

## **ASSESSMENT OF GULLY EROSION CONTRIBUTIONS WITHIN THE ARS CEAP GOODWIN CREEK EXPERIMENTAL WATERSHED**

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**Abstract** A watershed scale assessment of the effect of conservation practices on the environment is critical when recommending conservation management practices to agricultural producers. The identification of all sources of sediment and tracking the movement of sediment downstream is a necessary part of this assessment. Pollutant loading allocations established without comprehensive studies of all sediment sources will likely require treatment of lands that will contribute little to load reductions and insufficient treatment of higher sediment contributing lands. The ARS Goodwin Creek Experimental Watershed (GCEW) was selected as part of the USDA Conservation Evaluation and Assessment Project (CEAP) to study the effects of conservation practices within watersheds, particularly on downstream sediment loads. The USDA Annualized Agricultural Nonpoint Source model (AnnAGNPS) was developed to perform watershed evaluations of conservation management plans that treat all sources of sediment and is a critical tool in the overall USDA CEAP watershed project effort. Recent enhancements to AnnAGNPS have been developed for use with USDA CEAP watershed projects to study conservation practice effects on ephemeral gully erosion. Within GCEW, many agricultural conservation practices have been implemented, such as conservation tillage, agricultural land conversion to CRP land, and drop pipes. This provides a unique opportunity to evaluate conservation practice effectiveness associated with the various processes controlling erosion, when combined with the historical database collected from the watershed for use with simulation models. An analysis will be performed within GCEW to show the contribution of gullies to sediment load and the effectiveness of conservation practices designed to control gully erosion. The environmental benefits of these practices have not been widely quantified at the watershed scale, which would require extensive monitoring studies. Watershed model studies can provide critical information when planning effective conservation practices needed by action agencies, such as the USDA Natural Resources Conservation Service.