

Thesis Defense

By

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ABSTRACT

GIS-AIDED MODELING AND SITE MEASUREMENT OF SOIL EROSION POTENTIALS IN THE UPPER FRESNO RIVER WATERSHED, CALIFORNIA

The objectives of this study were to evaluate soil erosion within the Upper Fresno River Watershed using geographic information systems (GIS) and the Revised Universal Soil Loss Equation (RUSLE) model to develop soil erosion risk assessment. The modeling results indicate that under simulated favorable cover and management conditions, erosion potential for most of the watershed is less than 0.1 tons/acre/yr and less than 1 tons/acre/yr under simulated adverse cover and management conditions. In areas with steep terrain and with development changes such as road construction and land surface disturbance, the erosion potential could reach up to 200 tons/acre/yr. Field experiments at selected sites were conducted to verify erosion modeling results. Sediments captured by the sediment traps were less than 1 ton/acre/yr, consistent with erosion modeling results. The results of this study indicate that the RUSLE model can readily be applied to evaluate erosion risk at the watershed scale.