Real Time Water Quality Monthly Report
Come by Chance River
March - May 2008

General

- The Water Resources Management Division staff monitors the real-time web page on a daily basis.
- Newfoundland and Labrador Refining Company will be informed of any significant water quality events in the form of a monthly report.
- This monthly report interprets the data from the Come by Chance River RTWQ station for the period of March 29 to May 14, 2008.

Maintenance and Calibration of Instrumentation

- The Come by Chance instrument was deployed on March 29, 2008. A second set of data readings was collected at the time of 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.
- The QA/QC rankings from comparing water quality data from both instruments at the time of installation are indicated in **Table 1**. Rankings were not available on installation due to a disruption in the transmission. However, rankings on removal were "excellent" or "good" indicating that on installation rankings would have been as much.

Table 1: QA/QC Data Comparison Rankings upon reinstallation on March 29, 2008

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Come by Chance River	March 29	Installation	N/A	N/A	N/A	N/A

- The Come by Chance instrument was deployed for 46 days. The instrument was removed on May 14, 2008 for routine maintenance and calibration. A second set of data readings was collected at the time of removal using a similar, freshly calibrated instrument. Data readings from both instruments were compared and their variability was ranked, as part of QA/QC protocol.
- The QA/QC rankings from comparing water quality data from both instruments at the time of removal are indicated in **Table 2**. Rankings of "excellent" for temperature, pH and dissolved oxygen and "good" for conductivity were achieved when comparing values from the two instruments indicating a high degree of confidence in the accuracy of the probe for the entire deployment period.

Table 2: QA/QC Data Comparison Rankings upon removal on May 14, 2008

Station	Date	Action	Minisonde vs. Datasonde Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Come by Chance River	May 14	Removal	Excellent	Excellent	Good	Excellent

Data Interpretation

- Water temperature values **(Figure 1)** for the deployment period display diurnal fluctuations and generally increased which is typical for the end of the spring season. Water temperature values ranged between -0.38 and 12.42^{o}C.

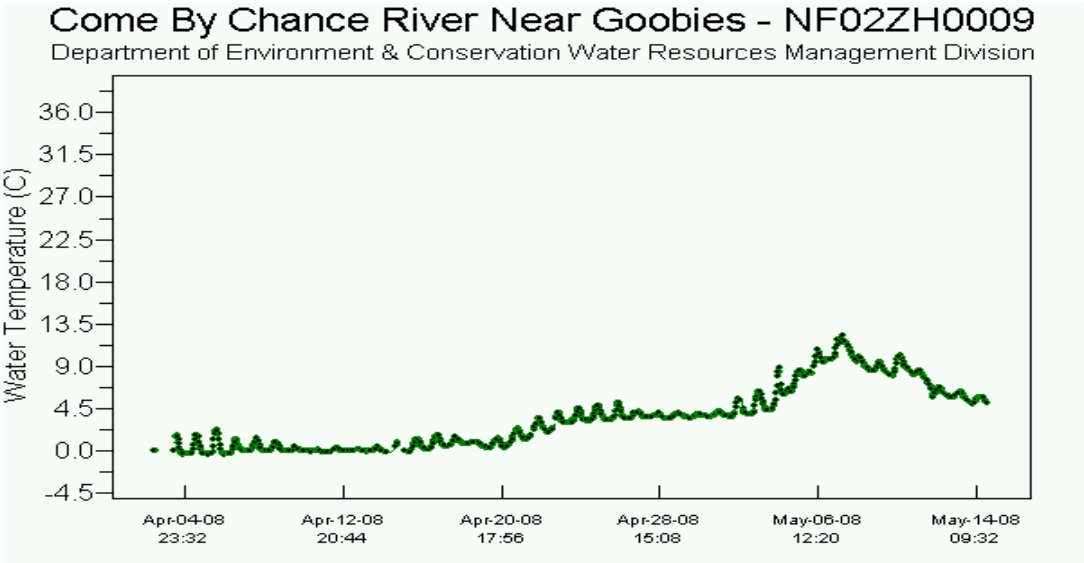

Figure 1

- Dissolved oxygen (DO) values (**Figure 2**) for the deployment period generally decreased, corresponding with the increase in water temperature. DO values ranged from 10.61 to 13.88 mg/L, all values above the minimum DO concentrations recommended by the Canadian Council of Ministers of the Environment (CCME) Protection of Freshwater Aquatic Life Guidelines (cold water/other life stages – above 6.5; warm water/other life stages – above 5.5; warm water/early life stages – above 6; cold water/early life stages – above 9.5 mg/L).

