

## **Groundwater Flow Models**

Minimum flows are set based on quantifiable relationships between water resource values and spring flows. There are ten water resource values including Fish and Wildlife Habitat and Recreation. Relationships are being quantified for the Wakulla Spring and river system using surface water and hydrodynamic models, as these types of models are capable of simulating complex hydraulic and environmental processes within the Wakulla River. Groundwater models are not used for this purpose.

A work plan was prepared in 2014 and there have been subsequent refinements to the project tasks and schedule. After completing the work plan, the District expanded its monitoring network by adding approximately 70 sites to support MFL development for Wakulla Spring. Although the work plan mentions using an “integrated surface and groundwater flow model” to provide “boundary conditions” (flows in the Wakulla River), the District chose to collect measured spring flows and water levels rather than use simulated values from a model.

Once the minimum flows are determined, groundwater flow models may be used to determine if a prevention strategy is needed. Groundwater flow models are also used to quantify benefits to spring flows that result from activities, projects, or regulatory measures that are part of a prevention or recovery strategy. Once a minimum flow is established, groundwater flow models can be used to evaluate impacts associated with Water Use Permits. An additional use of groundwater flow models by the District is for the Water Supply Assessment, which must be performed every five years to assess whether regional water resources are sufficient to meet the needs for a 20-year planning horizon.

The eastern District groundwater flow model includes the groundwater contribution area for Wakulla and Sally Ward springs. The model is being calibrated using measured aquifer levels, spring flows, and pumpage data. The model can be used to assess the effects of future pumpage on spring flows to determine if a prevention strategy is needed. A prevention strategy would be needed if projected withdrawals are anticipated to cause spring flows to fall below proposed minimum flows within a 20-year planning period. A recovery strategy would be needed if the proposed minimum flows are not currently being met based on measured spring flows. When needed, prevention or recovery strategies for Outstanding Florida Springs must be developed simultaneously with proposed minimum flows.