

SUWANNEE RIVER WATER MANAGEMENT DISTRICT

MEMORANDUM

TO: Governing Board

FROM: Robbie McKinney, Hydrologic Program Manager, Office of Water Resources

THRU: Hugh Thomas, Executive Director

DATE: August 31, 2024

RE: August 2024 Hydrologic Conditions Report

RAINFALL

- Districtwide average rainfall for the month was 11.73", which was 54 percent higher than the 1932-2023 average of 7.60" (Table 1, Figure 1). The 12-month period ending August 31 reflected a Districtwide rainfall surplus of 4.79", which was an increase to the 0.13" surplus seen at the end of July. Most District counties received anywhere between 5" and 14" of rainfall on average, with parts of Madison, Suwannee, Dixie, and Levy counties receiving more than 18" of rainfall (Figure 2).
- Overall, a 12-month rainfall surplus was present for each basin except the Waccasassa Basin, which had a small deficit at the end of August (Figure 3). Areas of twelve-month surpluses greater than 14" were represented in 3 of the basins, while sections with deficits greater than 10" were seen in the Waccasassa Basin. Two of the 5 river basins also had 3-month rainfall deficits, while the Santa Fe, Suwannee, and Waccasassa basins transitioned from deficit to surplus by month's end (Figure 4). Areas with surpluses greater than 7" were prevalent in many of the basins, while portions with greater than 5" deficits were seen in 3 of the river basins over the past 3 months.

SURFACE WATER

- **Rivers:** Each of the river gages in Figure 5 finished the month in either the normal (25th – 75th percentile) or above normal (75th – 100th percentile) flow ranges this month. River gages at Worthington Springs, Ft. White, White Springs, and Statenville each experienced new record maximum daily values at various times in August. Other rivers throughout South Georgia and North Florida finished the month in either the normal, above normal (75th – 90th percentile) or high (>90th percentile) flow categories due to increased rainfall amounts throughout the month (Figure 6).
- **Lakes:** Water levels increased at each of the monitored lakes in the District this month (Figure 7). The median increase in stage across all measured lakes was around 0.7', with only 4 of the lakes ending the month below their respective long-term average. Waters Lake represented the largest water level rise among lakes this month with a stage increase of around 5.8' due to increased rainfall in the area during August.
- **Springs:** Flow measurements were made at 16 springs in August by the U.S. Geological Survey (USGS), District staff, and contractors. The Wacissa River (Figure 8) had flows in the normal range throughout the entire month. Blue Hole (Figure 9) spent most of August in the normal range but increased to above normal flows in the early part of the month due to high groundwater levels caused by Hurricane Debby rainfall in that area.

GROUNDWATER

Upper Floridan Aquifer (UFA) levels across the District reflected mostly high (75th – 90th percentile) and extremely high (>90th percentile) levels this month (Figure 10). Overall, groundwater levels increased by a median of 2.8' since the end of July and ended August with a Districtwide average around the 86th percentile.

Each of the index wells remained higher than their respective historical monthly average level at the end of the month (Figure 11). Long-term District UFA well levels ended the month in the very high, high, or normal categories (Figure 12a). Long-term wells with records that extend back to at least 1964 showed mainly increasing water levels this month relative to last month (Figure 12b).

CLIMATE AND DROUGHT OUTLOOK

ENSO-neutral conditions are expected to continue with a 66% chance of La Niña emergence from September to November and continuing into winter 2024-25 (74% chance from November to January).

The NOAA three-month seasonal outlook suggests above normal temperatures along with above normal precipitation throughout the District from September through November 2024.

The U.S. Drought Monitor report released on Thursday, September 5th, shows Abnormally Dry (D0) conditions in portions of Jefferson and Taylor counties.

CONSERVATION

Water conservation continues to be necessary to sustain healthy groundwater levels and flows in District springs and rivers. All users are urged to eliminate unnecessary uses. Landscape irrigation during Daylight Saving Time (March 10, 2024, to November 3, 2024) is limited to twice per week based on a District water conservation rule that applies to residential landscaping, public or commercial recreation areas, and businesses that are not regulated by a District-issued water use permit. Information about SRWMD's year-round conservation measures is available at <http://www.srwmd.org/index.aspx?NID=337>.

ACKNOWLEDGMENTS

The Hydrologic Conditions Report is a monthly combined effort between the Offices of Water Resources and Hydrologic Data Services data collection and review programs. Acknowledgment is made to the following staff for their contributions to the timely production of this report:

- Data Collection: Jamie Gaylord, Matthew Jordan, Dylan Mock, Gene Page, Kevin Posada, and Vince Robinson
- QA/QC and Reporting: Stephanie Armstrong, Susie Hetrick, Robbie McKinney, and Brandi Sistrunk
- Administrative Support/Document Preparation/IT: Paul Buchanan, Bo Cameron, Tyler Jordan, Andrew Neel, and April Olive

This report is compiled in compliance with Chapter 40B-21.211, Florida Administrative Code, using rainfall (gage-adjusted radar-derived estimates), groundwater (121 wells), surface water (35 stations), and general information such as drought indices and forecasts. Data are provisional and updated as revised data become available. Data are available at <http://www.mysuwanneeriver.com/507/Water-Data-Portal> or upon request.

Table 1: Nexrad Monthly Rainfall Totals by County (inches)

County	August 2024	August Average*	Month % of Normal	Total Last 12 Months	Annual % of Normal*
Alachua	10.29	7.56	136%	50.40	96%
Baker	11.56	7.20	161%	59.73	113%
Bradford	9.51	7.19	132%	54.18	104%
Columbia	13.24	7.06	188%	60.50	114%
Dixie	13.96	9.31	150%	55.63	96%
Gilchrist	12.59	8.01	157%	51.87	95%
Hamilton	10.10	6.35	159%	63.55	123%
Jefferson	5.70	6.77	84%	59.17	106%
Lafayette	12.77	7.94	161%	60.96	110%
Levy	12.98	9.10	143%	53.93	96%
Madison	9.83	6.51	151%	67.34	126%
Suwannee	14.76	6.99	211%	65.11	123%
Taylor	9.65	8.28	117%	60.87	107%
Union	11.56	7.22	160%	56.18	107%

*Based on PRISM LT81 monthly rainfall averages by county (1927-2022)

August 2024 District Average	11.73
August Long-Term Average (1932-2023)	7.60
Historical 12-month Average (1932-2023)	54.71
Past 12-Month Total	59.50
12-Month Rainfall Surplus/Deficit	4.79

