

## Real Time Water Quality(RTWQ) Deployment Report NF02YL0012 – Humber River at Humber Village Bridge April - August 2008

### 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 April 29<sup>th</sup>, 2008 to August 7<sup>th</sup>, 2008.

### Maintenance and Calibration of Instrumentation

- The instrument was deployed from April 29<sup>th</sup>, 2008 to August 7<sup>th</sup>, 2008 (98-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 an excessive field commitments.
- The results from comparing the Minisonde values to the Datasonde values at the time of installation on April 29<sup>th</sup> can be seen in **Table 1**. No QA/QC readings were available on August 7<sup>th</sup> due to a malfunctioning Minisonde. 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 while conductivity received a good ranking and dissolved oxygen a poor ranking. The poor ranking for dissolved oxygen may be attributed to a poorly calibrated and/or malfunctioning Minisonde or a maintenance problem with the Datasonde oxygen probe.

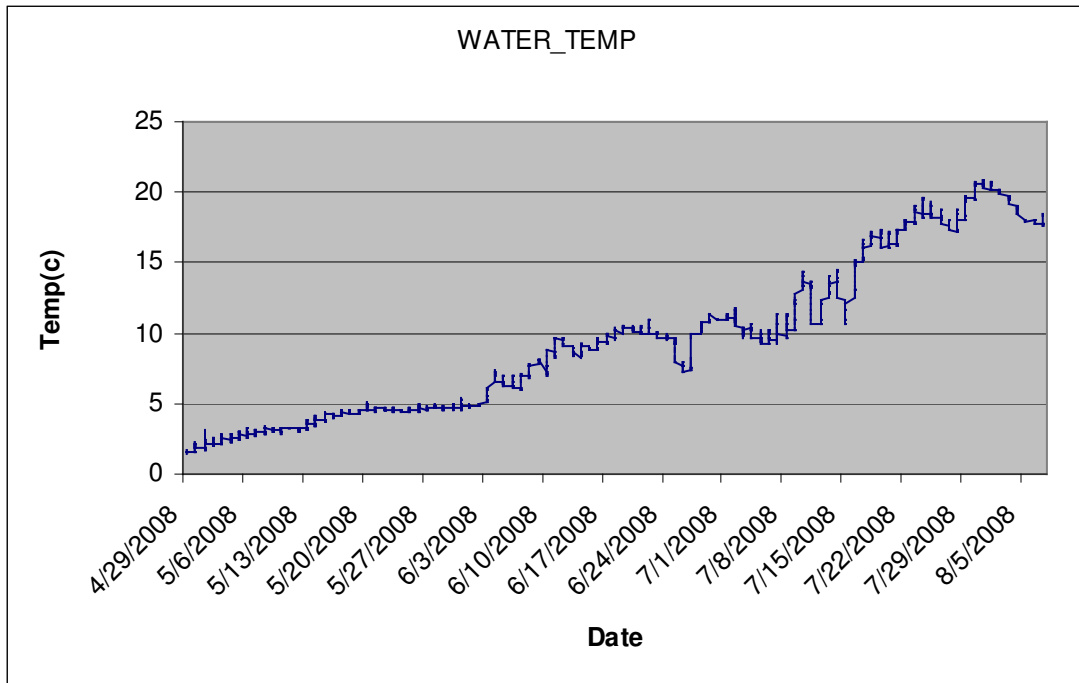
**Table 1: QA/QC Data Comparison Rankings for installation - April 29<sup>th</sup> & removal - August 7<sup>th</sup>**

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Humber River at Humber Village Bridge	April 29 <sup>th</sup> , 2008	Installation	Excellent	Excellent	Good	Poor
	August 7 <sup>th</sup> , 2008	Removal	NA	NA	NA	NA

### Data Interpretation

- During the deployment period of April 29<sup>th</sup> to August 7<sup>th</sup>, 2008 the water quality remained relatively stable for all parameters.

- Water temperature values (**Figure 1**) for the deployment period ranged from 1.4 to 20.9 with a clear rising trend as Spring and Summer progressed. There is also a clear 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 decline which can be at least partially attributed to the increasing temperature trend, i.e. as the water temperature increased the dissolved oxygen concentration decreased. It should be noted that this trend is likely also partially related to instrument drift over the deployment period.
- 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 DO values for this deployment period were within the recommended guidelines.

