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Hydrologic and Water-Quality Conditions in the Lower Apalachicola–Chattahoochee–Flint and Parts of the Aucilla–Suwannee–Ochlockonee River Basins in Georgia and Adjacent Parts of Florida and Alabama During Drought Conditions, July 2011



Scientific Investigations Report 2012–5179

U.S. Department of the Interior
U.S. Geological Survey

Cover. Background: field of sunflowers, Cordele, Georgia. Insets: left, *gossypium* (cotton) flowers, Dougherty County, Georgia; middle, USGS hydrologic technician taking water-level measurement from a well in Dougherty County, Georgia; right, exposed Ocala Limestone at a spring southwest of Albany, Georgia.

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KEN SALAZAR, Secretary

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Conversion Factors and Datums

Inch/Pound to SI

Multiply	By	To obtain
	Length	
inch	2.54	centimeter (cm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
yard (yd)	0.9144	meter (m)
	Volume per unit time (includes flow)	
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

$$°F = (1.8 \times °C) + 32$$

Temperature in degrees Fahrenheit (°F) may be converted to degrees Celsius (°C) as follows:

$$°C = (°F - 32) / 1.8$$

Vertical coordinate information is referenced to the National Geodetic Vertical Datum of 1988 (NGVD 88).

Horizontal coordinate information is referenced to North American Datum of 1983 (NAD 83).

Altitude, as used in this report, refers to distance above the vertical datum.

Specific conductance is given in microsiemens per centimeter at 25 degrees Celsius (µS/cm at 25 °C).

Abbreviations

ACF	Apalachicola–Chattahoochee–Flint
ASO	Aucilla–Suwannee–Ochlockonee
HUC	hydrologic unit code
mg/L	milligram per liter
NOAA	National Oceanic and Atmospheric Administration
DOI	U.S. Department of the Interior
USGS	U.S. Geological Survey
WaterSMART	Sustain and Manage America's Resources for Tomorrow

Hydrologic and Water-Quality Conditions in the Lower Apalachicola–Chattahoochee–Flint and Parts of the Aucilla–Suwannee–Ochlockonee River Basins in Georgia and Adjacent Parts of Florida and Alabama During Drought Conditions, July 2011

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Abstract

As part of the U.S. Department of the Interior sustainable water strategy, WaterSMART, the U.S. Geological Survey documented hydrologic and water-quality conditions in the lower Apalachicola–Chattahoochee–Flint and western and central Aucilla–Suwanee–Ochlockonee River basins in Alabama, Florida, and Georgia during low-flow conditions in July 2011. Moderate-drought conditions prevailed in this area during early 2011 and worsened to exceptional by June, with cumulative rainfall departures from the 1981–2010 climate normals registering deficits ranging from 17 to 27 inches. As a result, groundwater levels and stream discharges measured below median daily levels throughout most of 2011. Water-quality field properties including temperature, dissolved oxygen, specific conductance, and pH were measured at selected surface-water sites.

Record-low groundwater levels measured in 12 of 43 surficial aquifer wells and 128 of 312 Upper Floridan aquifer wells during July 2011 underscored the severity of drought conditions in the study area. Most wells recorded groundwater levels below the median daily statistic, and 7 surficial aquifer wells were dry.

Groundwater-level measurements taken in July 2011 were used to determine the potentiometric surface of the Upper Floridan aquifer. Groundwater generally flows to the south and toward streams except in reaches where streams discharge to the aquifer. The degree of connection between the Upper Floridan aquifer and streams decreases east of the Flint River where thick overburden hydraulically separates the aquifer from stream interaction. Hydraulic separation of the Upper Floridan aquifer from streams located east of the Flint River is shown by stream-stage altitudes that differ from groundwater levels measured in close proximity to streams.

Most streams located in the study area during 2011 exhibited below normal flows (streamflows less than the 25th percentile), substantiating the severity of drought conditions that year. Streamflow and springflow measured at 202 sites along 2,122 stream miles during July 20–24, 2011, identified about 286 miles of losing streams, about 1,230 miles of gaining streams, and about 606 miles of streams with no flow.

Water-quality field properties measured at 123 stream and 5 spring sites during July 2011 yielded water temperatures ranging from 20.6 to 31.6 degrees Celsius, dissolved oxygen ranging from 0.47 to 9.98 milligrams per liter, specific conductance ranging from 13 to 834 microsiemens per centimeter at 25 degrees Celsius, and pH ranging from 3.6 to 8.03.

Introduction

In 2010, the U.S. Department of the Interior (DOI) launched a sustainable water strategy known as WaterSMART to address a simple reality: "America's demands for water are quickly outgrowing our supplies of water" (*http://www.doi.gov/news/video/Interior-Launches-WaterSMART-Initiative.cfm/index.cfm*). WaterSMART stands for "Sustain and Manage America's Resources for Tomorrow" (WaterSMART—Apalachicola–Chattahoochee–Flint basin Focus Area Web site, accessed October 28, 2011, at *http://www.usgs.gov/conferences/watersmart-acf/about.html*). As part of WaterSMART, the U.S. Geological Survey (USGS) is studying availability and use of water in various areas across the country including the Apalachicola–Chattahoochee–Flint (ACF) River basin in Alabama, Florida, and Georgia. WaterSMART focuses on improving water conservation, helping water-resource managers make sound decisions about water use, and identifying adaptive measures to address climate change and its effect on future water demands (U.S. Department of the Interior WaterSMART Clearinghouse Web site, accessed January 4, 2012, at *http://www.doi.gov/watersmart/html/about.html*).

Severe drought during 2011 in the Southeastern United States resulted in record-low groundwater levels and streamflow in the lower ACF and western and central Aucilla–Suwannee–Ochlockonee (ASO) River basins. Documentation of these historic hydrologic conditions through measurement of groundwater levels, streamflow, springflow, and water quality of streams and springs provides essential data to help evaluate the effects of climatic extremes on the water resources of these basins and to further understand the exchange of water between the karstic Upper Floridan aquifer and overlying streams. These data will provide a basis for detailed calibration of groundwater-flow models used to simulate water-management scenarios for the region while also directly supporting WaterSMART.

Groundwater levels, streamflow, springflow, and water quality of streams and springs were measured simultaneously during low-flow conditions during July 18–24, 2011. Groundwater levels were measured in wells completed in the Upper Floridan and surficial aquifers. Streamflow measurements were coordinated with appropriate dam regulators to minimize streamflow variation caused by power generation and other releases. Temperature, pH, dissolved oxygen, and specific conductance were measured at many surface-water sites to help assess ecological habitat and provide an indication of areas where groundwater may be discharging into the stream.

Purpose and Scope

This report documents hydrologic and water-quality conditions in the lower ACF and western and central ASO River basins in southeastern Alabama, north-central Florida, and southwestern Georgia during low-flow conditions in July 2011. Data are presented on groundwater levels, streamflow, springflow, and water-quality of streams and springs collected by the USGS in a multi-State, field-data collection effort during July 18–24, 2011. Streamflow and springflow were measured at 202 stream or spring sites, and groundwater levels were measured in 312 Upper Floridan aquifer wells and 43 surficial aquifer wells (see appendix for locations of all measurement sites).

Data and analyses for July 2011 presented in the report include maps showing the potentiometric surface of the Upper Floridan aquifer and the distribution of surficial aquifer water levels based on groundwater-level measurements; areas of gaining, losing, and dry stream reaches based on streamflow measurements; and the distribution of selected field water-quality properties in stream and spring water that were measured at the same time as streamflow. Groundwater-level and streamflow data collected during July 2011 were compared with similar data collected during November 2008 (Warner and Peck, 2010) to assess the effect of drought conditions during 2011 on groundwater levels and streamflow.

Description of the Study Area

The study area is located in the Coastal Plain Physiographic Province in southwestern Georgia, southeastern Alabama (Houston County), and north-central Florida (fig. 1). The study area includes the lower ACF River basin, and the western and central parts of the ASO River basin. The study area contains all or parts of 10 hydrologic unit code (HUC) subbasins in the lower ACF River basin (HUCs beginning with 0313) (Seaber and others, 1987; Jones and Torak, 2006) and all or parts of five HUC subbasins in the western and central ASO River basin (HUCs beginning with 0311 and 0312). The study area extends through the Gulf Trough–Apalachicola Embayment, a northeast-southwest trending geologic feature composed of fine-grained, dense, low-permeability limestone overlain by a thick sequence of Oligocene to Miocene sediments (Zimmerman, 1977). The juxtaposition of low-permeability sediments of the Gulf Trough–Apalachicola Embayment and the high-permeability limestone forms a barrier to groundwater flow southeastward in the Upper Floridan aquifer (Torak, and others, 2010. The physiography, hydrogeology, and climate of the area are described in detail in Torak and others (1996, 2010), and Torak and Painter (2006). A brief description of each is summarized in the following sections.

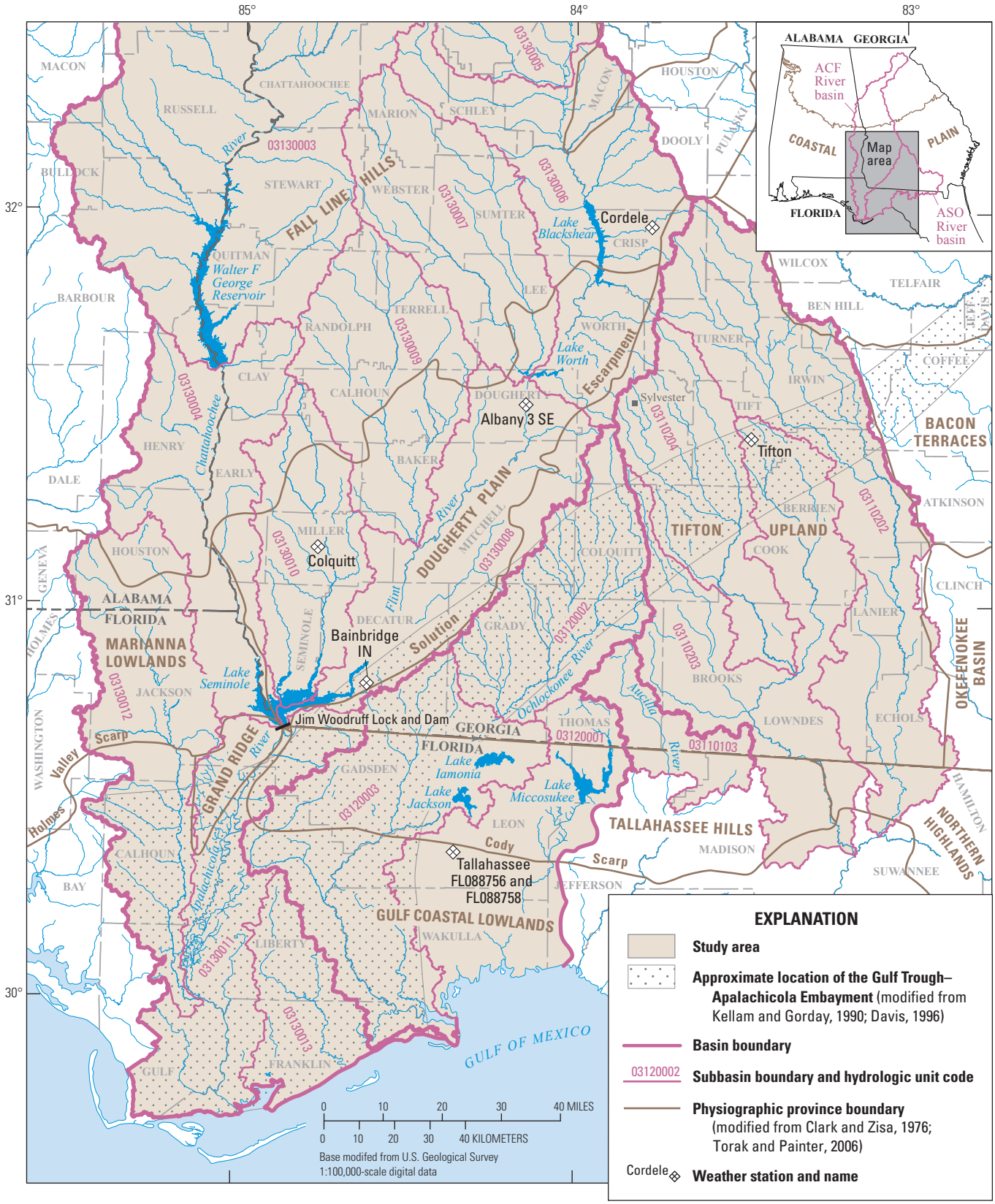

Figure 1. Location of the study area, physiographic provinces, basin boundaries, and weather stations in the lower Apalachicola–Chattahoochee–Flint (ACF) River basin and in western and central parts of the Aucilla–Suwannee–Ochlockonee (ASO) River basin, Georgia and Florida.

Physiography

The Coastal Plain Physiographic Province in the study area is made up of a dissected region of ridges and valleys, a low-lying karstic region, a region of dissected remnant hills and sand-hill ridges, and a low-lying region made up of coastal sediments (Torak and others, 1996; Torak and Painter, 2006). The Fall Line Hills make up the northern part of the study area in Georgia and Alabama and includes the updip limit of the Upper Floridan aquifer. The karstic region includes the Dougherty Plain and Tifton Upland physiographic districts in Georgia, the Marianna Lowlands in Alabama and Florida, and parts of the Grand Ridge and Tallahassee Hills physiographic districts in Florida. The Solution Escarpment separates the Dougherty Plain and the Tifton Upland, and the Holmes Valley Scarp separates the Marianna Lowlands from the Grand Ridge. The Gulf Coastal Lowlands is made up of flat, low-lying coastal sediments (fig. 1; Clark and Zisa, 1976; Torak and others, 1996; Torak and Painter, 2006). The Dougherty Plain and Marianna Lowlands are flat to gently rolling and characterized by karstic topography, including internal drainage and limestone dissolution features. Numerous sinkholes commonly form in the area and collect runoff, many providing direct recharge to the Upper Floridan aquifer (Torak and Painter, 2006). The Solution Escarpment and Holmes Valley Scarp provide as much as 125 feet (ft) of relief, forming a topographic and surface-water divide between the Flint and Ochlockonee River basins (Torak and others 2010). The Tifton Upland and Tallahassee Hills are characterized by rolling hills and dendritic drainage, resulting in relief up to 200 ft (Torak and others, 1996; Torak and Painter, 2006).

Hydrogeologic Setting

The flow system and stream-aquifer connection in the study area are controlled by geology, hydraulic properties of the Upper Floridan aquifer and its confining units, precipitation, and groundwater withdrawals. Geologic units that share similar hydraulic properties are grouped into hydrogeologic units in the ACF River basin in Alabama, Florida, and Georgia, and in the ASO River basin in Georgia and Florida (fig. 2).

Geologic units consist of Coastal Plain sediments of Eocene to Holocene age, including cross-bedded clayey sand, sand, gravel, clay, limestone, dolomite, and limestone residuum. Geologic units in the lower ACF River basin in Alabama, Florida, and Georgia—in ascending order—are the Lisbon Formation, Clinchfield Sand, Ocala and Suwannee Limestones, undifferentiated overburden (residuum), and terrace and undifferentiated (surficial) deposits (Torak and Painter, 2006; fig. 2). Geologic units in the ASO River basin, in Georgia—in ascending order—are the Tallahatta Formation, Lisbon Formation, Ocala and Marianna Limestones, Byram Formation, Suwannee Limestone, the Hawthorn Group, and terrace and undifferentiated (surficial) deposits. Geologic units in the western and central ASO River basin in Florida—in ascending order—are the Tallahatta Formation, Lisbon Formation, Ocala and Marianna Limestones, Byram Formation, Suwannee Limestone, the Chattahoochee Formation, the Hawthorn Group-Torreya Formation, the Citronelle Formation, and terrace and undifferentiated (surficial) deposits (Torak and others, 2010).

Hydrologic units in both river basins—in descending order—are the surficial aquifer system, the upper semiconfining unit where present, the Upper Floridan aquifer, and the lower confining unit (Torak and Painter, 2006; Torak and others, 2010; fig. 2). Weathering and dissolution of limestone in the Upper Floridan aquifer have created secondary permeability and interconnections with surface water. Direct recharge to or discharge from the aquifer occurs through karst or other erosional features. Many major streams in the area have eroded through the overburden and are directly in contact with the aquifer. Indirect recharge occurs by vertical leakage through the upper semiconfining unit or the surficial aquifer system. Groundwater discharges from the Upper Floridan aquifer to streams where overlying residuum is thin or absent and where the groundwater level (hydraulic head) is higher than the stream or lake. Conversely, streams or lakes discharge into the aquifer where the stream or lake level is higher than the groundwater level.

The hydrologic connection between the streams, the overburden sediments of the upper semiconfining unit and the Upper Floridan aquifer in the ACF and ASO River basins are quite different. During the wet season when winter and spring rains recharge the aquifer and irrigation pumping is inactive, the water table is close to land surface in the overburden and water flows from the Upper Floridan aquifer into the Flint River and other streams in the basin. Some of the water also discharges from the overburden sediments into the streams in the ASO River basin (fig. 3*A*). During the dry, summer growing season when rainfall is sporadic and irrigation pumping is fully active, the water level of the Flint River drops and the water table drops in the overburden causing many of the streams to go dry, especially in the ASO River basin. As a result, some of the water that was originally discharged into the Flint River and other streams in the basins is pumped out of the aquifer to irrigate crops during the summer growing season (fig. 3*B*).

Stream and Lake Characteristics

Streams in the Coastal Plain tend to be incised into the underlying aquifers and may receive substantial amounts of groundwater from these aquifers. In addition, the Flint River acts as a major regional drain for the Upper Floridan aquifer (Frick and others, 1996). Several reservoirs have altered the natural streamflow and ecosystem in the study area. Large reservoirs in the study area include Walter F. George Reservoir on the Chattahoochee River, Lake Blackshear and Lake Worth on the Flint River, and Lake Seminole at the headwaters of the Apalachicola River. The reservoirs affect downstream flows during extreme low and high flows (Frick and others, 1996).

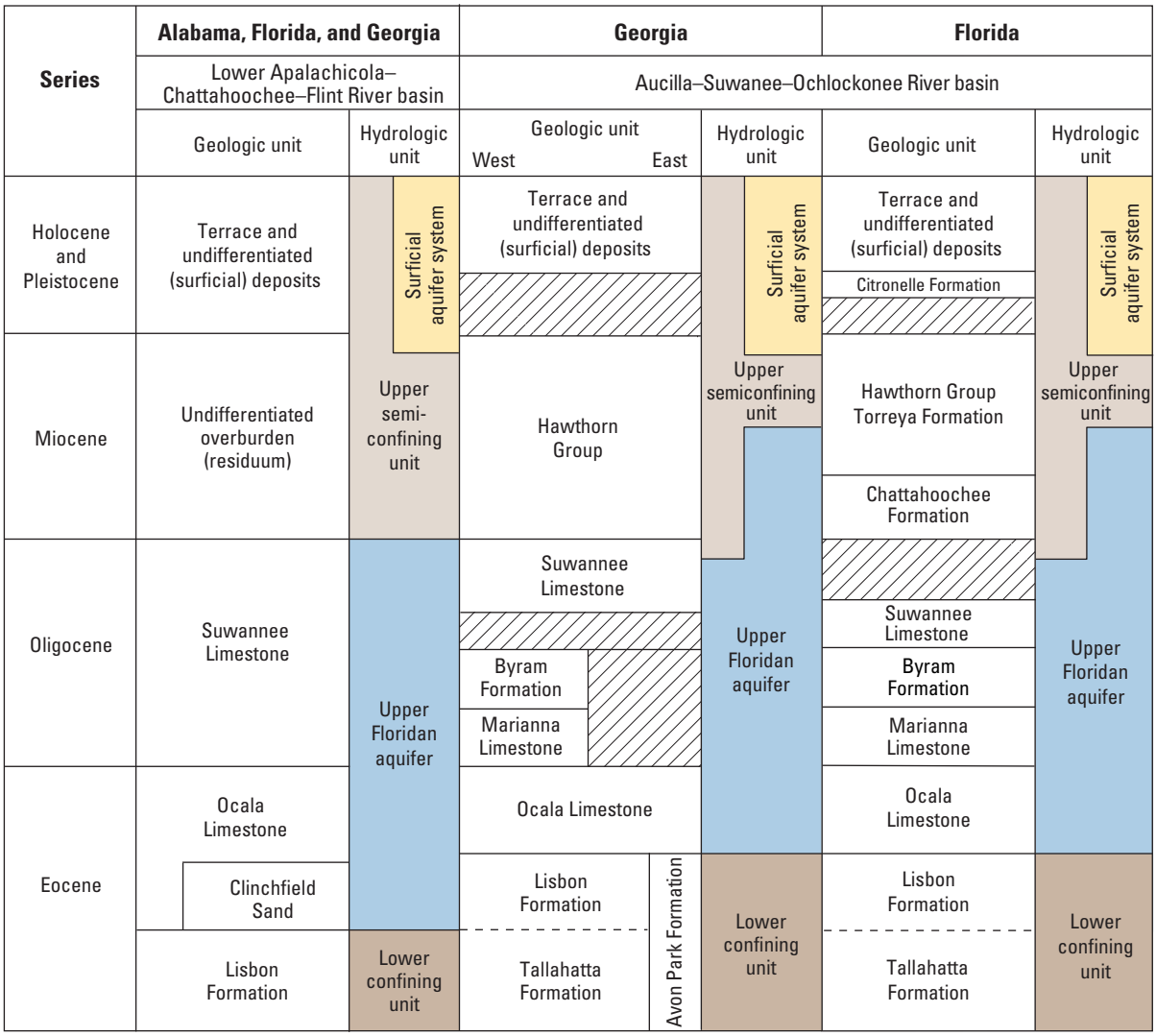

Figure 2. Generalized geologic and hydrologic units of the Upper Floridan aquifer and hydraulically connected sediments in the lower Apalachicola–Chattahoochee–Flint River basin and the Aucilla–Suwanee–Ochlockonee River basin, eastern Alabama, northwestern Florida and southwestern Georgia (modified from Miller, 1986; Rupert, 1990; Torak and Painter, 2006; Torak and others, 2010).

Many of the lakes in the karst areas of the Coastal Plain are well connected to the underlying aquifers. For example, Lakes Iamonia, Jackson, and Miccosukee in the Ochlockonee River basin in Florida were formed through karst dissolution along tributaries of the Ochlockonee River (fig. 1). The tributaries no longer flow to the river but have formed lakes that are directly connected to the Upper Floridan aquifer. Spring storms and tropical systems fill the lakes. Low-flow conditions, especially during the growing season, result in these lakes drying up (McGlynn, 2006).

Climate

The study area is characterized by a humid subtropical climate, with temperatures and precipitation that vary seasonally and areally. Records at five National Oceanic and Atmospheric Administration (NOAA) weather stations in Georgia and Florida (see locations, fig. 1) document that mean monthly temperatures for all sites during 1981–2010 were lowest during January, ranging from 45.9 to 50.9 degrees Fahrenheit (°F) and highest in July, ranging from 80.8 to 82.4 °F (table 1 [all tables are at back of report]; Golden Gate Weather Services, *http://ggweather.com/normals/monthly.htm*, accessed December 28, 2011, and *http://ggweather.com/normals/GA.html*, accessed December 21, 2011). Total monthly precipitation during the same period was lowest during October, ranging from 2.14 to 3.05 inches and highest during August, ranging from 3.9 to 8.34 inches. Average annual precipitation ranged from 45.9 inches at Cordele, Georgia (Ga.; USC00092266) to 58.1 inches at Tallahassee, Florida (Fla.; USC00088756). During 2011 the annual precipitation ranged from 25.3 inches at Colquitt, Ga. (USC00092153) to 38 inches at Tifton, Ga. (USC00098703).

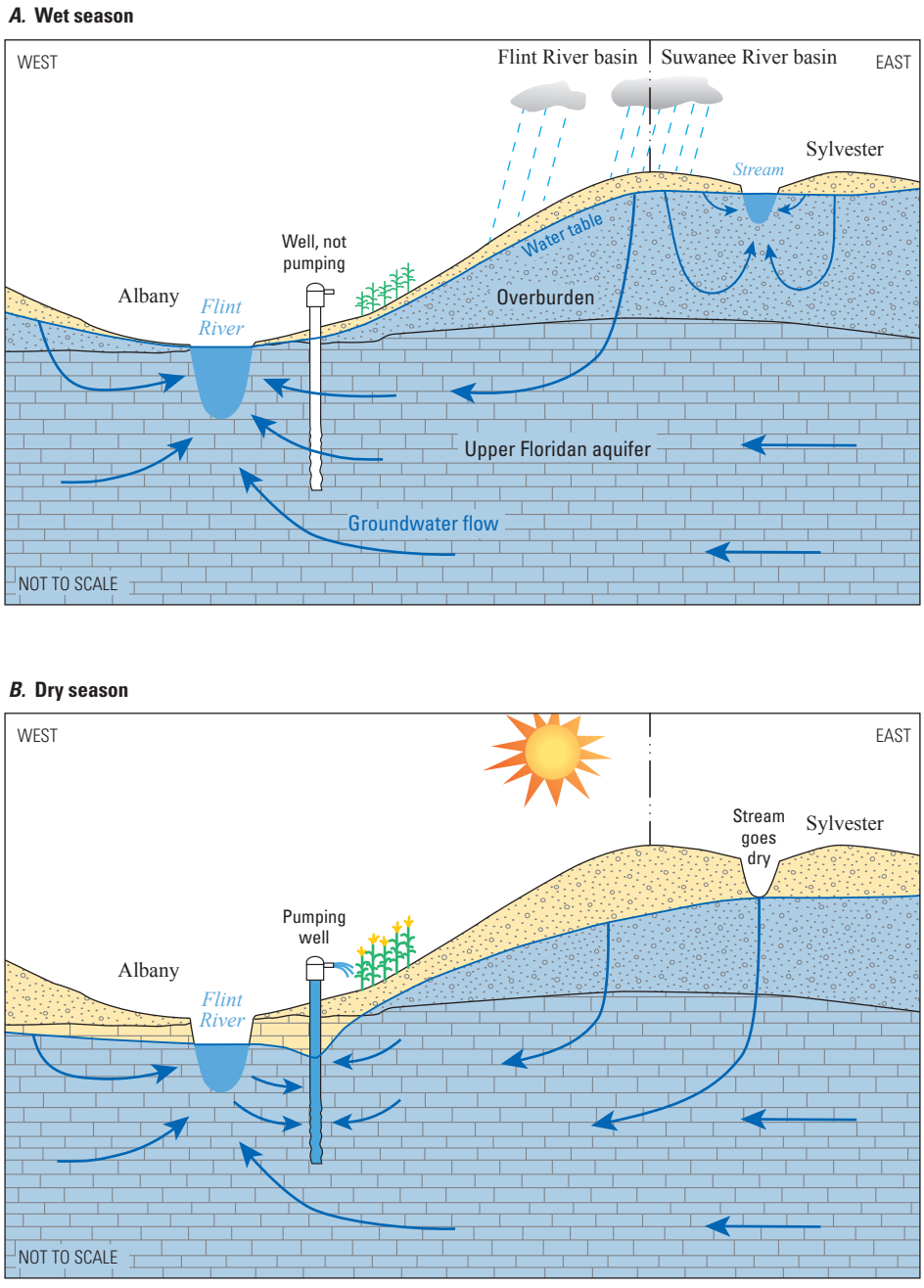

Figure 3. Schematic cross sections showing the hydrologic connection between the Flint River, the overburden sediments of the upper semiconfining unit, and the Upper Floridan aquifer in Georgia during *(A)* the wet season and *(B)* the dry, summer growing season.

Previous Investigations

Since 1996, the USGS has conducted numerous investigations regarding the hydrogeology of the ACF and ASO River basins. Torak and McDowell (1996) described the groundwater resources of the lower ACF River basin in southeastern Alabama, northwestern Florida, and southwestern Georgia (subarea 4 of the ACF/ACT River basin). Mosner (2002) described stream-aquifer relations and groundwater-level conditions in the lower ACF River basin during the drought years of 1999 and 2000 and computed aquifer contributions to streamflow for specific reaches. Jones and Torak (2004) described the geohydrology of the area surrounding Lake Seminole in southwestern Georgia and simulated the effects of impoundment on groundwater flow in the Upper Floridan aquifer. Torak and others (2006) cited physical and hydrochemical evidence of hydraulic connection between surface and groundwater beneath and around Lake Seminole and Jim Woodruff Lock and Dam as well as documented the complex exchange of surface and groundwater between the lake, streams, and aquifer. Torak and Painter (2006) described the geohydrology of the lower ACF River basin in southwestern Georgia, northwestern Florida, and southeastern Alabama. Jones and Torak (2006) simulated hydrologic conditions and variations in the stream-aquifer flow system through a drought-period irrigation season. Davis and Katz (2007) presented the results of a hydrogeologic investigation, water chemistry analysis, and groundwater flow model in the Tallahassee area of Florida. Torak (2009) reported that groundwater levels in the Upper Floridan aquifer throughout the ASO River basin are affected by variations in climate, groundwater pumping, and withdrawal amounts. Williams (2009) described the insights gained by using flowmeter logging to identify permeable zones within the Suwannee, Marianna, and Ocala Limestones in south-central Georgia. Torak and others (2010) investigated the geohydrology of the ASO River basin in southwest Georgia and northern Florida.

Maps published since 1990 show the potentiometric surface of the Upper Floridan aquifer in the study area and adjacent regions. Maps include a potentiometric-surface map of Georgia and adjacent parts of Alabama, Florida, and South Carolina for May–June 1990 (Peck, 1991); a potentiometric-surface map for the same area for May 1998 (Peck and others, 1999); and potentiometric-surface maps of the Upper Floridan aquifer in the lower ACF River basin for May 1998, October 1999, and August 2000 (Mosner, 2002). Gordon and Peck (2010) presented groundwater levels for the Upper Floridan aquifer, streamflow, and stream-stage data collected by the USGS (in November 2008) within a 21-county area, including the lower Chattahoochee–Flint and western and central ASO River basins in Georgia. The report includes a potentiometric-surface map of the Upper Floridan aquifer and a groundwater seepage map indicating reaches where streams gained or lost water or were dry. Kinnaman and Dixon (2011) published a potentiometric-surface map of the Upper Floridan aquifer in Florida and parts of Georgia, South Carolina, and Alabama for May–June 2010.

Station-Numbering Systems for Wells and Surface Water

In this report, wells in Georgia are identified using a numbering system based on USGS topographic maps. In Georgia, each 7.5-minute topographic quadrangle map has been given a number and letter designation beginning at the southwestern corner of the State. Numbers increase eastward through 39, and letters increase alphabetically northward through "Z" and then become double-letter designations "AA" through "PP." The letters "I," "O," "II," and "OO" are not used. Wells inventoried in each quadrangle are numbered sequentially beginning with "001." Thus, the third well inventoried in the Chattahoochee quadrangle (map 06D) is designated 06D003.

Surface-water sites in Georgia are assigned a unique number as part of an identification system that has been used for reporting station data in USGS reports and publications since October 1, 1950. Station numbers ascend in the downstream direction along the main channel. All stations on a tributary entering upstream from each main channel are listed prior to the station on the main channel and are assigned a lower downstream-order number than assigned to the surface-water station on the main channel. Each surface-water station is assigned a unique 8- or 10-digit number. Each station number, such as 02351890, begins with the 2-digit part number "02" plus the 6- or 8-digit downstream order number "351890" (*http://pubs.usgs.gov/wdr/WDR-WA-03-1/pdf/ADR_F.pdf*, accessed March 22, 2012). The part number designates the major river basin (*http://il.water.usgs.gov/annual_report/misc/cdextion.htm*, accessed March 26, 2012).

