

MEMORANDUM

TO: Governing Board

FROM: Megan Wetherington, P.E., Senior Professional Engineer ^{MW}

THRU: David Still, Executive Director ^{DS}
Jon Dinges, Department Director ^{JMD}

DATE: September 8, 2010

RE: August 2010 Hydrologic Conditions Report for the District

RAINFALL

- For a second month, coastal areas received significant rain while counties further inland saw below-normal totals. 8.29" fell in eight hours at Manatee Springs State Park near Chiefland, exceeding the 1% (100-year) storm for Levy County. 12.62" was recorded in three days at the same gage. 14.67" fell in seven days with 18.75" for the month at Rosewood Tower near Cedar Key. A total of 14.33" for the month was recorded at the Usher Tower gage between Chiefland and Otter Creek, the highest August total there since 1988. Doppler radar rainfall estimates showed monthly totals exceeding 27" over the lower Suwannee and Waccasassa Rivers. However, parts of Madison, Hamilton, Suwannee, Columbia, Bradford, and Alachua counties received as little as 50% of normal rain for August. The average rainfall across the District was 9.51", which is 127% of the District's long-term average of 7.49" (Table 1, Figure 1). Given the range of totals seen across the District, this statistic may be a poor indicator of rainfall conditions in August. Figure 2 shows the estimated rainfall accumulation, and Figure 3 shows the rainfall totals as a percent of normal August precipitation.
- Rainfall for the past twelve months was 60.90". The twelve-month surplus rose from 3.52" in July to 6.22". Coastal areas of Dixie and Levy counties had more than 25" of surplus. However, the upper Santa Fe River Basin showed a deficit of more than 10" since September 2009, and the upper Suwannee River Basin was near or below the long-term average. Figure 4 depicts the 12-month surplus/deficit across the District. Figure 5 shows the change in annual deficits beginning in 1998.

SURFACEWATER

- **Rivers:** Flows at the Econfina, Steinhatchee, Waccasassa, and Fenholloway Rivers were much above normal at the end of the month. Steinhatchee flows were above the 95th percentile compared to historic

August flows, and the Waccasassa River set apparent new record flows for this time of year. Conditions on the Santa Fe River improved to near-normal by mid-month followed by a decline as rainfall diminished. With the exception of the Suwannee River near Wilcox (at Fanning Springs), gages on the Suwannee River showed below-normal conditions. Discharge statistics for six river stations are presented in Figure 6 and streamflow conditions for major gages are shown in Figure 7.

- **Lakes:** Levels at most monitored lakes remained stable, with little change since July. Eleven of the 16 monitored lakes remained below their long-term average levels. Levels at Waters Lake and Governor Hill Lake remained below the minimum measurable stage. Figure 8 shows levels relative to the long-term average, minimum, and maximum levels for six lakes.
- **Springs:** Average August flow relative to historical flows is shown for four spring systems in Figure 12.

GROUNDWATER

Levels in 74 percent of monitored wells dropped in August, with an average decline of nearly 6" (Figure 9). Wells in coastal areas that received heavy rainfall continued to rise. The highest level in 34 years of record was observed in a Floridan Aquifer well near Gulf Hammock in Levy County. Levels in Levy wells farther from the coast were in a range considered normal. Overall, conditions across the District fell slightly below the 50th percentile based on records beginning in 1978. Levels in Levy County averaged above the 75th percentile, while levels in Gilchrist County averaged below the 25th percentile. Statistics for a representative sample of wells are shown in Figure 10. Figure 11 shows statistics for 5 wells in or near the District with continuous records that predate the mid-1970's.

HYDROLOGICAL/METEOROLOGICAL INFORMATION

- The Palmer Drought Severity Index (PDSI), a climatological tool produced by the National Weather Service, evaluates the scope, severity, and frequency of prolonged periods of abnormally dry or wet weather using precipitation, temperature, and soil moisture data. The PDSI indicated incipient dry conditions during the last week of August.
- The U.S. Geological Survey categorized streamflow in the Suwannee and its tributaries as below normal.

CONSERVATION

Homeowners and others within the District are required to limit landscape irrigation to two days per week, based on a year-round water conservation rule that applies to residential landscaping, public or commercial recreation areas,

and public and commercial businesses that aren't regulated by a District-issued permit. The District offers a variety of free water conservation information to the public via its website and by request.

The hydrologic conditions report is compiled in compliance with Chapter 40B-21.211, Florida Administrative Code, using water resource data collected from the following: rainfall (radar-derived estimate), groundwater levels (115 wells), surfacewater levels (16 lakes and 11 rivers), river flows (15 stations), spring flows (4 stations), and general hydrological and meteorological information (drought indices and weather forecasts). Data are provisional, and subject to revision. Statistics are updated as revised data become available.

MW/dd

Table 1: Estimated Rainfall Totals

County	Aug-2010	Aug-2009	Last 12 Months	Aug Average
Alachua	7.97	6.58	51.81	7.10
Baker	5.96	7.90	48.14	6.59
Bradford	5.99	5.47	46.84	7.39
Columbia	6.29	6.91	52.76	6.63
Dixie	14.94	5.71	69.69	9.11
Gilchrist	8.61	6.19	53.00	7.83
Hamilton	6.28	6.52	55.45	6.13
Jefferson	7.00	6.54	66.93	6.46
Lafayette	8.59	7.27	63.07	7.78
Levy	17.63	5.99	71.29	9.80
Madison	7.66	8.20	61.99	6.13
Suwannee	7.34	7.40	58.71	6.40
Taylor	10.47	7.81	67.96	8.01
Union	7.78	7.20	50.63	7.77

August 2010 Average: 9.51
 Historical August Average (since 1932): 7.49
 Historical 12-month Average (since 1932): 54.68
 Past 12-Month Total: 60.90
 12-month Rainfall Surplus: 6.22

(Rainfall reported in inches)