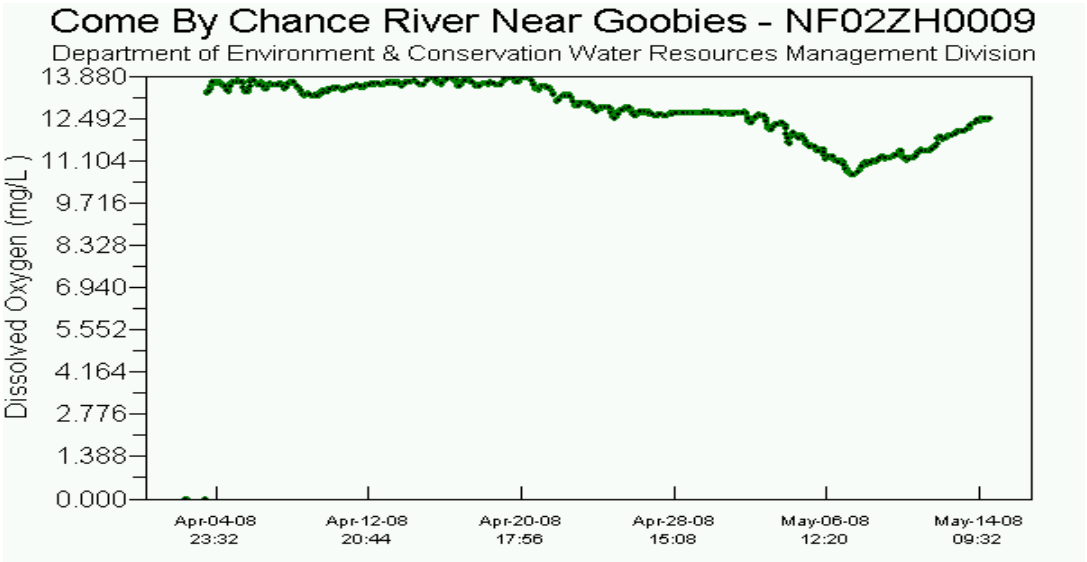

Figure 2

- pH values **(Figure 3)** for the deployment period displayed an increase over the deployment period, this may be attributed to increasing daylight hours and the resultant increase in photosynthetic activity. pH values ranged between 5.90 to 6.86, most values below the minimum pH level of 6.5 recommended by the CCME Guidelines for the Protection of Freshwater Aquatic Life (due to the naturally acidic nature of NL waters).