In Florida and Alabama, wells are identified with a 15-digit number consisting of the well latitude and longitude, separated by a zero, and ending with a number indicating which well it is at a particular location. For example, well 294337084532401 is the first well located at latitude 29°43'37"and longitude 84º53'24". In Alabama and Florida, surface-water sites are identified by the downstream order number or by the 15-digit number consisting of the station latitude and longitude, separated by a zero, and ending with a sequence number (01 for the first site used).

Methods

Water levels were measured in wells open to the Upper Floridan and surficial aquifers. USGS personnel used steel or electric tapes to measure water levels to the nearest 0.01 ft. A pre-established measuring point was subtracted from the water level to obtain depth to water below land surface. The depth below land surface was then subtracted from the land-surface altitude to calculate the water-surface altitude. Most land-surface altitudes were estimated using topographic maps with a 10-ft contour interval. Calculated values for water-surface altitude are considered accurate to within one-half of the topographic contour interval or 5 ft. Contours of water-level altitudes that were plotted on a map of the study area represent the potentiometric surface for the Upper Floridan aquifer.

Streamflows were measured using traditional USGS methods (Rantz and others, 1982). Streamflow loss or gain over a reach was calculated by subtracting upstream flow measurements from corresponding downstream flow measurements over a stream segment that defines the reach. The resulting positive difference in streamflow approximates the amount of groundwater discharged to the stream (stream seepage); negative streamflow differences indicate stream recharge to the aquifer through the channel bottom.

Field measurements of pH, dissolved oxygen, specific conductance, and temperature, were collected from streams using water-quality sondes. Published USGS protocols and procedures were used to calibrate the sondes and measure properties (Wilde, variously dated; Wilde and others, 2004).

Hydrologic Conditions and Stream-Water Quality during July 2011

Severe drought during 2011 resulted in record-low groundwater levels and streamflows throughout much of the ACF and ASO River basins. Documentation of these historic hydrologic conditions through measurement of groundwater levels, streamflow, springflow, and water-quality properties of streams and springs provides scientists, water managers, and water users with data showing the effects of climatic extremes on the water resources of these basins and furthers the understanding of water exchange between the karstic Upper Floridan aquifer and streams.

Precipitation

According to a scale developed by the Drought Mitigation Center (2011), southwestern Georgia, southeastern Alabama, and north-central Florida experienced dry to exceptional drought conditions during January–July 2011 (fig. 4). In June, exceptional drought conditions were evident through much of the area; however, during the second half of July when data for this study were collected, conditions improved somewhat due to rain, and drought intensity lessened to the extreme range. During July, the 12-month precipitation deficit ranged from 16 to more than 20 inches below average in the region (Drought Mitigation Center, 2011; *http://droughtmonitor.unl.edu/archive.html*, accessed February 7, 2012). Monthly total precipitation for 2011 and long-term statistics for five National Weather Service Stations are listed in table 1.

Data that represent cumulative departure from normal precipitation for the climate period 1981–2010 (Golden Gate Weather Services, *http://ggweather.com/normals/index.htm*, accessed December 28, 2011) were used to identify precipitation trends and define precipitation deficits that occurred during January 2006 to September 2011 (fig. 5). Cumulative departures from climate-normal precipitation were obtained by adding the daily departures and graphing the result—positive or negative—through time. A positive slope suggests above-normal precipitation, and a negative slope suggests below-normal precipitation. The cumulative-departure curves at four NOAA weather stations in the area—Albany 3 SE (GA090140), Tifton Experimental Station (GA098703), and Tallahassee (FL088756 and FL088758; fig. 1)—show a continually drying trend from 2006 to late 2008; a relatively stable or wetting trend for the next 2 years; followed by another drying trend from late 2010 to September 2011. During July 2011, the cumulative deficit was 17 inches at Albany, 18 inches at Tifton, and 27 inches at Tallahassee.

Although much of July experienced dry conditions, field-trip activities to measure streamflow and groundwater levels during July 11–18, 2011, were delayed by a rain event that produced 1.8 inches of rain at Albany, 1.1 inches at Tifton, and 2.54 inches at Tallahassee. Following this period of precipitation, streamflow hydrographs from the USGS real-time network were observed on a daily basis until flows had returned to base flow or near-base flow conditions, after which time streamflow and groundwater-level-measurements were initiated. During the period of data collection, minimal precipitation was recorded in the area; 0.39 inch of rain fell at Albany, 0.2 inch at Tifton, and 0.33 inch at Tallahassee.

Prior to this investigation, Gordon and Peck (2010) documented groundwater levels and streamflow in the lower ACF and central ASO River basins in Georgia during a drought period in November 2008. At that time, the cumulative deficit was 10 inches at Albany and 2.2 inches at Tifton, which are considerably less than the deficits recorded during July 2011 (17 inches at Albany and 18 inches at Tifton).

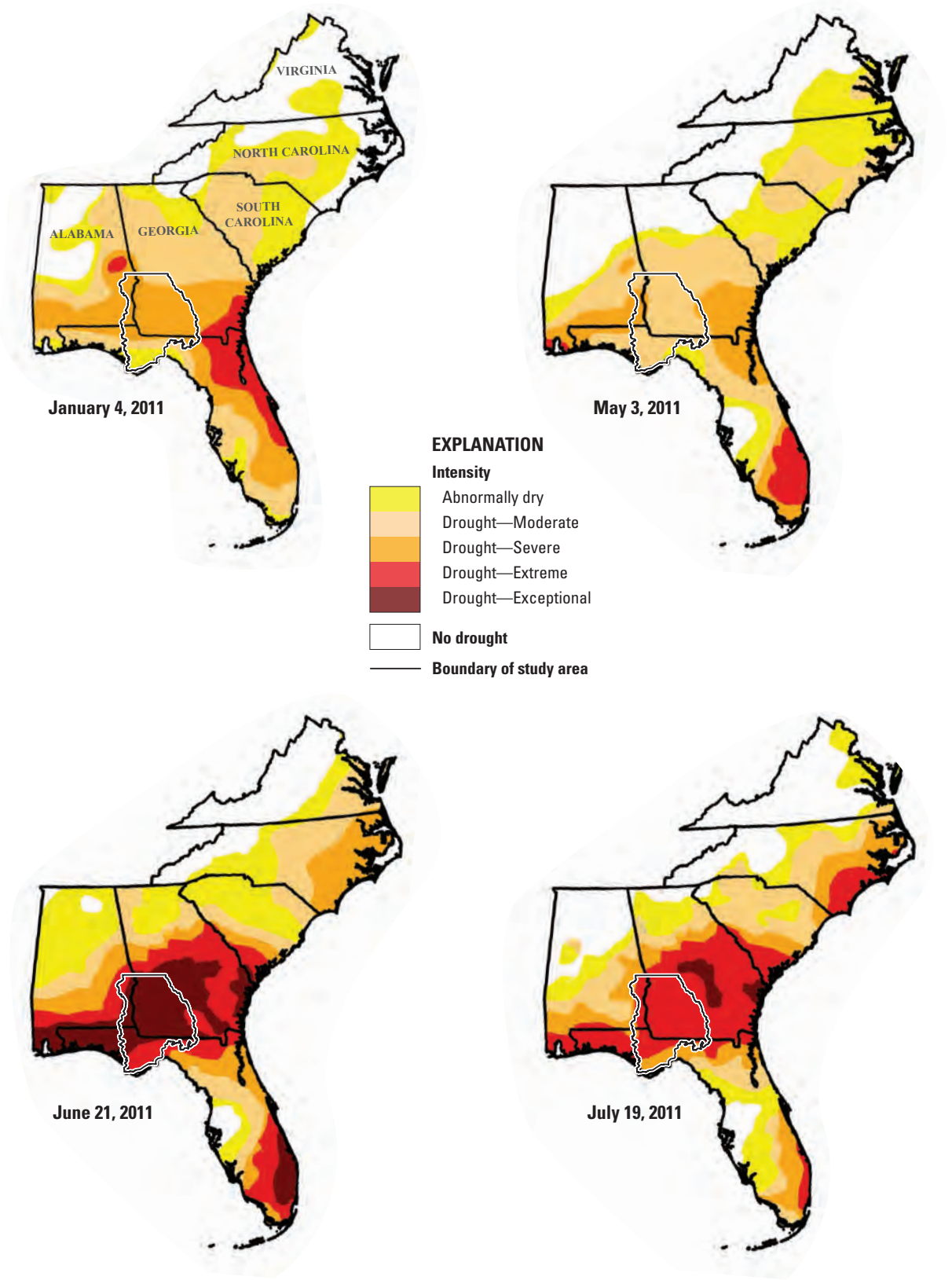

Figure 4. Intensity of drought in the southeastern United States for selected months in 2011 (modified from Drought Mitigation Center, 2011).

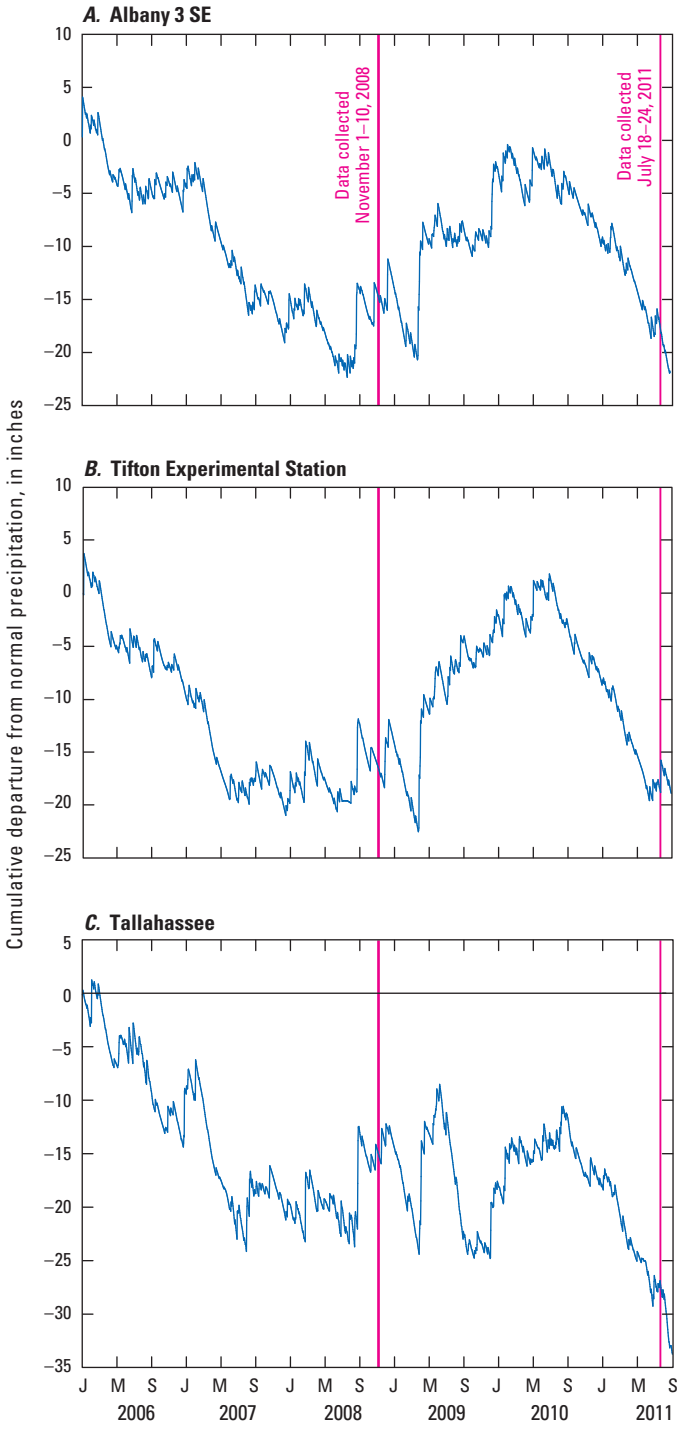

Figure 5. Cumulative departure from normal (1981–2010) precipitation at National Oceanic and Atmospheric Administration Georgia weather stations *(A)* Albany 3 SE (GA090140), *(B)* Tifton Experimental Station (GA098703), and *(C)* Tallahassee (FL088756 and FL088758), 2006–2011. (See figure 1 for locations.)

Groundwater Levels

During July 18–24, 2011, water levels were measured in 43 wells completed in the surficial aquifer system and 312 wells completed in the Upper Floridan aquifer. Of these wells, 38 are equipped with continuous water-level recorders—4 in the surficial aquifer system, and 34 in the Upper Floridan aquifer (tables 2 and 3).

Data were insufficient to generate a potentiometric surface for the surficial aquifer system; however, a map showing distribution of water levels gives an indication of areas of recharge and discharge (fig. 6). In general, upland areas contain the highest measured groundwater-level altitudes, suggesting recharge to the Upper Floridan aquifer, surficial aquifer system, or undifferentiated overburden. The lowest groundwater-level altitudes were measured in areas near streams and lakes, suggesting aquifer discharge to surface water. Measured groundwater-level altitudes ranged from 73 ft in Liberty County, Fla., to 410 ft in Turner County, Ga. Seven of the wells, all in Dougherty County, Ga., recorded dry conditions, indicating the water table had dropped beneath the depth of the well.

Record-low water levels were measured in 12 wells, with all but one well located in the ASO River basin. This area of record-low groundwater levels defines the upland recharge area to the surficial aquifer system or upper semiconfining unit located east of the drainage divide between the ACF and ASO River basins. Low groundwater levels in this area results in less recharge to the Upper Floridan aquifer by vertical leakage from the surficial aquifer through the upper semiconfining unit, than recharge by vertical leakage that could occur during higher groundwater-level conditions.

Hydrographs of two wells in the study area show daily mean groundwater levels in the surficial aquifer that were measured below long-term median daily levels for most of 2011 (fig. 7). Groundwater levels rose about 10 ft at well 07H003 and about 1 ft at well 13M007 in response to rainfall during the first half of July 2011 (about 4 inches at Newton and about 4.4 inches at Albany; *http://georgiaweather.net/*) and a likely decrease in irrigation pumping. However, during July 18–24, 2011, water levels in wells 07H003 and 13M007 were still below the median daily statistic. During the previous study to document drought conditions in November 2008 (Gordon and Peck, 2010), water levels in these two wells were near the median daily statistic.

Out of 312 Upper Floridan aquifer wells measured during July 2011, 128 wells attained record low levels (fig. 8). Hydrographs of three continuous recorder wells show daily mean groundwater levels in the Upper Floridan aquifer that were below long-term median daily levels for most of 2011 (fig. 9). The measured groundwater level in well 15Q016 near Cordele, Crisp County, Ga., was 13 ft below the median daily water level in July 2011. The water level in the same well was very close to the median daily statistic in November 2008, the time of year when annual water levels are usually at their lowest. Water levels usually begin to rise after November when irrigation pumping stops and precipitation brings recharge to the aquifer.

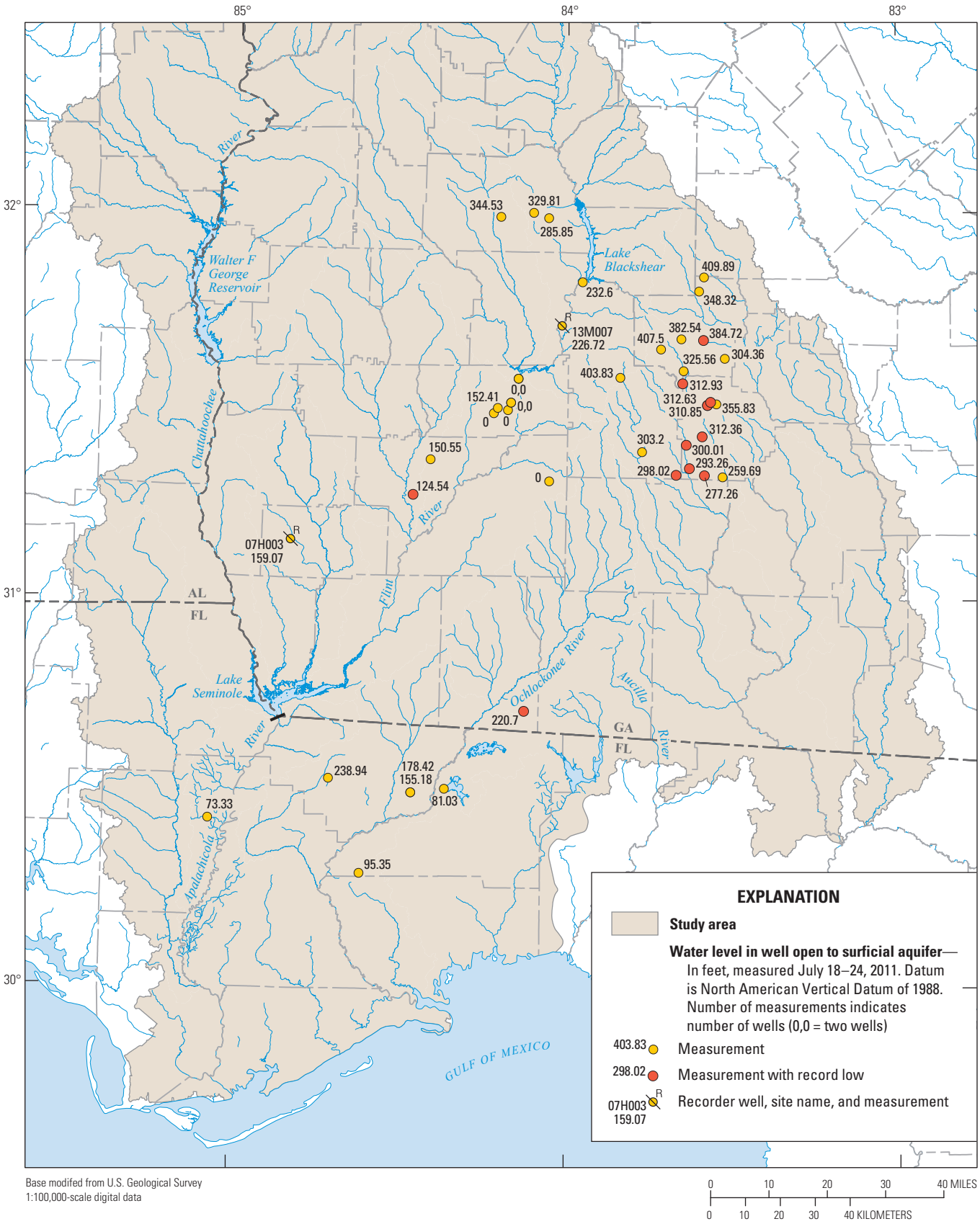

Figure 6. Location of wells open to the surficial aquifer and water levels, including record lows, in the lower Apalachicola–Chattahoochee–Flint River basin and in western and central parts of the Aucilla–Suwannee–Ochlockonee River basin, Georgia and Florida, July 2011.

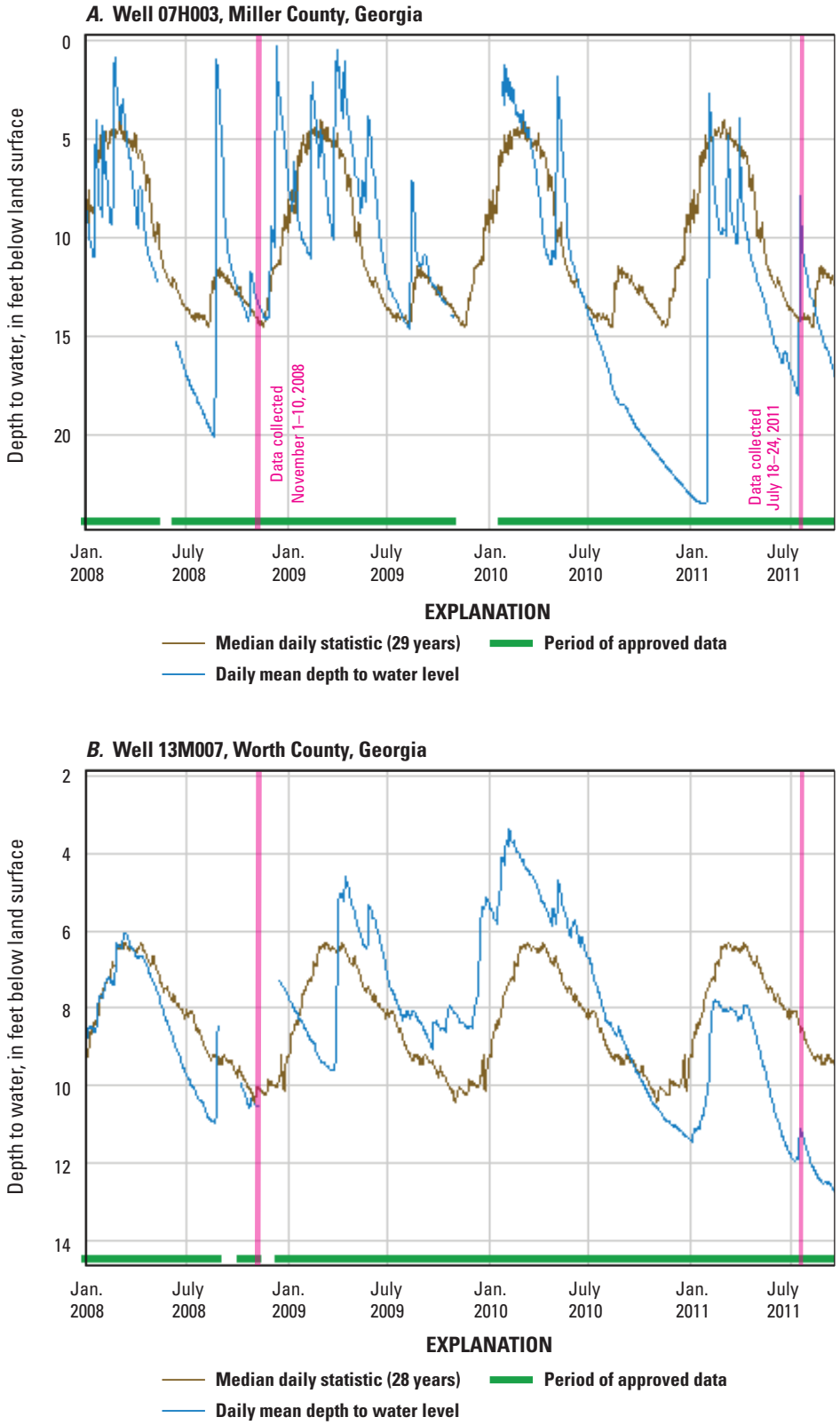

Figure 7. Water levels and long-term daily median statistics for *(A)* well 07H003 and *(B)* well 13M007. (See figure 6 for locations.)

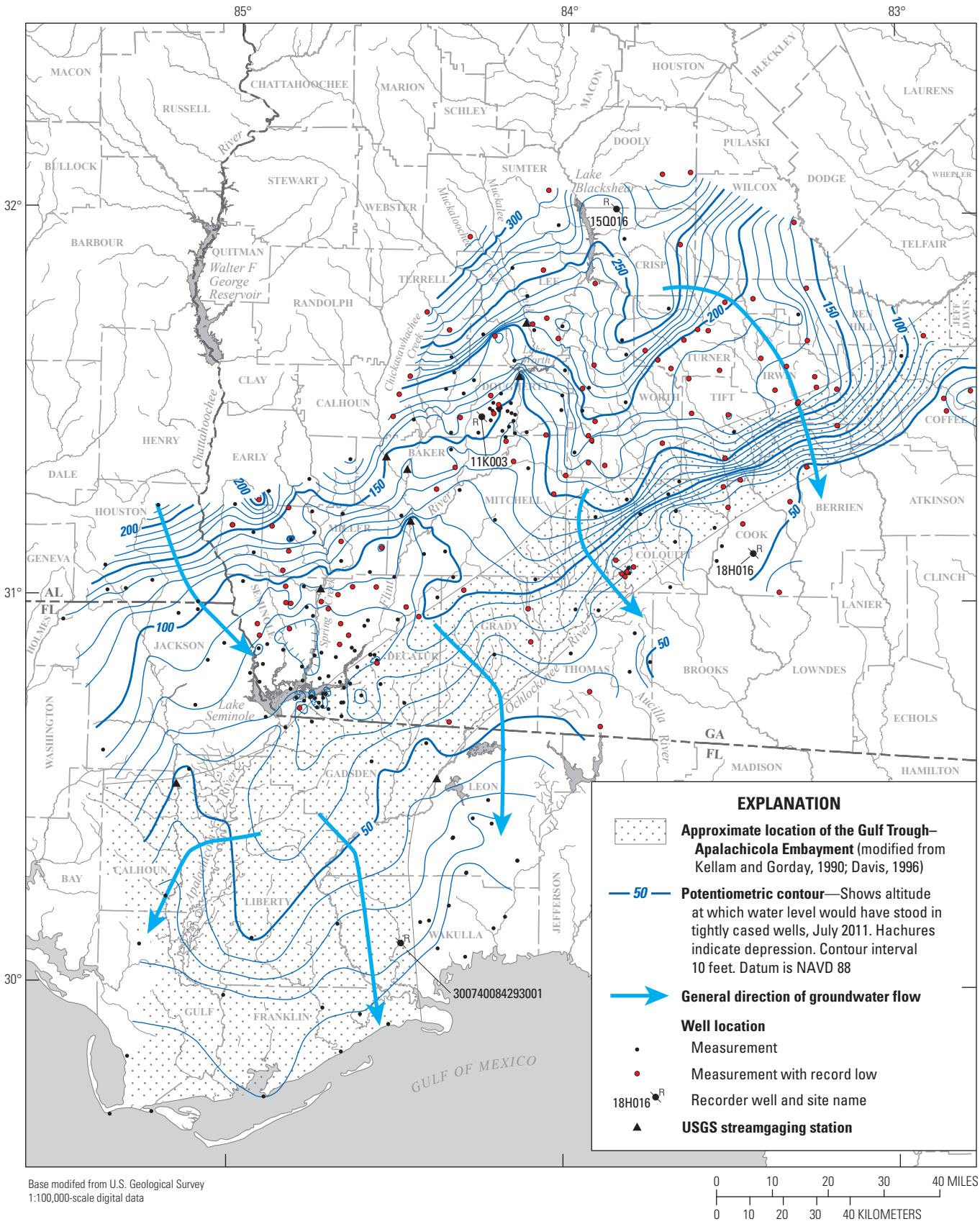

Figure 8. Potentiometric surface and record low water levels of the Upper Floridan aquifer in the lower Apalachicola–Chattahoochee–Flint River basin and western and central parts of the Aucilla–Suwanee–Ochlockonee River basin, Georgia and Florida, July 2011.

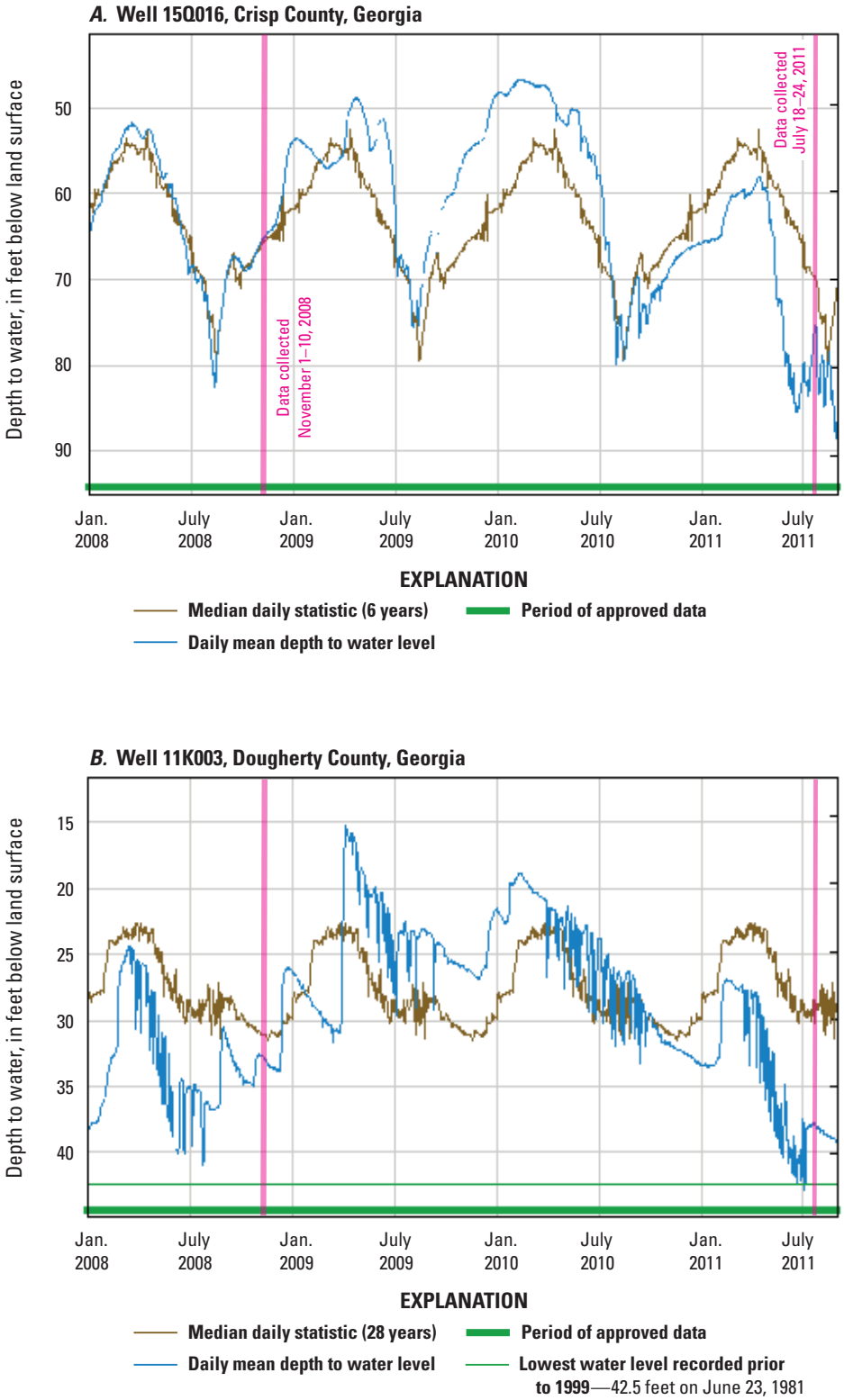

Figure 9. Water levels and long-term daily median statistics for *(A)* well 15Q016, *(B)* well 11K003, *(C)* well 18H016, and *(D)* well FL300740084293001, 2008. (See figure 8 for locations.)

