

## MEMORANDUM

TO: Governing Board

FROM: Megan Wetherington, P.E., Senior Professional Engineer *MW*

THRU: David Still, Executive Director *AT For*  
Jon Dinges, Department Director *JMD*

DATE: October 7, 2010

RE: September 2010 Hydrologic Conditions Report for the District

### RAINFALL

- Average rainfall in September was 4.54", which is 82% of the District's long-term average of 5.57" (Table 1, Figure 1). September was unusually dry until a series of systems, including bands from Tropical Storm Nicole, passed through beginning September 24<sup>th</sup>. Accumulations between the 24<sup>th</sup> and the 30<sup>th</sup> accounted for 84% of the September total, with about half falling on the 27<sup>th</sup>. Portions of Jefferson, Taylor, Madison, Hamilton, Union, and Bradford counties received less than a quarter inch prior to the 24<sup>th</sup>. Western Levy County had up to 9" in isolated areas, making September the third month of significant accumulations in that region. Figure 2 shows the estimated rainfall accumulation, and Figure 3 shows the rainfall totals as a percent of normal September precipitation.
- Rainfall for the past twelve months was 60.91". The twelve-month surplus was 6.23". Coastal areas of Dixie and Levy counties had more than 25" of surplus, while the upper Santa Fe River Basin showed a deficit of more than 10". 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 most Suwannee River and tributary gages fell below the 10<sup>th</sup> percentile during the middle of the month, meaning more than 90% of daily mean flow records have been higher. The Withlacoochee near Pinetta set new record daily low flows before improving to normal conditions at the end of the month. Conditions improved to below the 25<sup>th</sup> percentile for Suwannee gages at Ellaville, White Springs, and Bell. Less rain fell in the Santa Fe Basin, and gages on that river ended the month below the 10<sup>th</sup> percentile. Coastal rivers were near or above normal. 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 fell slightly since August. 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 September flow relative to historical flows is shown for five spring systems in Figure 12.

## GROUNDWATER

Levels in 67% of monitored wells dropped in September, with an average decline of 2" (Figure 9). Levels continued to rise in coastal areas of Levy, Dixie, and Taylor counties. Conditions averaged across the District remained slightly below the 50<sup>th</sup> percentile based on records beginning in 1978. Levels in Levy and Lafayette counties were near the 65<sup>th</sup> percentile, while levels in Alachua, Columbia, and Hamilton counties were near the 25<sup>th</sup> 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 mild drought during the last week of September.
- The U.S. Geological Survey categorized streamflow in the Suwannee River Basin 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 data collected from the following: rainfall (radar-derived estimate), groundwater levels (115 wells), surfacewater levels (6 lakes and 11 rivers), river flows (15 stations), spring flows (5 stations), and general information such as drought indices and forecasts. Data are provisional, and statistics are updated as revised data become available.

MW/dd

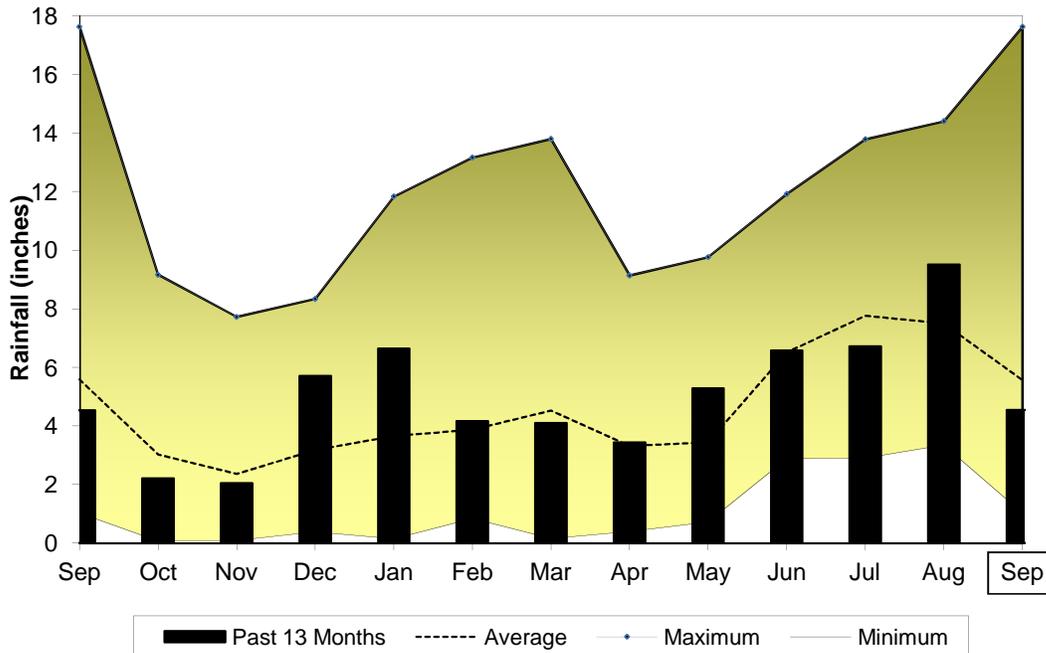
**Table 1: Estimated Rainfall Totals**

County	Sep-2010	Sep-2009	Last 12 Months	Sep Average
Alachua	3.45	4.10	51.17	5.36
Baker	4.76	3.64	49.26	5.44
Bradford	1.72	3.24	45.32	6.13
Columbia	4.64	3.89	53.51	4.85
Dixie	4.64	4.60	69.72	6.58
Gilchrist	5.47	4.05	54.42	5.75
Hamilton	4.46	3.29	56.62	4.63
Jefferson	3.17	7.07	63.03	5.31
Lafayette	4.58	4.36	63.29	5.46
Levy	5.53	5.33	71.49	6.70
Madison	5.49	4.69	62.79	4.62
Suwannee	4.46	4.01	59.16	5.08
Taylor	4.94	5.59	67.31	5.61
Union	3.07	3.09	50.61	4.94

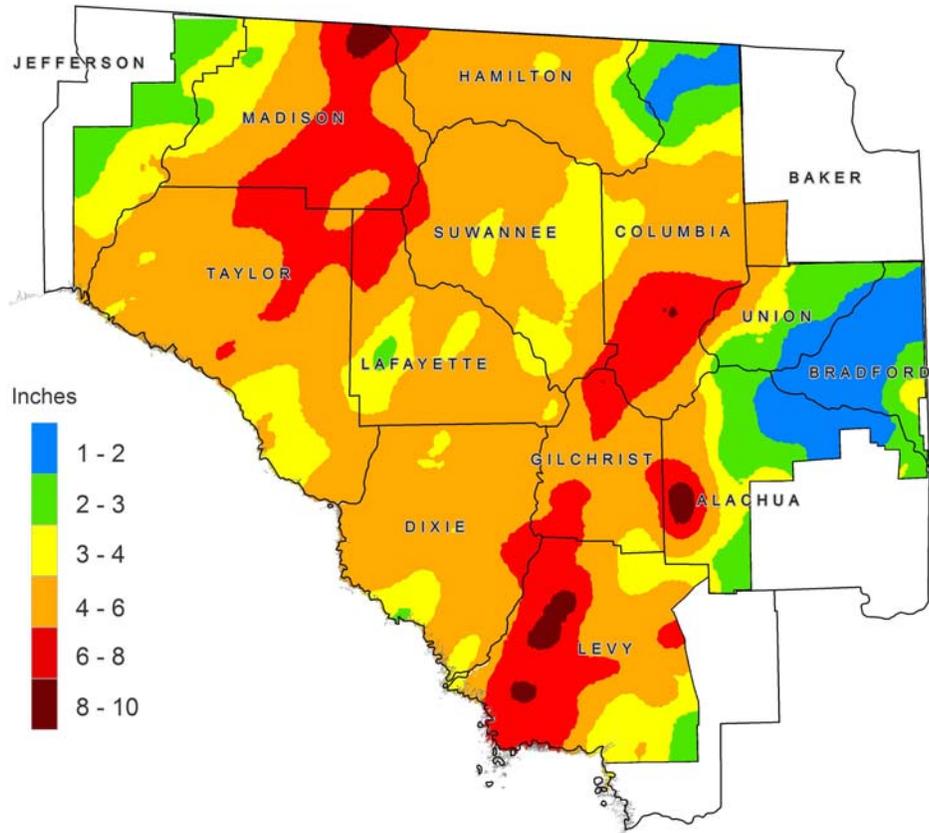
September 2010 Average: 4.54  
 Historical September Average (since 1932): 5.57  
 Historical 12-month Average (since 1932): 54.68  
 Past 12-Month Total: 60.91  
 12-month Rainfall Surplus: 6.23