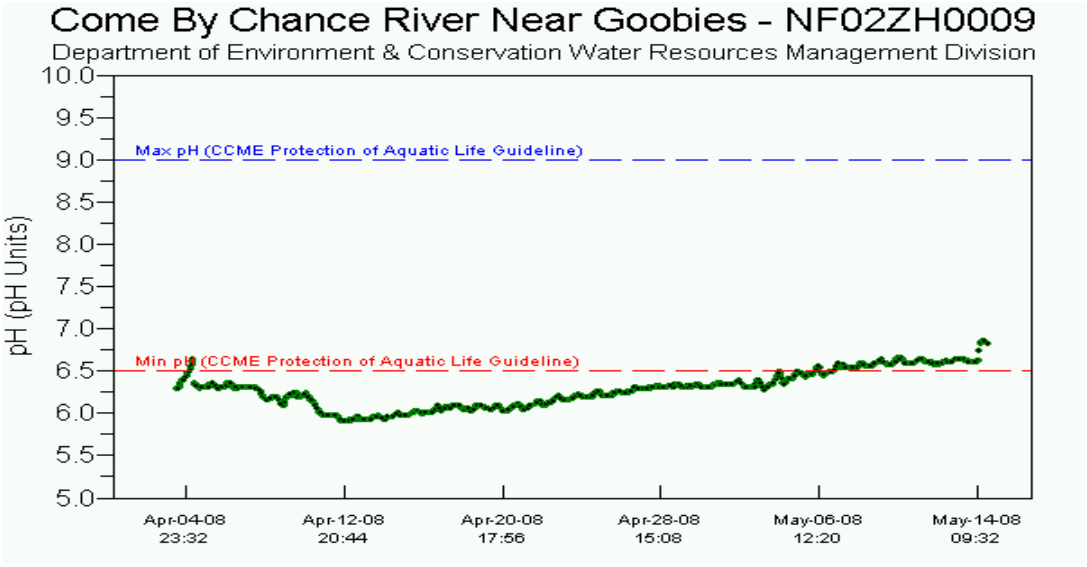

Figure 3

- Specific conductance values (**Figure 4**), ranged from 34.4 to 190.5 µS/cm throughout the deployment period. Specific conductance values were significantly higher at the beginning of the deployment period, which could be attributed to spring runoff which usually contains significant amounts of road salt.

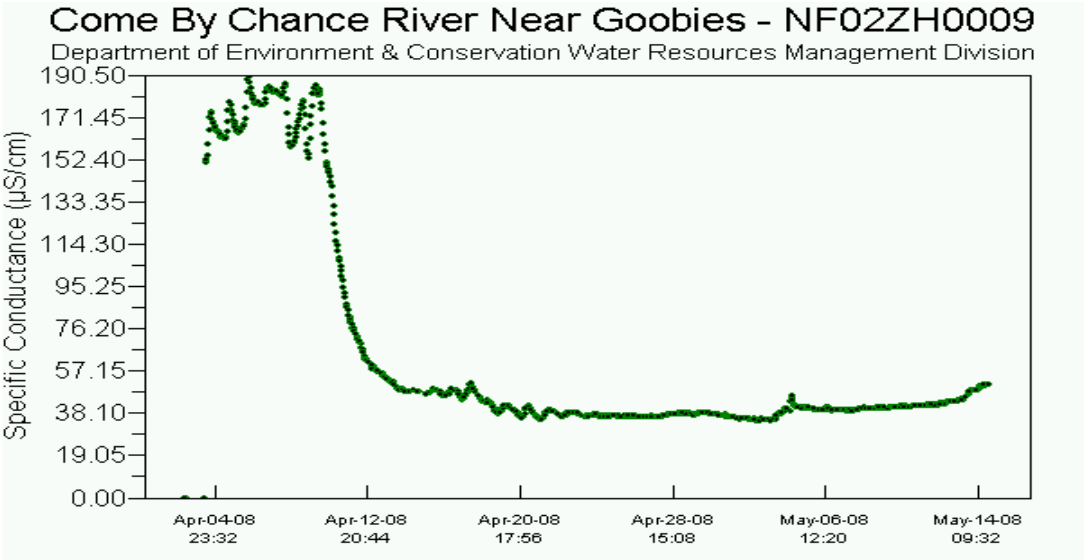

Figure 4

- Turbidity values **(Figure 5)** remained constant at 0 NTU for the deployment period.