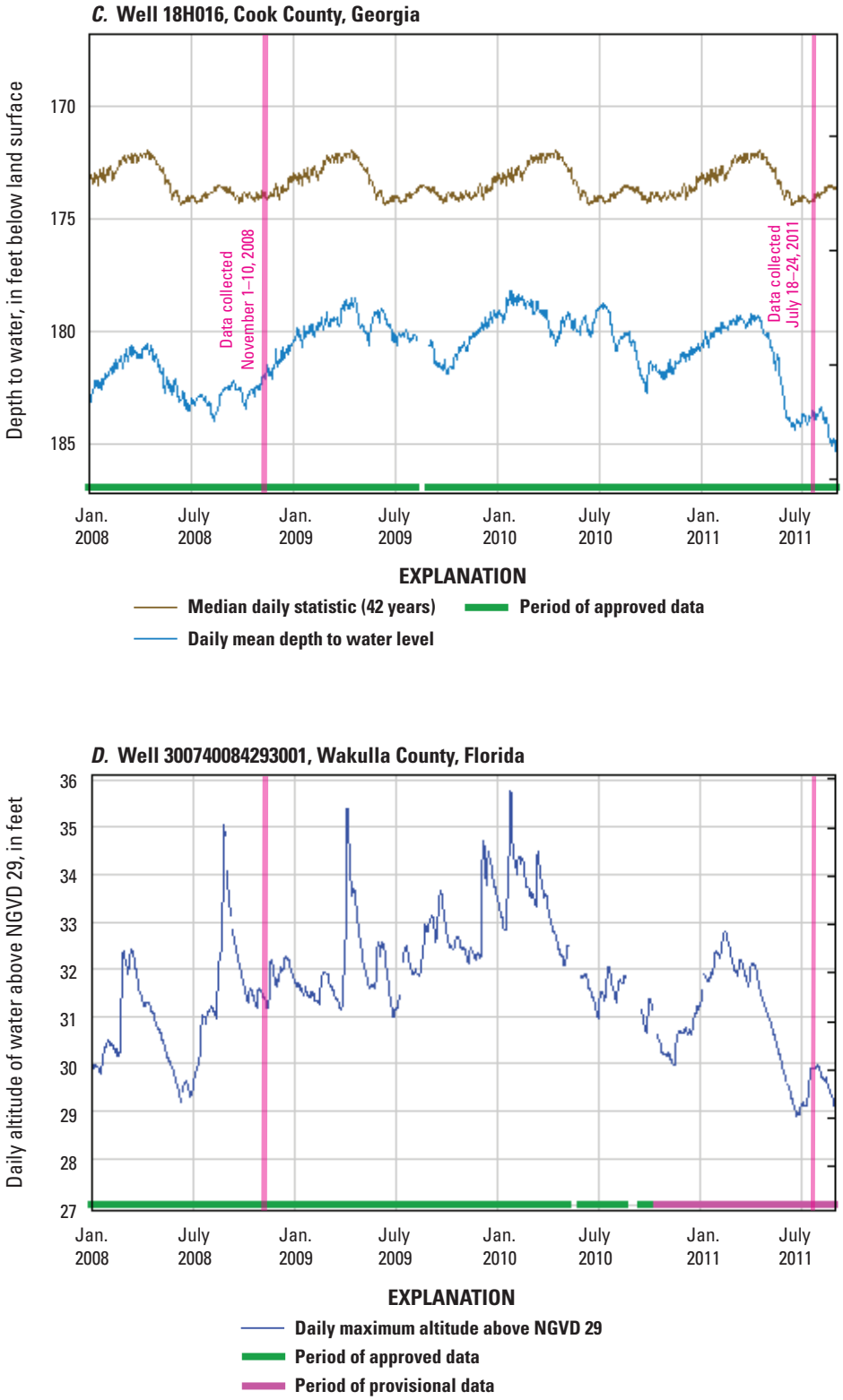

Figure 9. Water levels and long-term daily median statistics for *(A)* well 15Q016, *(B)* well 11K003, *(C)* well 18H016, and *(D)* well FL300740084293001, 2008. (See figure 8 for locations.)—Continued

Water levels in the Upper Floridan aquifer were generally lower in July 2011 than in November 2008. In November 2008, the water level in well 11K003 south of Albany in Dougherty County, Ga., was 4 ft below the mean daily statistic, whereas during July 2011 the water level was 9 ft below. In well 18H016 at Adel, Cook County, Ga., water levels were 9 ft and 10 ft below the median daily statistic during November 2008 and July 2011, respectively (fig. 9). Near Crawfordville, Wakulla County, Fla., groundwater levels at recorder well 300740084293001 declined throughout most of 2011 (daily median statistic not available for this well).

Water levels in four Upper Floridan aquifer recorder wells rose 0.8 to 9 ft during the first half of July in response to rainfall and possible reduction in pumping. The largest rise was at Cordele, Crisp County, Ga., where rainfall was 4.1 inches during July (table 1) and water levels in well 15Q016 in Crisp County, Ga., rose about 9 ft (fig. 9). Despite these rises, water levels in three of the wells remained below the median water-level statistic at the time of measurement. (A median water-level statistic was not available for well 300740084293001 in Wakulla County, Fla.)

A potentiometric-surface map was constructed from groundwater-level altitudes at 312 wells measured in Alabama, Florida, and Georgia during July 18–22, 2011 (fig. 8, table 3), to better understand groundwater flow in the Upper Floridan aquifer. The map shows an imaginary water surface that represents the altitude at which water would have stood in tightly cased wells if open to the Upper Floridan aquifer. The July 2011 potentiometric surface is similar to the May 2010 map in Florida and Georgia (Kinnaman and Dixon, 2011), the November 2008 map in Georgia (Gordon and Peck, 2010), and the May to June 1995 map in Florida (Mahon and others, 1997). The July 2011 map in figure 8 represents a larger area than was constructed for the November 2008 potentiometric surface (Gordon and Peck, 2010) by including two additional counties in Georgia, eight counties in Florida, and one in Alabama (fig. 1).

Water-level contours of the potentiometric surface of the Upper Floridan aquifer (fig. 8) indicate general directions of groundwater flow and areas of recharge and discharge. Recharge to the aquifer generally occurs in areas of high hydraulic potential, such as the area located along the northwestern extent of the mapped potentiometric surface. Areas of converging potentiometric contours, such as around a pumped well or well field, and areas where potentiometric contours bend upstream as the contour crosses the stream, represent areas of groundwater discharge. In Georgia, groundwater generally flows southeastward on the western side of the Flint River, southwestward on the eastern side of the Flint River, and south and southeastward from the basin divide between the ACF and ASO River basins in the eastern part of the study area. In the Florida and Alabama part of the study area, groundwater generally flows to the south and southeast.

One of the most prominent features of the potentiometric surface is the Gulf Trough, a subsurface feature consisting of low-hydraulic conductivity formations that cause hydraulic gradients to abruptly steepen across the trough from northwest to southeast. The region of the Gulf Trough is identified on the potentiometric surface (fig. 8) with tightly spaced potentiometric contours, particularly the 60- to 170-ft contours in the east-central part of the map area.

Other areas of the potentiometric surface containing steep hydraulic gradients are located near stream channels, and these gradients decrease with distance from streams to the south and east of the Flint River (Mosner, 2002). The 70-ft closed water-level contour indicates a large depression in the potentiometric surface in the area north of Lake Seminole located in the southwestern corner of Georgia. A similar depression is shown on the potentiometric maps from October 1999 (Mosner, 2002) and November 2008 (Gordon and Peck, 2010). This depression represents an area where the potentiometric surface has been lowered by extensive groundwater irrigation withdrawals (Torak and Painter, 2011, p. 16, fig. 7).

According to Hicks and others (1987), Mosner (2002), and Torak and Painter (2006), many of the major streams in the ACF River basin (fig. 1) are incised through the overburden into the Upper Floridan aquifer and provide a direct connection for groundwater and surface-water exchange. When the aquifer water level exceeds the stream stage, groundwater discharges from the aquifer to streams through springs located along or in the streams, or through diffuse channel leakage. When stream stage exceeds the aquifer water level, streamflow recharges the aquifer.

The Upper Floridan aquifer discharges to streams in most of the area located to the west of the Flint River. As mentioned previously, aquifer discharge of groundwater to streams is indicated on the map of the potentiometric surface with water-level contours that "bend" upstream as the contour crosses the stream, for example, along the Flint River in Dougherty County, Ga. At a spring in Dougherty County south of Albany (fig. 10; see appendix for location of spring 12K133S), groundwater levels declined below stream stage and allowed streamflow in the Flint River to invade the spring run and recharge the Upper Floridan aquifer. Under normal conditions this spring discharges to the Flint River and appears blue in color (fig. 10*A*); however, during the drought conditions of July 2011, river water flowed into the aquifer through the spring run, giving the water a muddy appearance (fig. 10*B*).

Several stream reaches in the area west of the Flint River were losing water to the Upper Floridan aquifer during July 2011 as groundwater levels declined below stream stage and, in some instances, below stream channel bottoms. These "losing" stream reaches are indicated on the map of the potentiometric surface with water-level contours that "bend" downstream as the contour crosses the stream (fig. 8). In the southern part of Miller County, Ga., Spring Creek had some losing reaches and ceased flowing, becoming a series of disconnected pools separated by dry stream reaches (Lynn J. Torak, Hydrologist, U.S. Geological Survey, Atlanta, Ga., written commun., June 2012). Chickasawhachee, Muckalee, and Muckaloochee Creeks also exhibited losing-stream conditions.

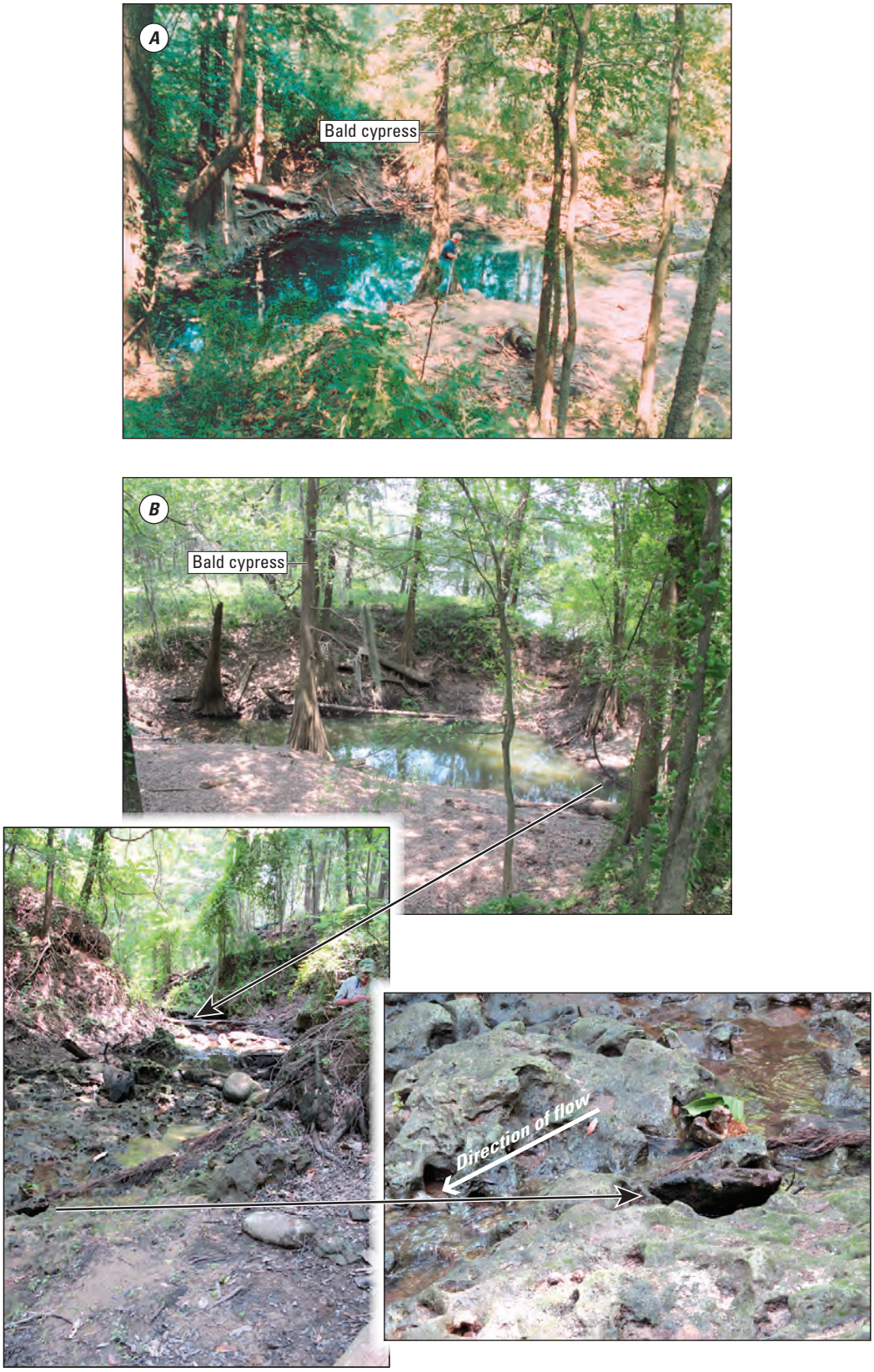

Figure 10. Spring (12K133S) south of Albany, Georgia, (A) April 2003 and (B) July 2011.

The degree of connection between the Upper Floridan aquifer and streams decreases east of the Flint River where the overburden is thicker as the Solution Escarpment is approached (fig. 3). West of the Flint River in the upland areas of the aquifer near its outcrop area, the Upper Floridan aquifer is well connected to the streams. According to Gordon and Peck (2010), the decreased connection is evident where stream-stage altitudes measured east of the Flint River during November 3–6, 2008, were not similar to adjacent groundwater-level altitudes. Of the streams that were flowing (not dry) in 2008, the stream stages were as much as 160 ft higher in altitude than the groundwater level in nearby Upper Floridan aquifer wells. Many of the same streams that were measured during November 2008 also were visited during July 2011, but measurements could not be made because the streams were dry; therefore, stream-stage data were not available.

A comparison of water levels from 180 Upper Floridan aquifer wells measured in Georgia during 2008 and 2011 (table 3) shows that 149 had water levels that were lower in 2011 than in 2008: 3 wells were lower by more than 22 ft, 19 wells were lower by 10 to 22 ft, 29 wells were lower by 5 to 10 ft, 98 wells were lower by 0 to 5 ft; and 31 wells had water levels that were higher in 2011 by 0 to 5 ft (fig. 11). The generally lower water levels in 2011 can be attributed to a larger precipitation deficit and to greater irrigation pumpage and evapotranspiration, because measurements were made in July during the peak of the summer growing season. Water levels in 2008 were collected during November at the end of the irrigation season. Water levels appear particularly low during July 2011 in Irwin County, Ga., along the eastern boundary of the study area (figs. 1 and 11).

Streamflow

Streamflow consists of surface runoff, interflow, and base flow. Stream base flow is the portion of streamflow contributed by groundwater discharge. During periods of low precipitation, all or most of streamflow is base flow. Near base-flow conditions were assumed to prevail when measurements were made during July 2011. Although some rain fell during the 7 days prior to the measurement period, measurements were collected after the peak discharge subsided and discharge was below the median daily statistic (fig. 12).

Streamflows measured at 202 sites in the study area during July 20–24, 2011, were used to identify stream reaches that were (1) gaining flow from groundwater discharge to the stream (stream seepage); (2) losing streamflow by leakage through the stream channel into the Upper Floridan aquifer; and, (3) dry, because the water level of the aquifer was below the bottom of the stream channel (table 4, fig. 13). The net gain or loss in streamflow (stream seepage) was calculated by subtracting an upstream streamflow measurement from the downstream streamflow measurement along a particular reach. A positive value represents the amount of groundwater that discharges to the stream along a specific stream reach. Negative values represent losing stream reaches where water from the stream is recharging the aquifer. For example the streamflow at upstream site 02350430, along the Flint River south of Lake Blackshear, was 1,400 cubic feet per second (ft^3/s) and at downstream site 02350490 was 1,390 ft^3/s. Subtracting the flow at the upstream site from the flow at the downstream site yields a seepage value of –10 ft^3/s (1,390–1,400=–10).

According to Sauer and Meyer (1992), streamflow measurements typically have errors between 2 and 8 percent; in this study, an error of 8 percent was assumed inherent to the streamflow measurements, which yields a range of streamflows associated with each measurement at a stream site (table 4). At some stream sites, measurement error results in a range of estimated streamflow that identifies the reach as possibly gaining or losing (fig. 13, table 4). This condition is illustrated by examining flows and associated error ranges for the aforementioned two sites—upstream site 02350430, along the Flint River south of Lake Blackshear, and downstream site 02350490. Although the computed stream seepage value for that stream reach was –10 ft^3/s, flow conditions for the reach can span both gaining and losing conditions when the 8-percent error range is taken into account:

- Losing conditions—streamflow at downstream site 02350490 could be as low as 1,279 ft^3/s and upstream site 02350430 could be as high as 1,512 ft^3/s, yielding a loss in flow of –233 ft^3/s (1,279–1,512=–233).

- Gaining conditions—streamflow at downstream site 02350490 could be as high as 1,501 ft^3/s and at upstream site 02350430 could be as low as 1,288 ft^3/s, which would yield a gain in flow of 213 ft^3/s (1,501–1,288=213).

At the 202 stream and spring sites, flows were measured along 2,122 stream miles (mi). The measurements identify 286 mi (13 percent) of losing streams, 1,230 mi (58 percent) of gaining streams, and 606 mi (29 percent) of streams with zero flow. Of the 43 stream and spring sites that were visited, about 20 percent were dry. All but five of the dry stream sites are located east of the Flint River where little or no direct connection occurs between streams and the Upper Floridan aquifer (fig. 13). Most of the dry stream reaches are headwater reaches, except in the Alapaha and Little River subbasins in the northeastern part of the study area where the majority of reaches were dry. The northeastern part of the study area also had low groundwater levels during July 2011, suggesting that groundwater and surface water are well connected. Gordon and Peck (2010) reported 24 dry reaches and 5 losing reaches out of 87 reaches that were measured during November 2008. Of the 115 sites that were measured during 2008 and 2011, 71 were lower in 2011 than in 2008, 16 were higher, and 28 were dry during both years (table 4).

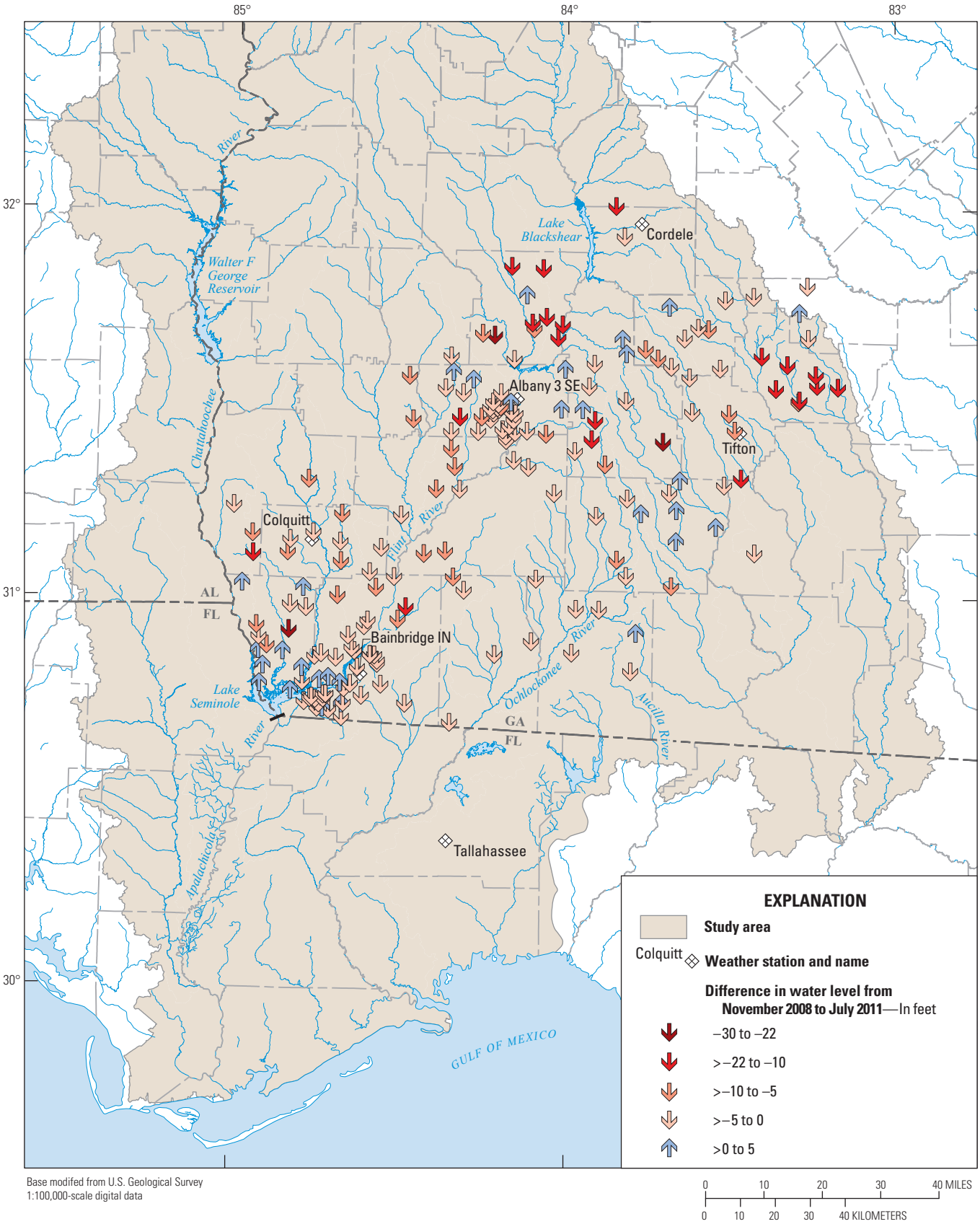

Figure 11. Location of wells open to the Upper Floridan aquifer showing the difference in water levels from November 2008 to July 2011 in the lower Apalachicola–Chattahoochee–Flint River basin and in western and central parts of the Aucilla–Suwannee–Ochlockonee River basin, Georgia.

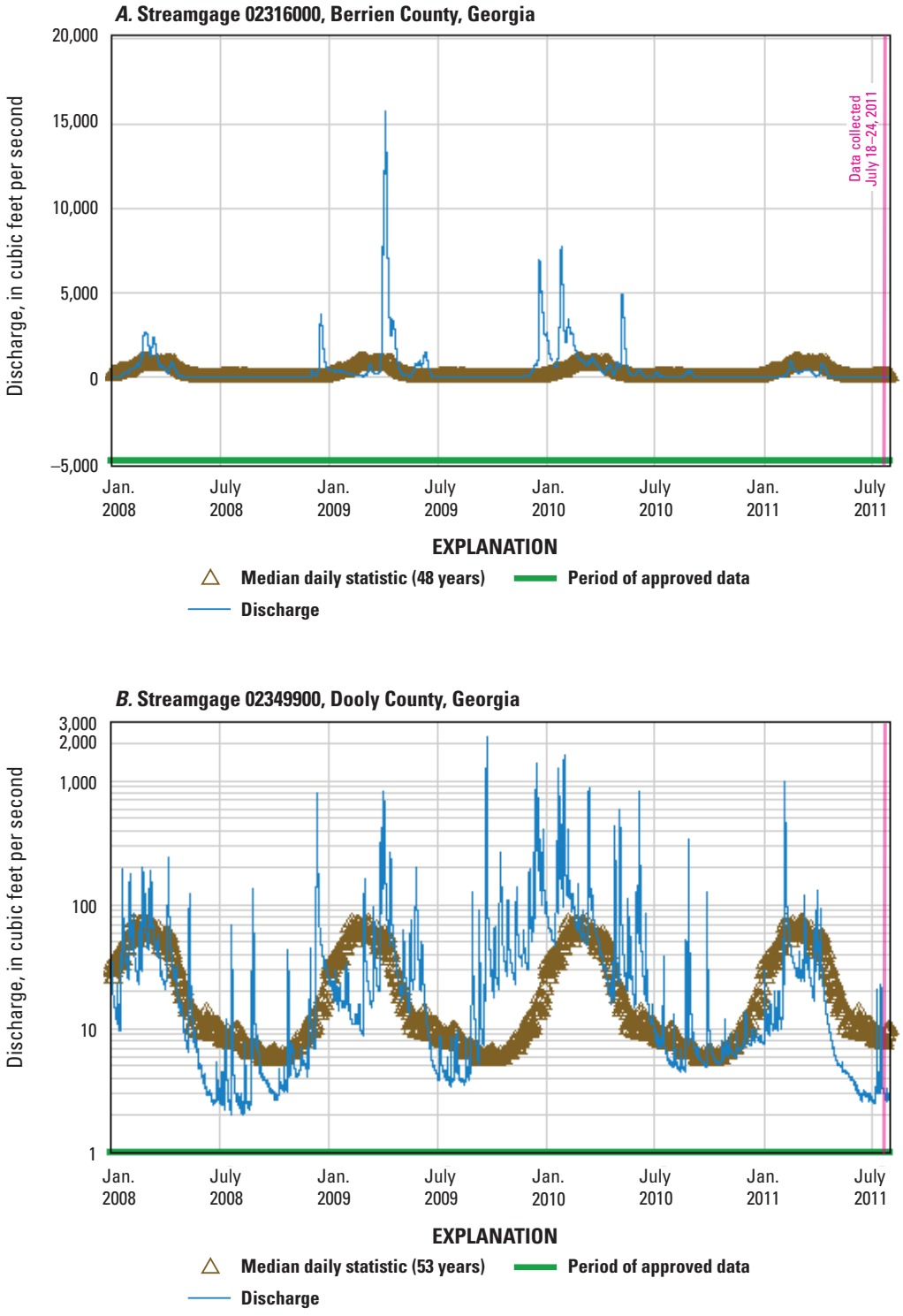

Figure 12. Discharge for U.S. Geological Survey streamgages *(A)* 02316000, *(B)* 02349900, *(C)* 02353400, and *(D)* 02329000, 2008–2011. (See figure 13 for locations.)

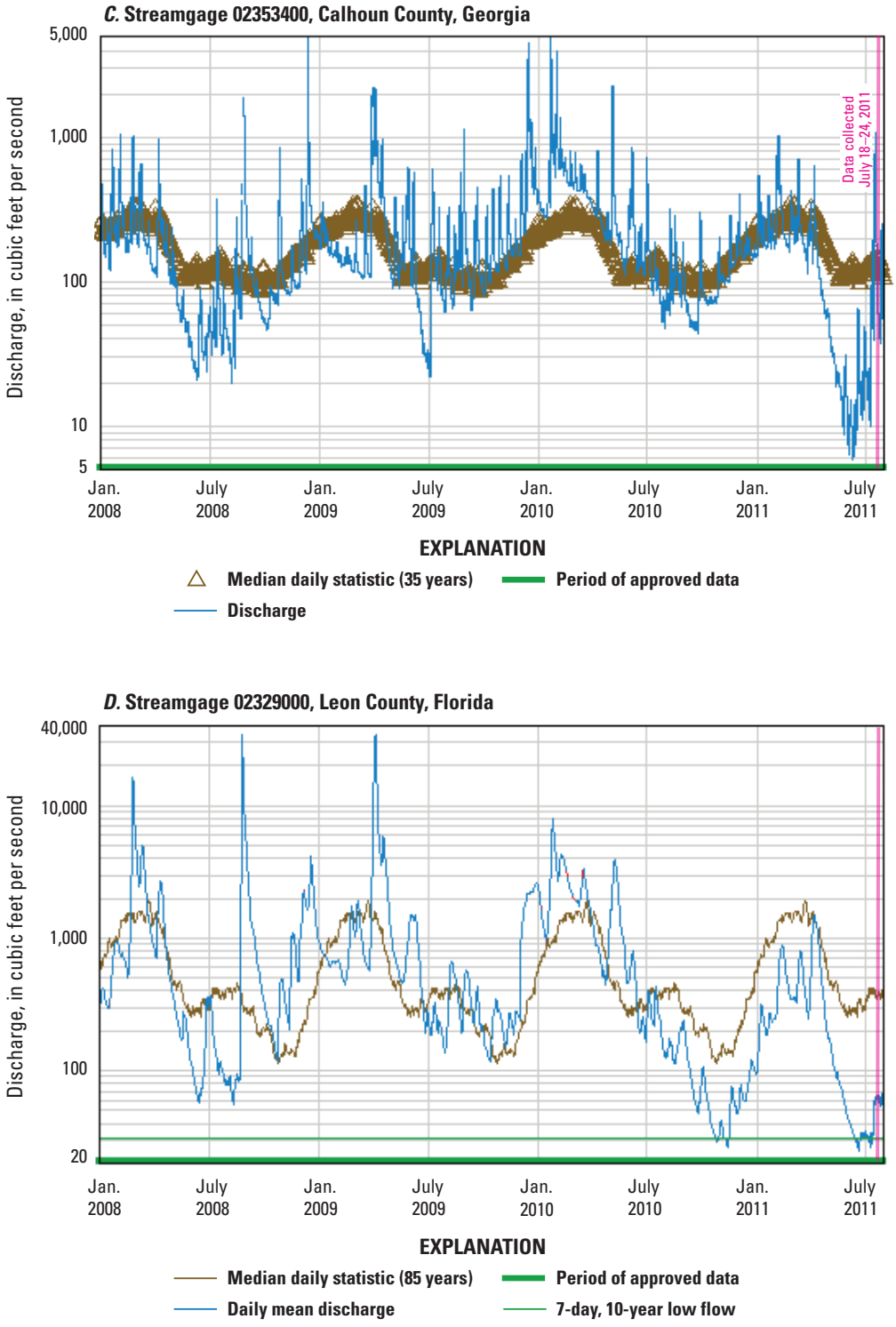

Figure 12. Discharge for U.S. Geological Survey streamgages *(A)* 02316000, *(B)* 02349900, *(C)* 02353400, and *(D)* 02329000, 2008–2011. (See figure 13 for locations.)—Continued

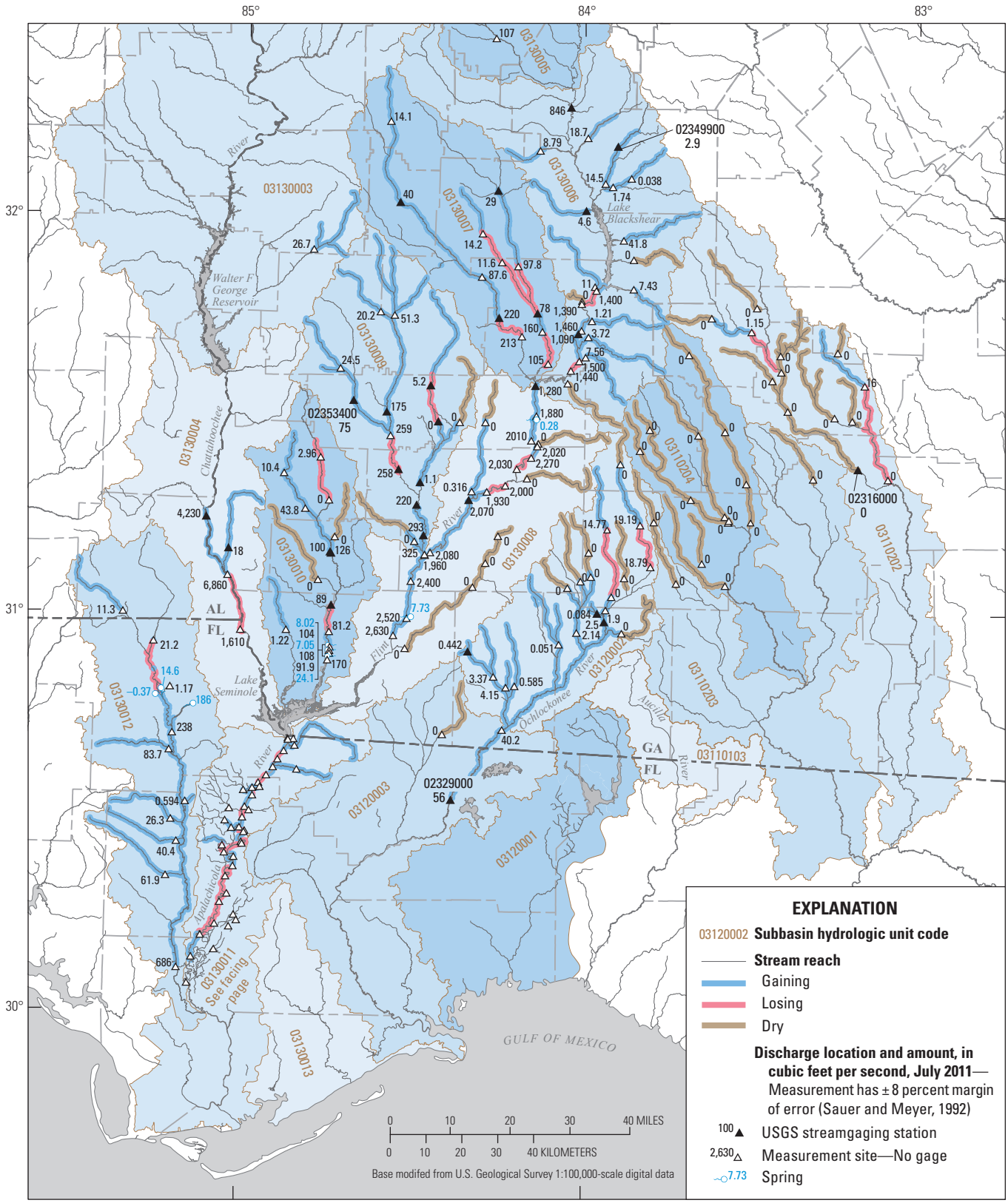

Figure 13. Discharge measurements made in the lower Apalachicola–Chattahoochee–Flint River basin and western and central parts of the Aucilla–Suwanee–Ochlockonee River basin, Georgia and Florida, showing gaining, losing, and dry stream reaches during July 2011.

