MEMORANDUM

TO: Governing Board

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

THRU: Charles H. Houder, III, Assistant Executive Director CHH
Jon Dinges, Director, Resource Management JMD

DATE: January 6, 2010

RE: December 2009 Hydrologic Conditions Report for the District

RAINFALL

- Average District rainfall in December was 5.73", which is 180% of the long-term monthly average of 3.14" (Table 1, Figure 1). Accumulations were highest in Jefferson, Madison, and Hamilton counties. Monticello in Jefferson County received 8.45", the highest December total at that station since 1964. Bradford, Alachua, and Levy counties saw the lowest totals, but rainfall was still above-average in those counties. Figure 2 shows the estimated rainfall accumulation across the District, and Figure 3 shows the rainfall totals as a percent of normal December precipitation.
- Rainfall for the past twelve months was 54.87", nearly equal to the long-term average of 54.68". The twelve-month surplus was 0.2", an improvement of almost 5" since November. Figure 4 depicts the 12-month surplus/deficit across the District. Figure 5 shows the change in annual deficits beginning in 1998.

SURFACEWATER

- **Rivers**: Streamflow conditions at all major District gages improved in December, although flows at the Santa Fe near Fort White in the lower Santa Fe Basin remained below the 10th percentile, considered much below normal. (The percentile is the percentage of historic levels that are equal to or below the observed value.) Discharge statistics for six river stations are presented in Figure 6. Coastal rivers and stations on the Withlacoochee, Alapaha, and the Suwannee below the Withlacoochee confluence ended the month with above-normal flows (Figure 7). The Aucilla River at Lamont was above flood stage during the last two weeks of the month, causing minor flooding.
- **Lakes**: With the exception of Santa Fe Lake, levels at all monitored lakes rose in December, increasing by an average of 0.4 feet. Eight of the 16 monitored lakes rose above their long-term average levels. Figure 8

shows levels relative to the long-term average, minimum, and maximum levels for six lakes.

- **Springs:** Average December flow relative to historical flows is shown for 5 spring systems in Figure 11. Rising river levels caused tannic water to enter the spring pools at Fanning, Troy, and Madison Blue springs.

GROUNDWATER

Groundwater levels increased in 59% of the District's monitored wells (Figure 9), with the largest increases seen near the Withlacoochee and Alapaha rivers. Average groundwater levels rose to the 40th percentile from the 33rd percentile in November. Areas of below-normal groundwater occurred in the middle Suwannee and lower Santa Fe basins. Statistics for a representative sample of wells are shown in Figure 10.

HYDROLOGICAL/METEOROLOGICAL INFORMATION

- The 12-month Standardized Precipitation Index (SPI), based on long-term precipitation patterns that impact streams and groundwater, indicated near-normal conditions throughout the District. The 3-month SPI, which better describes soil moisture deficits, also indicated near-normal conditions.
- None of the District's major basins experienced below-normal streamflow conditions, according to the U.S. Geological Survey.
- Long-term forecasts from the National Weather Service predict above-average precipitation through March due to ongoing El Niño conditions in the Pacific.

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 (114 wells), surfacewater levels (16 lakes and 11 rivers), river flows (6 stations on 4 rivers), spring flows (5 stations, courtesy of the Florida Department of Environmental Protection and the U.S. Geological Survey), 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.

/dd

Table 1: Estimated Rainfall Totals

County	Dec-2009	Dec-2008	Last 12 Months	Dec. Average
Alachua	2.88	0.84	50.96	2.77
Baker	5.60	0.71	54.62	2.77
Bradford	3.34	0.91	51.34	2.95
Columbia	5.43	0.63	52.22	3.08
Dixie	3.75	1.03	54.99	3.17
Gilchrist	3.32	0.81	51.68	3.07
Hamilton	7.46	0.81	53.17	2.98
Jefferson	9.86	1.29	63.00	4.25
Lafayette	5.48	0.93	57.12	3.33
Levy	3.26	0.83	54.15	3.18
Madison	8.99	1.14	60.85	3.79
Suwannee	6.94	0.91	53.57	2.79
Taylor	7.39	1.15	57.46	3.39
Union	3.86	0.80	48.05	2.86

December 2009 Average:	5.73
Historical December Average (since 1932):	3.14
Historical 12-month Average (since 1932):	54.68
Past 12-Month Total:	54.87
12-month Rainfall Surplus:	0.19

(Rainfall reported in inches)

