

Real Time Water Quality Monthly Report for Voisey's Bay Nickel Company Ltd. July 2005

General

- The Water Resources Management Division staff analyses the real-time web page on a daily basis.
- Voisey's Bay Nickel Company will continue to be informed of any significant water quality events in the future in the form of a monthly report.

Maintenance and Calibration of Instrumentation

- The three Datasondes were retrieved from the sites and brought back to the office for cleaning and maintenance on July 20th, 2005. The instruments were calibrated on July 20th, 2005 and returned to the water on July 21st, 2005. A DOEC staff member (Annette Tobin) was present on-site to oversee these tasks.
- All QA/QC protocols were followed when retrieving and deploying the instruments with the exception of the Minisonde readings upon retrieval. This was due to the turnaround of Environmental Officers on the day of July 20th, 2005 in which the Minisonde could not be accessed by DOEC staff. All required forms were completed and sent to the Department of Environment and Conservation on August 3rd, 2005.
- As noted in the previous monthly report, the dissolved oxygen and turbidity readings were not being transmitted for the Upper Reid at Outlet of Reid Pond site. This problem was rectified on July 21st, 2005. All parameters for this site are now transmitting.
- A new installation for Lower Reid Brook was installed on July 21st, 2005. The new installation allows the Datasonde to be 4-5 inches above the sediment bottom which is suspected to be the problem of turbidity spikes in Lower Reid Brook. The changes in turbidity values before and after the new installation will be analyzed to determine if the new installation has corrected the turbidity problems encountered.

Data Interpretation

- Throughout the month of July, most water quality parameters at the Upper Reid Brook station remained steady at expected background levels. As can be seen by the graphs, pH and conductivity (Figures 1 & 2) remained very consistent throughout the month. There is a slight increase in conductivity and decrease in pH after calibration of the instruments.

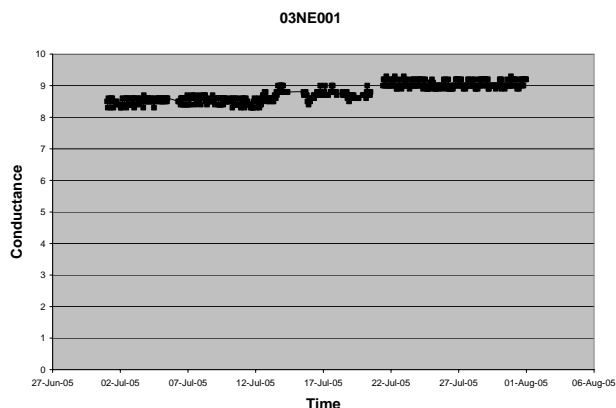
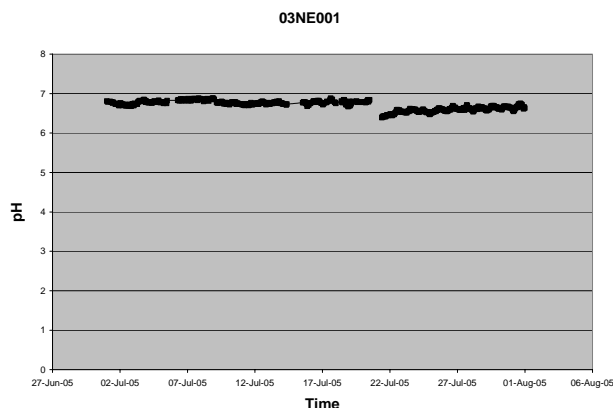


Figure 1

Figure 2

- Temperature, as expected for this time of year, has started to stabilize during the end of July with some fluctuations. (Figure 3).

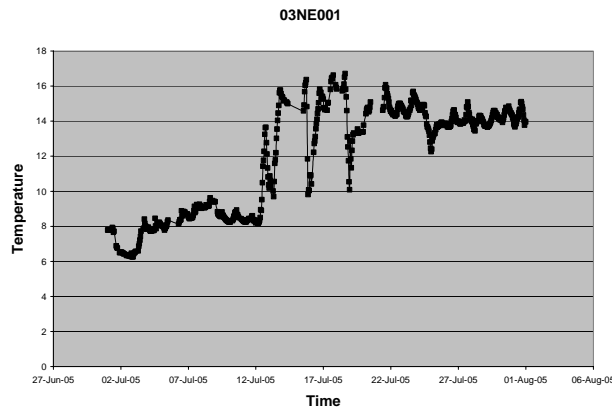


Figure 3

- There are no readings for turbidity and dissolved oxygen for Upper Reid Brook until July 21st, 2005 due to the issue with the time of transmissions discussed previously. The dissolved oxygen and turbidity (Figure 4 & 5 respectively) are relatively stable with one small spike in turbidity on July 27th, 2005.

