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How Does Temperature Affect the pH of Cement Creek?

The purpose of this experiment was to determine if the pH of Cement Creek in Silverton, Colorado changes with temperature and time of day. Cement Creek is a headwater stream that naturally has a high mineral content, but that has also been heavily impacted by mining and recently was considered as a potential Superfund site. Our hypothesis was that the pH will be closer to neutral (7.0) at warmer daytime temperatures because dilution from melting snow will decrease the acidity.

The pH and temperature of Cement Creek was recorded at specific times of the day. Four days a week, between 7:00 and 7:30 a.m. and 3:30 and 4:00 p.m. from February 5th through the 21st, a thermometer measured air and water temperature and narrow range pH strips measured the acidity.

The data collected supported the original hypothesis. The pH of Cement Creek is closer to neutral (7.0) at warmer air temperatures, and overall the pH increased with air temperature. The results produced an r^2 value of 0.7458, indicating the relationship between air temperature and pH of Cement Creek has a positive correlation and may be used as a possible indicator for predicting other results.

This information has potential to inform decisions regarding water clean-up procedures. Further studies may be directed at increasing understandings of other controls on pH such as weather patterns. Also, expanding the time-frame for this or similar studies into spring, summer and fall months to more completely understand the annual relationship of the two variables is recommended.