# USDA-CSREES 2006 National Water Quality Conference

## ASSESSING EPHEMERAL GULLY EROSION IN THE CHENEY LAKE WATERSHED USING GIS, REGEM AND THE ANNAGNPS MODEL

Ephemeral gully (EG) erosion has been recognized as contributing to sediment losses from agricultural fields, yet most methods for estimating soil erosion do not account for it. The Universal Soil Loss Equation (USLE), or revised and modified versions, evaluate soil loss as combined sheet and rill erosion, but do not include erosion due to concentrated flow channels in its estimates. Watershed models such as AnnAGNPS and SWAT are based only on combined sheet and rill estimates and do not account for EG erosion. Improved accuracy and adequate calibration of watershed models will require EG erosion be considered as a contributor to sediment and nutrient loading to surface water bodies. We are a special emphasis Conservation Effects Assessment Project (CEAP) in the Cheney Lake Watershed in Kansas studying EG erosion on NPS loading to Cheney Reservoir. Preliminary assessment of soil losses in Cheney Lake Watershed suggest that EG erosion may deliver fifty percent of the sediment load to the reservoir. Remote sensing and geographical information systems (GIS) are used to quantify the occurrence and extent of EGs in the watershed and to extract gully profiles from a digital elevation model, and soil and engineering properties from NASIS soil data. The Revised Ephemeral Gully Erosion Model (REGEM) has been incorporated into AnnAGNPS, and an ArcView script and interface have been developed to populate AnnAGNPS with the necessary inputs to assess EG erosion in the watershed. Addressing soil erosion from EGs may require a different suite of conservation practices than that required for sheet and rill erosion.

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