Figure 1: Comparison of District Monthly Rainfall

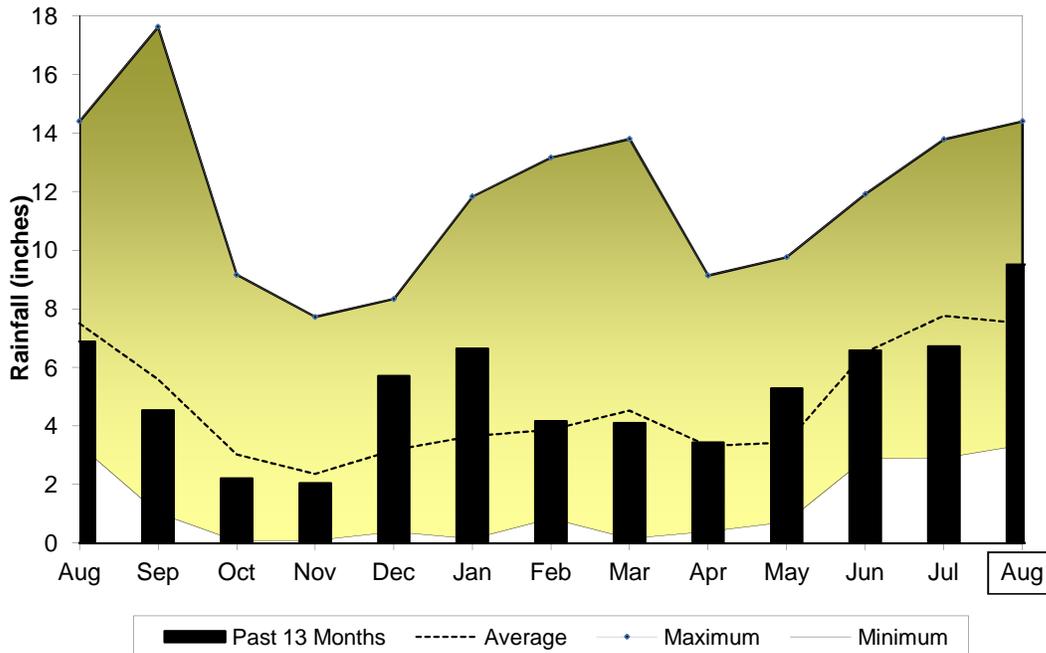


Figure 2: August 2010 Rainfall Estimate

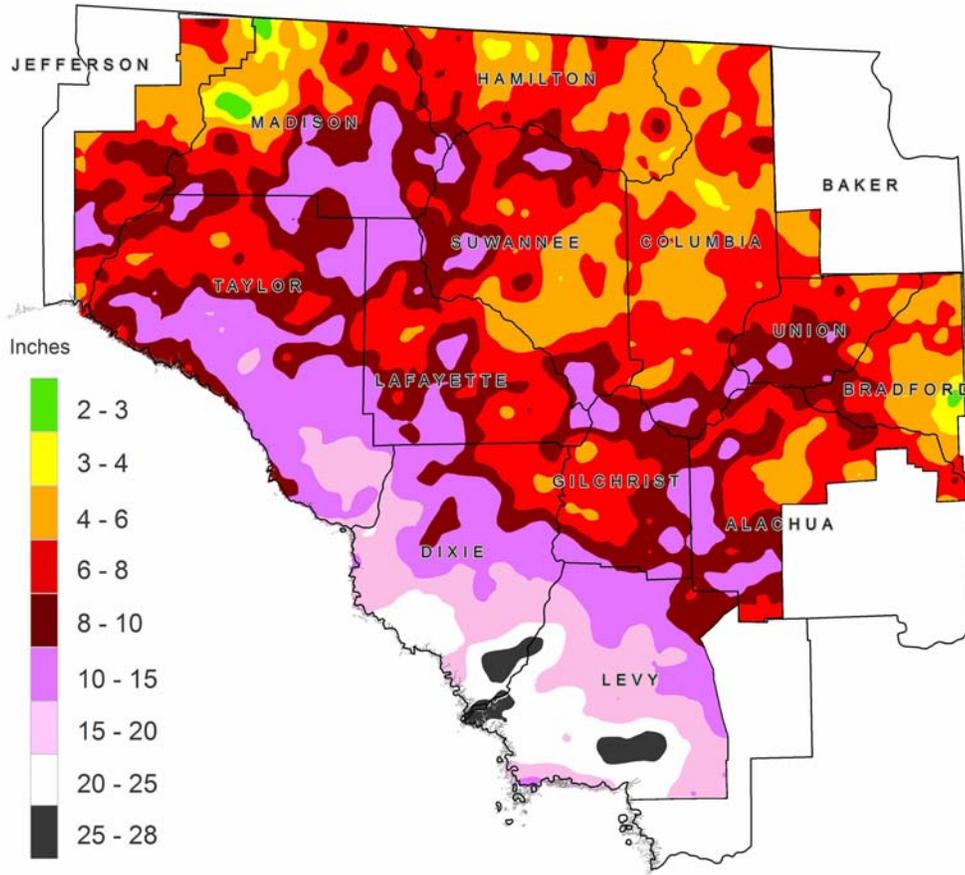


Figure 3: August 2010 Percent of Normal Rainfall

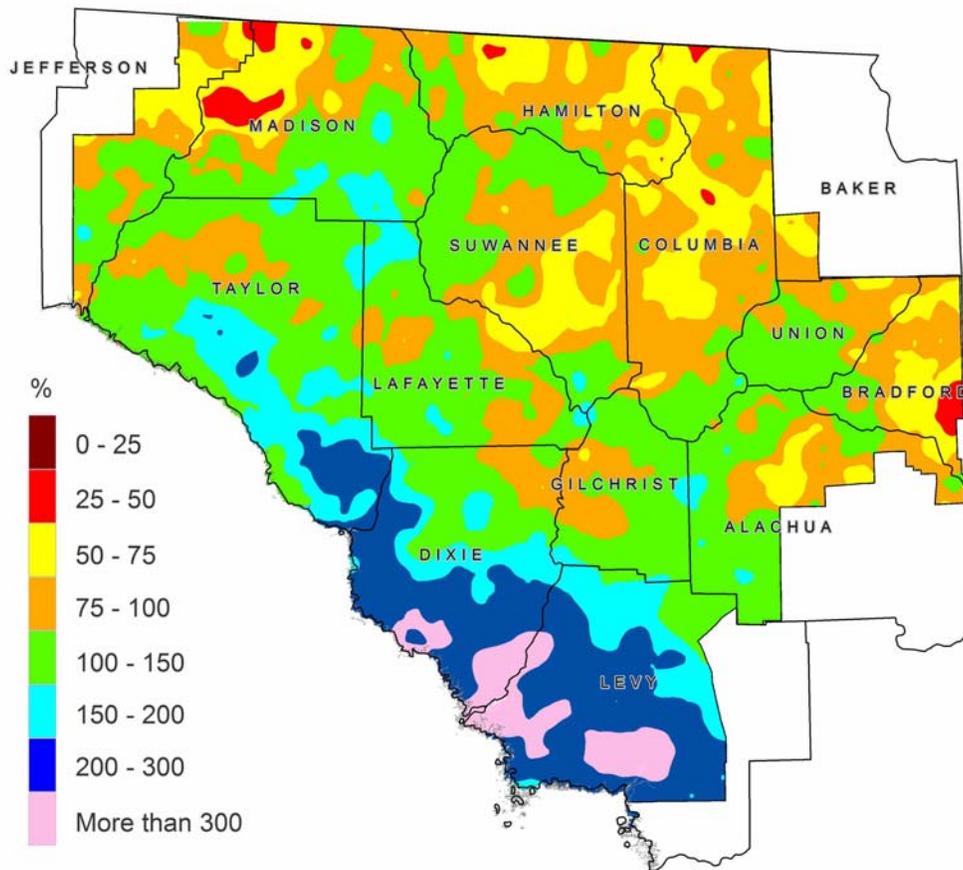


Figure 4: August 2010 Rainfall Surplus/Deficit

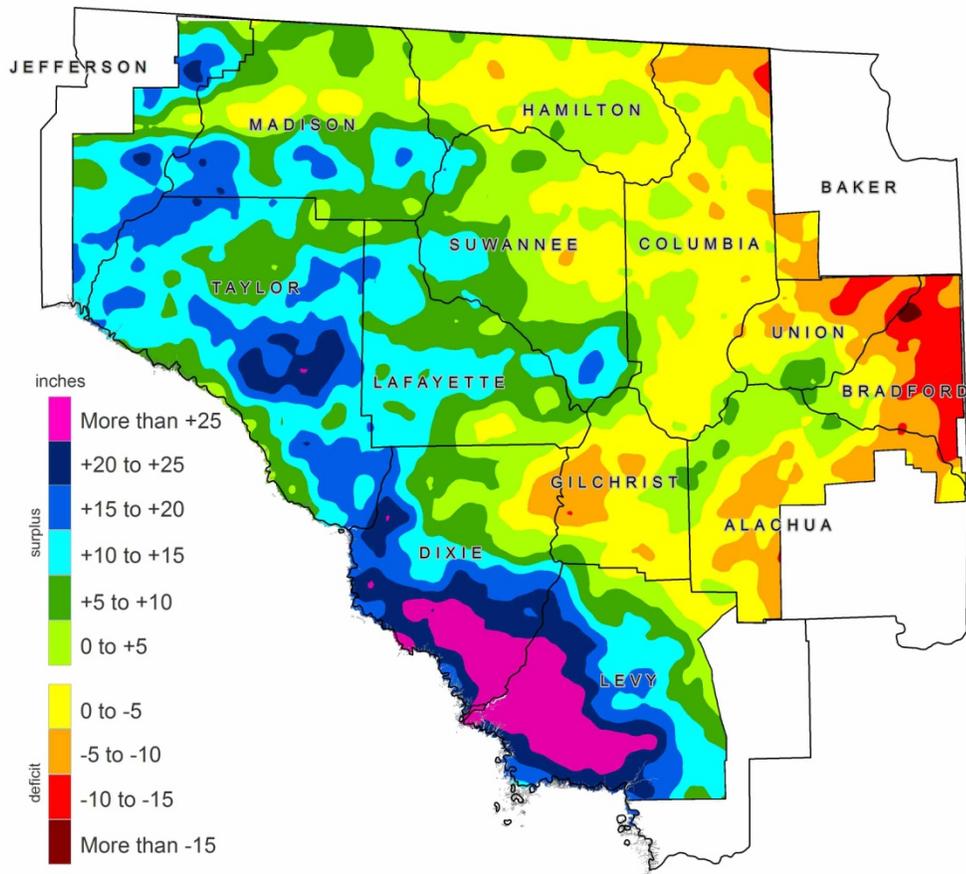


Figure 5: 12-month Rolling Rainfall Deficit Since 1998

Difference between observed 12-month rainfall and the long-term average over the same period

