Ground-Water Information and Project Support

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Cooperator Georgia Department of Natural Resources Environmental Protection Division

Albany Water, Gas, and Light Commission

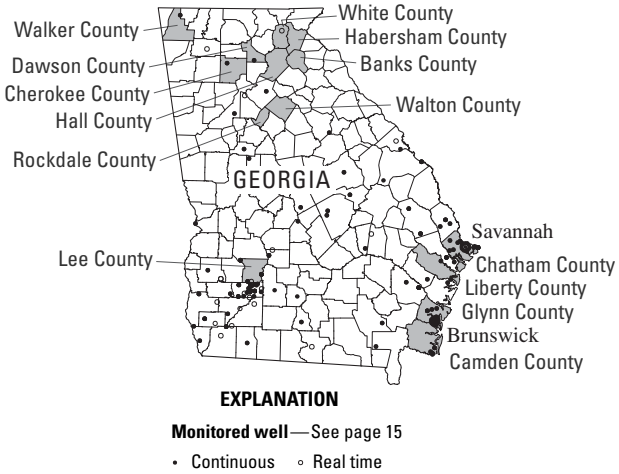
City of Brunswick

Glynn County

Jekyll Island Authority

St. Johns River Water Management District, Florida

Year Started 1938



Problem

Ground water accounts for about 22 percent of freshwater withdrawals in Georgia—more than 2.7 billion gallons per day. More than 1.8 million people are served by ground-water supplies, and 734 million gallons per day are withdrawn for irrigation (Julia L. Fanning, U.S. Geological Survey, oral commun., 2004). The distribution and quality of ground water are highly variable and directly related to geology and natural and human stresses. Monitoring ground-water levels and ground-water quality is essential for the management and development of this resource.

Objectives

- Collect ground-water-level and ground-water-quality data to assess the quantity, quality, and distribution of ground water.
- Provide data to address water-management needs and evaluate the effects of national and local management and conservation programs.
- Advance the knowledge of the regional hydrologic system.
- Advance field or analytical methodology.
- Advance the understanding of hydrologic processes.
- Provide data or results useful to multiple parties in potentially contentious interjurisdictional conflicts about water resources.
- Provide data required for interstate and international compacts, Federal law, court decrees, and congressionally mandated studies.
- Provide water-resource information that can be used by multiple parties for planning and operational purposes.
- Contribute data to national databases that will be used to advance the understanding of regional and temporal variations in hydrologic conditions.

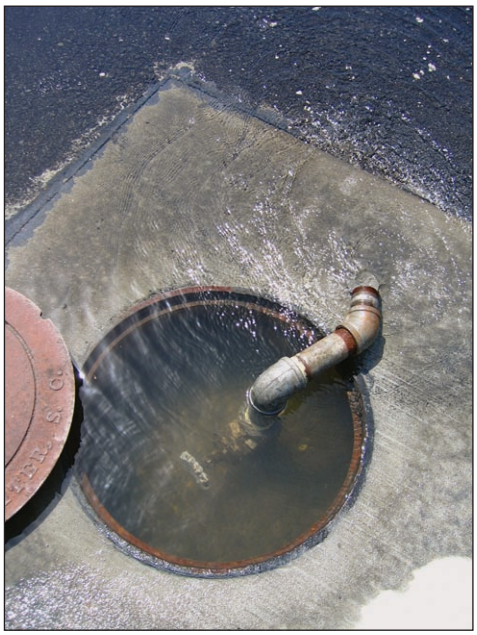
Progress and Significant Results, 2004–2005

- Continuous water-level recorders were operated in 184 wells during 2004 and 189 wells during 2005. One well in Walker County was instrumented with real-time transmission (satellite relay) of continuous water-level records to aid in drought planning. Currently, 19 wells are equipped for real-time transmission of continuous water-level data. The National Water Information System (NWIS) database may be accessed on the Web at *http://waterdata.usgs.gov/ga/nwis/current/?type=gw/*.
- Periodic water-level measurements were made in more than 3,542 wells throughout the State during 2004–2005 to define potentiometric surfaces and to assess long-term trends.
- Water samples for chloride analysis were collected from 66 wells during 2004 and 70 wells during 2005 in the Brunswick area, and 4 wells in the Savannah area and 8 wells in Camden County during 2004 and 2005.
- Borehole geophysical logs were collected in 26 wells in northern Georgia and 7 wells in coastal Georgia. The types of logs collected include caliper, natural gamma, electric (lateral, long and short-normal resistivity) fluid-temperature, fluid-resistivity, electromagnetic induction, full-waveform sonic, acoustic televiewer, optical televiewer, spinner-flowmeter, and borehole video camera.
- Well-inventory, water-level, and geologic data were verified for entry into the NWIS database. Field inventories of well sites were conducted to assist projects and 4,135 sites (mainly sites from the State of Georgia Drinking Water Program) were added to the NWIS Ground-Water Site Inventory database.

A typical real-time continuous recorder well in Walker County, which is part of the ground-water-level monitoring network. The equipment consists of a data logger, 30-pounds-per-square-inch transducer, a radio and antenna for transmitting data (A)*, and a solar panel and battery* (B)*. Real-time data typically are recorded at 60-minute intervals, stored on site, and then transmitted to U.S. Geological Survey (USGS) offices from every 1 to 4 hours via satellite, telephone, or radio relay. The NWIS database may be accessed on the Web at* http://waterdata.usgs.gov/ga/nwis/current/?type=gw/. *Photo by Alan M. Cressler, USGS.*

A typical set up for a continuous recorder well that is part of the ground-water-level monitoring network. The equipment consists of (A) *an electronic data logger,* (B) *batteries, and* (C) *a dry-air cannister for a 30-pounds-per-square-inch pressure transducer (not shown). The recorder is set to collect data on an hourly basis, which is processed and stored in the NWIS and may be accessed at* http://nwis.waterdata.usgs.gov/ga/nwis/. *Photo by Alan M. Cressler, USGS.*

A USGS hydrologist samples an Upper Floridan aquifer well in Miller County for pesticides, metals, nutrients, and major ions. Samples are collected in support of the National Water-Quality Assessment agricultural land-use study. Photo by Alan M. Cressler, USGS.



A USGS test well in Glynn County is shown flowing prior to sampling for chloride concentration. Samples are collected annually in support of the Brunswick and Glynn County Cooperative Water Program. Photo by Alan M. Cressler, USGS.