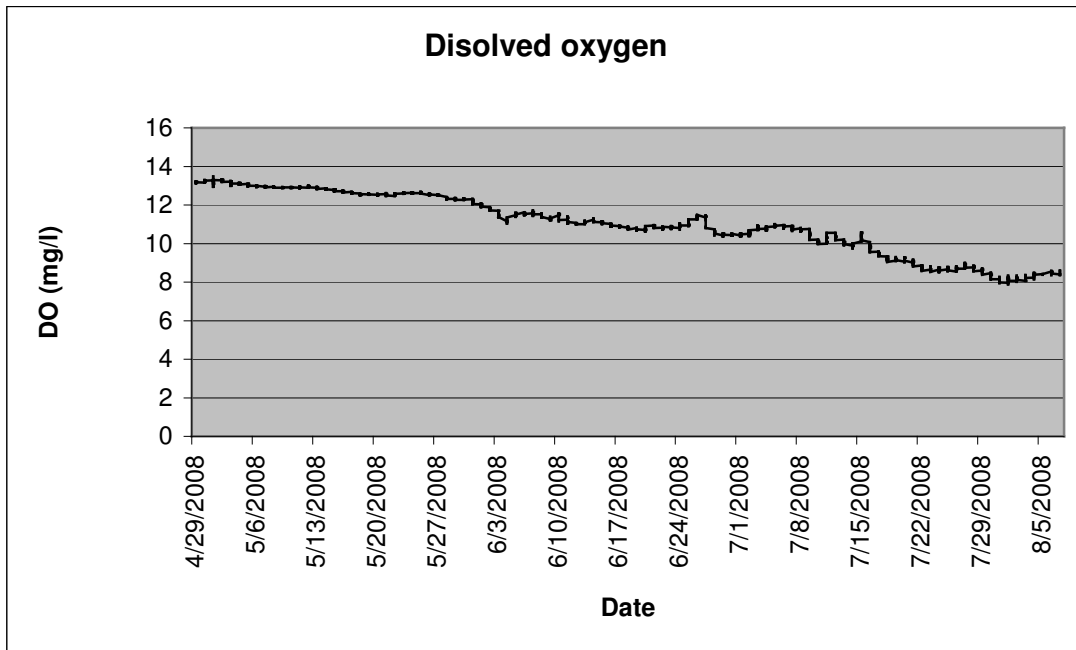


Figure 2

- pH values (Figure 3) were consistent over the deployment period. pH values ranged between 6.71 and 7.07 with all values within the 6.5 – 9.0 range recommended by the CCME Guidelines for the Protection of Freshwater Aquatic Life.