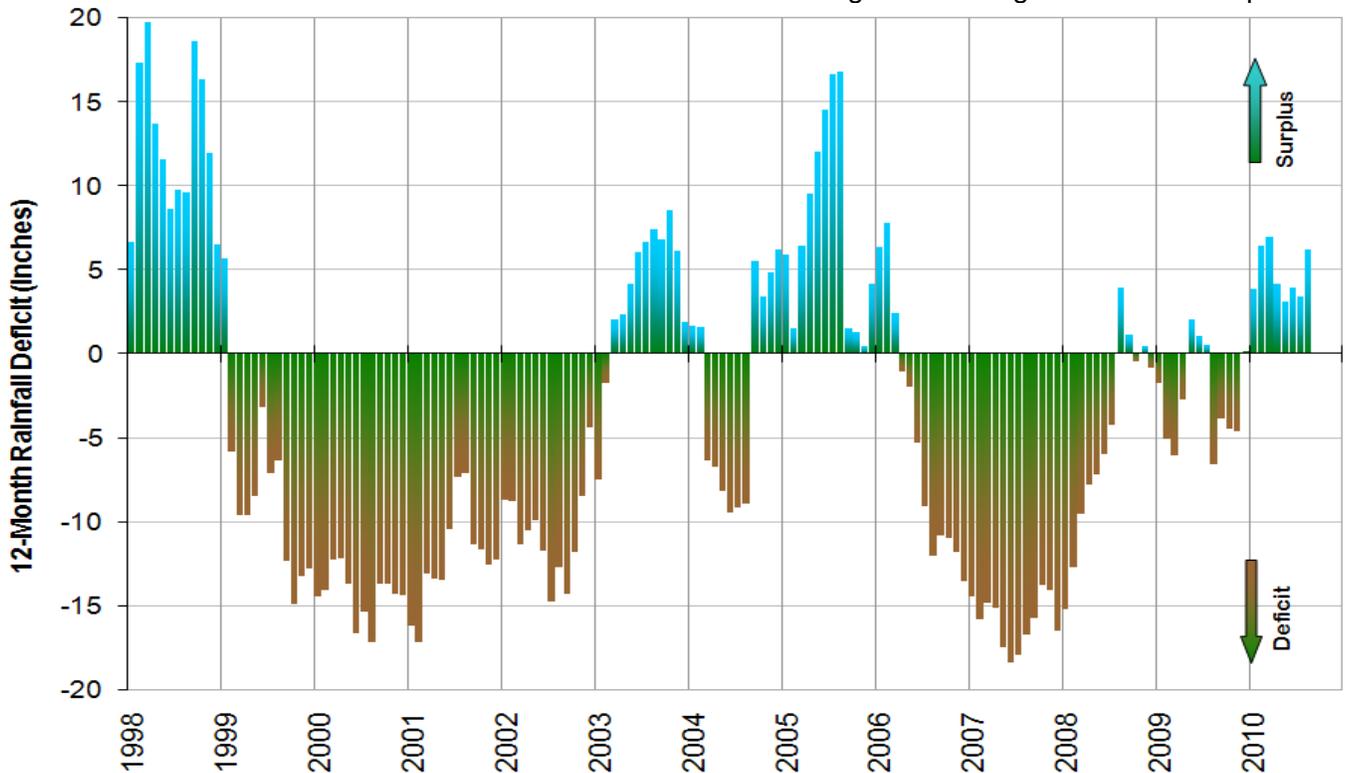
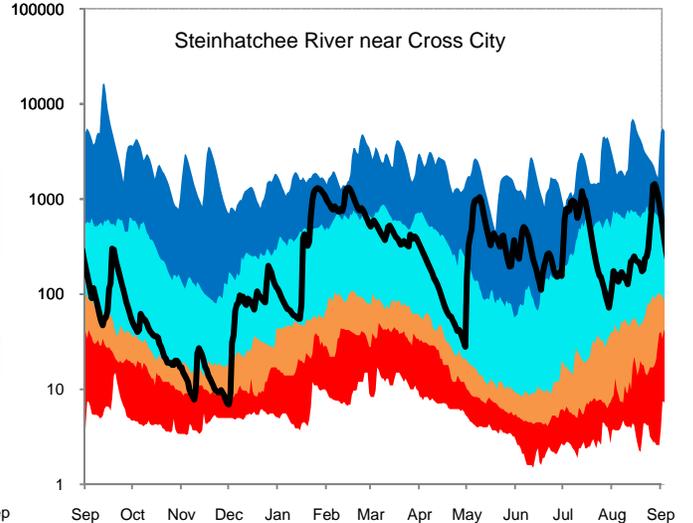
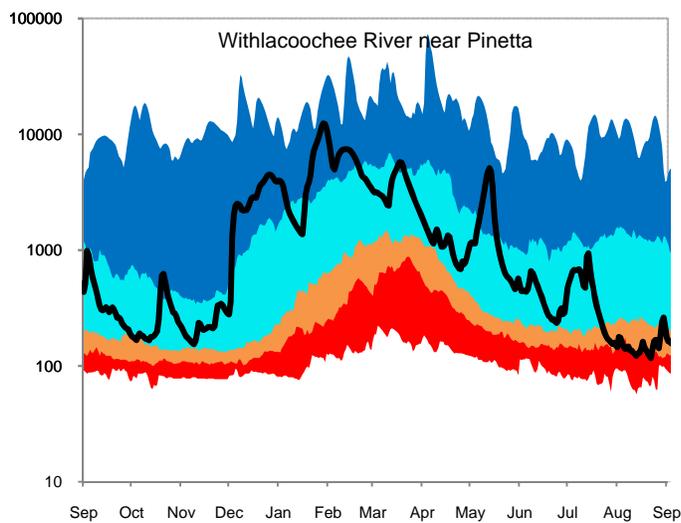
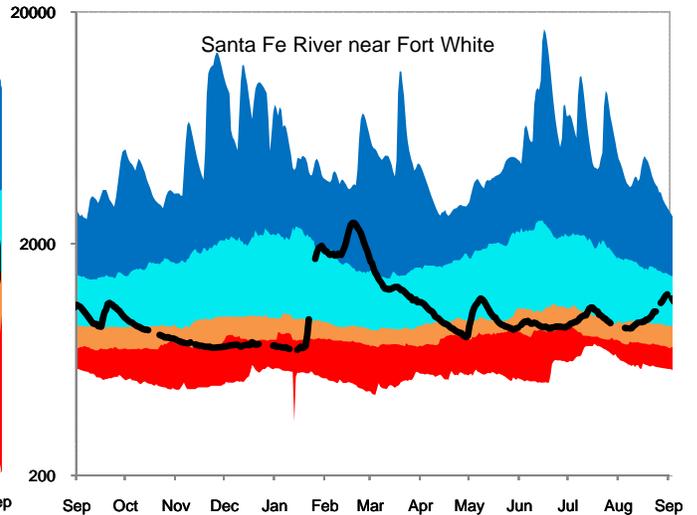
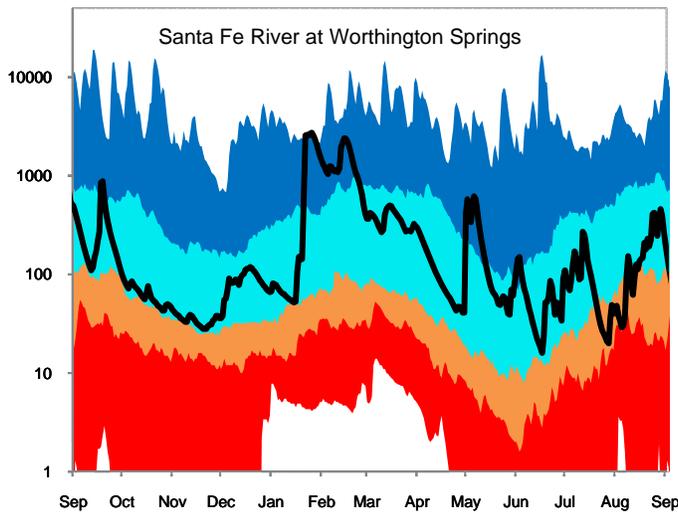
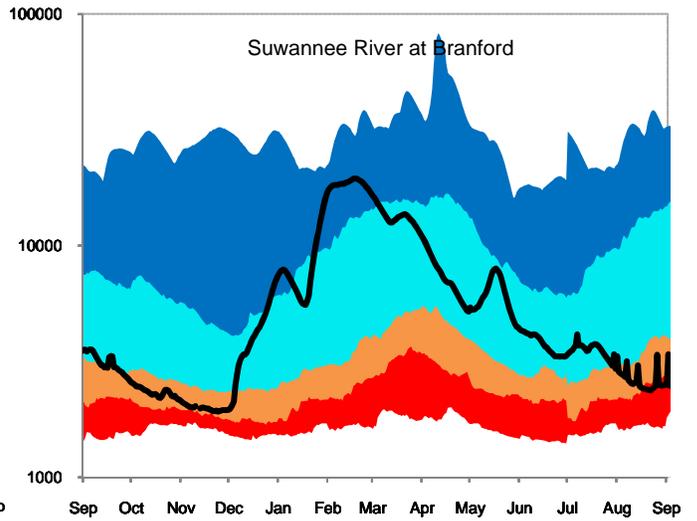
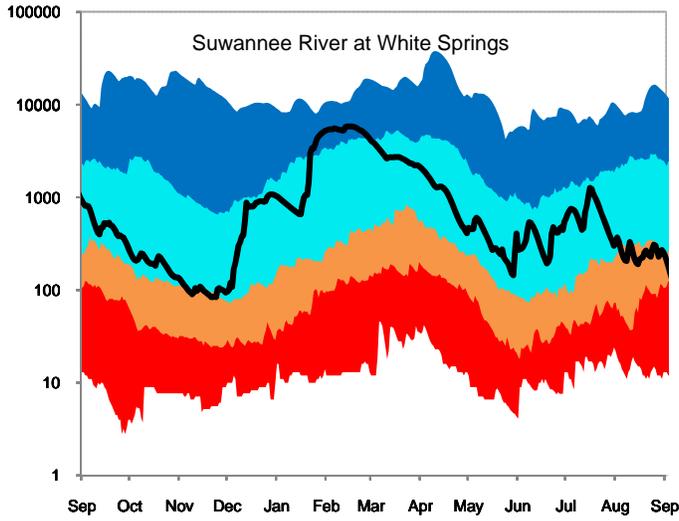
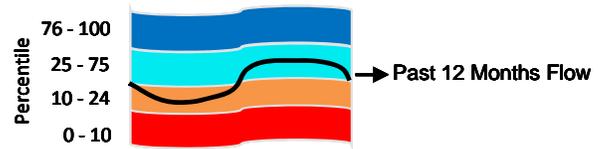


