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 43820) was deployed at this station between June 1 and 24, 2009, a period of 24 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 either "Excellent" or "Good" at installation and removal except for pH at installation. The pH sensor sometimes requires several minutes to stabilize its reading for pH. It is likely that QA/QC values were recorded before the instrument had adequate time to stabilize. The pH sensor will be recalibrated and checked before any future deployment.

Table 1: QA/QC Data Comparison Rankings for deployment between June 1 and 24, 2009.

				Instrument Comparison Ranking				
Station	Date	Action	Instrument Serial Number	Temperature	pH	Conductivity	Dissolved Oxygen	Turbidity
Minipi River below Minipi Lake	01-Jun-09	Installation	43820	Excellent	Fair	Excellent	Excellent	Excellent
	24-Jun-09	Removal		Good	Excellent	Excellent	Excellent	Good

Data Interpretation

Temperature

The water temperature shows a general increasing trend throughout the deployment period (Figure 1). This trend is expected as the average daily temperature is also increasing during this period (Appendix 1). The maximum reported water temperature is 18.83°C and the minimum is 5.93°C. The average water temperature between June 1 and June 24 is 9.94°C.

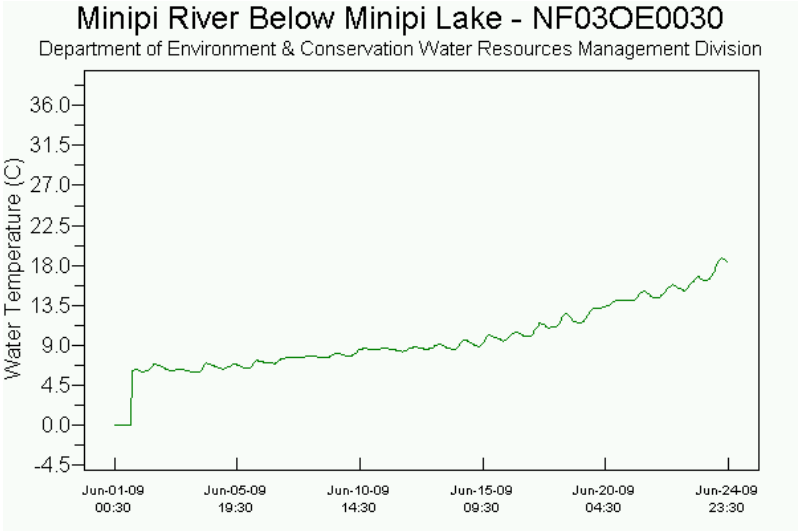

Figure 1: Water Temperature for Minipi River Station, June 1 to June 24, 2009.

pH

pH slightly increases throughout the deployment period (Figure 2). Values range between 5.25 and 6.82 units. Until June 22, all values are just slightly below the recommended value for pH as suggested by the CCME Guidelines for the Protection of Aquatic Life (>6.5 and < 9.0).

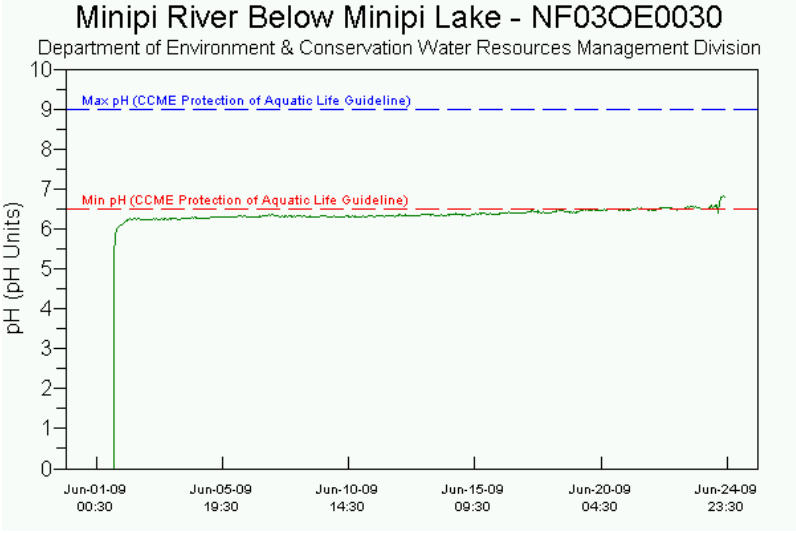

Figure 2: pH for Minipi River Station, June 1 to June 24, 2009.

