Testing the Water Quality of Karst Outflows in the Ozarks

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The health of water in a karst system stems from the interaction between ground and surface water. Within the Ozark Highland region many people rely upon springs for their water. Unfortunately, karst is susceptible to contamination due to the dissolutional features that make the terrain such a great aquifer. In this study, outflows in the Lower Boone Formation within Marion and Searcy Counties were assessed to investigate the vulnerability of these karst systems to contaminants and identify possible sources of pollutants within the karst hydrologic systems. Water quality parameters tested included temperature, dissolved oxygen, conductivity, total dissolved solids, pH, turbidity, alkalinity, calcium hardness, and phosphate, and each site was assessed using aerial photos, topographic maps, and geologic maps. One sample showed dissolved oxygen levels of 19.3%, suggesting leakage from a septic system 0.2 miles away. A second sample showed conductivity levels of 81.2 µS/cm, a fifth of the average for the area, indicating direct access to the water table by rainwater. Of the other 15 sites tested, all were above the water quality limit for phosphorus in reservoirs used for drinking water, which is 0.025 mg/l, and three of the samples were above 0.1 mg/l The likely source for these high values are the farms and septic systems dispersed through the area. This indicates that although this is a rural area, the density of residential and agricultural sources exceeds the capacity to remove contaminants and is creating a public health concern.

Awards Won:
Second Award of $2,000
Geological Society of America &amp
American Geosciences Institute: Second Award of $1,000