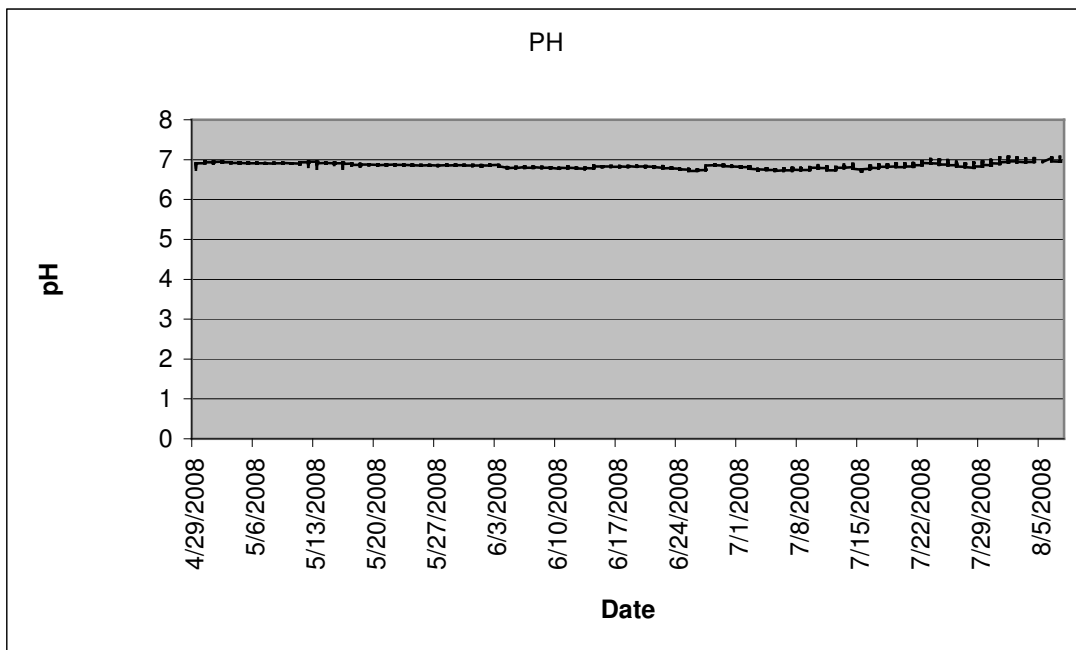
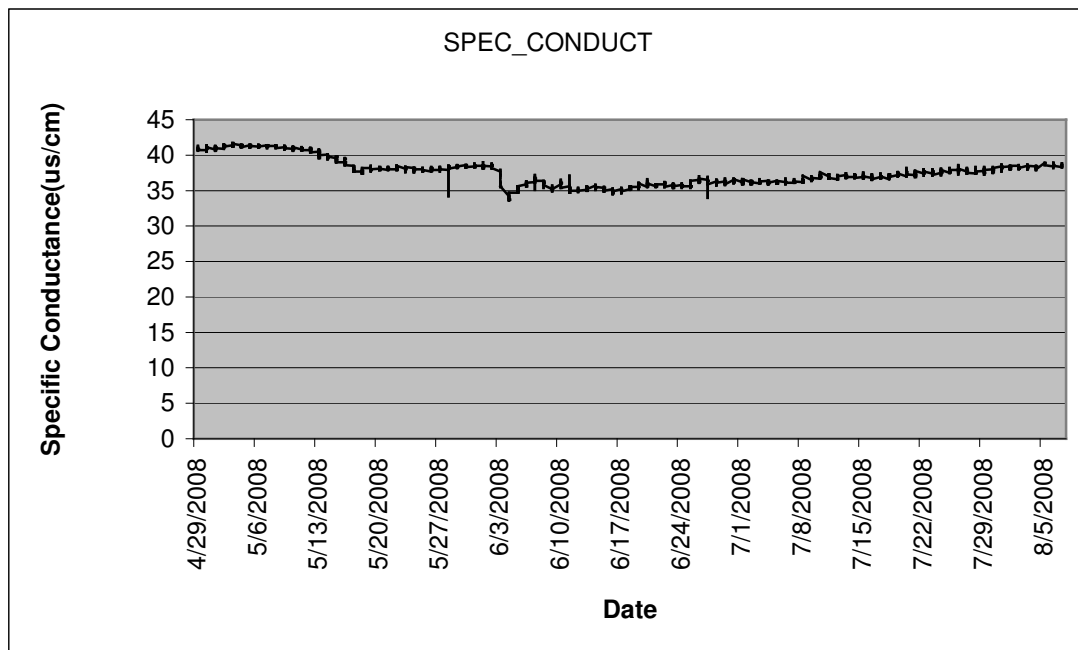


