

Woodville Recharge Basin Aquifer Protection Study, Leon County, FL

Ecological Monitoring and modeling

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Start / End Dates: 2003 – 2006

Key Project Personnel Involved in this Project:

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Project 4

Brief Description of Work Performed:

The Woodville Recharge Basin (WRB) is located in southeastern Leon County. The Floridan Aquifer, as it passes through the Karst Topography under the WRB is unconfined. Increasing concentrations of nutrients at discharge points, like Wakulla Springs and the St. Marks Rise (both 1st order magnitude springs), are becoming problematic. There are concerns as to the potability of drinking water in the future. A goal of the study is to assess sources of nutrient loading to the aquifer. The Leon County Board of County Commissioners, through an EPA Grant, funds this study. This study is nearing completion and is currently in Phase III.

The goal of this study is to develop recommendations that can be used to guide the inevitable development of the

basin so that impacts to the aquifer will be minimized. We are working with the Leon County GIS Department (Greg Mauldin, 850-488-5813) to apply the WAMview model, a geospatial watershed model that incorporates groundwater flow (both diffuse and conduit flows) and predicts water quality (surface and groundwater). Monitoring includes: surface and groundwater; septic tanks; atmospheric deposition; and laboratory experiments. Parameters monitored include nutrients, metals, hydrocarbons and bacteria. We are developing GIS layers on the application of residuals, OSTDS, land use, agriculture, the CoT wastewater sprayfield, karst features, groundwater flow, rainfall, atmospheric deposition, diffuse groundwater flow and conduit groundwater flow.

Diffuse groundwater flow was determined using piezometric surfaces and LIDAR data (water levels in Karst windows during a dry period). The two different approaches validated each other. Conduit flow was determined using rhodamine dye and insitu Hydrolab Minisonde 5 Multiprobes equipped to measure and store insitu fluorescence measurements.

Recommendations of this study will include: restricting the use of septic tanks in aquifer-vulnerable areas; modifications to the CoT Sprayfield; proposing sewer systems; regulating stormwater runoff; stormwater retrofit projects; restricting certain land uses; purchasing vulnerable lands; offering tax incentives for placing conservation easements on aquifer-vulnerable areas; etc.