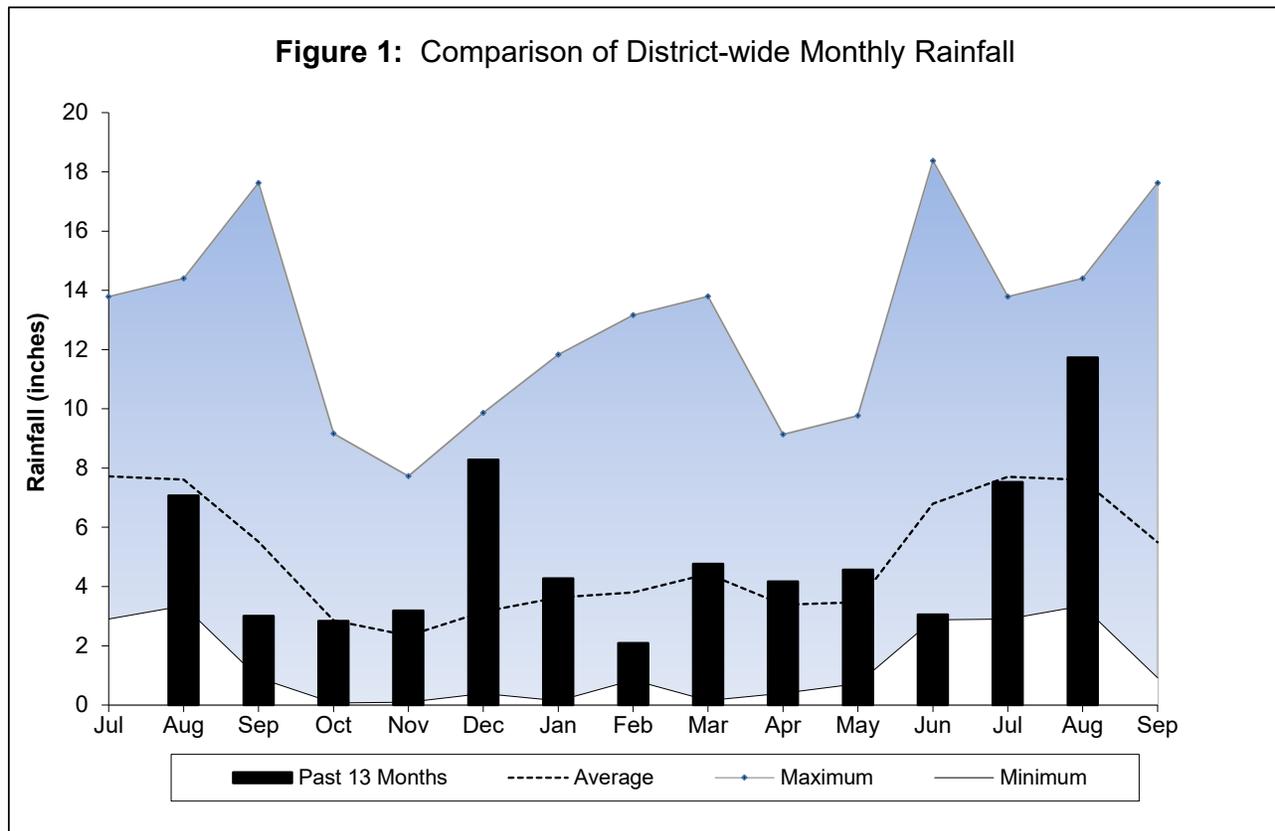


Figure 2: August 2024 SRWMD Gage-adjusted Radar Rainfall

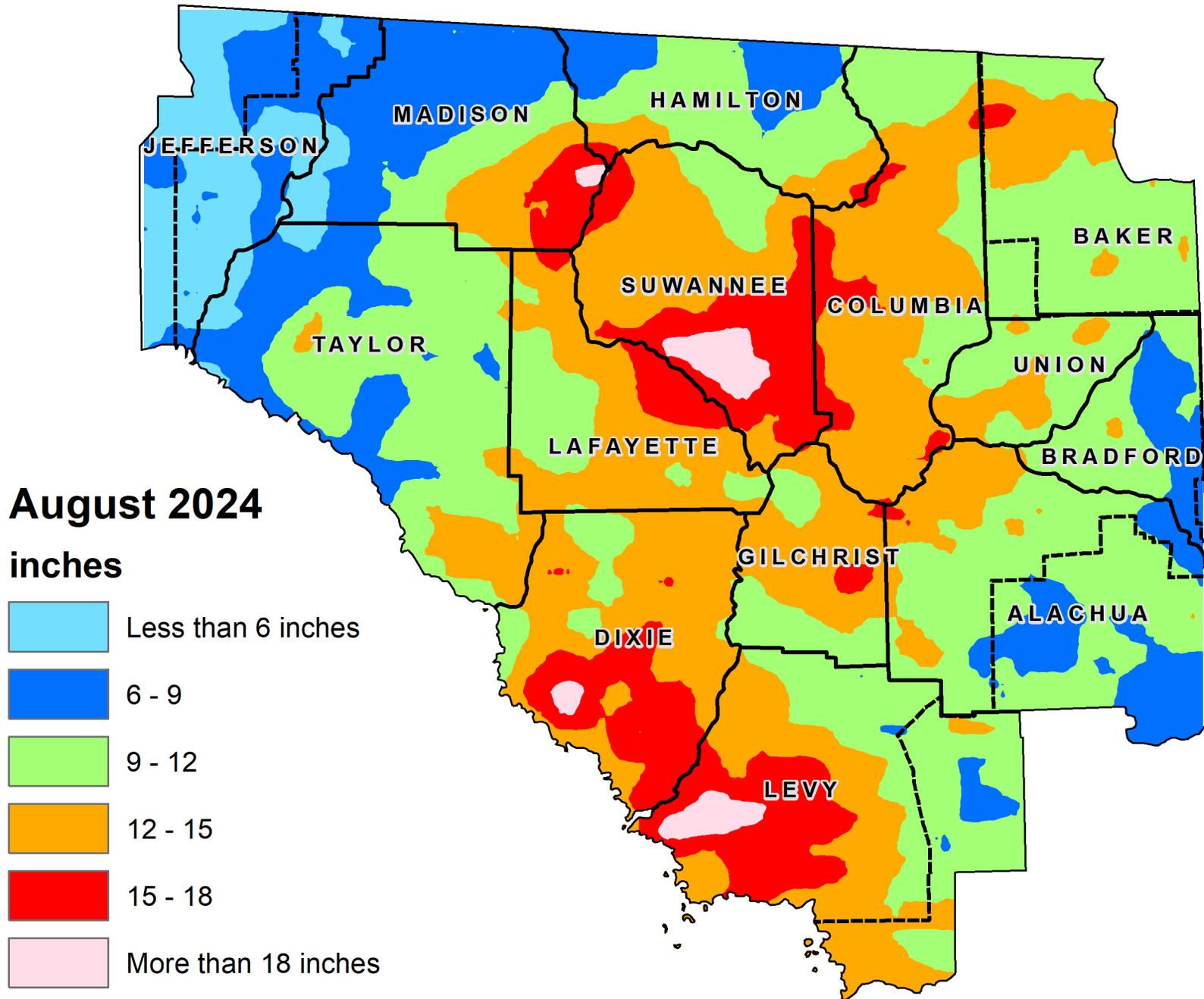


Figure 3: 12 - Month Rainfall Surplus/Deficit by River Basin through August 31, 2024

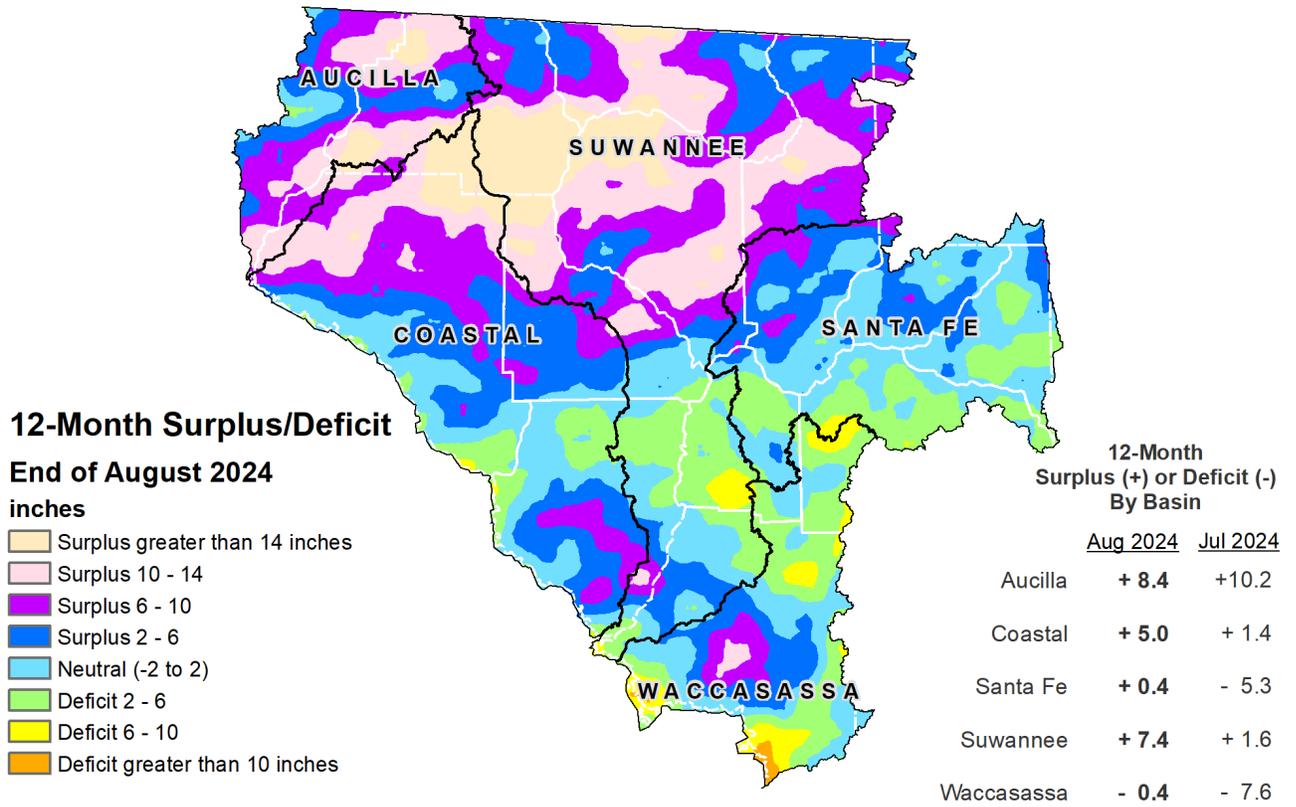


Figure 4: 3 - Month Rainfall Surplus/Deficit by River Basin through August 31, 2024