Figure 1: Comparison of District Monthly Rainfall

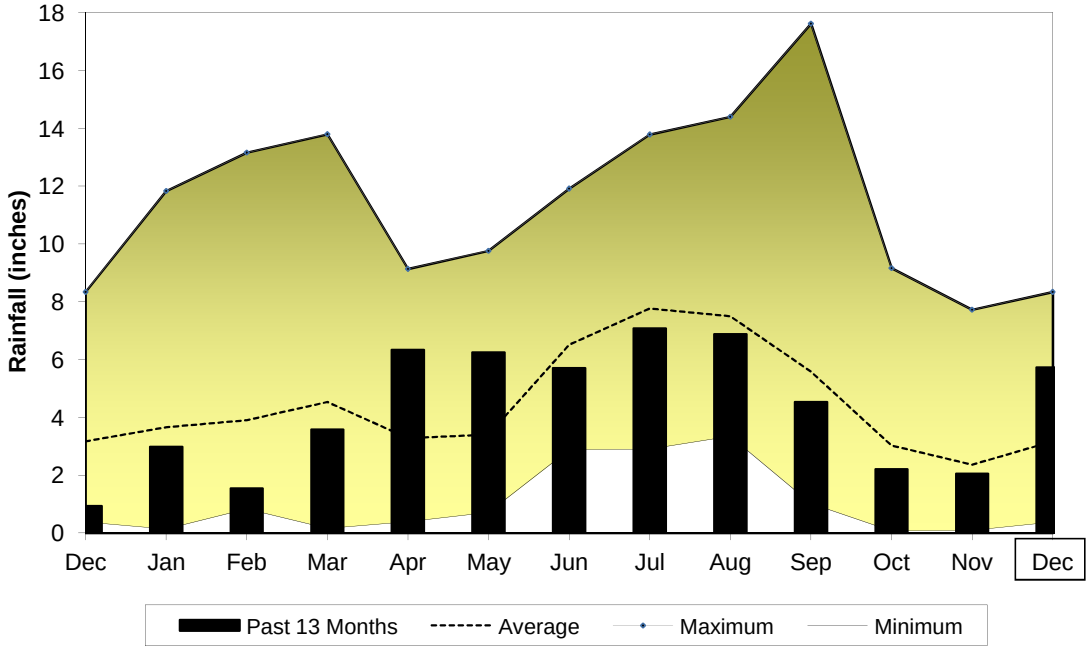


Figure 2: December 2009 Rainfall Estimate

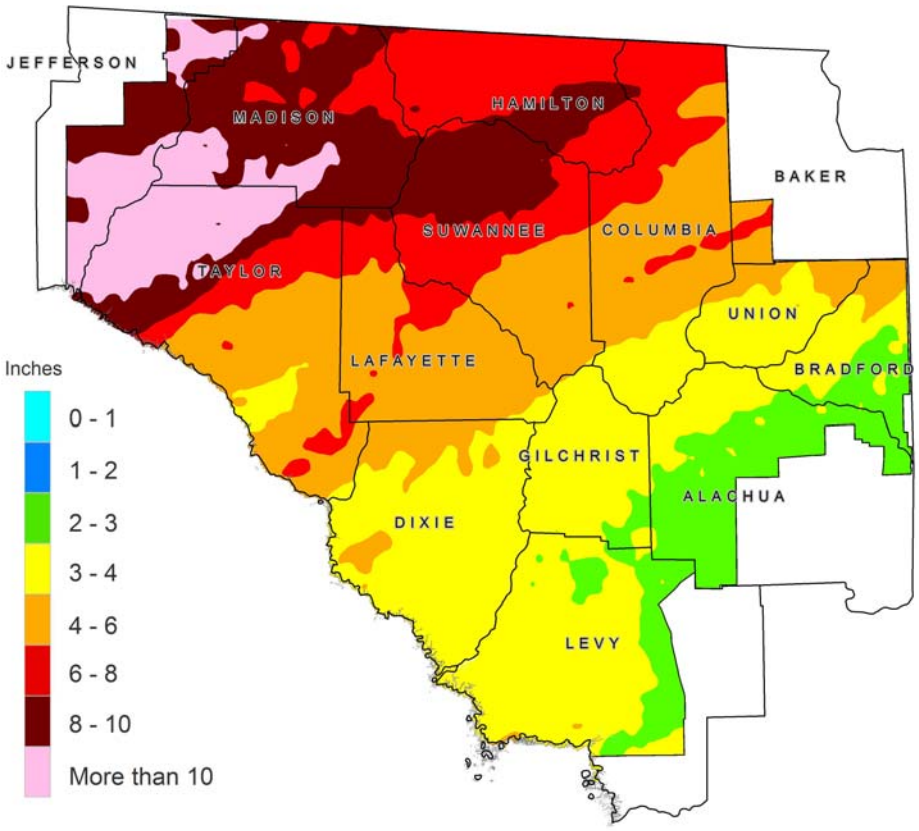


Figure 3: December 2009 Percent of Normal Rainfall

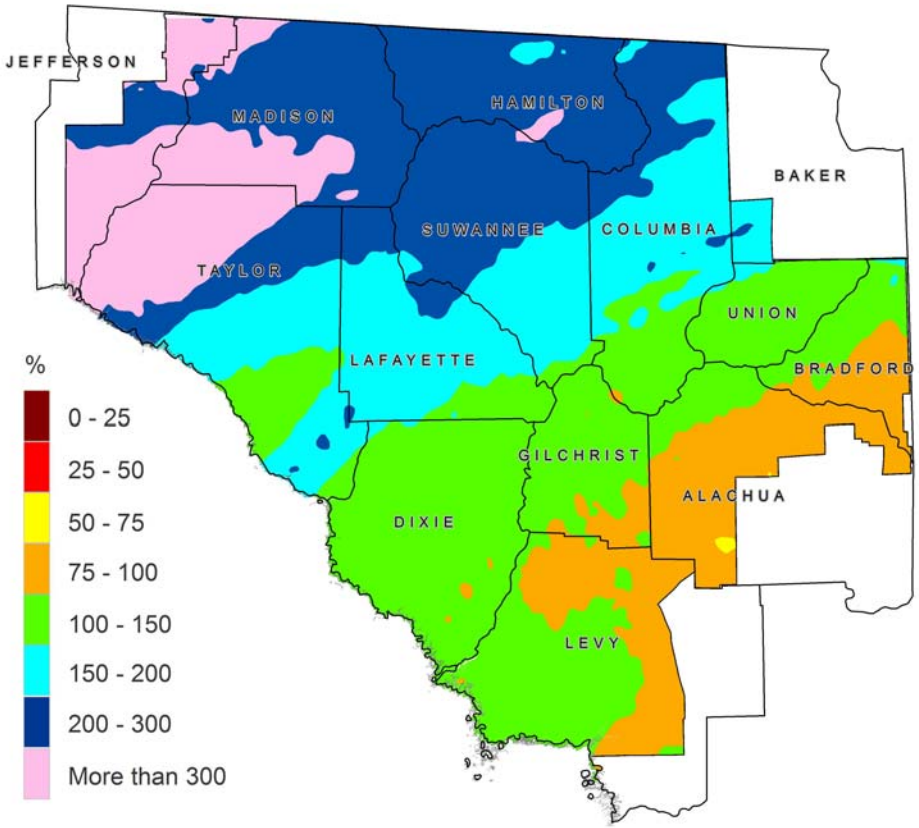


