

## **Evaluation of Water-Quality Trends at the Boise River Near Parma Using a Weighted-Regression Model**

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The U.S. Geological Survey has operated a stream gage and collected water-quality samples from the lower Boise River near Parma, Idaho (Parma) since 1972. Data collected at Parma are useful for evaluating progress toward meeting total maximum daily load targets (TMDLs) in the lower Boise River near its confluence with the Snake River. The Idaho Department of Environmental Quality and the Lower Boise Watershed Council are currently developing a TMDL for total phosphorus in the lower Boise River. The uninterrupted, long-term dataset from Parma provides sufficient data to evaluate trends in total phosphorus concentrations and loads using a recently-developed model called Weighted Regression on Time, Discharge, and Season (WRTDS). WRTDS is a useful tool for identifying water-quality changes in a stream related to changes in point and nonpoint sources within the upstream watershed. Initial WRTDS model results for Parma provide an understanding of important seasonal influences and long-term trends in total phosphorus loading to the lower Boise River. The WRTDS model also provides a baseline assessment of total phosphorus concentrations and loads prior to TMDL implementation.