

Real Time Water Quality Monthly Report Waterford River - St. John's NL September 2008

General

- Data from the Waterford River monitoring station is monitored by the Water Resources Management Division staff.

Maintenance and Calibration of Instrumentation

- The following table displays the dates when the Datasonde was installed and when it was removed at the end of the deployment period for routine cleaning, maintenance and calibration.

Table 1: Table of Datasonde installation and removal:

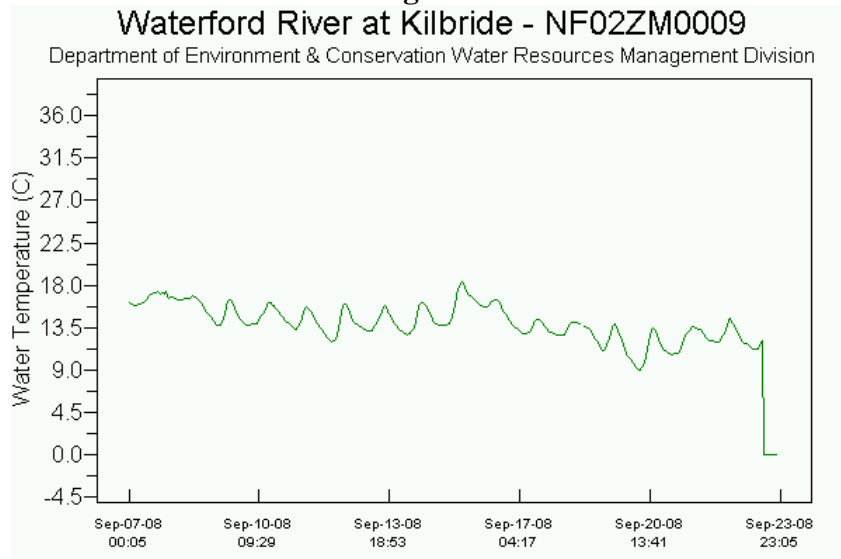
Date Installed	Date Removed
August 27, 2008	September 23, 2008

- Water quality readings were taken with a Hydrolab 4a at the time of installation and removal for QAQC comparison. The Hydrolab 4a was calibrated prior to each use.

