

**Real Time Water Quality (RTWQ) Deployment Report
 NF02YL0012 – Humber River at Humber Village Bridge
 October 2008 – January 2009**

General

- The Water Resources Management Division staff monitors the real-time web page on a daily basis.
- This monthly report interprets the data from the Humber River at Humber Village Bridge RTWQ station for the period of October 18th, 2008 to January 14th, 2009.

Maintenance and Calibration of Instrumentation

- The instrument was deployed from October 18th, 2008 to January 14th, 2009 (88 day deployment period) at which point it was removed for maintenance and calibration. This is a longer than normal deployment period for this station due to limited staff resources and excessive field commitments.
- The results from comparing the Minisonde values to the Datasonde values at the time of installation on October 18th and removal on January 14th can be seen in **Table 1**. Collection of QA/QC readings involves a second set of data readings being collected at the time of removal & installation, using a similar, freshly calibrated instrument. Data readings from both instruments were compared and their variability was ranked, as part of QA/QC protocol.
- For installation a ranking of excellent was achieved for temperature and pH, and conductivity, while dissolved oxygen had a poor ranking. For removal a ranking of excellent was achieved for temperature and pH, while conductivity and dissolved oxygen had a good ranking. The poor ranking for dissolved oxygen may be attributed to a poorly calibrated and/or malfunctioning Minisonde.

Table 1: QA/QC Data Comparison Rankings for installation –October 15th & removal - January 14th

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Humber River at Humber Village Bridge	October 18 th , 2008	Installation	Excellent	Excellent	Excellent	Poor
	January 14 th , 2009	Removal	Excellent	Excellent	Good	Good

Data Interpretation

- During the deployment period of October 15th, 2008 to January 14th, 2009 the water quality remained relatively stable for all parameters.

- Water temperature values (**Figure 1**) for the deployment period ranged from 1.6 °c to 10.6 °c with a declining trend through late fall and early winter. There is also a pattern of diurnal fluctuations with warming in the day and cooling at night.

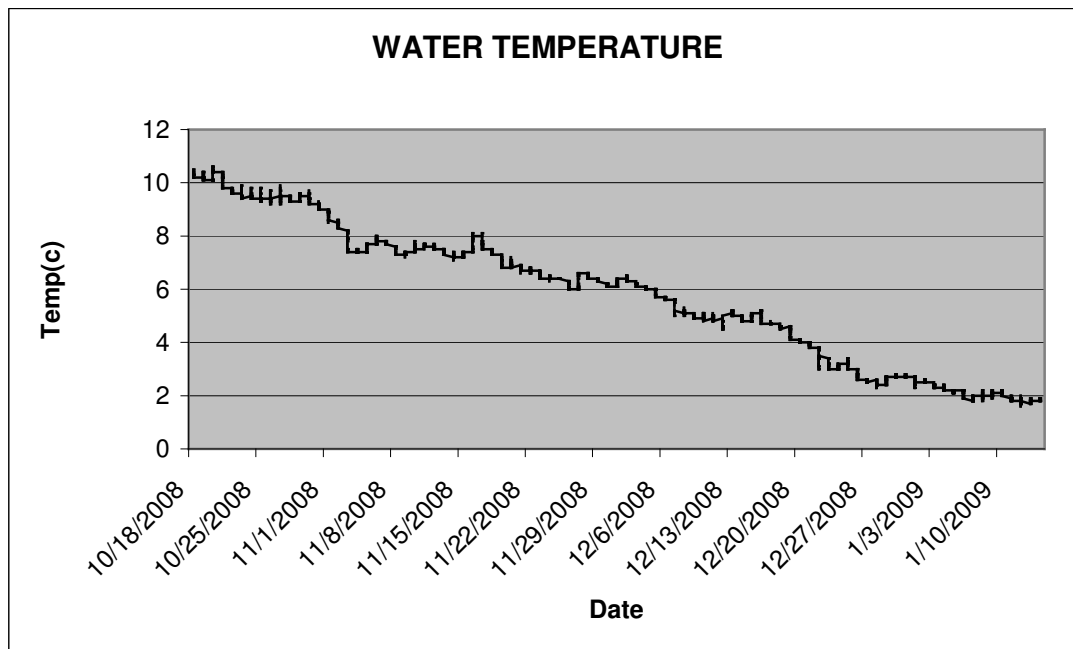


Figure 1

- Dissolved oxygen (DO) values (**Figure 2**) for the deployment period showed a gradual increase due to declining temperatures. DO ranged from 10.0 mg/l to 12.55 mg/l.