Figure 6: Daily River Flow Statistics

September 1, 2009 through August 31, 2010



RIVER FLOW, CUBIC FEET PER SECOND

Figure 7: August 2010 Streamflow Conditions

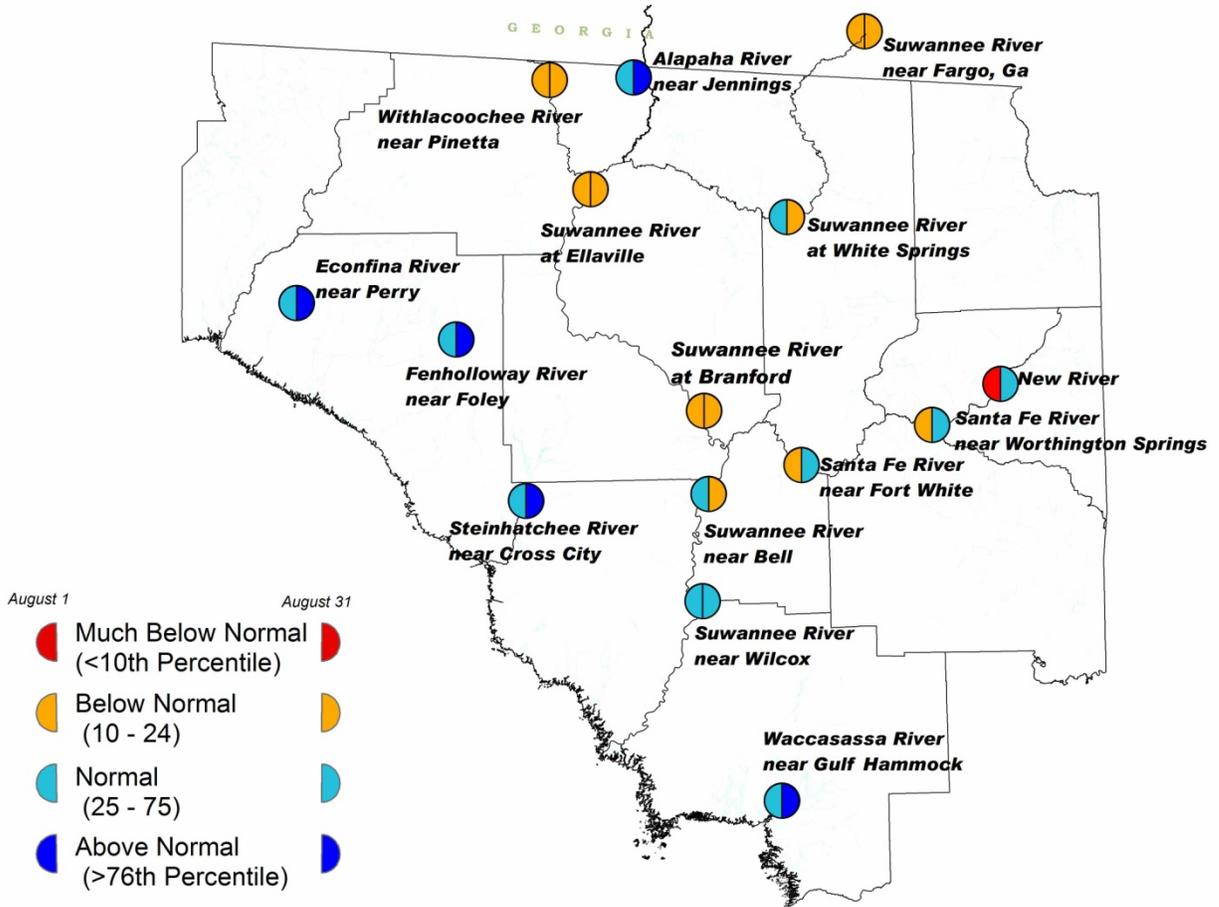
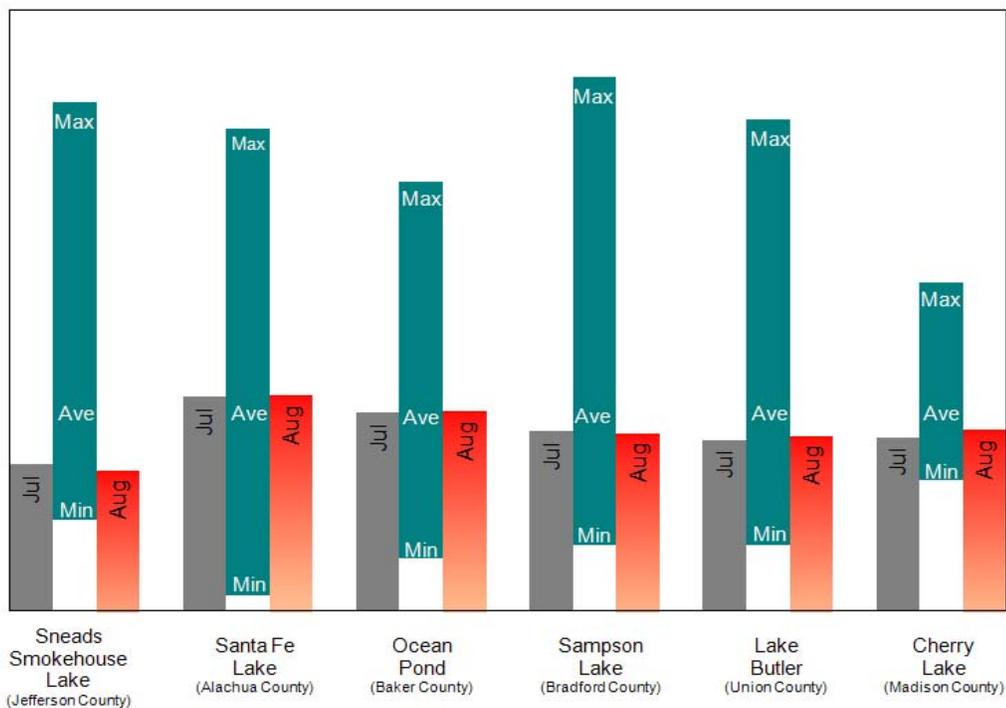


