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*Escherichia coli* (*E. coli*) is a bacterium found in the lower intestines of warm-blooded animals. The presence of *E. coli* in streams indicate that feces of warm-blooded animals are present and causes water to become cloudy with an unpleasant odor. High concentrations of *E. coli* are a health concern because it is an indicator that pathogenic bacteria and viruses may also be existing. The US Environmental Protection Agency sets a maximum safe limit of 235 colony forming units (cfu) for recreational water usage, but concentrations of *E. coli* can change rapidly with environmental conditions. We sought to investigate trends of *E. coli* concentrations in the Ohio River and Wheeling Creek, a tributary to the Ohio River because both are increasingly being utilized for recreational activities. We collected water samples weekly at two sites on the Ohio River, five sites on Wheeling Creek, and three sites on tributaries of Wheeling Creek between September 27, 2018 and December 27, 2018. In total, we collected 128 samples that were analyzed for *E. coli* using the IDEXX Colilert System. We have found that the concentrations ranged from 25 to 2,400 colonies of *E. coli*, and only 43 readings (32.8%) were below the EPA safe standard for recreational usage. The Ohio River and tributaries of Wheeling Creek tended to have lower concentrations of *E. coli* than Wheeling Creek itself. As the temperature declined in December *E. coli* concentrations decreased likely driven by the bacteria only being able to survive in waters 4°C and warmer.