(Rainfall reported in inches)

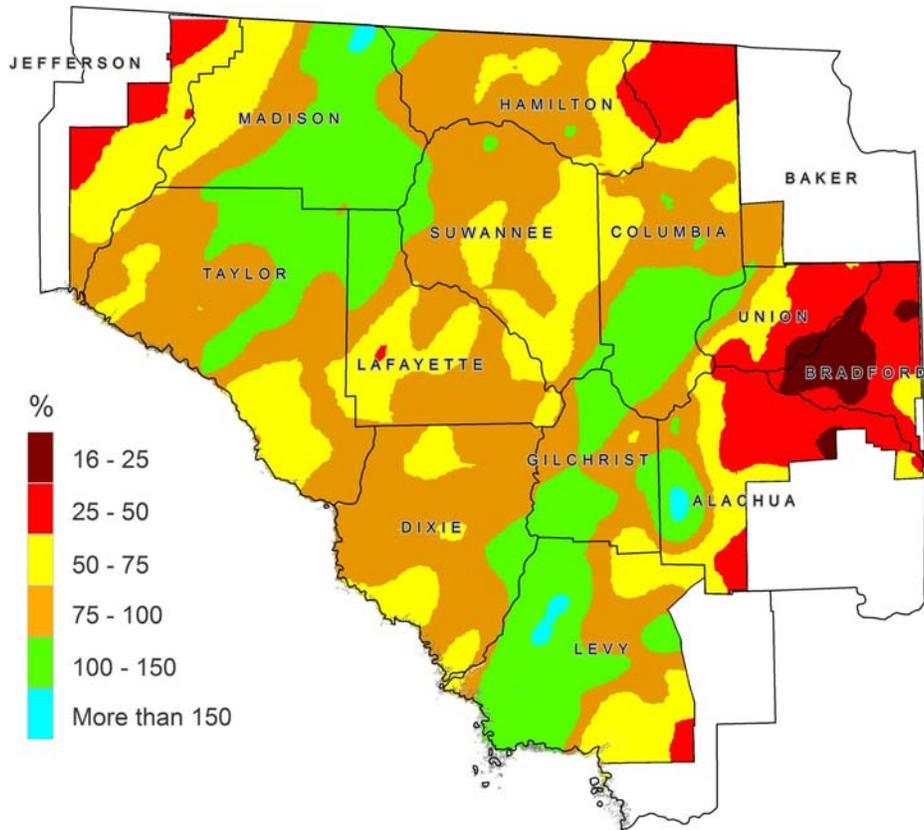
**Figure 1: Comparison of District Monthly Rainfall**



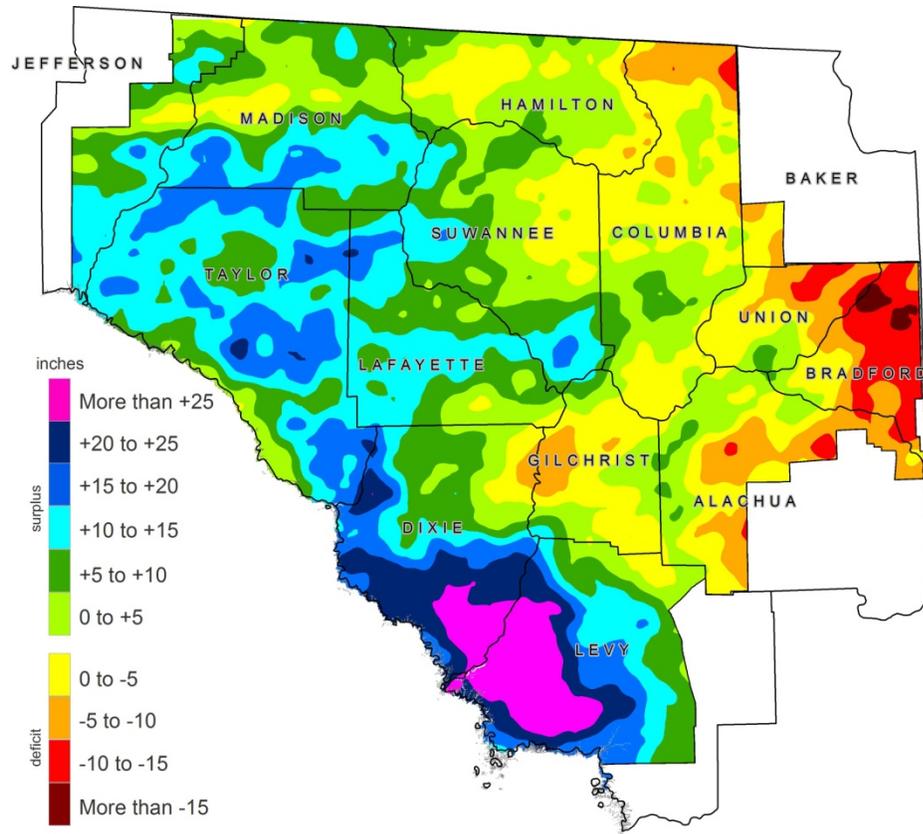
**Figure 2: September 2010 Rainfall Estimate**



