ARIZ OF SELECTED U.S. GEOLOGICAL SURVEY
WATER-RESOURCES ACTIVITIES IN GEORGIA

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Abstract. The U.S. Geological Survey (USGS) is the Nation's largest natural sciences and civilian mapping agency and provides reliable and impartial scientific information to natural-resource managers, planners, the public, and other customers and stakeholders throughout the Nation. This information contributes to sound conservation and management of natural resources; enhances the quality of life by monitoring water, biological, energy, and mineral resources; and minimizes losses from numerous natural hazards. The USGS disseminates results of data-collection programs and technical investigations in a wide variety of formats—including numerous scientific reports, maps, various databases, CD-ROMs, World Wide Web sites, and other products.

USGS water-resources activities in Georgia are conducted in cooperation with numerous local, State, and Federal agencies. Cooperating agencies include, but are not limited to, the City of Brunswick and Glynn County; Albany Water, Gas, and Light Commission; City of Lawrenceville; Georgia Department of Natural Resources; Georgia Department of Agriculture; University System of Georgia; U.S. Army Corps of Engineers; U.S. Department of Defense; U.S. Environmental Protection Agency; U.S. Fish and Wildlife Service; and National Park Service. In addition, some projects are funded through direct Congressional appropriation of Federal funds.

USGS WATER-RESOURCES INVESTIGATIONS
IN GEORGIA

The USGS has collected water-resources data and conducted technical investigations in Georgia since the 1890's. Currently (2001) surface-water data are collected at about 135 continuous-record and 75 partial-record streamflow-gaging stations, 18 reservoir stage-and-contents gaging stations, 20 continuous-record water-quality stations, and 135 water-quality stations that are sampled monthly. Many of the continuous-record stations are being upgraded to include rain gages, meteorologic instrumentation, and satellite telemetry that relay hydrologic data to the USGS office in Atlanta. Ground-water-level data are collected at about 175 continuous-record monitoring wells—during a typical year, ground-water levels are measured periodically in about 150 wells; however, this number varies depending on requirements of ongoing hydrologic investigations. USGS data are used in various interpretive hydrologic studies; by water-resources managers to make decisions concerning water supplies, flood control, drought effects, irrigation, bridge design and scour, and pollution abatement; and by recreational users (see USGS papers and abstracts by S.J. Alhadeff and others; T.R. Dyar and others; A.J. Gotvald and M.N. Landers; Landers and others; B.E. McCallum and J.K. Joiner; B.E. McCallum and A.J. Horowitz, K.B. McSwain and N.L. Barber; and T.C. Stamey and others, this volume).

Numerous water-resources investigations are being conducted by the USGS in Georgia. The objectives of these studies vary widely; summaries of selected investigations follow:

- Coastal Ground-Water Investigations—Cooperative projects to evaluate effects of ground-water pumpage on water quality (saltwater intrusion) in the Upper Floridan aquifer; determine mechanisms of ground-water flow and saltwater movement; delineate areas where saltwater is entering the aquifer in the Savannah, Ga.—Hilton Head Island, S.C., and Brunswick, Ga., areas; evaluate water-management alternatives through digital simulation; assess alternative water supplies from seepage ponds and supplemental aquifers; and monitor long-term ground-water levels and quality (see USGS papers by J.S. Clarke and R.E. Krause; W.F. Falls and others; L.E. Jones; R.E. Krause and J.S. Clarke; M.T. Laitta; D.F. Payne and others; Malek Abu-Ruman and J.S. Clarke; M.F. Peck and others; and M.D. Petkewich and others, this volume). Cooperators: Georgia Department of Natural Resources, City of Brunswick, Glynn County, St Johns River Water Management District.
• **Ground-Water Resources of the Piedmont in the vicinity of Lawrenceville**—Cooperative project to delineate the hydrogeologic characteristics of fractured crystalline-rock aquifers, and evaluate effects of ground-water withdrawal in a rapidly developing urban area (see USGS abstract by L.J. Williams and Marcel Belaval, *this volume*). *Cooperator:* City of Lawrenceville.

• **Hydrogeologic Monitoring and Evaluation in the Albany area**—Cooperative program to define ground-water resources, monitor ground-water levels and quality, establish and maintain a hydrogeologic database, and assess water chemistry and recharge mechanisms. *Cooperator:* Albany Water, Gas, and Light Commission.

• **Water Use in Georgia**—Cooperative program to collect and compile water-use data, and conduct assessments to improve the methodology for estimating irrigation water use (see USGS abstract by J.L. Fanning, *this volume*). *Cooperator:* Georgia Department of Natural Resources.