Figure 8: Lake levels, relative to historic maximum, minimum, and average levels.



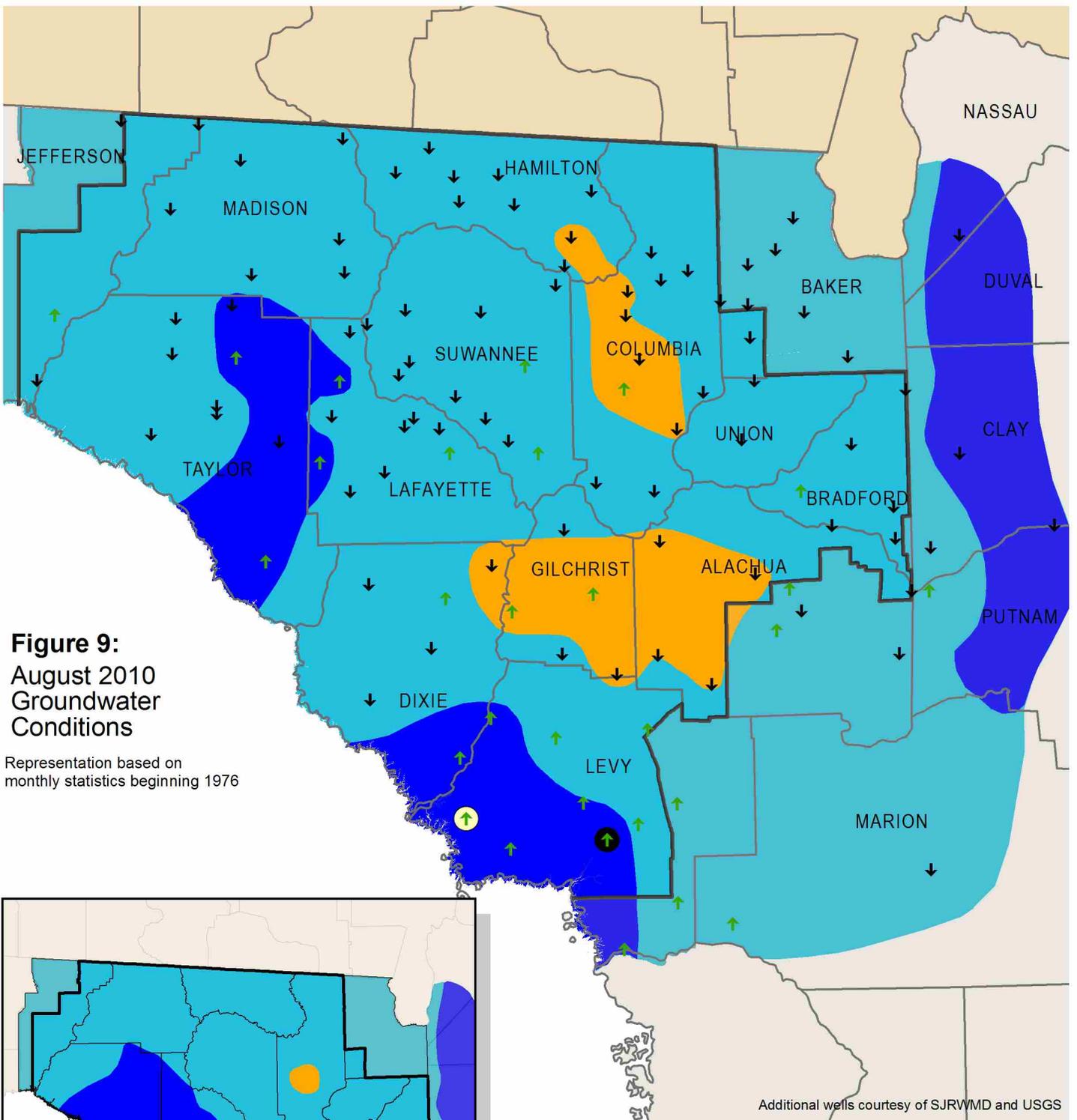


Figure 9:
 August 2010
 Groundwater
 Conditions

Representation based on
 monthly statistics beginning 1976

Additional wells courtesy of SJRWMD and USGS

- High
(Greater than 75th Percentile)
- Normal
(25th to 75th Percentile)
- Low
(10th to 25th Percentile)
- Extremely Low
(Less than 10th Percentile)
- Increase/decrease in level since last month
- District Boundary
- Record high level for month
- Historic high level

