LAKE OKEECHOBEE FIELD-SCALE NON-POINT SOURCE POLLUTION MODEL PROJECT

Mandate:

Lake Okeechobee Watershed Protection Program (LOWPP)

Background:

Runoff from fields in the Lake Okeechobee watershed is a major source of phosphorus entering the lake. The ability to estimate edge-of-field phosphorus loads and potential load reductions due to best management practices (BMPs) is important to programs whose goal is to limit the amount of phosphorus entering the lake. Examples of such programs are Works-of-the-District, isolated wetland restoration, and reservoir assisted stormwater treatment areas. The Field-Scale Non-Point Source Pollution Model (NPSM) estimates the impacts that land use practices and BMPs have on reducing phosphorus loads leaving a field.

Project Overview:

The NPSM has hydrology and nutrient transport components and a graphical user interface (GUI). The hydrology component computes overland and groundwater flows leaving a field. The nutrient transport component computes phosphorus concentrations in these flows, and can be expanded to include nitrogen should the need arise. The GUI facilitates model use, by automating many modeling functions, including input data preparation, model execution, and output analysis. Although all components are complete and operational, they are being upgraded to simulate groundwater exchanges between a field's hydrologic system and external surroundings. This capability does not exist in any field-scale models currently applied to the Lake Okeechobee watershed. The NSPSM also will be a component of the basin-scale, Phosphorus Transport Model (see this project's Implementation Plan for details). The project completion date is March, 2003.

Application of Results:

The following programs can use the NSPSM:

Works-of-the-District: The model can predict which BMPs best help reduce phosphorus loads leaving individual fields. Isolated wetland restoration: Model predictions of runoff and phosphorus loads can assist with wetland management. Lake Okeechobee Water Quality Model: The PTM, which uses NPSM phosphorus load predictions, can provide external phosphorus loads as input to the water quality model. Reservoir assisted stormwater treatment areas: The PTM, which uses NPSM phosphorus load predictions, can assist with the development of management strategies for treatment areas.