Government of Newfoundland and Labrador

Real Time Water Quality Monthly Report
For Peter's River
October 2005

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 October 6, where it collected hourly data until it was removed on October 31 for routine cleaning, maintenance and calibration. The datasonde was reinstalled in Peter's River on November 1.
- 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. Both instruments were cleaned and calibrated prior to use.
- 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.
- Environment Canada reported the following daily air temperatures and precipitation for the Central NL region (Badger)during October 2005, as indicated in **table 1** below:

Table 1: Daily Climate Data

Day	Max Temp °C	Min Temp °C	Mean Temp °C	Total Precip mm	Day	Max Temp °C	Min Temp °C	Mean Temp °C	Total Precip mm
01	16.6	-0.4	8.1	0.0	16	9.1	3.6	6.4	9.2
02	16.2	8.3	12.3	0.0	17	16.9	4.8	10.9	5.9
03	15.7	0.2	8.0	0.0	18	10.9	5.2	8.1	2.7
04	23.8	4.5	14.2	0.0	19	11.5	5.2	8.4	0.6
05	11.1	8.1	9.6	0.9	20	11.9	2.4	7.2	4.4
06	7.0	5.2	6.1	3.4	21	8.5	6.1	7.3	0.0
07	18.5	4.5	11.5	8.2	22	8.7	5.5	7.1	0.0
08	11.7	7.3	9.5	5.2	23	6.6	4.3	5.5	0.7
09	8.2	2.8	5.5	0.0	24	6.3	2.6	4.5	0.0
10	9.2	1.7	5.5	14.6	25	6.0	1.5	3.8	0.6
11	9.6	5.6	7.6	1.5	26	5.2	3.1	4.2	23.6
12	7.4	3.2	5.3	0.0	27	6.0	2.4	4.2	0.6
13	13.9	-4.5	4.7	0.0	28	7.8	-2.8	2.5	0.0
14	10.4	-3.7	3.4	0.0	29	9.3	2.1	5.7	0.0
15	11.9	1.0	6.5	11.1	30	8.3	-3.6	2.4	0.0
16	9.1	3.6	6.4	9.2	31	9.8	-1.7	4.1	0.0

Daily data has undergone only preliminary checking

- **Stage height** was slightly higher at the end of the period of measure at 1.168m, as compared to the beginning of the period when it measured 1.014, as seen in **figure 1** below**.** Peaks in stage height on October 9, 16 and 27 correspond to precipitation measured in the region on and immediately preceding those dates, as can be seen in t**able 1** above.
- **Water temperatures** reflect expected diurnal variations, as well as a decreasing trend, as can be seen in **figure 2** below. The decreasing trend in water temperature corresponds to the seasonally cooling ambient air temperatures, as seen in **table 1** above.

Figure 1: Stage Height

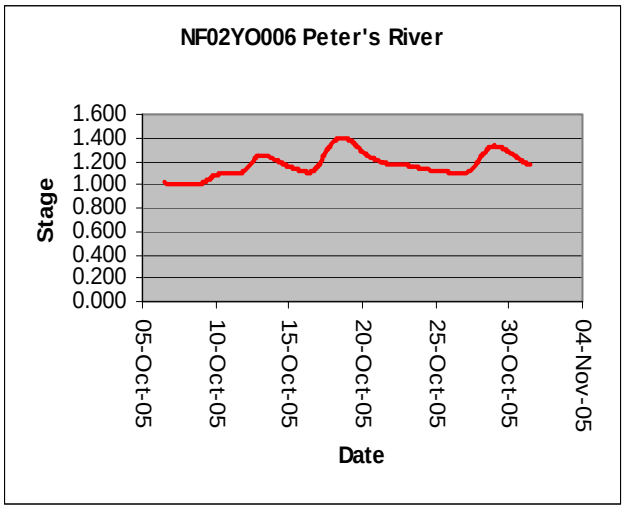
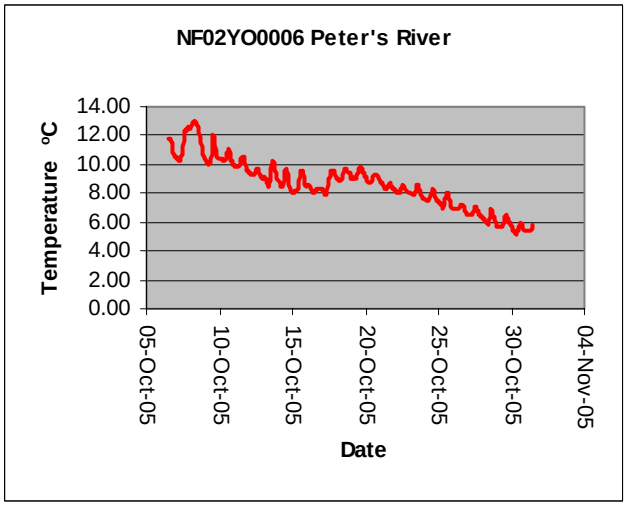