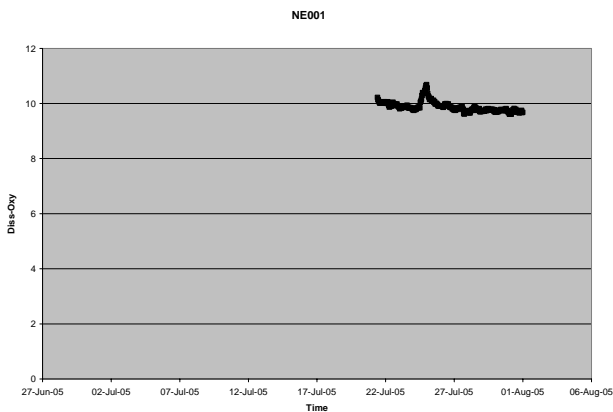


Figure 4

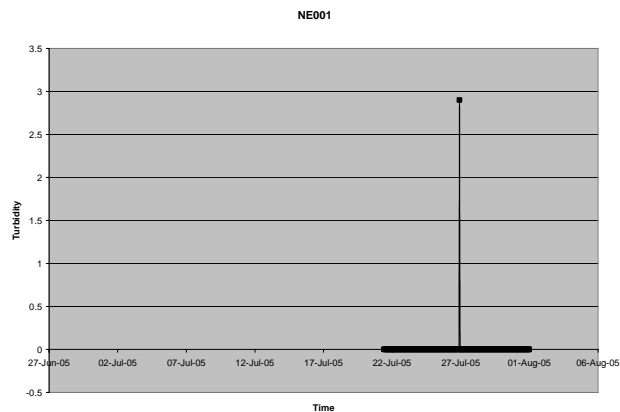


Figure 5

- Throughout the month of July, the pH in Camp Pond Brook remained consistent while conductivity showed a slight increase in July. There is no explanation for this observation at this time. (Figure 6 & 7).

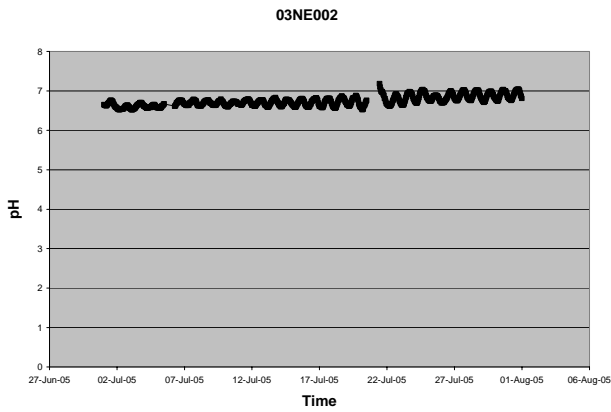


Figure 6

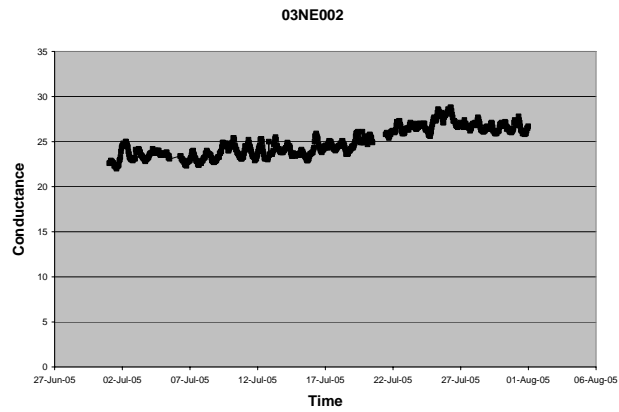


Figure 7

- Temperature, showed an increase during the first part of July and a decrease during the end of July. (Figure 8). The dissolved oxygen showed a gradual decrease which is consistent with the increase in temperature for the first part of the month and then an increase in dissolved oxygen during the end of July. (Figure 9).