Figure 4: December 2009 Rainfall Surplus/Deficit

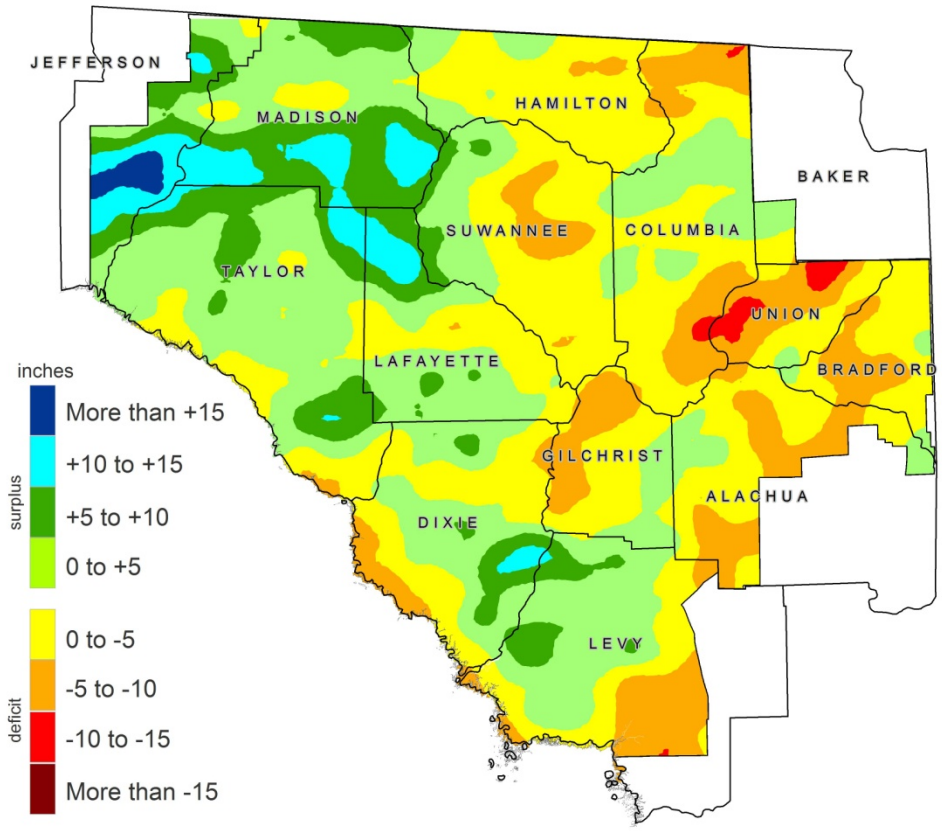


Figure 5: 12-month Rolling Rainfall Deficit Since 1998

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

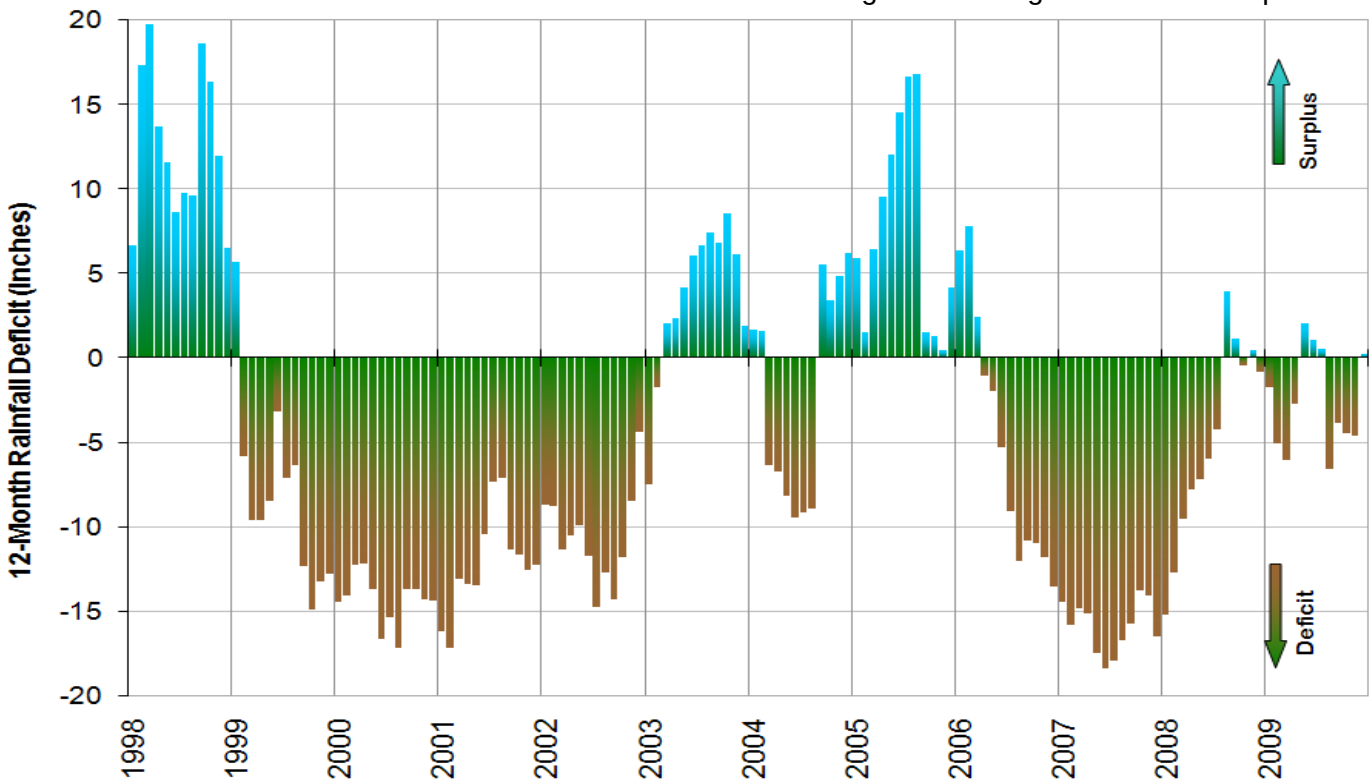