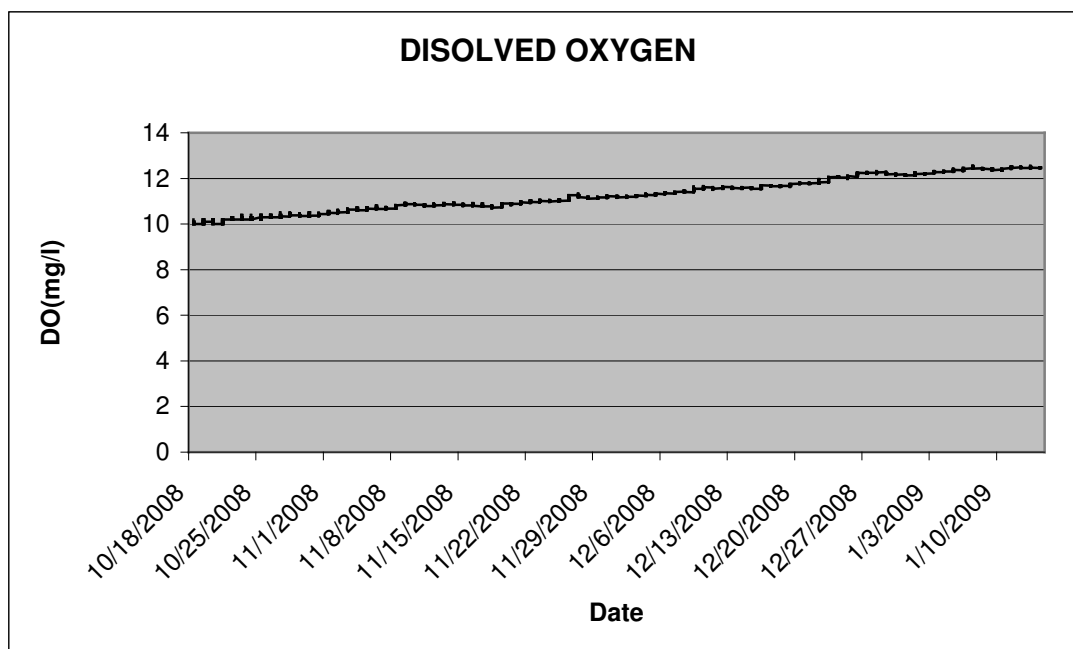


Figure 2

- There are 4 different guidelines for DO depending on the life cycle stage and water temperature (cold water/other life stages – above 6.5 mg/L; warm water/other life stages – above 5.5 mg/L; warm water/early life stages – above 6 mg/L; cold water/early life stages – 9.5 mg/L). All guidelines were met during this deployment period..
- pH values (**Figure 3**) were fairly consistent during the early part of the deployment period, however began to show more day-to-day variation than normal over the later part of the deployment period. This unusual variation is most likely the result of the pH probe losing its calibration. It is difficult to interpret this data in relation to the CCME Guidelines for the Protection of Freshwater Aquatic Life because of this calibration issue.

