

Real Time Water Quality Monthly Report For Peter's River November 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 November 1, after it received routine cleaning, maintenance and calibration. It collected hourly data until it was removed on December 1.
- Comparative water quality readings were taken with a minisonde during installation and removal 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, precipitation and wind gusts for the Central NL region (Badger) during November 2005, as indicated in **table 1** below:

Table 1: Daily Climate Data

D a y	<u>Max</u>	<u>Min</u>	<u>Mean</u>	<u>Total</u>	<u>Spd</u>	D a y	<u>Max</u>	<u>Min</u>	<u>Mean</u>	<u>Total</u>	<u>Spd</u>
	<u>Temp</u>	<u>Temp</u>	<u>Temp</u>	<u>Precip</u>	<u>of</u>		<u>Temp</u>	<u>Temp</u>	<u>Temp</u>	<u>Precip</u>	<u>of</u>
	°C	°C	°C	mm	<u>Max</u>		°C	°C	°C	mm	<u>Max</u>
					<u>Gust</u>						<u>Gust</u>
					km/h						km/h
<u>01</u> †	6.1	-2.3	1.9	0.6	<31	<u>15</u> †	5.9	-2.0	2.0	0.0	59
<u>02</u> †	12.5	1.8	7.2	4.1	37	<u>16</u> †	3.5	-6.6	-1.6	0.0	<31
<u>03</u> †	3.6	-0.2	1.7	0.6	57	<u>17</u> †	14.2	0.8	7.5	9.3	43
<u>04</u> †	0.7	-4.8	-2.1	0.0	54	<u>18</u> †	5.9	-3.3	1.3	0.6	43
<u>05</u> †	2.5	-3.3	-0.4	0.7	<31	<u>19</u> †	1.6	-7.7	-3.1	0.0	35
<u>06</u> †	1.8	-11.8	-5.0	0.6	<31	<u>20</u> †	2.9	-7.0	-2.1	0.0	41
<u>07</u> †	8.2	-11.2	-1.5	3.9	<31	<u>21</u> †	6.1	-1.4	2.4	0.0	<31
<u>08</u> †	4.0	0.7	2.4	0.0	44	<u>22</u> †	11.0	4.8	7.9	0.0	52
<u>09</u> †	2.1	-2.5	-0.2	1.2	<31	<u>23</u> †	12.6	9.0	10.8	16.6	57
<u>10</u> †	10.1	-4.8	2.7	3.0	54	<u>24</u> †	11.6	-1.8	4.9	0.0	41
<u>11</u> †	15.2	-0.1	7.6	20.7	57	<u>25</u> †	15.6	-0.8	7.4	1.2	46
<u>12</u> †	3.8	-0.9	1.5	0.0	<31	<u>26</u> †	3.7	-4.6	-0.5	0.0	<31
<u>13</u> †	3.4	-4.6	-0.6	0.0	<31	<u>27</u> †	0.5	-8.4	-4.0	0.0	<31
<u>14</u> †	6.8	-5.9	0.5	0.6	32	<u>28</u> †	1.2	-12.4	-5.6	0.0	<31
						<u>29</u> †	4.7	-12.7	-4.0	0.0	<31

†= Daily data has undergone only preliminary checking

- **Stage height** peaked around November 13, 19 and 25 as indicated in **figure 1**, below. These peaks were preceded by significant rainfall events as indicated in the daily climate data in **table 1**, above.
- **Water temperatures** reflect expected diurnal variations, as well as a decreasing trend, as indicated 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