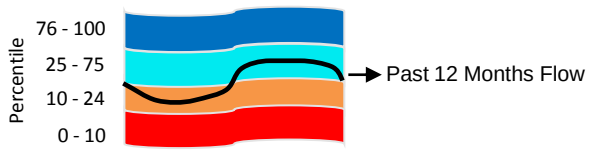
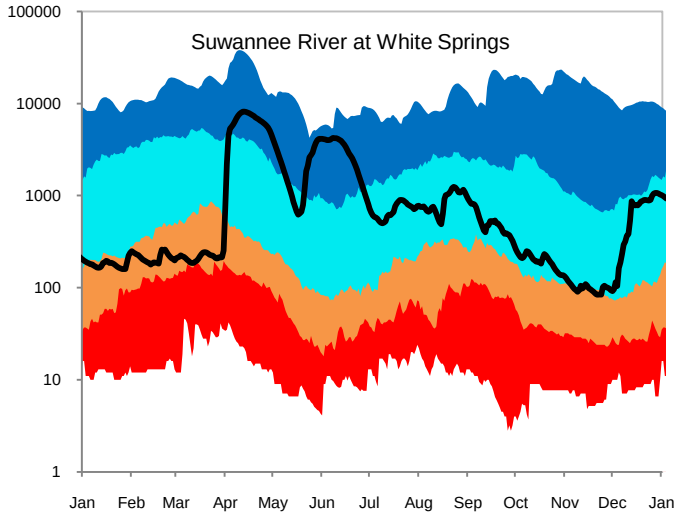


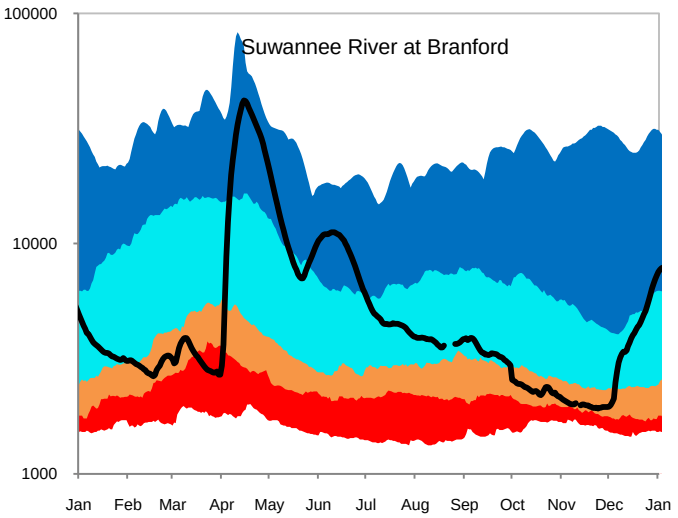
Figure 6: Daily River Flow Statistics

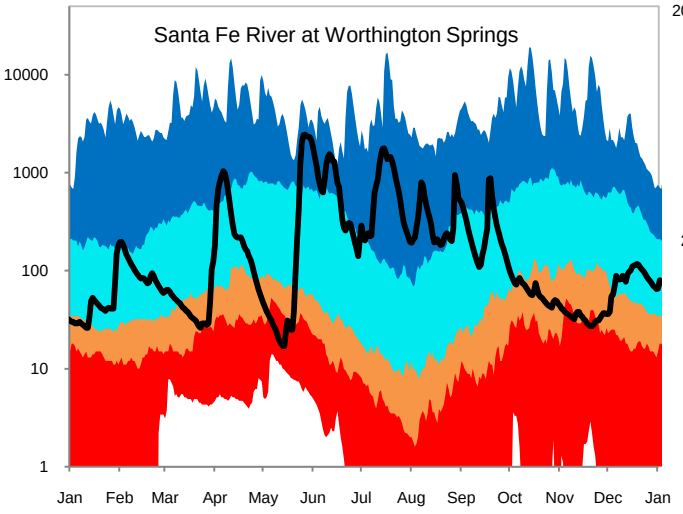
January 1, 2009 through December 31, 2009

