

2010

**Bluenose Coastal Action
Foundation**

Shannon Page



[WATER QUALITY MONITORING IN THE PETITE RIVIERE WATERSHED – 2010 FIELD REPORT]

During the summer of 2010, water quality samples were taken at 14 sites between June 14 and September 20 (Table 1).

Table 1. Water quality sites sampled in the Petite Rivière Watershed during the 2010 field season.

Site #	Site Name	UTM's
1	Milipsigate Lake	20 T 0373177
		4911392
2	Hebb Lake	20 T 0373177
		4911392
3	Birch Brook	20 T 0369586
		4910010
4	Minamkeak Lake (Camperdown)	20 T 0368932
		4904624
5	Indian Garden Farms Train Bridge	20 T 0372536
		4908656
6	Fancy Lake Outlet	20 T 0377324
		4911942
7	Conquerall Mills Dam	20 T 0377303
		4908234
8	Fitch Lake Brook	20 T 0378322
		4907211
9	Crousetown Road	20 T 0379113
		4905280
10	Crousetown and Conquerall Mills Road Junction	20 T 0381167
		4902066
11	Crousetown Dam	20 T 0381466
		4902042
12	Brown Brook	20 T 0382068
		4900482
13	Wamback Mill Brook	20 T 0383682
		4899407
14	Petite Estuary	20 T 0384433
		4698862

The average temperatures displayed in Figure 1 show relative consistency throughout the sites, getting cooler as you travel towards the Petite Estuary. Site 3 shows slightly lower temperatures (19.43°C), which might be explained by the heavy shade the brook receives where the water sample is taken. The highest temperatures (22.23°C) belong to Site 2 and could be explained by the fact that the sample site is very shallow, causing water to be warmer at this site than at other sites. The lowest temperatures (17.03°C) were recorded at Site 14, which is at the Petite Estuary.

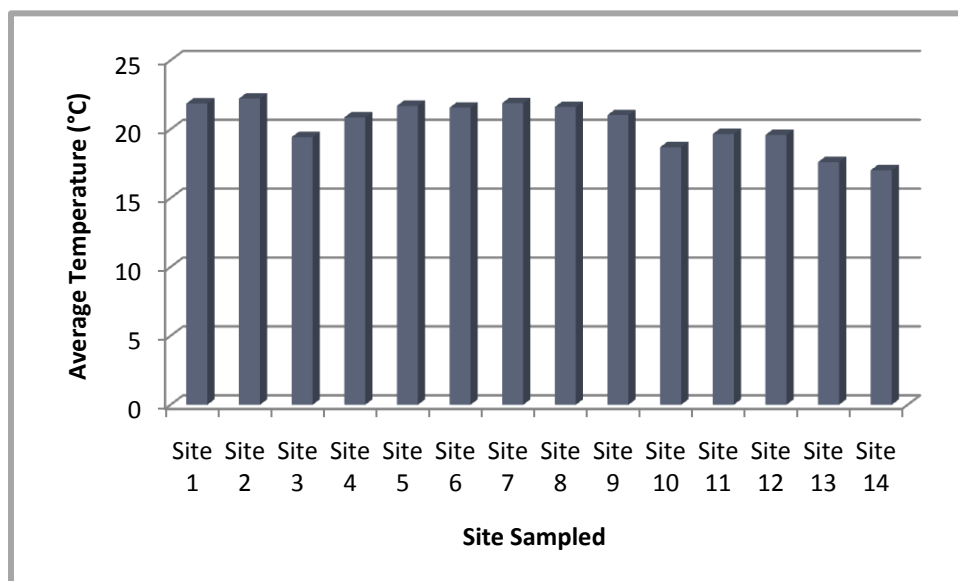


Figure 1. Average temperatures (°C) for sites 1-14 from June 14 to September 20, 2010.

Figure 2 shows specific conductivity parameters that were recorded for sites 1-13. Overall, numbers increase slowly as the Petite Estuary is approached. The two exceptions appear to be Sites 3 (0.044 mS/cm) and 10 (0.06 mS/cm). Numbers for Site 3 are presumed to be higher as materials from tailings ponds could be entering the water from the gravel quarry located next to the site. As the samples for Site 10 are taken off the bridge at the junction of Crousetown and Conquerall Mills Roads, runoff is a likely cause for the higher specific conductivity at this site. Site 10 is also a residential area and particulate matter could be entering from homes, lawns, etc. In order to simplify Figure 2, Site 14 data was not included, as it is an estuarine site. The average conductivity at Site 14 was 33.2 (mS/cm), which included two very low numbers (2.80 and 4.16 mS/cm). For comparison, after removing the low numbers the average for the site was 45.09 (mS/cm). Low numbers resulted when the water sample at Site 14 was taken during low tide or after significant rainfall, which would increase the amount of freshwater present and decrease the amount of saltwater.

