

# SATELLITE REMOTE SENSING OF WATER QUALITY IN SOUTHWEST MISSOURI

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## ABSTRACT

Water quality of Table Rock Lake in southwest Missouri is being assessed using Landsat thematic mapper (TM) satellite data. The assessment is based on an image processing protocol developed by the Water Resources Center and Remote Sensing Laboratory at the University of Minnesota. A pilot study uses multi-date satellite image scenes in conjunction with physical measurements of secchi disk transparency collected by the Lakes of Missouri Volunteer Program to construct a regression model used to estimate water clarity. The natural log of secchi disk transparency is the dependent variable in the regression and the independent variables are TM band 1 (blue) reflectance and a ratio of the band 1 and band 3 (red) reflectance. The regression model can be used to reliably ( $r^2 = 0.76$ ) predict water clarity anywhere within the lake. A pixel-level lake map of predicted water clarity or computed trophic state can be produced from the model output. Information derived from this model can be used by water resource managers to evaluate effects of changes in the watershed on water quality.

**Key words:** water quality, remote sensing, trophic state, modeling