

Hydrologic Conditions in Northwest Florida: 2006 Water Year

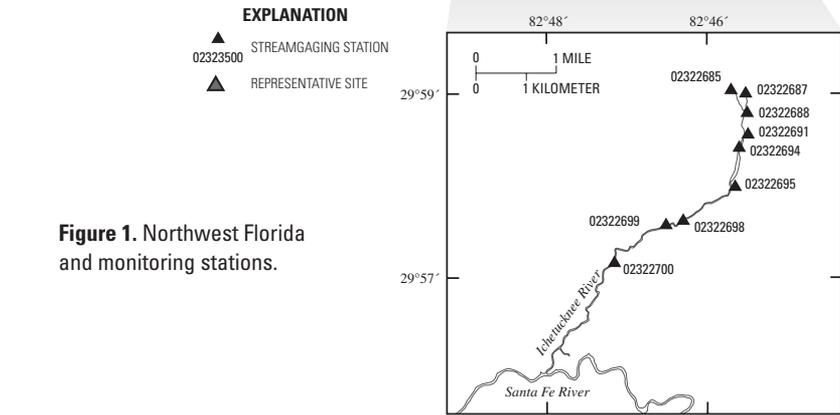
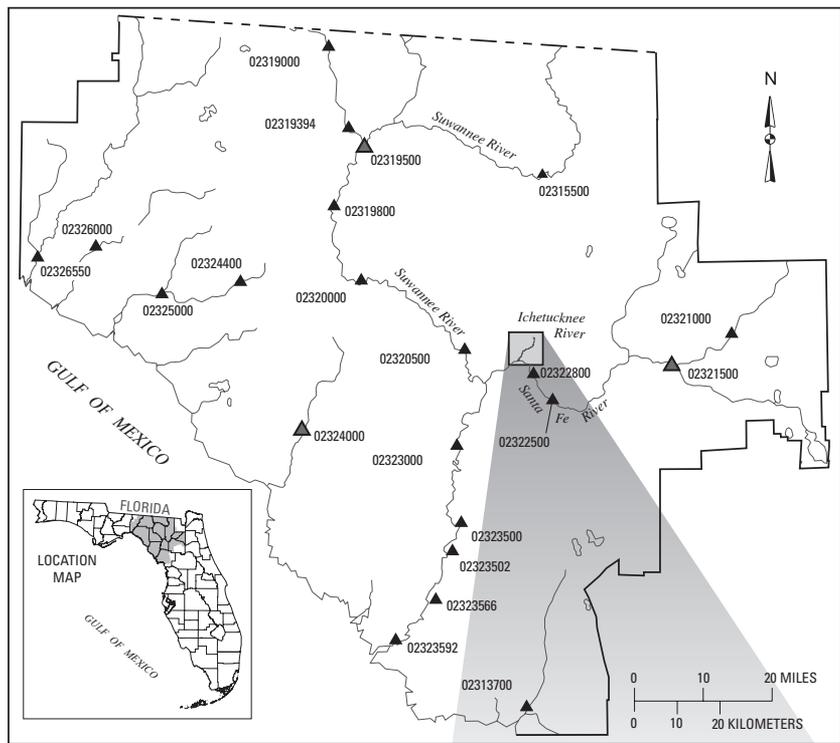
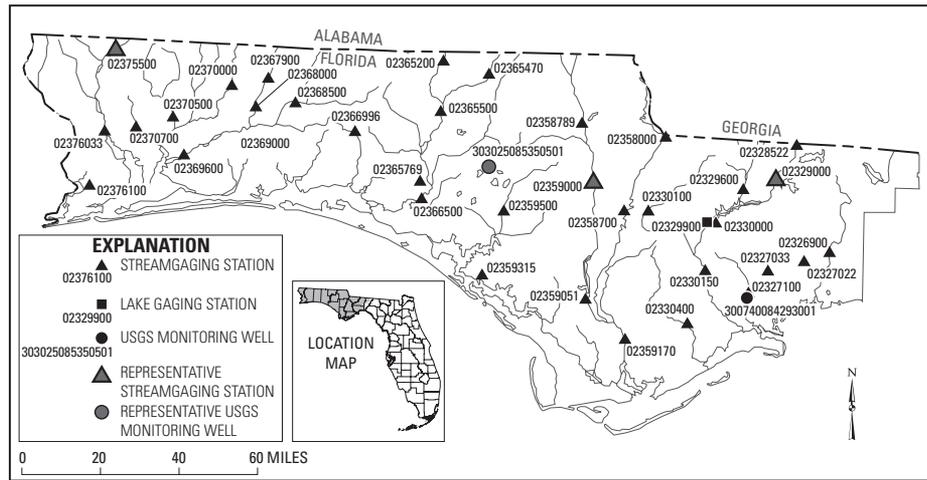


Figure 1. Northwest Florida and monitoring stations.

