Government of
Newfoundland
and Labrador

Real Time Water Quality Monthly Report
Leary's Brook
August 2005

General

- Data from the Leary's Brook 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 August.

Table 1: Table of Datasonde removal and installation dates

Date Installed	Date Removed
	August 01, 2005
August 1, 2005	August 12, 2005
August 14, 2005	August 24, 2005

- Water quality readings were taken with a Minisonde at the time of removal for comparison purposes. The Minisonde was calibrated prior to use.
- Water samples were taken on August 24, 2005 for laboratory analysis as part of QA/QC procedures.

Data Interpretation

- Areas in the graphs where the data lines go abruptly down to the x axis and show no data 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 August with expected daily/nightly (diurnal) and seasonal changes occurring.
- **Stage height** (water level) rose and fell in response to daily precipitation as seen in **Figure 1**. Increases in stage height correspond to precipitation events as seen in Table 2.
- **Water temperature** fluctuated in response to daily maximum and minimum air temperature. This is demonstrated by comparing the graph in **Figure 2** to the air temperature data in **Table 2**. Warmer water temperatures correspond to warmer air temperatures experienced from August 7th to August 14.

Table 2: Weather information for St. John's, NL provided by Environment Canada

Daily Data Report for August 2005											
Day	Max Temp °C	Min Temp °C	Mean Temp °C	Heat Deg Days C	Cool Deg Days C	Total Rain mm	Total Snow cm	Total Precip mm	Snow on Grnd cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
01†	21.4	9.7	15.6	2.4	0.0	0.0	0.0	0.0			<31
02†	19.1	9.9	14.5	3.5	0.0	0.0	0.0	0.0			<31
03†	18.5	11.0	14.8	3.2	0.0	3.4	0.0	3.4		16	37
04†	20.4	13.1	16.8	1.2	0.0	0.6	0.0	0.6		32	33
05†	18.2	12.0	15.1	2.9	0.0	1.6	0.0	1.6		25	43
06†	21.9	12.4	17.2	0.8	0.0	1.2	0.0	1.2		24	59
07†	24.3	13.2	18.8	0.0	0.8	0.0	0.0	0.0			<31
08†	26.3	12.6	19.5	0.0	1.5	0.0	0.0	0.0		26	39
09†	24.0	14.0	19.0	0.0	1.0	0.0	0.0	0.0		25	33
10†	23.1	14.5	18.8	0.0	0.8	0.0	0.0	0.0		24	56
11†	25.8	18.3	22.1	0.0	4.1	0.6	0.0	0.6		24	56
12†	23.8	10.0	16.9	1.1	0.0	3.2	0.0	3.2			<31
13†	22.0	9.8	15.9	2.1	0.0	0.0	0.0	0.0			<31
14†	23.9	14.6	19.3	0.0	1.3	T	0.0	T		21	43
15†	19.9	12.5	16.2	1.8	0.0	0.0	0.0	0.0			<31
16†	21.3	11.1	16.2	1.8	0.0	0.0	0.0	0.0			<31
17†	18.4	11.1	14.8	3.2	0.0	7.2	0.0	7.2		18	37
18†	21.8	8.9	15.4	2.6	0.0	1.4	0.0	1.4		28	32
19†	20.3	8.6	14.5	3.5	0.0	T	0.0	T		26	41
20†	20.7	9.1	14.9	3.1	0.0	0.0	0.0	0.0			<31
21†	21.1	12.4	16.8	1.2	0.0	0.3	0.0	0.3		18	48
22†	23.4	17.3	20.4	0.0	2.4	1.6	0.0	1.6		26	56
23†	21.9	15.3	18.6	0.0	0.6	27.2	0.0	27.2			<31
24†	20.7	14.6	17.7	0.3	0.0	33.2	0.0	33.2			<31
25†	14.8	13.0	13.9	4.1	0.0	25.0	0.0	25.0		2E	32E
26†	14.1	10.0	12.1	5.9	0.0	20.6	0.0	20.6		2	33
27†	17.9	9.9	13.9	4.1	0.0	0.0	0.0	0.0			<31
28†	24.4	14.4	19.4	0.0	1.4	0.0	0.0	0.0		24	46
29†	20.0	11.8	15.9	2.1	0.0	T	0.0	T			<31
30†	23.2	12.1	17.7	0.3	0.0	0.8	0.0	0.8		25	33
31T†	22.9	16.5	19.7	0.0	1.7	2.8	0.0	2.8			<31