**Figure 3: September 2010 Percent of Normal Rainfall**

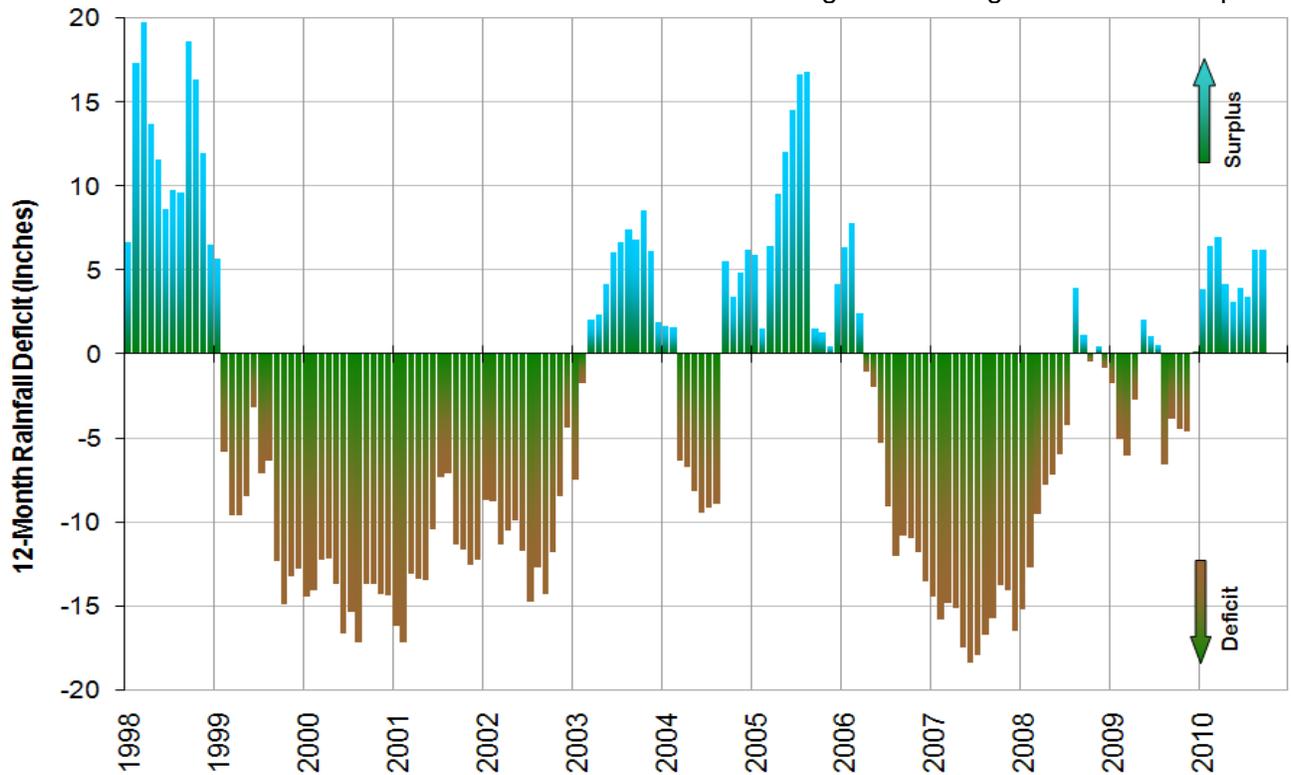


**Figure 4: September 2010 Rainfall Surplus/Deficit**



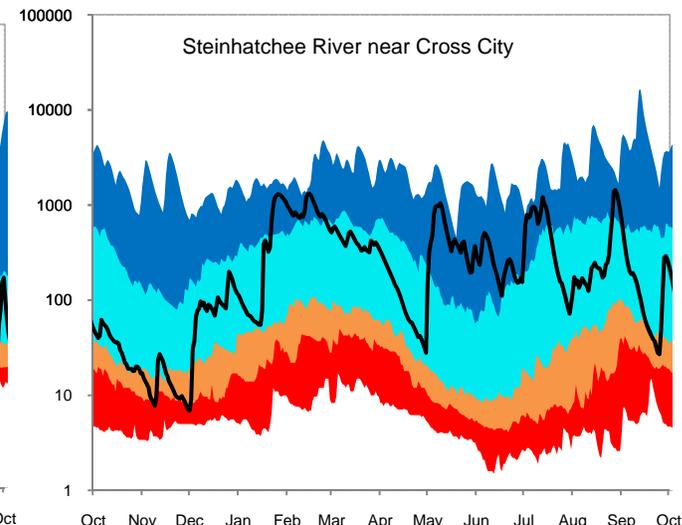
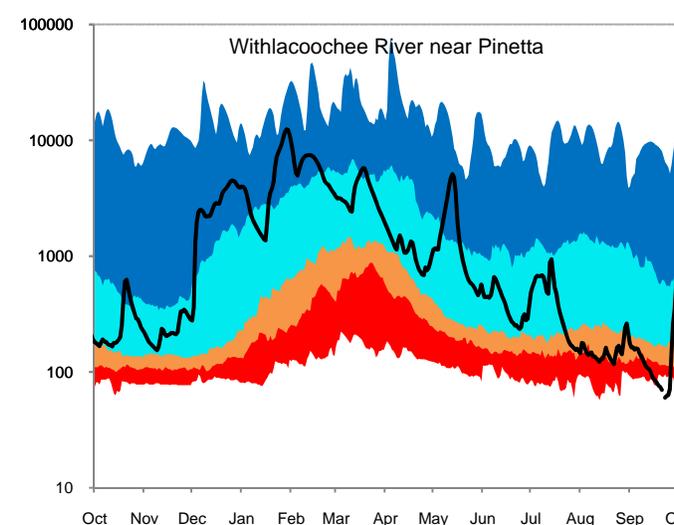
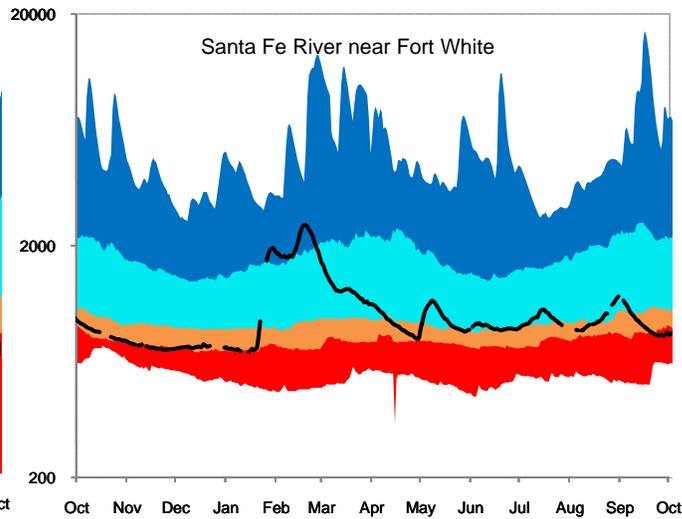
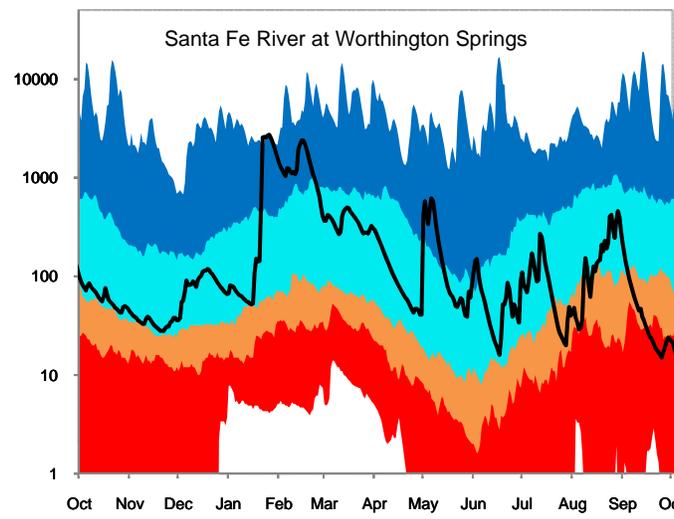
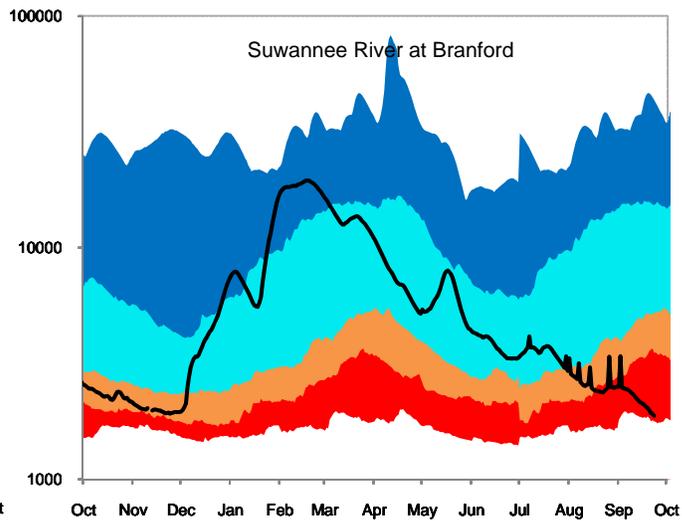
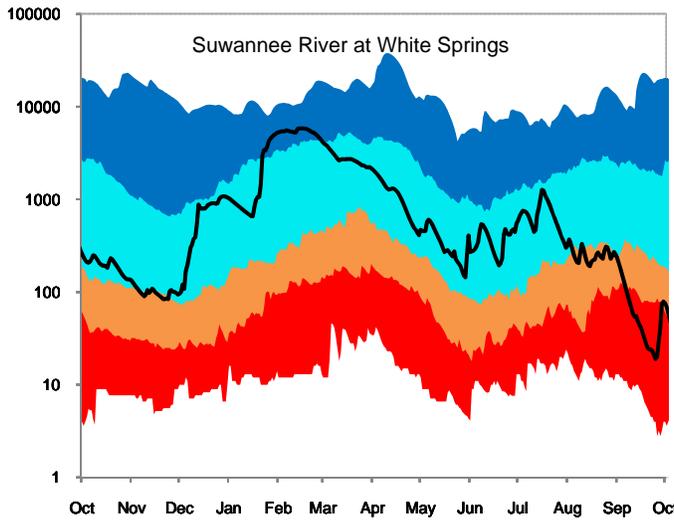
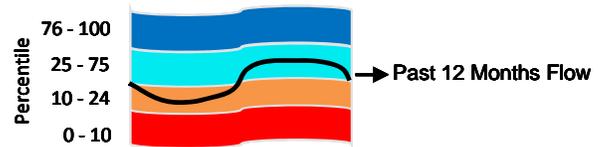
**Figure 5: 12-month Rolling Rainfall Deficit Since 1998**