Introduction

National data for streamflow, ground-water levels, and quality of water for the 2006 water year are accessible to the public on the U.S. Geological Survey's (USGS) Site Information Management System (SIMS) website (http://web10capp.er.usgs.gov/adr06_lookup/search.jsp). This fact sheet describes data and hydrologic conditions throughout northwest Florida during the 2006 water year (fig. 1), when record-low monthly streamflow conditions were reported at several streamgaging locations.

Prior to 1960, these data were published in various USGS Water-Supply Papers and included water-related data collected by the USGS during the water year (October 1 to September 30). In 1961, a series of annual reports, "Water Resources Data-Florida," was introduced that published surface-water data. In 1964, a similar report was introduced for the purposes of publishing water-quality data. In 1975, the reports were merged to a single volume and were expanded to publish data for surface water, water quality, and ground-water levels. Formal publication of the annual report series was discontinued at the end of the 2005 water year, upon activation of the SIMS website database.

Precipitation

Precipitation across northwest Florida during the 2006 water year varied. Precipitation data from seven National Oceanic and Atmospheric Administration (NOAA) climate stations, (Lake City, Perry, Tallahassee, Apalachicola, Panama City, Crestview, and Pensacola) indicated total precipitation ranged from 37.26 (in.) inches at Panama City to 50.33 in. at Lake City for the water year. The cumulative monthly departures ranged from 27.50 in. below normal at Panama City to 3.27 in. below normal at Lake City for the water year (table 1).

Precipitation during the fall quarter (October-December), one of the dryer periods, varied across northwest Florida.

Table 1. Total precipitation and cumulative monthly departure from the 30-year normal (1971-2000).

[Values shown in inches]

Station name	October -December 2005		January-March 2006		April-June 2006		July-September 2006		Water year 2006	
	Total precipitation	Departure	Total precipitation	Departure	Total precipitation	Departure	Total precipitation	Departure	Total precipitation	Departure
Lake City	10.74	2.54	9.89	-3.14	12.71	-1.06	16.99	-1.61	50.33	-3.27
Perry	11.53	2.44	7.94	-6.09	11.98	-0.69	11.57	-10.32	43.02	-14.66
Tallahassee	9.79	-1.42	10.00	-6.46	13.46	-2.00	11.39	-8.69	44.64	-18.57
Apalachicola	7.75	-3.56	7.12	-6.46	10.63	0.71	16.51	-5.19	42.01	-14.50
Panama City	6.20	-5.89	6.95	-9.72	8.38	-5.22	15.73	-6.67	37.26	-27.50
Crestview	10.32	-0.50	8.39	-10.07	7.59	-9.02	11.54	-6.51	37.84	-26.10
Pensacola	12.22	-0.34	6.99	-9.43	7.39	-7.29	18.93	-1.69	45.53	-18.75

