

## 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: March 31, 2024

RE: March 2024 Hydrologic Conditions Report

#### RAINFALL

- Districtwide average rainfall for the month was 4.77", which is about 8 percent higher than the 1932-2023 average of 4.43" (Table 1, Figure 1). The 12-month period ending March 31 reflected a Districtwide rainfall surplus of 5.29", which was a slight increase in the 4.57" surplus seen at the end of February. Most District counties received anywhere between 3" and 7" of rainfall on average, with areas of Suwannee, Hamilton, Jefferson, Taylor, Madison, Columbia, Baker, and Union counties receiving more than 7" of rainfall (Figure 2).
- Overall, a 12-month rainfall surplus was present for each basin except the Santa Fe Basin, which had less than 1" of deficit by month's end (Figure 3). Twelve-month surpluses greater than 14" were represented in many basins. Conversely, a small area of the southern Santa Fe Basin carried forward a 12-month deficit greater than 10". Only the Suwannee Basin showed a 3-month rainfall surplus, with the other 4 basins transitioning from surplus to deficit at the end of March (Figure 4). Portions of the Suwannee Basin also included surpluses greater than 3" for the past 3 months.

#### SURFACE WATER

- **Rivers:** Most of the river stations presented in Figure 5 finished the month in the normal (25<sup>th</sup> – 75<sup>th</sup> percentile) or above normal (75<sup>th</sup> – 100<sup>th</sup> percentile) flow ranges. Both the Alapaha near Jennings and the Withlacoochee near Pinetta began the month in the normal range and ended March with above normal flows (Figure 6). Other District gages were classified as having normal flows at the beginning and end of March. The Ochlocknee near Thomasville, the Little River, the Alapaha near Alapaha, and the Withlacoochee near Quitman each ended the month with either above normal (75<sup>th</sup> – 90<sup>th</sup> percentile) or high (>90<sup>th</sup> percentile) river flows due to increased rainfall in South Georgia.
- **Lakes:** Water levels increased slightly at most of the monitored lakes in the District this month (Figure 7). The median increase in stage across all measured lakes was around 0.1', with only 3 of the lakes ending the month below their respective long-term average. Snead's Smokehouse Lake represented the largest water level increase among lakes this month with a rise of about 0.6'.
- **Springs:** Flow measurements were made during March at 16 springs by the U.S. Geological Survey (USGS), District staff, and contractors. Fanning Springs had flows mostly in the normal range but saw some below normal flows towards the end of the month (Figure 8). Similarly, Manatee Springs had mostly normal flows this month but also showed some above normal flows near the beginning of March (Figure 9).

## **GROUNDWATER**

Upper Floridan Aquifer (UFA) levels across the District reflected normal groundwater levels or higher in March (Figure 10). Wells in Taylor, Madison, Jefferson, Lafayette, Gilchrist, Columbia, Baker, Bradford, and Hamilton counties showed >90<sup>th</sup> percentile levels this month. Overall, groundwater levels increased by a median of 0.2' since the end of February and ended March with a Districtwide average around the 81<sup>st</sup> percentile.

Each index well was higher than its 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 mostly increasing water levels this month relative to last month (Figure 12b).

## **CLIMATE AND DROUGHT OUTLOOK**

A transition from El Niño to ENSO-neutral is likely from April to June 2024 (83% chance) with a 62% chance of a La Niña developing from June to August 2024.

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

The U.S. Drought Monitor report released on April 4, 2024, shows no areas of the District with any drought characteristics.

## **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, Alejandro Arteaga Garcia, Susie Hetrick, Robbie McKinney, and Brandi Sistrunk
- Administrative Support/Document Preparation/IT: Paul Buchanan, 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	March 2024	March Average*	Month % of Normal	Total Last 12 Months	Annual % of Normal*
Alachua	3.13	3.92	80%	53.53	102%
Baker	4.61	4.11	112%	58.35	111%
Bradford	3.66	3.85	95%	55.74	107%
Columbia	5.19	4.31	120%	57.83	109%
Dixie	4.36	4.22	103%	59.78	103%
Gilchrist	3.92	4.11	95%	55.00	101%
Hamilton	6.60	4.65	142%	60.94	117%
Jefferson	5.70	5.16	110%	59.39	106%
Lafayette	4.57	4.38	104%	64.17	116%
Levy	3.40	4.00	85%	57.16	102%
Madison	5.28	4.94	107%	65.14	122%
Suwannee	5.40	4.58	118%	61.15	115%
Taylor	5.25	4.60	114%	63.70	112%
Union	5.11	4.04	127%	56.19	107%

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

March 2024 District Average	4.77
March Long-Term Average (1932-2023)	4.43
Historical 12-month Average (1932-2023)	54.71
Past 12-Month Total	60.00
12-Month Rainfall <b>Surplus/Deficit</b>	<b>5.29</b>