Specific Conductivity

Specific conductance increases slightly throughout the deployment period with values ranging between 12µS/cm and 14µS/cm (Figure 3).

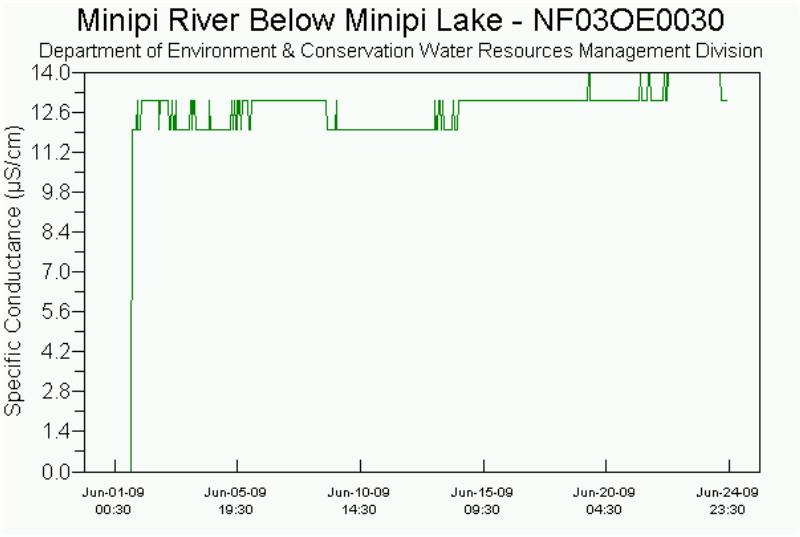

Figure 3: Specific Conductivity for Minipi River Station, June 1 to June 24, 2009.

Dissolved Oxygen and Percent Saturation

Dissolved Oxygen displays a general decreasing trend throughout the deployment period which is expected during this time of year as water and air temperatures are increasing (Figure 1, Appendix 1). Dissolved Oxygen values range from 12.33mg/L to 9.05mg/L, averaging at 11.12mg/L. Dissolved Oxygen values are all within the recommended values for fresh (cold) water as stated by the CCME Guideline for the Protection of Aquatic Life (>9.0mg/L).

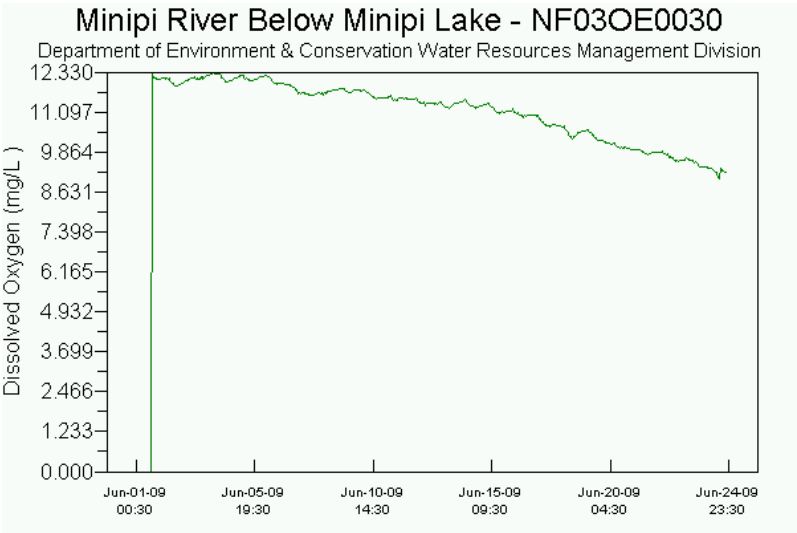

Figure 4: Dissolved Oxygen for Minipi River Station, June 1 to June 24, 2009.