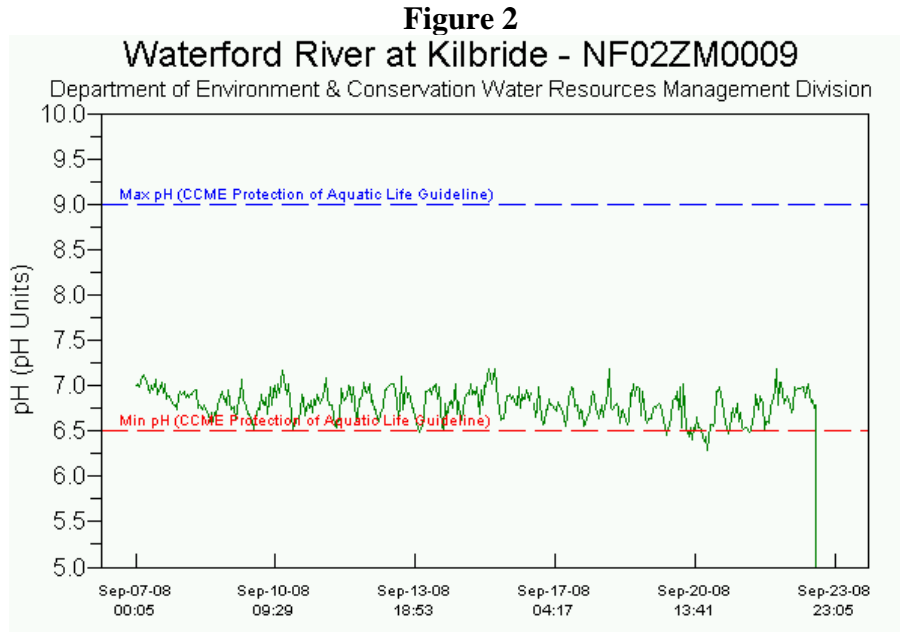
Data Interpretation

- Due to a transmission error, data is not available from August 27 to September 7, 2008. This data was collected and stored in a datalogger and will be reviewed, but will not be included as part of this report.
- In general, water quality parameters were stable during the deployment period with expected daily/nightly (diurnal) and seasonal changes occurring.
- Water temperatures fluctuated in response to daily maximum and minimum air temperatures. This is demonstrated by comparing the graph in **Figure 1** below, to the air temperature data in **Appendix 1**, found at the end of this report.

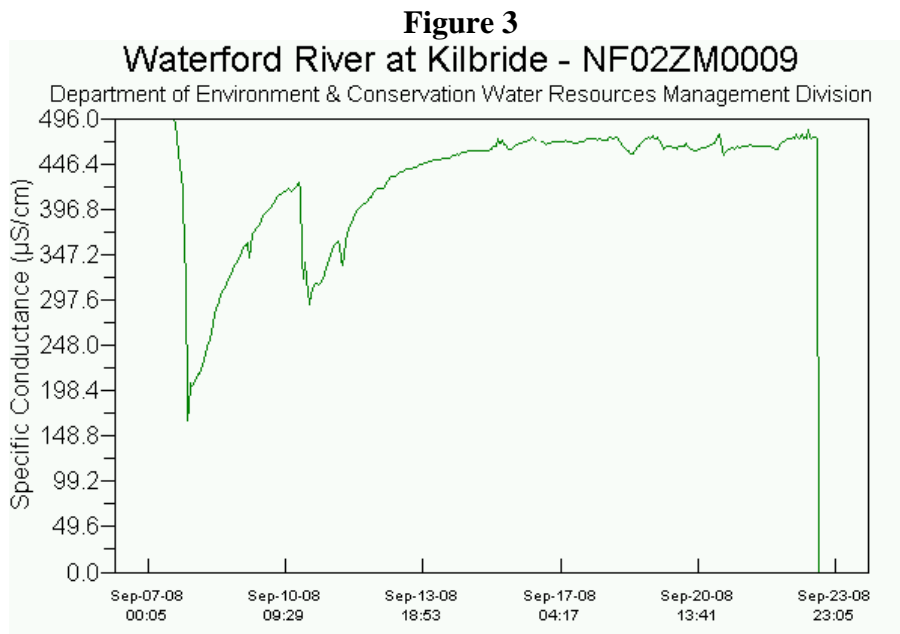
Figure 1



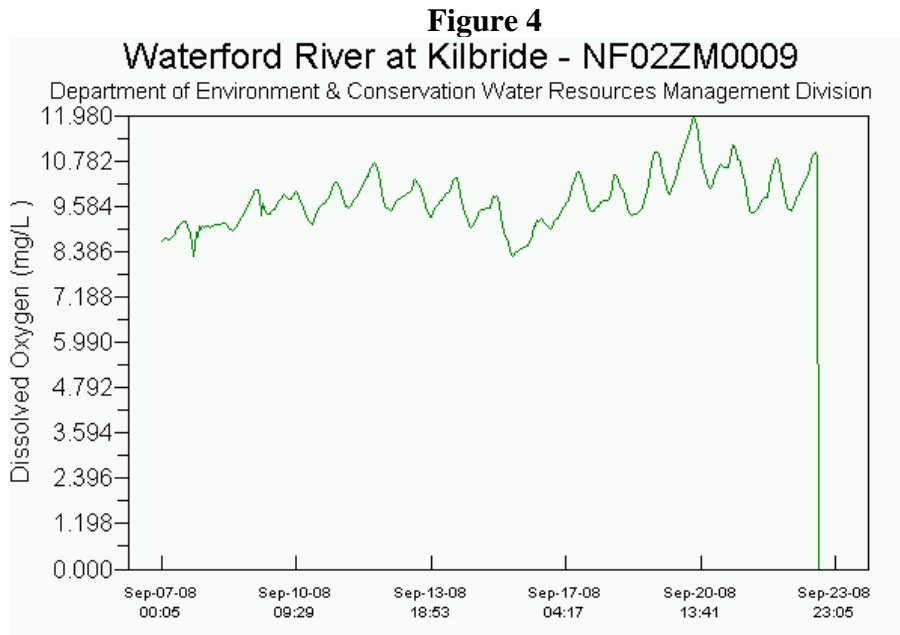
- pH levels during the deployment period were fairly stable, ranging from 6.29 to 7.19 pH units, as seen in **Figure 2**. There were some instances where pH was outside the range recommended by the Canadian Water Quality Guidelines for the Protection of Aquatic Life of 6.5 to 9 (Figure 2). It is typical for surface water in NL to have pH levels below the range recommended by the guidelines.