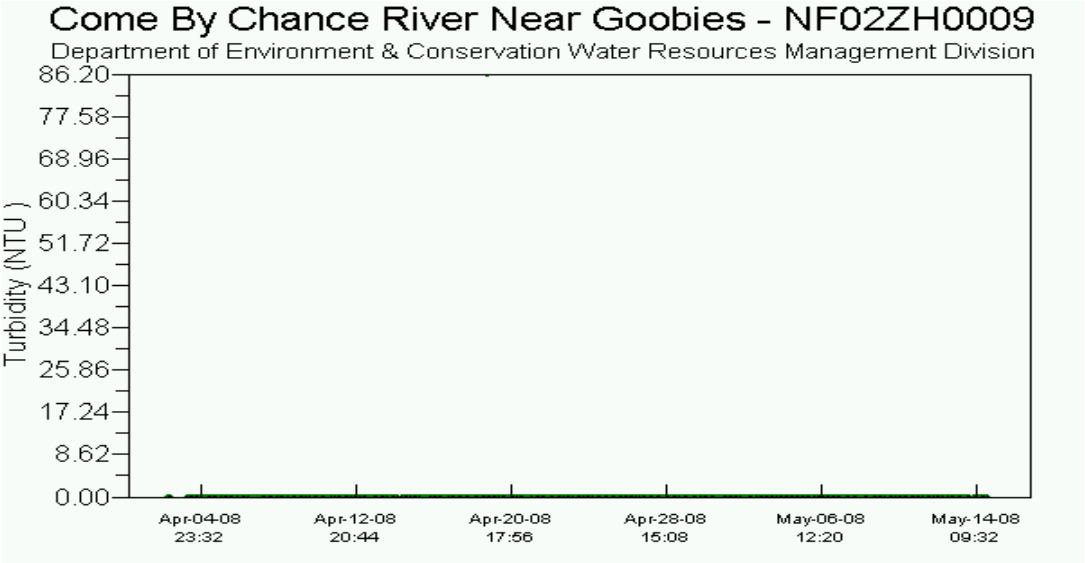

Figure 5

- Stage values (**Figure 6)** fluctuated during the deployment period due to the periods of precipitation (**Appendix A**) and spring runoff. Stage values ranged from 0.806 to 1.511 meters.

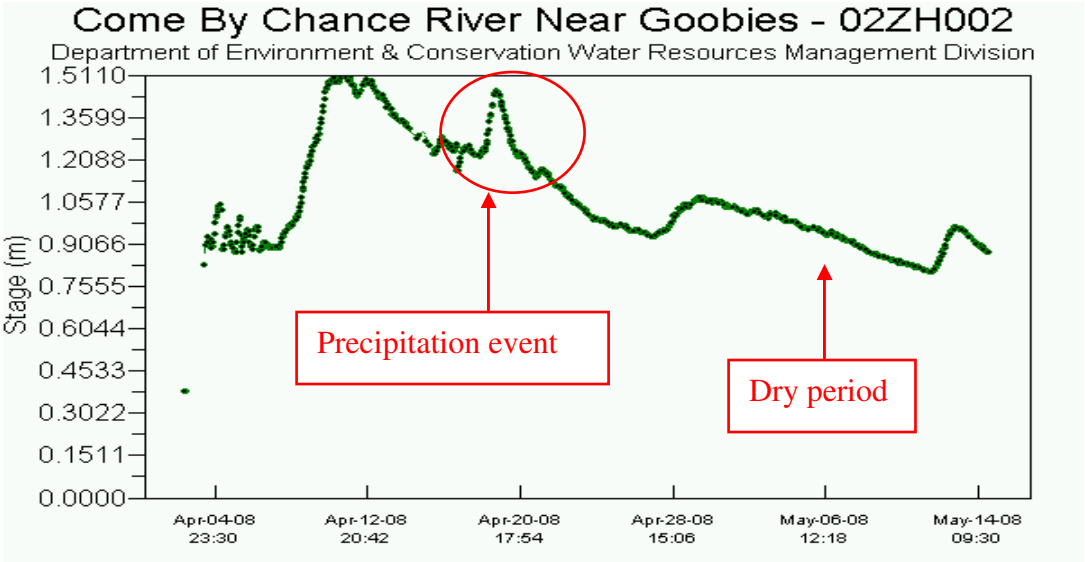

Figure 6

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Appendix A – Climate Data for Argentia, NL (March 29 to May 14, 2008)

Daily Data Report for March 2008											
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
29†	0.3	-4.9	-2.3	20.3	0.0	0.0	M	1.9		4	44
30†	-1.3	-7.2	-4.3	22.3	0.0	0.0	M	3.0		2	57
31†	-4.2	-9.7	-7.0	25.0	0.0	M	M	0.0		1	52