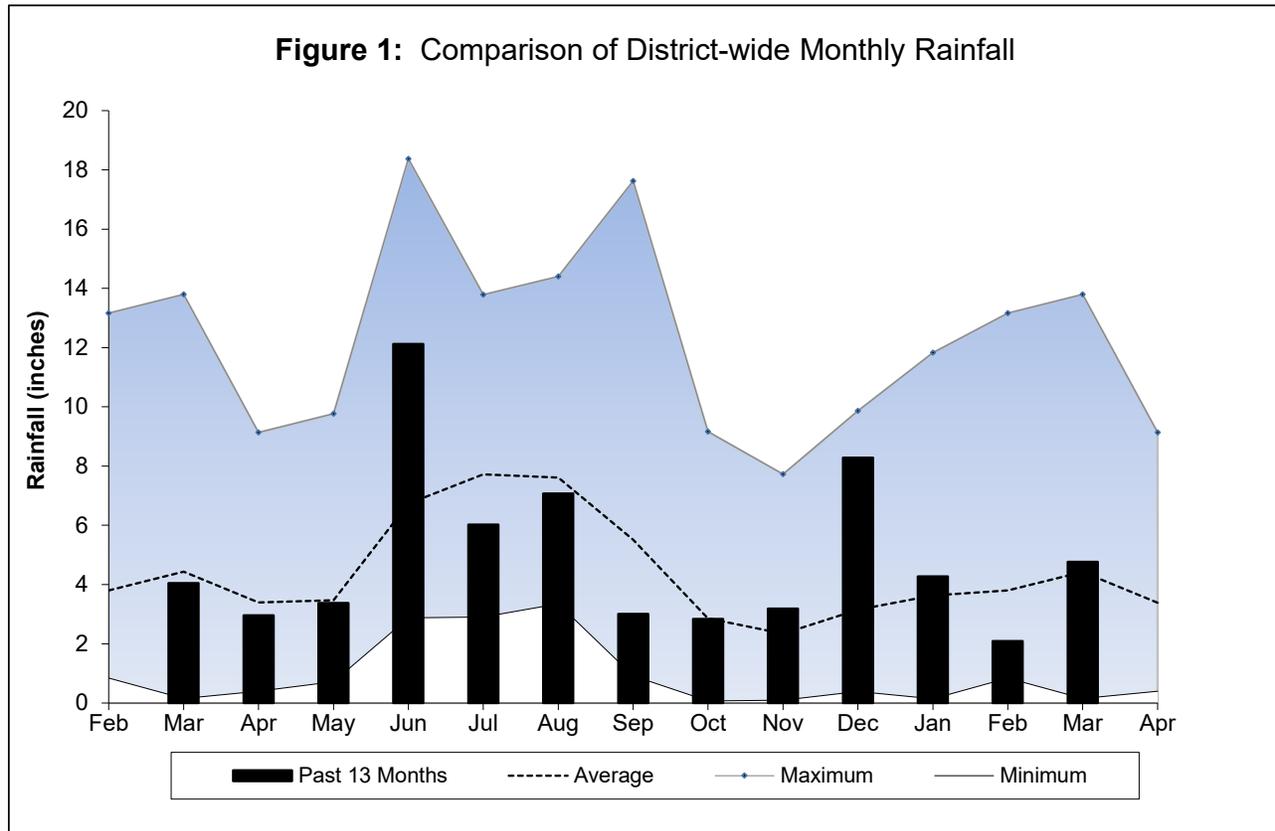
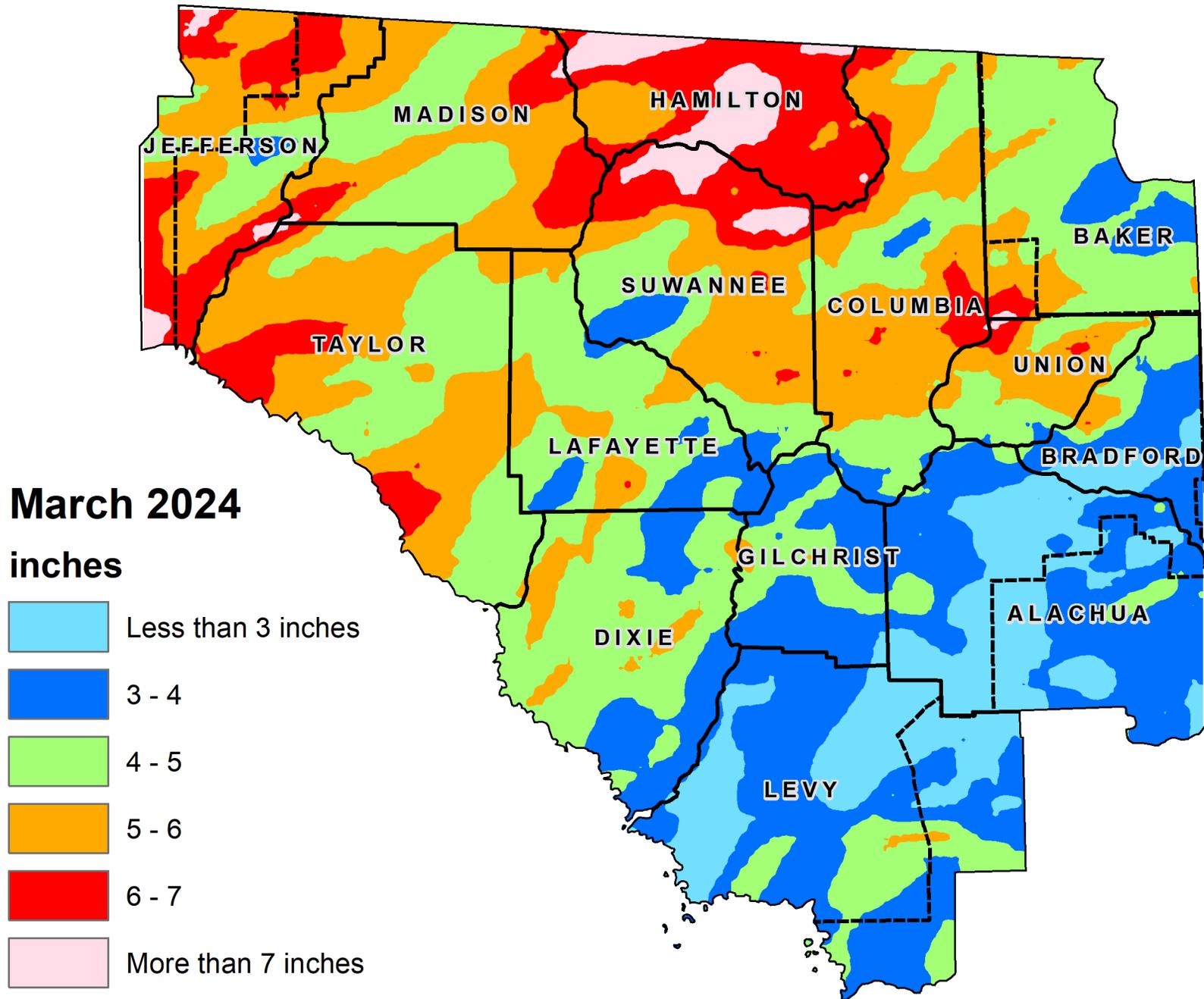