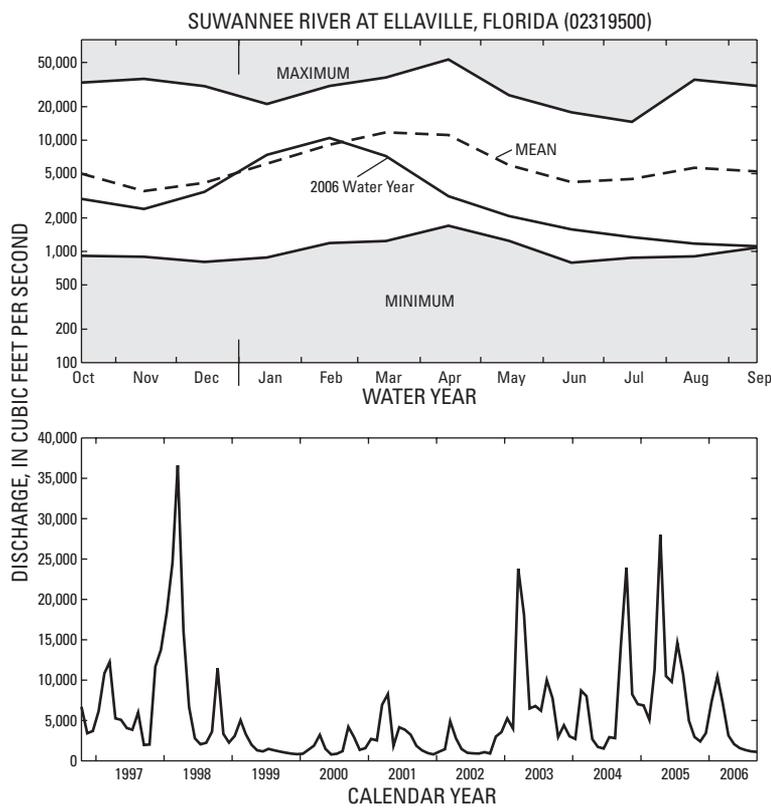


Figure 2. Suwannee River at Ellaville water year 2006 monthly mean discharge compared to the maximum, minimum, and mean monthly mean discharge for the period 1927-2006, and the monthly mean discharge for the period October 1996 to September 2006.

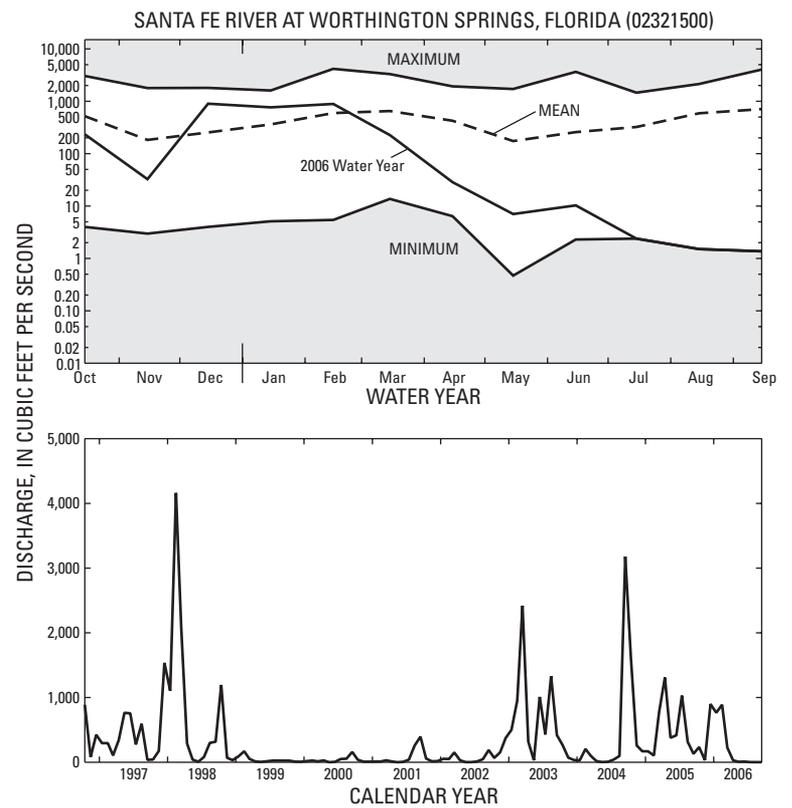


Figure 3. Santa Fe River at Worthington Springs water year 2006 monthly mean discharge compared to the maximum, minimum, and mean monthly mean discharge for the period 1932-2006, and the monthly mean discharge for the period October 1996 to September 2006.

During this period, the cumulative monthly departure ranged from 5.89 in. below normal at Panama City to 2.54 in. above normal at Lake City. Pensacola reported near normal conditions during this quarter (0.34 in. below normal) (table 1).

For the winter quarter (January-March), normally a wet period, precipitation was well below normal at all seven locations. The cumulative monthly

departure ranged from 10.07 in. below normal at Crestview to 3.14 in. below normal at Lake City (table 1).

Precipitation during the spring quarter (April-June 2006) had a large variation. The cumulative monthly departure ranged from 9.02 in. below normal at Crestview to 0.71 in. above normal at Apalachicola (table 1).

The summer quarter (July-September 2006), normally is the wet thunder-

storm season. The monthly cumulative departure, however, was well below normal ranging from 10.32 in. below normal at Perry to 1.61 in. below normal at Lake City (table 1).

