

## Real Time Water Quality Deployment Report Come by Chance River August - September 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 August 18 to September 11, 2008.

### Maintenance and Calibration of Instrumentation

- The Come by Chance River instrument was deployed on August 18<sup>th</sup>, 2008. A second set of data readings were 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 upon comparing water quality data from both instruments for the removal before the start of the deployment period and the installation at the start of the deployment period are both indicated in **Table 1**. Rankings of “excellent” were achieved on installation for all parameters.

**Table 1: QA/QC Data Comparison Rankings upon removal on August 13<sup>th</sup>, 2008 and installation on August 18<sup>th</sup>, 2008**

Station	Date	Action	Instrument Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Come by Chance River	Aug. 13, 2008	Removal	Excellent	Marginal	Excellent	Excellent
	Aug. 18, 2008	Installation	Excellent	Excellent	Excellent	Excellent

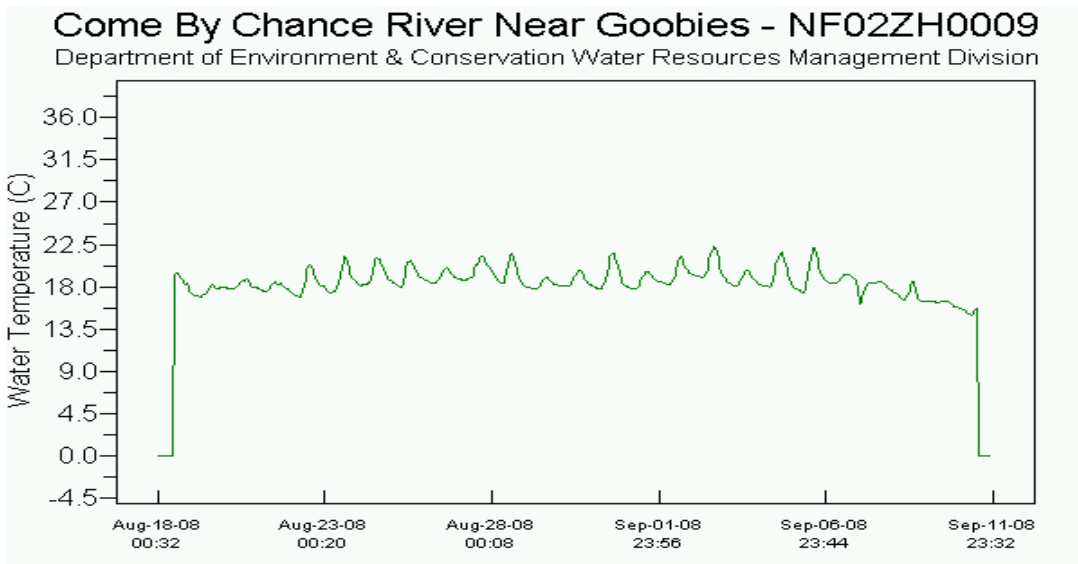
- The Come by Chance River instrument was removed September 11<sup>th</sup> after a period of 24 days for regular maintenance and calibration activities. A second set of data readings were collected at the time of removal, using a similar, freshly calibrated instrument. Data readings from both instruments were compared and their variability was ranked, as part of QA/QC protocol.
- The QA/QC rankings upon comparing water quality data from both instruments for the removal at the end of the deployment period and the installation after the deployment period are both indicated in **Table 2**. Rankings of “excellent” were achieved for all parameters on installation except pH. pH had a “marginal” ranking indicating on removal and a ranking of “fair” on the following installation. This indicates that the sensor may not be calibrating properly and will be monitored during the next deployment period. The “excellent” rankings on removal indicate a high degree of accuracy in the data obtained for all other parameters.

**Table 2: QA/QC Data Comparison Rankings upon removal on September 11<sup>th</sup>, 2008 and installation on September 15<sup>th</sup>, 2008**

Station	Date	Action	Instrument Comparison Ranking			
			Temperature	pH	Conductivity	Dissolved Oxygen
Come by Chance River	Sept. 11, 2008	Removal	Excellent	Marginal	Excellent	Excellent
	Sept. 15, 2008	Installation	Excellent	Fair	Excellent	Excellent