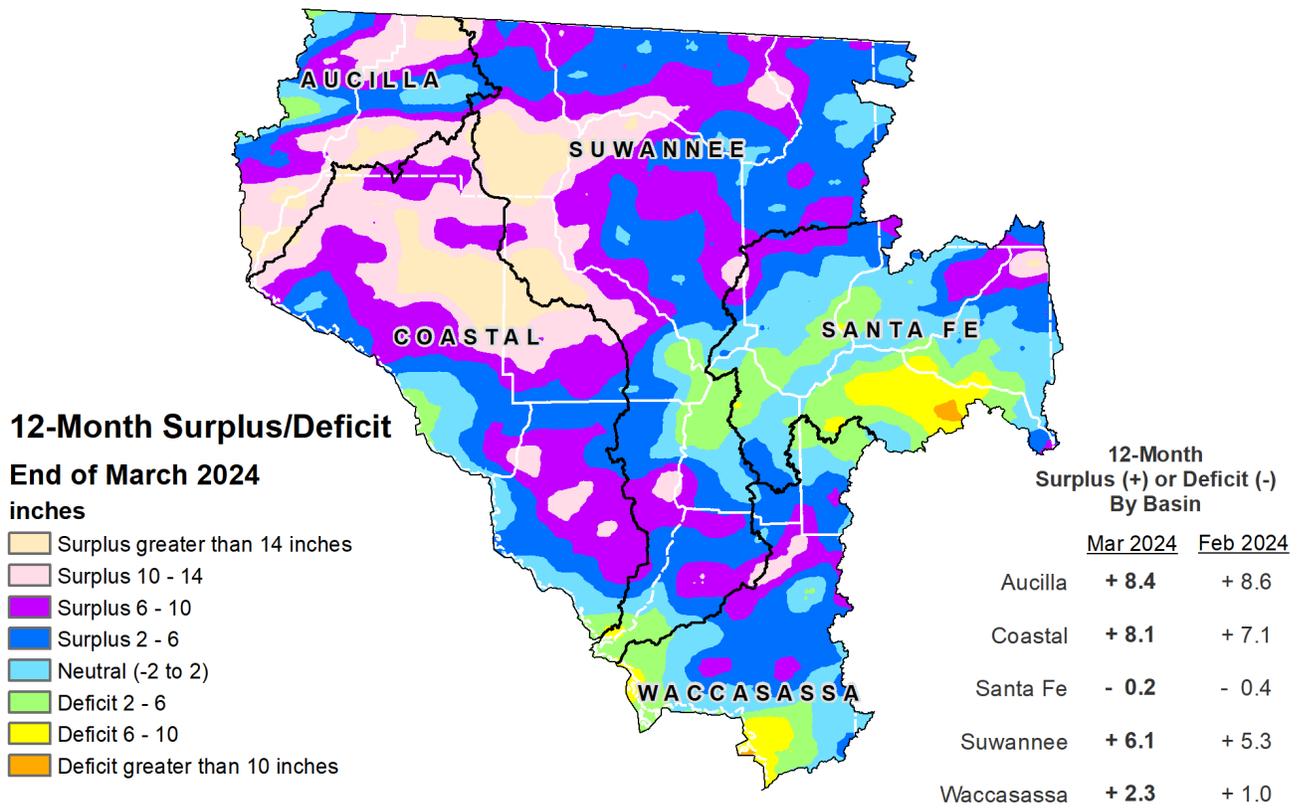