Surface Water

Table 2 provides data from seven representative sites in northwest Florida showing 2005 and 2006 water year mean discharge and percent of mean of the

Table 2. Relation of period-of-record mean annual discharge to mean discharge for the 2005 and 2006 water years.

Station number	Station name Representative streams in northwest Florida	Period of record	Mean annual discharge	Mean discharge for the 2005 water year	Percent of mean	Mean discharge for the 2006 water year	Percent of mean
			Value (cubic feet per second)	Value (cubic feet per second)		Value (cubic feet per second)	
02319500	Suwannee River at Ellaville, FL	1927-2006	6,380	11,800	185	3,650	57
02321500	Santa Fe River at Worthington Springs, FL	1932-2006	419	560	134	256	61
02324000	Steinhatchee River near Cross City, FL	1950-2006	310	496	160	69.6	22
02329000	Ochlockonee River near Havana, FL	1926-2006	1,040	1,930	186	433	42
02359000	Chipola River near Altha, FL	1913-2006	1,490	2,110	142	965	65
02369000	Shoal River near Crestview, FL	1938-2006	1,110	1,790	161	616	55
02375500	Escambia River near Century, FL	1935-2006	6,250	8,910	142	3,250	52

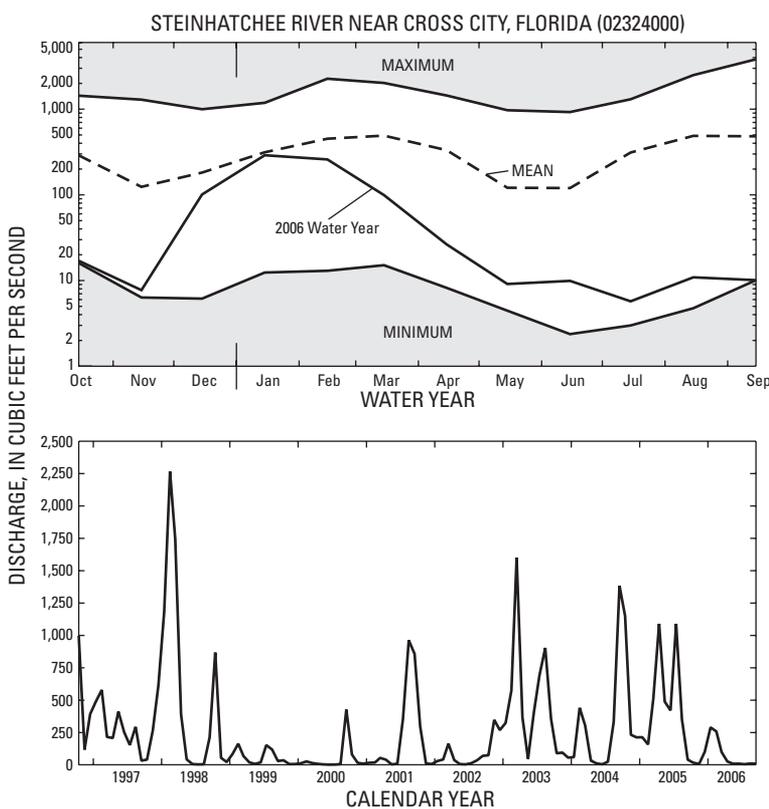


Figure 4. Steinhatcree River near Cross City water year 2006 monthly mean discharge compared to the maximum, minimum, and mean monthly mean discharge for the period 1950-2006, and the monthly mean discharge for the period October 1996 to September 2006.

