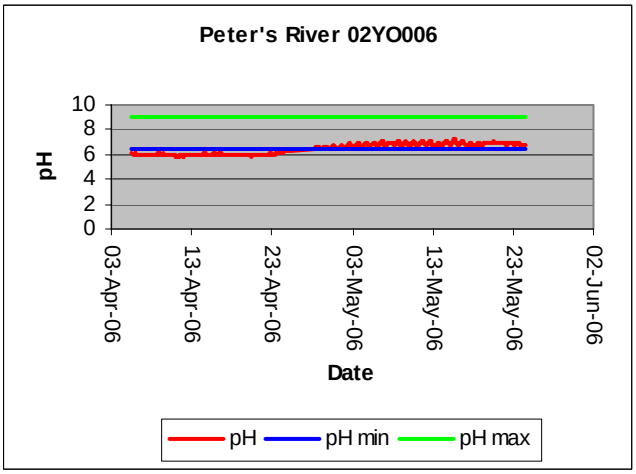
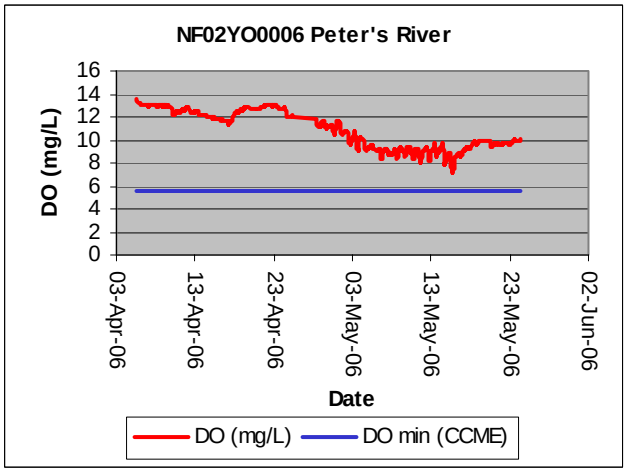
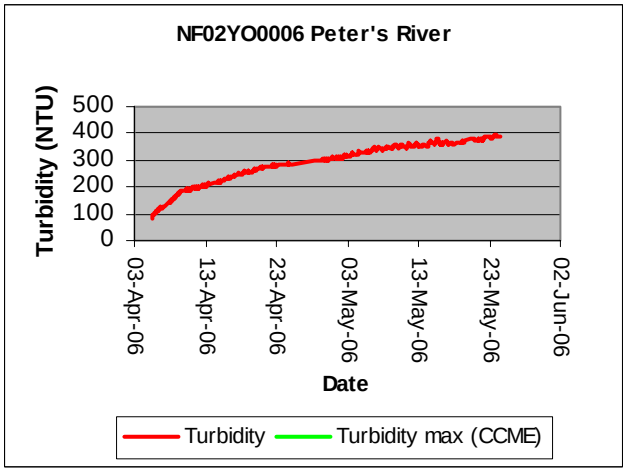


Figure 6: DO (mg/L)



- **Turbidity** values were unreliable for the period of measure, as the turbidity sensor would not calibrate successfully prior to the hydrolab being installed in Peter's River on April 5, 2006.



Additional Information

- **Table 3** provides summary statistics on water quality parameters for Peter's River from April 5-May 26, 2006.

Table 3: Summary Statistics

Summary Statistics

	Stage	Temp oC	pH	SpC	TDS	DO %	DO mg/L	Turbidity
Minimum	0.96	0.29	5.85	14	0.0087	78.3	7.13	81
Maximum	2.454	22.27	7.19	57	0.0363	101.6	13.49	393
Average	1.28777	7.938695	6.467343	34.89765	0.022288	90.63014	10.84208	292.8056
St Dev	0	5.237509	0.424682	13.33412	0.008524	4.564494	1.668253	74.25199

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