

Stream Water Chemistry Report Summary

Stream Name: Stokes River

Water Chemistry Parameters	Observed Value		Standard
	2013	2014	
Total Suspended Solids	14.43 ± 3.33 mg/L	7.62 ± 3.33 mg/L	< 11.2 mg/L
Alkalinity	207.67 ± 9.42mg/L	181.08 ± 9.42 mg/L	< 224.83 mg/L
Chloride	5.24 ± 1.36 mg/L	7.25 ± 1.30 mg/L	
Total Phosphorus	0.045 ± 0.006 mg/L	0.031 ± 0.006 mg/L	< 0.01 - 0.03 mg/L
Chlorophyll a Content	1.51 ± 0.41 mg/L	0.399 ± 0.33 mg/L	
Temperature	15.31 ± 2.18 C	13.52 ± 1.63 C	< 25.15 C
pH	8.04 ± 0.11	7.79 ± 0.11	Between 6.5-8.5
Conductivity	0.323 ± 0.02 spc	0.379 ± 0.02 spc	
Dissolved Oxygen	7.52 ± 0.58 mg/L	7.88 ± 0.44 mg/L	> 6.0 mg/L
Total Organic Nitrogen	0.697 ± 0.06 mg/L	0.658 ± 0.56 mg/L	< 1.1mg/L

Stokes River water quality improved between the 2013 and 2014 growing seasons. Of particular note were the total suspended solids, as they are now below the recommended maximum of 11.2 mg/L. Total phosphorus also decreased (2014: 0.031 mg/L), rendering it just above the more widely accepted guideline of 0.03mg/L for a stream system. The mean value of total organic nitrogen also decreased in 2014; however, the variability of 2014 data indicates that there was still nitrogen rich samples collected that season.

Regardless the total organic nitrogen values remained below the maximum recommended value of 1.1 mg/L, but above reference conditions (reference: 0.054 mg/L). Chlorophyll *a* content had the most notable decrease at this site between sampling years, dropping by 116%.

These water quality improvements may be due to the cattle exclusion systems installed at this site during the 2014 growing season. Comparing the fall water chemistry, when the cattle exclusion systems were fully installed and when large storms flush the human pollutants into streams, we see a decrease in 2014. Specifically, total phosphorus and total organic nitrogen both decreased by 18% and 33%. Long term monitoring is needed at this site to determine if these differences are natural variation or a product of cattle exclusion.