



Real Time Water Quality Monthly Report Leary's Brook July 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 July.

Date Installed	Date Removed
	July 7, 2005
July 8, 2005	July 18, 2005
July 20, 2005	

- 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

- In general, water quality parameters were stable during the month of July 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 days with precipitation as seen in Table 1.
- 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 1**. An increase in water temperature is observed in response to an increase in daily mean temperatures. A slight warming trend in water temperature continued to the end of the month.

Table 1: Weather information for St. John's, NL provided by Environment Canada

Daily Data Report for July 2005											
D a y	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†	22.2	7.3	14.8	3.2	0.0	0.0	0.0	0.0			<31
02†	24.7	8.5	16.6	1.4	0.0	T	0.0	T		23	56
03†	20.6	11.8	16.2	1.8	0.0	9.0	0.0	9.0		21	46
04†	21.7	10.9	16.3	1.7	0.0	0.0	0.0	0.0			<31
05†	25.8	11.4	18.6	0.0	0.6	0.0	0.0	0.0			<31
06†	24.6	8.6	16.6	1.4	0.0	0.0	0.0	0.0		25	41
07†	11.2	6.4	8.8	9.2	0.0	0.4	0.0	0.4			<31
08†	21.7	3.6	12.7	5.3	0.0	T	0.0	T		26	37
09†	23.5	10.7	17.1	0.9	0.0	0.0	0.0	0.0		26	48
10†	24.5	9.8	17.2	0.8	0.0	4.4	0.0	4.4		16	41
11†	19.3	12.6E	16.0E	2.0E	0.0E	M	M	T		M	M
12†	22.6	12.8	17.7	0.3	0.0	0.0	0.0	0.0			<31
13†	26.2	13.9	20.1	0.0	2.1	T	0.0	T		19	41
14†	23.0	13.7	18.4	0.0	0.4	0.8	0.0	0.8		22	33
15†	24.7	12.7	18.7	0.0	0.7	0.0	0.0	0.0		24	37
16†	21.0	13.5	17.3	0.7	0.0	6.4	0.0	6.4			<31
17†	19.0	13.6	16.3	1.7	0.0	1.0	0.0	1.0			<31
18†	24.7	13.4	19.1	0.0	1.1	0.0	0.0	0.0		26	48
19†	25.5	11.7	18.6	0.0	0.6	0.0	0.0	0.0			<31
20†	24.8	18.5	21.7	0.0	3.7	1.8	0.0	1.8		27	37
21†	25.0	15.6	20.3	0.0	2.3	0.0	0.0	0.0		27	33
22†	23.1	14.0	18.6	0.0	0.6	0.0	0.0	0.0			<31
23†	25.7	12.9	19.3	0.0	1.3	0.0	0.0	0.0			<31
24†	16.6	14.2	15.4	2.6	0.0	13.8	0.0	13.8		25	33
25†	19.6	13.1	16.4	1.6	0.0	0.0	0.0	0.0		26	67
26†	16.3	13.0	14.7	3.3	0.0	0.8	0.0	0.8		19	48
27†	24.0	14.2	19.1	0.0	1.1	T	0.0	T		22	39
28†	24.7	16.0	20.4	0.0	2.4	T	0.0	T		24	56
29†	22.0	15.1	18.6	0.0	0.6	17.6	0.0	17.6			<31

30†	24.7	10.9	17.8	0.2	0.0	13.6	0.0	13.6		26	32
31†	22.0	10.6	16.3	1.7	0.0	0.0	0.0	0.0		28	32

Figure 1

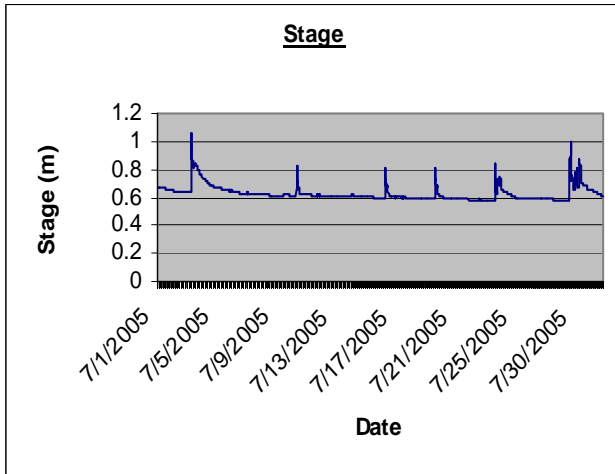
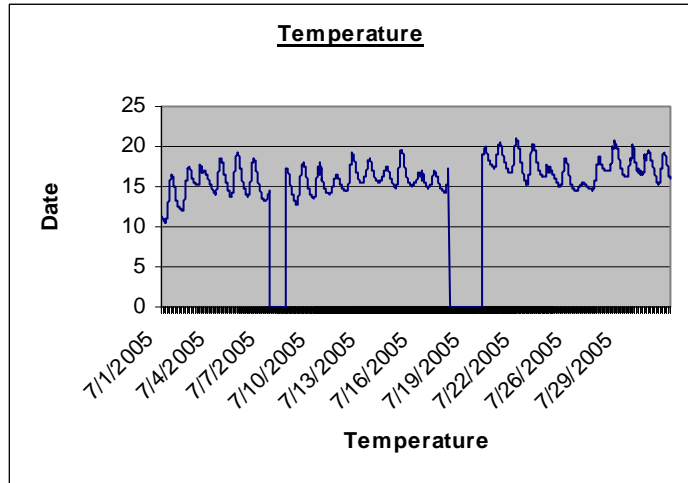


