

General

- The Water Resources Management Division staff monitors the real-time web page on a daily basis.
- This monthly deployment report interprets the data from a water quality monitoring station on Minipi River below Minipi Lake. A water quality monitoring instrument (s/n 47384) was deployed at this station between September 2 and September 22, 2009, a period of 20 days.

Quality Assurance and Quality Control

- As part of the installation and removal process, parameters are recorded from both the field sonde (in situ) and a similar, newly-calibrated QA sonde (placed side by side). The parameters from both instruments are compared and their variability is ranked as part of the QA/QC protocol (see Table 1).
- All parameters ranked “Excellent” or “Good” at installation and removal.

Table 1: QA/QC Data Comparison Rankings for deployment between September 2 and September 22, 2009.

				Instrument Comparison Ranking				
Station	Date	Action	Instrument Serial Number	Temperature	pH	Conductivity	Dissolved Oxygen	Turbidity
Minipi River below Minipi Lake	02-Sep-09	Installation	47384	Excellent	Good	Excellent	Excellent	Excellent
	22-Sep-09	Removal		Excellent	Good	Excellent	Excellent	Excellent

Data Interpretation

Temperature

The water temperature decreases slightly throughout the deployment period (Figure 1). This trend is expected as ambient air temperatures are also decreasing during this time (Appendix 1). Values range between 13.72°C and 7.68°C, averaging 10.59°C.

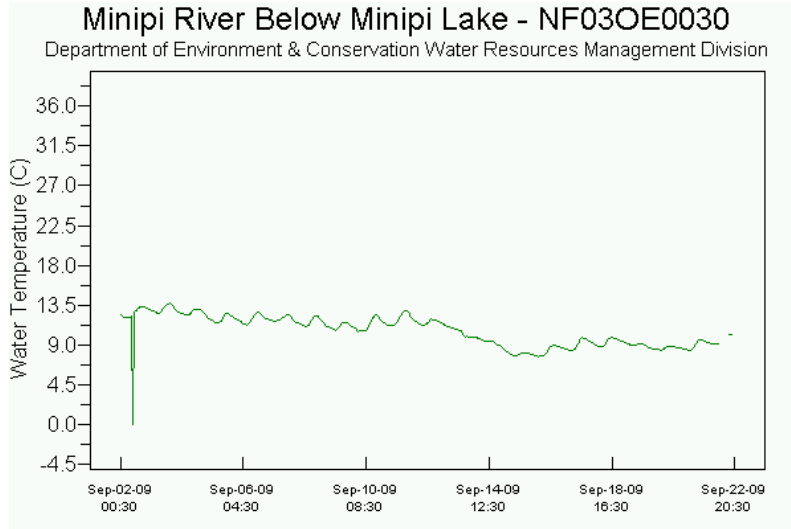


Figure 1: Water Temperature for Minipi River Station, September 2 to September 22, 2009.

pH

pH remains stable throughout the deployment period with values ranging between 6.64 and 7.06 units (Figure 2). All values collected are within the recommended guideline for pH level as suggested by the CCME Guidelines for the Protection of Aquatic Life (>6.5 and < 9.0).