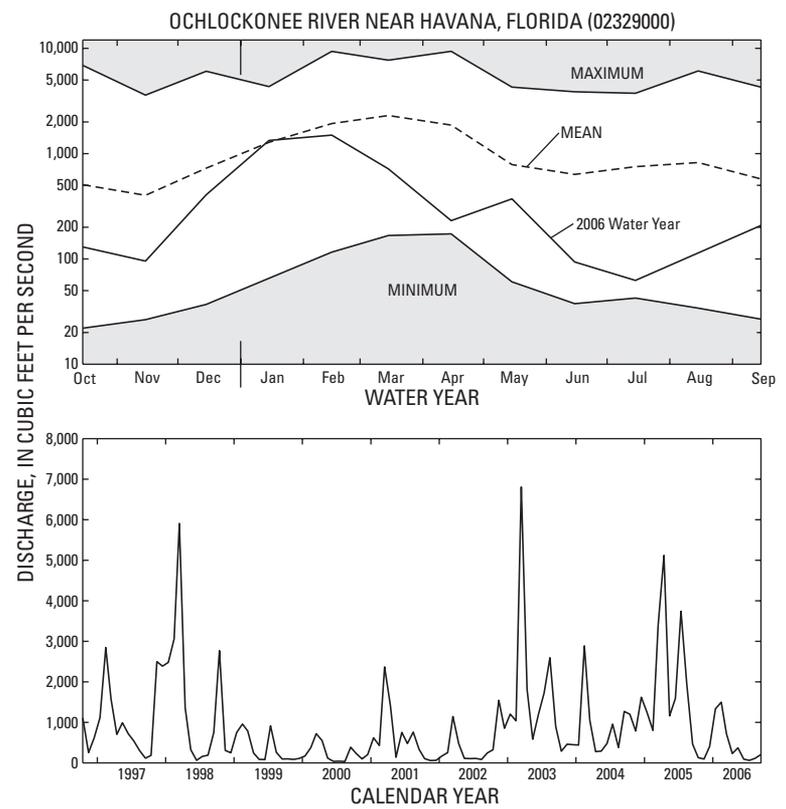


Figure 5. Ochlockonee River near Havana water year 2006 monthly mean discharge compared to the maximum, minimum, and mean monthly mean discharge for the period 1926-2006, and the monthly mean discharge for the period October 1996 to September 2006.

period of record. Discharge hydrographs for these representative streams in northwest Florida are shown in figures 2 to 8. The upper graph shows the 2006 water year monthly mean discharge compared to the maximum, minimum, and mean monthly mean discharge for the period of record at that site. The lower graph shows the monthly mean discharge for the period from October 1996 to September 2006.

Annual mean streamflow across northwest Florida averaged well below normal for the 2006 water year. Several streamgauge locations registered record-low monthly streamflows during the year. For example, the monthly streamflow during August at the Santa Fe River at Worthington Springs (02321500) was 1.51 ft³/s (cubic feet per second). The previous August record was 9.86 ft³/s set during the 9-year drought from 1949 to

1957 (table 3). Table 3 provides a comparison of record-low monthly streamflows observed during the 2006 water year and previous records for the period of record for representative streamgages.

Ground Water

Data are collected from two ground-water wells equipped with data recorders that measure 60-minute interval

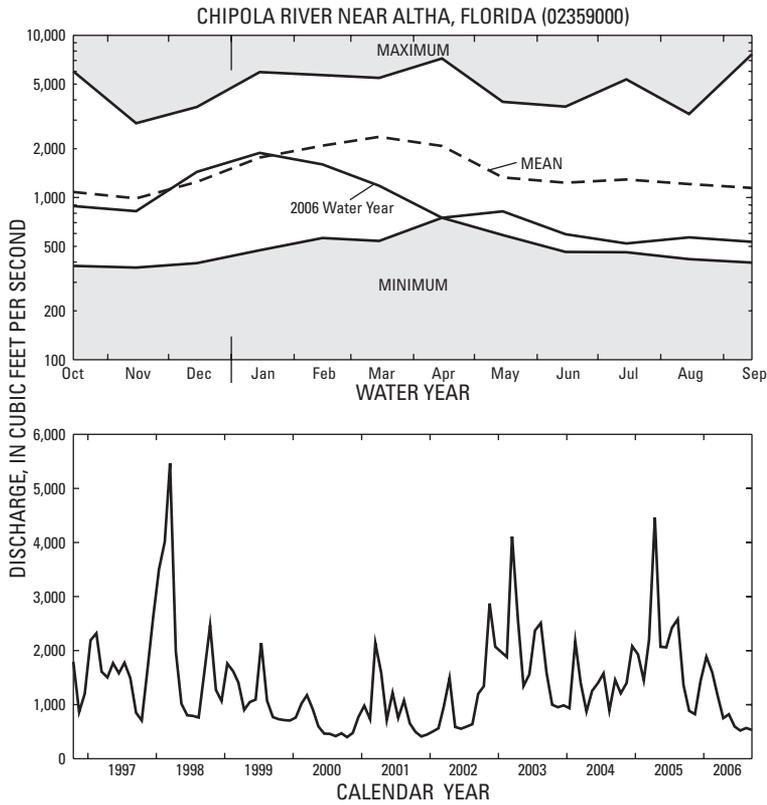


Figure 6. Chipola River near Altha water year 2006 monthly mean discharge compared to the maximum, minimum, and mean monthly mean discharge for the period 1913-2006, and the monthly mean discharge for the period October 1996 to September 2006.