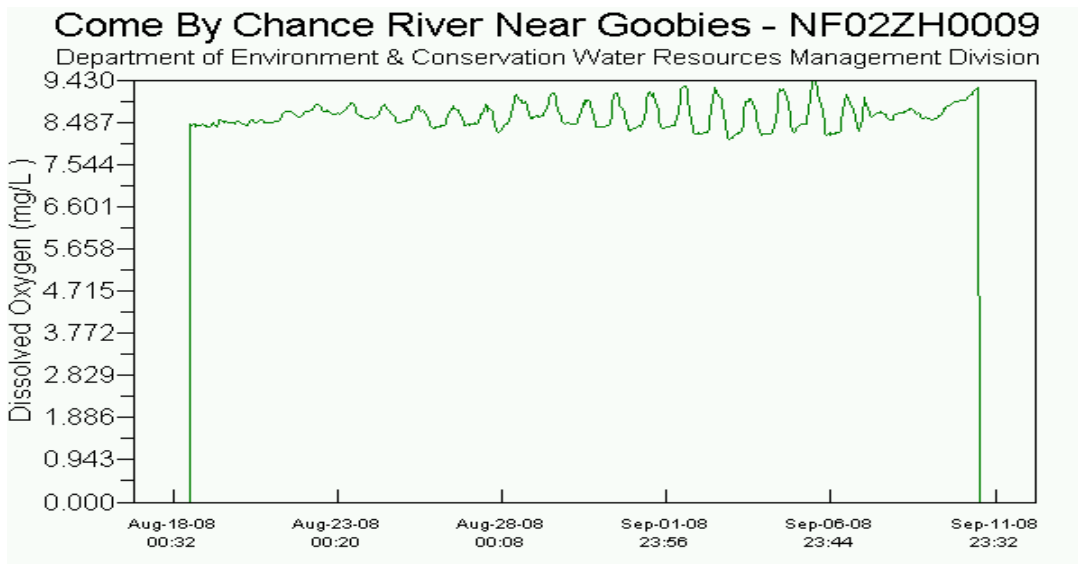
**Data Interpretation**

- Water temperature values (**Figure 1**) for the deployment period displayed diurnal fluctuations and remained consistent, typical for the summer season. Water temperature ranged between 15.03 and 22.28°C.



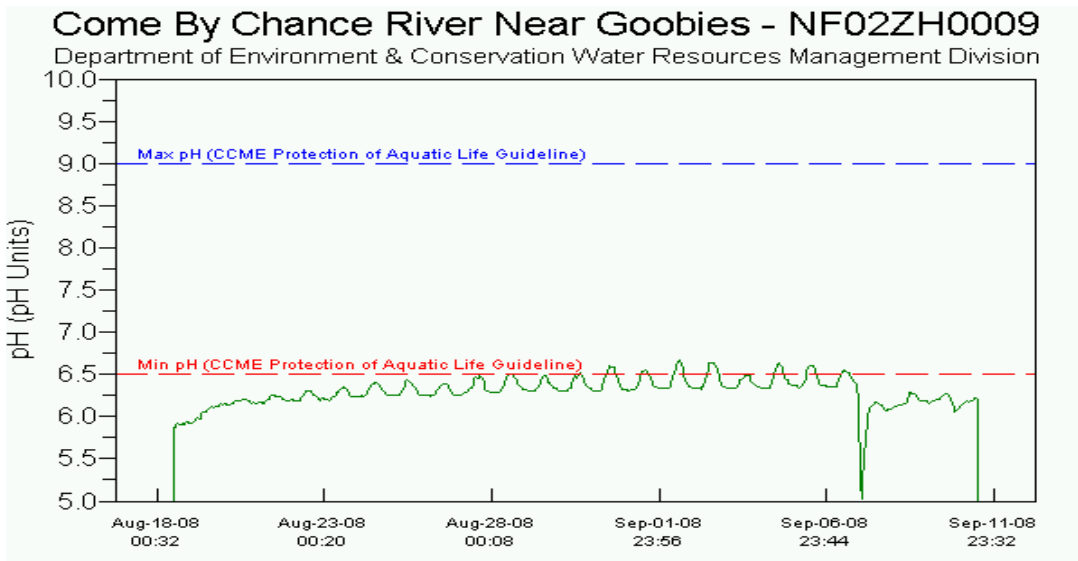
**Figure 1**

- Dissolved oxygen (DO) values (**Figure 2**) for the deployment period remained consistent. DO values ranged from 8.09 to 9.43 mg/L, all below the most conservative recommended DO concentration of 9.5 mg/L 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).