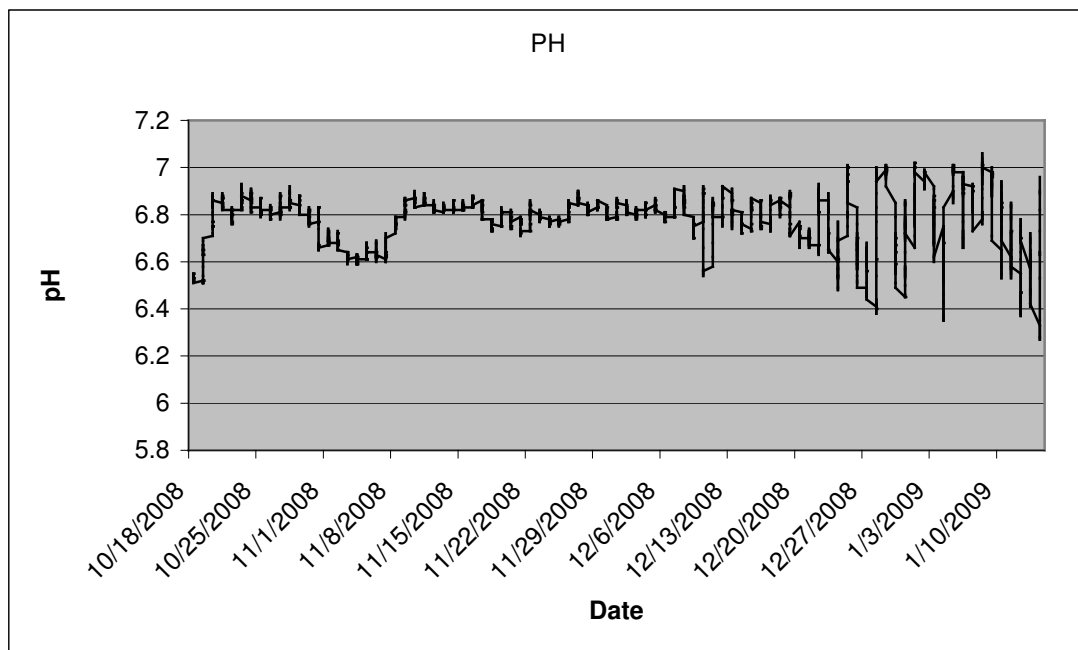


Figure 3

- Specific conductance values (**Figure 4**) were relatively consistent over the deployment period. Values ranged from 37.2 to 39.8 $\mu\text{S}/\text{cm}$, which is typical for this station.

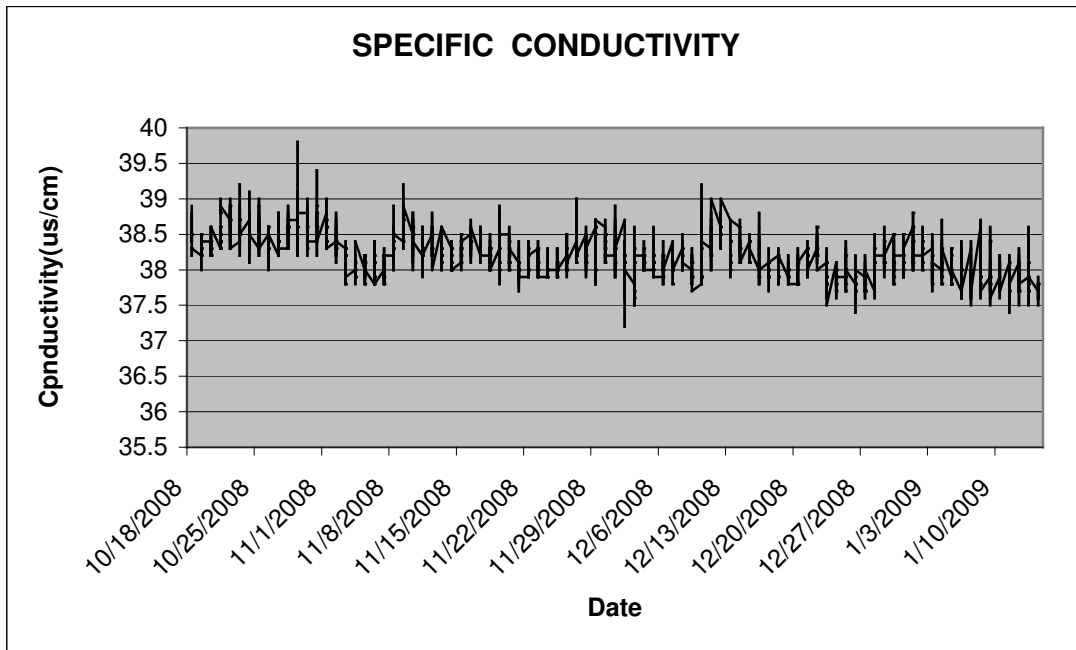


Figure 4

- Turbidity values (**Figure 5**) were at times abnormally high due to vegetative debris entrained in the turbidity probe. Debris was cleaned from the hydrolab on several occasions but was an ongoing problem throughout the deployment period. It is possible that some of the spikes in mid-December are related to the heavy precipitation and associated runoff, however it is difficult to distinguish them from those related to the vegetative debris.