Inset: July 2010 Groundwater Levels

Figure 10: Monthly Groundwater Level Statistics

Levels September 1, 2009 through August 31, 2010

Period of Record Beginning 1978

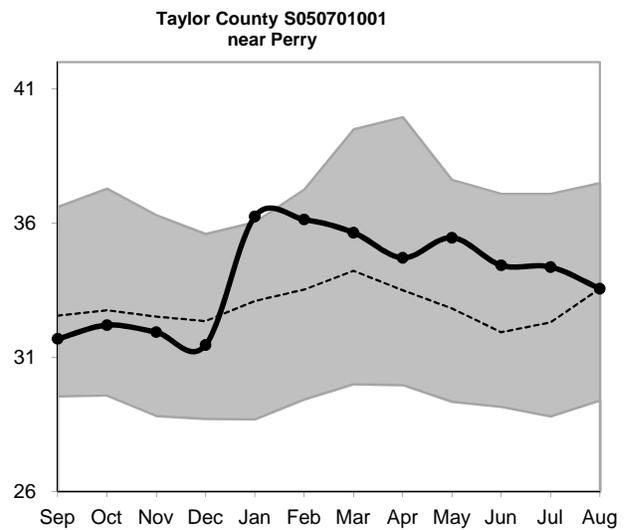
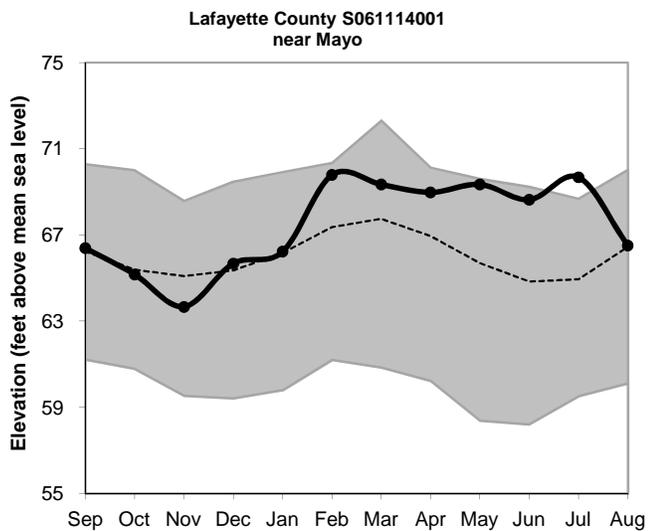
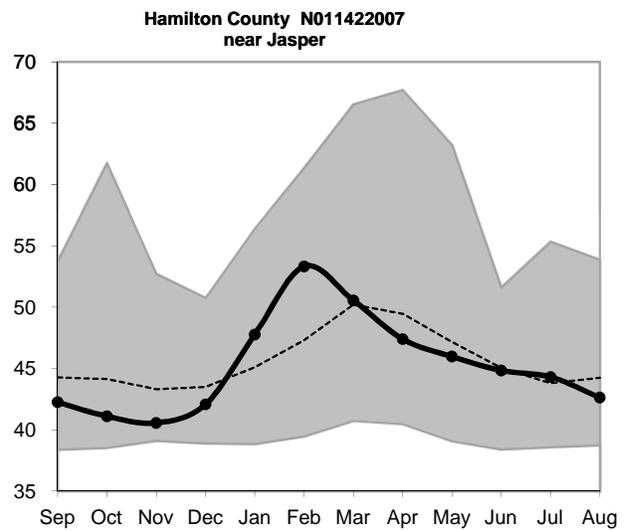
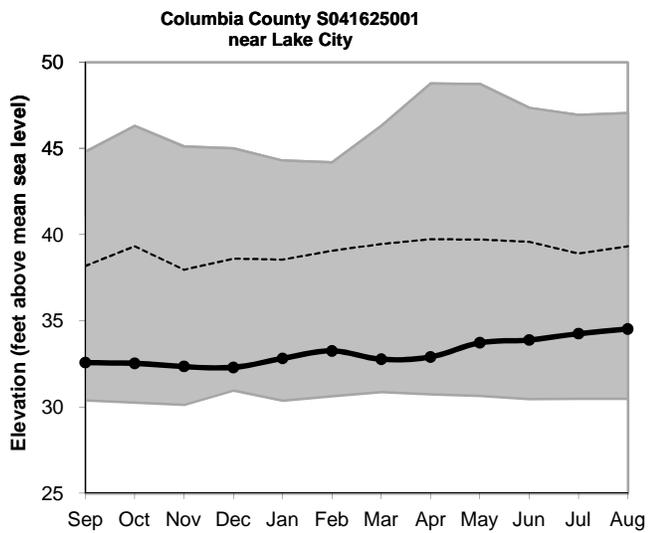
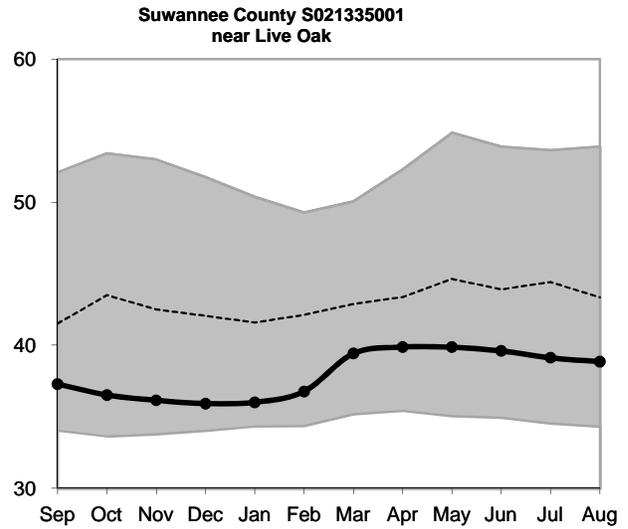
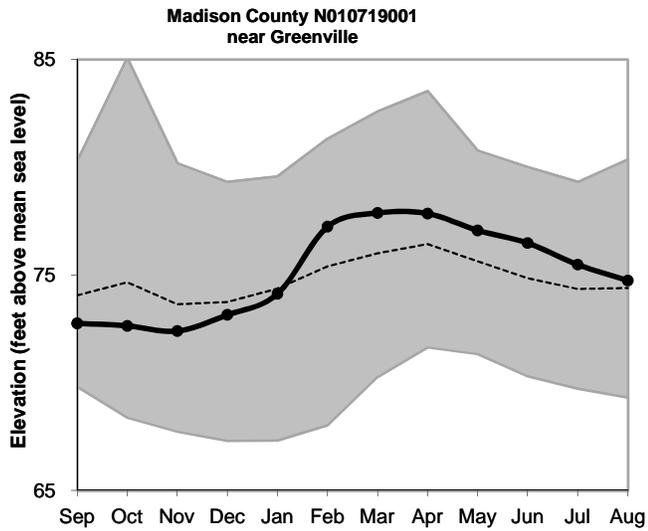
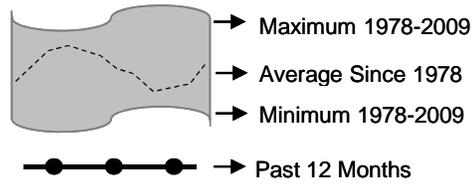


Figure 10, cont.: Monthly Groundwater Level Statistics
 Levels September 1, 2009 through August 31, 2010
 Period of Record Beginning 1978