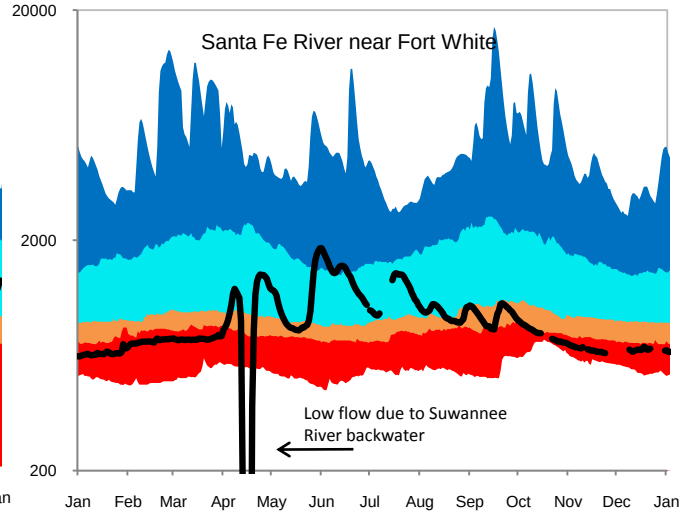


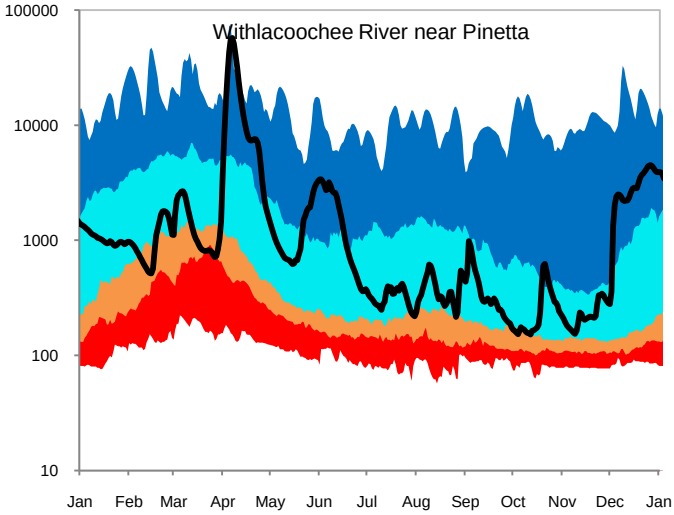
RIVER FLOW, CUBIC FEET PER SECOND











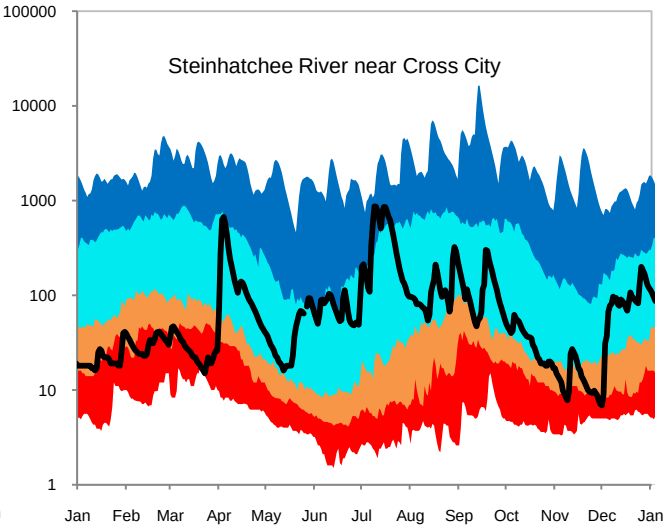