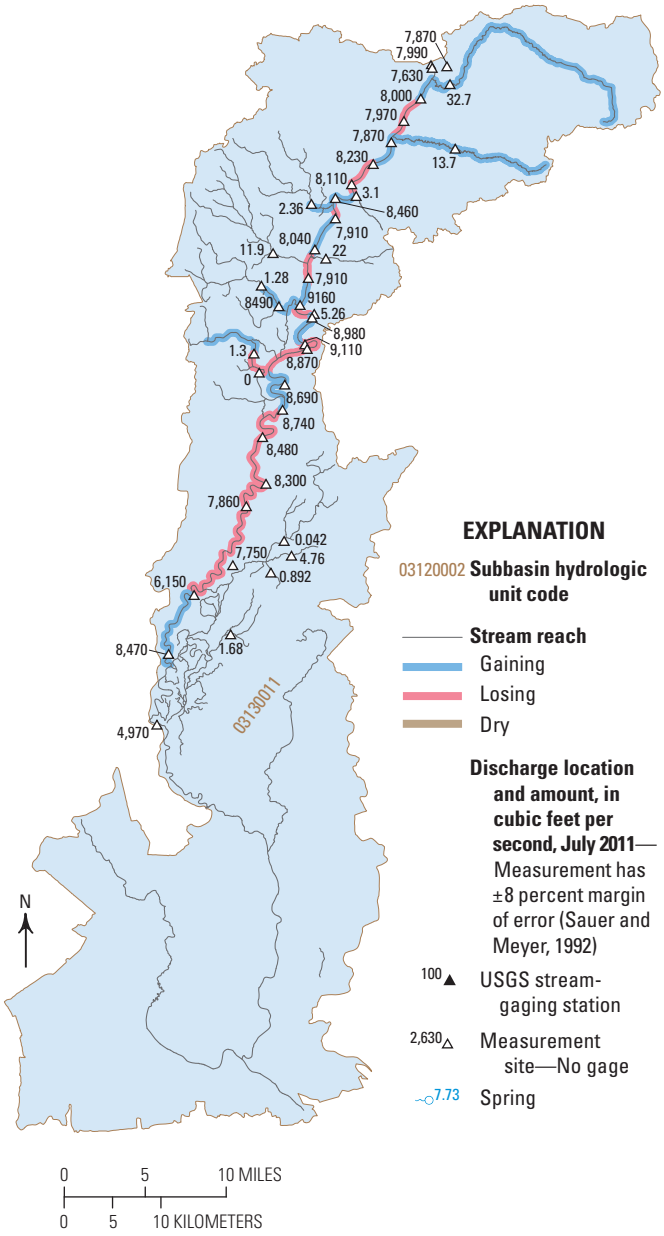

Figure 13. Discharge measurements made in the lower Apalachicola–Chattahoochee–Flint River basin and western and central parts of the Aucilla–Suwanee–Ochlockonee River basin, Georgia and Florida, showing gaining, losing, and dry stream reaches during July 2011.—Continued

Water Quality of Streams and Springs

Water-quality field properties, including pH, dissolved oxygen, specific conductance, and temperature, were measured at 123 stream and 5 spring sites during July 20–24, 2011 (table 5). Temperature ranged from 20.6 to 31.6 °C (fig. 14). Low temperatures may suggest a greater amount of groundwater than surface water. The five samples with the lowest temperatures (between 20 and 22 °C; three north of Lake Seminole and two west of Lake Seminole) were collected from springs, suggesting groundwater discharge. High temperature is typically associated with low dissolved oxygen and high specific conductance.

Dissolved oxygen concentrations ranged from 0.47 to 9.98 milligrams per liter (mg/L). Organisms become stressed if dissolved oxygen levels drop below 4 to 5 mg/L and cannot live if dissolved oxygen is below 1 mg/L. (*http://peer.tamu.edu/curriculum_modules/Water_Quality/module_3/lesson3.htm*, accessed January 9, 2012). A small tributary of the Ochlockonee River had an unexpectedly low dissolved oxygen level of 0.47 mg/L even though the temperature at that site was not high and specific conductance was not low. Ten samples had dissolved oxygen concentrations below 4 mg/L, and 19 samples had dissolved oxygen concentrations between 4 and 5 mg/L (fig. 15).

Specific conductance ranged from 13 to 834 microsiemens per centimeter at 25 degrees Celsius (µS/cm at 25 °C). Twenty-seven samples had specific conductance values below 70 µS/cm, suggesting recent recharge or rainwater. The three samples with the highest specific conductance values (greater than 500 µS/cm) were collected from the Ochlockonee River, which could suggest a high percentage of groundwater in the Ochlockonee River, but is more likely due to surface runoff (fig. 16).

Values of pH ranged from 3.6 to 8.03. Three samples had pH values less than 5.0 and all are located on tributaries of the Chipola River in Calhoun County, Florida (fig. 17). The normal range of stream pH is between 6 and 8; the reproduction of fish becomes affected in water with a pH below 5 (*http://ga.water.usgs.gov/edu/phdiagram.html*, accessed January 10, 2012). Low pH may also indicate recent recharge of rainwater.

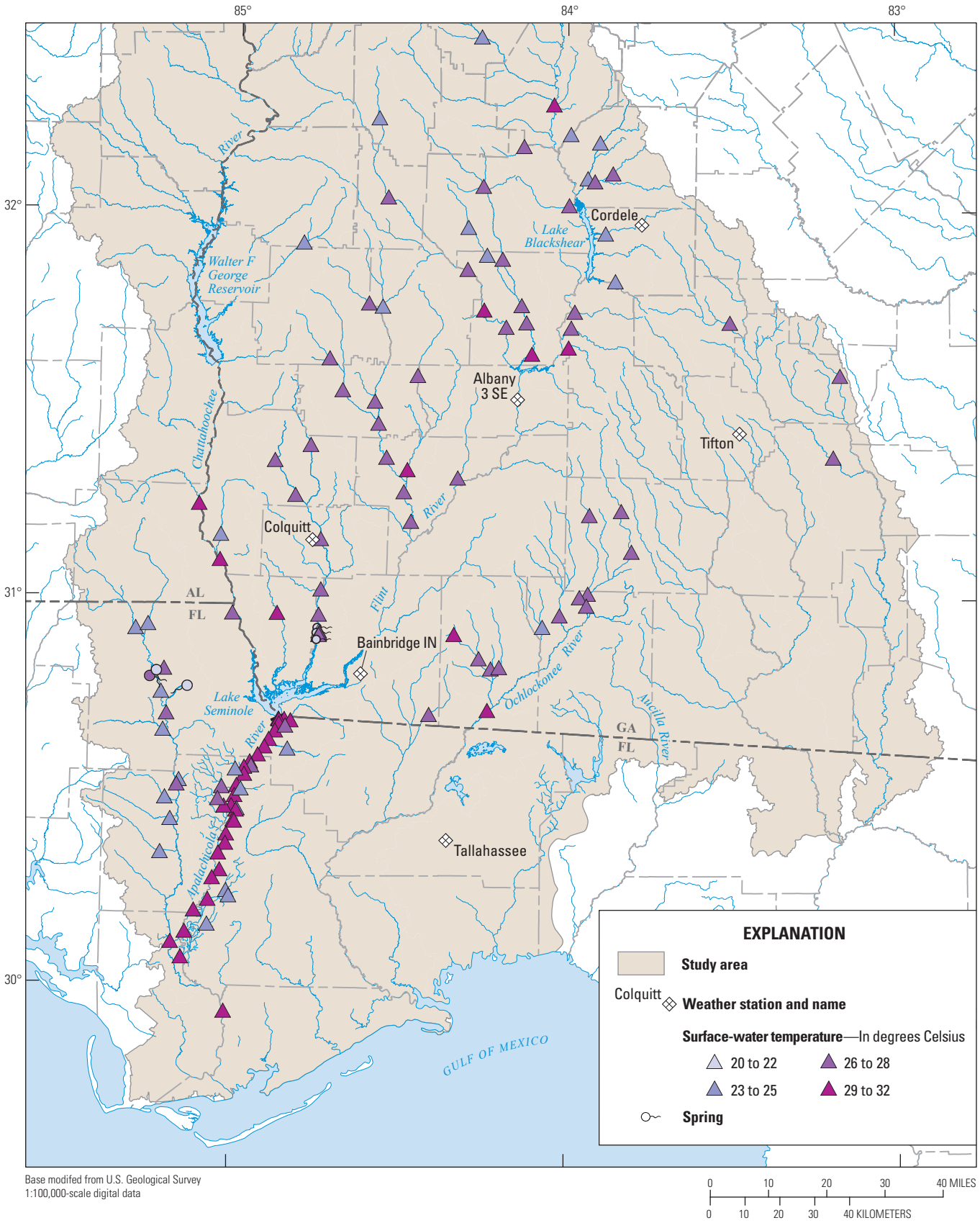

Figure 14. Location of weather stations and surface-water sites with temperature measurements in the lower Apalachicola–Chattahoochee–Flint River basin and in western and central parts of the Aucilla–Suwannee–Ochlockonee River basin, Georgia and Florida, July 2011.

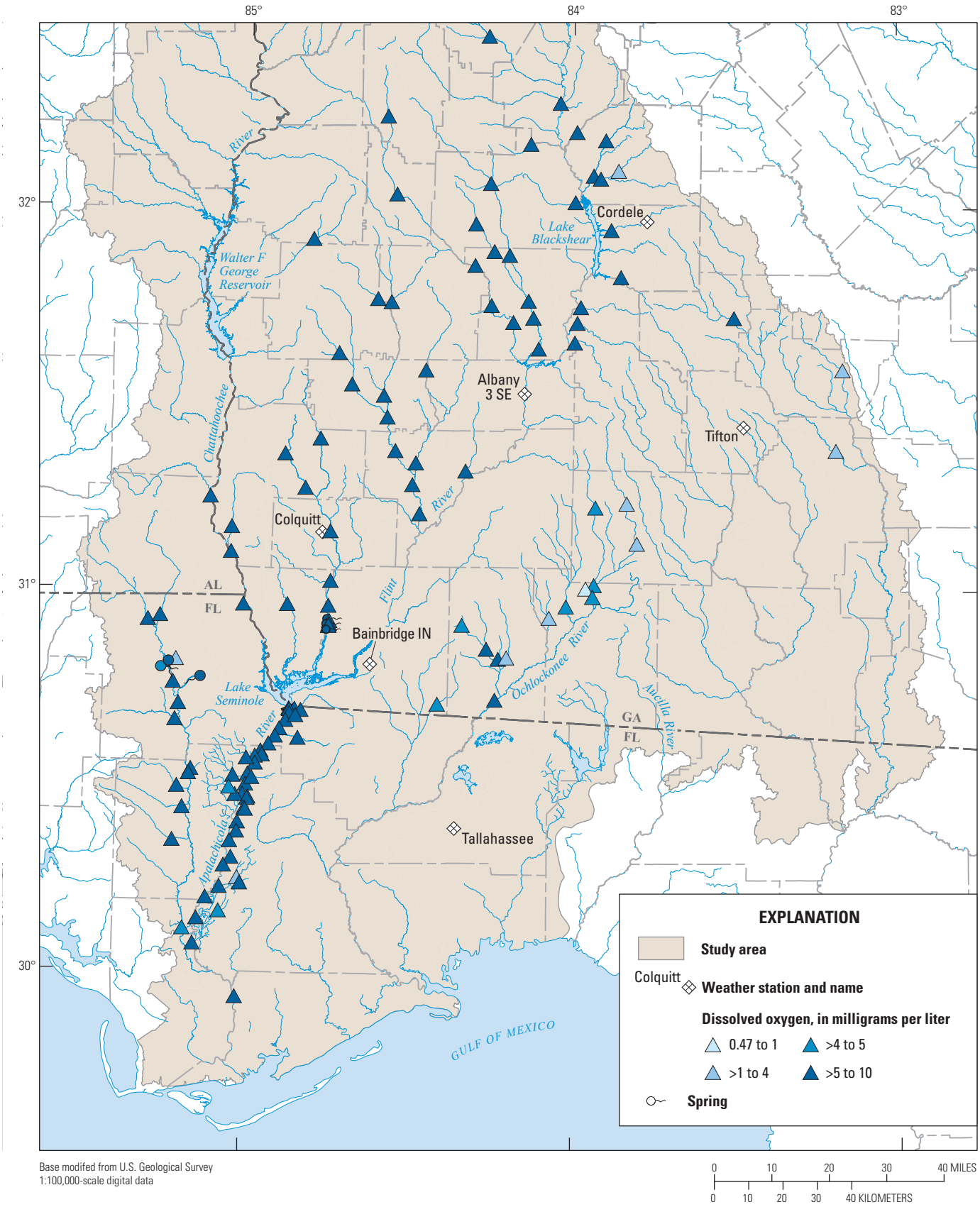

Figure 15. Location of surface-water sites with dissolved oxygen measurements in the lower Apalachicola–Chattahoochee–Flint River basin and in western and central parts of the Aucilla–Suwannee–Ochlockonee River basin, Georgia and Florida, July 2011.

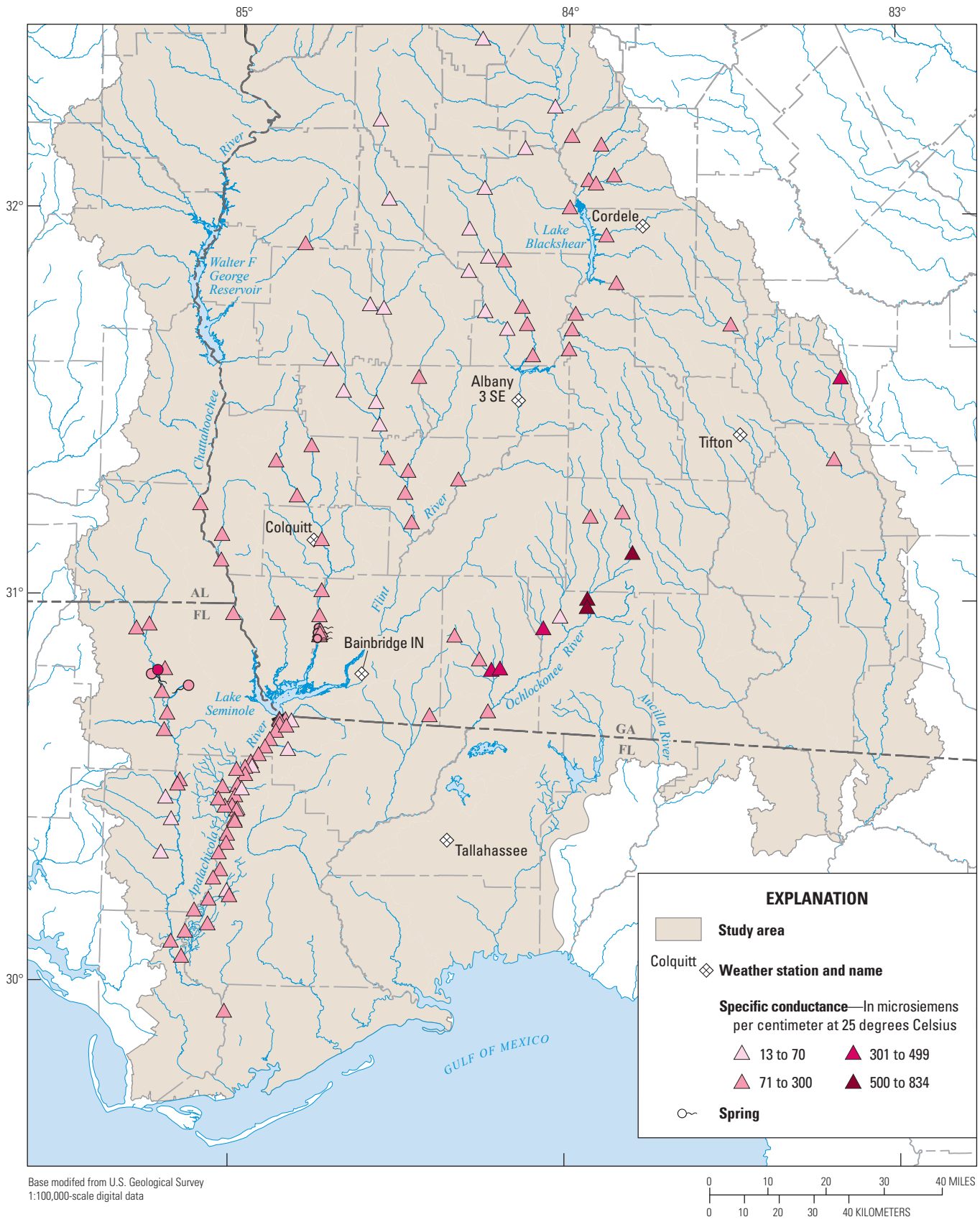

Figure 16. Location of surface-water sites with specific conductance measurements in the lower Apalachicola–Chattahoochee–Flint River basin and in western and central parts of the Aucilla–Suwannee–Ochlockonee River basin, Georgia and Florida, July 2011.

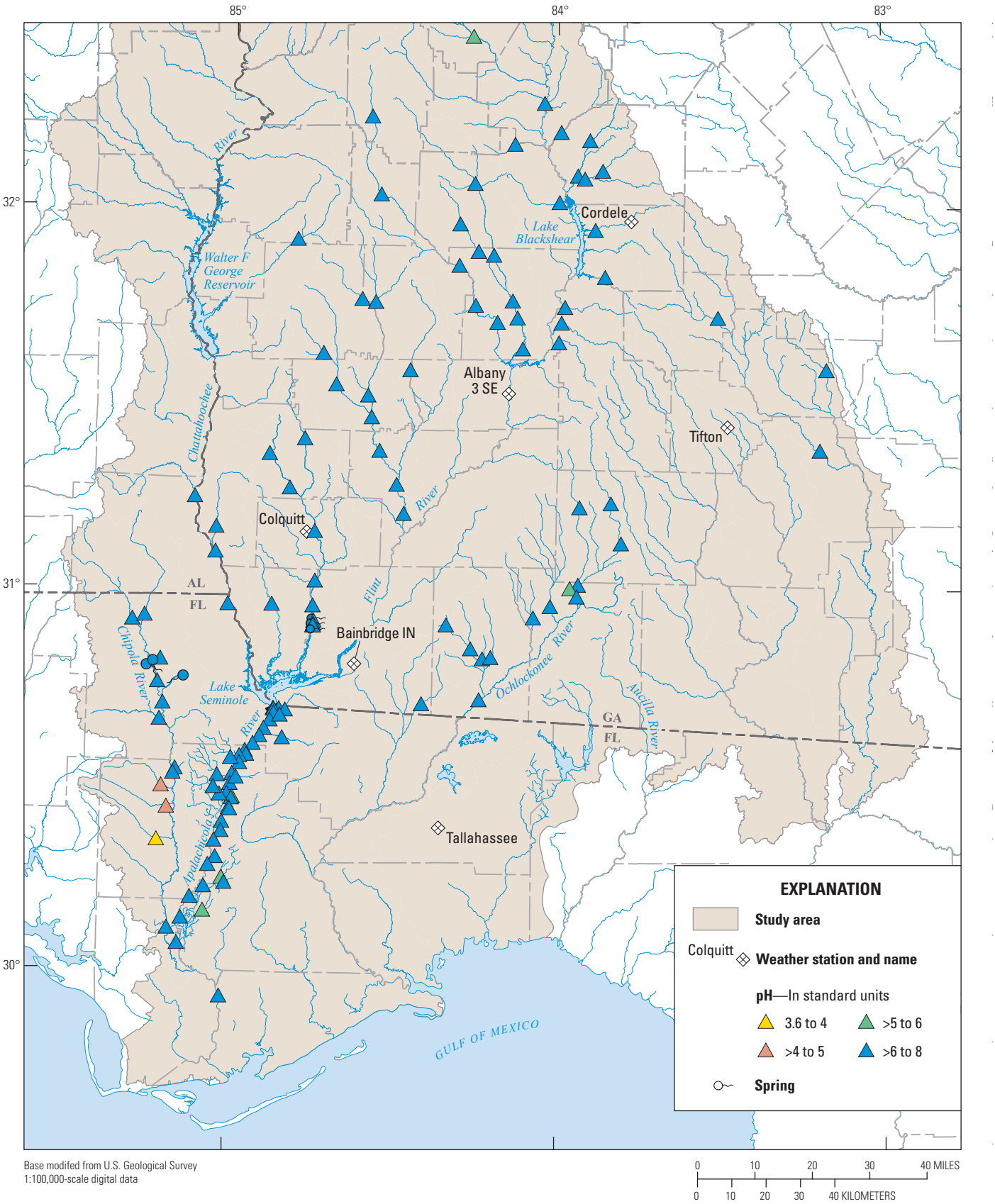

Figure 17. Location of surface-water sites with pH measurements in the lower Apalachicola–Chattahoochee–Flint River basin and in western and central parts of the Aucilla–Suwannee–Ochlockonee River basin, Georgia and Florida, July 2011.

Summary

During most of 2011, southwestern Georgia, southeastern Alabama, and north-central Florida experienced severe drought conditions. Graphs of cumulative departure from normal precipitation during 2008–2011 show a long-term precipitation deficit ranging from 17 to 27 inches. Groundwater levels were below normal throughout most of 2011, and record-low water levels were recorded at 128 Upper Floridan aquifer wells in Georgia during July. Flow was below normal in many of the streams measured during July 2011.

A potentiometric-surface map of the Upper Floridan aquifer was constructed using water-level measurements collected in 312 wells in Alabama, Florida, and Georgia during July 18–22, 2011. The potentiometric surface indicates that groundwater in the study area generally flows to the south and toward streams except where stream reaches discharge to the Upper Floridan aquifer. One of the most prominent features of the potentiometric surface is the Gulf Trough, an area where the hydraulic gradient abruptly steepens. The degree of direct connection between the Upper Floridan aquifer and the streams decreases east of the Flint River where the overburden is thicker than it is west of the Flint River. The decreased connection is evident from stream-stage altitudes measured in July 2011 east of the Flint River, which differed from water-level altitudes in the Upper Floridan aquifer by as much as 160 feet.

Streamflow was used to estimate stream seepage in July 2011. Although some rain fell during the 7 days prior to the measurement period, measurements were collected after the peak discharge subsided. The measurements suggest that of the 2,122 stream miles, 286 miles depicted losing streams, 1,230 miles identified gaining streams, and 606 miles contained no flow. Many of the stream reaches in the Alapaha River subbasin were dry when measured in July 2011, as they had been in November 2008.

Water-quality field properties including pH, dissolved oxygen, specific conductance, and temperature, were measured at 123 stream and 5 spring sites. Temperature ranged from 20.6 to 31.6 degrees Celsius (°C). The five samples with the lowest temperatures, between 20 and 22 °C, were collected from springs and suggest groundwater discharge. Dissolved oxygen concentrations ranged from 0.47 to 9.98 milligrams per liter (mg/L). Ten samples had dissolved oxygen levels below 4 mg/L, suggesting a stressful environment for organisms. Specific conductance ranged from 13 to 834 microsiemens per centimeter (µS/cm) at 25 °C. Twenty-seven samples had specific conductance values below 70 µS/cm, suggesting recent recharge or rainwater. Values of pH ranged from 3.6 to 8.03. Three samples located on tributaries of the Chipola River in Calhoun County, Florida, had pH levels below 5.0, suggesting recent recharge of rainwater that might affect the reproduction of fish.

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Tables 1–5

Table 1. Period of record (1981–2010) monthly maximum, mean, and minimum values for temperature and precipitation at selected climatological stations in southwestern Georgia and northwestern Florida (Golden Gate Weather Services, 2011).

[—, not available]

Precipitation	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
City: ALBANY 3 SE State: GA ID: USC00090140 Latitude: 31°32'02"N Longitude: 84°08'56"W County: Dougherty Elevation: 180 feet													
Temperature													
Maximum	59.8	64.4	71.3	78.4	85.7	90.7	92.8	92.1	88	79.9	71	62.4	78.1
Mean	47.9	51.8	58.2	64.9	73.2	79.8	82.4	81.9	77.2	67.4	58	50.5	66.2
Minimum	36	39.2	45.1	51.4	60.8	68.9	72.1	71.8	66.4	54.9	45	38.6	54.3
Precipitation													
Normal	5.11	4.42	5.28	3.38	3.26	4.96	5.93	5.2	3.65	2.65	3.61	3.97	51.42
2011	4.68	4.75	4.05	1.83	0.89	1.88	7.63	3.12	1.82	2.62	1.74	2.2	37.21
City: COLQUITT 2W State: GA ID: USC00092153 Latitude: 31°10'05"N Longitude: 84°45'59"W County: Miller Elevation: 153 feet													
Temperature													
Maximum	62.3	66	73.1	78.9	86.1	90.9	92	91.4	87.6	80.4	71.3	64.1	78.7
Mean	50.9	53.8	60.4	65.5	73.8	79.8	81.4	81.1	76.5	68.1	59.5	52.8	67
Minimum	39.6	41.7	47.6	52	61.6	68.8	70.9	70.8	65.4	55.7	47.7	41.5	55.3
Precipitation													
Normal	—	—	—	—	—	—	—	—	—	—	—	—	—
2011	2.53	7.77	3.2	1.56	0.01	1.91	1.99	0.98	1.66	1.79	0.6	1.3	25.3
City: CORDELE State: GA ID: USC00092266 Latitude: 31°59'06"N Longitude: 83°46'29"W County: Crisp Elevation: 308 feet													
Temperature													
Maximum	56.7	61	68.9	76.5	84.2	89.8	92	90.5	85.4	76.9	67.7	58.6	75.8
Mean	45.9	49.8	56.7	64	72.2	78.9	81.2	80.2	74.9	65.1	55.8	47.8	64.4
Minimum	35.2	38.6	44.4	51.5	60.2	67.9	70.5	69.8	64.4	53.3	43.9	37	53.1
Precipitation													
Normal	4.65	4.02	4.86	3.37	2.8	4.48	4.14	3.9	4.25	2.14	3.33	3.95	45.89
2011	4.14	4.21	5.74	0.99	0.2	1.76	10.22	2.05	1.15	1.72	2.08	3.2	37.46

Table 1. Period of record (1981–2010) monthly maximum, mean, and minimum values for temperature and precipitation at selected climatological stations in southwestern Georgia and northwestern Florida (Golden Gate Weather Services, 2011).—Continued

[—, not available]

Precipitation	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
City: TIFTON State: GA ID: USC00098703 Latitude: 31°26'46"N Longitude: 83.28'36"W County: Tift Elevation: 380 feet													
Temperature													
Maximum	59.3	63.5	70.3	76.9	84.4	89.3	91.4	90.4	86.5	78.7	70	61.5	76.9
Mean	48	51.8	58.2	64.5	72.7	78.5	80.8	80.2	75.8	66.7	57.9	50.4	65.5
Minimum	36.6	40	46.1	52.1	60.9	67.7	70.3	70	65.1	54.7	45.8	39.3	54.1
Precipitation													
Normal	4.69	4.18	5.24	3.09	2.78	4.56	4.72	4.46	3.97	2.71	3.19	3.71	47.3
2011	3.43	3.69	3.4	1.22	0.56	4.31	4.88	2.98	5.81	4.1	1.67	1.95	38
City: TALLAHASSEE AP State: FL ID: USC00088756 Latitude: 30°23'46"N Longitude: 84°21'20"W County: Leon Elevation: 55 feet													
Temperature													
Maximum	64.2	67.7	75.2	80.5	87.8	91.5	92.6	92.9	89.5	82.3	74.8	65.8	80.5
Mean	50.8	54.2	60.6	66.3	74.5	80.2	82	82.2	78.4	69	60.4	52.6	67.6
Minimum	37.4	40.7	46	52	61.2	68.9	71.3	71.4	67.3	55.7	45.9	39.3	54.8
Precipitation													
Normal	4.88	4.59	5.43	3.18	2.93	7.17	6.71	8.34	4.5	3.05	3.41	3.87	58.06
2011	4.3	2.72	3.21	2.01	0.7	5.77	5.26	2.07	4.26	1.77	1.02	4.53	37.62
Temperature—Mean monthly for all sites													
Minimum	45.9	49.8	56.7	64	72.2	78.5	80.8	80.2	74.9	65.1	55.8	47.8	64.4
Maximum	50.9	54.2	60.6	66.3	74.5	80.2	82.4	82.2	78.4	69	60.4	52.8	67.6
Average	48.7	52.3	58.8	65.0	73.3	79.4	81.6	81.1	76.6	67.3	58.3	50.8	66.1
Precipitation—Total monthly													
Minimum	4.65	4.02	4.86	3.09	2.78	4.48	4.14	3.9	3.65	2.14	3.19	3.71	45.89
Maximum	5.11	4.59	5.43	3.38	3.26	7.17	6.71	8.34	4.5	3.05	3.61	3.97	58.06
Average	4.83	4.30	5.20	3.25	2.94	5.29	5.37	5.47	4.09	2.64	3.38	3.87	50.67

Table 2. Water levels in the surficial aquifer in Georgia and Florida, July 2011 and October 2006.