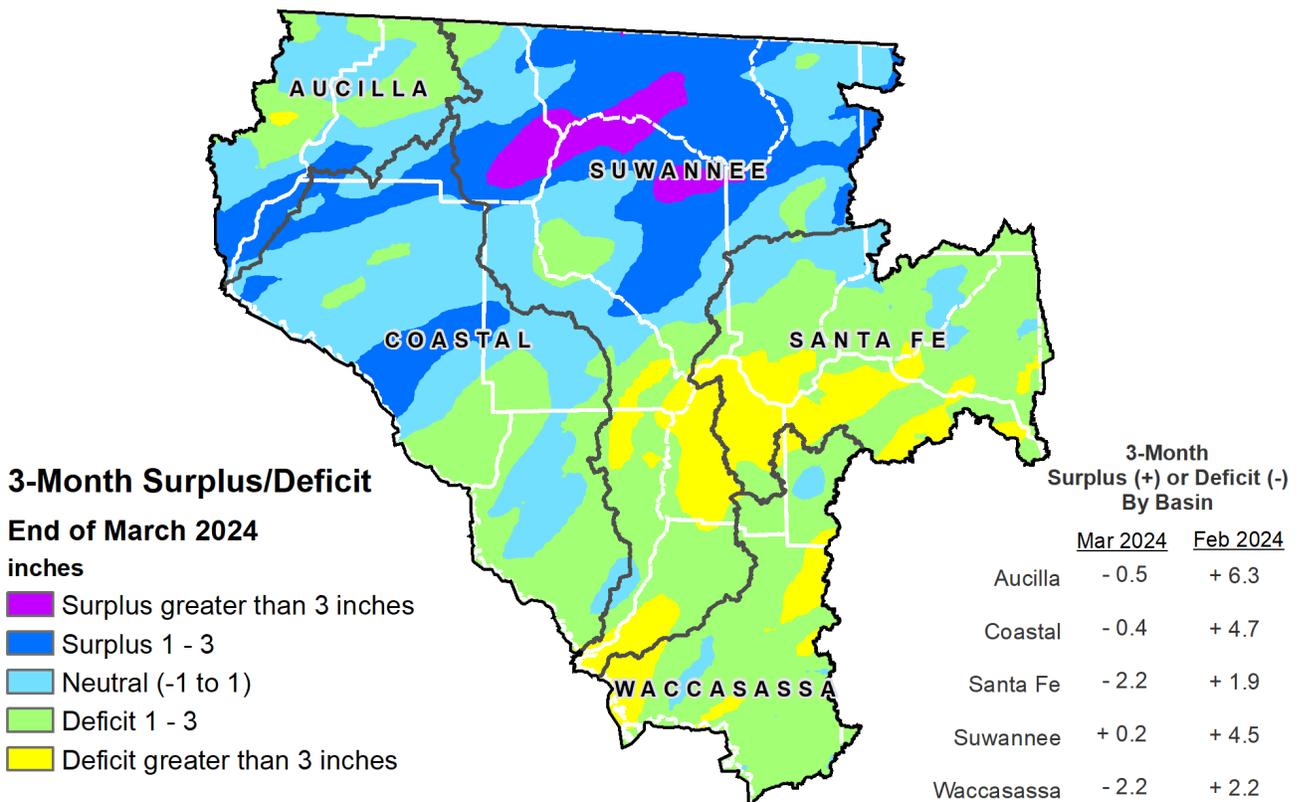
Figure 2: March 2024 SRWMD Gage-adjusted Radar Rainfall