Sum				51.2	15.6	130.7	0.0	130.7			
Avg	21.3	12.4	16.8								

Figure 1

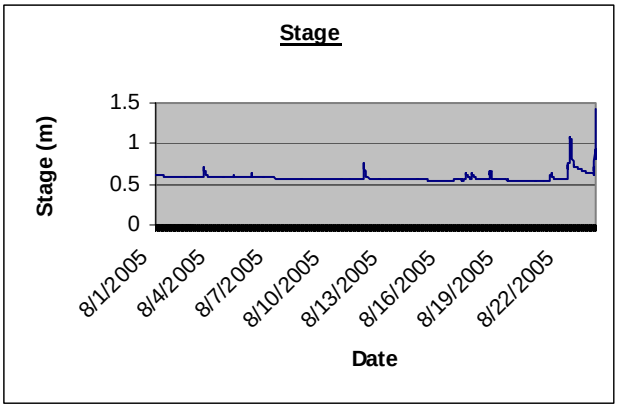
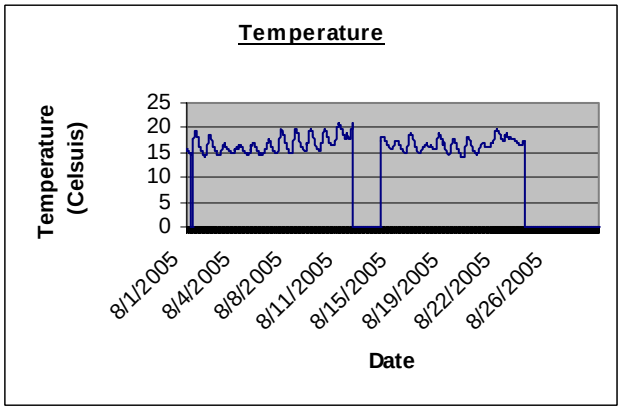


Figure 2



- **Conductivity** levels fluctuated throughout the month with several notable spikes as observed in Figure 3. These spikes usually occurred in response to precipitation events.

- **Total dissolved solids** (**Figure 4)** levels reflected the changes in conductivity. 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

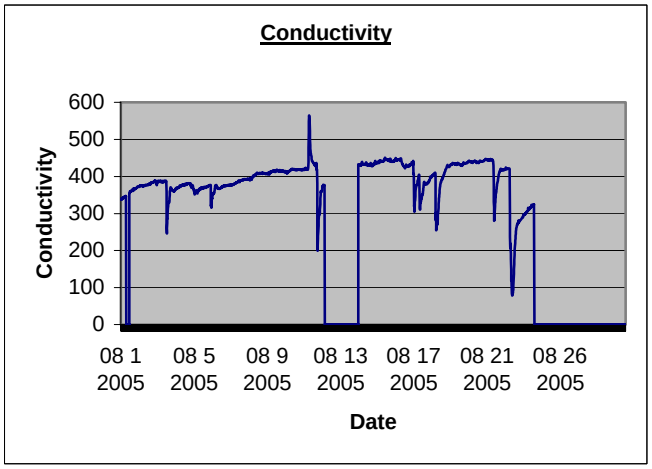
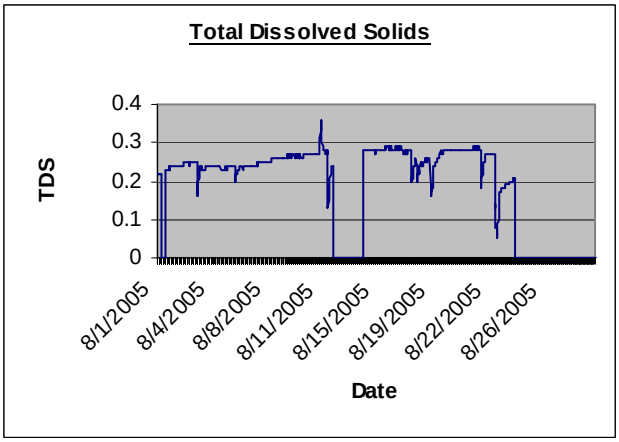


Figure 4



- The technical problem with the pH probe that occurred in July was resolved. **pH** levels for the month of August ranged between 6.57 to 7.45. There were some exceedances above the CCME recommended Guideline for Freshwater Aquatic Life of 6.5 (see **Figure 5**). The average pH level for August was 7.06. (see **Table 3**).