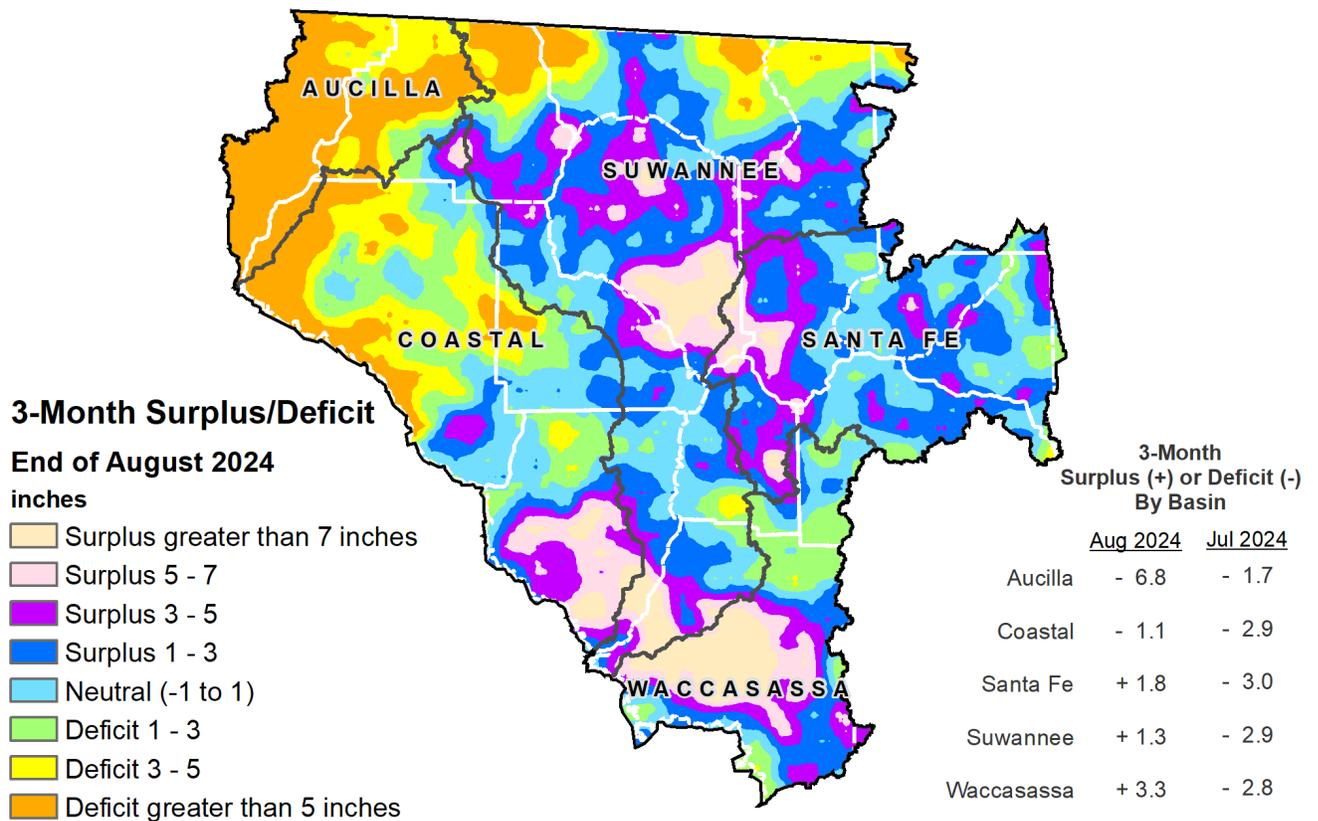


Figure 5: Daily River Flow Statistics

September 1, 2023 through August 31, 2024

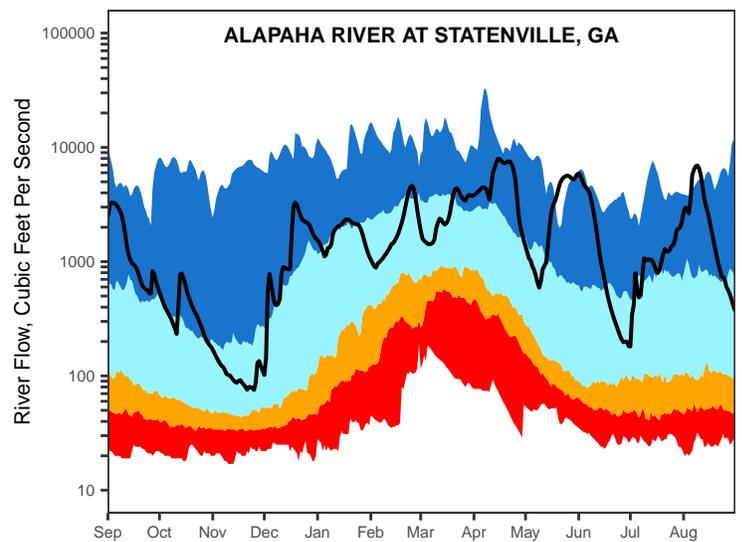
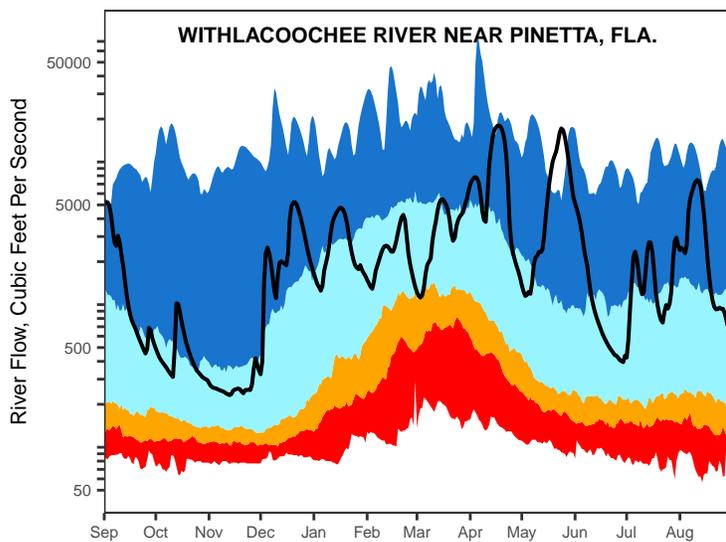
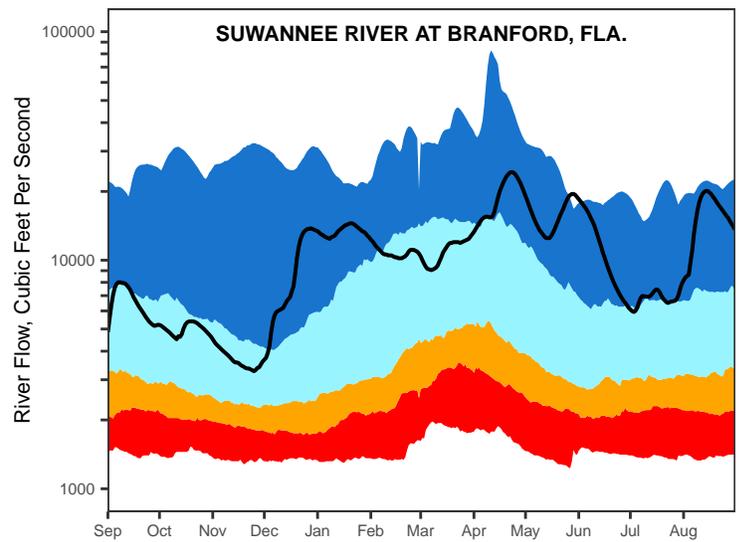
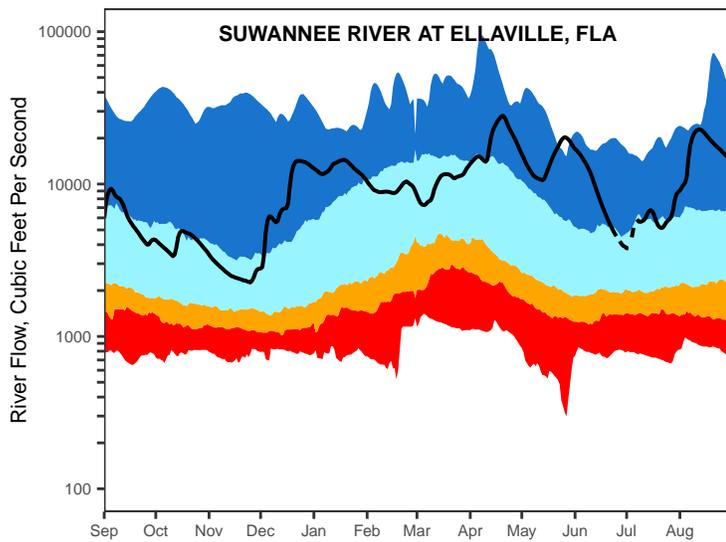
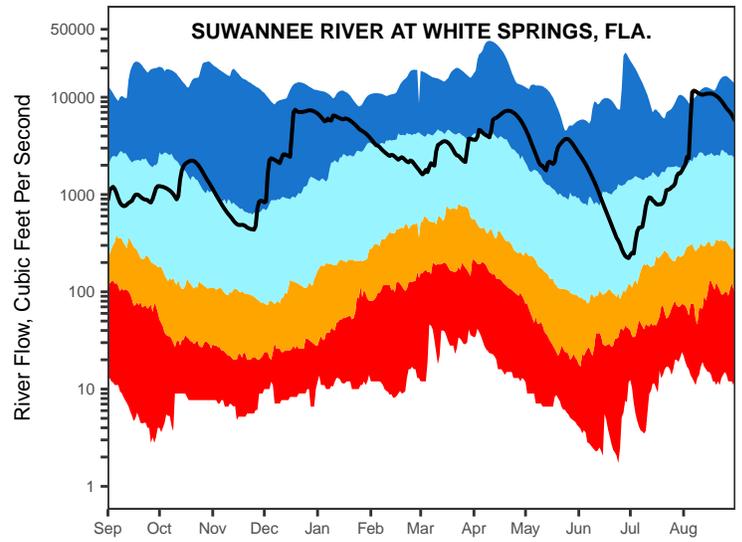
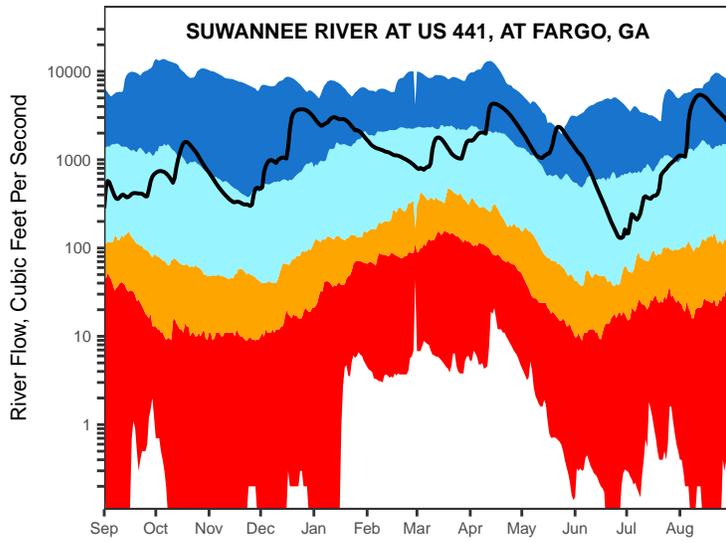
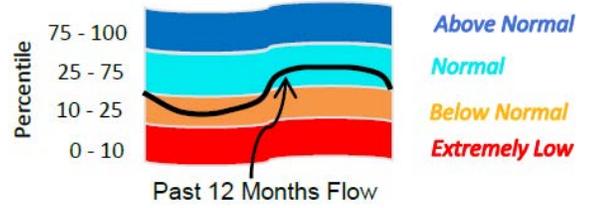
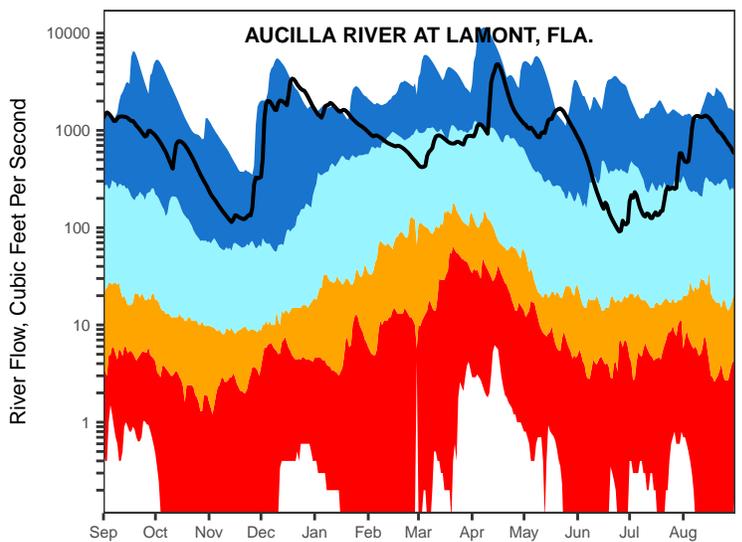
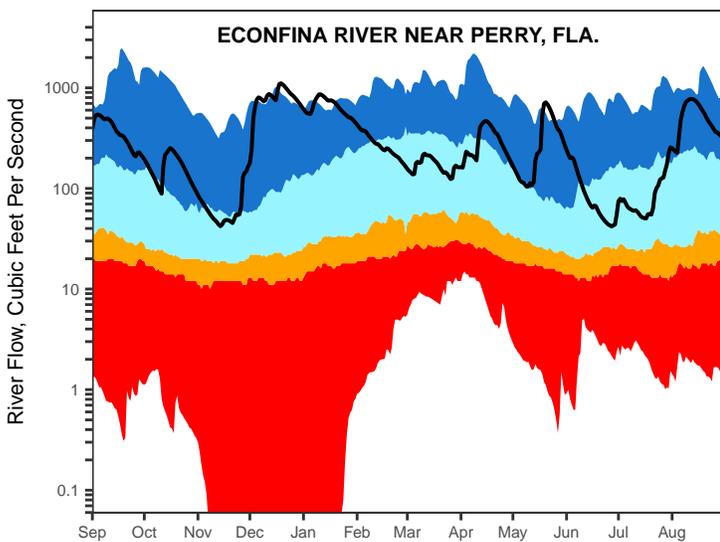
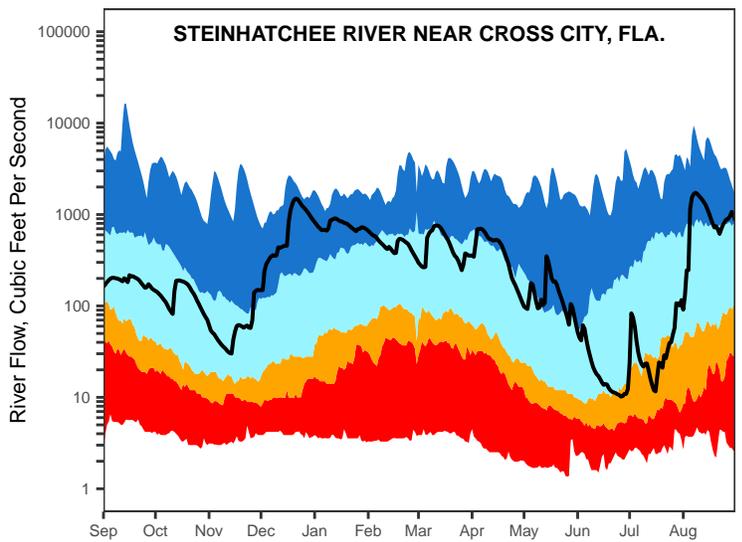
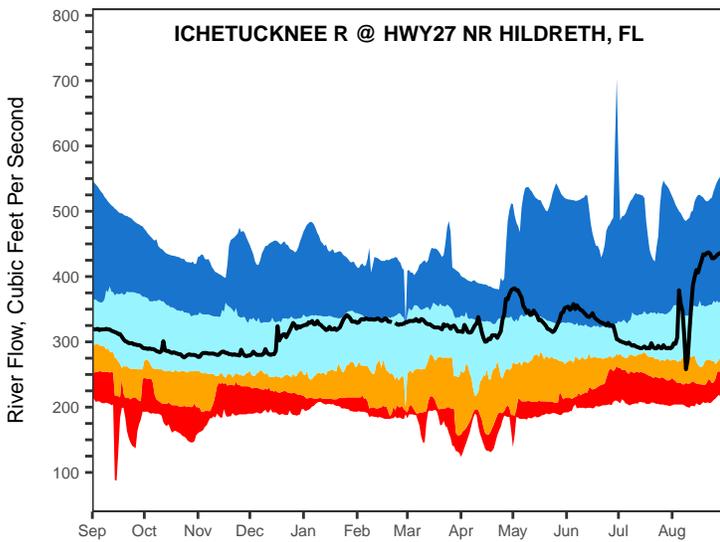
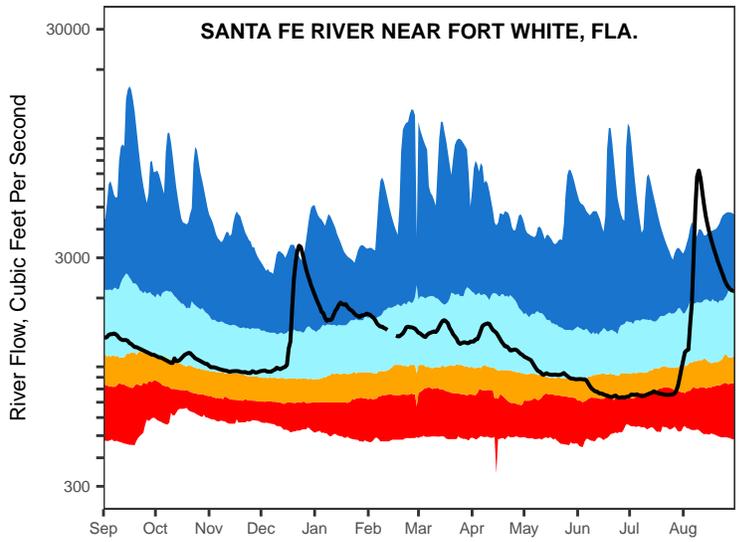
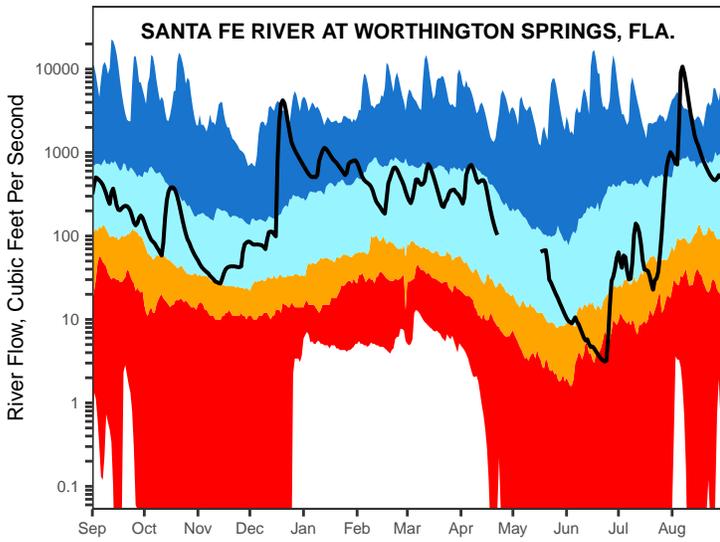
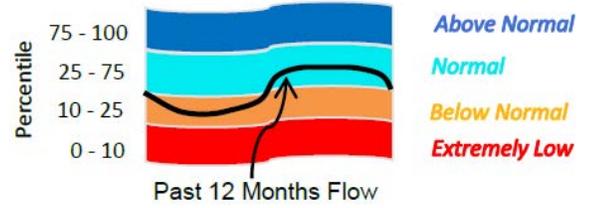