Percent saturation values are derived from dissolved oxygen and water temperature values. During the deployment period, percent saturation is stable with values ranging between 95.6% and 100.3% (Figure 5).

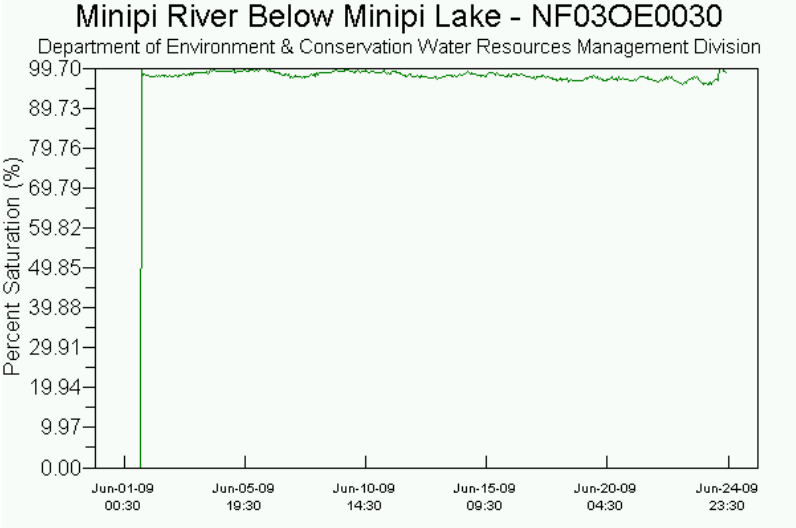

Figure 5: Percent Saturation for Minipi River Station June 1 to June 24, 2009.

Turbidity

Turbidity values primarily remain at 0 NTU for the majority of the deployment period except for a couple of events on June 20 and June 24 (Figure 6). Neither event lasts longer than one hour and is not a cause for concern.

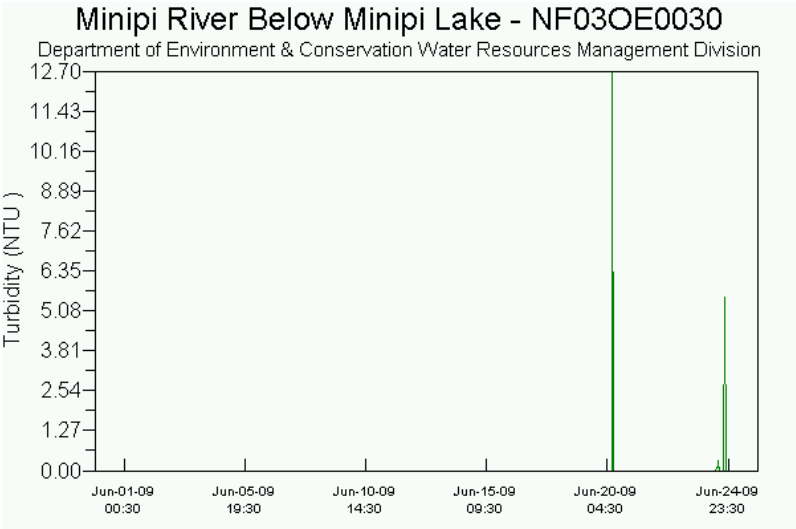

Figure 6: Turbidity for Minipi River Station June 1 to June 24, 2009.

Stage

Stage levels rise slightly at the beginning of the deployment period before beginning to decrease for the remainder of the June deployment. This trend is expected as summer low flow period is beginning. Stage values range between 5.185m and 6.060m.