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



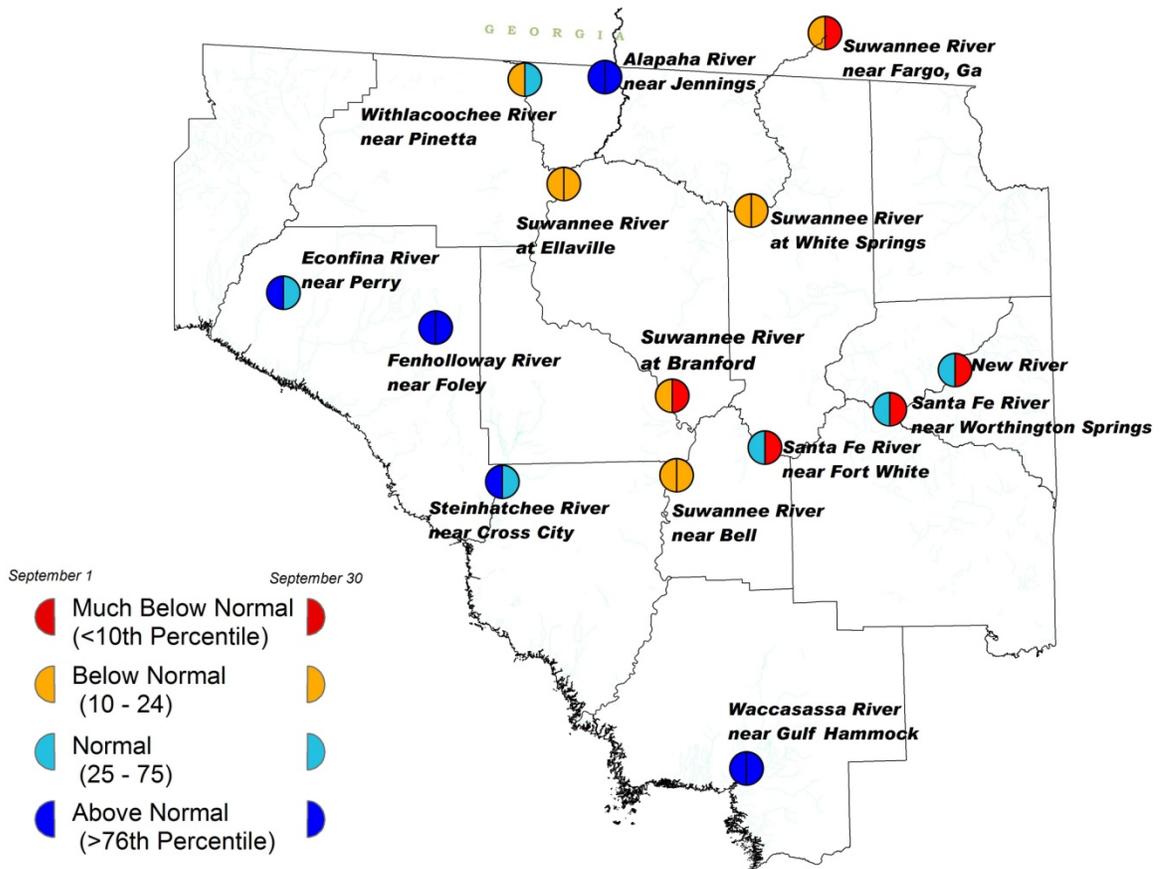
# Figure 6: Daily River Flow Statistics

October 1, 2009 through September 30, 2010

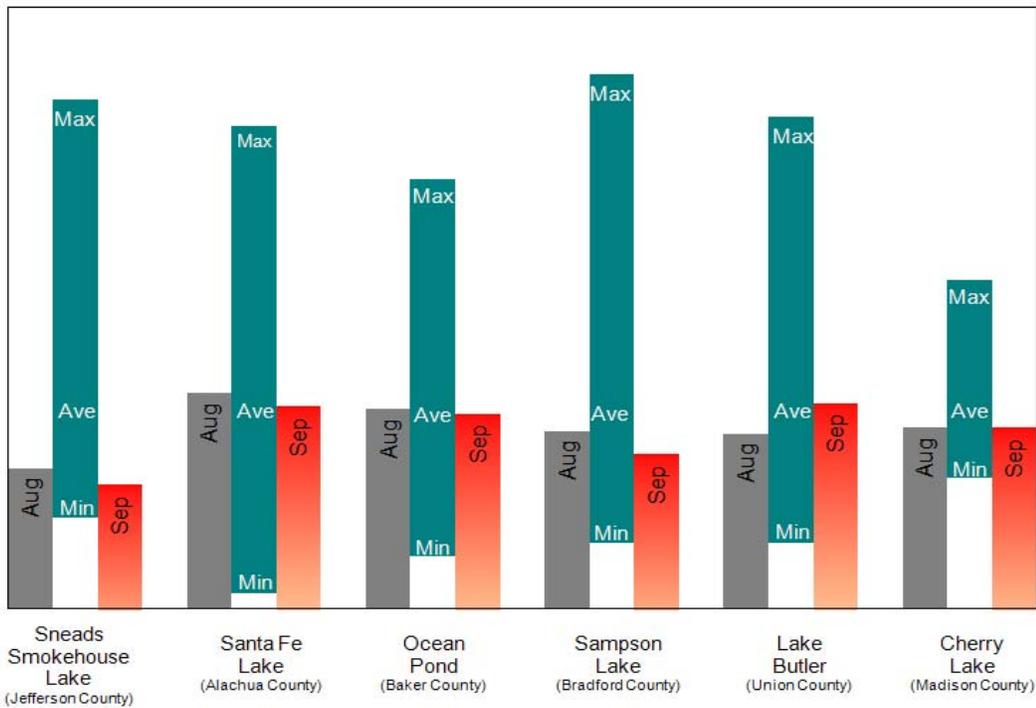


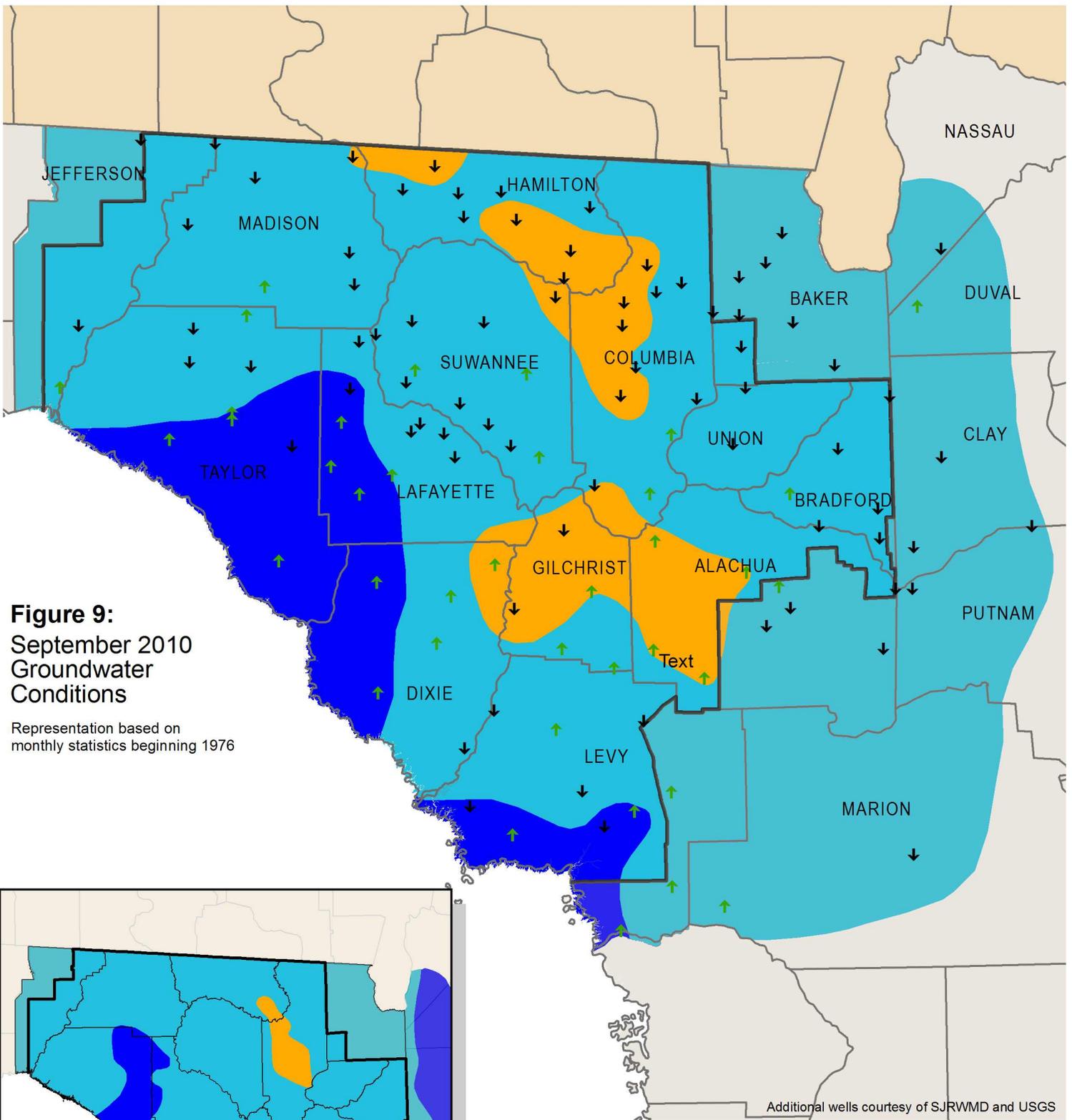
RIVER FLOW, CUBIC FEET PER SECOND

**Figure 7: September 2010 Streamflow Conditions**



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