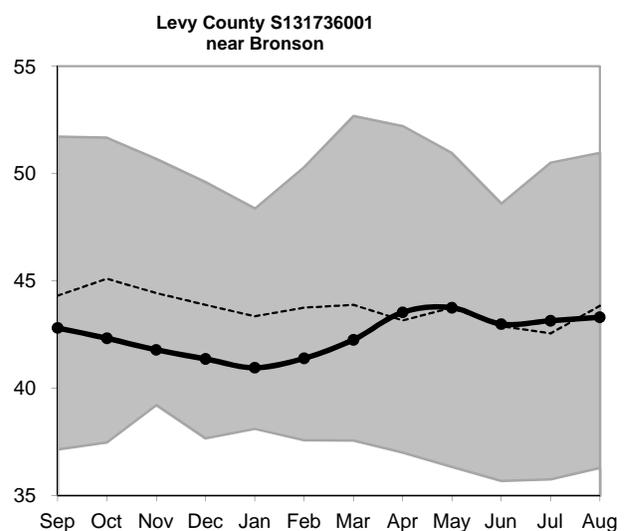
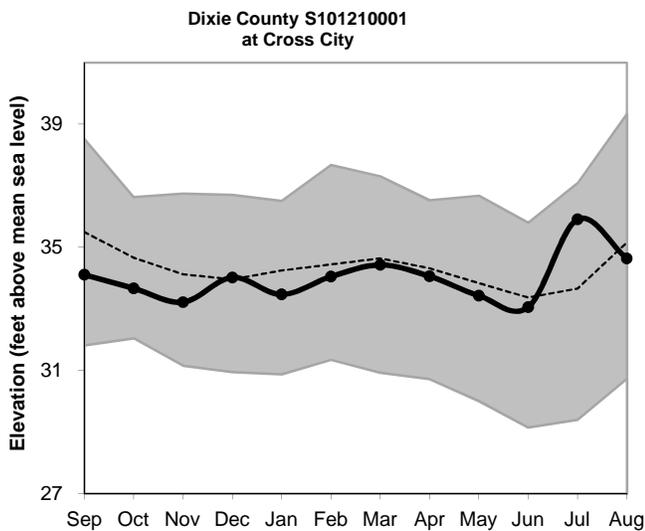
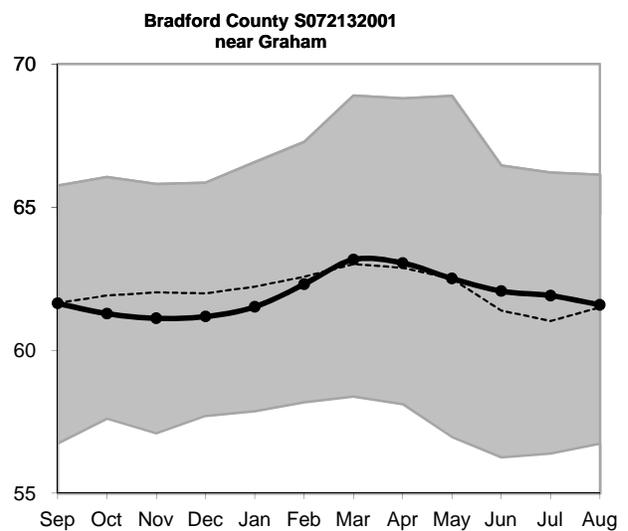
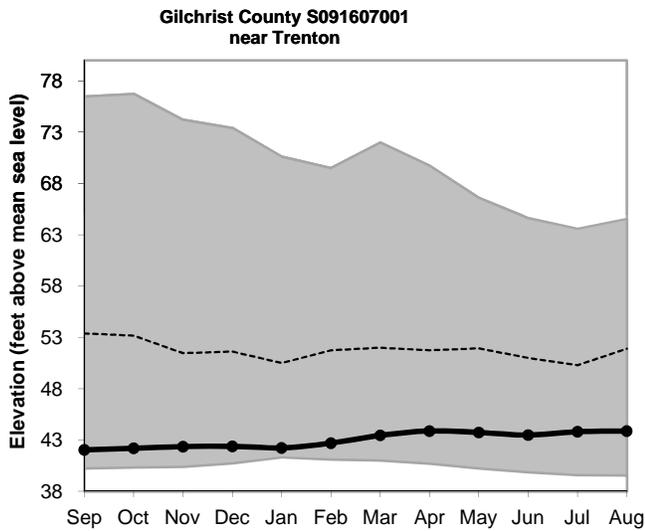
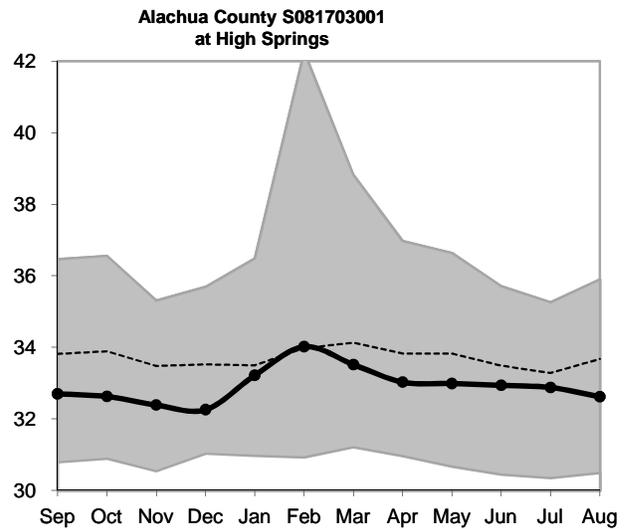
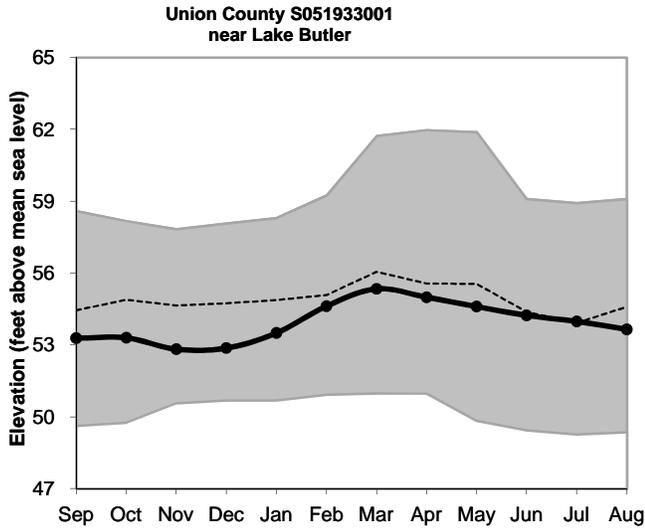
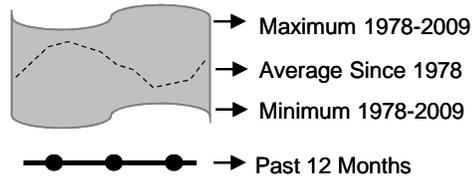