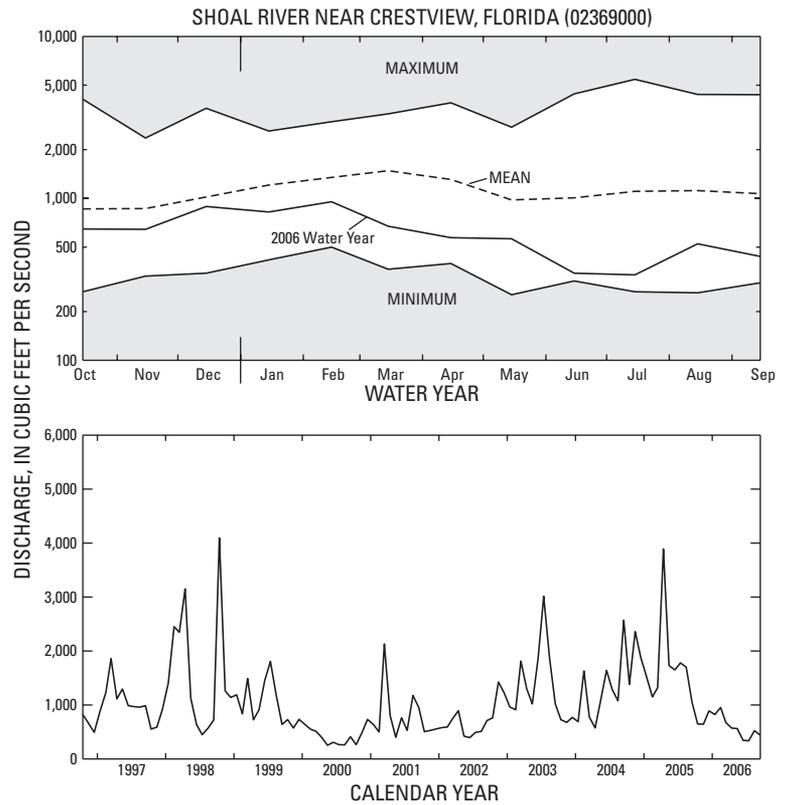


Figure 7. Shoal River near Crestview water year 2006 monthly mean discharge compared to the maximum, minimum, and mean monthly mean discharge for the period 1938-2006, and the monthly mean discharge for the period October 1996 to September 2006.