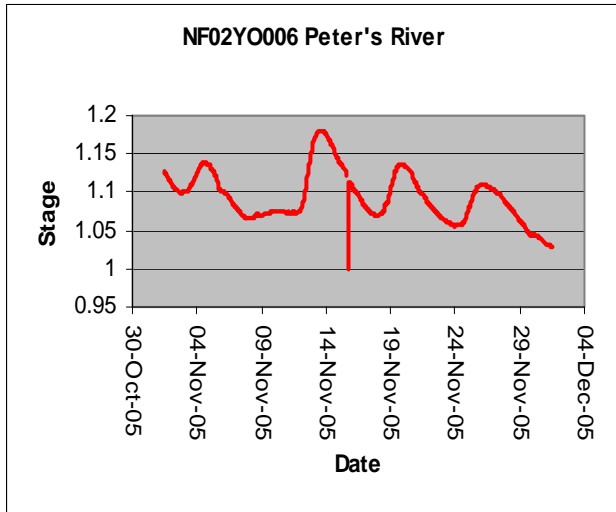
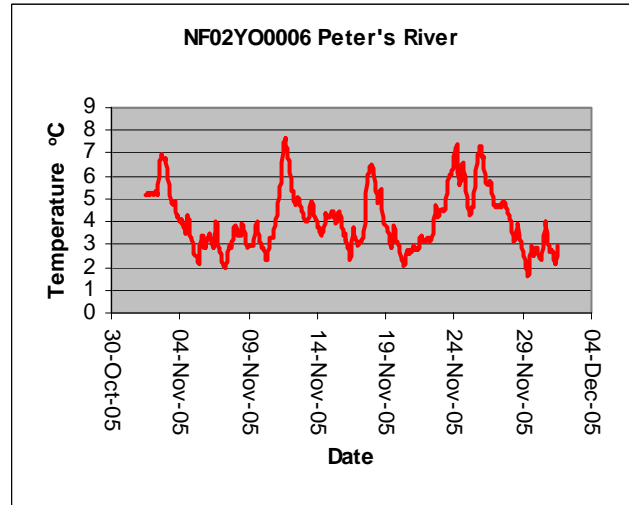


Figure 2: Water Temperature



- **Specific conductance** levels were fairly constant during the period of measure, ranging from 34-41 μ S/cm, as indicated in **figure 3** below.
- **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

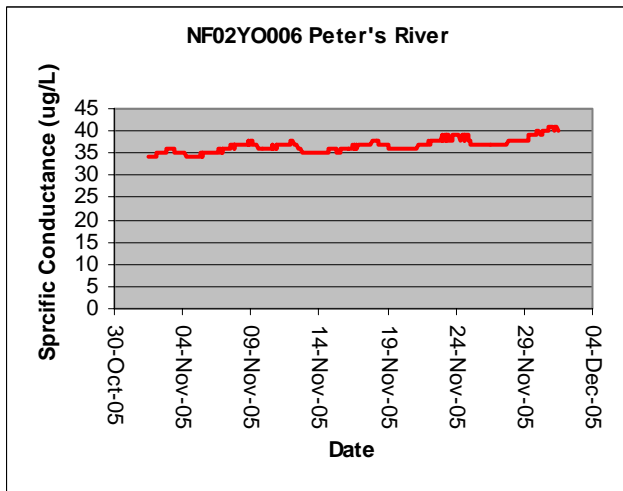
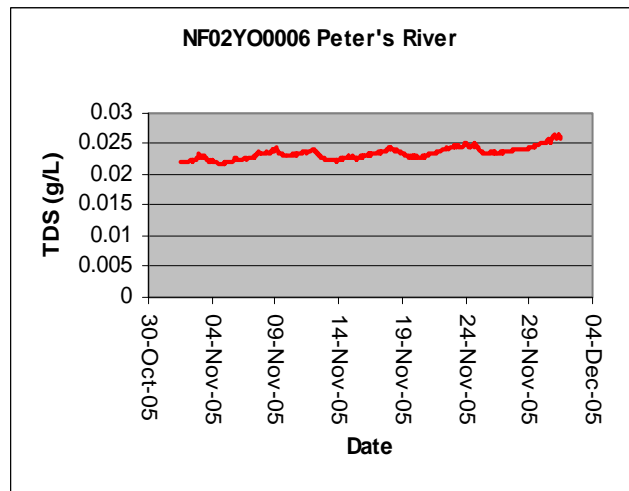


Figure 4: Total Dissolved Solids



- **pH** levels were fairly constant and fluctuated near the minimum recommended CCME guideline of 6.5 pH units for the protection of freshwater aquatic life, as seen in **figure 5**, below. This is within the expected natural background pH range for Peter's River.
- **Dissolved oxygen (DO)** levels were fairly constant during this period of measure, ranging from 11.1-12.9mg/L, as seen in **figure 6**, below. DO levels continue to increase as expected, as water temperatures decrease. The average DO level for November was 12.19mg/L as compared to an average of 9.92mg/L in October. The average water temperature in November was 4.08°C, whereas the average water temperature in October was 8.60°C.