Figure 7: December 2009 Streamflow Conditions

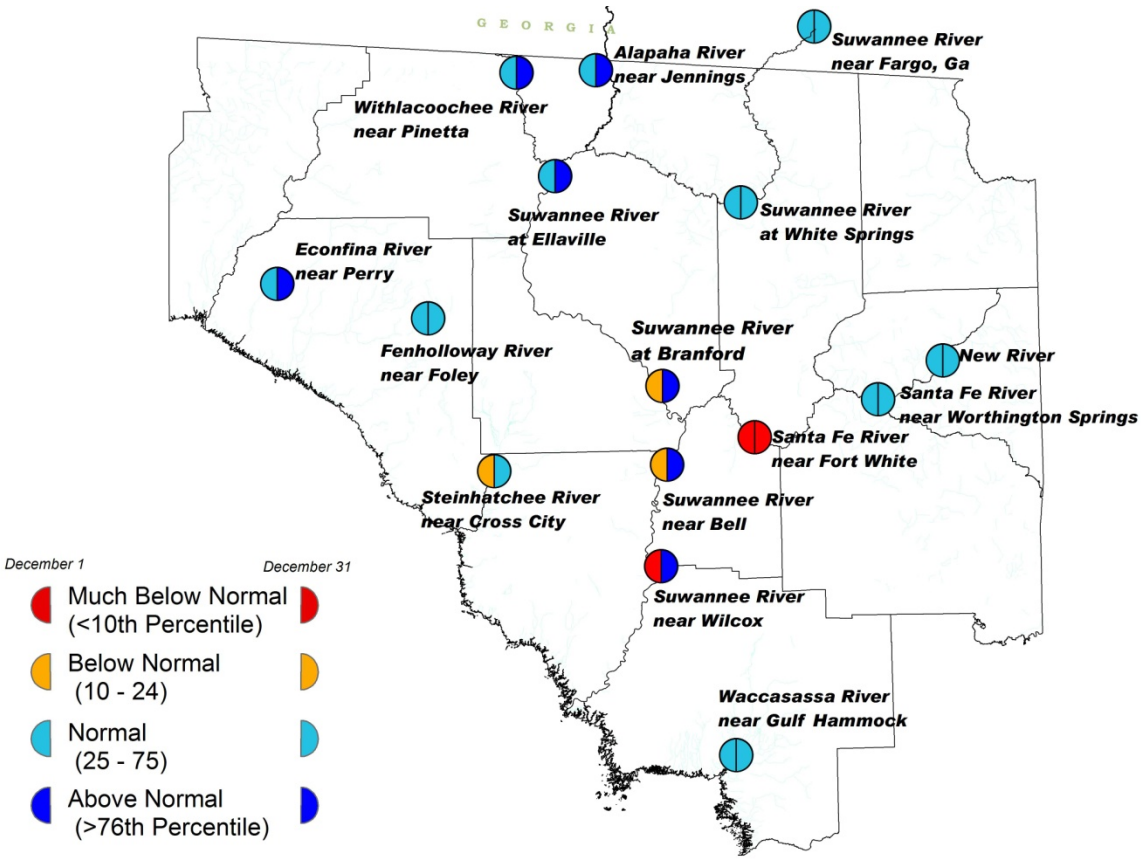
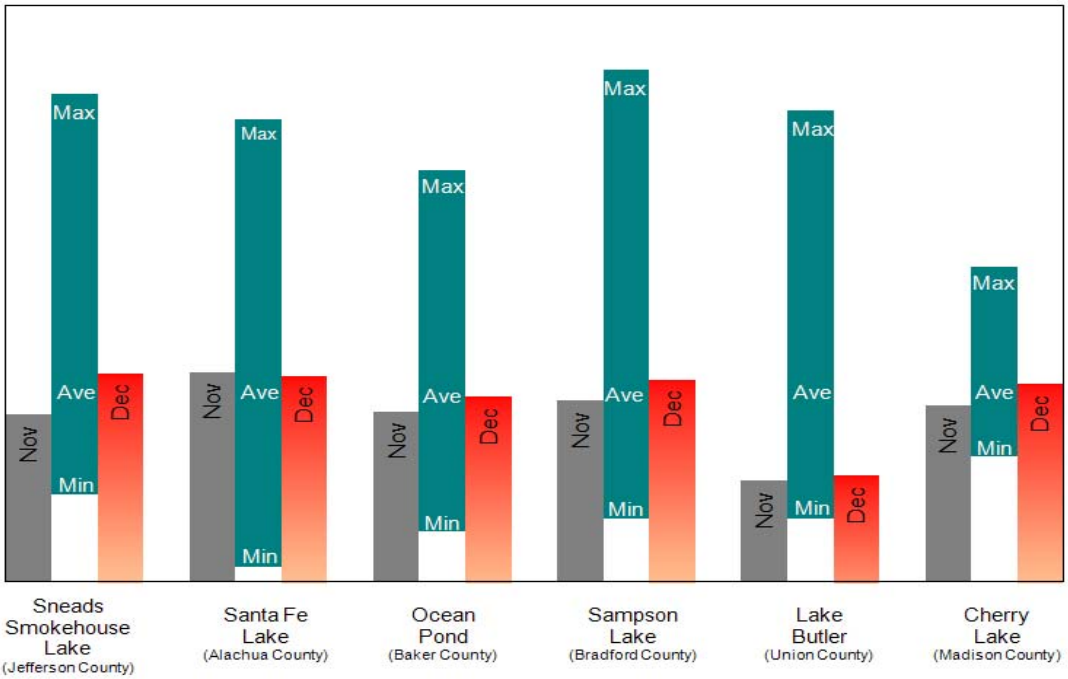


Figure 8: Lake levels, relative to historic maximum, minimum, and average levels.



