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Community DECISIONS: Community Decision Support for Integrated, On-the-ground Nutrient Strategies

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Abstract Text:

Watershed planning must be a collaborative process, but stakeholders may not have equal access to science-based information when they express their preferences for water quality. This new integrated research, extension, and education project will develop a group decision support system that will assist a stakeholder group in Virginia's North Fork basin of the Shenandoah River to arrive at a consensus watershed plan that satisfies their individual preferences for watershed goals.

A watershed nutrient mass balance represents the relationship between the quantity and form of nutrients imported (such as feed or fertilizer), managed and unmanaged nutrients exported (harvested crops or treated wastewater), and nutrients retained within the watershed. The nutrient balance concept offers an operational framework for organizing efforts to reduce unmanaged exports. Stakeholders will help to design and assess a procedure for developing a watershed plan that meets their preferences. Stakeholders involved in this way in the development of a watershed model should develop a clearer understanding of nutrient flow dynamics, and will be assisted to reach a consensus watershed plan that they will promote to other watershed stakeholders.

The Community DECISIONS group decision aid and collaborative stakeholder decision process will 1) assess watershed input, output, and storage of nitrogen and phosphorus nutrients; 2) provide a database of nutrient treatments characterized by their efficiencies in affecting watershed nutrient balances and their costs of implementation; 3) elicit and quantify stakeholder preferences for watershed management objectives; and 4) generate watershed-level treatment strategies that reflect stakeholders' preferences. The project will produce a flexible, practical toolkit that can be utilized to aid watershed nutrient planning in humid areas of the U.S.

Impact Statement:

The project will produce a generalized nutrient mass balance simulation model, a generalized watershed treatment database, and a description and assessment of procedures to conduct watershed planning projects in other humid areas of the US.