- The technical problems that were experienced with the Dissolved Oxygen (DO) probe were resolved with the installation of a new DO probe. **Dissolved oxygen** levels ranged between 3.4 mg/L to 9.2 mg/L during the period of measurement (see **Figure 6).** During the month of August, dissolved oxygen measurements were below the CCME recommended maximum guideline of 9.5 mg/L. The average DO level for the period of measure was 6.8 mg/L (see **Table 3**).

Figure 5

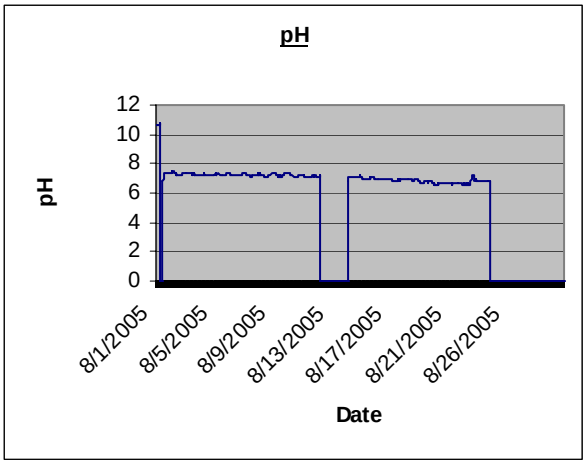
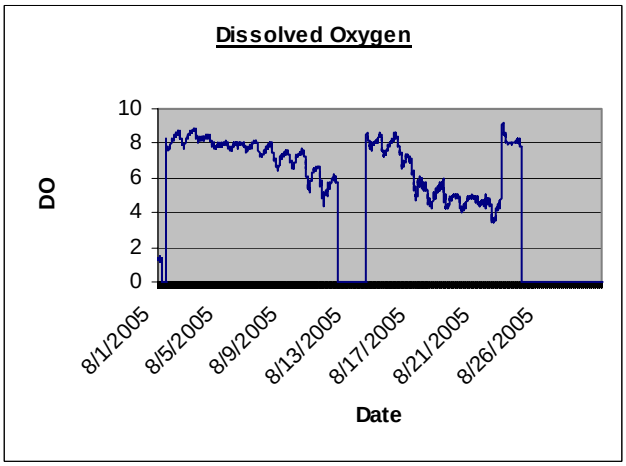
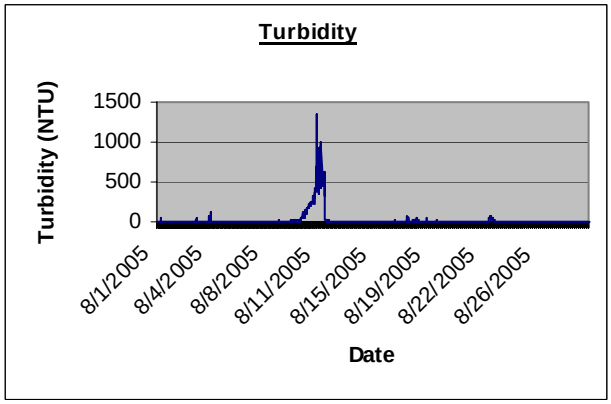


Figure 6



- **Turbidity** levels fluctuated and had several minor spikes noted throughout the month. The turbidity spikes (see **Figure 7**) are normally in response to precipitation. A large notable turbidity spike occurred mid month between August 10th to the 12th. No significant precipitation was noted during mid-month so the large turbidity spike must be due to other factors. Many turbidity spikes exceeded the CCME recommended maximum of 8 NTU above background levels.

Figure 7



Additional Information

- Table 3 provides summary statistics on water quality parameters for Leary's Brook during the month of August 2005.

Table 3: Summary statistics for August 2005.

	Water	pH	Conductance	Dissolved	Percent	Dissolved	Turbidity

	Temperature			Solids	Saturated	Oxygen	
Max	20.9	7.45	565	0.36	97.4	9.2	1350
Min	14.13	6.57	78.3	0.05	37.1	3.4	0
Average	16.69838	7.05969	391.6639724	0.251429	70.2178413	6.837210448	27.71626
Standard Deviation	1.25512	0.236784	52.05945261	0.033583	14.5614537	1.4534392	101.5932

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