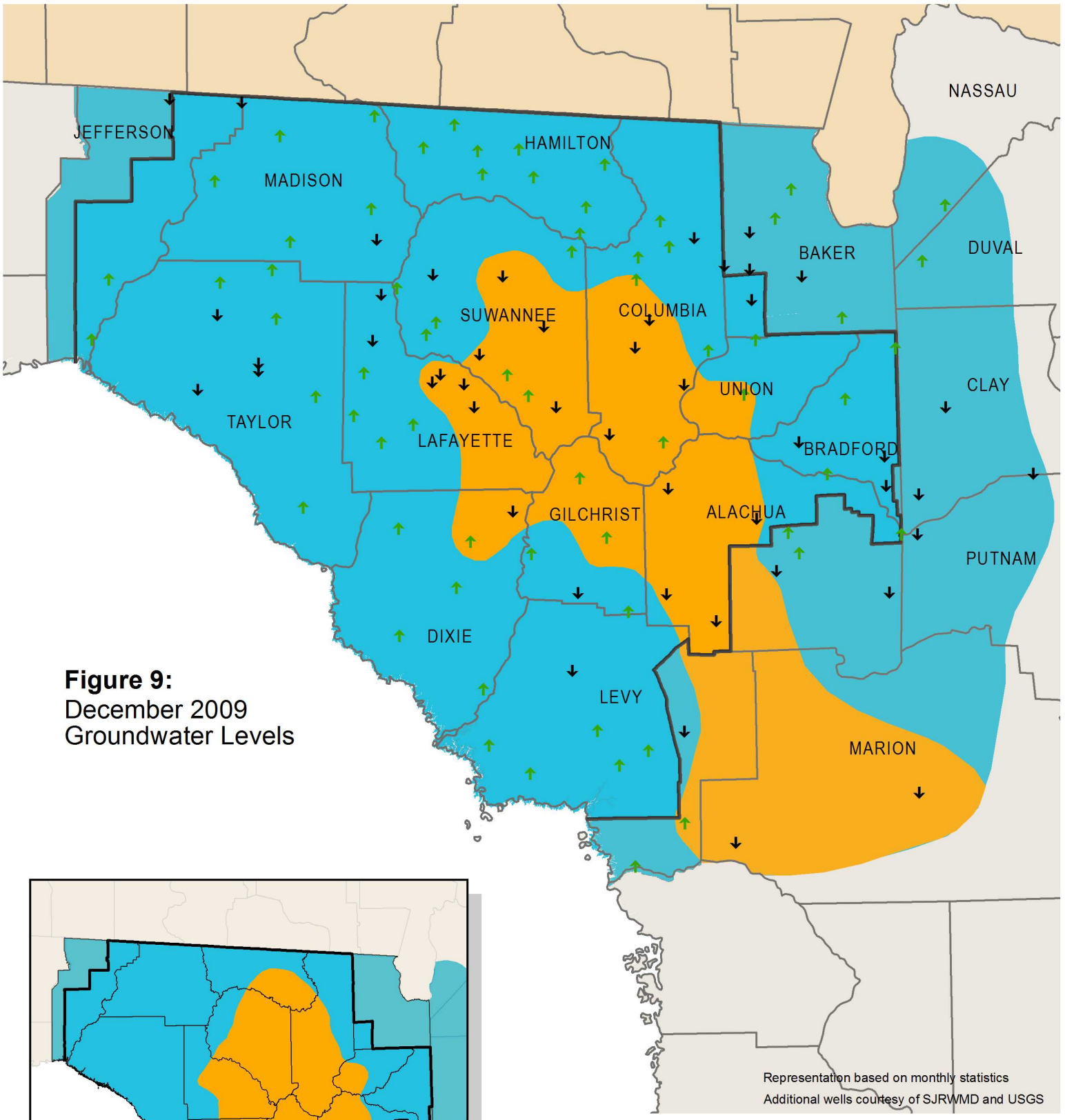


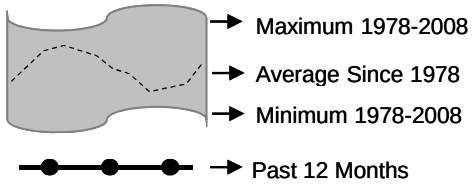
Figure 9:
December 2009
Groundwater Levels

Inset: November 2009 Groundwater Levels

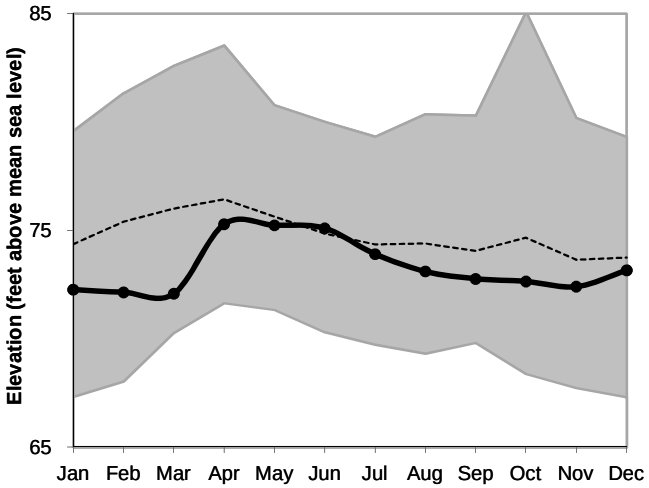
Figure 10: Monthly Groundwater Level Statistics