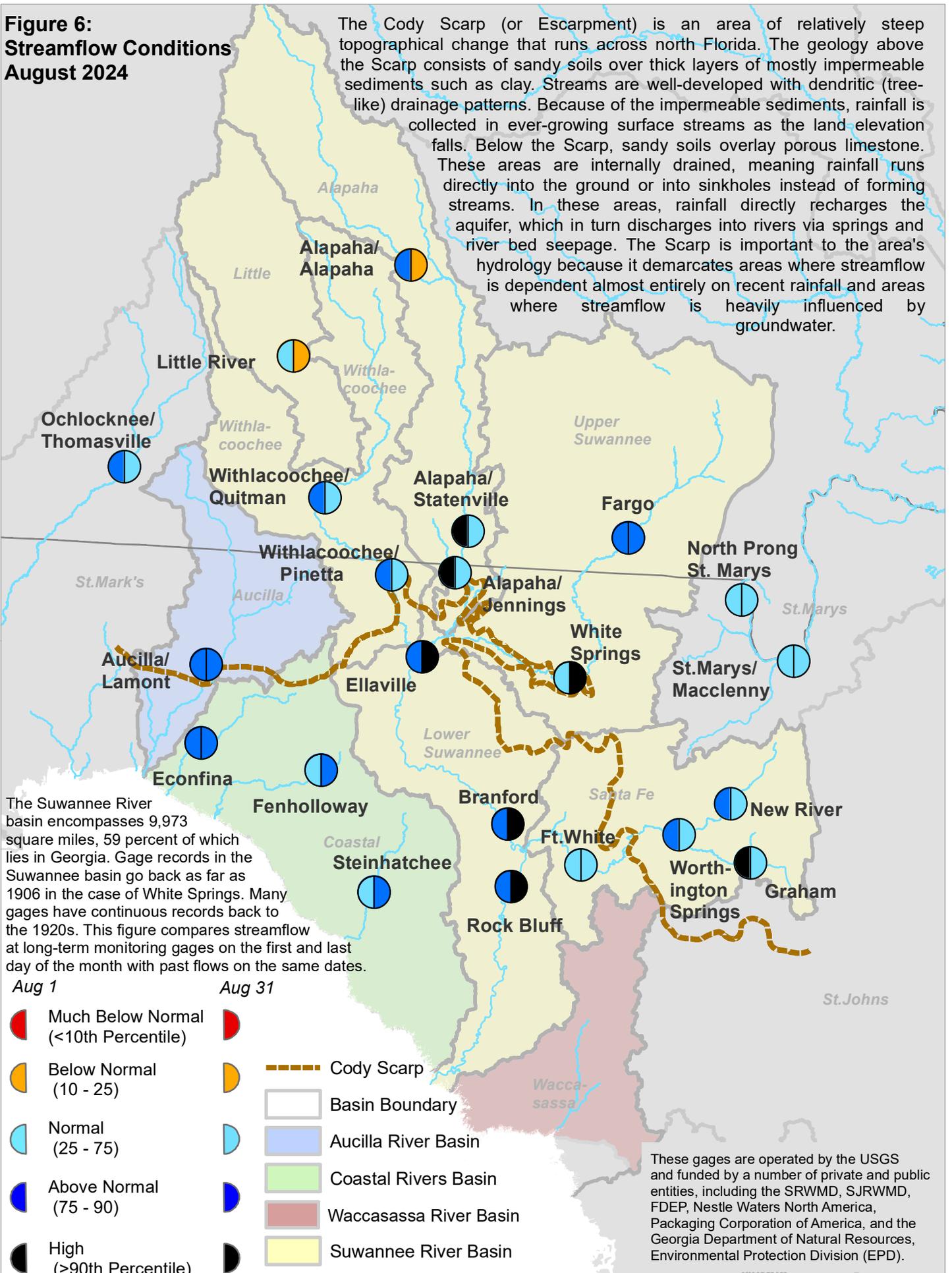
Figure 5, cont.: Daily River Flow Statistics

September 1, 2023 through August 31, 2024



**Figure 6:
Streamflow Conditions
August 2024**

The Cody Scarp (or Escarpment) is an area of relatively steep topographical change that runs across north Florida. The geology above the Scarp consists of sandy soils over thick layers of mostly impermeable sediments such as clay. Streams are well-developed with dendritic (tree-like) drainage patterns. Because of the impermeable sediments, rainfall is collected in ever-growing surface streams as the land elevation falls. Below the Scarp, sandy soils overlay porous limestone. These areas are internally drained, meaning rainfall runs directly into the ground or into sinkholes instead of forming streams. In these areas, rainfall directly recharges the aquifer, which in turn discharges into rivers via springs and river bed seepage. The Scarp is important to the area's hydrology because it demarcates areas where streamflow is dependent almost entirely on recent rainfall and areas where streamflow is heavily influenced by groundwater.



