

Real Time Water Quality Monthly Report For Peter's River, November 5-December 2/03

General

- The following is an analysis of the Peter's River water quality data from November 5 to December 2, 2003.

Maintenance and Calibration of Instrumentation

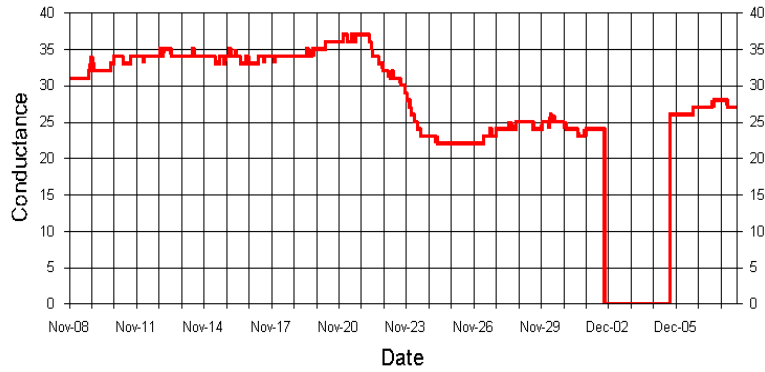
- On October 28, 2003 the Datasonde was removed for routine monthly maintenance and calibration.
- Minisonde readings were taken at the time of removal as required by the QA/QC protocol. The Minisonde was calibrated before use.
- The Datasonde was cleaned, calibrated and re-programmed to include the "total dissolved solids" (TDS) parameter.
- The Datasonde was reinstalled on October 29, 2003.
- A problem with the recorded data was discovered on October 31 whereby the numerical data readings were not being transmitted in the proper order with their corresponding parameter codes. It was determined that an error was made when the Datasonde was re-programmed to add the TDS parameter. The Datasonde was once again removed on November 4, 2003, re-programmed, and returned to the river on November 5, 2003. Review of the real-time data revealed that the programming error had been corrected.
- The real-time data that was transmitted from the October 29 to November 4 contains errors and omissions and will not be included in this analysis. The data used in this analysis begins at reinstallation on November 5, 2003 at 1407 hours NST, and continues until the Datasonde was removed on December 2, 2003.
- There is a dip in each real-time water quality-monitoring graph corresponding with the time the Datasonde was out of the water for calibration and maintenance and programming.
- The water quality data collected on a real-time basis from November 5 to December 2, 2003 did not drift significantly according to the QA/QC Minisonde readings taken when the Datasonde was retrieved. There is an apparent problem however with the difference between the Minisonde and the Datasonde readings after calibration, at the time of reinstallation. The difference in the specific conductance readings between the two instruments lies outside the acceptable range. This problem will be addressed during the next scheduled calibration and maintenance at the end of December.

Data Interpretation

- Water quality parameters remained fairly constant at background levels for most of the period of this analysis. The impact of a significant rainfall event that occurred during November 21st and 22nd, when approximately 87mm of rain was recorded for this area, can be seen in the graphs of the water quality data. Conductivity (**figure 1**) and total dissolved solids (**figure 2**) levels decreased rapidly during the rainfall:

Figure 1

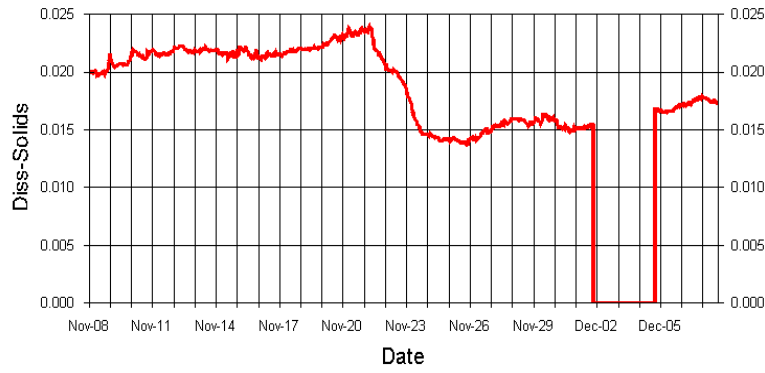
02YO006



Last Reading: Dec-08-2003 12:07PM Conductance = 27

Figure 2

02YO006



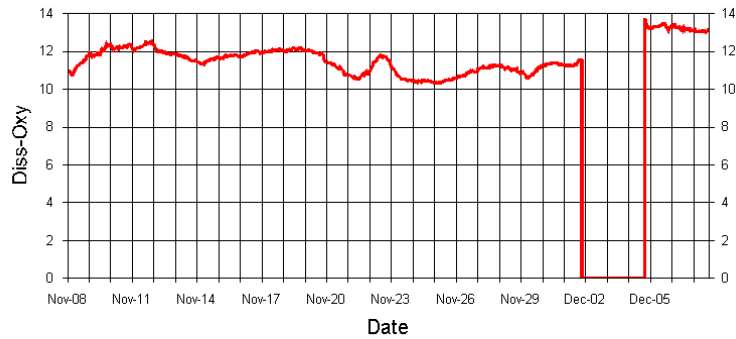
Last Reading: Dec-08-2003 12:07PM Diss-Solids = 0.0173

Conversely, dissolved oxygen levels (figure 3) increased during the rainfall:

:

Figure 3

02YO006

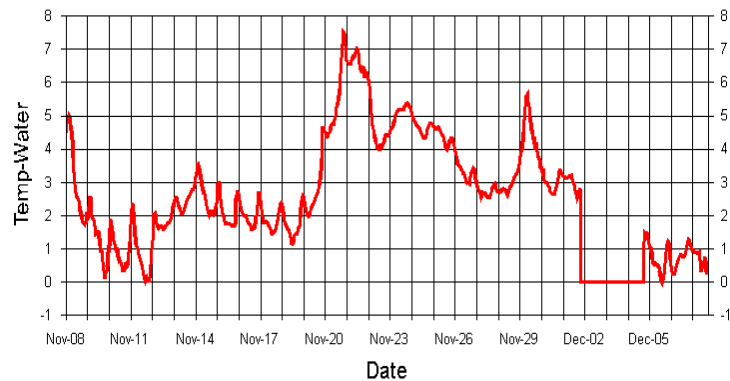


Last Reading: Dec-08-2003 12:07PM Diss-Oxy = 13.13

Water temperature (**Figure 4**) fluctuated between -0.01°C and 7.52, largely in response to changes in air temperature and rainfall (**Table 1**):

Figure 4

02YO006

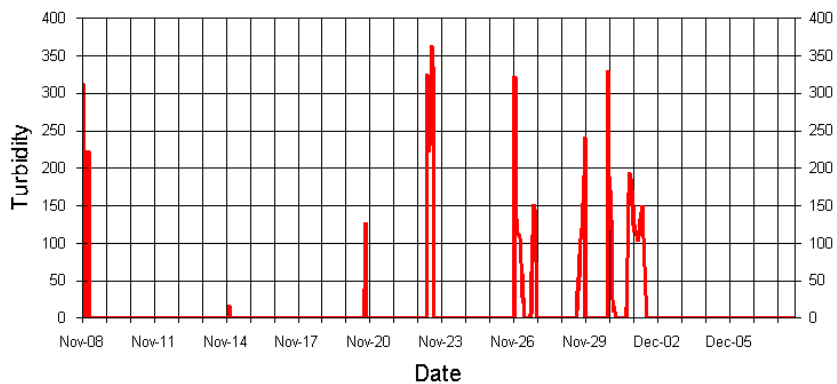


Last Reading: Dec-08-2003 12:07PM Temp-Water = 0.42

Ten spikes in turbidity levels (**Figure 5**) occurred between November 4 and December 5. The data in **Table 1** reveals that high winds and/or rainfall conditions existed on all dates when turbidity increased, except November 26:

Figure 5

02YO006

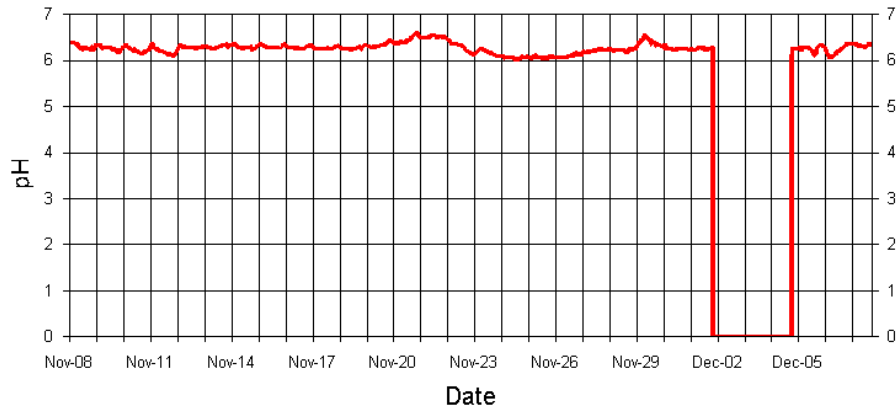


Last Reading: Dec-08-2003 12:07PM Turbidity = 0

pH levels (**Figure 6**) were stable during this period, ranging from 6.02 to 6.61 pH units:

Figure 6

02YO006



Last Reading: Dec-08-2003 12:07PM pH = 6.36

Table 1

Daily Data Report for November 2003

Notes on Data Quality.

GANDER INT'L A
NEWFOUNDLAND

Latitude: 48° 57' N **Longitude:** 54° 34' W **Elevation:** 151.20 m
Climate ID: 8401700 **WMO ID:** 71803 **TC ID:** YQX

Month Year

Previous Month Next Month

D a y	Max Temp °C	Min Temp °C	Mean Temp °C	Max Rel Hum %	Min Rel Hum %	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
1	10.7	2.2	6.5	95	71	3.6	0.0	3.6	M	27	63
2	8.3	0.4	4.4	72	50	0.0	0.0T	0.0T	M	27	67
3	4.0	-1.5	1.3	80	47	0.0	0.0T	0.0T	M	19	46
4	0.9	-3.0	-1.1	94	66	0.0	4.8	6.4	0.0T	36	57

5	0.4	-1.4	-0.5	95	72	0.6	2.0	2.6	3.0	31	37
6	6.9	-1.2	2.9	97	69	4.6	1.4	6.4	2.0	28	50
7	3.3	-2.1	0.6	82	42	0.0	0.0	0.0	0.0T	29	39
8	4.0	-4.1	-0.1	97	71	0.4	1.4	2.6	0.0T	23	57
9	-0.2	-3.4	-1.8	91	64	0.0	2.8	2.6	1.0	28	85
10	-1.1	-5.6	-3.4	78	43	0.0	0.0T	0.0T	2.0	29	69
11	-0.3	-5.9	-3.1	78	51	0.0	0.0T	0.0T	2.0	29	46
12	1.9	-5.3	-1.7	95	62	0.0	0.0T	0.0T	1.0	0	<31
13	4.2	0.5	2.4	99	86	3.8	0.0T	3.8	0.0T	13	41
14	7.7	2.2	5.0	97	84	7.0	0.0	7.0	0.0T	11	59
15	4.1	-0.3	1.9	95	62	0.4	0.0T	0.4	M	22	39
16	4.8	0.8	2.8	94	64	0.0	0.2	0.2	0.0T	28	37
17	3.6	-1.9	0.9	85	59	0.0	0.0	0.0	M	28	35
18	0.2	-2.8	-1.3	80	63	0.0	0.0T	0.0T	M	0	<31
19	4.7	-3.0	0.9	89	73	0.0	0.0	0.0	M	22	50
20	10.1	3.8	7.0	95	76	0.0	0.0	0.0	M	21	44
21	12.1	8.1	10.1	96	82	1.2	0.0	1.2	M	19	44
22	11.0	3.3	7.2	99	94	87.8	0.0	87.8	M	36	35
23	3.4	-0.9	1.3	97	83	0.6	0.0	0.6	M	1	35
24	2.0	-1.5	0.3	98	78	0.0	0.0T	0.0T	M	0	<31
25	8.7	-1.5	3.6	100	97	0.0T	0.0	0.0T	M	0	<31
26	5.8	-1.1	2.4	97	61	0.0T	0.0	0.0T	M	0	<31
27	3.2	-1.7	0.8	88	59	0.0	0.0	0.0	M	27	37
28	1.9	-0.4	0.8	88	74	0.0	0.0	0.0	M	0	<31
29	14.1	-1.8	6.2	99	87	12.2	0.0T	12.2	M	19	76
30	13.3	0.5	6.9	92	62	2.4	0.0T	2.4	M	21	70

The next scheduled removal of the Datasonde for routine calibration and maintenance and subsequent data analysis will be during the first week of January.

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