Levels January 1, 2009 through December 31, 2009

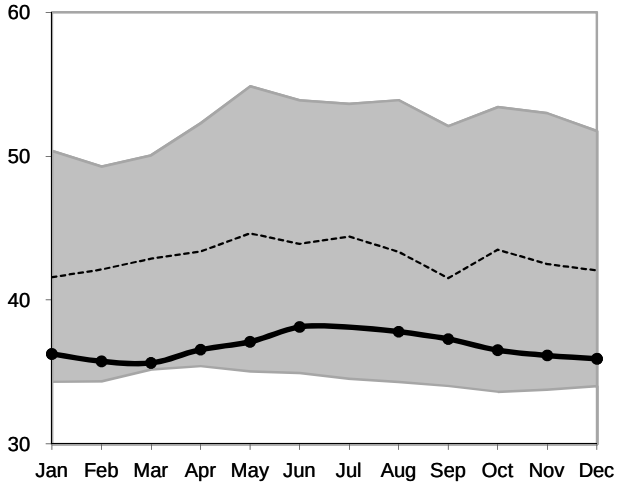
Period of Record Beginning 1978



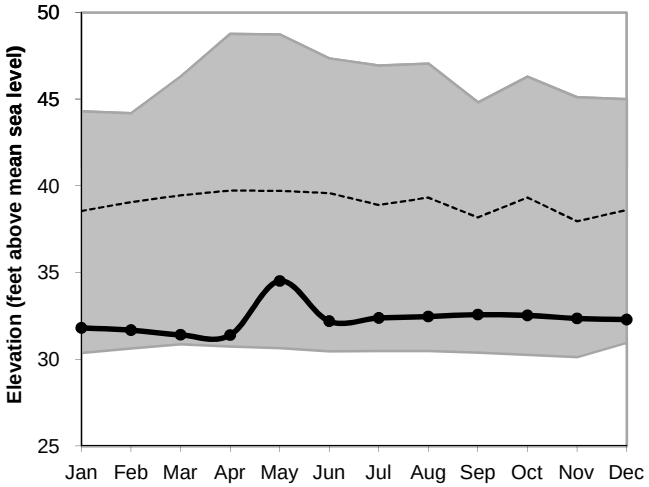
Madison County N010719001



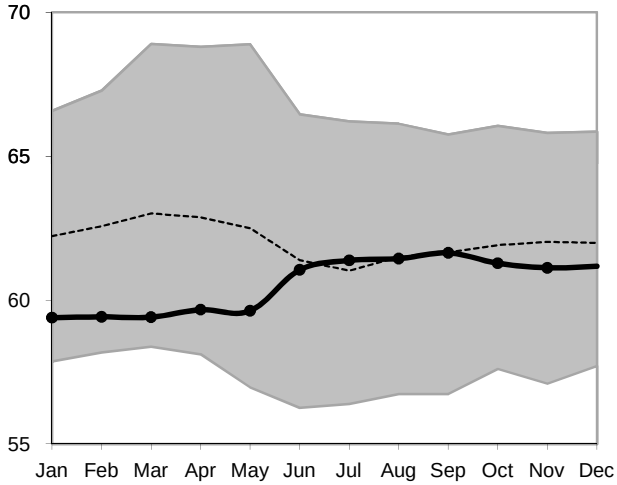
Suwannee County S021335001



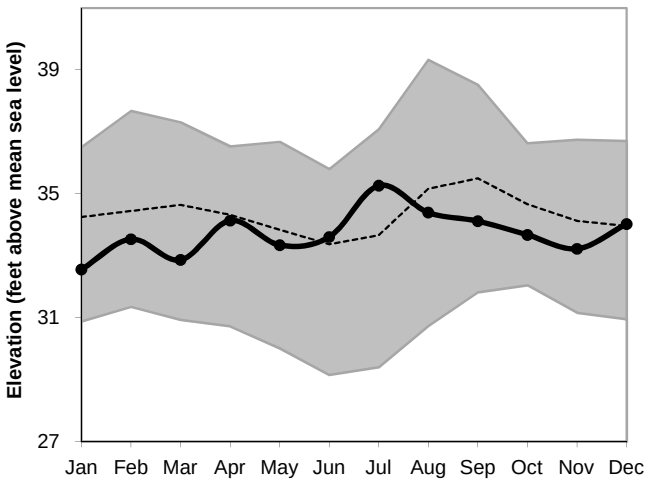
Columbia County S041625001



Bradford County S072132001



Dixie County S101210001



Taylor County S050701001

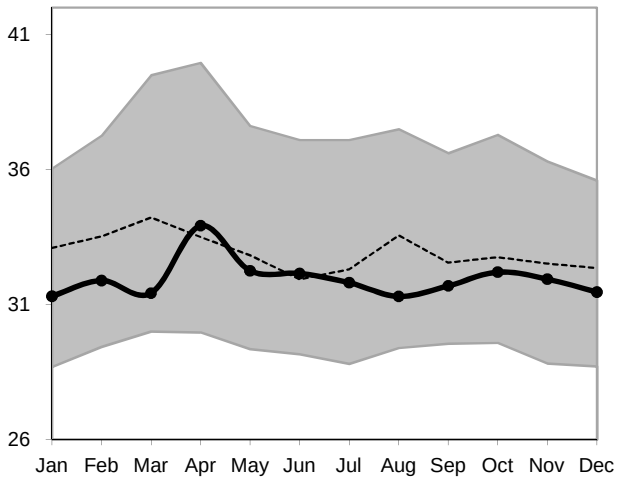
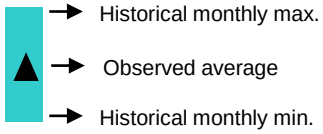
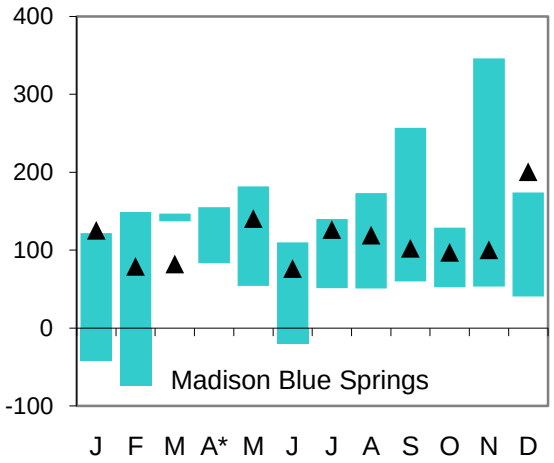


Figure 11: Monthly Springflow Statistics

Flows January 1, 2009 through December 31, 2009
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.