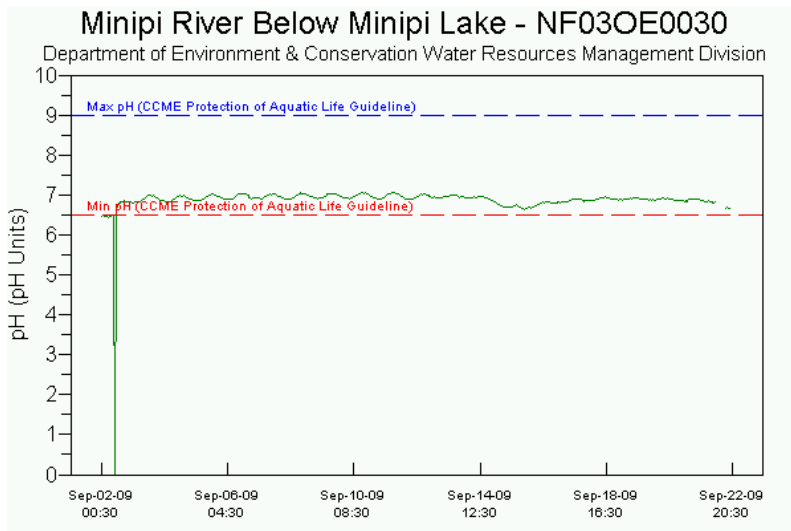


Figure 2: pH for Minipi River Station, September 2 to September 22, 2009.

Specific Conductivity

Specific conductance remains relatively stable throughout the deployment period with values ranging between 15µS/cm and 18µS/cm (Figure 3).

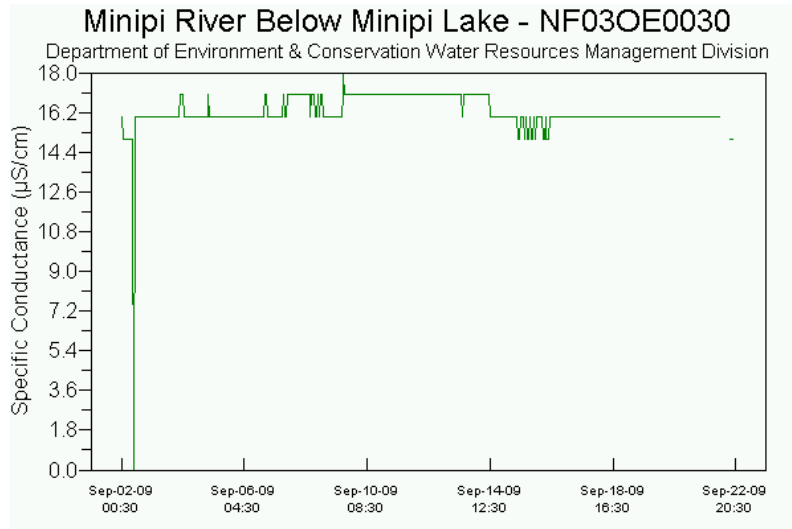


Figure 3: Specific Conductivity for Minipi River Station, September 2 to September 22, 2009.

Dissolved Oxygen and Percent Saturation

Dissolved Oxygen content increases slightly throughout the deployment period (Figure 4). This trend is expected as water and air temperatures are decreasing during this time (Figure 1, Appendix 1). Dissolved oxygen values range between 9.86mg/L and 11.53mg/L, averaging at 10.68mg/L. All recorded values for dissolved oxygen content are within the recommended values for fresh (cold) water as suggested by the CCME Guideline for the Protection of Aquatic Life (>9.0mg/L).

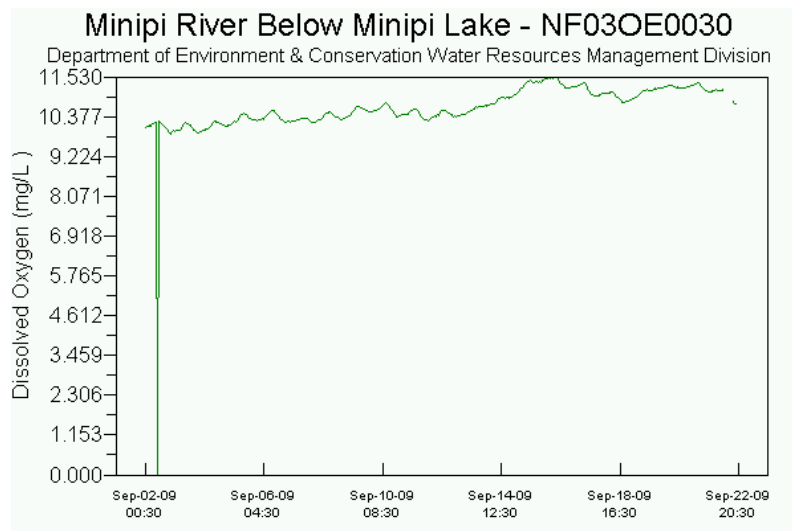


Figure 4: Dissolved Oxygen for Minipi River Station September 2 to September 22, 2009.