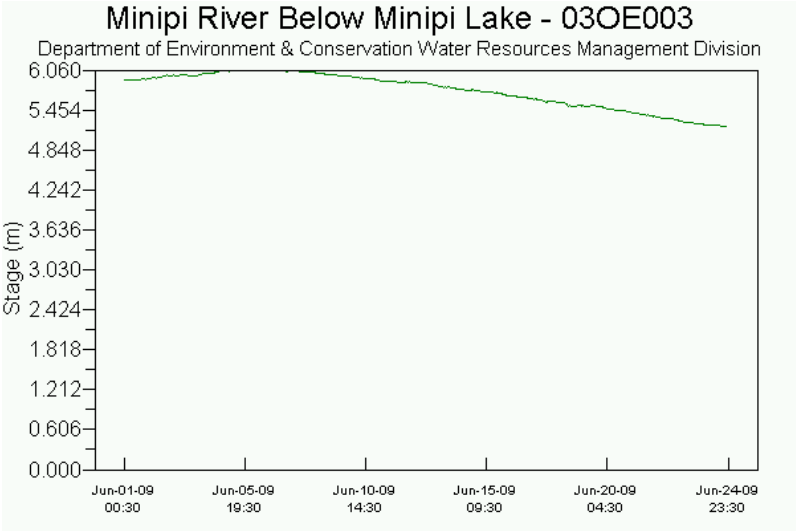

Figure 8: Stage level for Minipi River Station June 1 to June 24, 2009.

Conclusions

No water quality events were recorded at the Minipi River Station below Minipi Lake during the period between June 1 and 24, 2009. Typical seasonal patterns were identified regarding temperature, dissolved oxygen and stage level. pH level was mostly below the recommend level as stated by the CCME Guidelines for the Protection of Aquatic life however this phenomenon is likely naturally occurring in this watershed. Dissolved oxygen levels were within the recommended CCME Guidelines for the Protection of Aquatic Life.

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

Appendix 1 – Weather Data

Table A-1 : Weather for Happy Valley Goose Bay – June 1 to 24th, 2009

Date	Max Temp °C	Min Temp °C	Mean Temp °C	Heat Deg Days °C	Cool Deg Days °C	Precipitation (mm)	Wind Direction	Wind Speed (km.h)
1-Jun-09	16.8	4.7	10.8	7.2	0	14.6	7	50
2-Jun-09	10.7	3.6	7.2	10.8	0	0.8	26	44
3-Jun-09	7.8	3.2	5.5	12.5	0	1.2	29	57
4-Jun-09	13.1	2.3	7.7	10.3	0	T	27	46
5-Jun-09	9.9	3.1	6.5	11.5	0	0.6	32	37
6-Jun-09	18.1	3.2	10.7	7.3	0	0.8	6	39
7-Jun-09	11.3	6.1	8.7	9.3	0	13.2		<31
8-Jun-09	9.2	3.6	6.4	11.6	0	0.6	5	39
9-Jun-09	10.6	3.6	7.1	10.9	0	0.2	7	32
10-Jun-09	13.7	2.7	8.2	9.8	0	0		<31
11-Jun-09	16.3	3.8	10.1	7.9	0	8	18	35
12-Jun-09	13.7	5.6	9.7	8.3	0	7		<31
13-Jun-09	9.9	2.9	6.4	11.6	0	0.8	35	39
14-Jun-09	15	2.6	8.8	9.2	0	0		<31
15-Jun-09	20.7	1.8	11.3	6.7	0	0		<31
16-Jun-09	25.3	11.4	18.4	0	0.4	2.4	32	59
17-Jun-09	26.7	10	18.4	0	0.4	3.2	27	50
18-Jun-09	27.5	9.1	18.3	0	0.3	5.2	28	65
19-Jun-09	20.6	7.1	13.9	4.1	0	0		<31
20-Jun-09	18.7	7.1	12.9	5.1	0	0		<31
21-Jun-09	22.7	8.2	15.5	2.5	0	5		<31
22-Jun-09	18.6	7.1	12.9	5.1	0	0.8	35	37
23-Jun-09	25.4	12.1	18.8	0	0.8	0		<31
24-Jun-09	32.7	11.1	21.9	0	3.9	0	20	35
Extreme	**32.7**	**1.8**						**65**
Average			**11.5**					
Sum						**64.4**		