Figure 5: pH

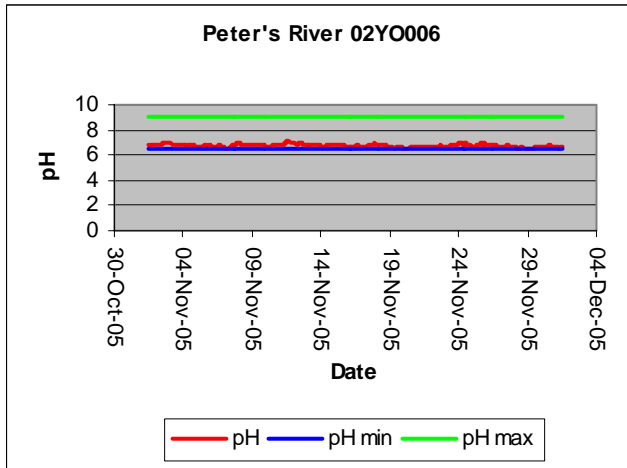
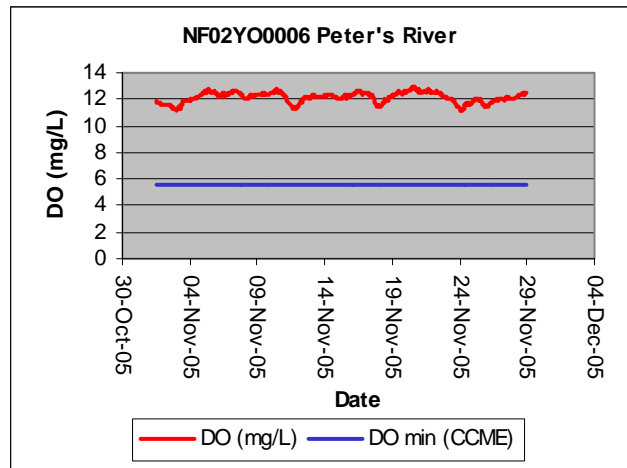
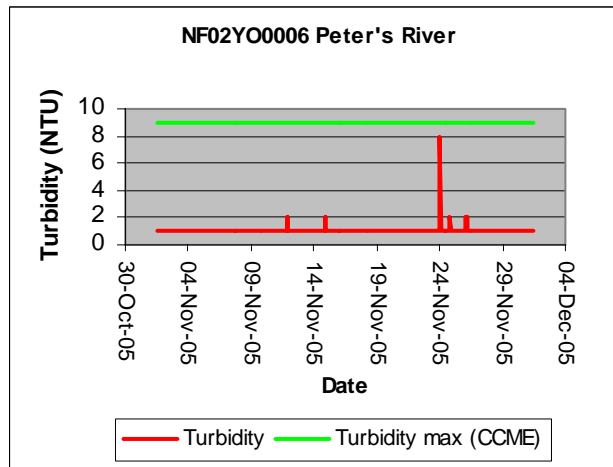


Figure 6: DO (mg/L)



- **Turbidity** levels hovered around 1-2 NTU as seen in **figure 7**, below, with the exception of one spike that occurred on November 24, when turbidity levels reached 8 NTU. This spike may have been the result of significant precipitation and high winds that occurred in the region during the preceding 24 hours, as seen in **table 1**, above.

Figure 7: Turbidity (NTU)



Additional Information

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

Table 2: Summary Statistics

	Stage	Temp°C	pH	SpC	TDS	DO%	DOmg/L	Turbidity
Min	1.000	1.640	6.430	34.000	0.022	90.000	11.100	1.000
Max	1.181	7.670	7.130	41.000	0.027	97.100	12.900	8.000
Average	1.094	4.082	6.750	36.696	0.023	93.889	12.187	1.018
St Dev	0.033	1.322	0.115	1.524	0.001	1.182	0.403	0.276

Report prepared by: Joanne Sweeney
 Dept of Environment
 Grand Falls-Windsor NL
 Ph. 292-4220