**Figure 9:**  
 September 2010  
 Groundwater  
 Conditions

Representation based on  
 monthly statistics beginning 1976

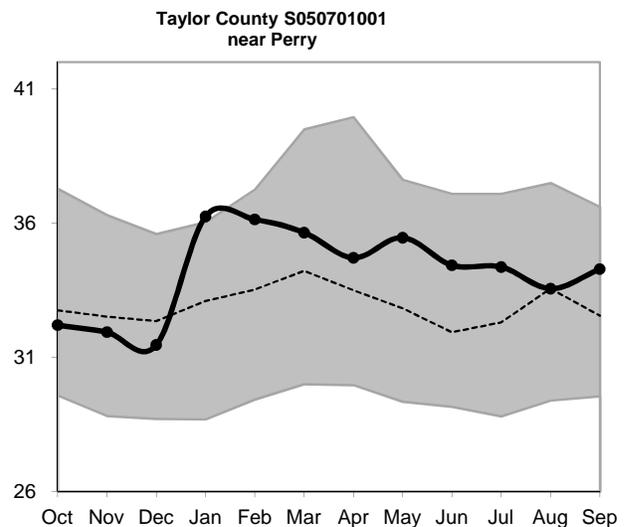
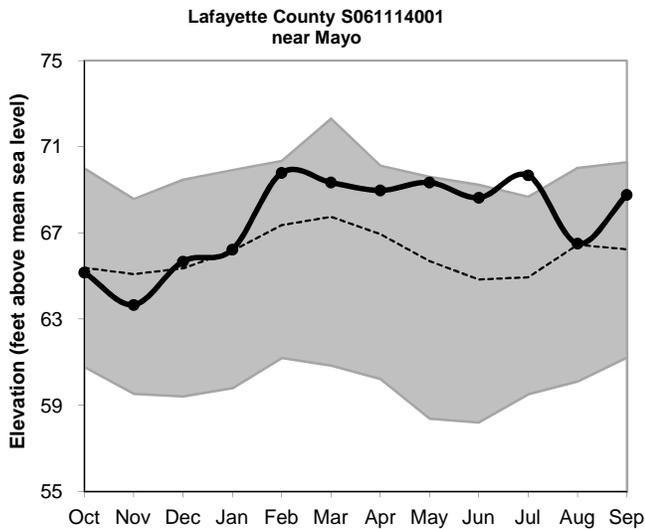
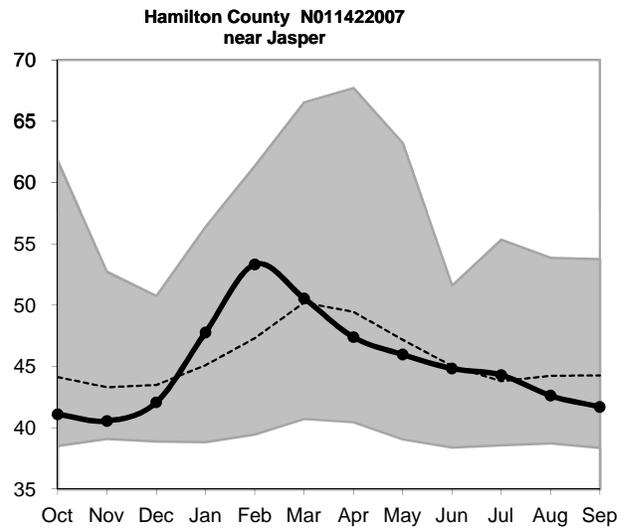
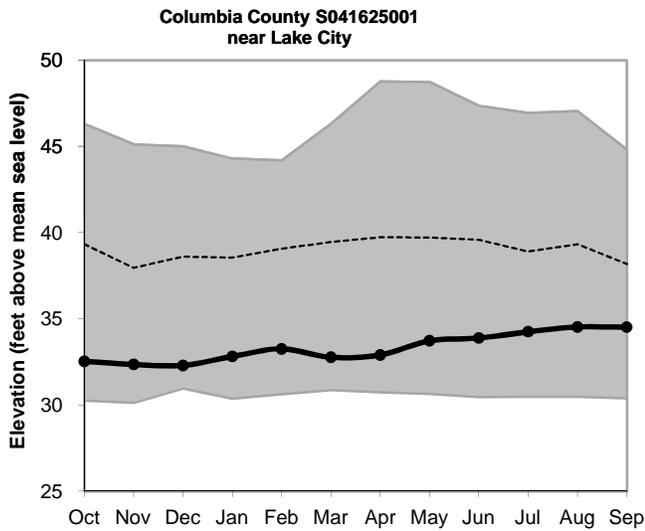
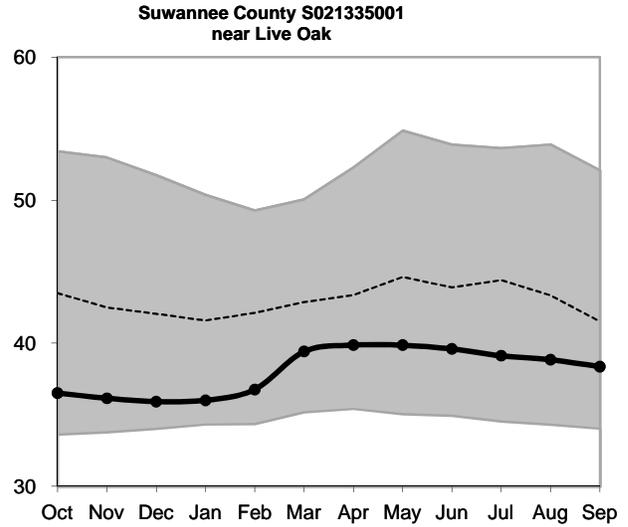
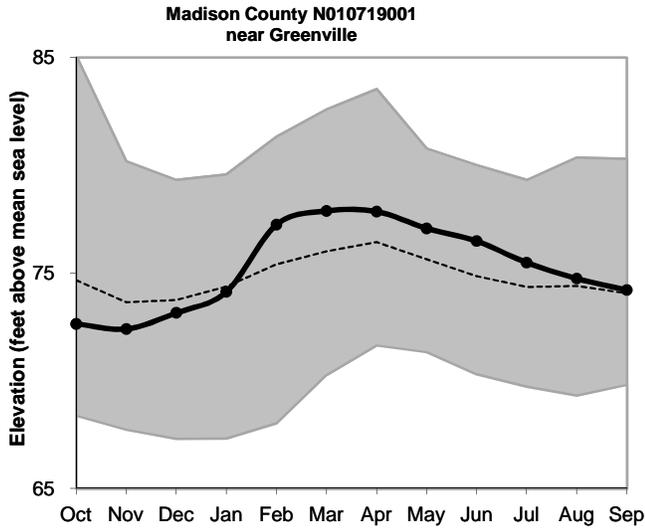
Inset: August 2010 Groundwater Levels