Figure 2: Water Temperature



- **Specific conductivity** levels decreased slightly during the period of measure, ranging from 41-31uS/cm, as indicated in **figure 3** below. Rainfall during this period may have had a dilution effect on the dissolved ion concentration, and cooling water temperatures may also be influencing the decrease in conductivity.
- **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

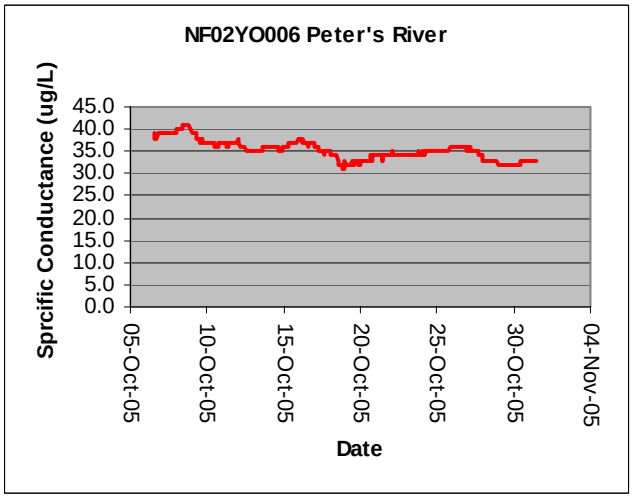
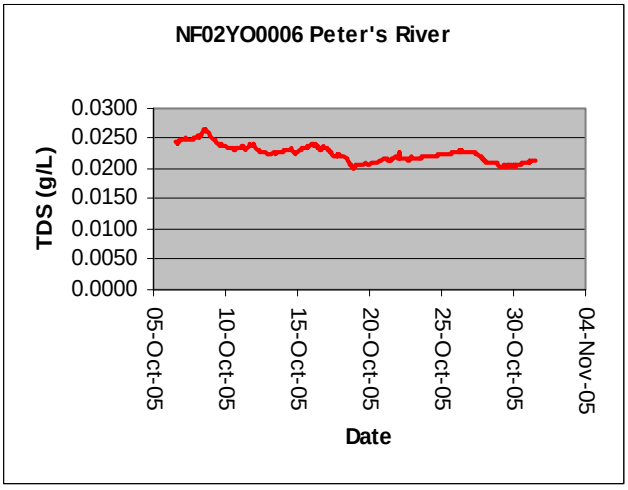


Figure 4: Total Dissolved Solids



- **pH** levels fluctuated near, and slightly exceeded, the CCME maximum recommended pH level of 9.0, for the second consecutive month, as seen in **figure 5** below. A comparison of the minisonde and datasonde readings for pH at the end of this period of measure indicates that the clean, freshly calibrated minisonde reading was 3.14 units lower (6.34) than the datasonde reading (9.48), thus the

higher datasonde pH values may be caused by fouling of the pH sensor. pH levels will continue to be closely monitored.