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data]

State	County	Site number	Station name	Latitude (ddmmss)	Longitude (ddmmss)	Altitude of land surface (ft)
Florida	Calhoun	302655085041103	302655085041103	30°26'56"N	85°04'10"W	82.4
Florida	Gadsden	303312084423501	303312084423501	30°33'14"N	84°42'34"W	264.4
Florida	Gadsden	303109084275402	303109084275402	30°31'08"N	84°27'50"W	200.67
Florida	Gadsden	303109084275404	303109084275404	30°31'07"N	84°27'49"W	198
Florida	Leon	301831084365604	301831084365604	30°18'32"N	84°36'56"W	109
Florida	Leon	303142084214602	303142084214602	30°31'43"N	84°21'46"W	121.6
Georgia	Baker	311714084275101	10J008	31°17'14"N	84°27'51"W	170
Georgia	Baker	312241084244401	10K007	31°22'40"N	84°24'44"W	180
Georgia	Dougherty	312950084131803	12K143	31°29'51"N	84°13'18"W	194.44
Georgia	Dougherty	313019084104602	12L371	31°30'20"N	84°10'46"W	190
Georgia	Dougherty	313038084122501	12L376	31°30'42"N	84°12'33"W	190.1
Georgia	Dougherty	313130084101002	12L049	31°31'31"N	84°10'10"W	179
Georgia	Dougherty	313130084101003	12L050	31°31'31"N	84°10'10"W	179
Georgia	Dougherty	313511084085207	12L287	31°35'12"N	84°08'52"W	191.46
Georgia	Dougherty	313511084085208	12L288	31°35'12"N	84°08'52"W	191.46
Georgia	Grady	304346084073501	12D034	30°43'47"N	84°07'35"W	234
Georgia	Miller	311009084495503	07H003	31°10'09"N	84°49'54"W	166.90
Georgia	Mitchell	311919084023902	13J010	31°19'22"N	84°03'12"W	270
Georgia	Sumter	320001084032801	13Q051	32°00'03"N	84°03'25"W	325
Georgia	Sumter	320011084121501	12Q056	32°00'12"N	84°12'12"W	352
Georgia	Sumter	320051084061401	13Q050	32°00'50"N	84°06'15"W	358
Georgia	Tift	312003083314401	17J022	31°20'04"N	83°31'44"W	267
Georgia	Tift	312021083350101	17J023	31°20'22"N	83°35'01"W	284
Georgia	Tift	312127083374701	16J033	31°21'27"N	83°37'47"W	325.1
Georgia	Tift	312505083382001	16K019	31°25'05"N	83°38'20"W	310.7
Georgia	Tift	312623083352401	17K066	31°26'23"N	83°35'24"W	329
Georgia	Tift	313116083342601	17L029	31°31'15"N	83°34'26"W	321.3
Georgia	Tift	313116083342601	17L029	31°31'15"N	83°34'26"W	321.3
Georgia	Tift	313122083325101	17L026	31°31'23"N	83°32'51"W	359
Georgia	Tift	313144083335501	17L028	31°31'44"N	83°33'55"W	322.3
Georgia	Turner	313435083390101	16L021	31°34'36"N	83°39'01"W	334
Georgia	Turner	313630083385001	16L022	31°36'31"N	83°38'50"W	341
Georgia	Turner	313822083311901	17M010	31°38'23"N	83°31'19"W	329
Georgia	Turner	313950083425401	16M015	31°39'51"N	83°42'54"W	416
Georgia	Turner	314115083351301	17M011	31°41'15"N	83°35'13"W	394.1
Georgia	Turner	314123083391301	16M016	31°41'24"N	83°39'13"W	403
Georgia	Turner	314847083360301	17N002	31°48'48"N	83°36'03"W	364
Georgia	Turner	315059083350901	17N003	31°51'00"N	83°35'09"W	429
Georgia	Worth	312025083401101	16J032	31°20'26"N	83°40'11"W	310
Georgia	Worth	312356083462001	15K012	31°23'57"N	83°46'20"W	316
Georgia	Worth	313521083501402	15L033	31°35'27"N	83°50'18"W	409
Georgia	Worth	315009083571001	14N008	31°50'12"N	83°57'13"W	239
Georgia	Worth	314330084005403	13M007	31°43'31"N	84°00'51"W	237.84

Table 2. Water levels in the surficial aquifer in Georgia and Florida, July 2011 and October 2006.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data]

Station name	Date measured in 2011	Depth of water below land surface (ft)	Altitude of water surface (ft)	Date measured in 2006	Depth to water below land surface (ft)	Altitude of water surface (ft)	Water-level change from 2006 to 2011 (ft)
302655085041103	7/2/2011	155.73	73.33	—	—	—	—
303312084423501	7/2/2011	503.34	238.94	—	—	—	—
303109084275402	7/2/2011	355.85	155.18	—	—	—	—
303109084275404	7/2/2011	376.42	178.42	—	—	—	—
301831084365604	7/19/2011	13.65	95.35	—	—	—	—
303142084214602	7/19/2011	40.57	81.03	—	—	—	—
10J008	7/19/2011	45.46	124.54	—	—	—	—
10K007	7/19/2011	29.45	150.55	—	—	—	—
12K143	7/20/2011	—	—	—	—	—	—
12L371	7/19/2011	—	—	—	—	—	—
12L376	7/19/2011	37.69	152.41	—	—	—	—
12L049	7/19/2011	—	—	—	—	—	—
12L050	7/19/2011	—	—	—	—	—	—
12L287	7/19/2011	—	—	—	—	—	—
12L288	7/19/2011	—	—	—	—	—	—
12D034	7/21/2011	13.30	220.70	—	—	—	—
07H003	7/19/2011	7.83	159.07	—	—	—	—
13J010	7/20/2011	—	—	—	—	—	—
13Q051	7/1/2011	39.15	285.85	10/16/2006	34.89	290.11	4.26
12Q056	7/1/2011	7.47	344.53	—	—	—	—
13Q050	7/1/2011	28.19	329.81	—	—	—	—
17J022	7/19/2011	7.31	259.69	10/3/2006	6.95	261.05	1.36
17J023	7/19/2011	6.74	277.26	10/3/2006	4.20	280.8	3.54
16J033	7/19/2011	31.84	293.26	10/3/2006	27.16	297.94	4.68
16K019	7/19/2011	10.69	300.01	10/3/2006	7.29	303.41	3.4
17K066	7/19/2011	16.64	312.36	10/4/2006	15.52	313.48	1.12
17L029	7/18/2011	157.90	163.40	10/5/2006	9.40	311.9	148.50
17L029	7/19/2011	10.45	310.85	10/5/2006	9.40	311.9	1.05
17L026	7/18/2011	3.17	355.83	10/5/2006	5.03	354.97	−0.86
17L028	7/18/2011	9.67	312.63	10/5/2006	9.22	313.08	0.45
16L021	7/18/2011	21.07	312.93	10/5/2006	20.92	314.08	1.15
16L022	7/18/2011	15.44	325.56	10/5/2006	18.78	323.22	–2.34
17M010	7/18/2011	24.64	304.36	10/4/2006	25.48	304.52	0.16
16M015	7/18/2011	8.50	407.50	10/4/2006	14.39	402.61	−4.89
17M011	7/18/2011	9.38	384.72	10/4/2006	8.12	385.98	1.26
16M016	7/18/2011	20.46	382.54	10/4/2006	21.72	382.28	−0.26
17N002	7/18/2011	15.68	348.32	10/4/2006	16.74	348.26	−0.06
17N003	7/18/2011	19.11	409.89	10/4/2006	17.48	412.52	2.63
16J032	7/19/2011	11.98	298.02	10/3/2006	10.62	300.38	2.36
15K012	7/20/2011	12.80	303.20	10/3/2006	13.51	303.49	0.29
15L033	7/1/2011	5.17	403.83	—	—	—	—
14N008	7/1/2011	6.40	232.60	—	—	—	—
13M007	7/19/2011	11.12	226.72	—	—	—	—

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

State	County	Site number	Station name	Latitude (ddmmss)	Longitude (ddmmss)	Altitude of land surface (ft)
Alabama	Houston	310017085063401	310017085063401	31°00'17"N	85°06'34"W	107.77
Alabama	Houston	311505085140101	311505085140101	31°15'06"N	85°14'02"W	226.96
Alabama	Houston	310153085225901	310153085225901	31°01'53"N	85°22'59"W	132.86
Alabama	Houston	310208085194001	310208085194001	31°02'08"N	85°19'40"W	130.39
Alabama	Houston	310329085145401	310329085145401	31°03'29"N	85°14'54"W	124.03
Alabama	Houston	310539085232601	310539085232601	31°05'44"N	85°23'27"W	161.96
Florida	Calhoun	301403085112801	301403085112801	30°14'34"N	85°11'30"W	21
Florida	Calhoun	303415085074001	303415085074001	30°34'16"N	85°07'40"W	207.56
Florida	Franklin	295046084394301	295046084394301	29°50'47"N	84°39'43"W	4.48
Florida	Franklin	295507084311901	295507084311901	29°55'08"N	84°31'19"W	29.38
Florida	Franklin	295732084430701	295732084430701	29°57'33"N	84°43'07"W	9.42
Florida	Franklin	295918085005201	295918085005201	29°59'19"N	85°00'52"W	14.91
Florida	Franklin	295638084362301	295638084362301	29°56'37"N	84°36'23"W	18.35
Florida	Franklin	294337084532401	294337084532401	29°43'38"N	84°53'24"W	4.42
Florida	Camden	303550084345001	303550084345001	30°35'51"N	84°34'49"W	150.46
Florida	Gadsden	303845084250001	303845084250001	30°38'46"N	84°24'59"W	257.08
Florida	Gadsden	304056084502501	304056084502501	30°40'57"N	84°50'24"W	117.49
Florida	Gadsden	304154084453901	304154084453901	30°41'54"N	84°45'39"W	282
Florida	Gulf	300703085160401	300703085160401	30°07'04"N	85°16'04"W	40.45
Florida	Gulf	294936085175001	294936085175001	29°49'36"N	85°17'50"W	16.4
Florida	Gulf	294032085204501	294032085204501	29°40'33"N	85°20'45"W	9.52
Florida	Gulf	294102085134801	294102085134801	29°41'04"N	85°13'20"W	6.5
Florida	Jackson	303701085231301	303701085231301	30°37'02"N	85°23'12"W	304.6
Florida	Jackson	304230084535901	304230084535901	30°42'33"N	84°54'00"W	98.25
Florida	Jackson	304413085064401	304413085064401	30°44'14"N	85°06'43"W	166.31
Florida	Jackson	304918084565601	304918084565601	30°49'19"N	84°56'55"W	109.56
Florida	Jackson	305113085043601	305113085043601	30°51'15"N	85°04'37"W	127.21
Florida	Jackson	305713085305302	305713085305302	30°57'15"N	85°30'53"W	145.65
Florida	Jackson	305905085063401	305905085063401	30°59'04"N	85°06'34"W	147
Florida	Jackson	305351085013903	305351085013903	30°53'55"N	85°01'40"W	122.89
Florida	Jackson	305822085095701	305822085095701	30°58'26"N	85°10'01"W	146
Florida	Leon	301844084173501	301844084173501	30°18'45"N	84°17'35"W	25
Florida	Leon	301844084173502	301844084173502	30°18'41"N	84°17'37"W	24.55
Florida	Leon	302037084082701	302037084082701	30°20'39"N	84°08'27"W	28.56
Florida	Leon	302039084082601	302039084082601	30°20'40"N	84°08'26"W	28.35
Florida	Leon	302404084200701	302404084200701	30°24'05"N	84°20'07"W	45.67
Florida	Leon	302410084200002	302410084200002	30°24'11"N	84°21'00"W	36.86
Florida	Leon	302710084163001	302710084163001	30°27'11"N	84°16'30"W	185.84

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

Station name	Date measured in 2011	Depth to water below land surface (ft)	Altitude of water surface (ft)	Date measured in 2008	Depth to water below land surface (ft)	Altitude of water surface (ft)	Water-level change from 2008 to 2011 (ft)
310017085063401	7/19/2011	40.84	107.77	—	—	—	—
311505085140101	7/18/2011	14.7	226.96	—	—	—	—
310153085225901	7/18/2011	26.79	132.86	—	—	—	—
310208085194001	7/18/2011	19.25	130.39	—	—	—	—
310329085145401	7/18/2011	35.6	124.03	—	—	—	—
310539085232601	7/18/2011	37.69	161.96	—	—	—	—
301403085112801	7/20/2011	—	25.357	—	—	—	—
303415085074001	7/20/2011	—	49.273	—	—	—	—
295046084394301	7/20/2011	0.73	3.75	—	—	—	—
295507084311901	7/20/2011	23.25	6.13	—	—	—	—
295732084430701	7/20/2011	–3.23	12.65	—	—	—	—
295918085005201	7/22/2011	–2.9	17.81	—	—	—	—
295638084362301	7/20/2011	8.63	9.72	—	—	—	—
294337084532401	7/20/2011	–5.58	10	—	—	—	—
303550084345001	7/21/2011	—	53.615	—	—	—	—
303845084250001	7/22/2011	—	47.246	—	—	—	—
304056084502501	7/21/2011	—	60.934	—	—	—	—
304154084453901	7/21/2011	—	75.624	—	—	—	—
300703085160401	7/21/2011	17.44	23.01	—	—	—	—
294936085175001	7/21/2011	11.81	4.59	—	—	—	—
294032085204501	7/21/2011	2.64	6.88	—	—	—	—
294102085134801	7/21/2011	3.85	2.65	—	—	—	—
303701085231301	7/19/2011	—	94.882	—	—	—	—
304230084535901	7/19/2011	—	70.673	—	—	—	—
304413085064401	7/19/2011	—	83.985	—	—	—	—
304918084565601	7/19/2011	—	77.915	—	—	—	—
305113085043601	7/19/2011	—	79.918	—	—	—	—
305713085305302	7/19/2011	—	127.117	—	—	—	—
305905085063401	7/19/2011	—	102.411	—	—	—	—
305351085013903	7/19/2011	—	86.459	—	—	—	—
305822085095701	7/19/2011	—	106.319	—	—	—	—
301844084173501	7/19/2011	19.05	5.95	—	—	—	—
301844084173502	7/19/2011	17.78	6.77	—	—	—	—
302037084082701	7/19/2011	9.57	18.99	—	—	—	—
302039084082601	7/19/2011	9.14	19.21	—	—	—	—
302404084200701	7/19/2011	21.37	24.3	—	—	—	—
302410084200002	7/19/2011	10.59	26.27	—	—	—	—
302710084163001	7/22/2011	167.24	18.6	—	—	—	—

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

State	County	Site number	Station name	Latitude (ddmmss)	Longitude (ddmmss)	Altitude of land surface (ft)
Florida	Leon	303001084134701	303001084134701	30°30'02"N	84°13'47"W	191.23
Florida	Leon	302613084130001	302613084130001	30°26'23"N	84°13'07"W	132.5
Florida	Liberty	300813084555701	300813084555701	30°08'14"N	84°55'56"W	51.46
Florida	Liberty	301035084403701	301035084403701	30°10'36"N	84°40'36"W	21.69
Florida	Wakulla	300540084174001	300540084174001	30°05'41"N	84°17'40"W	8.33
Florida	Wakulla	300655084223701	300655084223701	30°06'56"N	84°22'36"W	31.48
Florida	Wakulla	301115084241201	301115084241201	30°11'16"N	84°24'12"W	34.35
Florida	Wakulla	301156084103501	301156084103501	30°11'57"N	84°10'35"W	6.3
Florida	Wakulla	301104084255401	301104084255401	30°11'00"N	84°25'47"W	44.22
Florida	Wakulla	301337084204001	301337084204001	30°13'36"N	84°20'39"W	17.67
Florida	Wakulla	301008084123801	301008084123801	30°10'09"N	84°12'38"W	10
Florida	Wakulla	300740084293001	300740084293001	30°07'41"N	84°29'30"W	46.77
Georgia	Ben Hill	314523083174801	19N003	31°45'24"N	83°17'48"W	360
Georgia	Ben Hill	314745083261401	18N003	31°47'49"N	83°26'06"W	373
Georgia	Ben Hill	314924083162001	19N007	31°49'24"N	83°16'20"W	251.35
Georgia	Berrien	311622083192401	19J011	31°16'22"N	83°19'24"W	253
Georgia	Berrien	312147083162101	19J013	31°21'47"N	83°16'21"W	285
Georgia	Berrien	312810083104701	20K020	31°28'10"N	83°10'47"W	312
Georgia	Calhoun	312853084275101	10K005	31°28'54"N	84°27'51"W	190
Georgia	Calhoun	313532084283501	10L004	31°35'33"N	84°28'35"W	233.59
Georgia	Calhoun	312919084313701	09K012	31°29'19"N	84°31'37"W	213
Georgia	Calhoun	313246084303201	09L029	31°32'46"N	84°30'32"W	236
Georgia	Coffee	312612082423901	24K001	31°26'12"N	82°42'39"W	185
Georgia	Coffee	313019082505201	23L007	31°30'20"N	82°50'52"W	250.36
Georgia	Coffee	313211082511801	23L004	31°32'17"N	82°51'20"W	244.21
Georgia	Coffee	313325082462801	23L021	31°33'25"N	82°46'28"W	236
Georgia	Coffee	313632082412201	24L004	31°36'330"N	82°41'21"W	236.17
Georgia	Coffee	313903082590501	22M003	31°38'56"N	82°59'00"W	286.25
Georgia	Coffee	314200082550001	22M010	31°42'00"N	82°55'00"W	306
Georgia	Colquitt	310211083405301	16G001	31°03'11"N	83°41'06"W	267.37
Georgia	Colquitt	310443083491701	15G010	31°04'44"N	83°49'17"W	280.48
Georgia	Colquitt	310720083505801	15G022	31°07'17"N	83°50'58"W	248.49
Georgia	Colquitt	311006083402001	16H028	31°10'12"N	83°40'12"W	267.42
Georgia	Colquitt	311220083330201	17H027	31°12'23"N	83°33'03"W	262.39
Georgia	Colquitt	311400083544001	14H007	31°14'01"N	83°54'40"W	336.49

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

Station name	Date measured in 2011	Depth to water below land surface (ft)	Altitude of water surface (ft)	Date measured in 2008	Depth to water below land surface (ft)	Altitude of water surface (ft)	Water-level change from 2008 to 2011 (ft)
303001084134701	7/22/2011	162.36	28.87	—	—	—	—
302613084130001	7/19/2011	112.53	19.97	—	—	—	—
300813084555701	7/20/2011	—	52.976	—	—	—	—
301035084403701	7/20/2011	—	29.788	—	—	—	—
300540084174001	7/18/2011	3.8	4.53	—	—	—	—
300655084223701	7/18/2011	25.32	6.16	—	—	—	—
301115084241201	7/18/2011	8.29	26.06	—	—	—	—
301156084103501	7/18/2011	2.58	3.72	—	—	—	—
301104084255401	7/18/2011	15.69	28.53	—	—	—	—
301337084204001	7/18/2011	11.1	6.57	—	—	—	—
301008084123801	7/18/2011	6.64	3.36	—	—	—	—
300740084293001	7/19/2011	—	29.795	—	—	—	—
19N003	7/19/2011	162.10	197.9	11/7/2008	165.80	194.56	–3.34
18N003	7/19/2011	178.91	194.09	11/6/2008	175.60	197.78	3.69
19N007	7/19/2011	94.08	157.27	11/7/2008	92.20	159.15	1.88
19J011	7/18/2011	197.08	55.92	—	—	—	—
19J013	7/18/2011	239.14	45.86	—	—	—	—
20K020	7/18/2011	194.09	117.91	—	—	—	—
10K005	7/18/2011	30.95	159.05	11/3/2008	21.96	168.04	8.99
10L004	7/18/2011	22.23	211.36	11/3/2008	13.35	220.24	8.88
09K012	7/18/2011	35.41	177.59	—	—	—	—
09L029	7/18/2011	37.70	198.3	—	—	—	—
24K001	7/19/2011	144.92	40.08	—	—	—	—
23L007	7/19/2011	209.06	41.3	—	—	—	—
23L004	7/19/2011	203.42	40.79	—	—	—	—
23L021	7/19/2011	208.16	27.84	—	—	—	—
24L004	7/19/2011	191.32	44.85	—	—	—	—
22M003	7/19/2011	182.09	104.16	—	—	—	—
22M010	7/19/2011	220.56	85.44	—	—	—	—
16G001	7/19/2011	203.28	64.09	11/5/2008	198.23	69.14	5.05
15G010	7/19/2011	217.45	63.03	11/4/2008	213.01	67.47	4.44
15G022	7/19/2011	182.71	65.78	11/4/2008	177.37	71.12	5.34
16H028	7/19/2011	202.61	64.81	11/5/2008	203.51	63.91	–0.90
17H027	7/19/2011	206.77	55.62	11/5/2008	207.10	55.29	–0.33
14H007	7/19/2011	193.72	142.77	11/4/2008	191.83	144.66	1.89

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

State	County	Site number	Station name	Latitude (ddmmss)	Longitude (ddmmss)	Altitude of land surface (ft)
Georgia	Colquitt	311427083464201	15H022	31°14'28"N	83°46'33"W	347.45
Georgia	Colquitt	311452083400701	16H037	31°14'57"N	83°40'10"W	327.44
Georgia	Colquitt	311643083490001	15J013	31°16'44"N	83°49'01"W	369
Georgia	Colquitt	311730083412501	16J019	31°17'34"N	83°41'28"W	312.44
Georgia	Colquitt	311845083313901	17J009	31°18'437"N	83°31'28"W	257.38
Georgia	Colquitt	311930083390901	16J009	31°19'33"N	83°39'29"W	316.44
Georgia	Colquitt	310509083495401	15G023	31°05'10"N	83°49'54"W	264.49
Georgia	Colquitt	310517083483301	15G016	31°05'18"N	83°48'33"W	282.48
Georgia	Colquitt	310525083490201	15G021	31°05'25"N	83°49'02"W	272.48
Georgia	Colquitt	310535083490001	15G004	31°05'29"N	83°48'56"W	278.48
Georgia	Colquitt	310612083481101	15G020	31°06'17"N	83°48'38"W	258.48
Georgia	Colquitt	310617083474701	15G017	31°06'18"N	83°47'47"W	289.47
Georgia	Cook	310813083260301	18H016	31°08'14"N	83°26'03"W	240.78
Georgia	Cook	310221083212201	19G011	31°02'22"N	83°21'22"W	240.36
Georgia	Cook	310714083324001	17G017	31°07'15"N	83°32'40"W	217.37
Georgia	Cook	310931083314401	17H007	31°09'32"N	83°31'44"W	247.81
Georgia	Cook	311255083275801	18H042	31°12'56"N	83°27'58"W	259.37
Georgia	Cook	311531083303901	17J027	31°15'31"N	83°30'39"W	220.01
Georgia	Crisp	315703083493601	15P018	31°57'053"N	83°49'36"W	291.46
Georgia	Crisp	320139083511602	15Q016	32°01'48"N	83°51'08"W	329
Georgia	Crisp	315610083392301	16P022	31°56'10"N	83°39'23"W	425
Georgia	Decatur	304247084402001	08D006	30°42'48"N	84°40'20"W	290
Georgia	Decatur	304353084424201	08D005	30°43'54"N	84°42'42"W	276
Georgia	Decatur	304408084444701	08D003	30°44'09"N	84°44'47"W	250
Georgia	Decatur	304415084434801	08D002	30°44'16"N	84°43'48"W	285
Georgia	Decatur	304450084442701	08D001	30°44'51"N	84°44'27"W	252
Georgia	Decatur	304454084402401	08D090	30°44'55"N	84°40'24"W	293
Georgia	Decatur	304456084400201	08D007	30°44'57"N	84°40'02"W	300
Georgia	Decatur	304457084290101	10D015	30°44'58"N	84°29'01"W	314.57
Georgia	Decatur	304508084470601	07E003	30°45'09"N	84°47'06"W	189.84
Georgia	Decatur	304532084450801	07E009	30°45'33"N	84°45'08"W	158
Georgia	Decatur	304536084434101	08E024	30°45'37"N	84°43'40"W	165
Georgia	Decatur	304539084460301	07E001	30°45'40"N	84°46'03"W	170
Georgia	Decatur	304550084454501	07E008	30°45'51"N	84°45'45"W	130
Georgia	Decatur	304603084364701	09E521	30°46'04"N	84°36'47"W	280

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

Station name	Date measured in 2011	Depth to water below land surface (ft)	Altitude of water surface (ft)	Date measured in 2008	Depth to water below land surface (ft)	Altitude of water surface (ft)	Water-level change from 2008 to 2011 (ft)
15H022	7/19/2011	257.44	90.01	11/4/2008	258.03	89.42	–0.59
16H037	7/19/2011	270.47	56.97	11/5/2008	271.54	55.9	–1.07
15J013	7/19/2011	209.51	159.49	11/4/2008	208.41	161.05	1.56
16J019	7/19/2011	206.61	105.83	11/6/2008	205.41	107.03	1.20
17J009	7/18/2011	186.42	70.96	11/6/2008	185.07	72.31	1.35
16J009	7/19/2011	202.11	114.33	11/6/2008	203.00	113.44	–0.89
15G023	7/20/2011	191.72	72.77	—	—	—	—
15G016	7/20/2011	222.68	59.8	—	—	—	—
15G021	7/20/2011	211.47	61.01	—	—	—	—
15G004	7/20/2011	218.43	60.05	—	—	—	—
15G020	7/20/2011	202.91	55.57	—	—	—	—
15G017	7/20/2011	228.13	61.34	—	—	—	—
18H016	7/18/2011	183.70	57.08	11/7/2008	181.67	58.69	1.61
19G011	7/18/2011	178.29	62.07	—	—	—	—
17G017	7/18/2011	165.47	51.9	—	—	—	—
17H007	7/18/2011	190.74	57.069	—	—	—	—
18H042	7/18/2011	207.24	52.13	—	—	—	—
17J027	7/18/2011	166.95	53.06	—	—	—	—
15P018	7/19/2011	27.22	264.24	11/5/2008	25.36	266.1	1.86
15Q016	7/19/2011	76.93	252.07	11/5/2008	65.39	263.61	11.54
16P022	7/19/2011	181.11	243.89	—	—	—	—
08D006	7/19/2011	212.19	77.81	11/4/2008	211.28	78.72	0.91
08D005	7/19/2011	200.79	75.21	11/4/2008	199.72	76.28	1.07
08D003	7/18/2011	182.87	67.13	11/4/2008	181.39	68.61	1.48
08D002	7/18/2011	195.69	89.31	11/8/2008	196.45	88.55	–0.76
08D001	7/18/2011	179.48	72.52	11/5/2008	179.30	72.7	0.18
08D090	7/19/2011	218.38	74.62	11/4/2008	219.69	73.31	–1.31
08D007	7/19/2011	225.85	74.15	11/4/2008	224.34	75.66	1.51
10D015	7/19/2011	244.09	70.48	11/6/2008	242.39	72.18	1.70
07E003	7/18/2011	120.18	69.665	11/5/2008	119.61	69.39	–0.28
07E009	7/18/2011	84.44	73.56	11/5/2008	81.86	76.14	2.58
08E024	7/19/2011	75.28	89.72	11/5/2008	75.13	89.87	0.15
07E001	7/18/2011	100.43	69.57	11/5/2008	99.27	70.73	1.16
07E008	7/18/2011	32.19	97.81	11/5/2008	31.52	98.48	0.67
09E521	7/19/2011	184.36	95.64	11/3/2008	181.67	98.33	2.69

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

State	County	Site number	Station name	Latitude (ddmmss)	Longitude (ddmmss)	Altitude of land surface (ft)
Georgia	Decatur	304613084434301	08E019	30°46'14"N	84°43'43"W	90
Georgia	Decatur	304614084431401	08E022	30°46'14"N	84°43'13"W	85
Georgia	Decatur	304616084431101	08E021	30°46'16"N	84°43'12"W	85
Georgia	Decatur	304712084395801	08E038	30°47'12"N	84°39'58"W	99
Georgia	Decatur	304750084332201	09E009	30°47'51"N	84°33'21"W	300
Georgia	Decatur	304753084385101	08E031	30°47'54"N	84°38'51"W	192
Georgia	Decatur	304806084404101	08E039	30°48'07"N	84°40'41"W	91
Georgia	Decatur	304836084442201	08E035	30°48'37"N	84°44'22"W	90
Georgia	Decatur	304858084424701	08E034	30°48'59"N	84°42'47"W	107
Georgia	Decatur	305104084340201	09E007	30°51'05"N	84°34'02"W	137.88
Georgia	Decatur	305132084340301	09E006	30°51'32"N	84°34'03"W	110
Georgia	Decatur	305157084412901	08E037	30°51'58"N	84°41'29"W	125.1
Georgia	Decatur	305210084451901	07E044	30°52'11"N	84°45'19"W	89
Georgia	Decatur	305222084343001	09E005	30°52'23"N	84°34'29"W	120
Georgia	Decatur	305223084351301	09E004	30°52'24"N	84°35'13"W	115
Georgia	Decatur	305223084351701	09E003	30°52'23"N	84°35'17"W	115
Georgia	Decatur	305227084373501	08E032	30°50'28"N	84°37'35"W	95
Georgia	Decatur	305236084440701	08F018	30°52'37"N	84°44'07"W	118
Georgia	Decatur	305258084380501	08F499	30°52'59"N	84°38'05"W	100
Georgia	Decatur	305326084383901	08F009	30°53'27"N	84°38'38"W	117.57
Georgia	Decatur	305523084391401	08F012	30°55'21"N	84°39'15"W	114.59
Georgia	Decatur	305651084362401	09F005	30°56'52"N	84°36'24"W	129.59
Georgia	Decatur	305736084355801	09F520	30°57'43"N	84°35'46"W	127.6
Georgia	Decatur	305752084302201	09F004	30°57'54"N	84°30'22"W	118.6
Georgia	Decatur	305950084285401	10F001	30°59'51"N	84°28'54"W	139.6
Georgia	Decatur	310136084411701	08G005	31°01'37"N	84°41'17"W	129.63
Georgia	Decatur	310250084342001	09G010	31°02'51"N	84°34'21"W	144.64
Georgia	Decatur	310428084310501	09G001	31°04'29"N	84°31'05"W	144.64
Georgia	Decatur	304356084475901	07D005	30°43'56"N	84°47'59"W	154
Georgia	Decatur	304533084383201	07E062	30°45'34"N	84°48'31"W	134
Georgia	Decatur	305355084405101	08F017	30°53'56"N	84°40'51"W	118.57
Georgia	Decatur	305706084404401	08F513	30°57'06"N	84°40'43"W	132
Georgia	Decatur	305822084263601	10F004	30°58'23"N	84°26'36"W	144.6
Georgia	Decatur	305926084425901	08F514	30°59'26"N	84°43'00"W	119
Georgia	Decatur	310033084441701	08G015	31°00'33"N	84°44'17"W	118