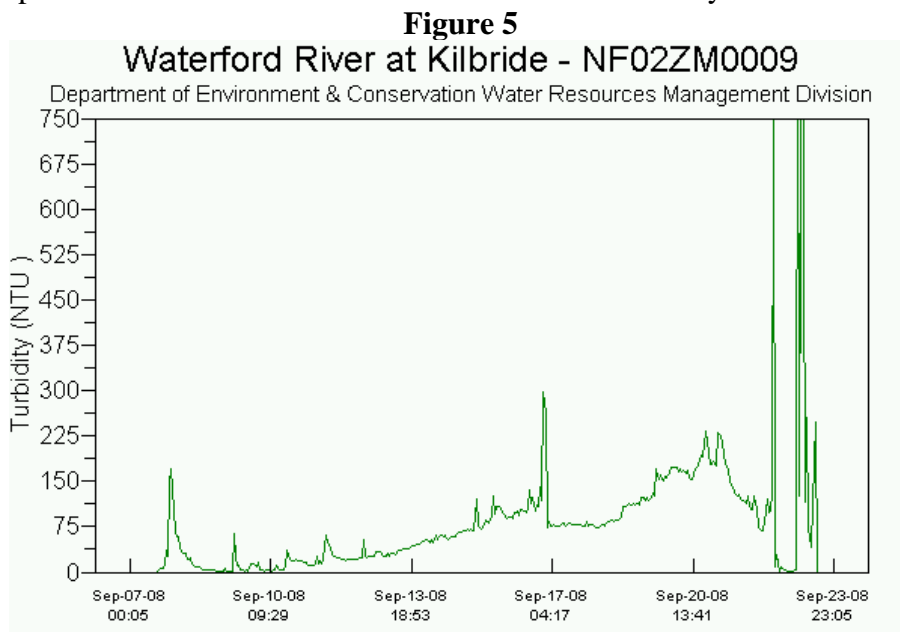
- Conductivity levels displayed sharp decreases on September 8th and 11th, as seen in **Figure 3**. This was the result of a dilution effect caused by significant rainfall recorded on September 7th and 10th, as seen in **Appendix 1**. Average conductivity was 430 μ S/cm during the deployment period, which is within the expected range for this station.



