

Stream Water Chemistry Report Summary

Stream Name: Black Creek (Reference Site)

Water Chemistry Parameters	Observed Value			Standard
	2013	2014	2015	
Total Suspended Solids	6.48 ± 1.05 mg/L	3.53 ± 0.96 mg/L	2.37 ± 2.15 mg/L	N/A
Alkalinity	179.86 ± 16.18 mg/L	158.92 ± 17.45 mg/L	169.35 ± 65.72 mg/L	N/A
Chloride	6.86 ± 0.50 mg/L	6.58 ± 0.54 mg/L	7.72 ± 2.13 mg/L	
Total Phosphorus	0.011 ± 0.004 mg/L	0.015 ± 0.004 mg/L	0.011 ± 0.005 mg/L	< 0.01 - 0.03 mg/L
Chlorophyll a Content	0.328 ± 0.05 mg/L	0.176 ± 0.06 mg/L	1.018 ± 1.42 mg/L	
Temperature	15.15 ± 1.39 C	12.46 ± 1.39 C	14.90 ± 4.00 C	N/A
pH	7.93 ± 0.37	8.01 ± 0.23	7.68 ± 0.47	Between 6.5-8.5
Conductivity	0.263 ± 0.02 spc	0.307 ± 0.02 spc	0.297 ± 0.09 spc	
Dissolved Oxygen	6.17 ± 0.57 mg/L	7.24 ± 0.58 mg/L	6.97 ± 2.26 mg/L	> 6.0 mg/L
Total Organic Nitrogen	0.557 ± 0.04 mg/L	0.523 ± 0.04 mg/L	0.458 ± 0.17 mg/L	< 1.1mg/L
Caffeine			0.0129 µg/L	

The three years of water chemistry data continues to indicate the high water quality of this reference site. Of particular note are the relatively low values of total phosphorus and total organic nitrogen levels that are consistently observed at this site. The total phosphorus levels have remained below the standard of 0.03 mg/L every year, although total phosphorus levels at this are consistently observed above the more stringent standard of 0.01 mg/L. As total phosphorus levels at this reference site have been observed above 0.01 mg/L for the past three years, it is possible the background water chemistry for this region is naturally slightly above 0.01 mg/L. Based off of the 2015 caffeine measurements at this site, it is also possible this stream may be slightly impacted by septic systems in the watershed. While the caffeine levels at this site are relatively low, they are detectable, surpassing those found at other monitored streams in the region such as Judge's Creek.

Unlike total phosphorus and total organic nitrogen trends for this reference site in 2015 we observed a notable increased in chlorophyll a content. As total phosphorus and total organic nitrogen concentrations did not increase in 2015, this suggests that other environmental factors may have stimulated chlorophyll a production at this site, such as increased availability of micronutrients or increased light reaching the stream's surface. Interestingly, this increase in chlorophyll a content did not increase total suspended solids, as these values have steadily declined from 2013 to 2015.

The remaining variables, specifically alkalinity, chloride, and conductivity, have remained fairly consistent throughout the observation years, as expected. These variables tend to reflect the water's source, and continue to indicate the reference site has a strong rain water input with a lesser groundwater input compared to other monitored streams.