- 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

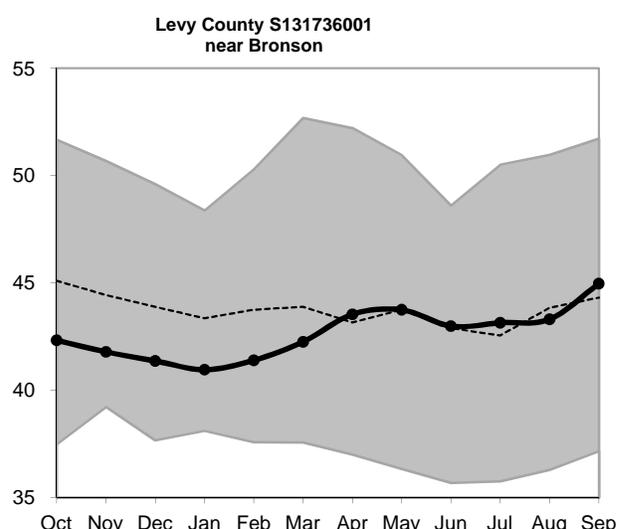
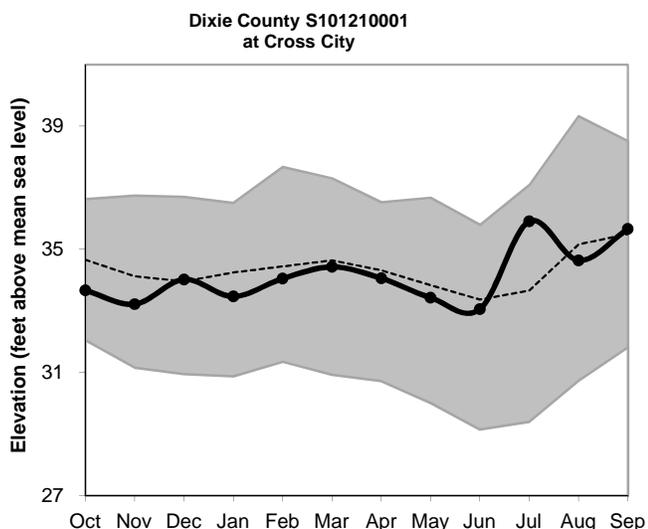
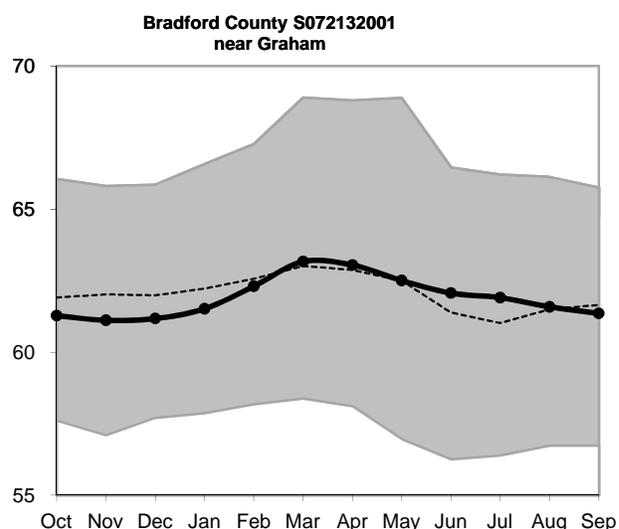
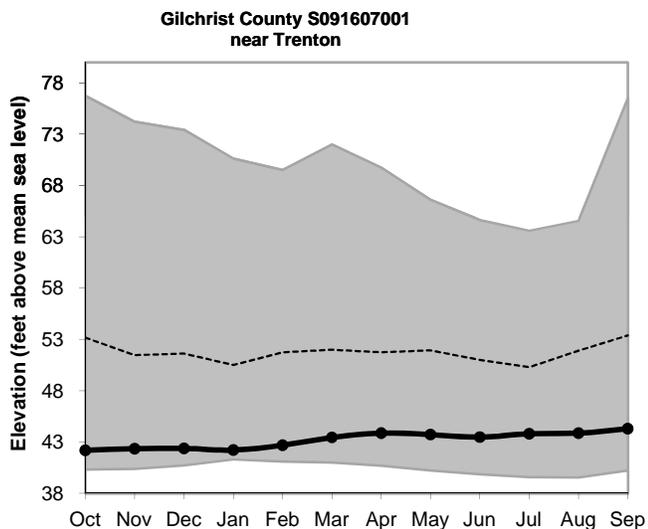
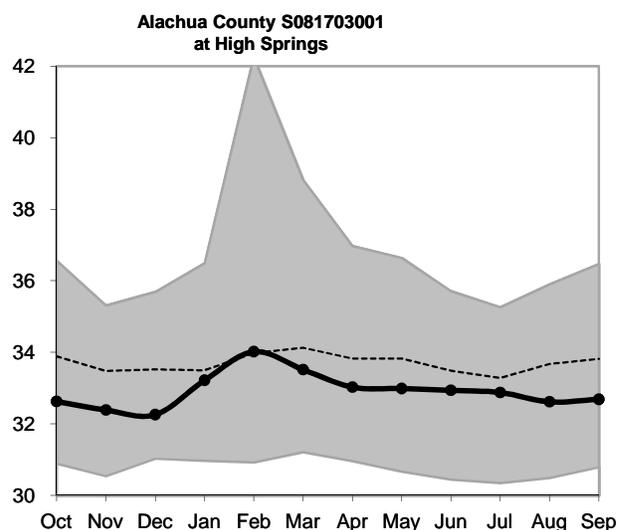
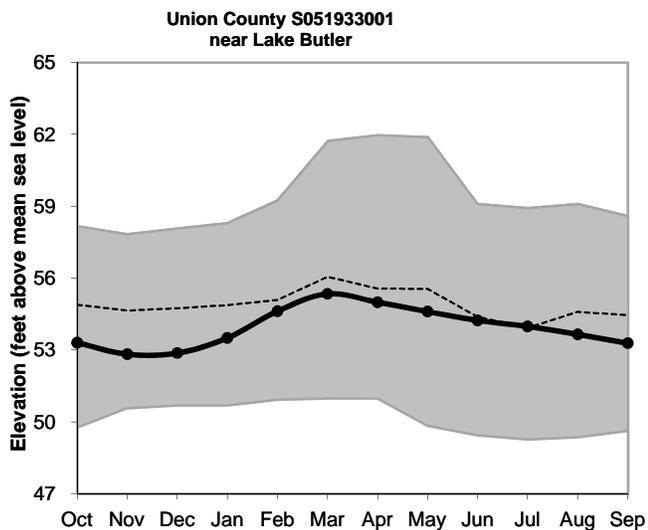
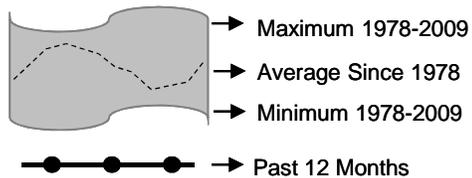
# Figure 10: Monthly Groundwater Level Statistics