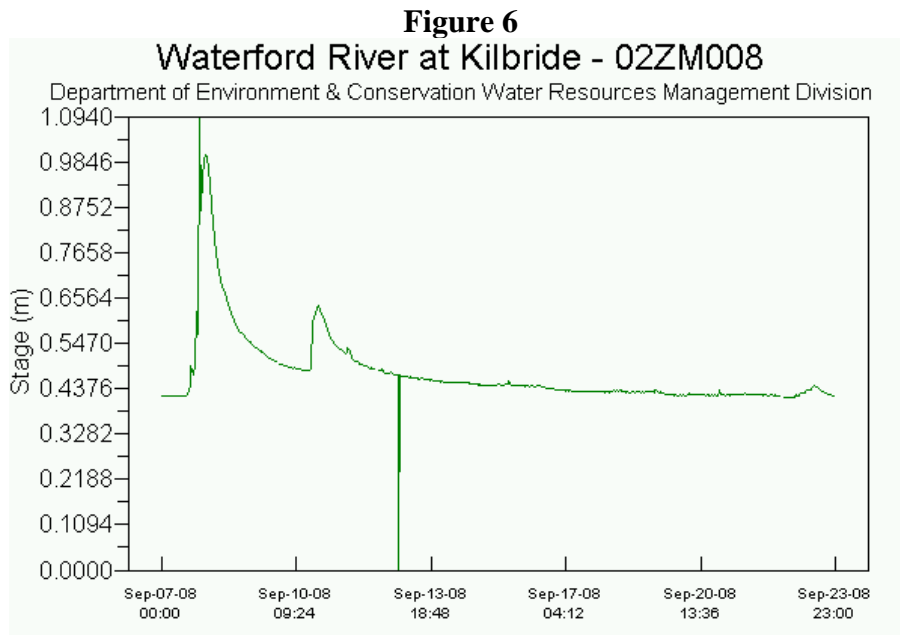
- Dissolved oxygen levels displayed diurnal fluctuations (see **Figure 4**) in response to changes in water temperatures from daytime highs to night time lows (see **Figure 1**). Colder water typically holds more dissolved oxygen than warmer water, so as water temperatures decrease, dissolved oxygen levels typically increase.



- Turbidity levels displayed significant spikes on September 8th and 16th, as seen in **Figure 5**. Significant spikes are also seen from September 20th- 23rd. The latter series of fluctuations may have been the result of sensor fouling, since the sensor was at the end of the deployment period. Several turbidity spikes exceeded the CCME recommended maximum of 8 NTU above background levels. It isn't unusual for turbidity levels at this station to display significant spikes because Waterford River passes through urban development for most of its water course and is influenced by urban run-off.



- Stage height increased significantly on September 7th and 10th (see **Figure 6**) in response to rainfall that occurred on those days (see **Appendix 1**). The downward spike that is seen in **Figure 6** on September 12th is the result of a transmission error.



APPENDIX 1: Weather information for St. John's, NL provided by Environment Canada for September 2008:

Daily Data Report for September 2008				
Day	Max Temp °C	Min Temp °C	Total Rain mm	Spd of Max Gust km/h
01†	17.3	12.5	1.0	<31
02†	18.0	14.4	3.0	<31
03†	26.6	13.4	0.0	32
04†	22.4	13.3	1.6	39
05†	21.4	10.0	T	41
06†	22.4	12.2	0.0	46
07†	20.7	15.8	41.0	44
08†	17.9	10.1	3.0	56
09†	17.4	8.7	0.0	<31
10†	18.8	10.9	9.0	61
11†	17.1	8.6	0.0	46
12†	18.8	9.3	0.0	54
13†	17.9	11.4	0.0	37
14†	20.7	10.9	0.0	<31
15†	23.6	12.2	0.0	52
16†	19.0	9.1	T	48
17†	12.7	8.7	0.0	<31
18†	15.0	5.8	2.0	37

<u>19</u> †	12.4	4.1	0.0	46
<u>20</u> †	16.1	4.0	0.0	48
<u>21</u> †	17.0	8.9	T	<31
<u>22</u> †	13.7	6.8	T	37
<u>23</u> †	11.8	3.7	3.4	<31

Report prepared by:

Joanne Sweeney
Environmental Scientist
Water Resources Management Division
Department of Environment and Conservation
Confederation Building West Block 4th Floor
PO Box 8700
St. John's NL A1B 4J6

Ph. (709) 729-0351
Fax (709) 729-0320