Percent saturation values are derived from dissolved oxygen and water temperature values. During the deployment period between September 2 and September 22, percent saturation values range between 93.7% and 99.4% (Figure 5).

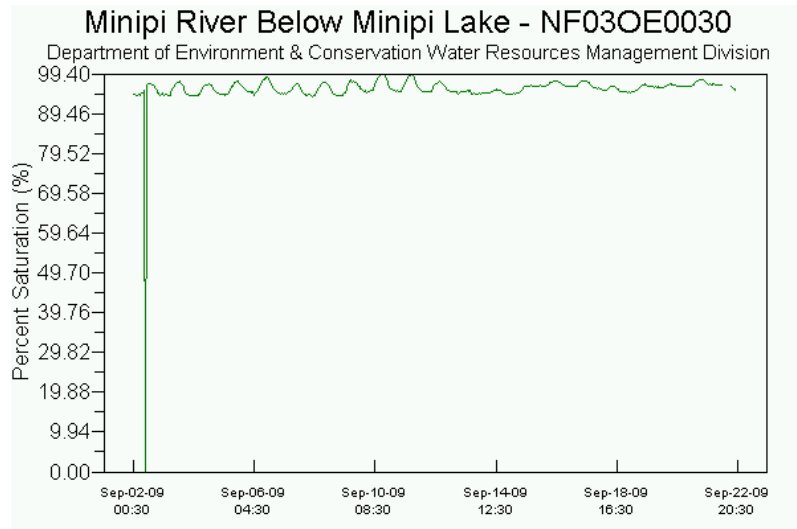


Figure 5: Percent Saturation for Minipi River Station September 2 to September 22, 2009.

Turbidity

Turbidity values primarily remain at 0 NTU for the majority of the deployment period except for a few events on September 9, 14, 16 and 18 (Figure 6). These spikes reach values up to 12.4 NTU, 3.9NTU, 23.8 NTU, and 4.6 NTU respectively. Each event is sustained for 1-2 hours. Rainfall events recorded between September 12 and 15 and again between September 18 and 19 are likely the cause of these turbidity increases (Appendix 1).

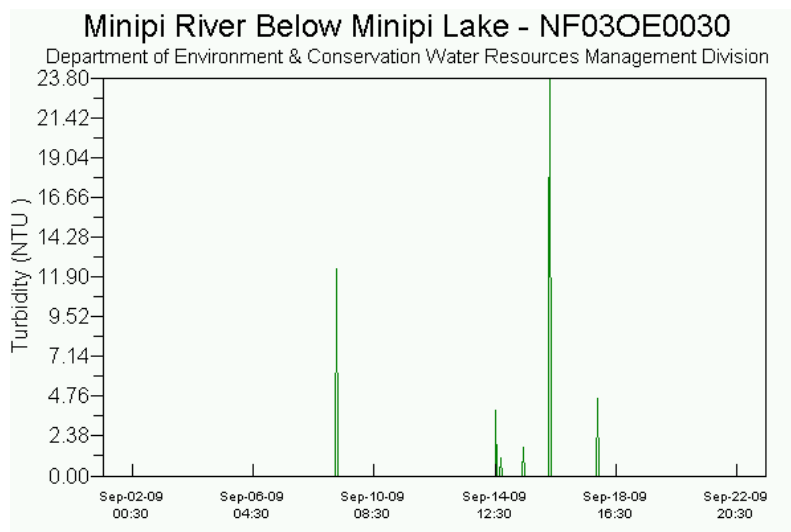


Figure 6: Turbidity for Minipi River Station September 2 to September 22, 2009.

Stage

Stage levels are stable throughout the first part of the deployment before beginning to increase slightly in the last week of the deployment (Figure 7). When the instrument was deployed, stage level was at 4.059m. When the instrument was retrieved on September 22, stage level had risen to 4.734m.