Figure 2



- **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 variations 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

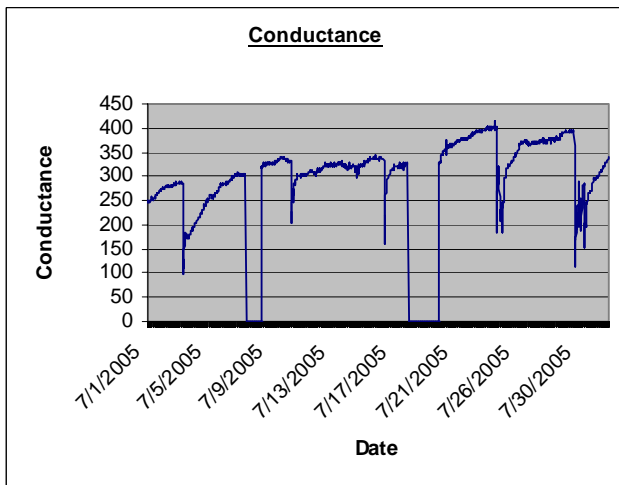
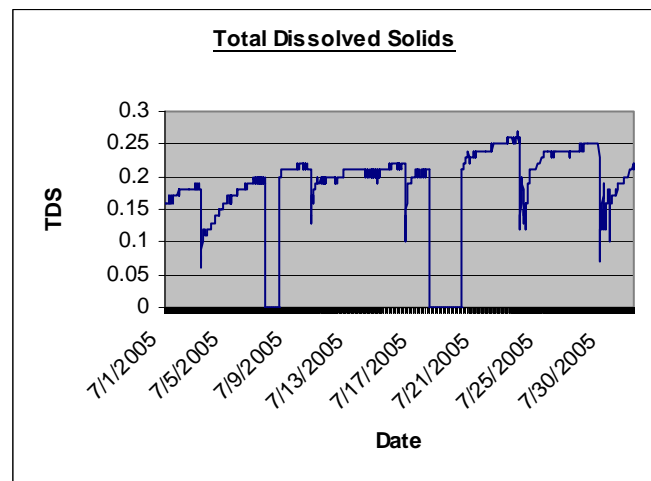


Figure 4



- After the Datasonde was reinstalled on July 20th a technical problem occurred and the pH readings are not accurate from July 20th to the end of the month. **pH** levels for July 1st to July 20th ranged between 6.77 to 7.75. There were some exceedances above the CCME recommended Guideline for Freshwater Aquatic Life of 6.5 (see **Figure 5**). The average pH level for July 1st to July 20th was 7.05. (see **Table 2**).

Figure 5

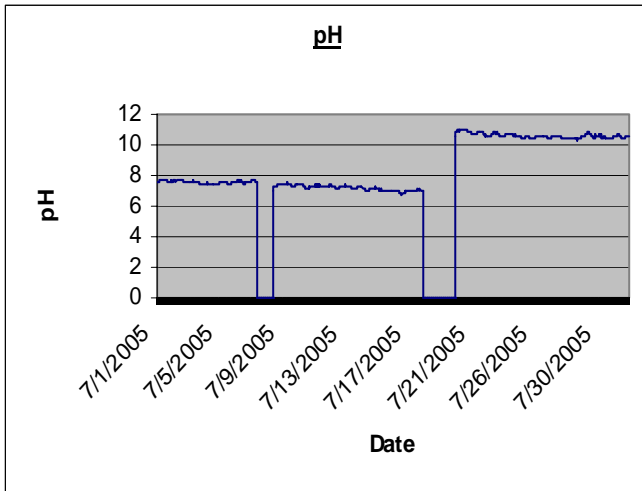
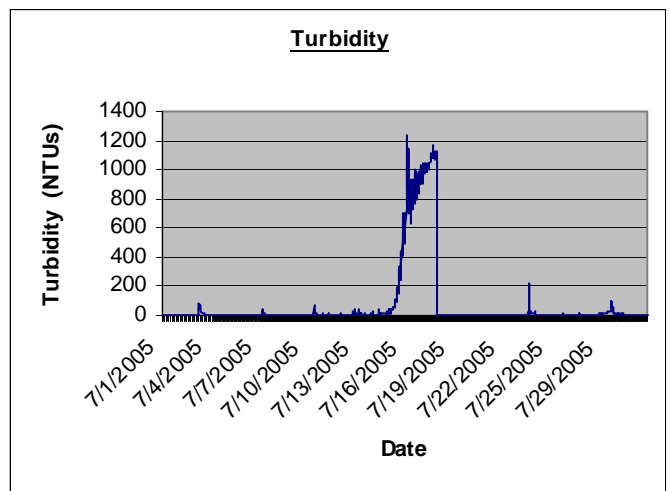


Figure 6



- **Turbidity** levels fluctuated and had several minor spikes noted throughout the month and one major spike noted mid-month. The turbidity spikes (see **Figure 6**) are normally in response to precipitation. 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.

Additional Information

- Table 2 provides summary statistics on water quality parameters for Leary's Brook during the month of July 2005.

Table 2: Summary statistics for July 2005.

	Water Temperature	pH (July 1st to July 20 th)	Conductance	Dissolved Solids	Turbidity
Max	20.95	7.75	413	0.27	1238
Min	10.61	6.77	98.6	0.06	0
Average	16.31	7.34988	316.1095931	0.20285928	77.4399029
Standard Deviation	1.85456	0.22788	53.17748862	0.03439055	247.353865

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