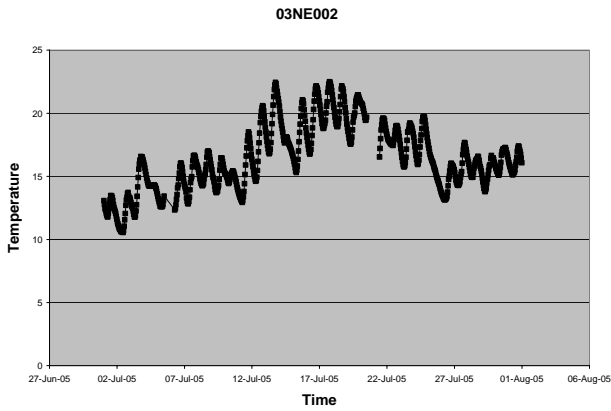


Figure 8

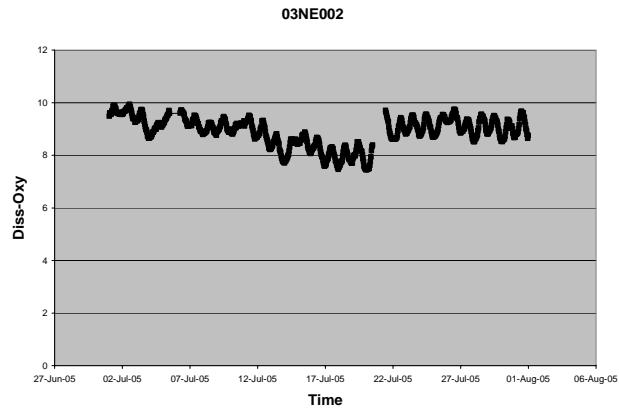


Figure 9

- Throughout the majority of July, turbidity in Camp Pond Brook showed relatively small spikes (less than 20 NTU) that are consistent with readings seen last year at the same station (Figure 10). On July 8th, 2005 there was a spike of 56 NTU; July 11th ranging from 33 NTU to 171 NTU and July 15th a spike of 33 NTU. These spikes are fairly common this year. There is no explanation at this time for these individual spikes in turbidity.

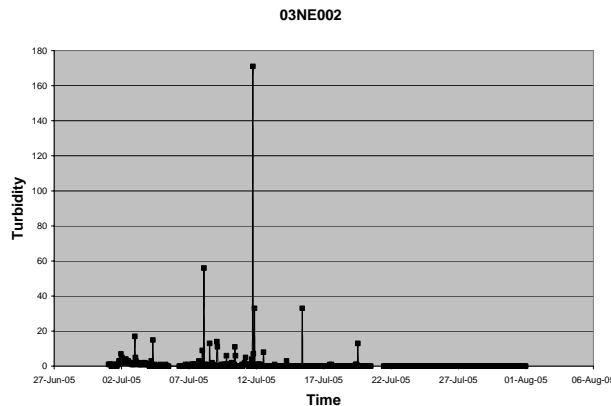


Figure 10

- Throughout the month of July, the pH in Lower Reid Brook remained stable (Figure 11).

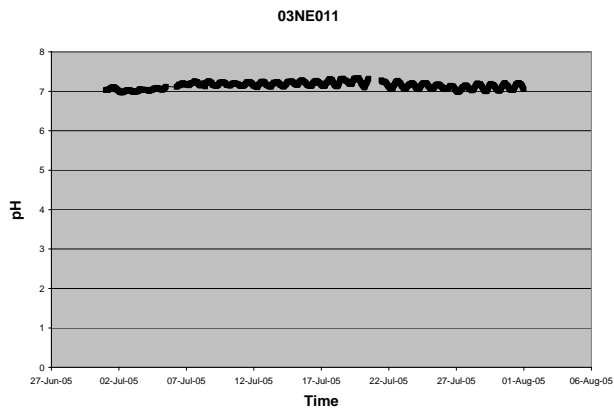


Figure 11

- There was an increase in conductivity in the month of July (Figure 12) until July 25th when levels began to stay consistent.

