ABSTRACT

TITLE:	Earth and Water: Landcover and River Health on the Missouri River
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ABSTRACT: The Missouri River Research Endeavor (MRRE) set out to conduct an empirical study of the Missouri River. Our team canoed from the official headwaters near Three Forks, MT to the confluence with the Mississippi River in Saint Louis, MO. The MRRE sought greater understanding of the river, its health, and how human practices on and near the river affect it. Dams, nutrients, and pollution can have dramatic impacts on rivers. The river was broken up into twelve reaches because of the effects of damming. Reaches were defined as a length of river from headwaters to the first dam, between dams, and from the final dam to confluence with the Mississippi River. At three sites per reach water was sampled at 1 m depth and analyzed in the field. From these samples seston was collected by filtration, while pH, total dissolved solids, conductivity, salinity, dissolved oxygen, nitrate (NO3-), nitrite (NO2-), phosphate (PO4-) were measure from the filtrate. The seston samples were combusted to determine organic mass. Land cover was determined within 50 km of the river and its reservoirs using the USGS National GAP Land Cover dataset. Most phosphate measurements were outside 2.75 mgL-1 range of the colorimeter used, but the few low sites suggest a relationship between phosphate, conserved lands, and impoundment deltas. Nitrate levels showed no significant pattern and nitrite levels were within natural back ground levels. River modification, in the form of damming and channelization, severely reduce sediment load in the river and is disruptive to native riparian areas. Within 50 km of the river, 35% of the land is cropland and is the largest contributor of excess nutrients to the river system.