USGS WATERSMART – PROVIDING INFORMATION AND TOOLS FOR MANAGING WATER IN THE APALACHICOLA-CHATTAHOOCHEE-FLINT RIVER BASIN, ALABAMA, FLORIDA, AND GEORGIA

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Abstract. Over the last 50 years, the Apalachicola-Chattahoochee-Flint (ACF) Basin in Alabama, Florida, and Georgia has undergone extensive development of water resources for municipal and industrial supplies, power generation, and agriculture. Concurrent with this development, there has been increasing conflict over the use of water in the ACF system, resulting in legal battles over the rights to this valuable resource. The U.S. Geological Survey (USGS) is launching a study in the ACF basin as part of the Department of Interior's initiative titled "Water: Sustain and Manage America's Resources for Tomorrow" (WaterSMART) that will provide improved water-availability information and develop new tools to support water management decisions. This federally-funded, three-year study has three major components that build on USGS data collection and modeling capabilities: estimating water use, modeling surface and groundwater flow, and modeling ecological flow relations. The water use component will develop a site-specific database of water use for the ACF Basin, develop new methods for estimating agricultural withdrawals, and compile available water-use projections. Calculations of net water use will be improved by obtaining information on interbasin transfers, determining septic-tank return flows, and estimating consumptive use by thermoelectric plants. The hydrologic modeling component will consist of a surface-water model for the entire ACF Basin using the USGS Precipitation-Runoff Modeling System (PRMS) and a MODFLOW groundwater model for the lower Chattahoochee and Flint River Basins. These models will be linked to provide improved simulation of groundwater/surface-water interactions in the lower part of the Basin. The ecological flows component will use multi-state, multi-season ecological models to predict changes in fish and mussel species occupancy based on variations in flow conditions associated with climate change, land-use change, and changes in water withdrawals or discharges.