

Stream Water Chemistry Report Summary

Stream Name: Stokes River

Water Chemistry Parameters	Observed Value			Standard
	2013	2014	2015	
Total Suspended Solids	14.43 ± 3.33 mg/L	7.62 ± 3.33 mg/L	4.87 ± 2.33 mg/L	< 11.2 mg/L
Alkalinity	207.67 ± 9.42mg/L	181.08 ± 9.42 mg/L	203.31 ± 35.66 mg/L	< 224.83 mg/L
Chloride	5.24 ± 1.36 mg/L	7.25 ± 1.30 mg/L	5.68 ± 4.69 mg/L	
Total Phosphorus	0.045 ± 0.006 mg/L	0.031 ± 0.006 mg/L	0.039 ± 0.024 mg/L	< 0.01 - 0.03 mg/L
Chlorophyll a Content	1.51 ± 0.41 mg/L	0.399 ± 0.33 mg/L	1.51 ± 1.17 mg/L	
Temperature	15.31 ± 2.18 C	13.52 ± 1.63 C	15.71 ± 3.45 C	< 25.15 C
pH	8.04 ± 0.11	7.79 ± 0.11	7.82 ± 0.21	Between 6.5-8.5
Conductivity	0.323 ± 0.02 spc	0.379 ± 0.02 spc	0.359 ± 0.09 spc	
Dissolved Oxygen	7.52 ± 0.58 mg/L	7.88 ± 0.44 mg/L	8.48 ± 2.40 mg/L	> 6.0 mg/L
Total Organic Nitrogen	0.697 ± 0.06 mg/L	0.658 ± 0.56 mg/L	0.528 ± 0.132 mg/L	< 1.1mg/L
Caffeine			0.012 ± 0.004 µg/L	

From 2013 to 2014 Stokes River demonstrated signs of notable improvement in water chemistry, with declines in total suspended solids and total phosphorus to near or below recommended levels. While 2015 water chemistry values are generally improved compared to 2013 values, total phosphorus levels did slightly increased from 2014 to 2015. Unlike total phosphorus, total suspended solids and total organic nitrogen values continued to trend downwards, decreasing by 36% and 20% respectively from 2014 to 2015. The 2015 caffeine measure indicates a minor impact of regional septic systems, although to a magnitude similar to the reference site.

As observed at many other sites in 2015 chlorophyll a levels notably increased from 2014 to 2015. Chlorophyll a levels of this level have been observed in 2013, prior to the cattle exclusion efforts that took place in the summer of 2014. Considering the wide spread increase in chlorophyll a content across sites in 2015, including the reference site, it is likely these increases are related to naturally occurring environmental conditions. Still, the increased chlorophyll a content may also be contributing to a continued decrease in total organic nitrogen concentrations, as vegetation will incorporate nitrogen suspended in stream waters to build biomass that supports chlorophyll a production. These increases in chlorophyll a content did not correspond with a notable decline in dissolved oxygen content in the stream, a real threat of algal blooms that can cause the higher chlorophyll a levels.