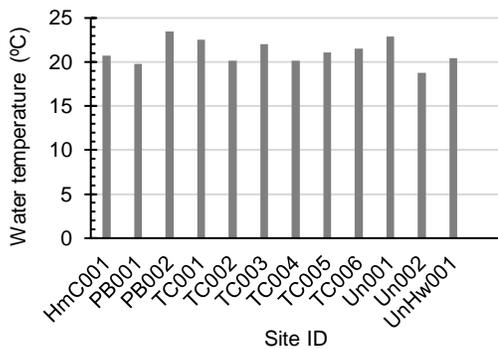


2019 TINKER'S CREEK WATER QUALITY

Using volunteer and staff assistance, TCWP measured water quality at 12 sites throughout Tinker's Creek watershed between May and September 2019. At each site, we collected pH, water temperature, dissolved oxygen, nitrate and nitrite, ammonia, total phosphorus, total suspended solids, and *E. coli* (*Escherichia coli*). Read below to learn more about each parameter and what our results indicate about the health of Tinker's Creek!

pH and water temperature

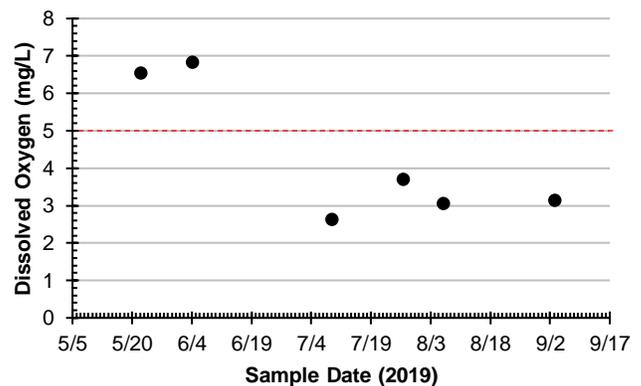


pH is a measure of acidic or basic the water is, and it drives changes in water chemistry. Most organisms can only survive in waters with pH values between 6.5-8.5, with a pH of 7 considered neutral. The pH of Tinker's Creek remained between these thresholds for the entire sampling season!

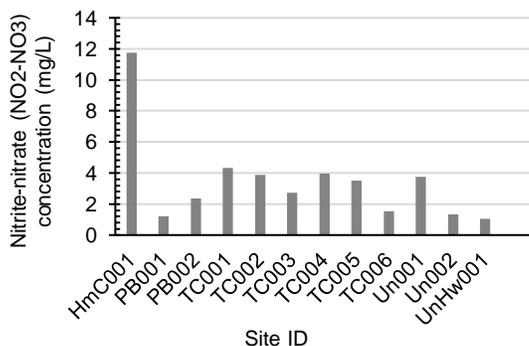
Water temperature is measured in degrees Celsius (left). Like pH, water temperature can drive changes in water chemistry and biological communities. Tinker's Creek is designated warmwater habitat.

dissolved oxygen

Fish and aquatic organisms can only use dissolved oxygen from the water, not oxygen from the air. Dissolved oxygen is used for respiration by all aquatic organisms. Faster flowing, colder water holds more oxygen than stagnant, warm water. Fish generally live in waters with dissolved oxygen concentrations of 5 mg/L or higher. If dissolved oxygen falls below 2 mg/L, fish will begin to suffocate. Only one site in Tinker's Creek watershed, Darrow Road Park (right), consistently experiences low dissolved oxygen levels.



