
Paper Title: Water Quality Analysis of an Intensively Used Agricultural Reservoir

Key Words: Agriculture, Conservation, Ecology, Water Quality

Oral or Poster Presentation Acceptable (prefer poster assuming a paper can still be submitted)

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ABSTRACT

The use of farm reservoirs for irrigation is gaining popularity in the Mississippi River Alluvial Plain (MRAP). Due to depletions of several aquifers, many counties within the MRAP have been labeled as critical-use groundwater areas. To alleviate the stress on these aquifers, many farmers are implementing storage reservoirs for economic reasons. Their benefits, however, extend into the surrounding environment. When used with a tailwater recovery system, reservoirs have the potential to accumulate nutrients, which decreases the need for fertilizer application with irrigation water. Also, potentially harmful contaminants (e.g. pesticides) are trapped and transformed within the reservoir, rather than being released through drainage into receiving systems such as lakes, rivers, and streams. Roberts Reservoir is an intensively used, 49 ha storage reservoir, located in Poinsett County, Arkansas. Water quality analyses and toxicity assessments of the reservoir and surrounding ditches indicated a stable water quality environment, with no observed toxic effects. The results of this study suggest that water released into a local receiving stream poses no contaminant risk and could be maintained for irrigation purposes, thereby reducing the need for groundwater depletion.