Levels October 1, 2009 through September 30, 2010

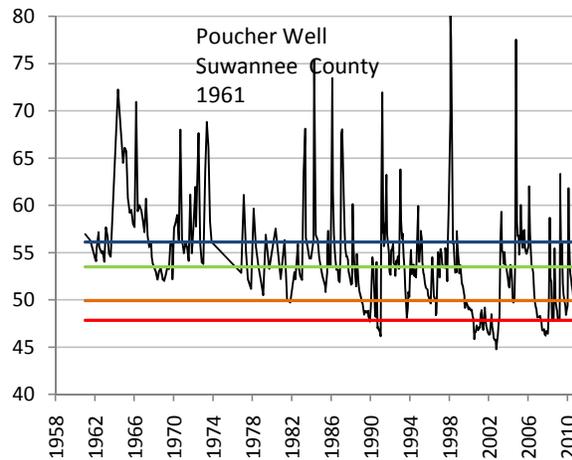
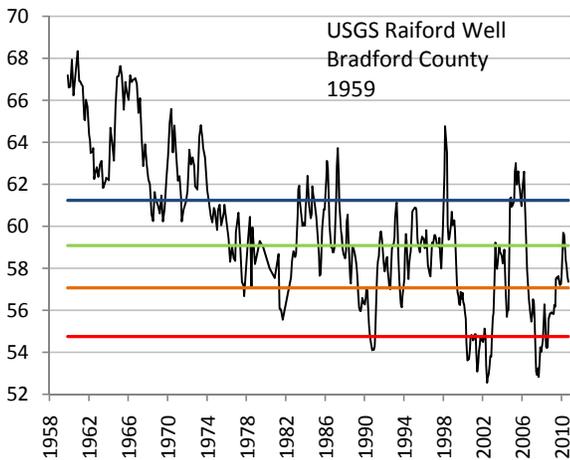
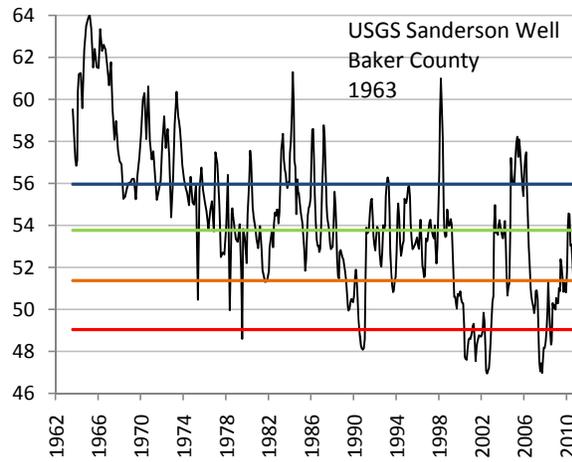
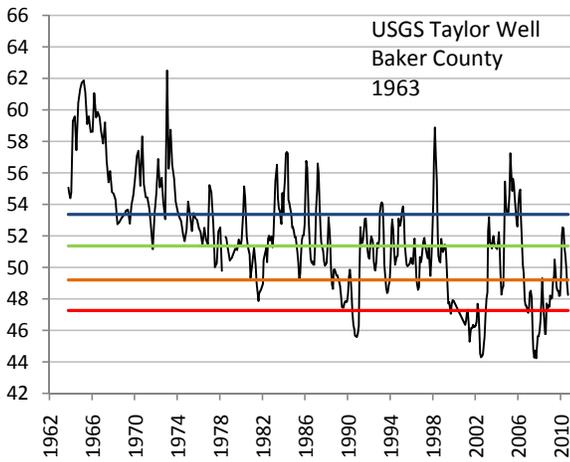
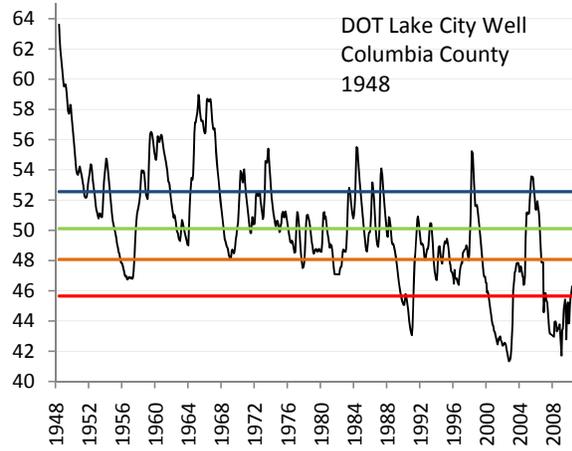
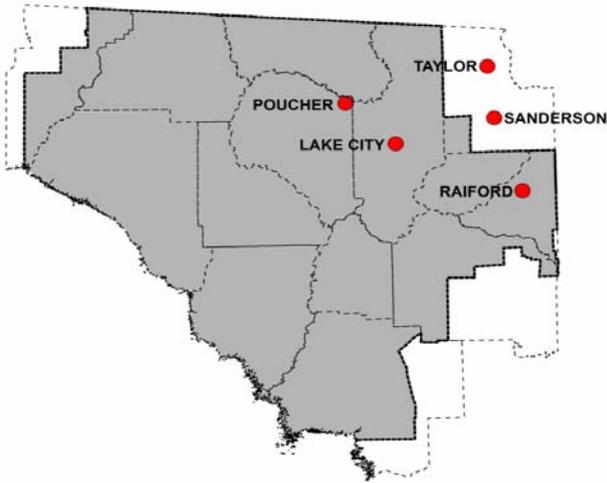
Period of Record Beginning 1978