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

Station name	Date measured in 2011	Depth to water below land surface (ft)	Altitude of water surface (ft)	Date measured in 2008	Depth to water below land surface (ft)	Altitude of water surface (ft)	Water-level change from 2008 to 2011 (ft)
08E019	7/19/2011	7.68	82.32	11/5/2008	6.10	83.9	1.58
08E022	7/19/2011	17.47	67.53	11/5/2008	17.23	67.77	0.24
08E021	7/19/2011	15.40	69.6	11/4/2008	14.79	70.21	0.61
08E038	7/19/2011	22.71	76.29	11/4/2008	22.24	76.76	0.47
09E009	7/18/2011	222.34	77.66	11/3/2008	218.89	81.11	3.45
08E031	7/19/2011	107.75	84.25	11/8/2008	107.58	84.42	0.17
08E039	7/20/2011	14.73	76.27	11/7/2008	16.64	74.36	–1.91
08E035	7/20/2011	14.19	75.81	11/7/2008	14.82	75.18	–0.63
08E034	7/20/2011	31.17	75.83	11/7/2008	31.87	75.13	–0.70
09E007	7/19/2011	51.93	85.948	11/3/2008	48.37	89.63	3.68
09E006	7/19/2011	43.29	66.71	11/4/2008	42.04	67.96	1.25
08E037	7/20/2011	50.79	74.31	11/7/2008	49.07	76.03	1.72
07E044	7/20/2011	27.77	61.23	11/7/2008	26.75	62.25	1.02
09E005	7/19/2011	42.79	77.21	11/3/2008	41.13	78.87	1.66
09E004	7/19/2011	35.60	79.4	11/3/2008	34.06	80.94	1.54
09E003	7/19/2011	36.07	78.93	11/3/2008	33.65	81.35	2.42
08E032	7/19/2011	23.51	71.49	11/4/2008	21.80	73.2	1.71
08F018	7/20/2011	41.30	76.7	11/7/2008	39.74	78.26	1.56
08F499	7/20/2011	22.35	77.65	11/7/2008	20.74	79.26	1.61
08F009	7/20/2011	41.13	76.44	11/7/2008	39.89	77.68	1.24
08F012	7/20/2011	38.20	76.39	11/1/2008	34.92	79.67	3.28
09F005	7/21/2011	52.75	76.84	11/6/2008	49.63	79.96	3.12
09F520	7/21/2011	50.18	77.42	11/6/2008	46.07	81.53	4.11
09F004	7/21/2011	40.73	77.87	11/6/2008	32.17	86.43	8.56
10F001	7/21/2011	54.75	84.85	11/6/2008	43.97	95.63	10.78
08G005	7/21/2011	39.89	89.74	11/7/2008	34.15	95.48	5.74
09G010	7/21/2011	60.56	84.08	11/6/2008	53.70	90.94	6.86
09G001	7/21/2011	53.93	90.71	11/6/2008	51.90	92.74	2.03
07D005	7/18/2011	68.12	85.88	—	—	—	—
07E062	7/18/2011	76.21	57.79	—	—	—	—
08F017	7/21/2011	40.76	77.81	—	—	—	—
08F513	7/20/2011	53.09	78.91	—	—	—	—
10F004	7/21/2011	54.56	90.04	—	—	—	—
08F514	7/22/2011	39.53	79.47	—	—	—	—
08G015	7/22/2011	35.46	82.54	—	—	—	—

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

State	County	Site number	Station name	Latitude (ddmmss)	Longitude (ddmmss)	Altitude of land surface (ft)
Georgia	Decatur	310117084231501	10G001	31°01'23"N	84°23'14"W	141
Georgia	Decatur	310251084384001	08G013	31°02'51"N	84°38'40"W	132
Georgia	Dooly	320704083424101	16Q023	32°07'04"N	83°42'41"W	406
Georgia	Dooly	320720083373001	16Q022	32°07'20"N	83°37'30"W	329
Georgia	Dougherty	312636084034601	13K017	31°26'37"N	84°03'46"W	241
Georgia	Dougherty	312650084092301	12K013	31°26'54"N	84°09'23"W	184.03
Georgia	Dougherty	312654084210104	11K033	31°26'55"N	84°21'01"W	183
Georgia	Dougherty	312704084071601	13K014	31°27'05"N	84°07'16"W	182.48
Georgia	Dougherty	312709084161701	11K015	31°26'57"N	84°16'03"W	183
Georgia	Dougherty	312714084114001	12K010	31°27'15"N	84°11'41"W	194.71
Georgia	Dougherty	312747084102901	12K110	31°27'55"N	84°10'29"W	183.8
Georgia	Dougherty	312848084094101	12K115	31°28'49"N	84°09'40"W	168.85
Georgia	Dougherty	312852084135001	12K173	31°28'53"N	84°13'49"W	189.77
Georgia	Dougherty	312913084192601	11K043	31°29'14"N	84°19'26"W	193
Georgia	Dougherty	312919084153801	11K003	31°29'14"N	84°15'30"W	194.34
Georgia	Dougherty	312947084092201	12K180	31°29'47"N	84°09'22"W	171.3
Georgia	Dougherty	312950084131801	12K141	31°29'51"N	84°13'17"W	194.48
Georgia	Dougherty	313000084100301	12L373	31°30'00"N	84°10'03"W	185.3
Georgia	Dougherty	313019084133101	12L352	31°30'21"N	84°13'29"W	192.99
Georgia	Dougherty	313026084121901	12L350	31°30'26"N	84°12'19"W	189.1
Georgia	Dougherty	313031084005901	13L048	31°30'32"N	84°00'59"W	244.48
Georgia	Dougherty	313040084125901	12L277	31°30'42"N	84°12'33"W	190.1
Georgia	Dougherty	313043084131401	12L353	31°30'42"N	84°13'59"W	193.29
Georgia	Dougherty	313048084120101	12L272	31°30'48"N	84°12'01"W	184.16
Georgia	Dougherty	313115084122701	12L351	31°31'16"N	84°12'25"W	191.08
Georgia	Dougherty	313130084101001	12L030	31°31'34"N	84°10'10"W	176.54
Georgia	Dougherty	313135084132201	12L344	31°31'35"N	84°13'22"W	191.01
Georgia	Dougherty	313300084184901	11L020	31°33'00"N	84°18'48"W	207
Georgia	Dougherty	313302084120301	12L028	31°33'02"N	84°11'59"W	181.42
Georgia	Dougherty	313340084220001	11L111	31°33'41"N	84°22'00"W	220
Georgia	Dougherty	313504084165701	11L092	31°35'04"N	84°16'56"W	219.8
Georgia	Dougherty	313614084203401	11L112	31°36'15"N	84°20'34"W	232
Georgia	Dougherty	313640084002101	13L047	31°36'41"N	84°00'21"W	256
Georgia	Dougherty	312950084131802	12K142	31°29'51"N	84°13'18"W	194
Georgia	Dougherty	313019084104601	12L370	31°30'19"N	84°10'46"W	187.56

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

Station name	Date measured in 2011	Depth to water below land surface (ft)	Altitude of water surface (ft)	Date measured in 2008	Depth to water below land surface (ft)	Altitude of water surface (ft)	Water-level change from 2008 to 2011 (ft)
10G001	7/21/2011	33.88	107.12	—	—	—	—
08G013	7/21/2011	43.88	88.12	—	—	—	—
16Q023	7/21/2011	107.69	298.31	—	—	—	—
16Q022	7/21/2011	34.69	294.31	—	—	—	—
13K017	7/18/2011	93.89	147.11	11/6/2008	86.52	154.48	7.37
12K013	7/20/2011	35.89	148.14	11/0/2008	34.82	149.21	1.07
11K033	7/20/2011	19.73	163.27	11/5/2008	18.80	164.2	0.93
13K014	7/18/2011	35.98	146.5	11/6/2008	35.76	146.72	0.22
11K015	7/18/2011	28.65	154.35	11/4/2008	25.64	157.36	3.01
12K010	7/19/2011	53.45	141.26	11/0/2008	52.36	142.35	1.09
12K110	7/20/2011	43.90	139.9	11/0/2008	42.99	140.81	0.91
12K115	7/20/2011	27.83	141.02	11/0/2008	26.23	142.62	1.60
12K173	7/20/2011	35.61	154.16	11/4/2008	35.25	154.52	0.36
11K043	7/18/2011	37.27	155.73	11/5/2008	19.69	173.31	17.58
11K003	7/18/2011	37.72	156.62	11/5/2008	32.50	161.84	5.22
12K180	7/20/2011	28.64	142.66	11/4/2008	28.10	143.2	0.54
12K141	7/20/2011	41.54	152.94	11/4/2008	40.54	153.94	1.00
12L373	7/19/2011	42.38	142.92	11/4/2008	41.35	143.95	1.03
12L352	7/19/2011	39.69	153.3	11/3/2008	37.67	155.32	2.02
12L350	7/19/2011	38.42	150.68	11/3/2008	35.74	153.36	2.68
13L048	7/18/2011	77.79	166.69	11/6/2008	78.53	165.95	–0.74
12L277	7/19/2011	37.59	152.51	11/4/2008	36.80	153.3	0.79
12L353	7/19/2011	39.66	153.63	11/3/2008	35.37	157.92	4.29
12L272	7/19/2011	36.30	147.86	11/4/2008	28.11	156.05	8.19
12L351	7/19/2011	38.38	152.7	11/4/2008	37.16	153.92	1.22
12L030	7/19/2011	28.29	148.25	11/4/2008	29.16	147.38	–0.87
12L344	7/19/2011	35.17	155.84	11/6/2008	31.13	159.88	4.04
11L020	7/19/2011	25.00	182	11/5/2008	21.91	185.09	3.09
12L028	7/19/2011	27.50	153.92	11/3/2008	24.75	156.67	2.75
11L111	7/20/2011	30.30	189.7	11/5/2008	25.64	194.36	4.66
11L092	7/19/2011	31.47	188.33	11/5/2008	32.13	187.67	–0.66
11L112	7/20/2011	34.82	197.18	11/4/2008	37.85	194.15	–3.03
13L047	7/18/2011	58.32	197.68	11/7/2008	60.84	195.16	–2.52
12K142	7/20/2011	41.90	152.1	—	—	—	—
12L370	7/19/2011	46.02	141.54	—	—	—	—

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

State	County	Site number	Station name	Latitude (ddmmss)	Longitude (ddmmss)	Altitude of land surface (ft)
Georgia	Dougherty	313235084134801	12L309	31°32'36"N	84°13'48"W	183.48
Georgia	Dougherty	313241084135301	12L305	31°32'42"N	84°13'53"W	178.08
Georgia	Dougherty	313247084005001	13L180	31°32'48"N	84°00'50"W	229.61
Georgia	Early	310800084563601	06H013	31°08'01"N	84°56'36"W	184.64
Georgia	Early	311108084564301	06H009	31°11'09"N	84°56'43"W	201.68
Georgia	Early	311526085000801	05J007	31°15'27"N	85°00'08"W	207.71
Georgia	Early	311929084464301	07J012	31°19'30"N	84°46'42"W	186.74
Georgia	Early	311209085003301	05H008	31°12'10"N	85°00'33"W	198.68
Georgia	Early	311212085003401	05H021	31°12'12"N	85°00'34"W	195
Georgia	Early	311608084555101	06J010	31°16'08"N	84°55'51"W	220
Georgia	Early	311733084540101	06J009	31°17'33"N	84°54'01"W	209
Georgia	Early	312232084391701	08K001	31°22'39"N	84°39'17"W	230
Georgia	Grady	304159084205501	11D027	30°42'05"N	84°20'56"W	251.53
Georgia	Grady	305235084125101	12F036	30°52'36"N	84°12'52"W	204.08
Georgia	Grady	305436084061901	13F034	30°54'36"N	84°06'19"W	221.4
Georgia	Grady	310226084182801	11G021	31°02'27"N	84°18'28"W	164.58
Georgia	Grady	310431084202501	11G002	31°04'32"N	84°20'25"W	139.59
Georgia	Irwin	313132083175901	19L001	31°31'33"N	83°18'01"W	332.33
Georgia	Irwin	313148083175001	19L029	31°31'48"N	83°17'50"W	304.19
Georgia	Irwin	313333083103801	20L002	31°33'47"N	83°10'49"W	299
Georgia	Irwin	313339083220601	19L026	31°33'39"N	83°22'06"W	341.15
Georgia	Irwin	313405083143401	20L025	31°34'05"N	83°14'34"W	304.7
Georgia	Irwin	313536083144701	20L003	31°35'43"N	83°14'51"W	337
Georgia	Irwin	313719083195901	19L033	31°37'20"N	83°19'59"W	368.71
Georgia	Lee	313808084093601	12M017	31°38'09"N	84°09'36"W	224
Georgia	Lee	314134084013801	13M056	31°41'35"N	84°01'38"W	254
Georgia	Lee	314153084131101	12M027	31°41'54"N	84°13'11"W	243
Georgia	Lee	314210084151901	11M017	31°42'11"N	84°15'19"W	264
Georgia	Lee	314252084060102	13M027	31°42'53"N	84°06'01"W	246
Georgia	Lee	314345084061901	13M066	31°43'46"N	84°06'19"W	259
Georgia	Lee	314442084034501	13M086	31°44'43"N	84°03'45"W	279
Georgia	Lee	314809084071901	13N003	31°48'10"N	84°07'19"W	288.51
Georgia	Lee	315209084042501	13N007	31°52'10"N	84°04'24"W	312.51
Georgia	Lee	315228084100601	12N004	31°52'29"N	84°10'05"W	288.56

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

Station name	Date measured in 2011	Depth to water below land surface (ft)	Altitude of water surface (ft)	Date measured in 2008	Depth to water below land surface (ft)	Altitude of water surface (ft)	Water-level change from 2008 to 2011 (ft)
12L309	7/19/2011	18.26	165.22	—	—	—	—
12L305	7/19/2011	10.78	167.3	—	—	—	—
13L180	7/22/2011	59.28	170.33	—	—	—	—
06H013	7/19/2011	61.70	122.94	11/5/2008	49.04	135.6	12.66
06H009	7/19/2011	54.12	147.56	11/5/2008	45.69	155.99	8.43
05J007	7/19/2011	35.46	172.25	11/5/2008	31.65	176.06	3.81
07J012	7/18/2011	28.63	158.11	11/7/2008	21.48	165.26	7.15
05H008	7/19/2011	45.08	153.6	—	—	—	—
05H021	7/19/2011	41.99	153.01	—	—	—	—
06J010	7/19/2011	8.13	211.87	—	—	—	—
06J009	7/19/2011	34.72	174.28	—	—	—	—
08K001	7/18/2011	34.15	195.85	—	—	—	—
11D027	7/21/2011	193.84	57.69	11/3/2008	191.51	60.02	2.33
12F036	7/21/2011	143.41	60.67	11/2/2008	142.78	61.31	0.64
13F034	7/21/2011	142.23	79.17	11/3/2008	140.23	81.17	2.00
11G021	7/21/2011	61.88	102.7	11/3/2008	58.21	106.37	3.67
11G002	7/21/2011	40.55	99.04	11/3/2008	32.71	106.88	7.84
19L001	7/20/2011	156.17	176.16	11/6/2008	146.80	185.53	9.37
19L029	7/20/2011	127.79	176.4	11/6/2008	113.04	191.15	14.75
20L002	7/20/2011	136.87	162.13	11/6/2008	119.90	174.41	12.28
19L026	7/20/2011	163.32	177.83	11/6/2008	150.50	190.65	12.82
20L025	7/20/2011	124.78	179.92	11/6/2008	108.98	195.72	15.80
20L003	7/20/2011	158.00	179	11/6/2008	141.59	183.74	4.74
19L033	7/20/2011	190.67	178.04	11/6/2008	176.80	191.91	13.87
12M017	7/21/2011	32.76	191.24	11/3/2008	31.00	193	1.76
13M056	7/20/2011	40.60	213.4	11/4/2008	28.70	225.3	11.90
12M027	7/21/2011	70.04	172.96	11/3/2008	40.51	202.49	29.53
11M017	7/21/2011	33.44	230.56	11/3/2008	26.89	237.11	6.55
13M027	7/20/2011	41.48	204.52	11/4/2008	35.34	210.66	6.14
13M066	7/20/2011	47.37	211.63	11/4/2008	25.57	233.43	21.80
13M086	7/20/2011	66.89	212.11	11/5/2008	50.03	228.97	16.86
13N003	7/20/2011	47.12	241.39	11/5/2008	47.56	240.95	–0.44
13N007	7/20/2011	61.37	251.14	11/5/2008	47.32	265.19	14.05
12N004	7/20/2011	32.49	256.07	11/5/2008	19.72	268.84	12.77

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

State	County	Site number	Station name	Latitude (ddmmss)	Longitude (ddmmss)	Altitude of land surface (ft)
Georgia	Miller	310512084353201	09G005	31°05'13"N	84°35'31"W	151.90
Georgia	Miller	310651084404501	08G001	31°06'52"N	84°40'44"W	151.68
Georgia	Miller	310816084501801	07H008	31°08'17"N	84°50'18"W	174.66
Georgia	Miller	310857084332701	09H012	31°08'58"N	84°33'27"W	149.67
Georgia	Miller	310952084404801	08H010	31°09'53"N	84°40'48"W	171.69
Georgia	Miller	311009084495502	07H002	31°10'09"N	84°49'54"W	167
Georgia	Miller	311113084454701	07H012	31°11'14"N	84°45'46"W	173.7
Georgia	Miller	311411084403401	08H009	31°14'12"N	84°40'33"W	192.72
Georgia	Miller	310514084512101	07G027	31°05'14"N	84°51'21"W	159
Georgia	Miller	311206084532201	06H022	31°12'06"N	84°53'22"W	201
Georgia	Miller	311430084460701	07H026	31°14'30"N	84°46'06"W	169
Georgia	Miller	311459084502501	07H025	31°14'59"N	84°50'24"W	189
Georgia	Mitchell	310804084254401	10H006	31°08'05"N	84°25'44"W	157.64
Georgia	Mitchell	310830084215501	11H003	31°08'31"N	84°21'55"W	148.62
Georgia	Mitchell	311743084023001	13J001	31°17'30"N	84°02'18"W	374.52
Georgia	Mitchell	311802084192302	11J012	31°18'03"N	84°19'23"W	165
Georgia	Mitchell	312127084065801	13J004	31°21'30"N	84°06'57"W	193.51
Georgia	Mitchell	312253084100001	12K001	31°22'31"N	84°09'38"W	169.51
Georgia	Mitchell	311328084130701	12H008	31°13'28"N	84°12'55"W	165
Georgia	Mitchell	312023084001001	13J014	31°20'23"N	84°00'10"W	264
Georgia	Seminole	304656084493501	07E045	30°46'57"N	84°49'35"W	90
Georgia	Seminole	304758084551301	06E023	30°47'59"N	84°55'13"W	80
Georgia	Seminole	304815084472601	07E046	30°48'16"N	84°47'26"W	90
Georgia	Seminole	305024084473501	07E007	30°50'25"N	84°47'35"W	104.55
Georgia	Seminole	305044084543801	06E019	30°50'45"N	84°54'38"W	119.57
Georgia	Seminole	305258084510201	07F006	30°52'59"N	84°51'11"W	99.57
Georgia	Seminole	305309084552601	06F007	30°53'10"N	84°55'26"W	161.57
Georgia	Seminole	305356084534601	06F001	30°53'50"N	84°53'55"W	110
Georgia	Seminole	305509084552301	06F005	30°55'10"N	84°55'23"W	155.58
Georgia	Seminole	305616084495801	07F002	30°56'17"N	84°49'58"W	117.59
Georgia	Seminole	305657084554801	06F084	30°56'58"N	84°55'483"W	148
Georgia	Seminole	305938084465301	07F004	30°59'39"N	84°46'53"W	112.6
Georgia	Seminole	310010084494801	07G007	31°00'11"N	84°49'48"W	155.61
Georgia	Seminole	310250084472701	07G005	31°02'51"N	84°47'27"W	129.62

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

Station name	Date measured in 2011	Depth to water below land surface (ft)	Altitude of water surface (ft)	Date measured in 2008	Depth to water below land surface (ft)	Altitude of water surface (ft)	Water-level change from 2008 to 2011 (ft)
09G005	7/18/2011	54.93	96.965	11/4/2008	52.32	99.34	2.38
08G001	7/18/2011	46.08	105.6	11/4/2008	36.75	114.93	9.33
07H008	7/20/2011	52.22	122.44	11/6/2008	42.27	132.39	9.95
09H012	7/18/2011	59.70	89.97	11/4/2008	57.26	92.41	2.44
08H010	7/18/2011	58.77	112.92	11/4/2008	56.28	115.41	2.49
07H002	7/19/2011	16.66	150.34	11/5/2008	13.41	153.59	3.25
07H012	7/19/2011	33.14	140.56	11/6/2008	28.70	145	4.44
08H009	7/18/2011	50.40	142.32	11/4/2008	41.24	151.48	9.16
07G027	7/20/2011	40.05	118.95	—	—	—	—
06H022	7/19/2011	53.73	147.27	—	—	—	—
07H026	7/19/2011	33.00	136	—	—	—	—
07H025	7/19/2011	39.48	149.52	—	—	—	—
10H006	7/21/2011	66.83	90.81	11/6/2008	61.01	96.63	5.82
11H003	7/21/2011	49.42	99.2	11/6/2008	42.08	106.54	7.34
13J001	7/21/2011	223.93	150.59	11/5/2008	222.44	152.08	1.49
11J012	7/21/2011	49.79	115.21	11/6/2008	48.94	116.06	0.85
13J004	7/20/2011	56.86	136.65	11/5/2008	54.93	138.58	1.93
12K001	7/20/2011	37.30	132.21	11/5/2008	35.45	134.06	1.85
12H008	7/21/2011	44.26	120.74	—	—	—	—
13J014	7/20/2011	96.20	167.8	—	—	—	—
07E045	7/21/2011	13.51	76.49	11/3/2008	13.61	76.39	–0.10
06E023	7/21/2011	7.75	72.25	11/6/2008	7.94	72.06	–0.19
07E046	7/21/2011	15.84	74.16	11/3/2008	15.83	74.17	0.01
07E007	7/21/2011	32.83	71.72	11/3/2008	34.15	70.4	–1.32
06E019	7/21/2011	45.05	74.52	11/6/2008	46.46	73.11	–1.41
07F006	7/21/2011	26.70	72.87	11/3/2008	31.28	68.29	–4.58
06F007	7/21/2011	95.70	65.87	11/6/2008	95.92	65.65	–0.22
06F001	7/21/2011	36.38	73.62	11/6/2008	30.56	79.44	5.82
06F005	7/21/2011	74.31	81.27	11/6/2008	71.90	83.68	2.41
07F002	7/20/2011	52.22	65.37	11/7/2008	28.92	88.67	23.30
06F084	7/21/2011	60.13	87.87	11/6/2008	54.16	93.84	5.97
07F004	7/20/2011	33.18	79.42	11/3/2008	31.32	81.28	1.86
07G007	7/20/2011	58.05	97.56	11/3/2008	56.04	99.57	2.01
07G005	7/20/2011	40.17	89.45	11/3/2008	41.46	88.16	–1.29

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

State	County	Site number	Station name	Latitude (ddmmss)	Longitude (ddmmss)	Altitude of land surface (ft)
Georgia	Seminole	310330084582801	06G008	31°03'32"N	84°58'28"W	131.6
Georgia	Seminole	305816084454201	07F003	30°58'18"N	84°45'43"W	121.59
Georgia	Seminole	310017084503901	07G028	31°00'17"N	84°50'39"W	152
Georgia	Seminole	310249084504501	07G026	31°02'49"N	84°50'45"W	160
Georgia	Sumter	315714084175101	11P019	31°57'14"N	84°17'51"W	351
Georgia	Sumter	315908084013901	13P019	31°59'08"N	84°01'39"W	320
Georgia	Sumter	320430084033001	13Q102	32°04'30"N	84°03'30"W	363
Georgia	Terrell	313836084210401	11M025	31°38'37"N	84°21'04"W	260
Georgia	Terrell	314247084212901	11M041	31°42'47"N	84°21'29"W	287
Georgia	Terrell	314531084253501	10N024	31°45'31"N	84°25'35"W	320
Georgia	Thomas	305002083481901	15E002	30°50'03"N	83°48'23"W	237.43
Georgia	Thomas	305238083591301	14F010	30°52'51"N	83°59'03"W	217.49
Georgia	Thomas	305600083472901	15F003	30°56'01"N	83°47'29"W	262.45
Georgia	Thomas	305932083540001	14F006	30°59'33"N	83°54'04"W	249.5
Georgia	Thomas	305959083580401	14F013	30°59'40"N	83°58'13"W	264.5
Georgia	Thomas	310432084053001	13G006	31°04'17"N	84°05'31"W	345
Georgia	Thomas	304126083533901	14D004	30°41'26"N	83°53'39"W	99
Georgia	Thomas	304652083553601	14E048	30°46'52"N	83°55'36"W	215
Georgia	Thomas	305133083444101	16E016	30°51'33"N	83°44'41"W	216
Georgia	Thomas	305943084065001	13F035	30°59'43"N	84°06'50"W	290
Georgia	Tift	311949083282701	18J041	31°19'49"N	83°28'27"W	317.64
Georgia	Tift	312310083311202	17K112	31°23'10"N	83°31'12"W	304
Georgia	Tift	312712082593301	18K049	31°27'13"N	83°29'33"W	329.36
Georgia	Tift	312949083303201	17K052	31°29'50"N	83°30'37"W	387.37
Georgia	Tift	313004083371801	17L014	31°30'05"N	83°37'18"W	333
Georgia	Tift	313525083374801	16L037	31°35'25"N	83°37'48"W	348.77
Georgia	Tift	313836083243801	18M017	31°38'36"N	83°24'38"W	309
Georgia	Turner	313640083321201	17L009	31°36'45"N	83°32'13"W	334
Georgia	Turner	313700083410201	16L048	31°37'00"N	83°41'02"W	379
Georgia	Turner	313819083432801	16M027	31°38'19"N	83°43'28"W	403.82
Georgia	Turner	313947083454701	15M013	31°39'47"N	83°45'47"W	422.56
Georgia	Turner	314125083384201	16M047	31°41'25"N	83°38'42"W	393.78
Georgia	Turner	314254083342001	17M007	31°42'53"N	83°34'17"W	381

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

Station name	Date measured in 2011	Depth to water below land surface (ft)	Altitude of water surface (ft)	Date measured in 2008	Depth to water below land surface (ft)	Altitude of water surface (ft)	Water-level change from 2008 to 2011 (ft)
06G008	7/21/2011	36.48	95.12	11/5/2008	38.38	93.22	–1.90
07F003	7/20/2011	50.45	71.14	—	—	—	—
07G028	7/20/2011	67.50	84.5	—	—	—	—
07G026	7/20/2011	68.98	91.02	—	—	—	—
11P019	7/19/2011	25.99	325.01	—	—	—	—
13P019	7/19/2011	34.19	285.81	—	—	—	—
13Q102	7/19/2011	70.21	292.79	—	—	—	—
11M025	7/21/2011	24.97	235.03	11/3/2008	22.82	237.18	2.15
11M041	7/21/2011	20.99	266.01	—	—	—	—
10N024	7/21/2011	26.90	293.1	—	—	—	—
15E002	7/20/2011	172.46	64.97	11/4/2008	171.35	66.08	1.11
14F010	7/20/2011	143.29	74.2	11/4/2008	142.80	74.69	0.49
15F003	7/20/2011	195.81	66.64	11/4/2008	200.01	62.44	–4.20
14F006	7/20/2011	185.72	63.78	11/4/2008	184.77	64.73	0.95
14F013	7/20/2011	182.07	82.43	11/4/2008	180.82	83.68	1.25
13G006	7/20/2011	232.11	112.89	11/5/2008	230.88	113.66	0.77
14D004	7/20/2011	42.75	56.25	—	—	—	—
14E048	7/20/2011	160.27	54.73	—	—	—	—
16E016	7/20/2011	168.99	47.01	—	—	—	—
13F035	7/20/2011	207.47	82.53	—	—	—	—
18J041	7/19/2011	255.53	62.11	11/7/2008	238.80	78.84	16.73
17K112	7/19/2011	149.83	154.17	—	—	—	—
18K049	7/18/2011	145.48	183.88	11/7/2008	135.59	193.77	9.89
17K052	7/21/2011	197.06	190.31	11/7/2008	187.80	199.57	9.26
17L014	7/20/2011	145.18	187.82	11/5/2008	142.00	191.43	3.61
16L037	7/18/2011	161.85	186.92	11/5/2008	158.60	190.17	3.25
18M017	7/20/2011	128.10	180.9	11/6/2008	116.52	192.48	11.58
17L009	7/18/2011	148.46	185.54	11/6/2008	146.70	187.67	2.13
16L048	7/18/2011	187.99	191.01	11/3/2008	185.36	193.64	2.63
16M027	7/18/2011	204.99	198.83	11/3/2008	198.60	205.22	6.39
15M013	7/19/2011	192.49	230.07	11/3/2008	185.78	236.78	6.71
16M047	7/18/2011	202.73	191.05	11/3/2008	199.50	194.28	3.23
17M007	7/19/2011	184.82	196.18	11/6/2008	179.53	201.84	5.66

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

State	County	Site number	Station name	Latitude (ddmmss)	Longitude (ddmmss)	Altitude of land surface (ft)
Georgia	Turner	314302083361101	17M035	31°43'02"N	83°36'11"W	388.25
Georgia	Turner	314618083412702	16N013	31°46'18"N	83°41'27"W	396.76
Georgia	Turner	314716083311401	17N011	31°47'16"N	83°31'14"W	366.68
Georgia	Wilcox	315933083183101	19P005	31°59'34"N	83°18'32"W	254.29
Georgia	Worth	312157083530301	14J019	31°21'58"N	83°53'03"W	389.49
Georgia	Worth	312358083583201	14K008	31°23'59"N	83°58'32"W	408
Georgia	Worth	312529083423501	16K013	31°25'27"N	83°42'35"W	374
Georgia	Worth	312550083552901	14K013	31°25'51"N	83°55'29"W	432.49
Georgia	Worth	312223083560301	14J022	31°22'24"N	83°56'03"W	417.49
Georgia	Worth	312846083545201	14K012	31°28'47"N	83°54'52"W	399.49
Georgia	Worth	313027083570901	14L013	31°30'28"N	83°57'09"W	279.49
Georgia	Worth	313146083491601	15L020	31°31'47"N	83°49'16"W	419
Georgia	Worth	313400083555801	14L006	31°34'01"N	83°55'58"W	331.48
Georgia	Worth	313729083550301	14L014	31°37'30"N	83°55'03"W	283.43
Georgia	Worth	313909083491201	15M005	31°39'10"N	83°49'12"W	322
Georgia	Worth	314123083495801	15M004	31°41'24"N	83°49'583"W	341
Georgia	Worth	314330084005402	13M006	31°43'31"N	84°00'51"W	237.44
Georgia	Worth	312635083560401	14K061	31°26'35"N	83°56'040"W	422
Georgia	Worth	313352083570801	14L059	31°33'52"N	83°57'08"W	255
Georgia	Worth	315008083545601	14N015	31°50'08"N	83°54'56"W	269

Table 3. Water levels in the Upper Floridan aquifer, July 2011 and November 2008.—Continued

[Vertical datum is NAVD 88; ddmmss, degree, minute, second; N, north; W, west; ft, feet; —, no data; –, measurement above land surface]

Station name	Date measured in 2011	Depth to water below land surface (ft)	Altitude of water surface (ft)	Date measured in 2008	Depth to water below land surface (ft)	Altitude of water surface (ft)	Water-level change from 2008 to 2011 (ft)
17M035	7/17/2011	189.70	198.55	11/6/2008	185.70	202.55	4.00
16N013	7/18/2011	134.39	262.37	11/3/2008	135.35	261.41	–0.96
17N011	7/18/2011	164.34	202.34	11/7/2008	161.90	204.78	2.44
19P005	7/21/2011	99.14	155.15	—	—	—	—
14J019	7/20/2011	212.01	177.48	11/5/2008	203.42	186.07	8.59
14K008	7/20/2011	226.03	181.97	11/4/2008	224.82	183.18	1.21
16K013	7/20/2011	220.21	153.79	11/5/2008	192.85	181.15	27.36
14K013	7/20/2011	254.18	178.31	11/4/2008	243.80	188.69	10.38
14J022	7/20/2011	248.53	168.96	—	—	—	—
14K012	7/21/2011	201.42	198.07	11/4/2008	189.90	209.59	11.52
14L013	7/21/2011	74.73	204.76	11/4/2008	74.90	204.59	–0.17
15L020	7/21/2011	217.32	201.68	11/4/2008	214.73	204.74	3.06
14L006	7/22/2011	113.10	218.38	11/3/2008	112.50	218.98	0.60
14L014	7/22/2011	52.21	231.22	11/4/2008	50.35	233.08	1.86
15M005	7/22/2011	80.82	241.18	11/3/2008	80.88	241.12	–0.06
15M004	7/21/2011	88.87	252.13	11/3/2008	89.45	251.55	–0.58
13M006	7/22/2011	30.41	207.03	11/3/2008	9.39	228.05	21.02
14K061	7/21/2011	226.17	195.83	—	—	—	—
14L059	7/22/2011	49.73	205.27	—	—	—	—
14N015	7/22/2011	35.35	233.65	—	—	—	—

Table 4. Streamflow measurements collected in Alabama, Florida, and Georgia, July 2011 and November 2008.