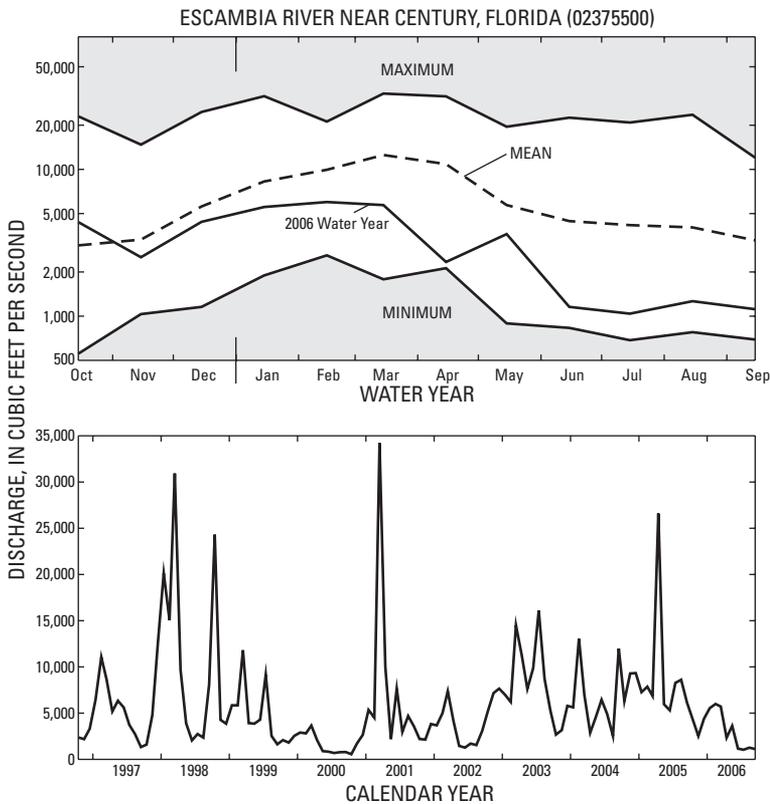
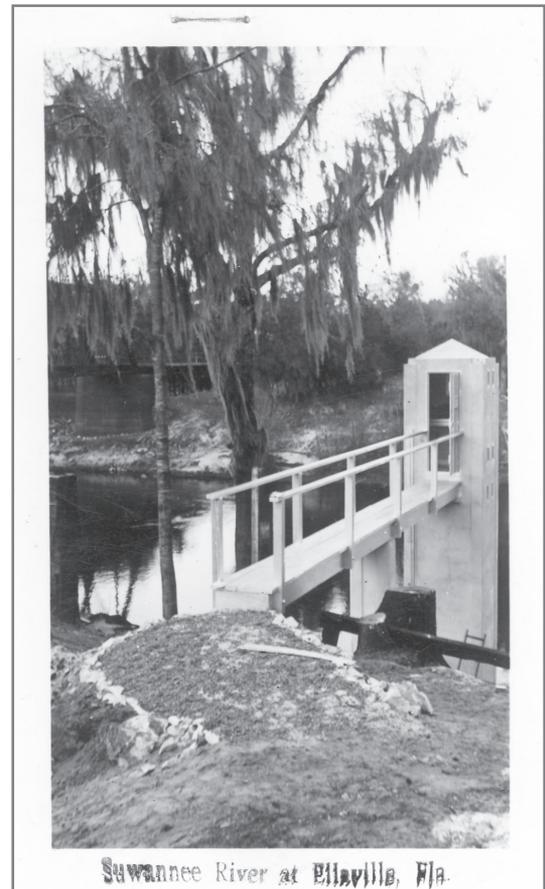


Figure 8. Escambia River near Century water year 2006 monthly mean discharge compared to the maximum, minimum, and mean monthly mean discharge for the period 1935-2006, and the monthly mean discharge for the period October 1996 to September 2006.



Streamgage on the Suwannee River at Ellaville, Florida, on February 20, 1939.

Table 3. Record-low monthly streamflows during the 2006 water year compared to previous records for the period of record.

Station number	Station name	Period of record	Record-low month	2006 water year streamflow (cubic feet per second)	Year of previous record-low month	Historical streamflow (cubic feet per second)
02313700	Waccasassa River near Gulf Hammock, FL	1963-2006	October	-42.5	1985	46.0
			November	-77.4	2002	-59.7
			June	-88.3	2004	-39.2
			July	-46.4	1977	55.5
02321000	New River near Lake Butler, FL	1950-2006	July	0.31	1999	1.06
			August	0.28	1999	1.32
			September	0.52	1999	0.73
02321500	Santa Fe River at Worthington Springs, FL	1932-2006	July	2.39	1981	9.05
			August	1.51	1954	9.86
			September	1.37	1990	10.3
02324000	Steinhatchee River near Cross City, FL	1950-2006	September	10.1	1956	29.5
02327100	Sopchoppy River near Sopchoppy, FL	1961-2006	April	2.97	2004	4.77
			July	2.68	1977	3.06
			August	2.91	1990	6.14
02330000	Ochlockonee River near Bloxham, FL	1926-2006	April	312	1999	327
02359000	Chipola River near Altha, FL	1913-2006	April	750	1968	757
02365500	Choctawhatchee River at Carryville, FL	1929-2006	July	1,000	1986	1,190

Table 4. Minimum and maximum instantaneous ground-water elevation conditions at two wells in northwest Florida.