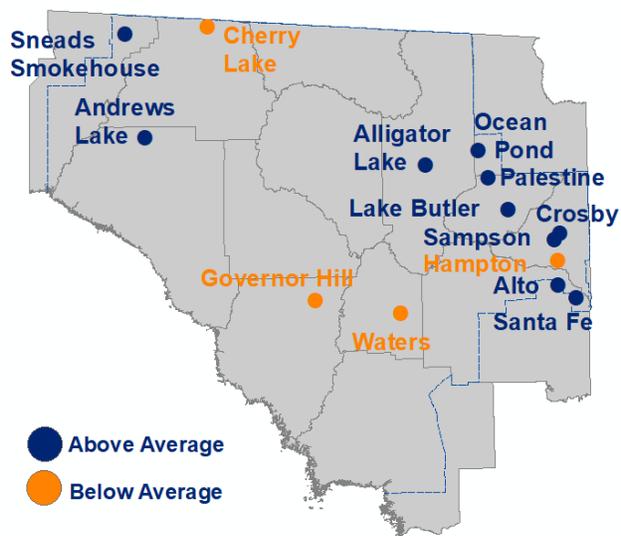
The Suwannee River basin encompasses 9,973 square miles, 59 percent of which lies in Georgia. Gage records in the Suwannee basin go back as far as 1906 in the case of White Springs. Many gages have continuous records back to the 1920s. This figure compares streamflow at long-term monitoring gages on the first and last day of the month with past flows on the same dates.

- | | |
|--------------------------------------|---------------|
| Aug 1 | Aug 31 |
| | |
| Much Below Normal (<10th Percentile) | |
| | |
| Below Normal (10 - 25) | |
| | |
| Normal (25 - 75) | |
| | |
| Above Normal (75 - 90) | |
| | |
| High (>90th Percentile) | |

- Cody Scarp
- Basin Boundary
- Aucilla River Basin
- Coastal Rivers Basin
- Waccasassa River Basin
- Suwannee River Basin

These gages are operated by the USGS and funded by a number of private and public entities, including the SRWMD, SJRWMD, FDEP, Nestle Waters North America, Packaging Corporation of America, and the Georgia Department of Natural Resources, Environmental Protection Division (EPD).

Figure 7: August 2024 Lake Levels



SRWMD lakes react differently to climatic changes depending on their location in the landscape. Some lakes, in particular in the eastern part of the District, are embedded in a surficial or intermediate aquifer over relatively impermeable clay deposits. These lakes rise and fall according to local rainfall and surface runoff. They retain water during severe droughts since most losses occur from evaporation. Other lakes, such as Governor Hill and Waters Lake, have porous or “leaky” bottoms that interact with the Floridan aquifer. These lakes depend on groundwater levels to stay high. If aquifer levels are low, these lakes go dry even if rainfall is normal.

The District currently monitors 14 lakes on a long-term basis; much of the data was originally provided by volunteer observers. Monitoring records began in the 1970s, except for Lakes Butler, Sampson, and Santa Fe, which started in 1957.

Feet Above or Below Historic Average

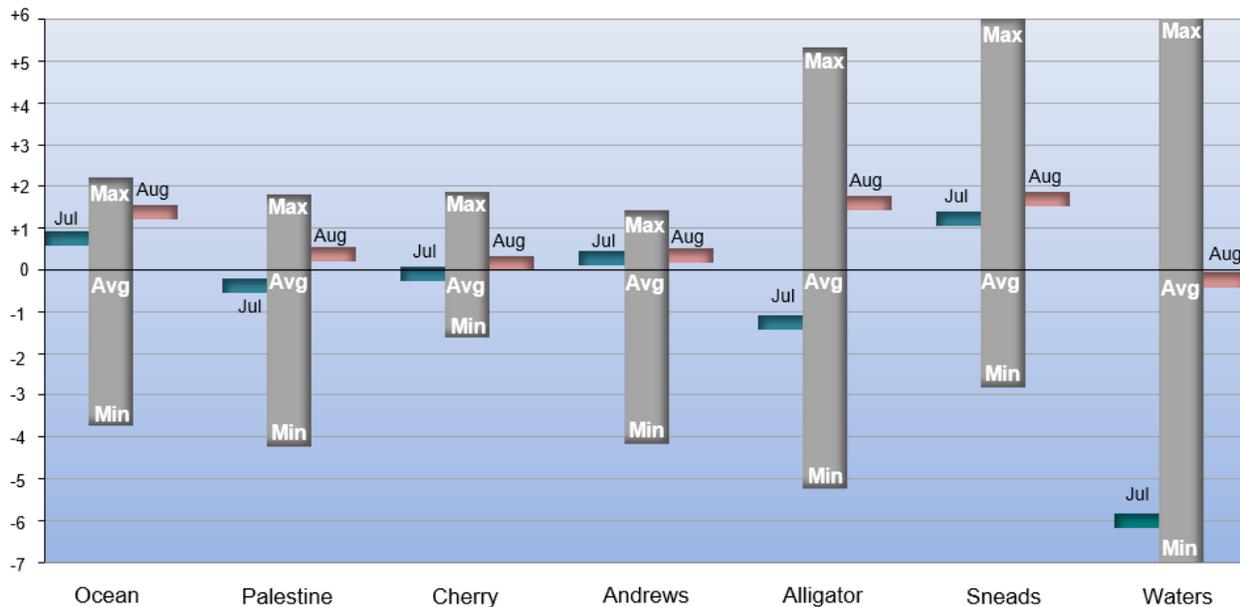
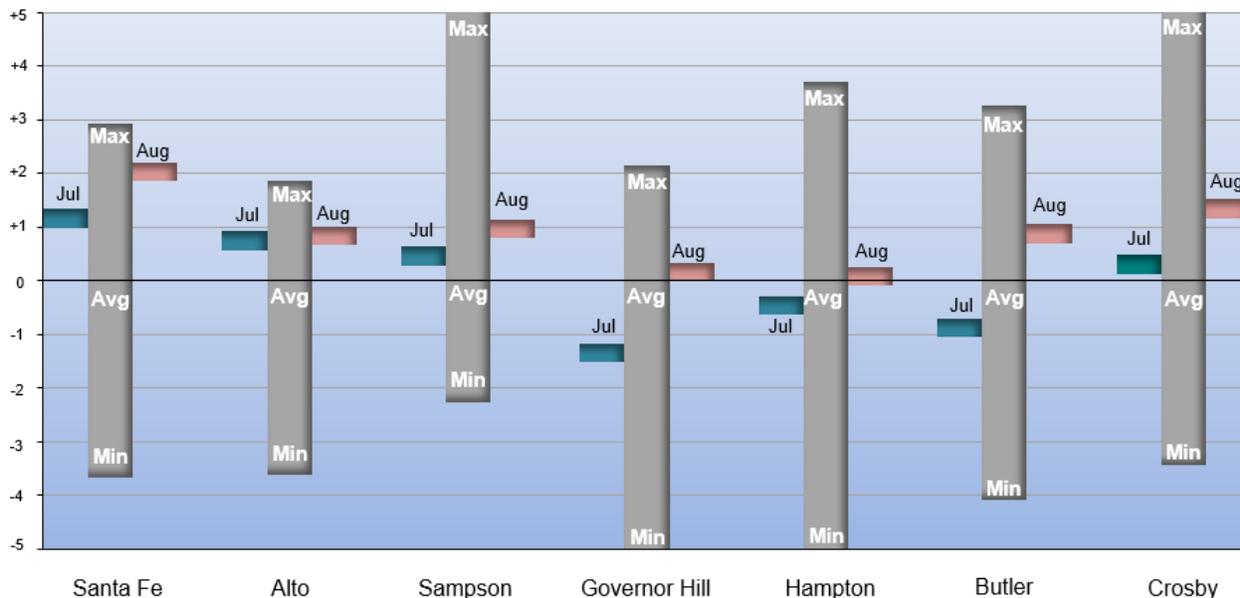


Figure 8: Flow Over the Past 12 Months, Wacissa River (cubic feet per second)

Note: This graph is based on provisional data that are subject to revision

Period 12 Month 09/01/2023 to 09/01/2024

2023-24

Percentile statistics are calculated using data from 06/04/1971 to 09/30/2022

Wacissa

- Max-Q75
- Q75-Q25
- Q25-Q10
- Q10-Min
- Archived Data
- Provisional Data

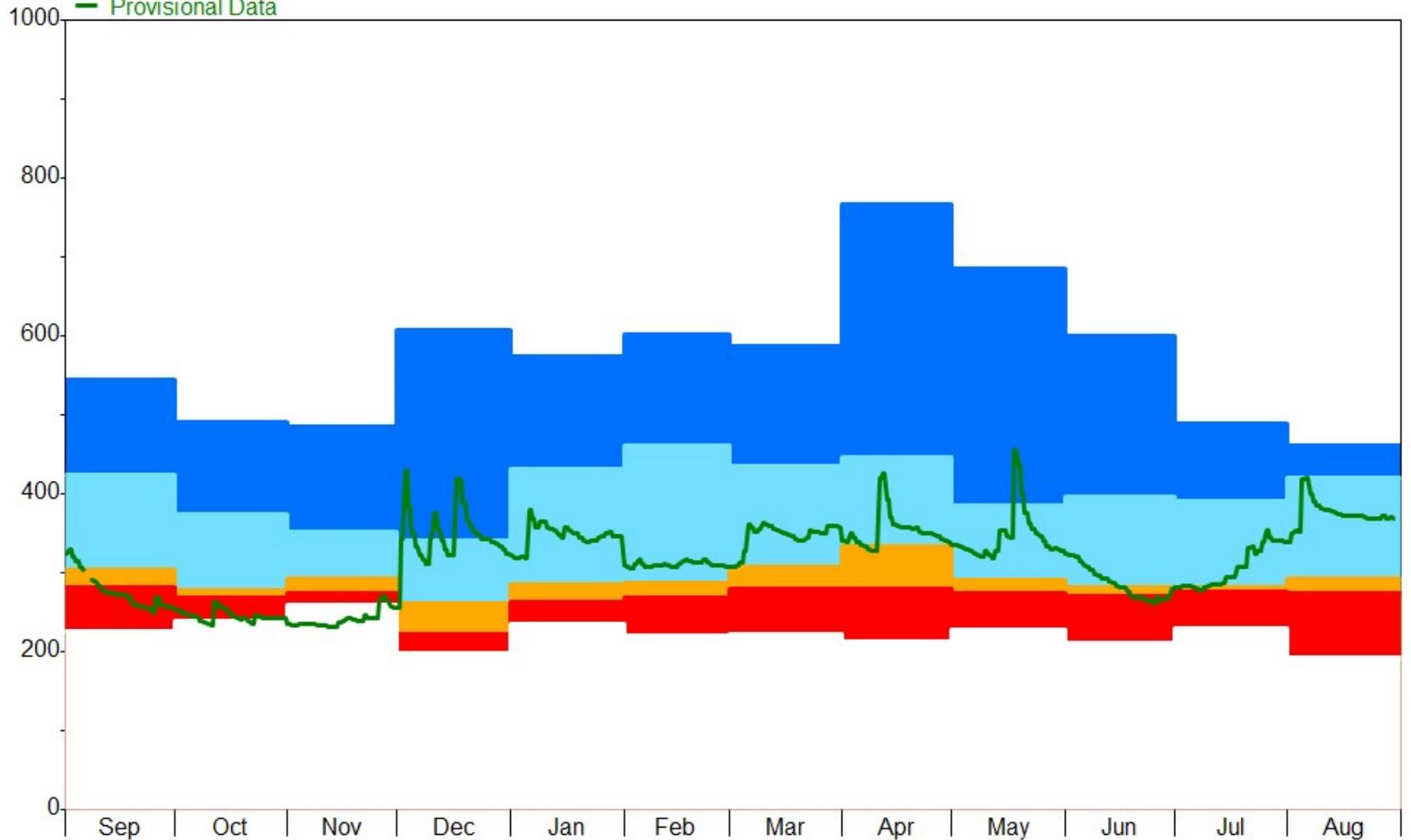


Figure 9: Flow Over the Past 12 Months, Blue Hole (cubic feet per second)