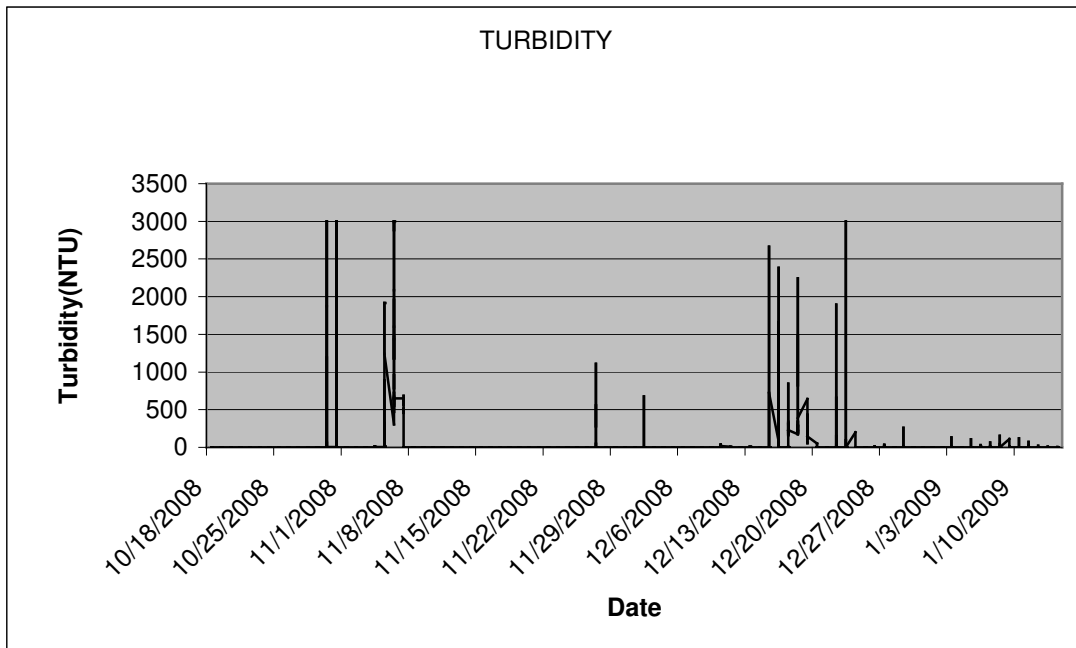


Figure 5

- Stage readings (**Figure 6**) were reasonably consistent over most of the deployment period with the exception of a distinct peak in mid December due to several days of heavy rainfall and associate snow melt. The height of the river ranged from 1.621 m to 3.926 m, which translates to a range of 162 m³/s to 496 m³/s.

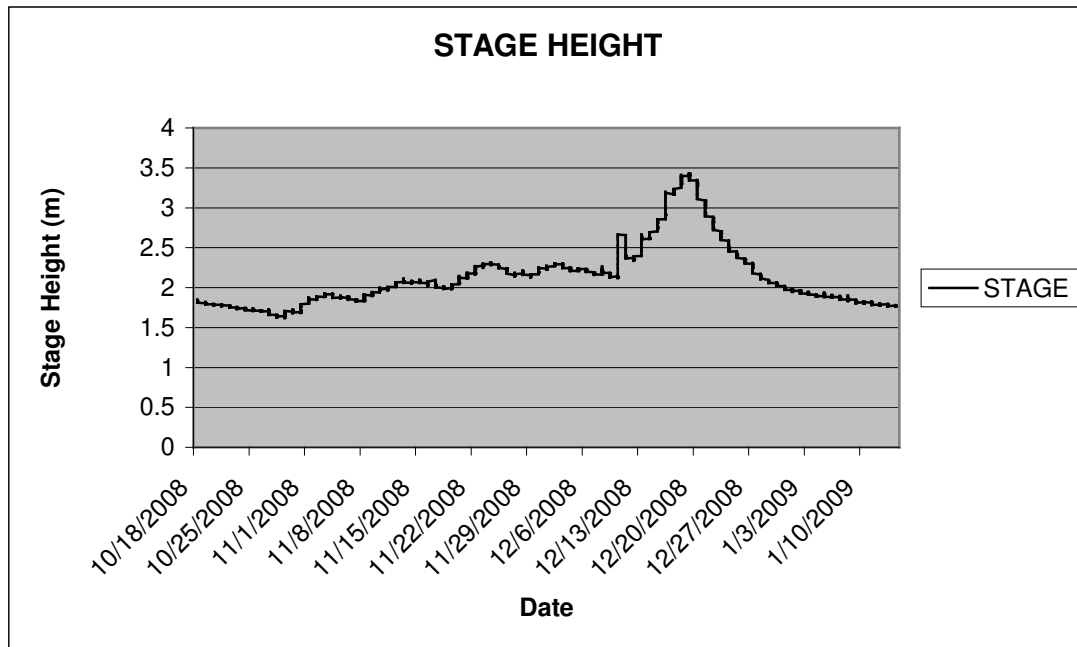


Figure 6

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