Average total dissolved solids are shown in Figure 3. Data shows similar numbers for all sites except Site 10. As discussed for data in Figure 2, Site 10 is located adjacent to a road juncture which may be the cause of an increase in particulate matter at the site. In order to simplify the chart data, Site 14 was once again not included. The average total dissolved solids for Site 14

was 21.57 (g/L). As with the specific conductivity data for this site, there were two low numbers present due to an influx of freshwater at the time of sampling. The average total dissolved solids, not including these two numbers, was 29.3 (g/L).

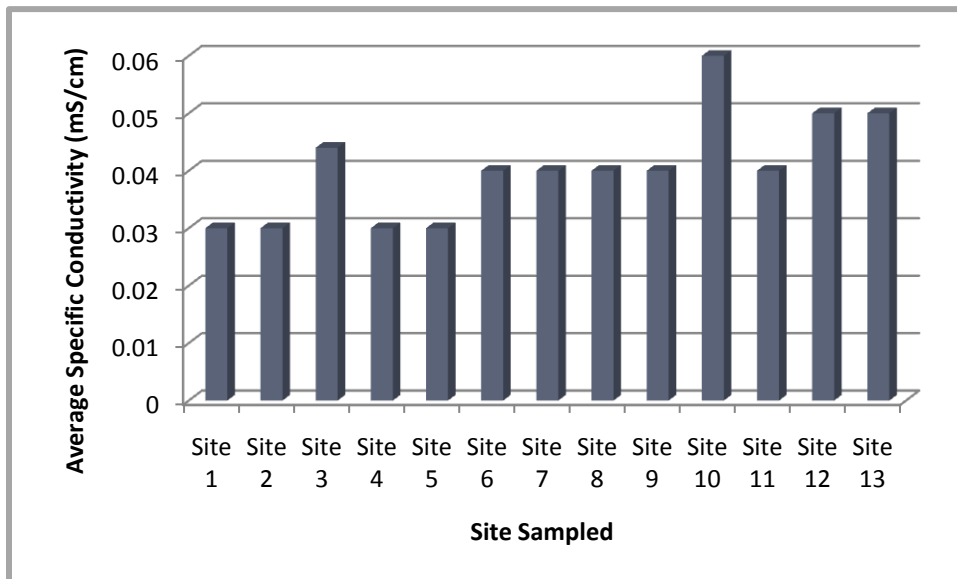


Figure 2. Average specific conductivity (mS/cm) for sites 1-13 from June 14 to September 20, 2010.
See text for Site 14.

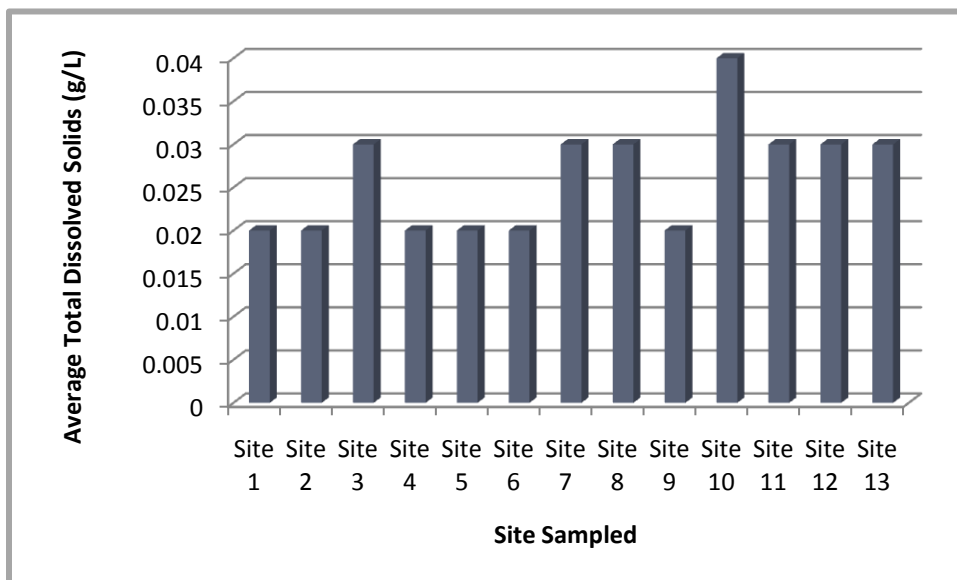


Figure 3. Average total dissolved solids (g/L) for sites 1-13 from June 14 to September 20, 2010.
See text for Site 14.

The average salinity numbers for Sites 1-6 are equal with the exception of Site 3, and salinity numbers for Sites 7-13 are the same with the exception of Site 10 (Figure 4). The noticeable spikes in numbers for samples taken at Sites 3 and 10 are presumed to be the same as those discussed for specific conductivity in Figure 2. In order to simplify Figure 4, data from Site 14 has been excluded from the chart. Average salinity for Site 14 was 21.37, and for comparison was 29.22 without the two samples which were taken while an influx of freshwater was present, as with specific conductivity and total dissolved solid samples.