Daily Data Report for April 2008											
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†	-0.9	-9.8	-5.4	23.4	0.0	M	M	0.8		13	63
02†	4.9	-1.7	1.6	16.4	0.0	M	M	5.6		14	85
03†	-0.1	-3.7	-1.9	19.9	0.0	M	M	0.6		25	76
04†	1.6	-2.0	-0.2	18.2	0.0	M	M	1.0		26	63
05†	4.4	-2.2	1.1	16.9	0.0	M	M	0.6		8	32
06†	4.8	-2.6	1.1	16.9	0.0	M	M	0.6		3	46
07†	2.6	-1.9	0.4	17.6	0.0	M	M	3.8		3	56
08†	9.2	1.2	5.2	12.8	0.0	M	M	0.0		3	43
09†	9.2	1.5	5.4	12.6	0.0	M	M	0.0			<31
10†	5.3	1.3	3.3	14.7	0.0	M	M	0.0			<31
11†	5.3	1.3	3.3	14.7	0.0	M	M	6.0		13	37
12†	3.7	0.2	2.0	16.0	0.0	M	M	0.0		21	32
13†	4.1	0.1	2.1	15.9	0.0	M	M	4.2		21	35
14†	2.1	0.0	1.1	16.9	0.0	M	M	0.0		26	70
15†	3.2	-0.1	1.6	16.4	0.0	M	M	1.0		27	70
16†	5.4	-0.5	2.5	15.5	0.0	M	M	0.0		22	43
17†	4.8	0.7	2.8	15.2	0.0	M	M	0.0		21	50
18†	8.9	1.4	5.2	12.8	0.0	M	M	29.2		21	33
19†	4.5	-2.4	1.1	16.9	0.0	M	M	2.4		3	56
20†	6.2	-3.3	1.5	16.5	0.0	M	M	0.0		25	41
21†	5.6	-1.1	2.3	15.7	0.0	M	M	0.0		27	41
22†	4.1	-1.5	1.3	16.7	0.0	M	M	0.0		8	32
23†	3.2	-2.6	0.3	17.7	0.0	M	M	0.0			<31
24†	3.6	-2.3	0.7	17.3	0.0	M	M	0.0			<31
25†	10.1	-1.8	4.2	13.8	0.0	M	M	2.6		20	32
26†	6.7	-1.4	2.7	15.3	0.0	M	M	0.7		6	54
27†	7.6	0.7	4.2	13.8	0.0	M	M	0.0		6	57
28†	9.9	4.3	7.1	10.9	0.0	M	M	0.0		8	43
29†	12.5	3.7	8.1	9.9	0.0	M	M	0.0		9	57
30†	13.3	3.7	8.5	9.5	0.0	M	M	0.0		11	65

Daily Data Report for May 2008											
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†	10.6	3.2	6.9	11.1	0.0	M	M	0.0		9	44
02†	9.9	-0.3	4.8	13.2	0.0	M	M	0.0		2	43
03†	6.2	-0.8	2.7	15.3	0.0	M	M	0.0		3	39
04†	6.2	0.3	3.3	14.7	0.0	M	M	0.0		22	37
05†	3.4	0.7	2.1	15.9	0.0	M	M	0.0		20	46
06†	7.8	1.7	4.8	13.2	0.0	M	M	0.0			<31
07†	14.4	2.3	8.4	9.6	0.0	M	M	1.2		5	50
08†	6.3	1.8	4.1	13.9	0.0	M	M	0.6		2	65
09†	8.7	2.1	5.4	12.6	0.0	M	M	0.0		5	43
10†	11.3	2.7	7.0	11.0	0.0	M	M	0.0		8	43
11†	4.3	2.2	3.3	14.7	0.0	M	M	8.7		5	67
12†	3.6	2.0	2.8	15.2	0.0	M	M	12.0		5	67
13†	7.4	1.3	4.4	13.6	0.0	M	M	0.0		3	52
14†	4.2	0.9	2.6	15.4	0.0	M	M	0.0		4	57