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

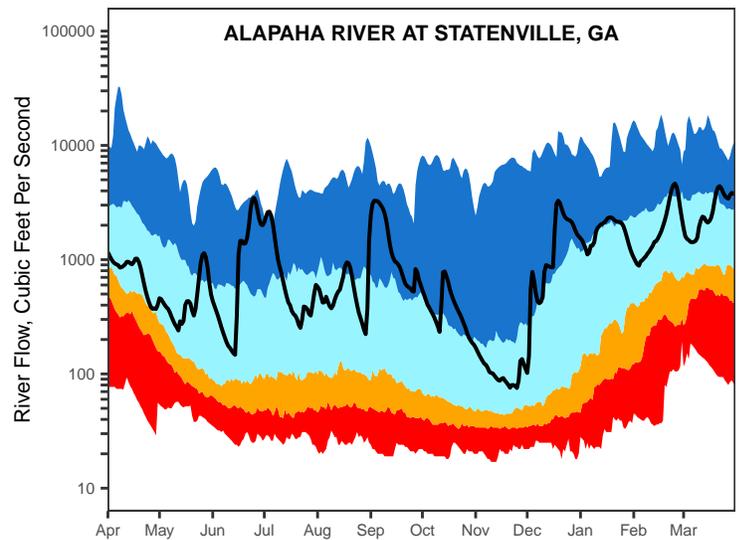
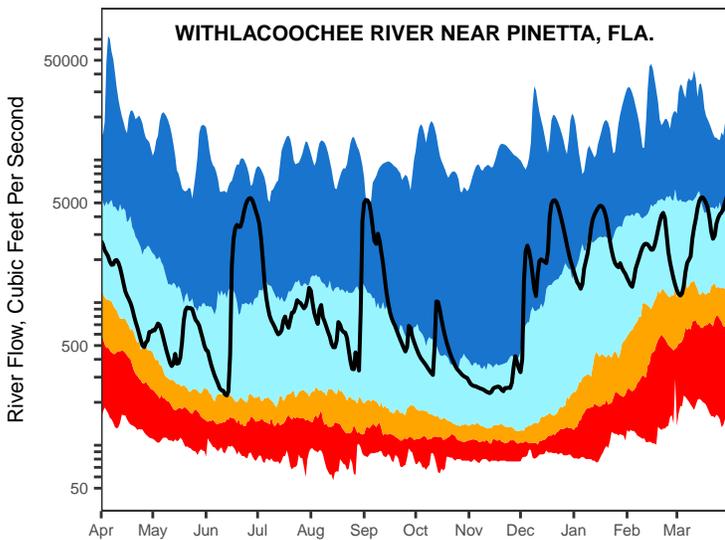
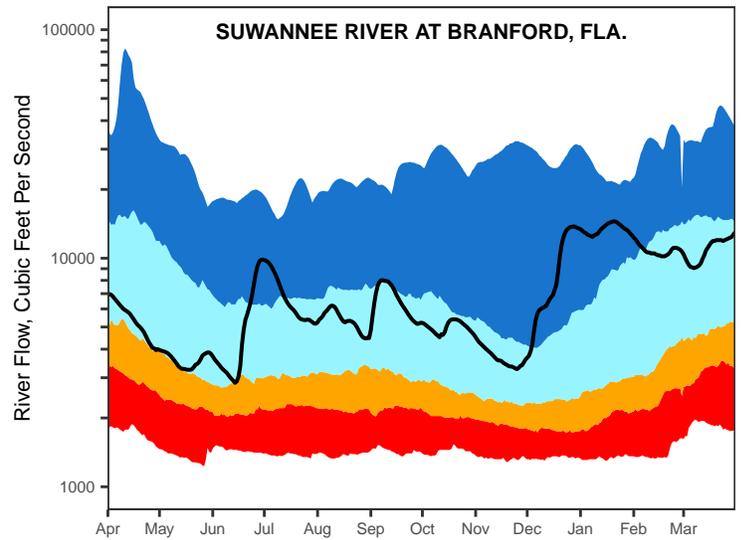
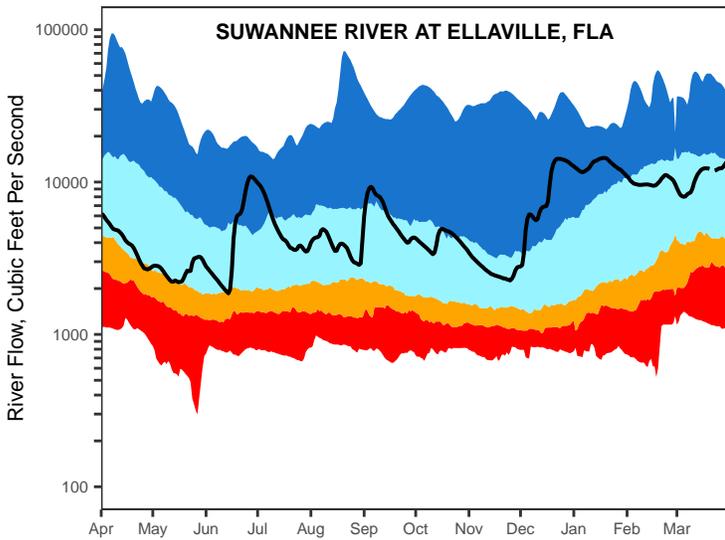
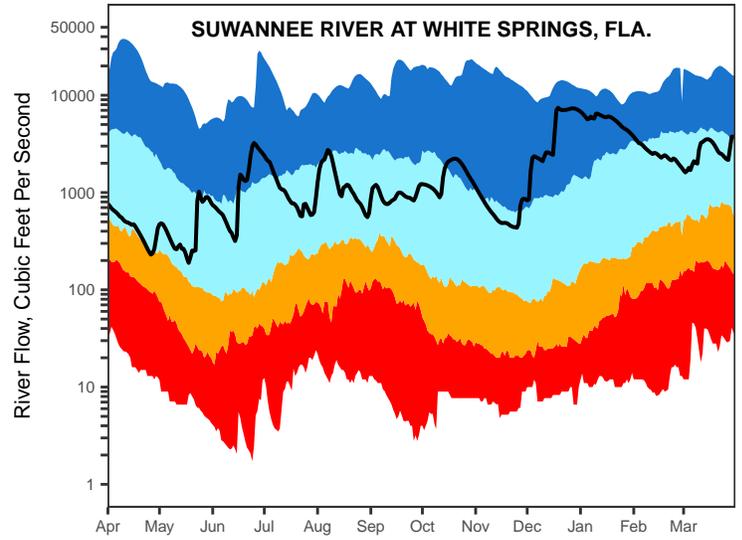
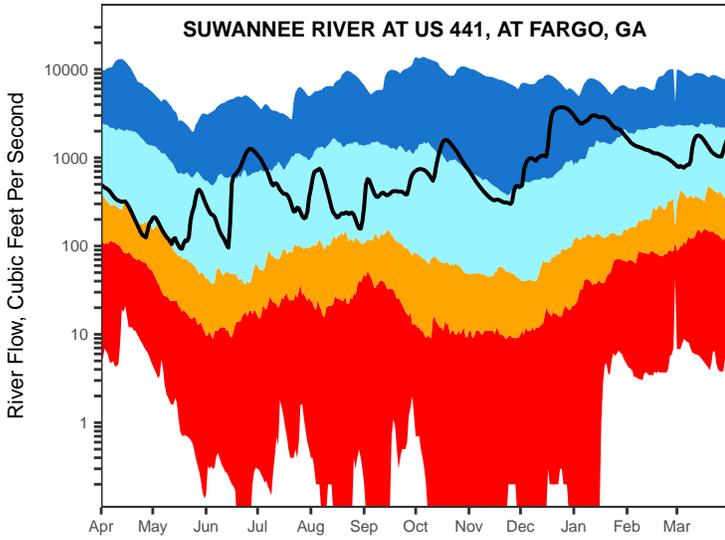
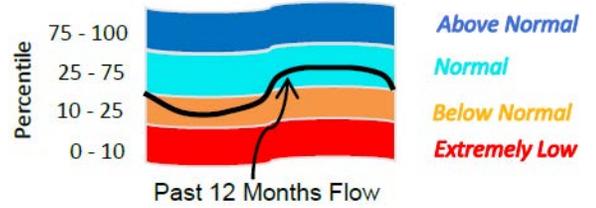


