Monitoring Efforts in Mason Creek: Preliminary Scientific Applications and Findings

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Mason Creek, a tributary of the lower Boise River, is highly impacted by urban, suburban, and agricultural land uses. Of all lower Boise River tributaries, Mason Creek carries one of the highest loads of suspended sediment. The Idaho Department of Environmental Quality (IDEQ) has listed Mason Creek as impaired by several pollutants including suspended sediment and nutrients.

The U.S. Geological Survey, in cooperation with the Lower Boise Watershed Council and IDEQ, conducted high-frequency water-quality monitoring in Mason Creek during Water Years 2011 and 2012. Monthly samples included total phosphorus, total nitrogen, suspended sediment, and E. coli. Continuous (15-minute) monitoring of stage, turbidity, and temperature began in the spring of 2011. For the first time, during the fall of 2011, the USGS collected aquatic habitat and biological community data from a 160-meter reach near the mouth of Mason Creek.

Preliminary results of this sampling effort and a summary of the constituent concentrations and loads will be presented. The water-quality samples and continuous monitoring data were used in regression models to evaluate the relationships among continuous parameters (turbidity and flow) and instantaneous water-quality measures of total phosphorus, suspended sediment and E. coli. An evaluation of flow and turbidity as surrogates for constituents of interest will be examined. A summary of the fish community assessment and periphyton chlorophyll-*a* data will be provided. The Idaho State river fish index (RFI) score for Mason Creek was calculated, and a preliminary examination of the ability of the Creek to support cold water fish will be discussed.

Finally, many data collection challenges including funding and logistics may be of interest to those conducting these types of studies. For example, many data quality issues should be considered when funding is limited.