Figure 11: Long-Term Groundwater Levels

Ending August 2010

Levels in feet above mean sea level

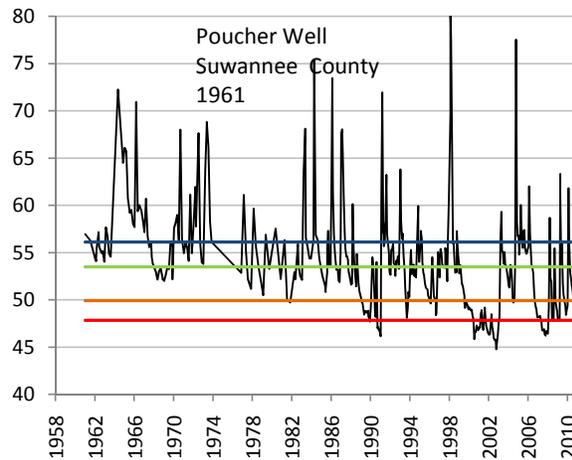
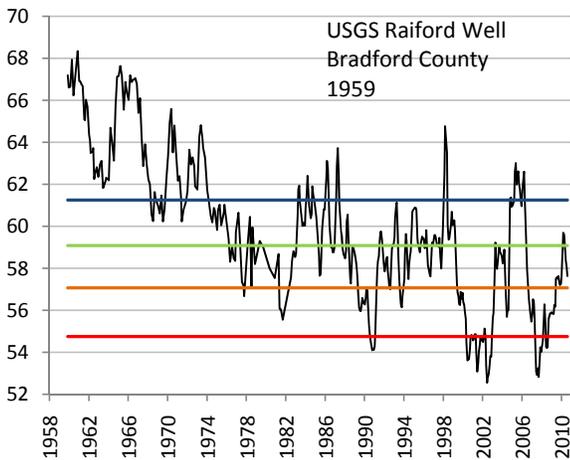
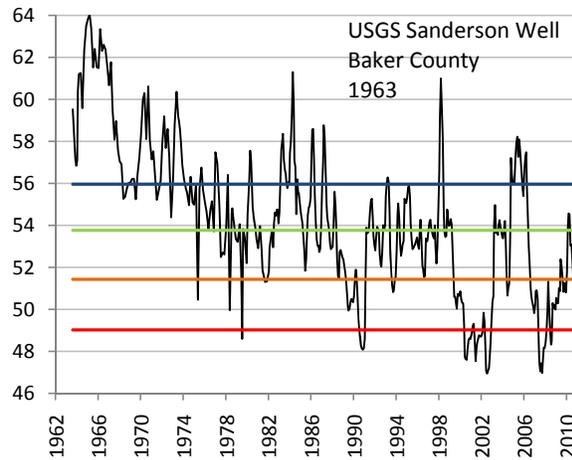
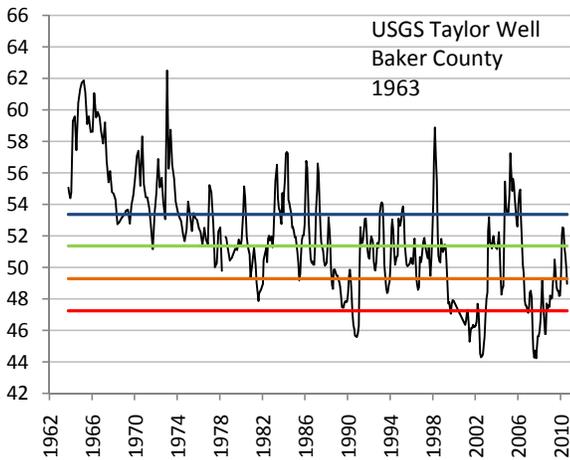
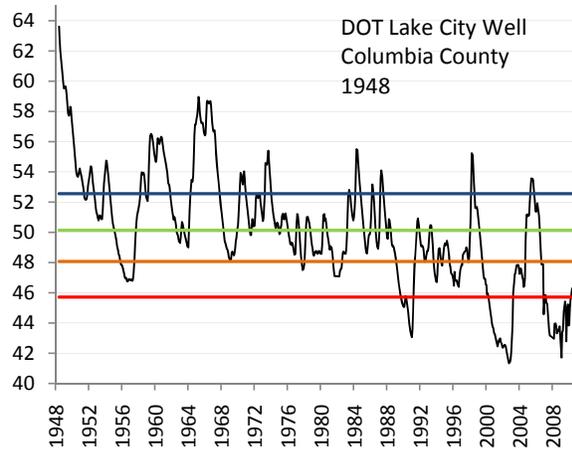
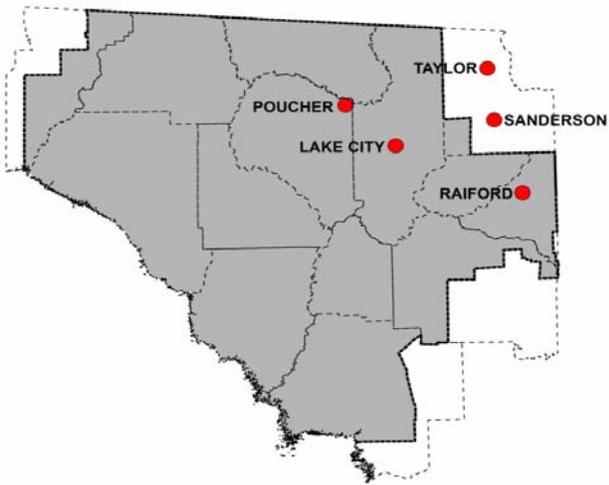
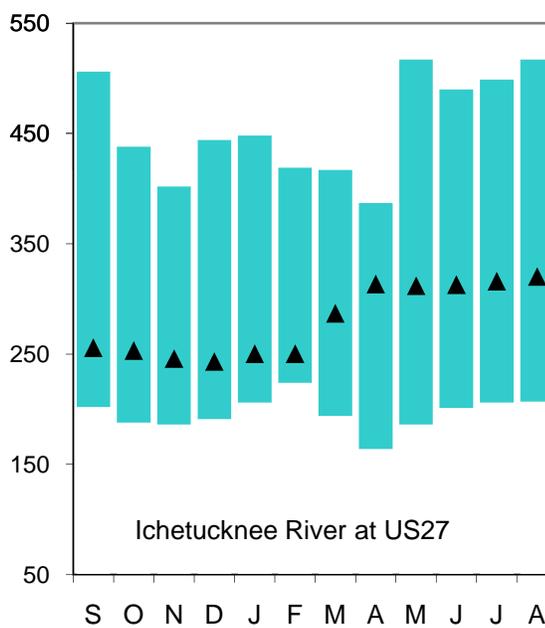
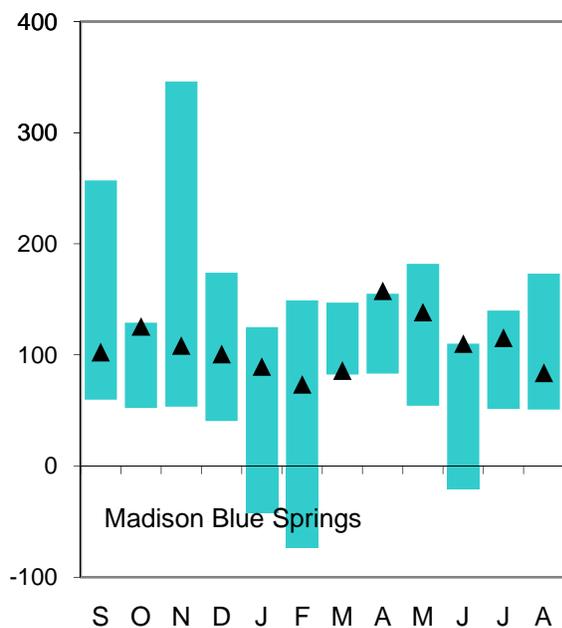
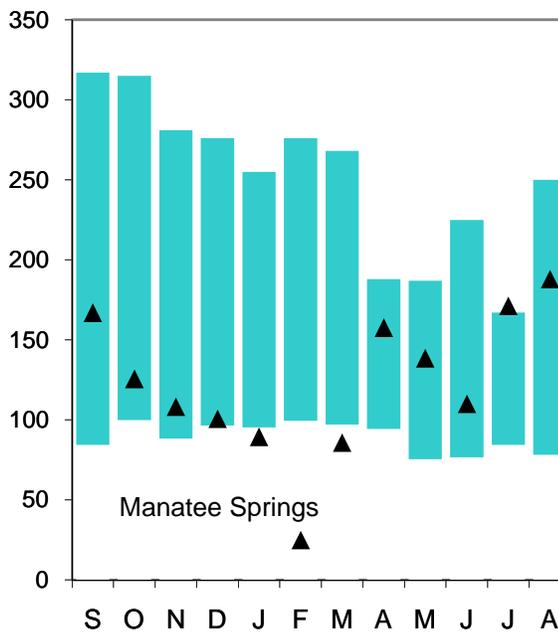
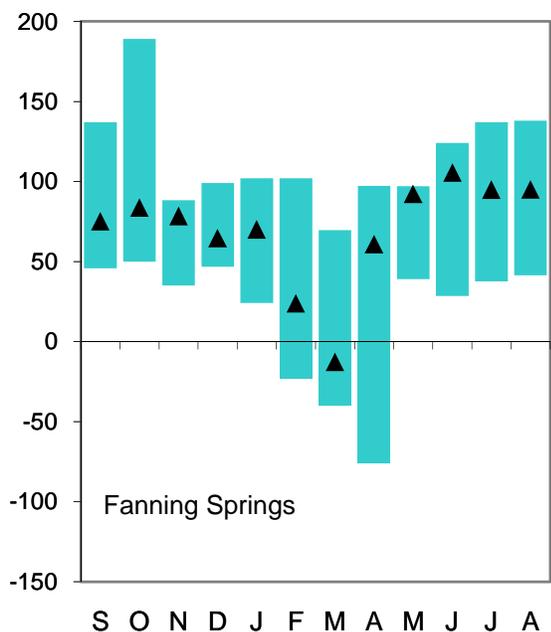


Figure 12: Monthly Springflow Statistics

Flows September 1, 2009 through August 31, 2010
 Springflow data are given in cubic feet per second.
 Period of record beginning 2002. Data are provisional.



Note: Rising river levels caused by high tides or flooding can cause springflow to slow or reverse.

Springflow for months marked by an asterisk (*) was strongly affected by river conditions.

Data will be revised once approved and published by the U.S. Geological Survey.