**Figure 4: 3 - Month Rainfall Surplus/Deficit by River Basin through March 31, 2024**



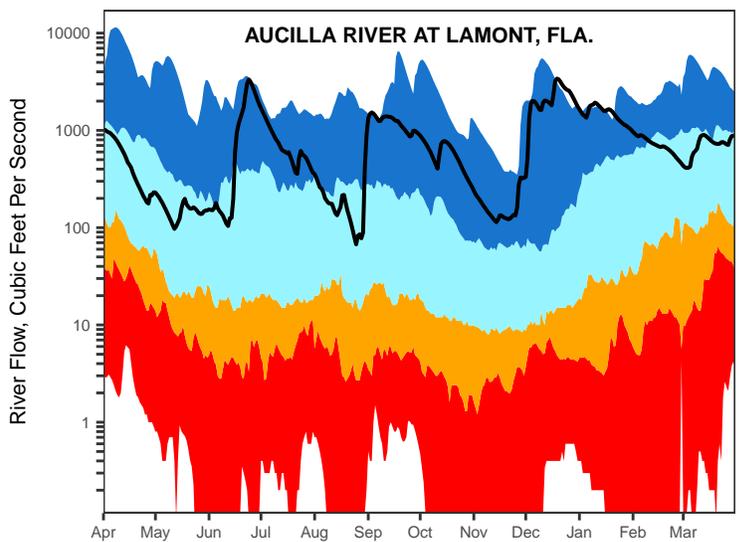
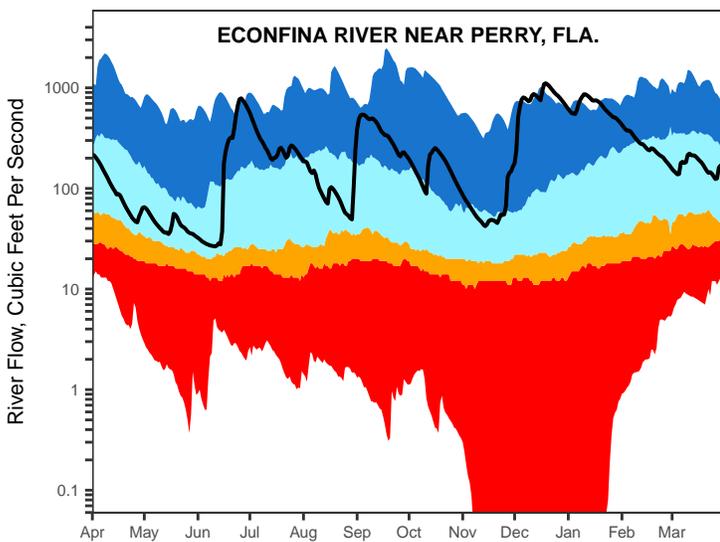
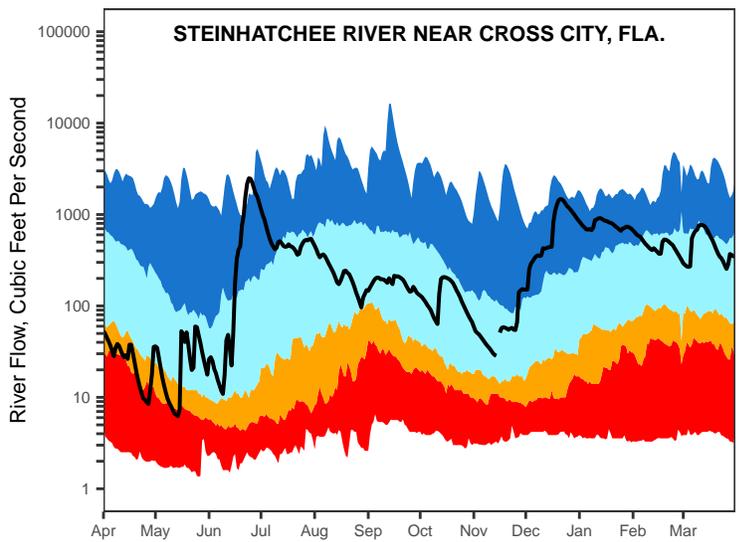
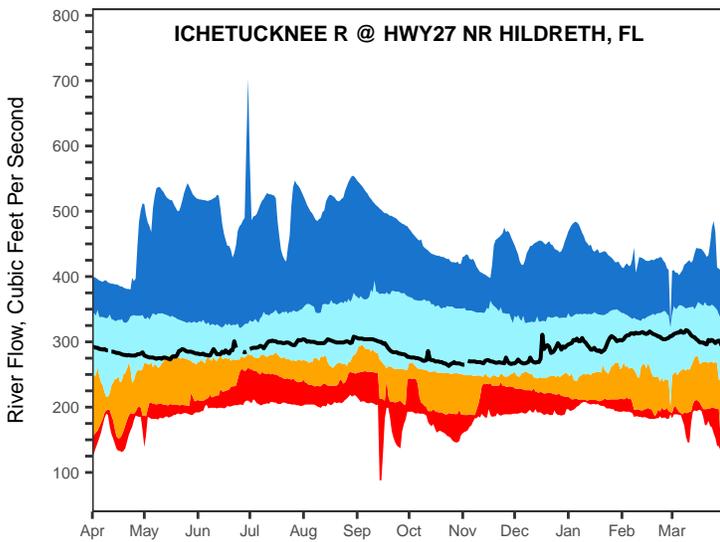
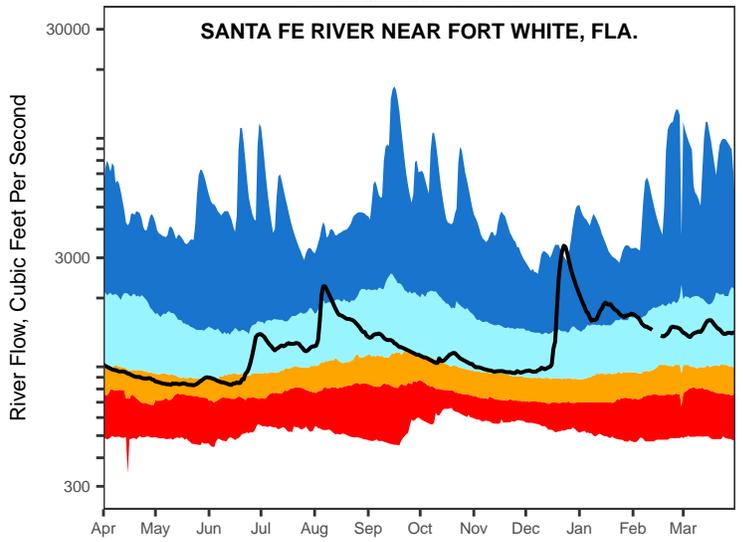
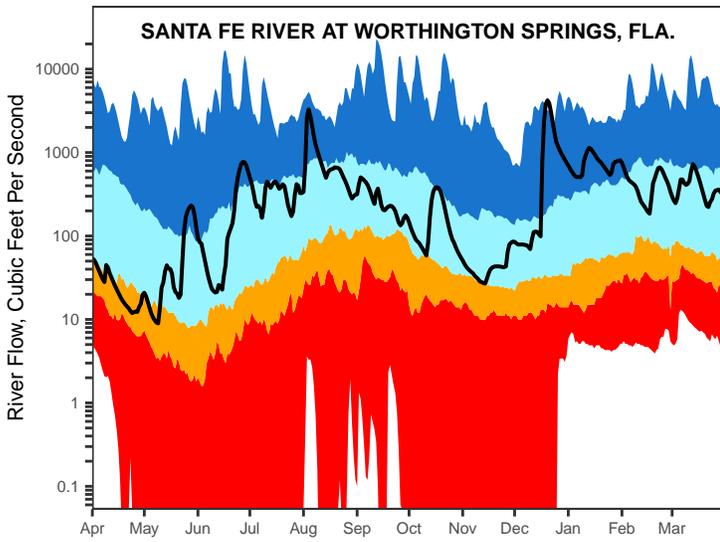
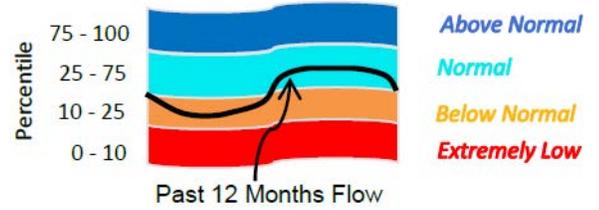
# Figure 5: Daily River Flow Statistics