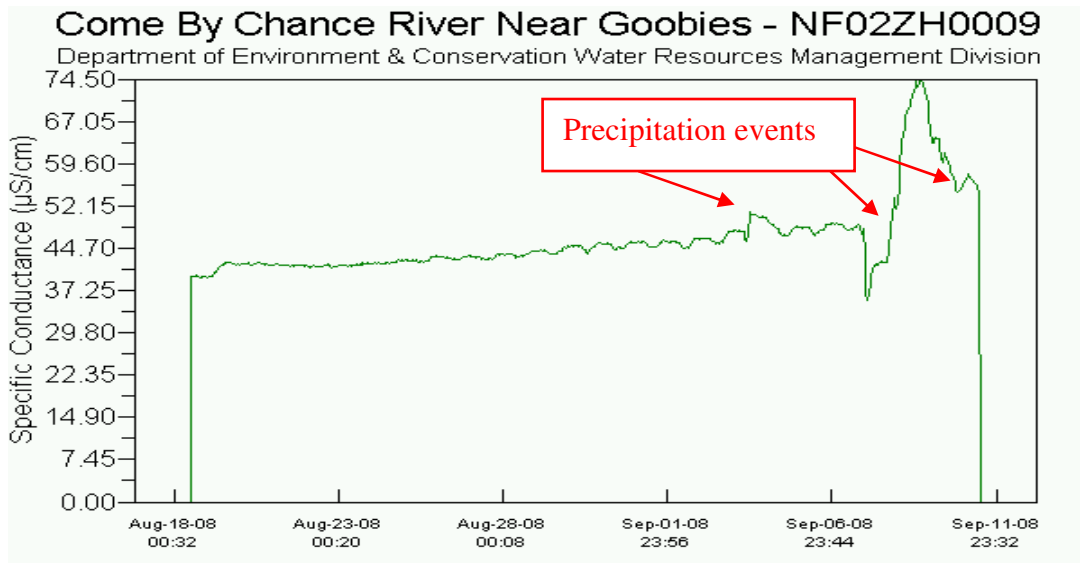
**Figure 2**

- pH values (**Figure 3**) were relatively stable except towards the end of the deployment period when a sudden and large precipitation event caused a sharp variation in values. pH values ranged between 5.02 and 6.67, 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).



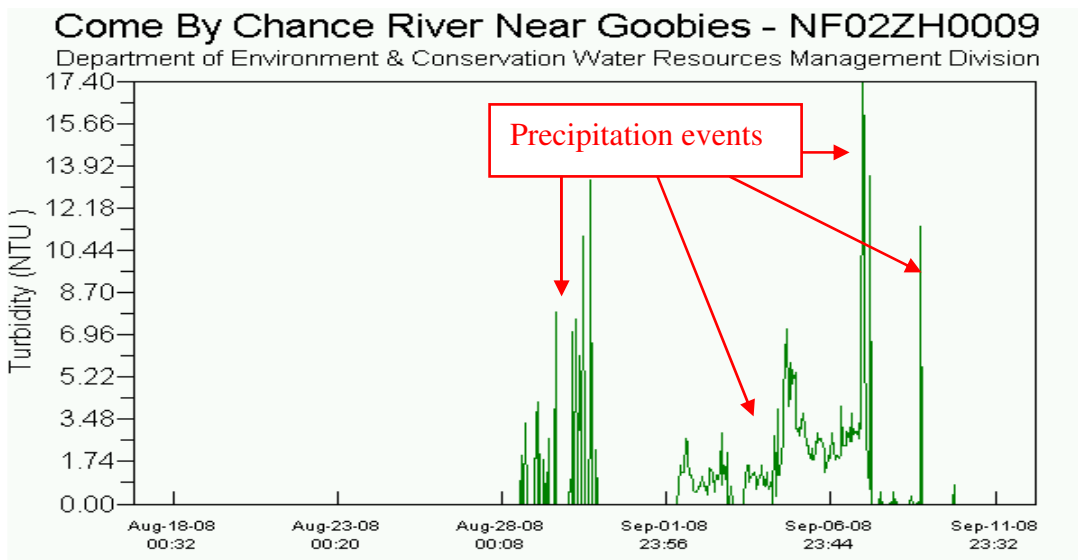
**Figure 3**

- Specific conductance values (**Figure 4**) were generally consistent over the deployment period except towards the end of the deployment period when a sudden and large precipitation event caused a sharp variation in values. Specific conductance ranged from 35.4 to 74.5  $\mu\text{S}/\text{cm}$ .



