CSREES National Water Quality Program

Title: Use of Research and Modeling Information in Community-based Watershed Planning

Name: Gerald Miller **Email:** soil@iastate.edu

Organization: Iowa State University

State: IA **Region:** Heartland

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Theme: Watershed Management

Situation: Nonpoint source nutrients are a frequent concern in agricultural watersheds. Community involvement in environmental management, which promotes widespread awareness and action on many issues, can have a major impact on producers' acceptance and implementation of nutrient and manure best management practices. Agricultural research, education and extension have an important role to play in facilitating citizens watershed councils, supporting participatory learning and enabling performance-based watershed management.

Objectives: Project objectives are: 1) to facilitate citizen councils able to bring local perspective and democratic processes to watershed management; 2) to conduct applied research and demonstrations of nitrogen and phosphorus inputs and losses, in runoff and subsurface drainage, under local conditions; and 3) to enhance practical use of computer models, including both environmental and economic outputs, for determination of water quality best management practices for crop and manure nutrients.

Methods: Extension field staff, including community development specialists, met with citizens groups that became watershed councils. They provided research-based information and assisted on-farm demonstrations as citizens' discovery process proceeded. Maquoketa River monitoring by ISU scientists and input from watershed stakeholders contributed to model calibration and application. Project modeling resulted in four research articles and in information materials used for news releases and community meetings. The project also contributed to an Extension to Communities guide for watershed leaders.

Partnerships: Applied modeling was conducted by the Texas Institute for Applied Environmental Research and the Center for Agriculture and Rural Development at Iowa State University. Material and technical assistance was provided by northeast Iowa Soil and Water Conservation Districts and the Iowa Corn Growers Association. The project brought closer cooperation between drainage research and modeling programs of ISU and the University of Minnesota.

Research: Extension nutrient management education programs relied heavily on results of concurrent watershed research and modeling. Farmer-initiated applied research was also conducted. Extension staff assisted with over 50 on-farm demonstrations addressing questions raised by the educational program. Modeling research conducted by U. of Minnesota improved the ability of applied watershed models to incorporate drainage effects. Outreach from this and other shared research was presented at an annual Interstate Drainage Forum.

Resources: The U.S. EPA Region VII and the Iowa Department of Natural Resources provided substantial funds for concurrent watershed monitoring. EPA RVII also contributed to facilitation of watershed councils. Ongoing research programs at Iowa State University shared staff time and analytical costs. Local resources were provided by NRCS and SWCDs.

Results: Results of on-farm demonstrations were widely publicized in news releases, newsletters and presentations. Cooperators in demonstrations and in a project nutrient education program farmed over 60% of their watershed. Citizens collaborated with scientists on local data for applied modeling. Extension facilitation resulted in a watershed council empowered to set goals and determine needed nutrient and manure management practices. Their efforts contributed to a very high rate of participation in an associated watershed protection project. The council has continued its involvement in watershed issues.