

Stream Water Chemistry Report Summary

Stream Name: Unnamed Stream

Water Chemistry Parameters	Observed Value		Standard
	2013	2014	
Total Suspended Solids	14.93 ± 8.07 mg/L	18.99 ± 7.47 mg/L	< 11.2 mg/L
Alkalinity	238.14 ± 24.34 mg/L	236.86 ± 24.34 mg/L	< 224.83 mg/L
Chloride	8.31 ± 1.29 mg/L	10.21 ± 1.29 mg/L	
Total Phosphorus	0.03 ± 0.01 mg/L	0.037 ± 0.06 mg/L	< 0.01 - 0.03 mg/L
Chlorophyll a Content	1.12 ± 0.48 mg/L	0.412 ± 0.48 mg/L	
Temperature	14.08 ± 2.47 C	11.01 ± 2.29 C	< 25.15 C
pH	7.80 ± 0.28	7.85 ± 0.12	Between 6.5-8.5
Conductivity	0.393 ± 0.08 spc	0.536 ± 0.07 spc	
Dissolved Oxygen	6.69 ± 1.31 mg/L	7.38 ± 1.21 mg/L	> 6.0 mg/L
Total Organic Nitrogen	0.637 ± 2.63 mg/L	4.19 ± 2.63 mg/L	< 1.1mg/L

The Unnamed Stream has minor signs of human disturbance, with minimal changes between years. The most notable indicators are the high total suspended solids and the high total phosphorus. The high total suspended solids indicate high erosion within this watershed. Phosphorus often binds to soil particles, thus increased erosion can increase phosphorus inputs into streams. The annual data demonstrates this trend, with increasing total suspended solids in 2014 associated with increased total phosphorus levels. Total organic nitrogen has the largest increase of any parameter at any site, rising by 146% in 2014. This increase was entirely driven by an exceptionally high value of 26 mg/L in April 2014. Considering the transient nature of this high value it suggests that some unusual event occurred at this site at the time of sampling. This could be a particularly intense storm or direct defecation at the site. Consider that only nitrogen levels increased this suggests a very specific input, such as nearby nitrogen fertilization before sampling.

Interestingly, chlorophyll *a* levels are inverted to the total organic nitrogen annual trends. During the 2014 growing season the chlorophyll *a* content, indicative of algae growth, dropped by 92%. Considering that both phosphorus and nitrogen levels increased at this site in 2014, this drop in chlorophyll *a* is likely due to the decrease in stream temperatures. These cool temperatures could also be indicative of a drop in incoming light, a resource that strongly determines algae growth in flowing streams.

The notably high conductivity level at this site indicates that it has a strong ground water connection. This strong ground water connection is likely naturally increasing the CaCO₃ in the stream. The bedrock in this region is predominately limestone, a rock composed of CaCO₃. This same compound is what is used to measure alkalinity. Thus the ground water that comes in contact with the bedrock will be naturally rich in CaCO₃, increasing the alkalinity of this site.