April 1, 2023 through March 31, 2024



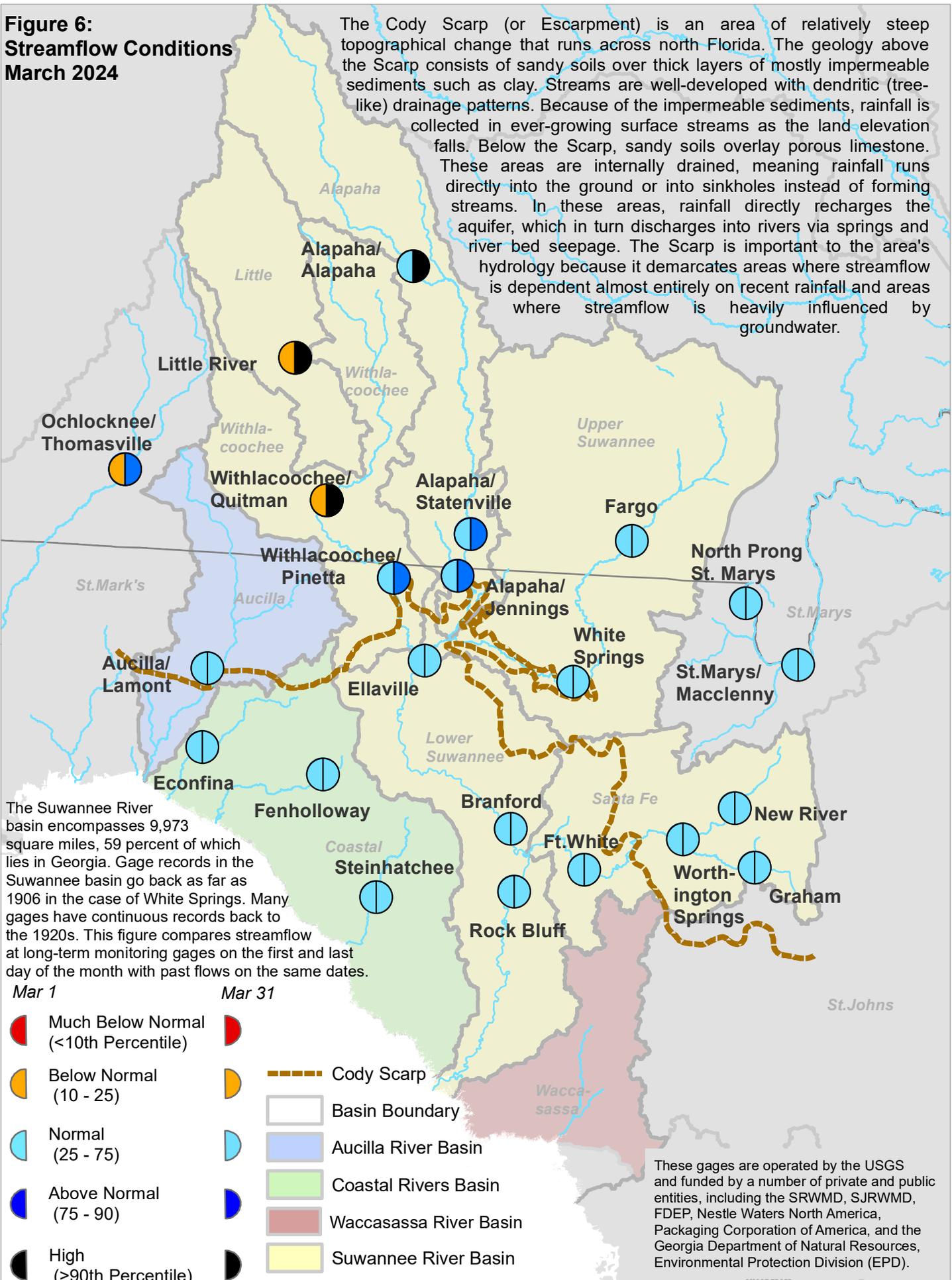
# Figure 5, cont.: Daily River Flow Statistics

April 1, 2023 through March 31, 2024



**Figure 6:  
Streamflow Conditions  
March 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.



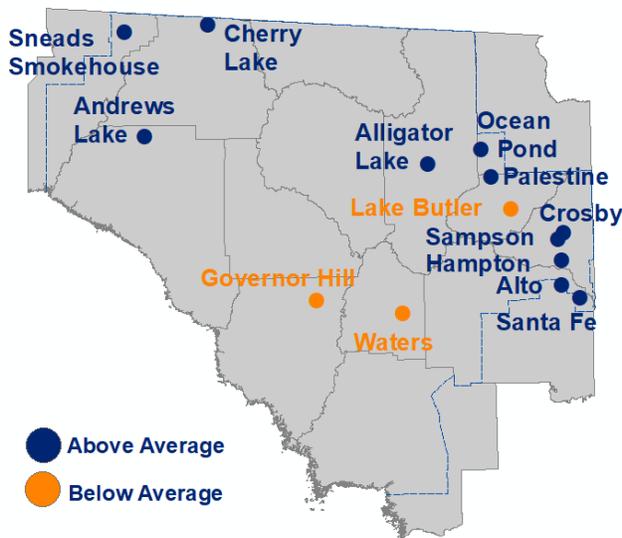
The Suwannee River basin encompasses 9,973 square miles, 59 percent of which lies in Georgia. Gage records in the Suwannee basin go back as far as 1906 in the case of White Springs. Many gages have continuous records back to the 1920s. This figure compares streamflow at long-term monitoring gages on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

- |                                      |        |
|--------------------------------------|--------|
| Mar 1                                | Mar 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).