**Figure 10, cont.:** Monthly Groundwater Level Statistics  
 Levels October 1, 2009 through September 30, 2010  
 Period of Record Beginning 1978



**Figure 11: Long-Term Groundwater Levels**  
 Ending September 2010  
 Levels in feet above mean sea level

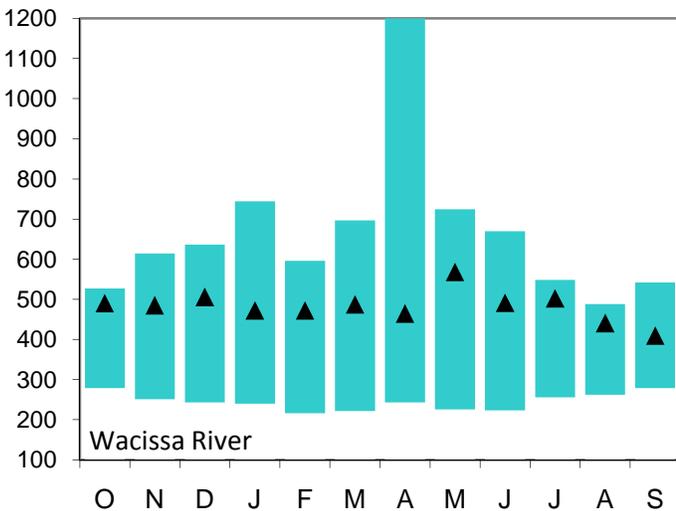
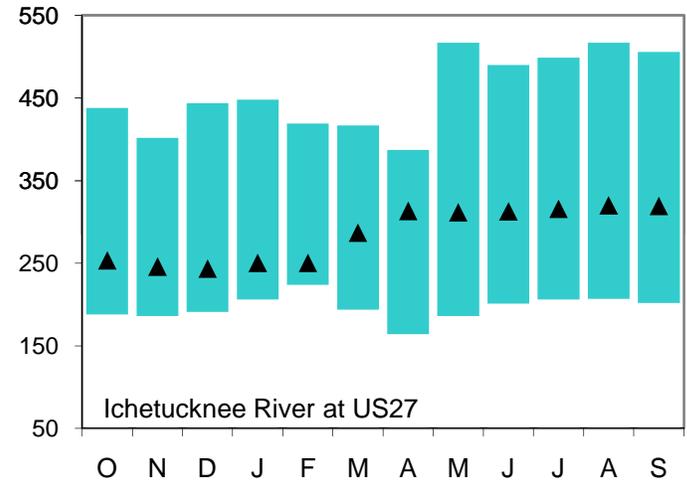
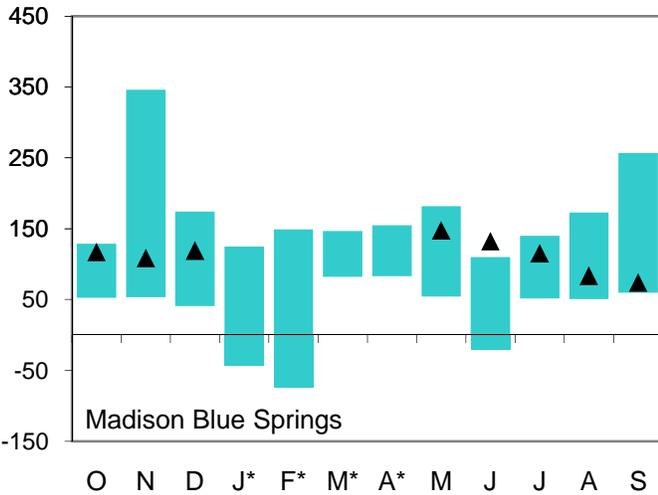
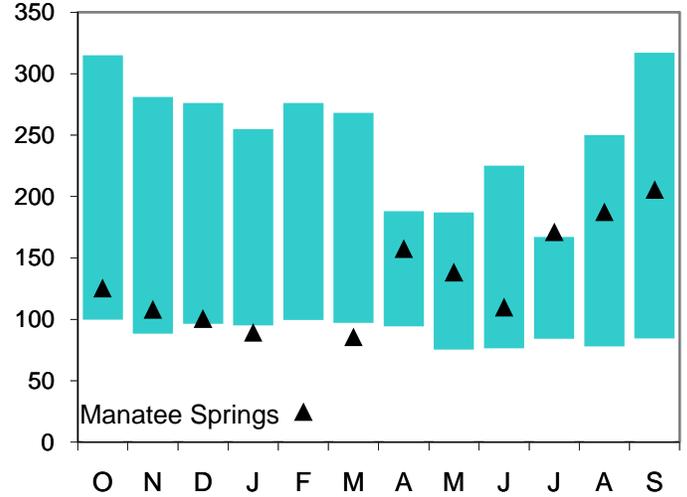
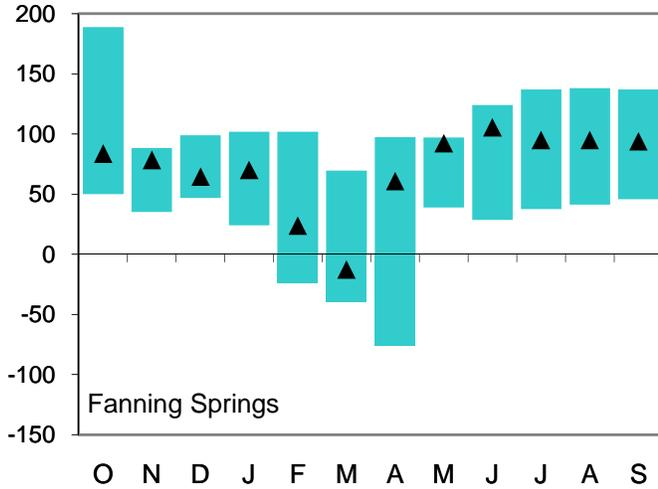
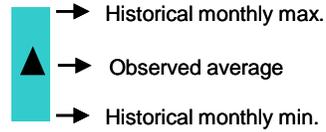


### Figure 12: Monthly Springflow Statistics

Flows October 1, 2009 through September 30, 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.