- **Dissolved oxygen (DO)** levels ranged from 8.79 -10.93mg/L during this period of measure, as seen in **figure 6** below. All measured dissolved oxygen levels were above the CCME recommended minimum of 5.5mg/L for the protection of freshwater aquatic life. An increasing trend in dissolved oxygen that is seen toward the end of this period of measure may correspond with decreasing water temperatures.

Figure 5: pH

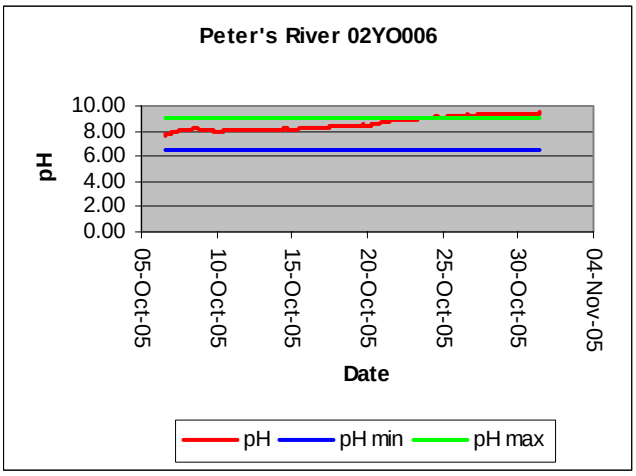
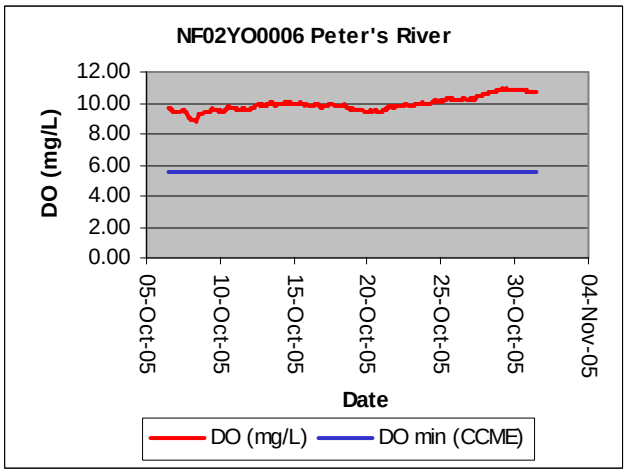
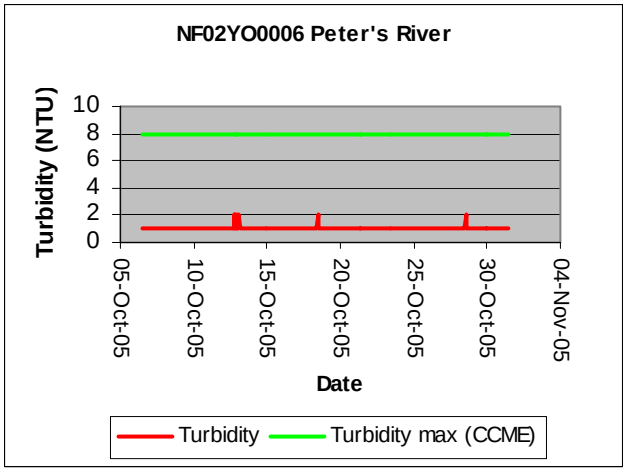


Figure 6: DO (mg/L)



- **Turbidity** values ranged between 1 -2NTU during this period, as seen in **figure 7** below. The CCME guideline for turbidity allows for an increase of 8 NTU above background levels.

Figure 7: Turbidity (NTU)



Additional Information

- **Table 2** provides summary statistics on water quality parameters for Peter's River during October, 2005.

Table 2: Summary Statistics

	Stage	Temp°C	pH	SpC	TDS	DO%	DOmg/L	Turbidity
Min	0.999	5.18	7.58	31.0	0.0200	81.9	8.79	1.00
Max	1.404	13.07	9.48	41.0	0.0265	89.9	10.93	2.00
Average	1.170	8.60	8.60	35.3	0.0226	85.6	9.92	1.01
St Dev	0.102	1.75	0.52	2.2	0.0014	1.6	0.45	0.09

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