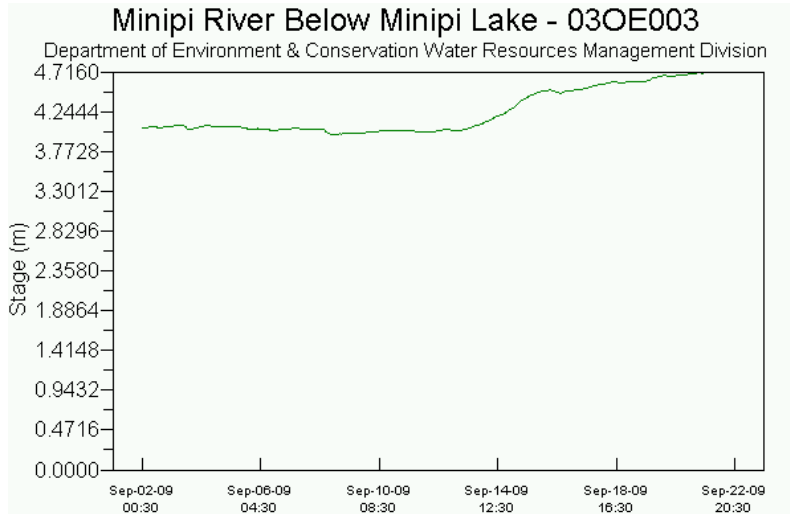


Figure 7: Stage level for Minipi River Station September 2 to September 22, 2009.

Conclusions

The water quality monitoring instrument was deployed at the station on Minipi River below Minipi Lake between September 2 and September 22. During this deployment period, no water quality events were recorded at the Minipi River Station below Minipi Lake. Spikes in turbidity can be attributed to a precipitation events recorded by Environment Canada in the area. All values for pH and dissolved oxygen are within the recommended guidelines as suggested by the CCME Guidelines for the Protections of Aquatic Life.

Appendix 1 – Weather Data

Table A-1 : Weather for Happy Valley Goose Bay – September 2 to September 22, 2009

	<i>Max Temp °C</i>	<i>Min Temp °C</i>	<i>Mean Temp °C</i>	<i>Total Precip mm</i>	<i>Dir of Max Gus 10's Deg t</i>	<i>Spd of Max Gust km/h</i>
2-Sep	20.7	7.9	14.3	11	23E	52E
3-Sep	19.4	9.8	14.6	T	25E	61E
4-Sep	14	3	8.5	1.2		<31
5-Sep	14.2	2.8	8.5	0	30E	46E
6-Sep	17	3.6	10.3	0	24E	54E
7-Sep	16.5	6.5	11.5	T	25E	56E
8-Sep	14.1	5.1	9.6	T	27E	52E
9-Sep	12.9	3.1	8	T	34E	48E
10-Sep	23.2	5	14.1	0	24E	39E
11-Sep	23.2	7.8	15.5	0	25E	35E
12-Sep	11	2.2	6.6	3.4	4E	37E
13-Sep	4.6	2	3.3	18.8	4E	39E
14-Sep	5.8	3.3	4.6	58.4	34E	59E
15-Sep	6.3	-0.6	2.9	1.6	33E	67E
16-Sep	9.5	-0.9	4.3	T	26E	37E
17-Sep	19.3	7.9	13.6	0	23E	44E
18-Sep	18.8	6	12.4	2		<31
19-Sep	9.3	1.2	5.3	4.4	35E	41E
20-Sep	11.6	1.8	6.7	0		<31
21-Sep	21.9	8.4	15.2	0	24E	48E
22-Sep	25.2	14.7	20	T	M	M

