

CLAIBORNE AQUIFER HYDRAULIC PROPERTIES, BASED ON TWO AQUIFER TESTS, SOUTHWESTERN GEORGIA, 2015–2016

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Two 72-hour constant-discharge aquifer tests were performed in southwestern Georgia as part of a study in cooperation with the Georgia Environmental Protection Division to determine the hydraulic properties of the Claiborne aquifer and the degree of its connection with the overlying Upper Floridan aquifer. At each site, one Claiborne aquifer well was pumped while water-levels were monitored in the Claiborne and Upper Floridan aquifers. The two sites are 23 miles apart. Both showed no indication of leakage between the Upper Floridan and Claiborne aquifers. The aquifer-tests indicated quite different groundwater and geohydrologic conditions within the Claiborne aquifer at each site, however.

One aquifer test was performed at the University of Georgia, Stripling Irrigation Research Park, located in Mitchell County, Georgia, during December 15–18, 2015. Here the Claiborne aquifer is 260-feet (ft) thick, and the well was pumped at 579 gallons per minute (gal/min). Water-level decline in the Claiborne aquifer monitor well (drawdown) indicated wellbore-storage effects and leakage into the Claiborne aquifer, likely from the underlying Clayton aquifer, based on model calibration. A two-dimensional, axisymmetric, transient groundwater-flow model (MODFLOW-2005) simulated this drawdown and estimated aquifer transmissivity and storage coefficient at 1,500 feet squared per day (ft²/d) and 0.0006, respectively.

Another aquifer test was performed at the Newberry site, located in northeastern Early County, Georgia, during March 14–17, 2016, where the Claiborne aquifer is 55-ft thick and was pumped at 291 gal/min. Drawdown indicated the presence of a restricted- or no-flow boundary and recorded water-levels indicated very slow recovery from previous pumping events. Transmissivity and storage coefficient of the Claiborne aquifer were estimated at 700 ft²/d and 0.0004, respectively, using Theis concepts and temporal superposition.

Program reference: 3.3.2