Note: This graph is based on provisional data that are subject to revision

Period 12 Month 09/01/2023 to 09/01/2024

2023-24

Percentile statistics are calculated using data from 05/01/1946 to 09/30/2022

Blue_Hole

■ Max-Q75

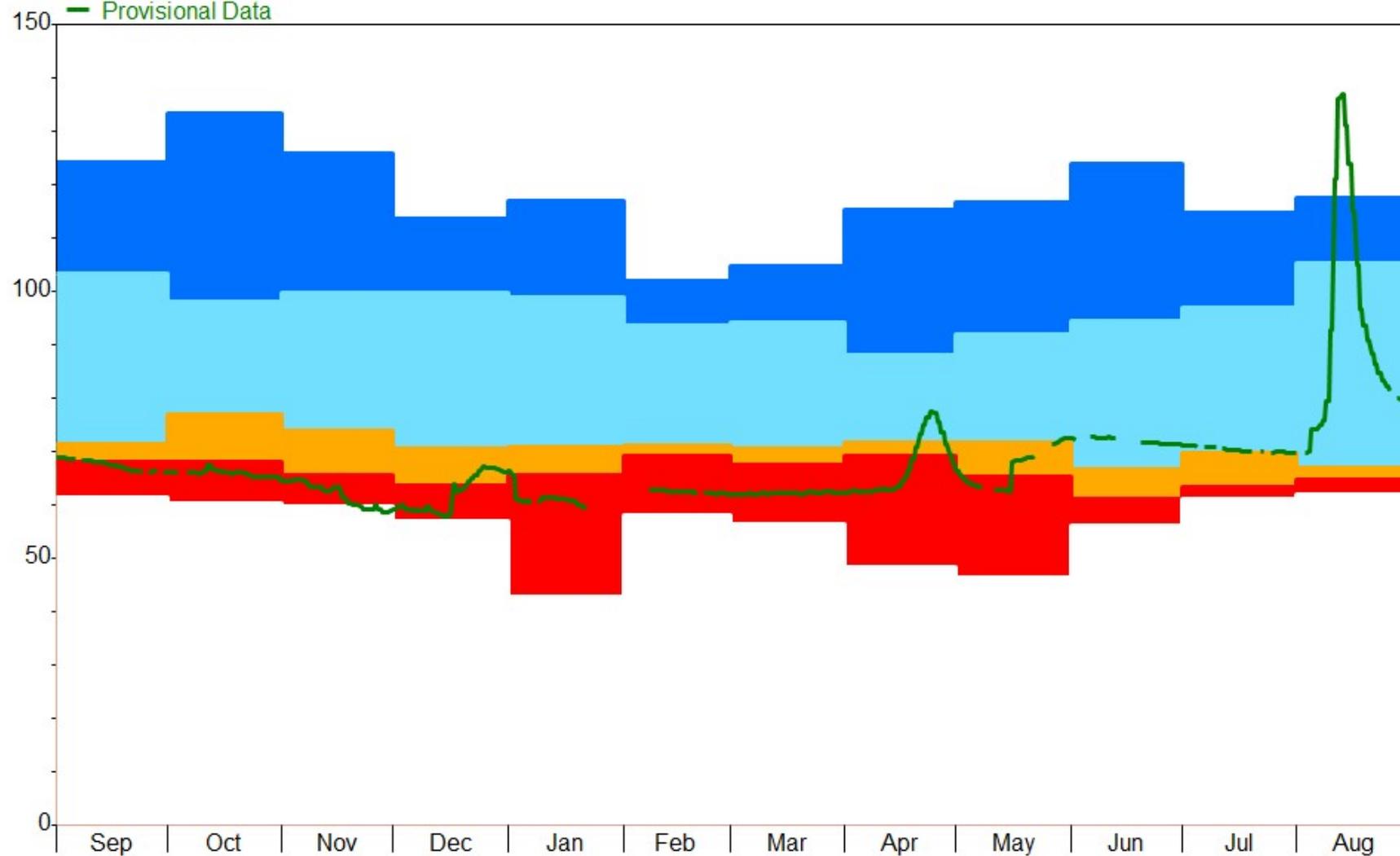
■ Q75-Q25

■ Q25-Q10

■ Q10-Min

— Archived Data

— Provisional Data



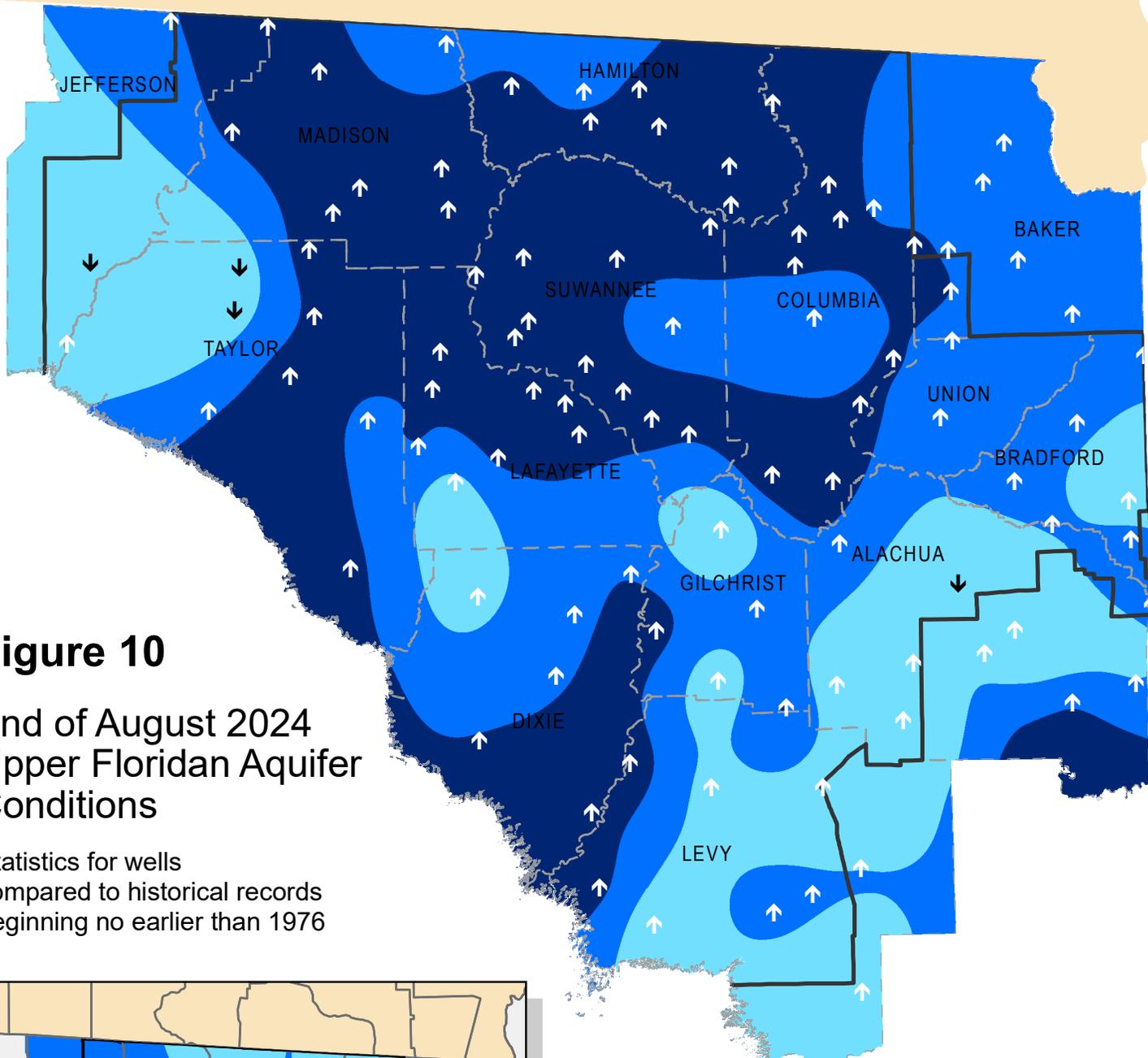
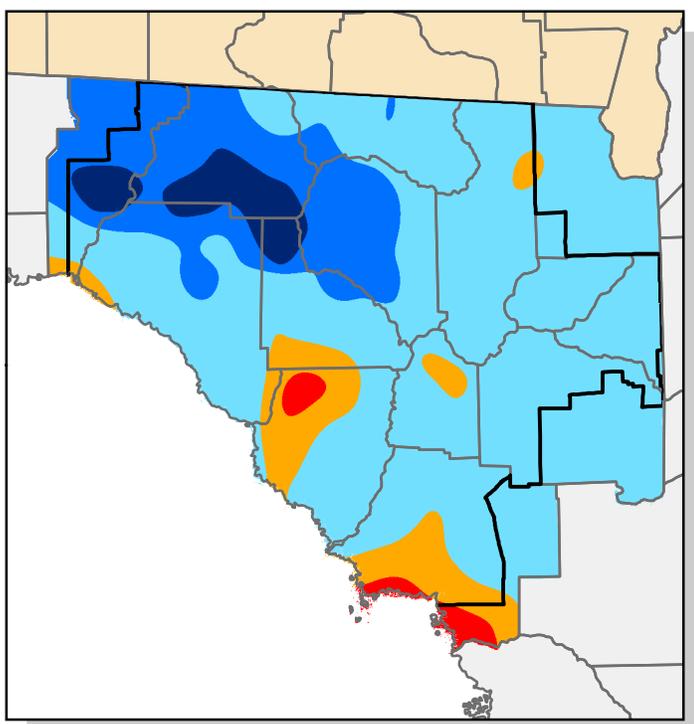