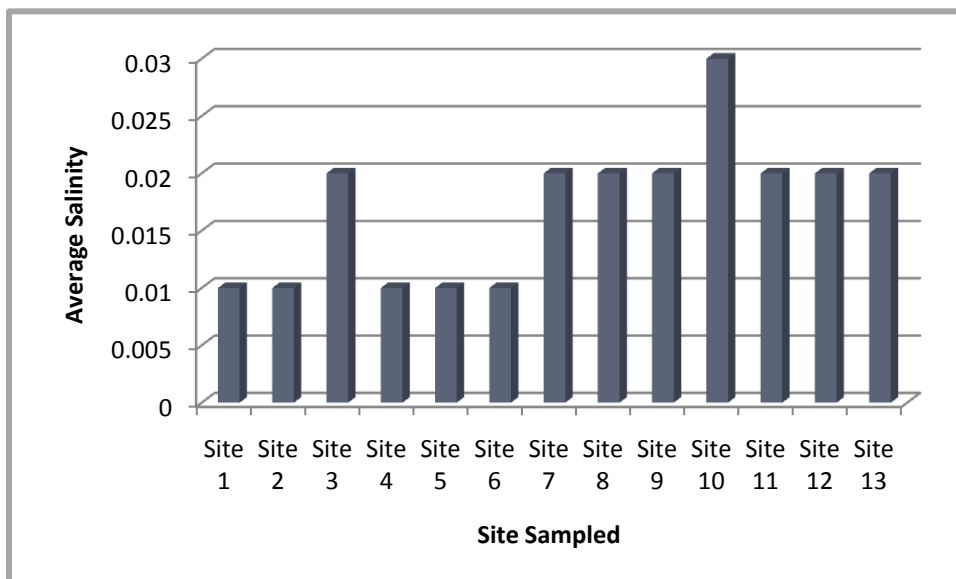


Figure 4. Average salinity for sites 1-13 from June 14 to September 20, 2010.

See text for Site 14.

The average amount of dissolved oxygen throughout all sites is displayed in Figure 5. The lowest numbers occur at Sites 3, 4, and 9, while the highest were present at Sites 7, 8, and 14. A lower percent saturation for these sites can be explained by their depth or movement. The sample for Site 3 is taken in a very shallow slow moving brook, which would not provide a high percent of dissolved oxygen. Samples 4 and 9 are taken in stagnant pools, which similarly to Site 3, would not provide a high percent of dissolved oxygen.

All sites depicted in Figure 6 show pH levels below or slightly above the neutral mark of 7. The highest pH level was at Site 14, which is the result of an increase in salt water compared to the other 13 sites. Individual pH numbers for all sites fluctuate slightly; however, it can be assumed that all sample sites are relatively productive and healthy in terms of pH levels, as pH levels are between 5 and 7.



Figure 5. Average dissolved oxygen (% saturation) for sites 1-14 from June 14 to September 20, 2010.

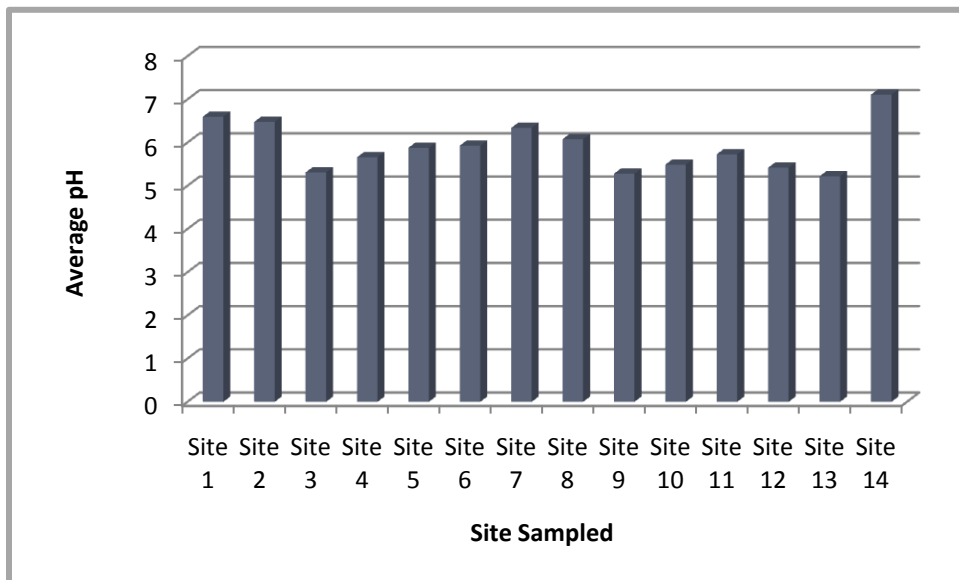


Figure 6. Average pH for sites 1-14 from June 14 to September 20, 2010.