[ddmmss, degree, minute, second; N, north, W, west; ft^3/s, cubic feet per second; ds, downstream, us, upstream; —, no data]

State	County	Site number	Site name	Latitude (ddmmss)	Longitude (ddmmss)	Date measured in 2011	Discharge (ft^3/s)	Date measured in 2008	Discharge (ft^3/s)	Change in discharge from 2008 to 2011
Alabama	Houston	02358770	Big Creek near Madrid	31°01'14"N	85°21'01"W	7/22/2011	11.3	—	—	—
Florida	Calhoun	303604084571700	Apalachicola River at mile 96	30°35'39"N	84°56'46"W	7/21/2011	8,110	—	—	—
Florida	Calhoun	303238084590900	Apalachicola River at mile 90	30°31'59"N	84°59'05"W	7/21/2011	8,040	—	—	—
Florida	Calhoun	02358684	Apalachicola River near Sweetwater (near mile 87.6)	30°30'24"N	84°59'29"W	7/21/2011	7,910	—	—	—
Florida	Calhoun	302817084592100	Apalachicola River at mile 84 (at Alum Bluff)	30°28'10"N	84°59'13"W	7/23/2011	8,980	—	—	—
Florida	Calhoun	302707084595900	Apalachicola River at mile 82	30°26'40"N	84°59'38"W	7/23/2011	9,110	—	—	—
Florida	Calhoun	302147085022700	Apalachicola River at mile 68	30°21'28"N	85°02'16"W	7/24/2011	8,480	—	—	—
Florida	Calhoun	02358661	Ocheese Creek near Atha	30°34'31"N	84°59'22"W	7/21/2011	2.36	—	—	—
Florida	Calhoun	02358998	Holliman Branch near Atha	30°32'43"N	85°09'33"W	7/21/2011	0.594	—	—	—
Florida	Calhoun	02359035	Fourmile Creek near Clarkdale	30°26'41"N	85°10'59"W	7/21/2011	40.4	—	—	—
Florida	Calhoun	302607085025501	Sutton Creek at Blountstown	30°26'07"N	85°02'55"W	7/20/2011	1.3	—	—	—
Florida	Calhoun	02359059	Juniper Creek at Frink	30°21'30"N	85°12'45"W	7/21/2011	61.9	—	—	—
Florida	Calhoun	02359012	Tenmile Creek near Clarksville	30°30'01"N	85°12'01"W	7/21/2011	26.3	—	—	—
Florida	Calhoun	02358683	Graves Creek at Selman	30°31'45"N	85°01'48"W	7/20/2011	11.9	—	—	—
Florida	Calhoun	02358696	Stafford Creek near Selman	30°29'55"N	85°02'31"W	7/20/2011	1.28	—	—	—
Florida	Calhoun	302504085023401	Sutton Creek near Blountstown	30°25'04"N	85°02'34"W	7/20/2011	0	—	—	—
Florida	Calhoun	02358700	Apalachicola River near Blountstown	30°25'31"N	85°01'53"W	7/23/2011	8,490	—	—	—
Florida	Calhoun	301428085053600	Apalachicola River at mile 55	30°14'28"N	85°05'36"W	7/22/2011	7,750	—	—	—
Florida	Gadsden	304048084523800	Apalachicola River at mile 104	30°40'29"N	84°52'23"W	7/20/2011	8,000	—	—	—
Florida	Gadsden	303923084534500	Apalachicola River at mile 102	30°39'14"N	84°53'27"W	7/20/2011	7,970	—	—	—
Florida	Gadsden	02358634	Apalachicola River near Sneads (near mile 100.2)	30°38'02"N	84°54'14"W	7/20/2011	7,870	—	—	—
Florida	Gadsden	303719084554000	Apalachicola River at mile 98	30°36'48"N	84°55'24"W	7/21/2011	8,230	—	—	—
Florida	Gadsden	02358519	Mosquito Creek at Chattahoochee	30°41'19"N	84°50'30"W	7/21/2011	32.7	—	—	—

Table 4. Streamflow measurements collected in Alabama, Florida, and Georgia, July 2011 and November 2008.—Continued

[ddmmss, degree, minute, second; N, north, W, west; ft^3/s, cubic feet per second; ds, downstream, us, upstream; —, no data]

State	County	Site number	Site name	Latitude (ddmmss)	Longitude (ddmmss)	Date measured in 2011	Discharge (ft^3/s)	Date measured in 2008	Discharge (ft^3/s)	Change in discharge from 2008 to 2011
Florida	Gadsden	02358600	Flat Creek near Chattahoochee	30°37'43"N	84°50'06"W	7/21/2011	13.7	—	—	—
Florida	Gadsden	02329000	Ochlockonee River near Havana	30°33'15"N	84°23'03"W	7/19/2011	56	—	—	—
Florida	Gulf	02358754	Apalachicola River near Wewahitchka (mile 44.2)	30°09'16"N	85°08'06"W	7/22/2011	8,470	—	—	—
Florida	Gulf	02359101	Chipola River above Dead Lakes outlet near Wewahitchka	30°07'38"N	85°10'39"W	7/24/2011	686	—	—	—
Florida	Jackson	304220084514900	Apalachicola River below Jim Woodruff Dam	30°42'24"N	84°51'45"W	7/20/2011	7,990	—	—	—
Florida	Jackson	304221084520600	Apalachicola River at mile 106	30°42'13"N	84°51'40"W	7/20/2011	7,630	—	—	—
Florida	Jackson	02358772	Cowarts Creek at State Highway 2 near Malone	30°56'50"N	85°15'32"W	7/23/2011	21.2	—	—	—
Florida	Jackson	02358800	Chipola River at Oakdale	30°43'02"N	85°12'01"W	7/24/2011	238	—	—	—
Florida	Jackson	304913085144201	Blue Hole Spring at foot bridge near Marianna	30°49'13"N	85°14'42"W	7/20/2011	-0.37	—	—	—
Florida	Jackson	304948085140501	Baltzell Spring	30°49'48"N	85°14'05"W	7/20/2011	14.6	—	—	—
Florida	Jackson	02358900	Dry Creek near Oakdale	30°40'29"N	85°12'32"W	7/23/2011	83.7	—	—	—
Florida	Jackson	02358795	Jackson Blue Spring near Marianna	30°47'26"N	85°08'27"W	7/22/2011	186	—	—	—
Florida	Jackson	02358784	Muddy Branch near Marianna	30°49'58"N	85°12'31"W	7/22.2011	1.17	—	—	—
Florida	Jackson	304217084514800	Apalachicola River below Jim Woodruff Dam	30°42'17"N	84°51'48"W	7/20/2011	7,870	—	—	—
Florida	Liberty	303501084563100	Rock Creek at Torreya State Park near Johnson Landing	30°35'01"N	84°56'31"W	7/21/2011	3.1	—	—	—
Florida	Liberty	303526084582100	Apalachicola River at mile 94	30°34'52"N	84°57'49"W	7/21/2011	8,460	—	—	—
Florida	Liberty	02358664	Apalachicola River near Rock Bluff (near mile 92.2)	30°33'44"N	84°57'47"W	7/21/2011	7,910	—	—	—
Florida	Liberty	301719084355900	Apalachicola River at mile 86	30°28'52"N	84°59'59"W	7/23/2011	9,160	—	—	—
Florida	Liberty	02358685	Little Sweetwater Creek near Bristol	30°28'23"N	84°59'04"W	7/23/2011	5.26	—	—	—
Florida	Liberty	302642084595000	Apalachicola River at mile 80	30°26'25"N	84°59'30"W	7/23/2011	8,870	—	—	—
Florida	Liberty	302442085004100	Apalachicola River at mile 75	30°24'25"N	85°00'55"W	7/24/2011	8,690	—	—	—

Table 4. Streamflow measurements collected in Alabama, Florida, and Georgia, July 2011 and November 2008.—Continued

[ddmmss, degree, minute, second; N, north, W, west; ft³/s, cubic feet per second; ds, downstream, us, upstream; —, no data]

State	County	Site number	Site name	Latitude (ddmmss)	Longitude (ddmmss)	Date measured in 2011	Discharge (ft³/s)	Date measured in 2008	Discharge (ft³/s)	Change in discharge from 2008 to 2011
Florida	Liberty	302200085010100	Apalachicola River at mile 72	30°23'00"N	85°01'00"W	7/24/2011	8,740	—	—	—
Florida	Liberty	301935085020000	Apalachicola River at mile 64 (at Estiffanulga)	30°18'51"N	85°02'00"W	7/24/2011	8,300	—	—	—
Florida	Liberty	301759085032700	Apalachicola River at mile 60	30°17'36"N	85°03'16"W	7/22/2011	7,860	—	—	—
Florida	Liberty	301258085065300	Apalachicola River at mile 50	30°12'35"N	85°06'32"W	7/22/2011	6,150	—	—	—
Florida	Liberty	023587547	Apalachicola River at mile 36 at Wewahitchka	30°05'19"N	85°08'47"W	7/22/2011	4,970	—	—	—
Florida	Liberty	02358673	Sweetwater Creek near Rock Bluff	30°31'29"N	84°58'22"W	7/20/2011	22	—	—	—
Florida	Liberty	02358742	Little Gully Creek near Esiffanulga	30°15'41"N	85°00'47"W	7/22/2011	0.042	—	—	—
Florida	Liberty	02358745	Mary Branch at Orange	30°13'54"N	85°01'36"W	7/22/2011	0.892	—	—	—
Florida	Liberty	02358750	Gregory Mill Creek at Orange	30°10'25"N	85°04'08"W	7/22/2011	1.68	—	—	—
Florida	Liberty	02358737	Big Gully Creek near Orange	30°14'52"N	85°00'18"W	7/22/2011	4.76	—	—	—
Georgia	Atkinson	02316253	Willacoochee River U.S. 82, near Willacoochee	31°21'37"N	83°06'16"W	7/22/2011	0	11/4/2008	18.3	18.3
Georgia	Baker	02352980	Cooleewahee Creek near Newton	31°19'49"N	84°19'50"W	7/22/2011	0.316	11/5/2008	6.72	6.40
Georgia	Baker	02353000	Flint River at Newton	31°18'25"N	84°20'20"W	7/23/2011	2,070	11/5/2008	2,959.61	889.61
Georgia	Baker	02353500	Ichawaynochaway Creek at Milford	31°22'58"N	84°32'47"W	7/22/2011	258	11/10/2008	298.36	40.36
Georgia	Baker	02354500	Chickasawhatchee Creek at Elmodel	31°21'02"N	84°28'57"W	7/22/2011	1.1	11/4/2008	95.56	94.46
Georgia	Baker	02354800	Ichawaynochaway Creek near Elmodel	31°17'38"N	84°29'31"W	7/22/2011	220	11/5/2008	442.01	222.01
Georgia	Baker	02355350	Ichawaynochaway Creek below Newton	31°13'03"N	84°28'15"W	7/23/2011	293	11/6/2008	502.45	209.45
Georgia	Baker	02355600	Big Cypress Creek near Newton	31°12'15"N	84°29'53"W	7/23/2011	0	11/4/2008	0	0
Georgia	Baker	02352795	Flint River at Red Bluff above Baconton	31°24'56"N	84°09'20"W	7/21/2011	2,270	—	—	—
Georgia	Baker	02352805	Flint River approximately 2 miles us Raccoon Cr near Baconton	31°23'14"N	84°11'53"W	7/22/2011	2,030	—	—	—
Georgia	Baker	02352939	Flint River Culpepper Spring below Baconton	31°20'44"N	84°13'53"W	7/22/2011	2,000	—	—	—

Table 4. Streamflow measurements collected in Alabama, Florida, and Georgia, July 2011 and November 2008.—Continued

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State	County	Site number	Site name	Latitude (ddmmss)	Longitude (ddmmss)	Date measured in 2011	Discharge (ft³/s)	Date measured in 2008	Discharge (ft³/s)	Change in discharge from 2008 to 2011
Georgia	Baker	02352945	Flint River approx 3 miles us Cooleewahee Creek near Newton	31°19'47"N	84°17'09"W	7/22/2011	1,930	—	—	—
Georgia	Baker	02353075	Flint River 1.3 miles us Ichawaynocha-way near Camilla	31°10'35"N	84°27'04"W	7/23/2011	2,080	—	—	—
Georgia	Baker	02353080	Flint River above Ichawaynochaway Creek, near Newton	31°10'09"N	84°28'00"W	7/23/2011	1,960	—	—	—
Georgia	Baker	02355650	Ichawaynochaway Creek at mouth, near Newton	31°10'15"N	84°28'03"W	7/23/2011	325	—	—	—
Georgia	Baker	02355670	Flint River above Bovine Springs, near Hopeful	31°06'14"N	84°30'25"W	7/23/2011	2,400	—	—	—
Georgia	Ben Hill	02316120	Turkey Branch at Edward Road, near Fitzgerald	31°40'46"N	83°15'03"W	7/21/2011	0	11/5/2008	0	0
Georgia	Berrien	02316000	Alapaha River near Alapaha	31°23'04"N	83°11'33"W	7/21/2011	0	11/5/2008	19.16	19.16
Georgia	Berrien	02317668	Hardy Mill Creek at Sapps Lake Road, near Enigma	31°21'45"N	83°19'30"W	7/22/2011	0	11/4/2008	0	0
Georgia	Calhoun	02353265	Ichawaynochaway Creek at Ga. 37, near Morgan	31°31'37"N	84°34'58"W	7/21/2011	175	11/5/2008	162.19	–12.81
Georgia	Calhoun	02353400	Pachitla Creek near Edison	31°33'18"N	84°40'51"W	7/21/2011	75	11/1/2008	106.84	31.84
Georgia	Calhoun	02353460	Ichawaynochaway Creek at Ga. 62, near Leary	31°28'10"N	84°34'15"W	7/22/2011	259	11/3/2008	307	48
Georgia	Calhoun	02354350	Chickasawhatchee Creek near Albany	31°35'38"N	84°27'12"W	7/23/2011	5.2	11/5/2008	51.5	46.3
Georgia	Calhoun	02354410	Chickasawhatchee Creek near Leary	31°30'13"N	84°25'50"W	7/23/2011	0	11/5/2008	52.44	52.44
Georgia	Colquitt	02317830	Little River at Kinard Bridge Road, near Lenox	31°15'16"N	83°31'00"W	7/23/2011	0	11/3/2008	46.6	46.6
Georgia	Colquitt	02317874	Warrior Creek Ga. 256, near Norman Park	31°18'41"N	83°41'07"W	7/22/2011	0	11/3/2008	0	0
Georgia	Colquitt	02317886	Warrior Creek (Cr 486) near Ellenton	31°15'16"N	83°34'31"W	7/21/2011	0	11/3/2008	54.6	54.6
Georgia	Colquitt	02317920	Ty Ty Creek (Cr 486) near Ellenton	31°15'33"N	83°34'22"W	7/21/2011	0	11/3/2008	0	0
Georgia	Colquitt	02318013	Bear Creek at Cook Road, near Moultrie	31°09'04"N	83°39'09"W	7/21/2011	0	11/4/2008	0	0
Georgia	Colquitt	02318014	Indian Creek at Tillman Road, near Berlin	31°05'44"N	83°35'04"W	7/22/2011	0	11/4/2008	11.6	11.6
Georgia	Colquitt	02318538	Okapilco Creek at James Buckner Road, near Moultrie	31°15'18"N	83°47'38"W	7/22/2011	0	11/4/2008	2.28	2.28

Table 4. Streamflow measurements collected in Alabama, Florida, and Georgia, July 2011 and November 2008.—Continued

[ddmmss, degree, minute, second; N, north, W, west; ft^3/s, cubic feet per second; ds, downstream, us, upstream; —, no data]

State	County	Site number	Site name	Latitude (ddmmss)	Longitude (ddmmss)	Date measured in 2011	Discharge (ft^3/s)	Date measured in 2008	Discharge (ft^3/s)	Change in discharge from 2008 to 2011
Georgia	Colquitt	02318591	Okapilco Creek at Old Berlin Road, near Moultrie	31°06'04"N	83°43'42"W	7/21/2011	0	11/4/2008	3.29	3.29
Georgia	Colquitt	02327195	Ochlockonee River at Ga. 133, near Moultrie	31°14'50"N	83°50'03"W	7/21/2011	19.19	11/4/2008	0	–19.19
Georgia	Colquitt	02327205	Ochlockonee River Lower Meigs Road, near Moultrie	31°08'32"N	83°48'13"W	7/22/2011	18.79	11/4/2008	7.21	–11.58
Georgia	Colquitt	02327250	Little Creek at Lower Meigs Road, near Moultrie	31°06'52"N	83°52'50"W	7/22/2011	0	11/5/2008	0.45	0.45
Georgia	Colquitt	02327320	Bridge Creek at Funston-Sale City Road, near Doerun	31°14'10"N	83°55'51"W	7/21/2011	14.77	11/5/2008	1.9	–12.87
Georgia	Colquitt	02327335	Bridge Creek Zion Grove Church Road near Coolidge	31°04'02"N	83°55'05"W	7/23/2011	0	11/5/2008	3.23	3.23
Georgia	Colquitt	02327413	Little Ochlockonee River (CR 228) near Hartsfield	31°10'42"N	83°59'06"W	7/21/2011	0	11/5/2008	0	0
Georgia	Colquitt	02327415	Little Ochlockonee River at Ga. 111, near Moultrie	31°07'02"N	83°58'42"W	7/21/2011	0	11/5/2008	0.6	0.6
Georgia	Colquitt	02327430	Lost Creek at Ga. 111, near Meigs	31°06'21"N	84°00'31"W	7/21/2011	0	—	—	—
Georgia	Colquitt	02317915	Ty Ty Creek at Livingston Bridge Road, near Omega	31°16'08"N	83°35'07"W	7/21/2011	0	—	—	—
Georgia	Crisp	02350220	Gum Creek at U.S. 280, at Coney	31°57'41"N	83°53'05"W	7/21/2011	41.8	11/6/2008	9.82	–31.98
Georgia	Crisp	02350300	Cedar Creek near Cordele	31°54'46"N	83°51'18"W	7/23/2011	0	—	—	—
Georgia	Crisp	02350360	Swift Creek near Warwick	31°50'21"N	83°51'18"W	7/23/2011	7.43	11/3/2008	7.4	–0.03
Georgia	Decatur	02329385	Swamp Creek at U.S. 27, near Attapulgus	30°43'11"N	84°24'41"W	7/22/2011	0	—	—	—
Georgia	Decatur	02355950	Big Slough at Ga. 97, near Bainbridge	30°56'06"N	84°31'23"W	7/21/2011	0	11/3/2008	0	0
Georgia	Decatur	02357000	Spring Creek near Iron City	31°02'25"N	84°44'24"W	7/23/2011	89	11/4/2008	136.24	47.24
Georgia	Decatur	02357050	Spring Creek at U.S. 84, at Brinson	30°58'31"N	84°44'44"W	7/24/2011	81.2	11/4/2008	198	116.8
Georgia	Decatur	02357150	Spring Creek near Reynoldsville	30°54'15"N	84°44'57"W	7/22/2011	170	11/6/2008	423.75	253.75
Georgia	Decatur	02357073	Yates Spring	30°55'23"N	84°44'41"W	7/24/2011	24.1	—	—	—
Georgia	Decatur	02357072	Above Yates Spring	30°55'24"N	84°44'41"W	7/24/2011	91.1	—	—	—
Georgia	Decatur	02357065	Spring 3	30°56'02"N	84°44'39"W	7/24/2011	7.05	—	—	—

Table 4. Streamflow measurements collected in Alabama, Florida, and Georgia, July 2011 and November 2008.—Continued

[ddmmss, degree, minute, second; N, north, W, west; ft^3/s, cubic feet per second; ds, downstream, us, upstream; —, no data]

State	County	Site number	Site name	Latitude (ddmmss)	Longitude (ddmmss)	Date measured in 2011	Discharge (ft^3/s)	Date measured in 2008	Discharge (ft^3/s)	Change in discharge from 2008 to 2011
Georgia	Decatur	02357061	Spring 5 (Godby Spring)	30°56'07"N	84°44'36"W	7/24/2011	8.02	—	—	—
Georgia	Decatur	02357060	Above Springs 3 and 5	30°56'07"N	84°44'35"W	7/24/2011	104	—	—	—
Georgia	Decatur	02357070	Above Spring 2	30°55'40"N	84°44'38"W	7/24/2011	108	—	—	—
Georgia	Decatur	02355685	Flint River above Westrick Spring near Steinham Store	31°00'38"N	84°31'05"W	7/24/2011	2,520	—	—	—
Georgia	Decatur	02355687	Westrick Spring outflow near Steinham Store	31°00'50"N	84°30'59"W	7/24/2011	7.73	—	—	—
Georgia	Decatur	02355690	Flint River below Westrick Spring, near Lynn	30°58'02"N	84°33'26"W	7/24/2011	2,630	—	—	—
Georgia	Dooly	02349900	Turkey Creek at Byromville	32°11'44"N	83°54'08"W	7/22/2011	2.9	11/4/2008	4.83	1.93
Georgia	Dooly	02349910	Turkey Creek County Road, near Drayton	32°06'14"N	83°56'23"W	7/23/2011	14.5	11/6/2008	18.9	4.4
Georgia	Dooly	02349960	Little Pennahatchee Creek near Lilly	32°07'01"N	83°51'44"W	7/23/2011	0.038	11/5/2008	1.08	1.04
Georgia	Dooly	02349980	Pennahatchee Creek County Road near Drayton	32°05'44"N	83°55'04"W	7/23/2011	1.74	11/5/2008	9.14	7.4
Georgia	Dougherty	02350543	Piney Woods Creek above Albany	31°36'09"N	84°02'58"W	7/22/2011	0	11/4/2008	0	0
Georgia	Dougherty	02352500	Flint River at Albany	31°35'39"N	84°08'39"W	7/23/2011	1,280	—	2,686.07	1,406.07
Georgia	Dougherty	02352760	Dry Creek near Putney	31°27'05"N	84°08'07"W	7/23/2011	0	11/5/2008	0	0
Georgia	Dougherty	02352970	Cooleewahee Creek near Albany	31°30'14"N	84°17'28"W	7/22/2011	0	11/5/2008	10.8	10.8
Georgia	Dougherty	02354440	Kiokee Creek near Pretoria	31°30'13"N	84°22'01"W	7/23/2011	0	11/5/2008	0	0
Georgia	Dougherty	02350533	Flint River Upper Dam near Albany	31°38'04"N	84°02'25"W	7/19/2011	1,440	—	—	—
Georgia	Dougherty	02352648	Flint River above Radium Springs, near Radium Springs	31°31'14"N	84°08'28"W	7/21/2011	1,880	—	—	—
Georgia	Dougherty	02352650	Radium Springs (Blue Springs) near Albany	31°31'13"N	84°08'26"W	7/21/2011	0.28	—	—	—
Georgia	Dougherty	02352700	Flint River 5 miles ds Radium Springs near Putney	31°27'32"N	84°09'20"W	7/21/2011	2,010	—	—	—
Georgia	Dougherty	02352790	Flint River (Putney Intake) near Putney	31°26'40"N	84°08'16"W	7/21/2011	2,020	—	—	—

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State	County	Site number	Site name	Latitude (ddmmss)	Longitude (ddmmss)	Date measured in 2011	Discharge (ft³/s)	Date measured in 2008	Discharge (ft³/s)	Change in discharge from 2008 to 2011
Georgia	Early	02343801	Chattahoochee River near Columbia, Ala.	31°15'34"N	85°06'37"W	7/21/2011	4,230	11/3/2008	4,559.07	329.07
Georgia	Early	02343940	Sawhatchee Creek at Cedar Springs	31°10'51"N	85°02'37"W	7/22/2011	18	11/3/2008	26.05	8.05
Georgia	Early	02356100	Spring Creek near Arlington	31°24'48"N	84°46'33"W	7/22/2011	2.96	11/5/2008	5.89	2.93
Georgia	Early	02356220	Spring Creek at Ga. 200, at Damascus	31°18'21"N	84°44'59"W	7/22/2011	0	11/5/2008	22.7	22.7
Georgia	Early	02356290	Dry Creek near Blakely	31°22'23"N	84°52'59"W	7/22/2011	10.4	11/5/2008	8.66	–1.74
Georgia	Early	02356460	Dry Creek at Hentown	31°17'03"N	84°49'10"W	7/22/2011	43.8	11/5/2008	25.9	–17.9
Georgia	Early	02344000	Chattahoochee River at Alaga, Ala.	31°06'55"N	85°02'43"W	7/21/2011	6,860	—	—	—
Georgia	Grady	02327860	Popple Branch at Ga. 179, near Whigham	30°55'36"N	84°20'18"W	7/21/2011	0.44	11/4/2008	0.57	0.13
Georgia	Grady	02328000	Tired Creek near Cairo	30°51'55"N	84°15'46"W	7/21/2011	3.37	11/4/2008	10.1	6.73
Georgia	Grady	02328025	Parkers Mill Creek at Pine Park Road, near Cairo	30°50'18"N	84°13'34"W	7/22/2011	4.15	11/4/2008	4.45	0.3
Georgia	Grady	02328082	Little Tired Creek at Pine Park Road, near Cairo	30°50'31"N	84°12'03"W	7/22/2011	0.585	11/4/2008	2.03	1.445
Georgia	Grady	02328200	Ochlockonee River near Calvary	30°43'54"N	84°14'12"W	7/22/2011	40.2	11/3/2008	209	168.8
Georgia	Irwin	02315919	Big Creek at Crystal Lake Road, near Irwinville	31°40'20"N	83°25'12"W	7/21/2011	0	11/3/2008	0	0
Georgia	Irwin	02315920	Alapaha River at Ga. 125/32 near Irwinville	31°37'53"N	83°25'05"W	7/21/2011	0	11/3/2008	0	0
Georgia	Irwin	02315935	Sand Creek at Ga. 125, near Irwinville	31°36'35"N	83°26'41"W	7/21/2011	0	11/3/2008	0	0
Georgia	Irwin	02316170	Willacoochee River at Ga. 32, near Ocilla	31°35'45"N	83°10'18"W	7/22/2011	16	11/4/2008	0	–16
Georgia	Irwin	02316216	Reedy Creek at Hickory Road, near Ocilla	31°30'58"N	83°15'40"W	7/22/2011	0	11/4/2008	0	0
Georgia	Irwin	02316241	Little Brushy Creek at Orchid Road, near Ocilla	31°30'28"N	83°12'32"W	7/22/2011	0	11/4/2008	2.59	2.59
Georgia	Lee	02350512	Flint River at Ga. 32, near Oakfield	31°43'30"N	84°01'07"W	7/23/2011	1,090	11/4/2008	3,182.29	2,092.29
Georgia	Lee	02350860	Kinchafoonee Creek at Ga. 118, near Smithville	31°52'07"N	84°18'18"W	7/24/2011	87.6	11/6/2008	188	100.4

Table 4. Streamflow measurements collected in Alabama, Florida, and Georgia, July 2011 and November 2008.—Continued

[ddmmss, degree, minute, second; N, north, W, west; ft^3/s, cubic feet per second; ds, downstream, us, upstream; —, no data]

State	County	Site number	Site name	Latitude (ddmmss)	Longitude (ddmmss)	Date measured in 2011	Discharge (ft^3/s)	Date measured in 2008	Discharge (ft^3/s)	Change in discharge from 2008 to 2011
Georgia	Lee	02350900	Kinchafoonee Creek at Pinewood Road, near Dawson	31°45'52"N	84°15'12"W	7/22/2011	220	11/4/2008	207.15	–12.85
Georgia	Lee	02351000	Kinchafoonee Creek at Ga. 32, near Leesburg	31°43'11"N	84°11'08"W	7/21/2011	213	11/4/2008	215	2
Georgia	Lee	02351700	Muckalee Creek near Smithville	31°53'44"N	84°11'52"W	7/21/2011	97.8	11/6/2008	114	16.2
Georgia	Lee	02351800	Muckaloochee Creek at Smithville	31°54'20"N	84°14'44"W	7/24/2011	11.6	11/6/2008	27.2	15.6
Georgia	Lee	02351890	Muckalee Creek at Ga. 195, near Leesburg	31°46'34"N	84°08'22"W	7/24/2001	78	11/4/2008	131.18	53.18
Georgia	Lee	02351900	Muckalee Creek near Leesburg	31°43'56"N	84°07'30"W	7/21/2011	160	11/4/2008	140	–20
Georgia	Lee	02351930	Muckalee Creek below Leesburg	31°39'06"N	84°06'27"W	7/23/2011	105	11/4/2008	152	47
Georgia	Lee	02350430	Flint River above Chokee Creek near Wawick	31°50'08"N	83°57'56"W	7/18/2011	1,400	—	—	—
Georgia	Lee	02350480	Chokee Creek at mouth near Warwick	31°50'20"N	83°58'04"W	7/18/2011	11	—	—	—
Georgia	Lee	02350489	Hawkins Branch at mouth near Oakfield	31°48'14"N	84°00'25"W	7/18/2011	0	—	—	—
Georgia	Lee	02350490	Flint River below Hawkins Branch near Oakfield	31°48'08"N	84°00'31"W	7/18/2011	1,390	—	—	—
Georgia	Lee	02350511	Flint River above Philema Branch near Oakfield	31°44'07"N	84°00'34"W	7/18/2011	1,460	—	—	—
Georgia	Lee	023505265	Flint River above Mill Creek, near Albany	31°39'31"N	84°00'56"W	7/19/2011	1,500	—	—	—
Georgia	Macon	02349605	Flint River at Ga. 26, near Montezuma	32°17'35"N	84°20'37"W	7/22/2011	846	11/4/2008	631.26	–214.74
Georgia	Macon	02349660	Sweetwater Creek at Andersonville	32°11'10"N	84°08'03"W	7/22/2011	8.79	11/4/2008	11.14	2.35
Georgia	Macon	02349740	Hogcrawl Creek (S-533) near Montezuma	32°13'03"N	83°59'30"W	7/22/2011	18.7	11/5/2008	21.5	2.8
Georgia	Marion	02350572	Kinchafoonee Creek near Buena Vista	32°15'23"N	84°34'41"W	7/21/2011	14.1	—	—	
Georgia	Miller	02356600	Long Branch near Colquitt	31°12'50"N	84°43'54"W	7/23/2011	0	11/4/2008	0	0
Georgia	Miller	02356640	Spring Creek at U.S. 27, at Colquitt	31°10'16"N	84°44'31"W	7/23/2011	126	11/4/2008	93.1	–32.9
Georgia	Miller	02356970	Aycocks Creek below Colquitt	31°06'20"N	84°46'46"W	7/23/2011	0	11/4/2008	2.76	2.76
Georgia	Miller	02356638	Spring Creek approx 0.25 mi us U.S. 27 near Colquitt, Ga.	31°10'27"N	84°44'42"W	7/23/2011	100	—	—	—