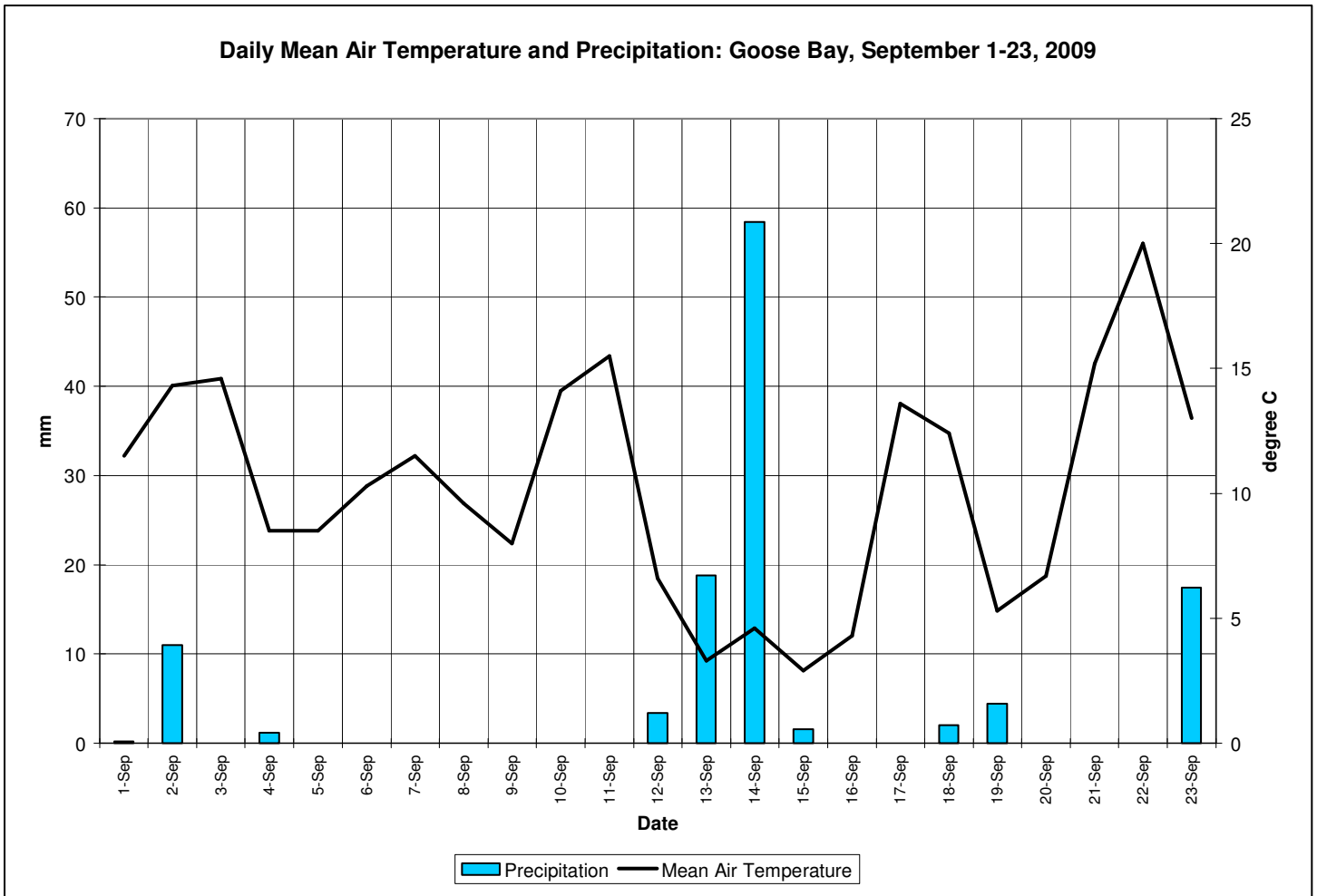


Figure A-1: Mean daily air temperature and precipitation Happy Valley-Goose Bay area, September 2 to September 22, 2009.

Report Prepared by: Grace Gillis, *Environmental Scientist*
 Water Resources Division – Labrador Region
 Department of Environment and Conservation
 (T) 709 – 896 – 5542
 (E) gracegillis@gov.nl.ca