



## Real Time Water Quality Monthly Report Waterford River January 2006

### General

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

### Maintenance and Calibration of Instrumentation

- The following table displays the dates when the Datasonde was removed for routine cleaning, maintenance and calibration and when it was redeployed during the month of January.

Table 1: Table of Datasonde removal and installation dates

Date Installed	Date Removed
	January 3, 2006
January 4, 2006	January 11, 2006
January 20, 2006	

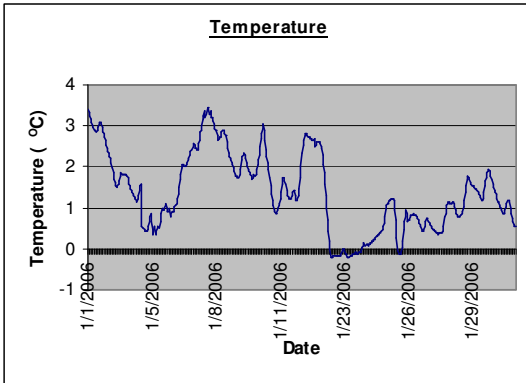
- Water quality readings were taken with a Minisonde at the time of removal for comparison purposes. The Minisonde was calibrated prior to use.

### Data Interpretation

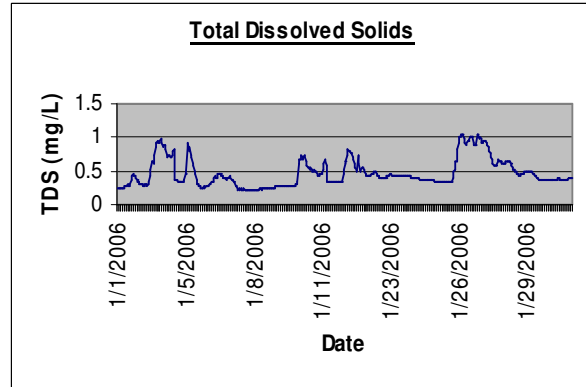
- Areas in the graphs where the data lines go abruptly down to the x axis and show no readings occur when the datasonde is removed for routine cleaning, maintenance and calibration. The dates where this occurs correspond to Table 1 above.
- In general, water quality parameters were stable during the month of January with expected daily/nightly (diurnal) and seasonal changes occurring.
- Water temperature fluctuated in response to daily maximum and minimum air temperature. This is demonstrated by comparing the graph in **Figure 1** to the air temperature data in **Table 2**. Cooler water temperatures correspond to cooler air temperatures generally experienced during the second half of the month.



**Figure 1**

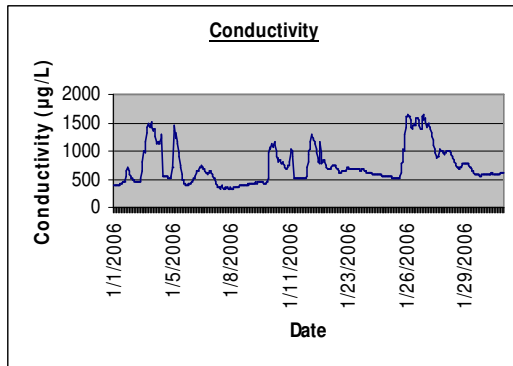


**Figure 2**

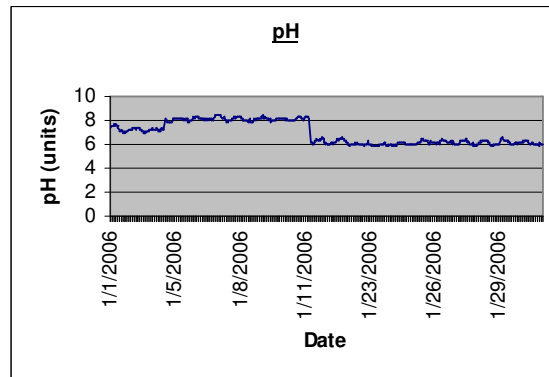


- Total dissolved solids levels reflected the changes in conductivity as observed in Figure 2. Conductivity measurements are a good indication of total dissolved solids and total dissolved ion concentrations, although this is not an exact linear relationship.

**Figure 3**

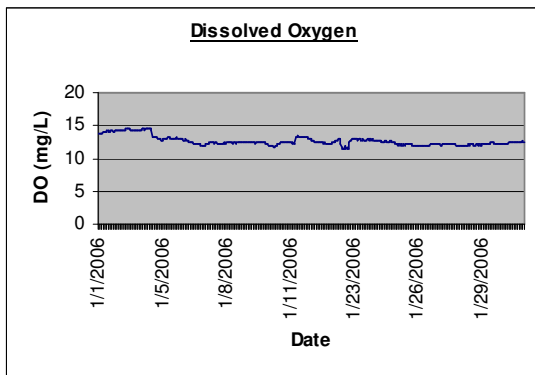


**Figure 4**

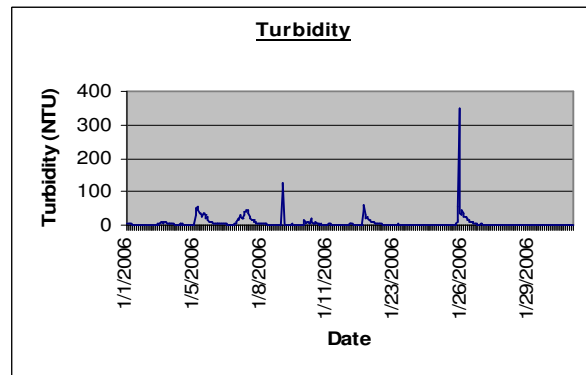


- Conductivity levels fluctuated throughout the month and were higher during the first and last weeks of January as observed in Figure 3. These higher conductivity readings usually occurred in response to precipitation events and warmer temperatures causing runoff from melting snow.
- The pH levels for the month of January ranged from 5.78 to 8.53. The pH readings are shown to be unusually high for the first half of the month. These high readings could be due to debris or contamination on the pH sensor. Readings returned to normal after routine maintenance and calibration of the datasonde on January 11<sup>th</sup>. There were some instances where the pH measurements were outside the CCME recommended Canadian Water Quality Guidelines for the Protection of Aquatic Life of 6.5 to 9 (Figure 4). The average pH level for January was 6.93. (Table 3).

**Figure 5**



**Figure 6**



- Dissolved oxygen levels ranged between 11.40 mg/L to 14.65 mg/L during the period of measurement (Figure 5). During the month of January, dissolved oxygen measurements went above the CCME recommended maximum guideline of 9.5 mg/L. The average DO level for the period of measure was 12.65 mg/L (Table 3).
- Turbidity levels fluctuated and had several spikes noted throughout the month. The turbidity spikes (Figure 6) are normally in response to precipitation events. The high turbidity readings can be attributed to warm air temperatures causing snow melt and subsequent runoff and precipitation events. Many turbidity spikes exceeded the CCME recommended maximum of 8 NTU above background levels.

**Additional Information**

- Table 3 provides summary statistics on water quality parameters for Waterford River during the month of January 2006.

Table 3: Summary statistics for January 2006.

	Water Temperature	pH	Conductance	Dissolved Solids	% Saturated	Dissolved Oxygen	Turbidity
Max	3.45	8.53	1642.00	1.05	105.80	14.65	351.40
Min	-0.19	5.78	321.00	0.21	77.70	11.40	0.00
Average	1.39	6.93	731.43	0.47	90.22	12.65	6.13
Standard Deviation	0.95	0.93	323.40	0.21	5.96	0.72	19.54

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