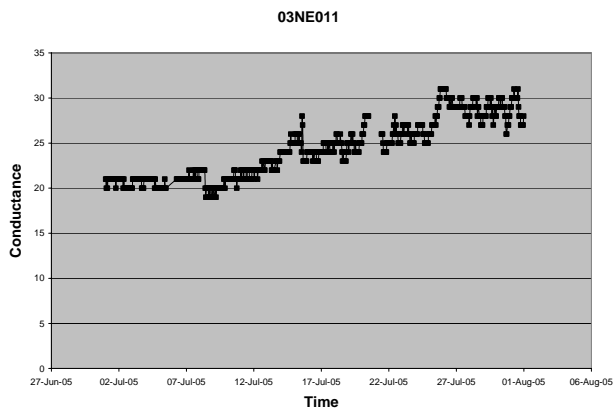


Figure 12

- Temperature showed fluctuations throughout the month of July. There was an increase in temperature until July 18th, decreased until July 26th and then an increase again. (Figure 13).

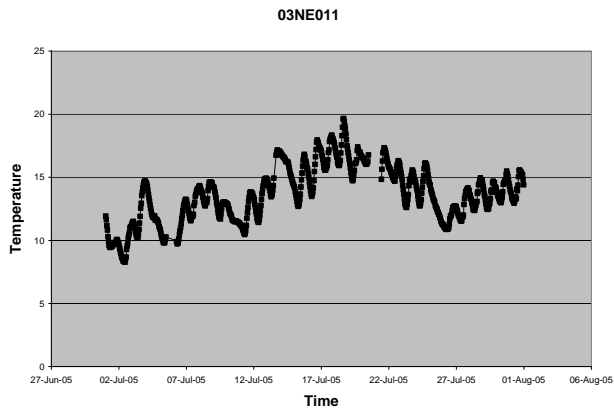


Figure 13

- The dissolved oxygen showed a gradual decrease until the instrument was removed and then the dissolved oxygen showed higher values when replaced but began to decrease shortly after reinstalled (Figure 14).

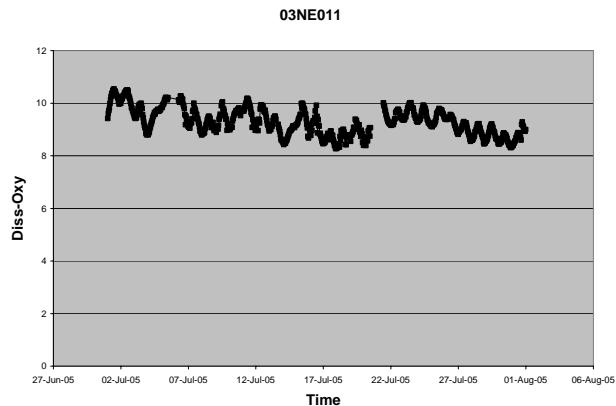


Figure 14

- Turbidity values for July fluctuated throughout the month (Figure 15). From July 1st to July 5th turbidity values fluctuated from 2 NTU – 454 NTU. The majority of the turbidity readings were between 2 NTU and 70 NTU. Significant spikes were recorded on July 2nd at 165 and 454 NTU and July 4th at 101, 105, 109 and 238 NTU. On July 9th there was a turbidity spike of 95 NTU. Spikes for Lower Reid Brook have been common this year. The new installation for Lower Reid Brook may fix the turbidity spikes commonly seen in Lower Reid Brook.
- During the period of July 13th and 14th a cyclic pattern was recorded with turbidity values fluctuation up to a maximum of 1051 NTU. This cyclic pattern indicated a water quality event. At this time, however, there is no explanation for this event. After July 14th, values were recorded at background concentration levels. After the instruments were removed and reinstalled with the new installation technique, turbidity values were recording at approximately 0 NTU.

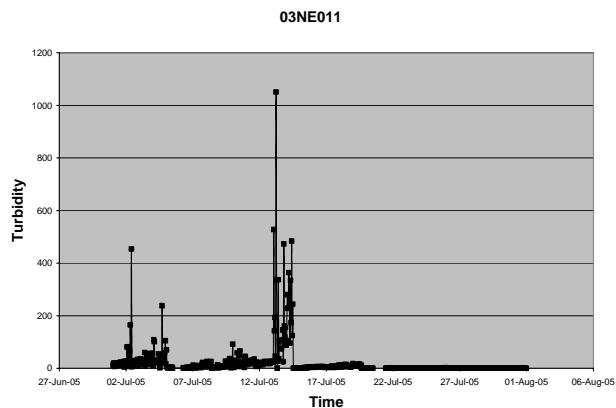


Figure 15

Prepared by: Annette Tobin
 Department of Environment and Conservation
 August 9th, 2005
 Ph: (709) 729-1159
 Fx: (709) 729-0320
 Email: annettetobin@gov.nl.ca