Table 4. Streamflow measurements collected in Alabama, Florida, and Georgia, July 2011 and November 2008.—Continued

[ddmmss, degree, minute, second; N, north, W, west; ft³/s, cubic feet per second; ds, downstream, us, upstream; —, no data]

State	County	Site number	Site name	Latitude (ddmmss)	Longitude (ddmmss)	Date measured in 2011	Discharge (ft³/s)	Date measured in 2008	Discharge (ft³/s)	Change in discharge from 2008 to 2011
Georgia	Mitchell	02327448	Big Creek at Ga. 111, near Meigs	31°05'22"N	84°02'49"W	7/24/2011	0	11/4/2008	2.22	2.22
Georgia	Mitchell	02352920	Raccoon Creek at Ga. 3, near Baconton	31°21'49"N	84°10'04"W	7/22/2011	0	11/5/2008	0	0
Georgia	Mitchell	02355785	Big Slough at Ga. 97, near Camilla	31°13'07"N	84°15'08"W	7/22/2011	0	11/4/2008	0	0
Georgia	Mitchell	02355830	Big Slough at Ga. 65, below Camilla	31°09'03"N	84°17'19"W	7/21/2011	0	11/4/2008	0	0
Georgia	Mitchell	02355880	Big Slough at Ga. 179, near Pelham	31°05'25"N	84°19'32"W	7/21/2011	0	11/4/2008	0	0
Georgia	Randolph	02353200	Little Ichaway-nochaway Creek near Shellman	31°46'46"N	84°36'13"W	7/21/2011	20.2	11/3/2008	32.1	11.9
Georgia	Randolph	02353350	Carter Creek near Carnegie	31°38'13"N	84°43'14"W	7/21/2011	24.5	11/3/2008	27.5	3
Georgia	Seminole	02357310	Fishpond Drain near Donalsonville	30°58'45"N	84°52'17"W	7/23/2011	1.22	11/4/2008	0.19	–1.03
Georgia	Seminole	02344040	Chattahoochee River near Steam Mill	30°58'40"N	85°00'19"W	7/22/2011	1,610	—	—	—
Georgia	Stewart	02343200	Pataula Creek near Lumpkin	31°56'04"N	84°48'12"W	7/23/2011	26.7	11/3/2008	32.5	5.8
Georgia	Sumter	02350080	Lime Creek near Cobb	32°02'02"N	83°59'47"W	7/23/2011	4.6	11/5/2008	20.74	16.14
Georgia	Sumter	02351500	Muckalee Creek near Americus	32°04'59"N	84°15'29"W	7/24/2011	29	11/3/2008	58.55	29.55
Georgia	Sumter	02351780	Muckaloochee Creek near Americus	31°58'38"N	84°18'12"W	7/24/2011	14.2	11/4/2008	14.7	0.5
Georgia	Taylor	02349000	Whitewater Creek below Rambulette Creek, near Butler	32°28'01"N	84°15'58"W	7/21/2011	107	11/6/2008	18.3	–88.7
Georgia	Terrell	02353100	Ichawaynochaway Creek at U.S. 82, near Graves	31°46'17"N	84°33'44"W	7/21/2011	51.3	11/3/2008	62	10.7
Georgia	Thomas	02327300	Ochlockonee River at Bee Line Road, near Chastain	31°02'01"N	83°56'07"W	7/23/2011	1.9	11/5/2008	17.5	15.6
Georgia	Thomas	02327350	Ochlockonee River tributary near Coolidge	31°01'25"N	83°57'35"W	7/23/2011	0.084	11/5/2008	0.295	0.211
Georgia	Thomas	02327355	Ochlockonee River at Ga. 188, near Coolidge	31°00'08"N	83°56'21"W	7/23/2011	2.5	11/5/2008	22	19.5

Table 4. Streamflow measurements collected in Alabama, Florida, and Georgia, July 2011 and November 2008.—Continued

[ddmmss, degree, minute, second; N, north, W, west; ft^3/s, cubic feet per second; ds, downstream, us, upstream; —, no data]

State	County	Site number	Site name	Latitude (ddmmss)	Longitude (ddmmss)	Date measured in 2011	Discharge (ft^3/s)	Date measured in 2008	Discharge (ft^3/s)	Change in discharge from 2008 to 2011
Georgia	Thomas	02327370	Big Creek at Ga. 35, near Coolidge	30°58'32"N	83°53'16"W	7/24/2011	0	11/6/2008	4.57	4.57
Georgia	Thomas	02327460	Little Ochlockonee River Ga. 188 near Ochlocknee	30°58'37"N	84°01'12"W	7/23/2011	2.14	11/5/2008	12.1	9.96
Georgia	Thomas	02327695	E Branch Barnetts Cr Mcmillan Road, near Ochlocknee	30°56'50"N	84°04'18"W	7/24/2011	0.05	11/5/2008	3.41	3.36
Georgia	Tift	02315970	Alapaha River at Ga. 35, near Tifton	31°31'58"N	83°23'57"W	7/21/2011	0	11/5/2008	0	0
Georgia	Tift	02317797	Little River at Upper Ty Ty Road, near Tifton	31°28'55"N	83°35'03"W	7/22/2011	0	11/4/2008	5.32	5.32
Georgia	Tift	02317818	Little River (CR 424) near Omega	31°21'04"N	83°31'18"W	7/22/2011	0	11/5/2008	21.7	21.7
Georgia	Tift	02317900	Ty Ty Creek at U.S. 82, at Ty Ty	31°28'23"N	83°39'47"W	7/22/2011	0	11/5/2008	8.13	8.13
Georgia	Turner	02315740	Double Run Creek (CR 250) near Rebecca	31°47'32"N	83°29'22"W	7/24/2011	0	11/3/2008	0	0
Georgia	Turner	02315850	West Fork Deep Creek at Ga. 159 near Amboy	31°46'01"N	83°37'26"W	7/21/2011	0	11/3/2008	0	0
Georgia	Turner	02315905	Deep Creek (CR 250) near Rebecca	31°43'57"N	83°30'21"W	7/20/2011	1.15	11/3/2008	0	–1.15
Georgia	Turner	02317771	Little River at Ga. 112, near Ashburn	31°40'29"N	83°41'26"W	7/22/2011	0	11/3/2008	0.73	0.73
Georgia	Webster	02350600	Kinchafoonee Creek at Preston	32°03'09"N	84°32'54"W	7/21/2011	40	—	—	—
Georgia	Worth	02317856	Town Creek at Melton Road, near Sylvester	31°29'13"N	83°48'22"W	7/21/2011	0	11/3/2008	1.58	1.58
Georgia	Worth	02317866	Horse Creek at Ga. 33, near Sylvester	31°26'03"N	83°50'06"W	7/22/2011	0	11/3/2008	0	0
Georgia	Worth	02327169	Ochlockonee River at Brooks Road, near Bridgeboro	31°24'01"N	83°53'33"W	7/22/2011	0	11/5/2008	0	0
Georgia	Worth	02350509	Jones Creek near Oakfield	31°45'34"N	83°58'42"W	7/24/2011	1.21	11/3/2008	2.81	1.6
Georgia	Worth	02350524	Abrams Creek near Oakfield	31°43'08"N	83°59'19"W	7/24/2011	3.72	11/3/2008	8.95	5.23
Georgia	Worth	02350527	Mill Creek near Albany	31°40'05"N	83°59'48"W	7/22/2011	7.56	11/4/2008	14.7	7.14

Table 5. Stream and spring water-quality data July 20–24, 2011.

[ddmmss, degrees, minutes, seconds, N, north; W, west; °C, degrees Celsius; µS/cm, microsiemens per centimeter]

State	County	Site number	Site name	Longitude (ddmmss)	Latitude (ddmmss)	Date measured in 2011	Water temperature (°C)	Specific conductance (µS/cm)	pH	Dissolved oxygen
Florida	Calhoun	303604084571700	Apalachicola River at mile 96	30°35'39"N	84°56'46"W	7/21/2011	29.9	142	7.5	6
Florida	Calhoun	303238084590900	Apalachicola River at mile 90	30°31'59"N	84°59'05"W	7/21/2011	30.6	142	7.7	6.2
Florida	Calhoun	02358684	Apalachicola River near Sweetwater (near mile 87.6)	30°30'24"N	84°59'29"W	7/21/2011	30.6	141	7.6	6.8
Florida	Calhoun	302817084592100	Apalachicola River at mile 84 (at Alum Bluff)	30°28'10"N	84°59'13"W	7/23/2011	29.3	144	7.5	5.5
Florida	Calhoun	302707084595900	Apalachicola River at mile 82	30°26'40"N	84°59'38"W	7/23/2011	29.8	144	7.4	5.7
Florida	Calhoun	02358700	Apalachicola River near Blountstown (mile 78)	30°28'47"N	85°01'22"W	7/23/2011	29.8	144	7.5	5.8
Florida	Calhoun	302147085022700	Apalachicola River at mile 68	30°21'28"N	85°02'16"W	7/24/2011	30.7	139	7.4	6.4
Florida	Calhoun	301428085053600	Apalachicola River at mile 55	30°14'17"N	85°04'03"W	7/22/2011	30.8	139	7.7	7.2
Florida	Calhoun	02358661	Ocheese Creek near Altha	30°34'31"N	84°59'22"W	7/21/2011	24	161	6.7	6.5
Florida	Calhoun	02358998	Holliman Branch near Altha	30°32'43"N	85°09'33."W	7/21/2011	24.7	80	6.4	6.8
Florida	Calhoun	02359000	Chipola River near Altha	30°32'02"N	85°09'55"W	7/22/2011	25.9	233	7.7	7.6
Florida	Calhoun	02359035	Fourmile Creek near Clarkdale	30°26'41"N	85°10'59"W	7/21/2011	24.5	20	4.1	7.9
Florida	Calhoun	02359059	Juniper Creek at Frink	30°21'30"N	85°12'45"W	7/21/2011	24.8	26	3.6	8.2
Florida	Calhoun	02359012	Tenmile Creek near Clarksville	30°30'01"N	85°12'01"W	7/21/2011	25.1	27	4.4	7.4
Florida	Calhoun	02358683	Graves Creek at Selman	30°31'45"N	85°01'48"W	7/20/2011	25.8	96	6.7	7.1
Florida	Calhoun	02358696	Stafford Creek near Selman	30°29'55"N	85°02'31"W	7/20/2011	26.8	126	6.4	4.9
Florida	Franklin	02359170	Apalachicola River near Sumatra	29°56'57"N	85°00'56"W	7/22/2011	31.1	129	6.5	6.2
Florida	Gadsden	304048084523800	Apalachicola River at mile 104	30°40'29"N	84°52'23"W	7/20/2011	30.2	138	7.5	6.9
Florida	Gadsden	303923084534500	Apalachicola River at mile 102	30°39'14"N	84°53'27"W	7/20/2011	30.4	139	7.5	6.6
Florida	Gadsden	02358634	Apalachicola River near Sneads (near mile 100.2)	30°38'02"N	84°54'14."W	7/20/2011	30.6	139	7.5	6.5
Florida	Gadsden	303719084554000	Apalachicola River at mile 98	30°36'48"N	84°55'24"W	7/21/2011	29.8	142	7.5	6.1
Florida	Gadsden	02358500	North Fork Mosquito Creek at Chattahoochee	30°42'08"N	84°49'35"W	7/23/2011	29.5	61	7.1	7.5
Florida	Gadsden	02358519	Mosquito Creek at Chattahoochee	30°41'19"N	84°50'30"W	7/21/2011	26.1	86	7.2	7
Florida	Gadsden	02358600	Flat Creek near Chattahoochee	30°37'43"N	84°50'06"W	7/21/2011	24.4	42	7.1	7.7

Table 5. Stream and spring water-quality data July 20–24, 2011.—Continued

[ddmmss, degrees, minutes, seconds, N, north; W, west; °C, degrees Celsius; µS/cm, microsiemens per centimeter]

State	County	Site number	Site name	Longitude (ddmmss)	Latitude (ddmmss)	Date measured in 2011	Water temperature (°C)	Specific conductance (µS/cm)	pH	Dissolved oxygen
Florida	Gulf	02358754	Apalachicola River near Wewahitchka (mile 44.2)	30°09'16"N	85°08'06"W	7/22/2011	31.1	136	7.6	7.2
Florida	Gulf	02359101	Chipola River above Dead Lakes outlet near Wewahitchka	30°07'38"N	85°10'39"W	7/24/2011	29.7	148	7.2	5
Florida	Jackson	304220084514900	Apalachicola River below Jim Woodruff Dam	30°42'24"N	84°51'45"W	7/20/2011	29.8	136	7.5	6.8
Florida	Jackson	304217084514800	Apalachicola River below Jim Woodruff Dam	30°42'18"N	84°50'42"W	7/20/2011	29.9	137	7.6	7.2
Florida	Jackson	304221084520600	Apalachicola River at mile 106	30°42'13"N	84°51'40"W	7/20/2011	30.1	137	7.7	7.3
Florida	Jackson	02358000	Apalachicola River at Chattahoochee	30°41'36"N	84°51'40"W	7/20/2011	30	140	7.7	7
Florida	Jackson	02358760	Marshall Creek at State Hwy. 2 near Campbellton	30°56'11"N	85°17'48"W	7/23/2011	25.3	213	7.5	7
Florida	Jackson	02358772	Cowarts Creek at State Highway 2 near Malone	30°56'50"N	85°15'32"W	7/23/2011	24.1	238	7.5	6.9
Florida	Jackson	02358784	Muddy Branch near Marianna	30°49'58"N	85°12'31"W	7/22.2011	26	78	6.8	2
Florida	Jackson	02358789	Chipola River at Marianna	30°46'22"N	85°12'59"W	7/20/2011	24.1	256	7.7	7.2
Florida	Jackson	02358800	Chipola River at Oakdale	30°43'02"N	85°12'01"W	7/24/2011	25.7	258	7.8	6.7
Florida	Jackson	304913085144201	Blue Hole Spring at foot bridge near Marianna	30°49'13"N	85°14'42"W	7/20/2011	27.2	186	7.4	4.4
Florida	Jackson	304948085140501	Baltzell Spring	30°49'48"N	85°14'05"W	7/20/2011	20.6	306	7.5	7.3
Florida	Jackson	02358900	Dry Creek near Oakdale	30°40'29"N	85°12'32"W	7/23/2011	23	214	8	8.5
Florida	Jackson	02358795	Jackson Blue Spring near Marianna	30°47'26"N	85°08'27"W	7/22/2011	20.6	251	7.5	7.2
Florida	Liberty	303501084563100	Rock Creek at Torreya State Park near Johnson Landing	30°35'01"N	84°56'31"W	7/21/2011	26.9	62	7.3	8.4
Florida	Liberty	303526084582100	Apalachicola River at mile 94	30°34'52"N	84°57'49"W	7/21/2011	30.5	142	7.5	6.2
Florida	Liberty	02358664	Apalachicola River near Rock Bluff (near mile 92.2)	30°33'44"N	84°57'47"W	7/21/2011	30.7	143	7.5	6.3
Florida	Liberty	301719084355900	Apalachicola River at mile 86	30°28'52"N	84°59'59"W	7/23/2011	29.7	145	7.4	5.3
Florida	Liberty	02358685	Little Sweetwater Creek near Bristol	30°28'23"N	84°59'04"W	7/23/2011	23.9	15	5.5	8.3

Table 5. Stream and spring water-quality data July 20–24, 2011.—Continued

[ddmmss, degrees, minutes, seconds, N, north; W, west; °C, degrees Celsius; µS/cm, microsiemens per centimeter]

State	County	Site number	Site name	Longitude (ddmmss)	Latitude (ddmmss)	Date measured in 2011	Water temperature (°C)	Specific conductance (µS/cm)	pH	Dissolved oxygen
Florida	Liberty	302642084595000	Apalachicola River at mile 80	30°26'25"N	84°59'30"W	7/23/2011	29.8	144	7.4	5.6
Florida	Liberty	302442085004100	Apalachicola River at mile 75	30°24'25"N	85°00'55"W	7/24/2011	30.5	139	7.4	6.2
Florida	Liberty	302200085010100	Apalachicola River at mile 72	30°23'00"N	85°01'00"W	7/24/2011	30.6	139	7.4	6.3
Florida	Liberty	301935085020000	Apalachicola River at mile 64 (at Estiffanulga)	30°18'51"N	85°02'00"W	7/24/2011	30.9	139	7.6	7
Florida	Liberty	301759085032700	Apalachicola River at mile 60	30°17'36"N	85°03'16"W	7/22/2011	30.4	140	7.5	6.9
Florida	Liberty	301258085065300	Apalachicola River at mile 50	30°12'35"N	85°06'326"W	7/22/2011	31	138	7.6	7.3
Florida	Liberty	023587547	Apalachicola River at mile 36 at Wewahitchka	30°05'19"N	85°08'47"W	7/22/2011	31.6	133	7.6	7.4
Florida	Liberty	02358673	Sweetwater Creek near Rock Bluff	30°31'29"N	84°58'22"W	7/20/2011	23	26	6.1	7.4
Florida	Liberty	02358742	Little Gully Creek near Esiffanulga	30°15'41"N	85°00'47"W	7/22/2011	24.2	56	5.6	2.3
Florida	Liberty	02358750	Gregory Mill Creek at Orange	30°10'25"N	85°04'08"W	7/22/2011	23.3	101	5.9	4.9
Florida	Liberty	02358737	Big Gully Creek near Orange	30°14'52"N	85°00'18"W	7/22/2011	23.4	119	6.6	5.7
Georgia	Baker	02352980	Cooleewahee Creek near Newton	31°19'49"N	84°19'50"W	7/22/2011	27.47	273	8.02	9.98
Georgia	Baker	02353500	Ichawaynochaway Creek at Milford	31°22'58"N	84°32'47"W	7/22/2011	27.27	79	7.06	6.32
Georgia	Baker	02354500	Chickasawhatchee Creek at Elmodel	31°21'02"N	84°28'57"W	7/22/2011	30.51	248	8.03	8.2
Georgia	Baker	02354800	Ichawaynochaway Creek near Elmodel	31°17'38"N	84°29'31"W	7/22/2011	28.27	82	7.29	6.79
Georgia	Baker	02355350	Ichawaynochaway Creek below Newton	31°13'03"N	84°28'15"W	7/23/2011	27.78	95	7.39	6.61
Georgia	Berrien	02316000	Alapaha River near Alapaha	31°23'04"N	83°11'33"W	7/21/2011	27.8	109	6.84	3.51
Georgia	Calhoun	02353265	Ichawaynochaway Creek at Ga. 37, near Morgan	31°31'37"N	84°34'58"W	7/21/2011	27.62	61	6.61	5.99
Georgia	Calhoun	02353400	Pachitla Creek near Edison	31°33'18"N	84°40'51"W	7/21/2011	25.92	52	6.64	6.69
Georgia	Calhoun	02353460	Ichawaynochaway Creek at Ga. 62, near Leary	31°28'10"N	84°34'15"W	7/22/2011	26.5	61	6.72	6.79
Georgia	Calhoun	02354350	Chickasawhatchee Creek near Albany	31°35'38"N	84°27'12"W	7/23/2011	25.96	216	6.95	5.75

Table 5. Stream and spring water-quality data July 20–24, 2011.—Continued

[ddmmss, degrees, minutes, seconds, N, north; W, west; °C, degrees Celsius; µS/cm, microsiemens per centimeter]

State	County	Site number	Site name	Longitude (ddmmss)	Latitude (ddmmss)	Date measured in 2011	Water temperature (°C)	Specific conductance (µS/cm)	pH	Dissolved oxygen
Georgia	Colquitt	02327195	Ochlockonee River at Ga. 133, near Moultrie	31°14'50"N	83°50'03"W	7/21/2011	25.9	87	7.26	3.8
Georgia	Colquitt	02327205	Ochlockonee River Lower Meigs Road, near Moultrie	31°08'32"N	83°48'13"W	7/22/2011	26.36	516	7.41	3.69
Georgia	Colquitt	02327320	Bridge Creek at Funston-Sale City Road, near Doerun	31°14'10"N	83°55'51"W	7/21/2011	26.7	133	7.15	4.07
Georgia	Crisp	02350220	Gum Creek at U.S. 280, at Coney	31°57'41"N	83°53'05"W	7/21/2011	25.32	149	7.13	6.34
Georgia	Crisp	02350360	Swift Creek near Warwick	31°50'21"N	83°51'18"W	7/23/2011	24	255	7.87	7.8
Georgia	Decatur	02357073	Yates Spring	30°55'23"N	84°44'41"W	7/24/2011	20.95	247	7.92	8.63
Georgia	Decatur	02357072	Above Yates Spring	30°55'24"N	84°44'41"W	7/24/2011	25.8	232	7.56	5.75
Georgia	Decatur	02357065	Spring 3	30°56'02"N	84°44'39"W	7/24/2011	20.79	267	7.57	7.14
Georgia	Decatur	02357061	Spring 5 (Godby Spring)	30°56'07"N	84°44'36"W	7/24/2011	21.68	267	7.77	8.25
Georgia	Decatur	02357060	Above Spring 3 and 5	30°56'07"N	84°44'35"W	7/24/2011	21.8	224	7.75	7.18
Georgia	Decatur	02357070	Above Spring 2	30°55'40"N	84°44'38"W	7/24/2011	25.7	232	7.52	5.92
Georgia	Decatur	02329385	Swamp Creek at U.S. 27, near Attapulgus	30°43'11"N	84°24'41"W	7/22/2011	26.51	122	6.63	4.97
Georgia	Decatur	02357000	Spring Creek near Iron City	31°02'25"N	84°44'24"W	7/23/2011	27.92	187	7.76	7.32
Georgia	Decatur	02357050	Spring Creek at U.S. 84, at Brinson	30°58'31"N	84°44'44"W	7/24/2011	26.29	201	7.59	5.88
Georgia	Dooly	02349900	Turkey Creek at Byromville	32°11'44"N	83°54'08"W	7/22/2011	24.6	133	6.85	5.9
Georgia	Dooly	02349910	Turkey Creek County Rd, near Drayton	32°06'14"N	83°56'23"W	7/23/2011	25.4	98	7.27	7.4
Georgia	Dooly	02349960	Little Pennahatchee Creek near Lilly	32°07'01"N	83°51'44"W	7/23/2011	25.8	280	6.93	1.82
Georgia	Dooly	02349980	Pennahatchee Creek County Road near Drayton	32°05'44"N	83°55'04"W	7/23/2011	26.6	234	7.62	6.1
Georgia	Early	02343801	Chattahoochee River near Columbia, Ala.	31°15'34"N	85°06'37"W	7/21/2011	29	85	6.9	7.39
Georgia	Early	02343940	Sawhatchee Creek at Cedar Springs	31°10'51"N	85°02'37"W	7/22/2011	24.8	200	7.58	7.14
Georgia	Early	02344000	Chattahoochee River at Alaga, Ala.	31°06'55"N	85°02'43"W	7/21/2011	29.3	83	6.81	7.24
Georgia	Early	02356100	Spring Creek near Arlington	31°24'48"N	84°46'33"W	7/22/2011	27.1	142	7.65	8.18
Georgia	Early	02356290	Dry Creek near Blakely	31°22'23"N	84°52'59"W	7/22/2011	26.18	130	6.99	6.14
Georgia	Early	02356460	Dry Creek at Hentown	31°17'03"N	84°49'10"W	7/22/2011	27.05	192	7.18	5.65

Table 5. Stream and spring water-quality data July 20–24, 2011.—Continued

[ddmmss, degrees, minutes, seconds, N, north; W, west; °C, degrees Celsius; µS/cm, microsiemens per centimeter]

State	County	Site number	Site name	Longitude (ddmmss)	Latitude (ddmmss)	Date measured in 2011	Water temperature (°C)	Specific conductance (µS/cm)	pH	Dissolved oxygen
Georgia	Grady	02327860	Popple Branch at Ga. 179, near Whigham	30°55'36"N	84°20'18"W	7/21/2011	29.36	80	6.46	4.37
Georgia	Grady	02328000	Tired Creek near Cairo	30°51'55"N	84°15'46"W	7/21/2011	27.07	182	7.4	6.89
Georgia	Grady	02328025	Parkers Mill Creek at Pine Park Road, near Cairo	30°50'18"N	84°13'34"W	7/22/2011	25.54	428	7.36	5.33
Georgia	Grady	02328082	Little Tired Creek at Pine Park Road, near Cairo	30°50'31"N	84°12'03"W	7/22/2011	25.57	309	6.52	3.23
Georgia	Grady	02328200	Ochlockonee River near Calvary	30°43'54"N	84°14'12"W	7/22/2011	31.29	229	7.68	8.5
Georgia	Irwin	02316170	Willacoochee River at Ga. 32, near Ocilla	31°35'45"N	83°10'18"W	7/22/2011	26.8	326	6.56	3.05
Georgia	Lee	02350860	Kinchafoonee Creek at Ga. 118, near Smithville	31°52'07"N	84°18'18"W	7/24/2011	26.4	52	6.77	6.79
Georgia	Lee	02350900	Kinchafoonee Creek at Pinewood Road, near Dawson	31°45'52"N	84°15'12"W	7/22/2011	28.42	52	6.82	7.47
Georgia	Lee	02351000	Kinchafoonee Creek at Ga. 32, near Leesburg	31°43'11"N	84°11'08"W	7/21/2011	28.38	59	6.95	7.35
Georgia	Lee	02351700	Muckalee Creek near Smithville	31°53'44"N	84°11'52"W	7/21/2011	26.45	75	6.78	6.62
Georgia	Lee	02351800	Muckaloochee Creek at Smithville	31°54'20"N	84°14'44"W	7/24/2011	25.3	42	6.32	6.24
Georgia	Lee	02351890	Muckalee Creek at Ga. 195, near Leesburg	31°46'34"N	84°08'22"W	7/24/2001	26.48	78	6.99	6.55
Georgia	Lee	02351900	Muckalee Creek near Leesburg	31°43'56"N	84°07'30"W	7/21/2011	27.5	83	6.71	7.02
Georgia	Lee	02351930	Muckalee Creek below Leesburg	31°39'06"N	84°06'27"W	7/23/2011	28.78	90	7.05	7.41
Georgia	Macon	02349605	Flint River at Ga. 26, near Montezuma	32°17'35"N	84°02'37"W	7/22/2011	29.1	36	6.83	7
Georgia	Macon	02349660	Sweetwater Creek at Andersonville	32°11'10"N	84°08'03"W	7/22/2011	26.1	38	6.55	7.1
Georgia	Macon	02349740	Hogcrawl Creek (S-533) near Montezuma	32°13'03"N	83°59'30"W	7/22/2011	24.9	112	6.97	7.5
Georgia	Marion	02350572	Kinchafoonee Creek near Buena Vista	32°15'23"N	84°34'41"W	7/21/2011	24.6	31	6.62	7.3
Georgia	Miller	02356640	Spring Creek at U.S. 27, at Colquitt	31°10'16"N	84°44'31"W	7/23/2011	26.43	194	7.16	5.22

Table 5. Stream and spring water-quality data July 20–24, 2011.—Continued

[ddmmss, degrees, minutes, seconds, N, north; W, west; °C, degrees Celsius; µS/cm, microsiemens per centimeter]

State	County	Site number	Site name	Longitude (ddmmss)	Latitude (ddmmss)	Date measured in 2011	Water temperature (°C)	Specific conductance (µS/cm)	pH	Dissolved oxygen
Georgia	Randolph	02353200	Little Ichaway-nochaway Creek near Shellman	31°46'46"N	84°36'13"W	7/21/2011	25.49	64	6.72	7.43
Georgia	Randolph	02353350	Carter Creek near Carnegie	31°38'13"N	84°43'14"W	7/21/2011	25.64	50	6.65	6.76
Georgia	Seminole	02344040	Chattahoochee River near Steam Mill	30°58'40"N	85°00'19"W	7/22/2011	28.41	106	6.86	6.31
Georgia	Seminole	02357310	Fishpond Drain near Donalsonville	30°58'45"N	84°52'17"W	7/23/2011	30.1	165	7.36	5.55
Georgia	Stewart	02343200	Pataula Creek near Lumpkin	31°56'04"N	84°48'13"W	7/23/2011	24.47	113	7.38	7.28
Georgia	Sumter	02350080	Lime Creek near Cobb	32°02'02"N	83°59'47"W	7/23/2011	26.5	88	7.32	6.5
Georgia	Sumter	02351500	Muckalee Creek near Americus	32°04'59"N	84°15'29"W	7/24/2011	28.2	58	7.2	6.9
Georgia	Sumter	02351780	Muckaloochee Creek near Americus	31°58'38"N	84°18'12"W	7/24/2011	23.1	29	6.15	7.52
Georgia	Taylor	02349000	Whitewater Cr below Rambulette Cr, near Butler	32°28'01"N	84°15'58"W	7/21/2011	22.8	13	5.97	8.2
Georgia	Terrell	02353100	Ichawaynochaway Creek at U.S. 82, near Graves	31°46'17"N	84°33'44"W	7/21/2011	25.21	48	6.43	7.4
Georgia	Thomas	02327300	Ochlockonee River at Bee Line Road, near Chastain	31°02'01"N	83°56'07"W	7/23/2011	26.84	834	7.41	4.81
Georgia	Thomas	02327350	Ochlockonee River Tributary near Coolidge	31°01'25"N	83°57'35"W	7/23/2011	26.93	112	5.66	0.47
Georgia	Thomas	02327355	Ochlockonee River at Ga. 188, near Coolidge	31°00'08"N	83°56'21"W	7/23/2011	27.97	789	7.25	4.92
Georgia	Thomas	02327460	Little Ochlockonee River Ga. 188 near Ochlocknee	30°58'37"N	84°01'12"W	7/23/2011	27.66	66	6.57	4.34
Georgia	Thomas	02327695	E Branch Barnetts Cr Mcmillan Rd, near Ochlocknee	30°56'50"N	84°04'18"W	7/24/2011	24.74	487	6.58	3.03
Georgia	Turner	02315905	Deep Creek (CR 250) near Rebecca	31°43'57"N	83°30'21"W	7/20/2011	25.68	134	7.19	6.45
Georgia	Webster	02350600	Kinchafoonee Creek at Preston	32°03'09"N	84°32'54"W	7/21/2011	26.4	32	7	7.2
Georgia	Worth	02350509	Jones Creek near Oakfield	31°45'34"N	83°58'42"W	7/24/2011	28.03	223	7.74	6.91
Georgia	Worth	02350524	Abrams Creek near Oakfield	31°43'08"N	83°59'19"W	7/24/2011	27.3	180	7.39	5.1
Georgia	Worth	02350527	Mill Creek near Albany	31°40'05"N	83°59'48"W	7/22/2011	28.98	212	7.8	7.2

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