Preliminary Study of the Beaverhead River and the Effects of the Dillon Community: Chemistry [MAS]

Steve Mock, Sheila Roberts, Cori Freshour, Stephanie Frisbee, Jack Hayes, and Jennifer O'Loughlin
Environmental Sciences Department,
Western Montana College, University of Montana - Dillon 59725

Students in two Freshman-level college chemistry classes studied water quality of the Beaverhead River, which flows through Dillon, Montana, as a lab component of their classes. This activity had several goals -- to involve beginning-level chemistry students in real scientific research, to offer the community planning boards information that would otherwise not be available, and to provide data for a longer term monitoring of Beaverhead River water quality. Many of the students at this college are studying to become public school teachers, so an additional goal was to provide a model for student research in science classes. Four collections sites were chosen: two upstream from Dillon, one just within the town, and one just downstream of town. Chemical analyses were done using a HACH portable water chemistry lab, with EPA-approved equipment and test procedures. Analyses performed at the water-collection sites included temperature, pH, dissolved oxygen, conductivity, and total dissolved solids. Samples were transported back to the lab and immediately analyzed for ammonium, nitrate, sulphate, and phosphate ions and alkalinity. One group tested the reliability of the results using chemical standards. Our analyses show that the river water is well within drinking-water standards for the analytes studied. It has healthy dissolved oxygen and pH levels and is well buffered. The results of this project provide a "clean" base level for planned continued monitoring of the river.