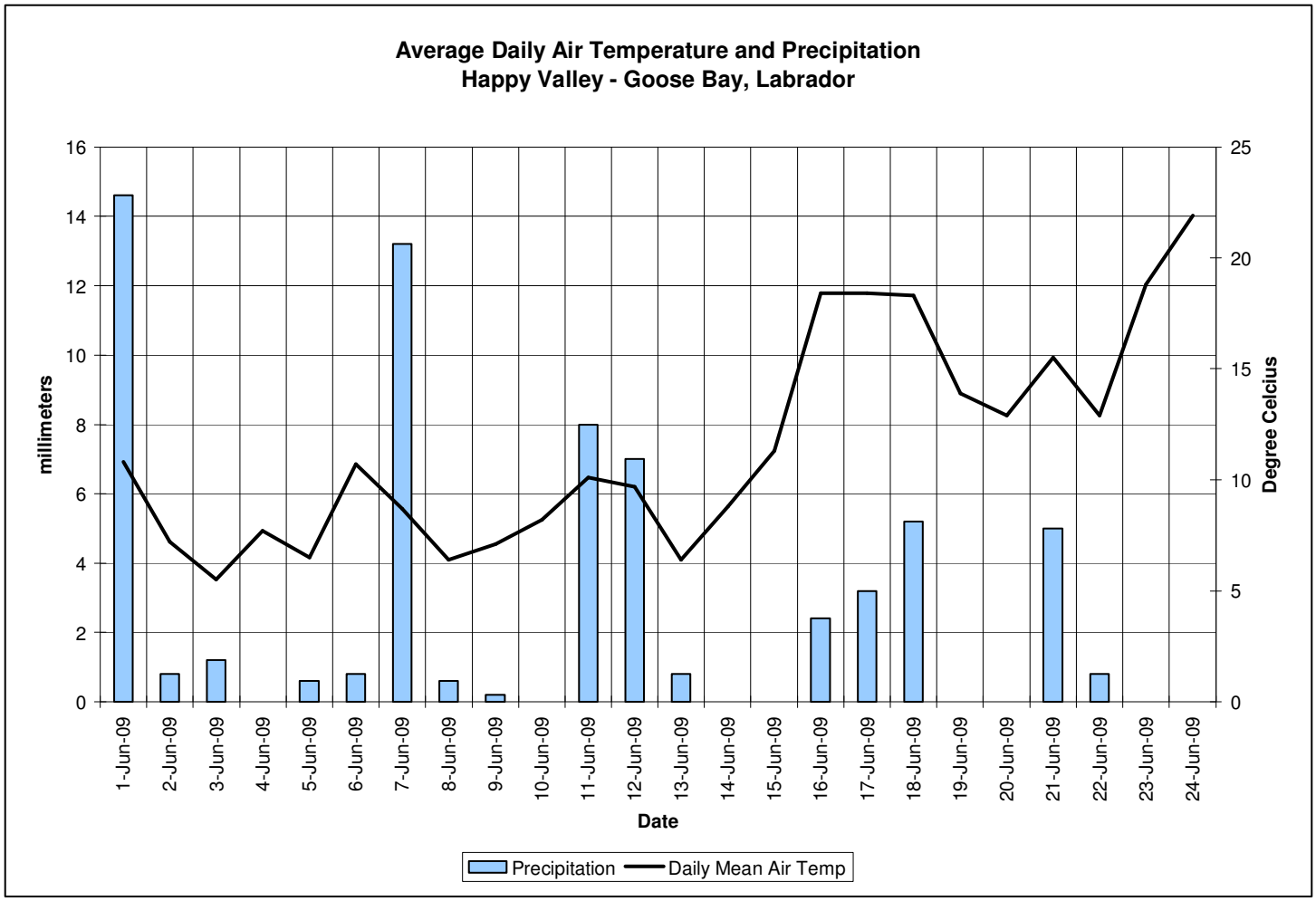

Figure A-1: Mean daily air temperature and precipitation Happy Valley-Goose Bay area, June 1 to June 24, 2009.