



USDA-CSREES 2006 National Water Quality Conference

Long-Term Water Quality Responses to Conservation Practices in Nested Coastal Plain Watersheds

We have studied water quality and hydrology in the Little River Experimental Watershed (LREW), in the headwaters of the Suwannee River, for the past 32 years. LREW consists of 8 nested watersheds totaling 334 km². We have also developed GIS data sets that describe land use, crops, and conservation practices in LREW for most of the 32-year record period. Our project extends and uses this extensive data record along with expert knowledge of the biophysical and socioeconomic factors affecting farm practices in a Cumulative Effects Analysis (CEA) framework to determine the effects of conservation practices on watershed water quality in these watersheds. The principal objectives of our 3-year project which began September, 2005 are to:

- 1) evaluate the effects of past and potential conservation practices in the nested watersheds;
- 2) evaluate social and economic factors influencing practice implementation and maintenance; and
- 3) inform stakeholders about these issues and the effects of cumulative land use activities on watershed water quality.

We will use the CEA approach to develop a conceptual model that will be implemented in the STELLA modeling framework and will incorporate information from farmer interviews, an expert panel addressing controlling factors, and matrices of practice/outcome interactions. The conceptual model will be applied to clarify trend analyses, regression analyses, and simulation modeling. SWAT will be used to model the nested watersheds for actual and alternative conservation practice scenarios and will include riparian and filter strip attenuation factors estimated using REMM. Alternative conservation practice scenarios will be based on the conceptual model so they will be constrained by biophysical, socioeconomic, and program factors. Information on local and regional water quality issues and conservation practices will be provided to stakeholders through targeted publications, presentations and workshops. Stakeholders will be engaged as participants in interviews and workshops, as outreach agents, and as students in undergraduate classes and internships. Through these activities, stakeholders will become better informed and

empowered to act to advance land conservation programs and watershed protection and restoration plans in the Suwannee Basin.

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