[NGVD, National Geodetic Vertical Datum]

Station number	Station name	2006 Instantaneous minimum elevation (feet above NGVD 1929)	Date and time of minimum	2006 Instantaneous maximum elevation (feet above NGVD 1929)	Date and time of maximum
300740084293001	USGS Observation Well near Crawfordville, FL	30.06	Nov. 20, 2005 at 03:00	33.84	Jan. 5, 2006 at 14:00
303025085350501	USGS Observation Well near Wausau, FL (422A)	53.20	Sept. 30, 2006 at 21:00	61.83	Oct. 1, 2005 at 00:00

water elevations as part of the Climate Response Network (<http://groundwater-watch.usgs.gov/>). The daily maximum water-level elevations presented in annual data on SIMS are derived from these measurements. Table 4 provides the instantaneous minimum and maximum

water elevations, and date and time of the peaks for the water year for both of the Climate Response Network wells. Water-level elevations for the USGS monitoring well near Wausau (303025085350501) are shown in figure 9. The upper graph shows the 2006 water year monthly

maximum water levels compared to the maximum, minimum, and mean monthly maximum water levels for the period of record. The lower graph shows the monthly maximum water level for the period of October 1997 to September 2006.

Lake Elevations

Data are collected from one lake, Lake Talquin near Bloxham (02329900), equipped with a data recorder that measures 15-minute interval water elevations. The daily mean water-level elevations presented in annual data on SIMS are

derived from these measurements. Water elevations for Lake Talquin are controlled by C.H. Corn Hydroelectric Dam located on the Ochlockonee River. The Hydroelectric Dam also regulates the flow into the Ochlockonee River near Bloxham. For 2006, the instantaneous

minimum for Lake Talquin near Bloxham (02329900) was 68.15 feet above NGVD 1929 on July 22, 2006, at 17:30. The instantaneous maximum at this site was 68.89 feet above NGVD 29 (National Geodetic Vertical Datum on January 3, 2006, at 11:15.

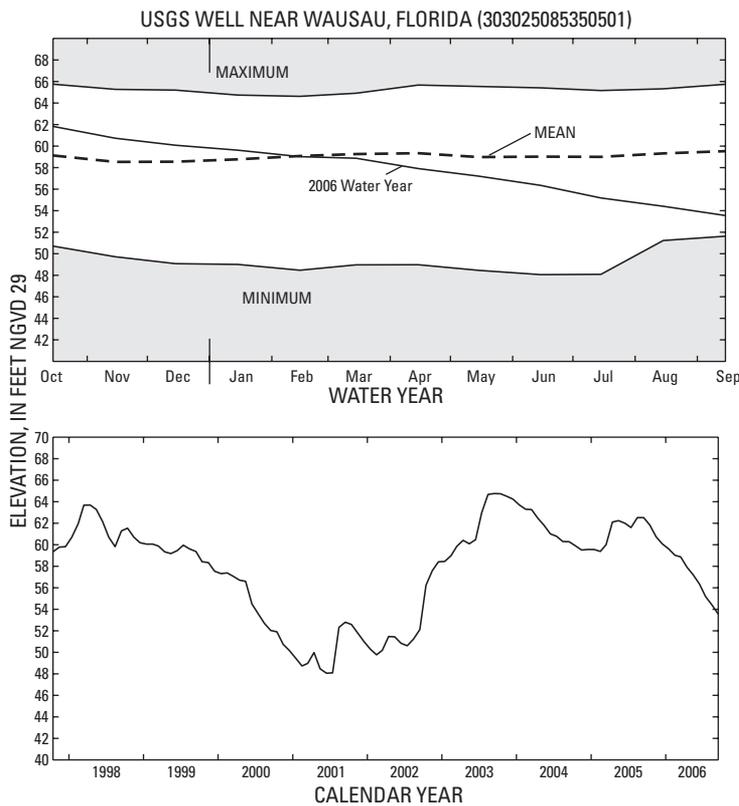


Figure 9. USGS well near Wausau monthly maximum water level for the 2006 water year compared to maximum, minimum, and mean monthly maximum water levels for the period 1963-2006 and the monthly maximum water level for the period October 1997 to September 2006. (NGVD 29, National Geodetic Vertical Datum of 1929)

For additional information, contact:

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Cooperation

The USGS and agencies in Florida have had cooperative agreements for the collection of water-resources records since 1930. Agencies that had cooperative agreements with the USGS during the 2006 water year are the: Florida Department of Environmental Protection, County of Walton, Florida Department of Transportation, Suwannee River Water Management District, U.S. Army Corps of Engineers Mobile District, Northwest Florida Water Management District, County of Okaloosa, City of Tallahassee, and County of Santa Rosa.

Construction crew on February 20, 1939. The new streamgage house on the Suwannee River at Ellaville, Florida, was completed this day.