nitrate, nitrite, and ammonia

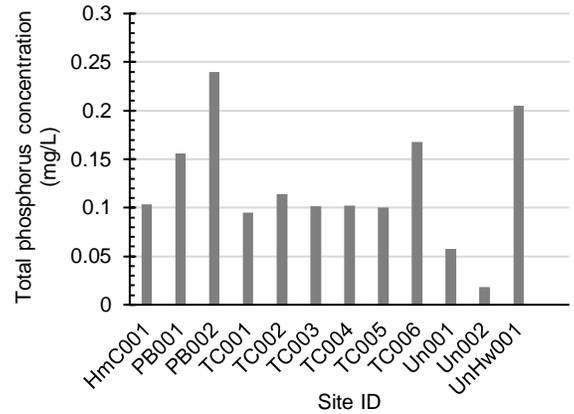


As organisms eat, die, and decompose, nitrogen is cycled throughout the stream ecosystem, alternating forms between nitrate, nitrite, and ammonia. Nitrate and nitrite are produced during decomposition. Ammonia is typically released with urea. High levels of nitrogen in water can indicate fertilizer runoff or organic pollution, like sewage. Tinker's Creek experiences normal fluctuations in nitrogen concentrations, suitable for healthy communities. Average nitrite-nitrate concentrations (left) were highest at Hemlock Creek.

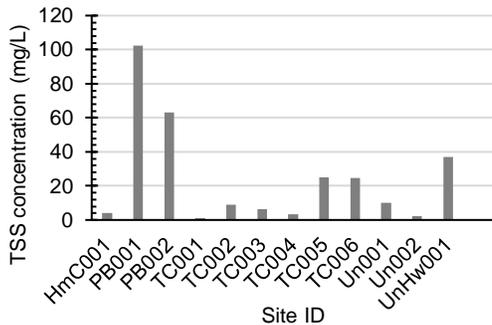
total phosphorus

Both phosphorus and nitrogen are needed for plant growth, and freshwater communities are often limited in growth by phosphorus availability. If phosphorus is present in excess, however, algal blooms may form, which can deplete dissolved oxygen levels and cause fish kills as the algae die and biodegrade.

Phosphorus levels within Tinker's Creek are within the normal range for healthy freshwater streams.



total suspended solids



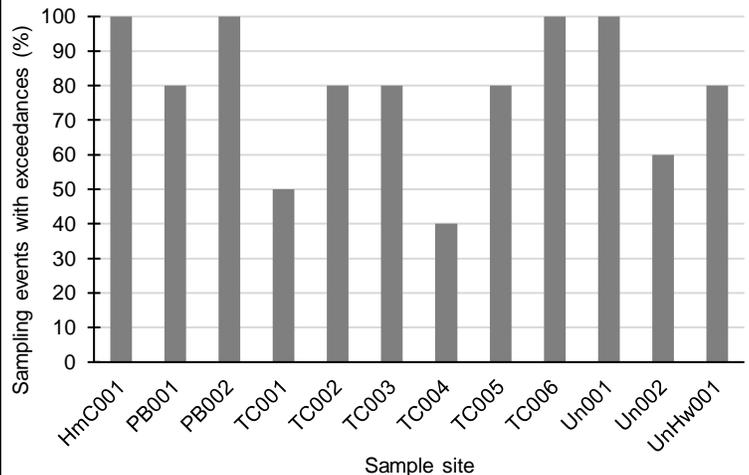
Total suspended solids (TSS) is a measurement of the amount of material, like sediment, suspended in the water column. High TSS values can reduce light availability to algae and aquatic plants, reduce dissolved oxygen concentrations, and clog organisms' gills. Suspended particles can also introduce nutrients, heavy metals, or other pollutants into the stream.

Tinker's Creek experiences elevated TSS levels following storm events. These storms can skew average TSS concentrations, like at PB001. Erosion also contributes to high TSS.

E. coli

E. coli is a type of bacteria found in the intestines of animals and humans. Rainfall washes animal waste into the creek, causing temporary spikes in *E. coli* concentrations following storm events. However, unusually high spikes in *E. coli* during storm events or dry weather may indicate sewage pollution through illegal connections or combined sewer systems.

Some portions of Tinker's Creek are currently exceeding water quality criteria, but TCWP is working with partners to alleviate this issue.



get involved!



TCWP is looking for more watershed stewards to join our volunteer program! Our watershed volunteers help us meet our water quality monitoring needs, serve as early alarm systems for major water quality threats, and restore the watershed through invasive species removals, tree plantings, and more! To get involved, contact **Sonya Mottram** at sonya@tinkercreekwatershed.org!

Thank you to our 2019 Water Quality Monitoring program volunteers! We could not have done this program without YOU!