Figure 10

End of August 2024 Upper Floridan Aquifer Conditions

Statistics for wells compared to historical records beginning no earlier than 1976



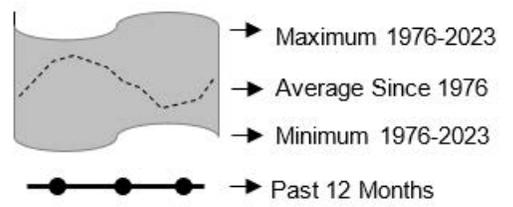
Inset: July Groundwater Percentiles

Additional wells courtesy of SJRWMD, SWFWMD and USGS

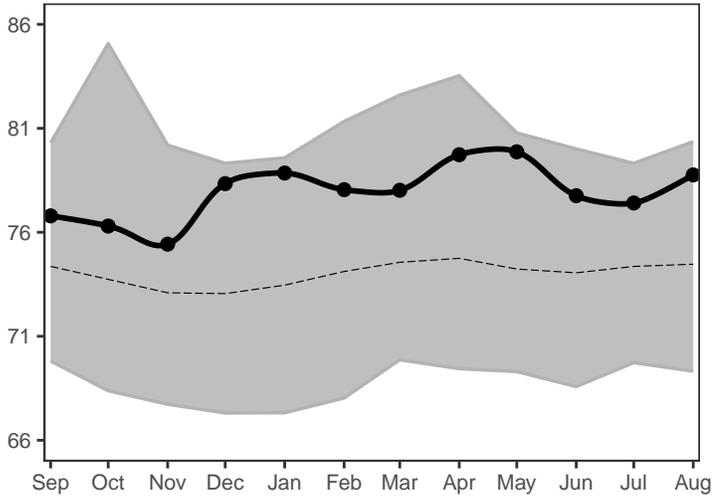
	Extremely High (Greater than 90th Percentile)
	High (75th to 90th Percentile)
	Normal (25th to 75th Percentile)
	Low (10th to 25th Percentile)
	Extremely Low (Less than 10th Percentile)
	Increase/decrease in level since last month
	
	Increase/decrease since last month less than one percent of historic range
	District Boundary

Figure 11: Monthly Groundwater Statistics

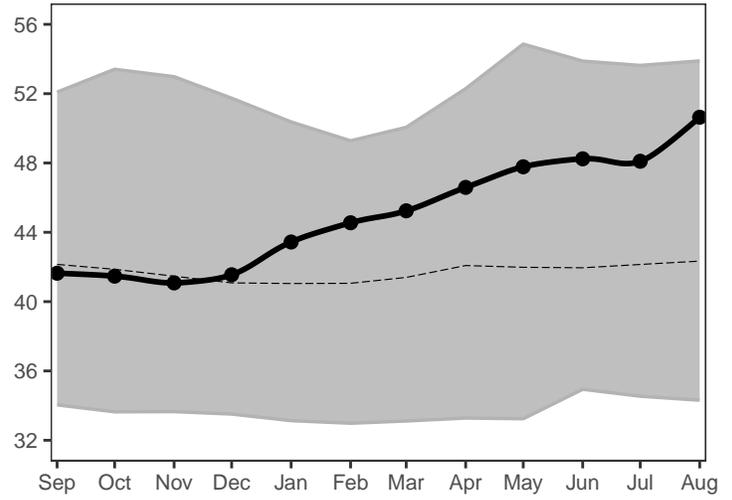
Levels September 2023 through August 2024
 Period of Record Beginning 1976



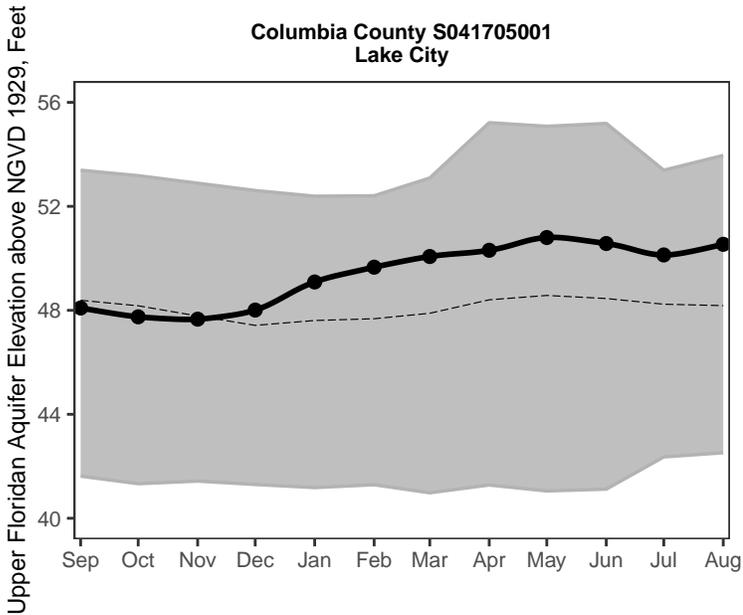
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near Greenville



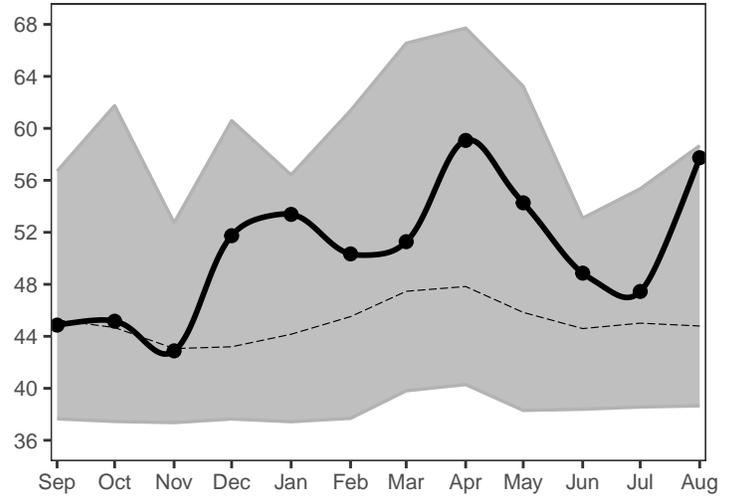
Suwannee County S021335001
near Live Oak



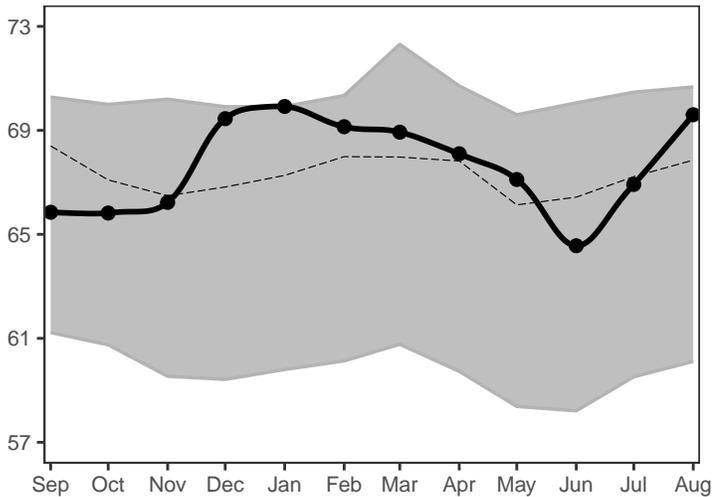
Columbia County S041705001
Lake City



Hamilton County N011422007
near Jasper



Lafayette County S061114001
near Mayo



Taylor County S040736005
Perry

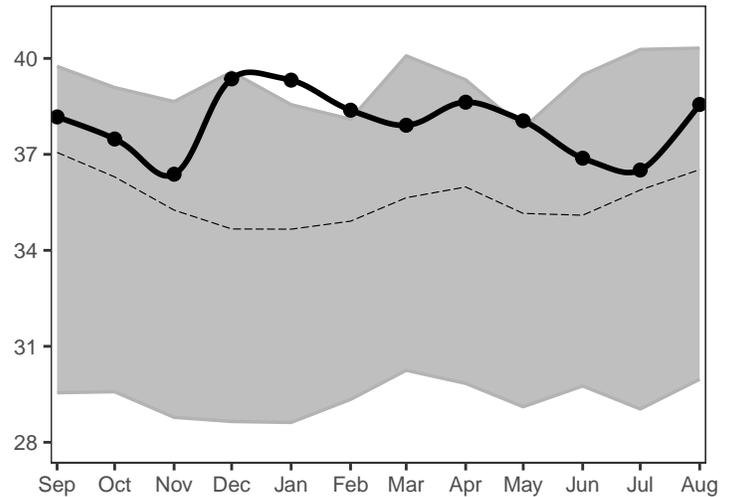
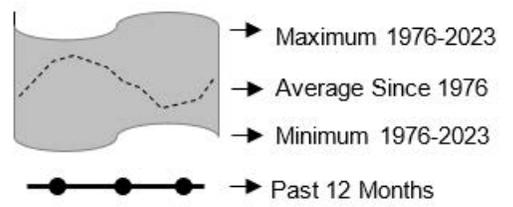
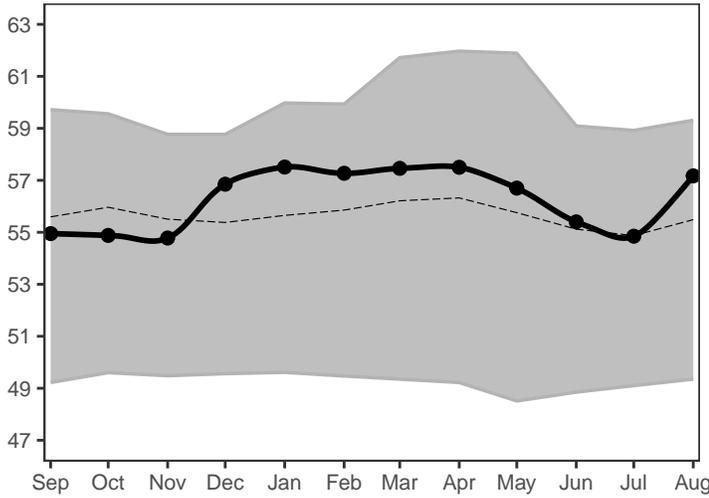


