

Real Time Water Quality Monthly Report For Peter's River August, 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 removed from Peter's River July 30/05 for a performance assessment during meetings in St. John's. The datasonde was not replaced in Peter's River until August 18, due to staff annual leave, thus creating a data gap from July 30 to August 18. The datasonde remained in Peter's River until August 31, when it was removed for routine cleaning, maintenance and calibration.
- Comparative water quality readings were taken with a minisonde during each 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, precipitation and maximum wind gusts for the Central NL region (Gander) during August 2005, as indicated in **table 1** below:

Table 1: Daily Climate Data

Daily Data Report for August 2005

D a y	<u>Max Temp</u> °C	<u>Min Temp</u> °C	<u>Mean Temp</u> °C	<u>Total Precip</u> mm	<u>Spd of Max Gust</u> km/h
<u>16</u>	24.5	10.1	17.3	0.0	35
<u>17</u>	21.4	11.5	16.5	0.0	35
<u>18</u>	19.7	8.4	14.1	0.2	44
<u>19</u>	19.8	9.3	14.6	0.2	50
<u>20</u>	21.6	9.6	15.6	0.0	<31
<u>21</u>	18.9	12.5	15.7	14.8	41
<u>22</u>	25.6	15.0	20.3	4.4	37
<u>23</u>	15.2	12.8	14.0	14.2	<31
<u>24</u>	17.6	12.6	15.1	1.8	<31
<u>25</u>	12.9	10.9	11.9	1.4	<31
<u>26</u>	17.3	10.1	13.7	T	<31
<u>27</u>	21.8	10.7	16.3	0.6	<31
<u>28</u>	27.3	15.2	21.3	0.0	41
<u>29</u>	15.7	10.3	13.0	0.2	<31
<u>30</u>	18.7	10.6	14.7	31.4	<31
<u>31</u> T	22.1	16.4	19.3	2.2	<31

has preliminary checking; *T=trace amount

Daily data undergone only

- **Stage height** increased steadily from August 24 to the 26, as indicated in **figure 1** below. The climate data report in **table 1** (above) indicates 36.6mm of precipitation for this region from August 21 to the 25, which likely impacted stage height.
- **Water temperatures** reflect expected diurnal variations as seen in **figure 2** below. Water temperatures ranged from 11.72-24.72°C during this period.

Figure 1: Stage Height

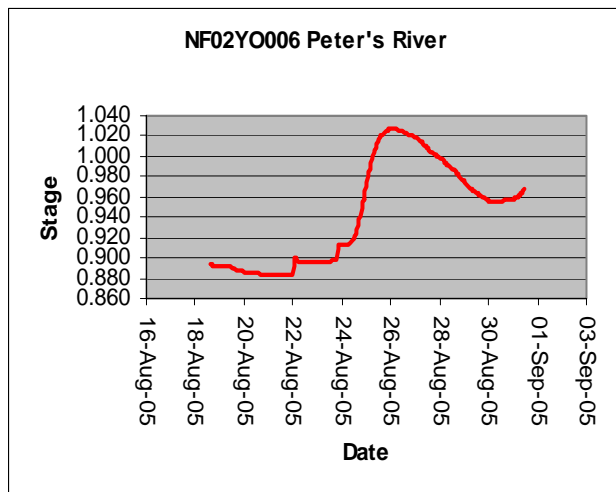
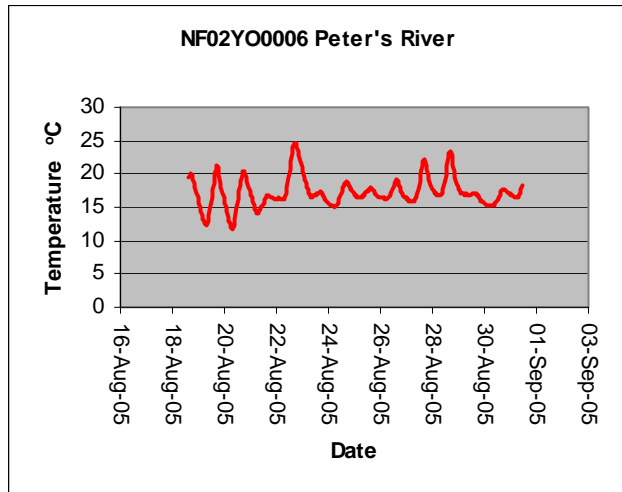


Figure 2: Water Temperature



- **Specific conductivity** levels decreased from 109-79uS/cm between August 22 and 26, then remained fairly constant for the remaining period of measure, as indicated in **figure 3** below. Rainfall during this period may have had a dilution effect on the dissolved ion concentration.
- **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

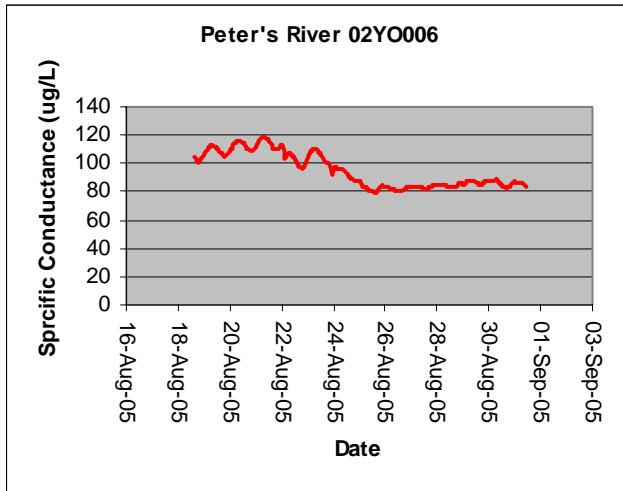
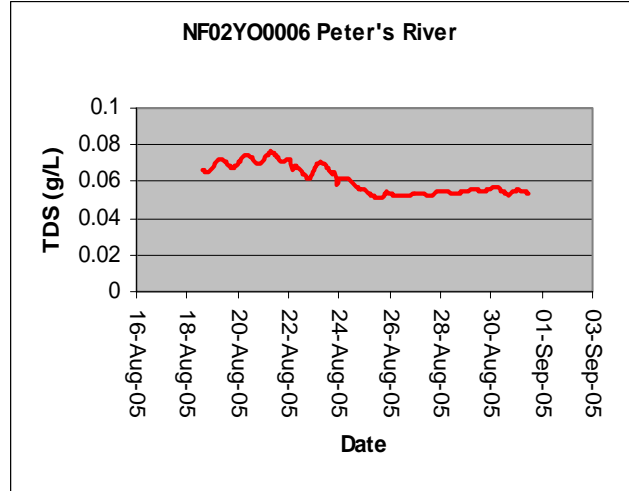


