DELTA WATER RESOURCES

Dean Pennington, Moderator

Climatological and cultural influences on annual groundwater decline in the Mississippi Delta shallow alluvial aquifer	Charles L. Wax, Jonathan W. Pote, and Tia L. Merrell Mississippi State University
Characterization of water quality in unmonitored streams in the Mississippi Alluvial Plain, Northwestern Mississippi, May-June 2006	Jeannie R. Bryson, Richard H. Coupe, and Michael A. Manning U.S. Geological Survey
Influence of surface-water recharge on the potential for agricultural nutrient and pesticide transport to the Mississippi River alluvial aquifer, Northwestern Mississippi	Heather L. Welch and Melinda Dalton U.S. Geological Survey
Use of a field method for determining hydraulic conductivity in soils in the Bogue Phalia Basin in the Mississippi River alluvial plain	Claire E. Rose and Richard H. Coupe U.S. Geological Survey

Use of a field method for determining hydraulic conductivity in soils in the Bogue Phalia Basin in the Mississippi River alluvial plain

Claire E. Rose and Richard H. Coupe
U.S. Geological Survey, Mississippi Water Science Center
cerose@usgs.gov

Interest in the determination of hydraulic conductivity for soils in the Mississippi River Alluvial Plain is spurred by the heavy use of agricultural chemicals on these highly productive soils and the potential for offsite movement of these chemicals. Ground-water models indicate that up to 5 percent of the precipitation recharges the shallow alluvial aquifer, indicating a potential pathway for movement of these chemicals into ground water. A field method designed to rapidly measure field-saturated hydraulic conductivity (K_{fs}) on soybean and cotton fields in the Bogue Phalia Basin was used to evaluate the potential for recharge through agricultural soils. This technique uses a portable falling-head, small-diameter, single-ring infiltrometer and an analytical formula for K_{fs} that compensates both for the falling head and for subsurface radial spreading. Measured K_{fs} values generally were higher than expected and vary more than four orders of magnitude from 1×10^{-2} to 5×10^{-6} cm/s. Hydraulic conductivity was shown to vary spatially within an agricultural field and temporally due to soil moisture conditions.

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