• **National Water-Quality Assessment (NAWQA) Program**—Federally funded program to provide consistent description of current water-quality conditions for surface- and ground-water resources; define long-term trends (or lack of trends) in water quality; and identify, describe, and explain the major factors that affect water-quality conditions and trends. Three NAWQA studies are being conducted in Georgia: (1) **Apalachicola-Chattahoochee-Flint River basin and related investigations**—study began in 1991 and is based in Atlanta, Ga. (see papers by M.B. Gregory and E.A. Frick; N.E. Peters and Seth Rose, *this volume*); (2) **Georgia-Florida Coastal Plain**—study began in 1991 and is based in Tallahassee, Fla.; and (3) **Mobile River basin**—study began in 1997 and is based in Montgomery, Ala.

• **Surface-Water Quality of Gwinnett County**—Cooperative study to describe water-quality status and trends for twelve streams, evaluate relations between water quality and watershed characteristics, and assess potential use of these relations to develop techniques to predict water quality from watershed characteristics (see USGS paper by P.D. Ankorth and others, *this volume*). *Cooperator:* Gwinnett County.

• **Chattahoochee Riverway Bacteria ALERT**—Cooperative program to monitor coliform bacteria levels at two sites on the Chattahoochee River. Water samples are collected Monday through Thursday, analyzed for total coliform bacteria and E. coli, and the results posted to the USGS Georgia Home page ([http://ga.water.usgs.gov/bacteria](http://ga.water.usgs.gov/bacteria)) within 24 hours of sample collection. *Cooperators:* U.S. National Park Service, Georgia Department of Natural Resources, The Georgia Conservancy, Upper Chattahoochee River Keeper.

• **Department of Defense (DOD) Environmental Contamination Program**—Program to provide sound technical assistance to DOD facilities in Georgia, so that DOD can make appropriate science-based decisions to remediate current contamination and prevent future contamination. Sites currently being evaluated include the Naval Submarine Base Kings Bay; Marine Corps Logistics Base near Albany; U.S. Army Signal Center at Fort Gordon near Augusta; and U.S. Air Force Plant 6, Marietta (see USGS paper by G.J. Gonthier and J.P. Waddell, *this volume*).

• **Effect of Impoundment of Lake Seminole on Water Resources of Lower Apalachicola-Chattahoochee-Flint-River Basin**—Cooperative project to develop a water budget for the Lake; compare current and pre-impoundment ground- and surface-water flow conditions; evaluate the possibility of a substantial amount of lake water entering the ground-water system, flowing beneath Jim Woodruff Lock and Dam, and entering Florida downstream; and assess the likelihood of a sinkhole collapse in the lake bottom, resulting in partial or complete lake drainage (see USGS abstracts by P.N. Albertson; and USGS papers by M.S. Mosner; and L.J. Torak, *this volume*). *Cooperator:* Georgia Department of Natural Resources.

• **Pesticide Monitoring in Ground Water, Southwest Georgia**—Cooperative project to monitor ground-water quality by collecting and analyzing annual samples from 40 shallow wells in southwest Georgia. These samples are analyzed for the following classes of
pesticides—organochlorine pesticides, chlorophenoxyacid herbicides, carbamate insecticides, organophosphorus pesticides, and triazine herbicides. **Cooperator:** Georgia Department of Agriculture.

- *Water, Energy, and Biogeochemical Budgets at Panola Mountain State Park*—Federally funded research study to investigate processes controlling movement and solute composition of water in a forested watershed; determine relative contributions of various sources including primary mineral weathering, ion exchange, and atmospheric deposition to solutes in streamwater; and investigate biogeochemical processes controlling the regulation of soil chemistry (see USGS paper by N.E. Peters and others, *this volume*).

- **Geographic Information Systems**—Cooperative program to develop environmental and ancillary spatially referenced databases for use in hydrologic investigations (see USGS abstracts by S.J. Alhadeff and others, *this volume*). **Cooperator:** Georgia Department of Natural Resources.

**DISSEMINATION OF USGS INFORMATION AND PRODUCTS**

The results of USGS data-collection programs and technical investigations are disseminated in a wide variety of formats, including numerous scientific reports, maps, CD-ROMs, Web sites, and other products. For further information about USGS water-resources activities in Georgia, visit the USGS Georgia Home Page at [http://ga.water.usgs.gov](http://ga.water.usgs.gov); for further information about the USGS, visit the USGS Home Page at [http://www.usgs.gov](http://www.usgs.gov).

**Selected Recently Published Reports for Georgia**