Figure 4: Total Dissolved Solids



- **pH** levels fell within the CCME maximum and minimum guidelines for freshwater aquatic life, ranging from 7.07-8.48 pH units, as seen in **figure 5** below. The CCME recommends the optimum pH range for the protection of freshwater aquatic life is 6.5-9.0 pH units.
- **Dissolved oxygen (DO)** levels fell within the CCME recommended range of 5.5-9.5mg/L for the protection of freshwater aquatic life, with the exception of two spikes that occurred on August 19 - 20, as seen in **figure 6** below. The data indicate DO exceedences on August 19- 20 ranging from 9.55-9.64mg/L. Windy conditions may have influenced DO levels as the maximum wind gusts for this period occurred on August 19, as indicated in **table 1**, above.

Figure 5: pH

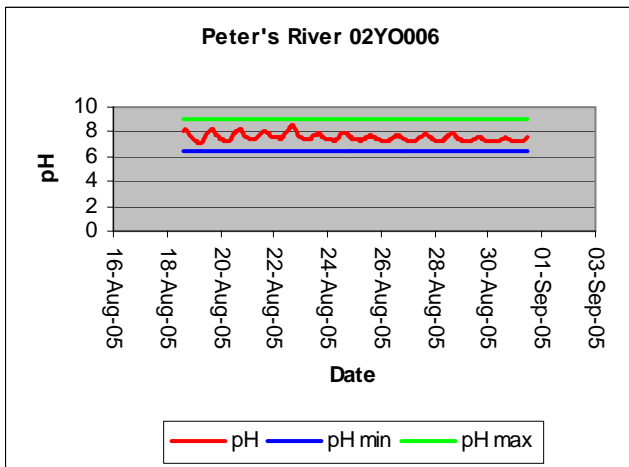
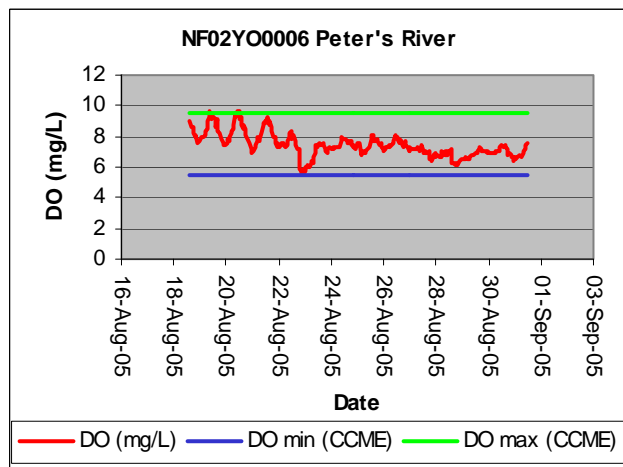
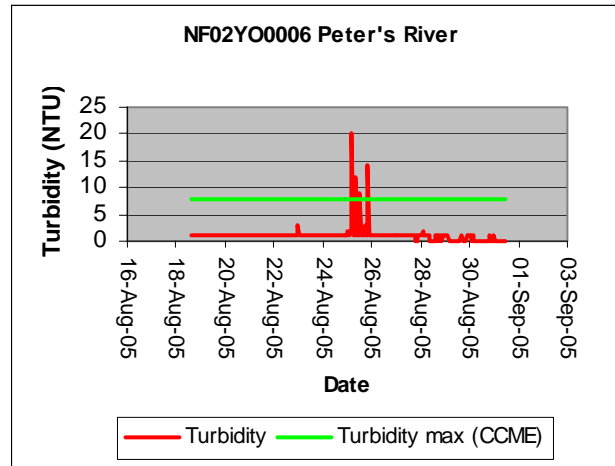


Figure 6: DO (mg/L)



- **Turbidity** values were at expected levels of 0-1 NTU for most of this period, however several spikes occurred on August 25-26, when levels fluctuated between 9 and 20 NTU, as seen in **figure 7** below. These turbidity spikes coincide with maximum levels for stage height for this period, (**figure 1** above), and are likely the result 36.6mm of rainfall that occurred from August 21-25 (**table 1** above). 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 August, 2005.

Table 2: Summary Statistics

	Stage	Temp-Water	pH	Conductance	Diss-Solids	Percent-Satur	Diss-Oxy	Turbidity
Minimum	0.884	11.720	7.090	79.000	0.051	63.700	5.630	0
Maximum	1.027	24.720	8.480	119.000	0.076	100.700	9.640	20.000
Average	0.944	17.279	7.551	94.906	0.061	77.693	7.413	1.010
Standard Dev	0.051	2.268	0.292	12.285	0.008	7.692	0.769	1.596

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