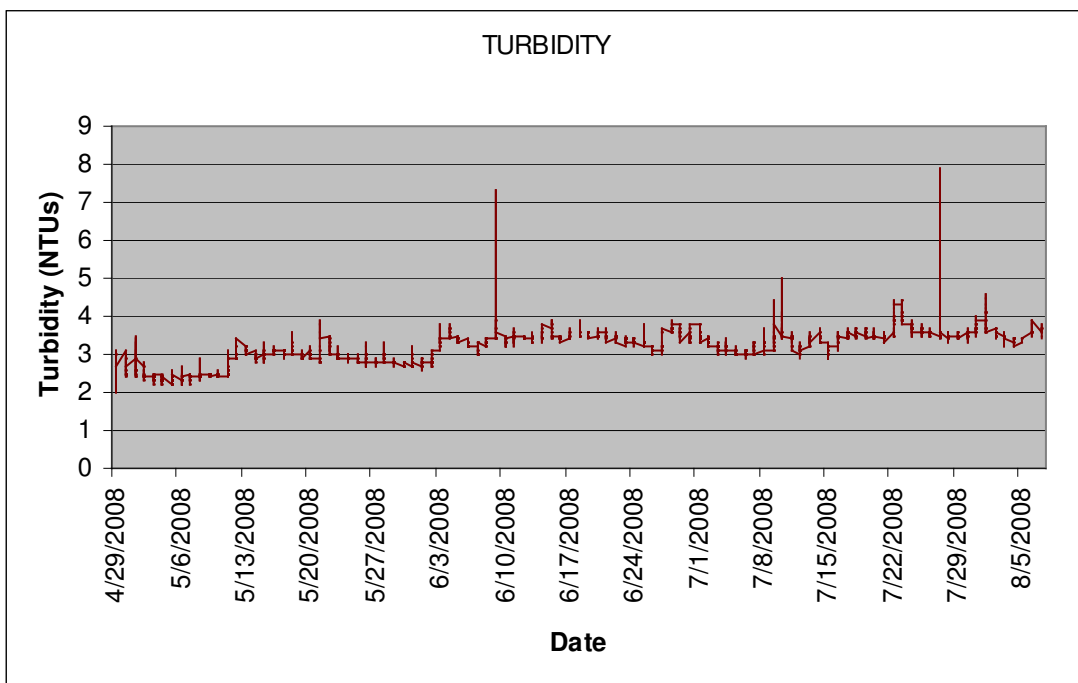
Figure 3

- Specific conductance values (**Figure 4**) were relatively consistent over the deployment period. Values ranged from 33.6 to 41.7  $\mu\text{S}/\text{cm}$ , which is typical for this station.



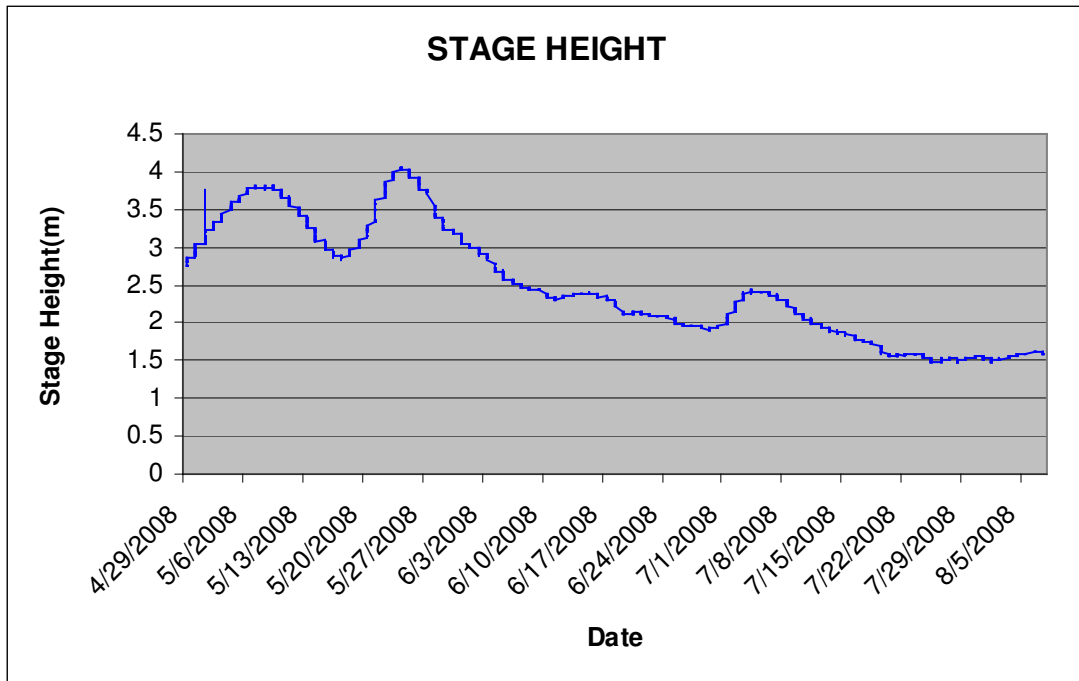
**Figure 4**

- Turbidity values (**Figure 5**) were relatively consistent over the deployment period and ranged from 2.0 – 7.9 NTUs which is typical of this station.



**Figure 5**

- Stage readings (**Figure 6**) showed considerable variation over the deployment period with two distinct peaks during Spring runoff and a gradual decline over the summer. The height of the river ranged from 1.472 m to 4.054 m, which translates to a range of 141 m<sup>3</sup>/s to 636 m<sup>3</sup>/s.



**Figure 6**

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