Figure 11, cont.: Monthly Groundwater Statistics

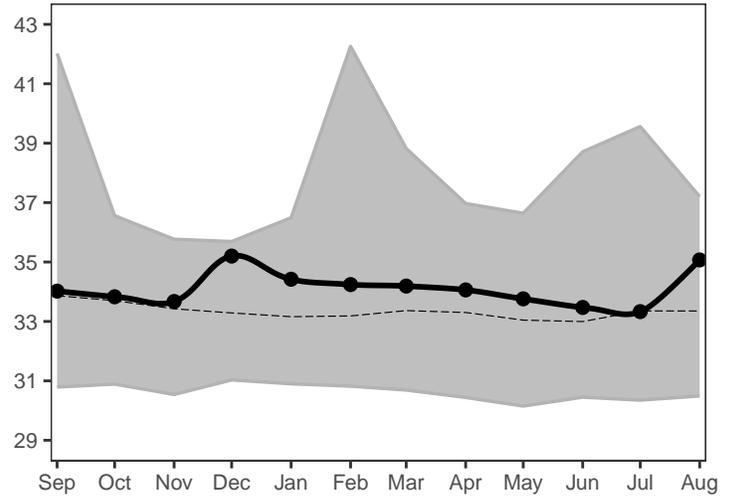
Levels September 2023 through August 2024
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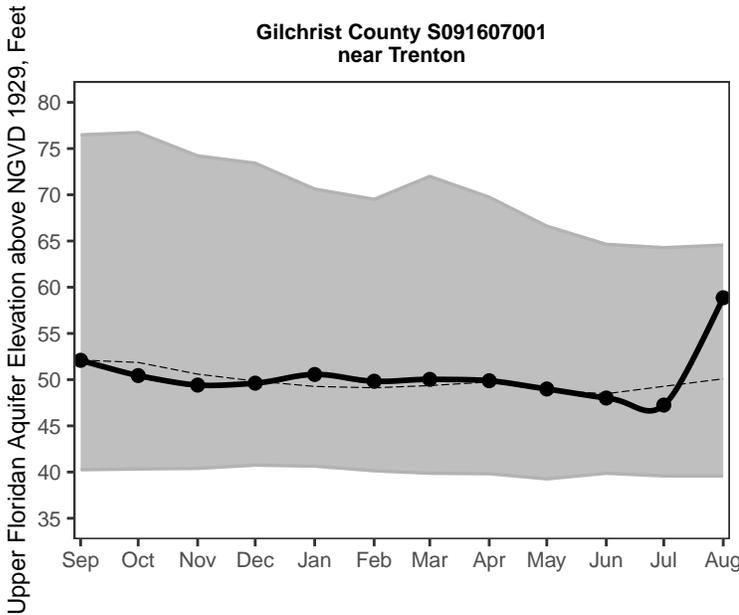
Union County S051933001
near Lake Butler



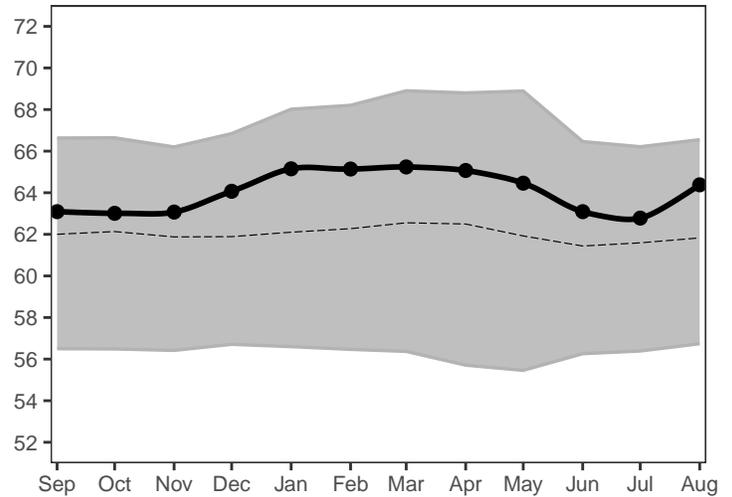
Alachua County S081703001
at High Springs



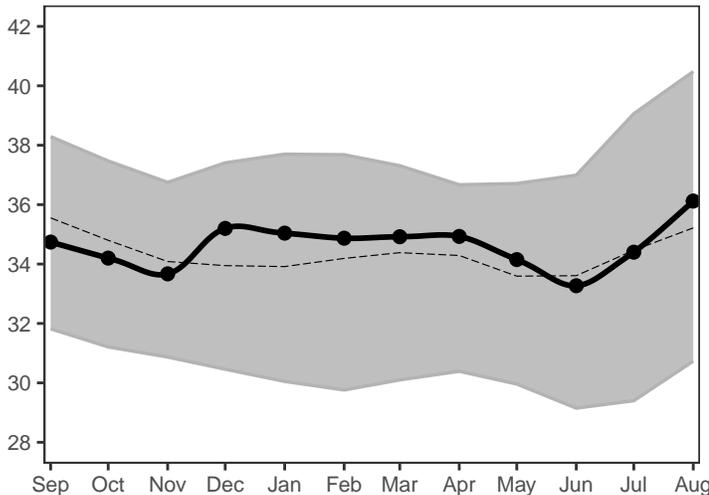
Gilchrist County S091607001
near Trenton



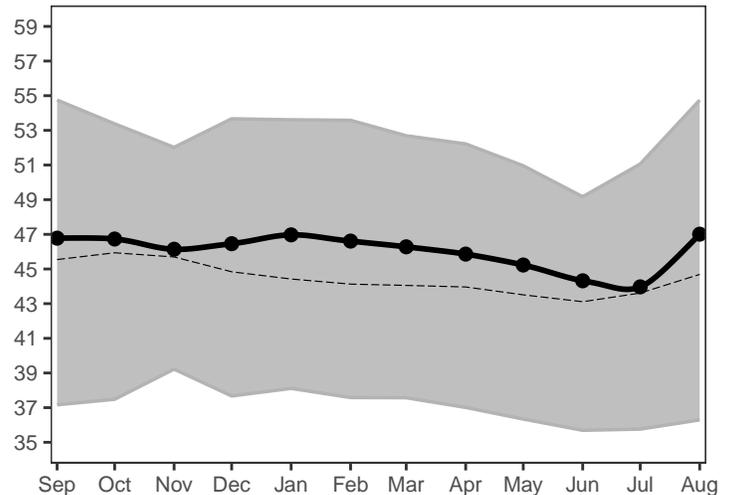
Bradford County S072132001
near Graham

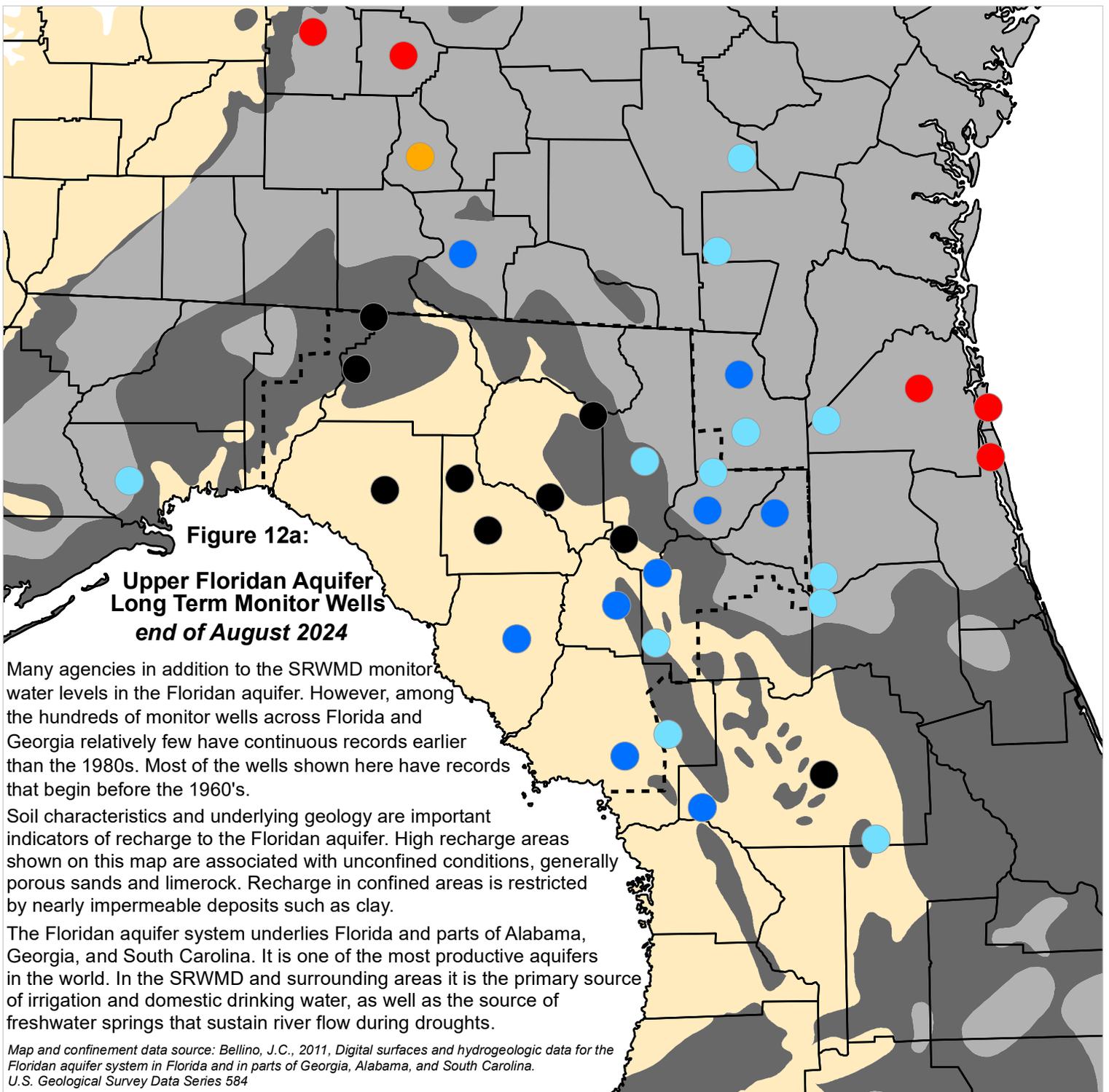


Dixie County S101210001
at Cross City



Levy County S131736001
near Bronson





Occurrence of Confined and Unconfined Conditions in the Upper Floridan Aquifer

-  Confined: Upper confining unit is generally greater than 100 feet thick and unbreached. Recharge is low.
-  Semi-confined: Upper confining unit is generally less than 100 feet thick, breached, or both. Recharge is moderate.
-  Unconfined: Upper confining unit is absent or very thin. Recharge is high.
-  SRWMD Boundary

Percentile of Most Recent Water Level Relative to Entire Record

-  Very High (Greater than 90th Percentile)
-  High (75th to 90th Percentile)
-  Normal (25th to 75th Percentile)
-  Low (10th to 25th Percentile)
-  Very Low (Less than 10th Percentile)
-  Data Not Available

Figure 12b: Regional Long Term Upper Floridan Aquifer Levels

Data through August 2024