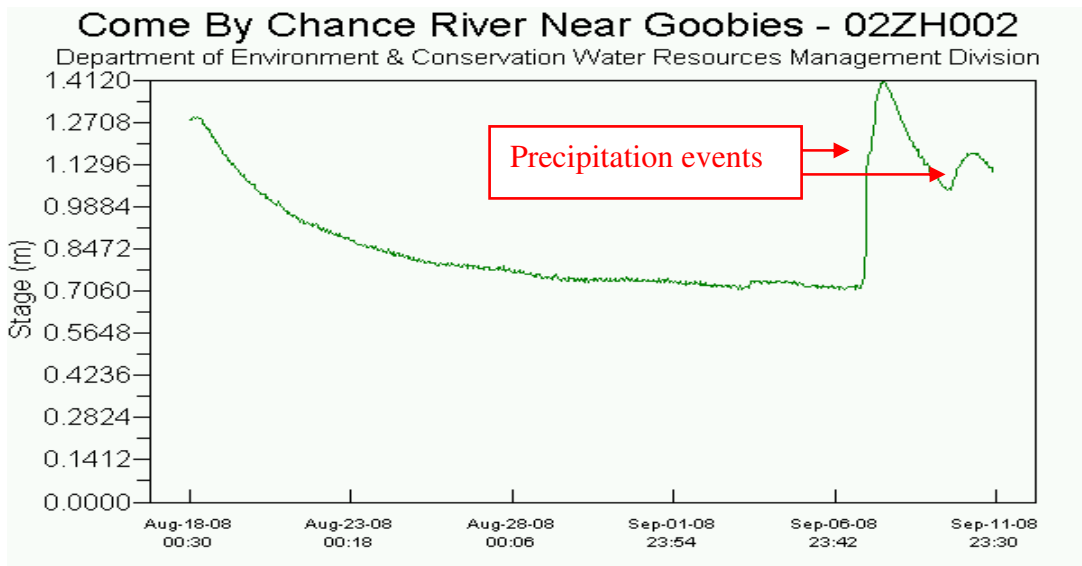
**Figure 4**

- Turbidity values (**Figure 5**) were at zero NTU for most of the deployment period. However, spikes in turbidity values are evident and correspond to precipitation events (**Appendix A**). The maximum turbidity value recorded for the deployment period was 17.4 NTU.



**Figure 5**

- Stage values (**Figure 6**) were generally consistent and correspond to precipitation events (**Appendix A**). Stage values ranged between 0.710 and 1.412 meters.



**Figure 6**

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## Appendix A – Climate Data for Argentia, NL (August 18 to September 11, 2008)

Daily Data Report for August 2008											
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
18†	18.2	11.4	14.8	3.2	0.0	M	M	0.7		20	44
19†	18.6	11.1	14.9	3.1	0.0	M	M	0.0		22	44
20†	18.7	13.9	16.3	1.7	0.0	M	M	1.6		20	43
21†	16.7	13.6	15.2	2.8	0.0	M	M	0.0		21	48
22†	17.8	13.6	15.7	2.3	0.0	M	M	0.0		20	39
23†	17.7	14.4	16.1	1.9	0.0	M	M	0.0		23	46
24†	18.2	14.4	16.3	1.7	0.0	M	M	0.0		21	44
25†	21.0	15.2	18.1	0.0	0.1	M	M	1.3		21	54
26†	17.3	15.6	16.5	1.5	0.0	M	M	0.0		20	46
27†	23.1	15.1	19.1	0.0	1.1	M	M	0.0		4	46
28†	18.6	13.1	15.9	2.1	0.0	M	M	0.0		6	52
29†	18.7	12.7	15.7	2.3	0.0	M	M	1.1		12	50
30†	20.3	13.5	16.9	1.1	0.0	M	M	4.0		14	37
31†	17.4	12.8	15.1	2.9	0.0	M	M	0.0		20	39

Daily Data Report for September 2008											
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†	20.6	12.9	16.8	1.2	0.0	M	M	0.0		10	32
02†	23.4	15.5	19.5	0.0	1.5	M	M	0.0			<31
03†	17.8	12.8	15.3	2.7	0.0	M	M	0.0			<31
04†	22.1	12.6	17.4	0.6	0.0	M	M	13.8		21	59
05†	20.8	13.2	17.0	1.0	0.0	M	M	0.0		27	44
06†	17.7	12.5	15.1	2.9	0.0	M	M	0.0		21	44
07†	20.4	15.1	17.8	0.2	0.0	M	M	34.1		21	69
08†	16.9	12.2	14.6	3.4	0.0	M	M	1.2		30	48
09†	15.9	11.5	13.7	4.3	0.0	M	M	0.0		21	41
10†	18.6	13.0	15.8	2.2	0.0	M	M	5.2		21	72
11†	16.5	12.5	14.5	3.5	0.0	M	M	0.0		26	44