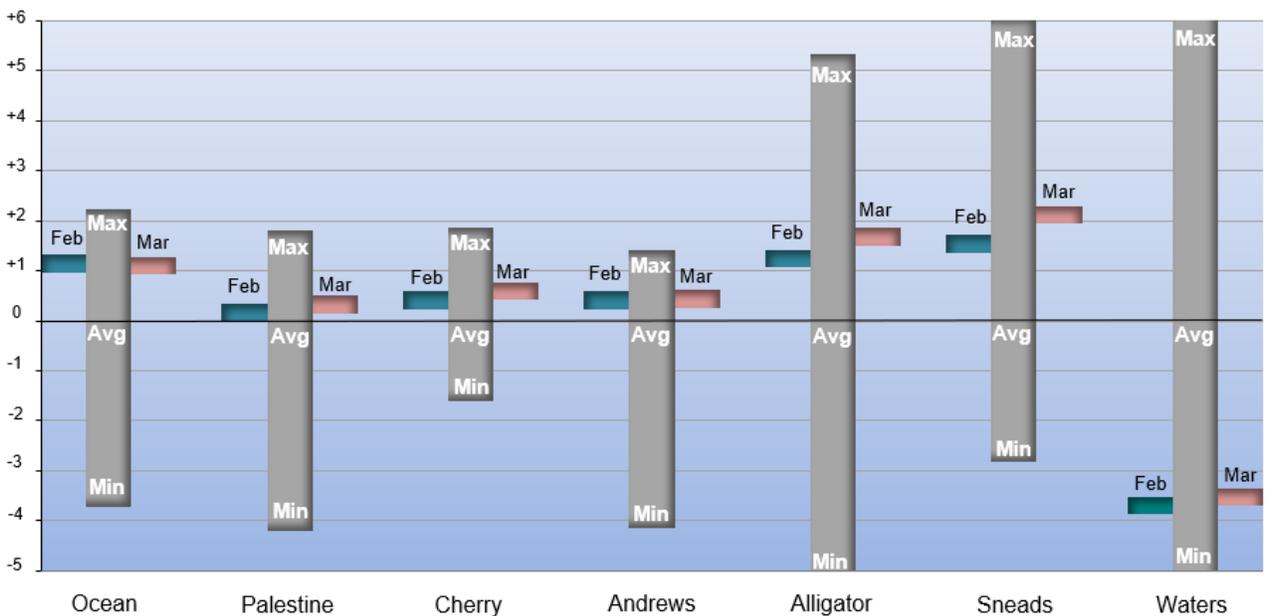
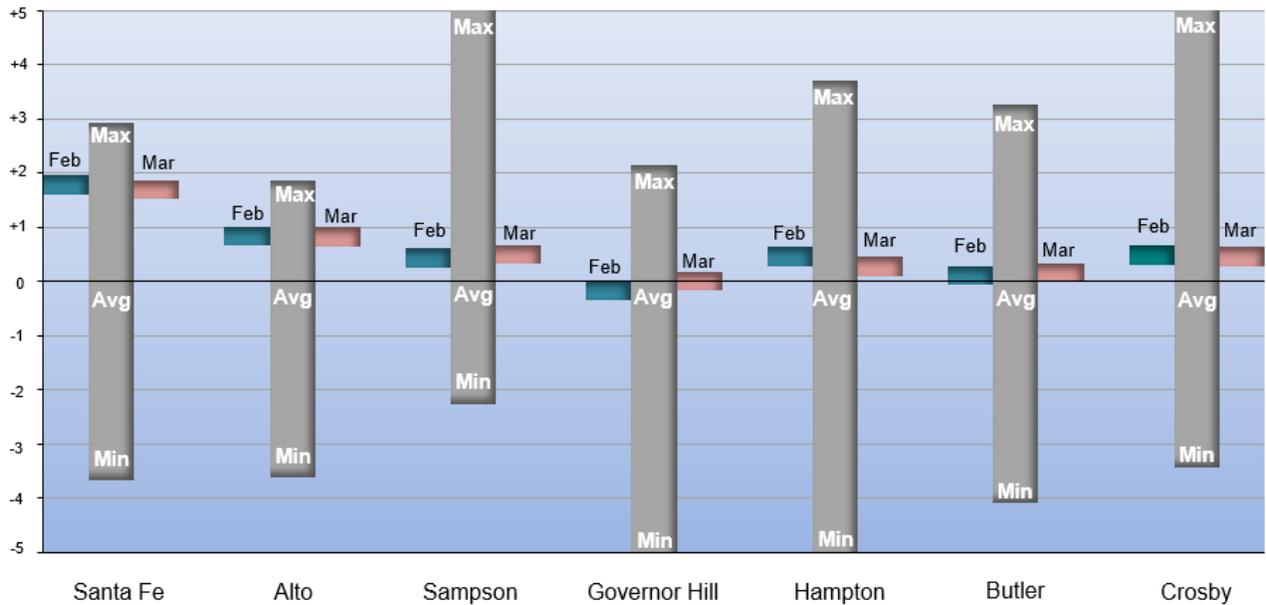
**Figure 7: March 2024 Lake Levels**



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, Fanning Springs (cubic feet per second)

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

Period 12 Month 04/01/2023 to 04/01/2024

2023-24

Percentile statistics are calculated using data from 10/01/1930 to 09/30/2022

Fanning\_spg

■ Max-Q75

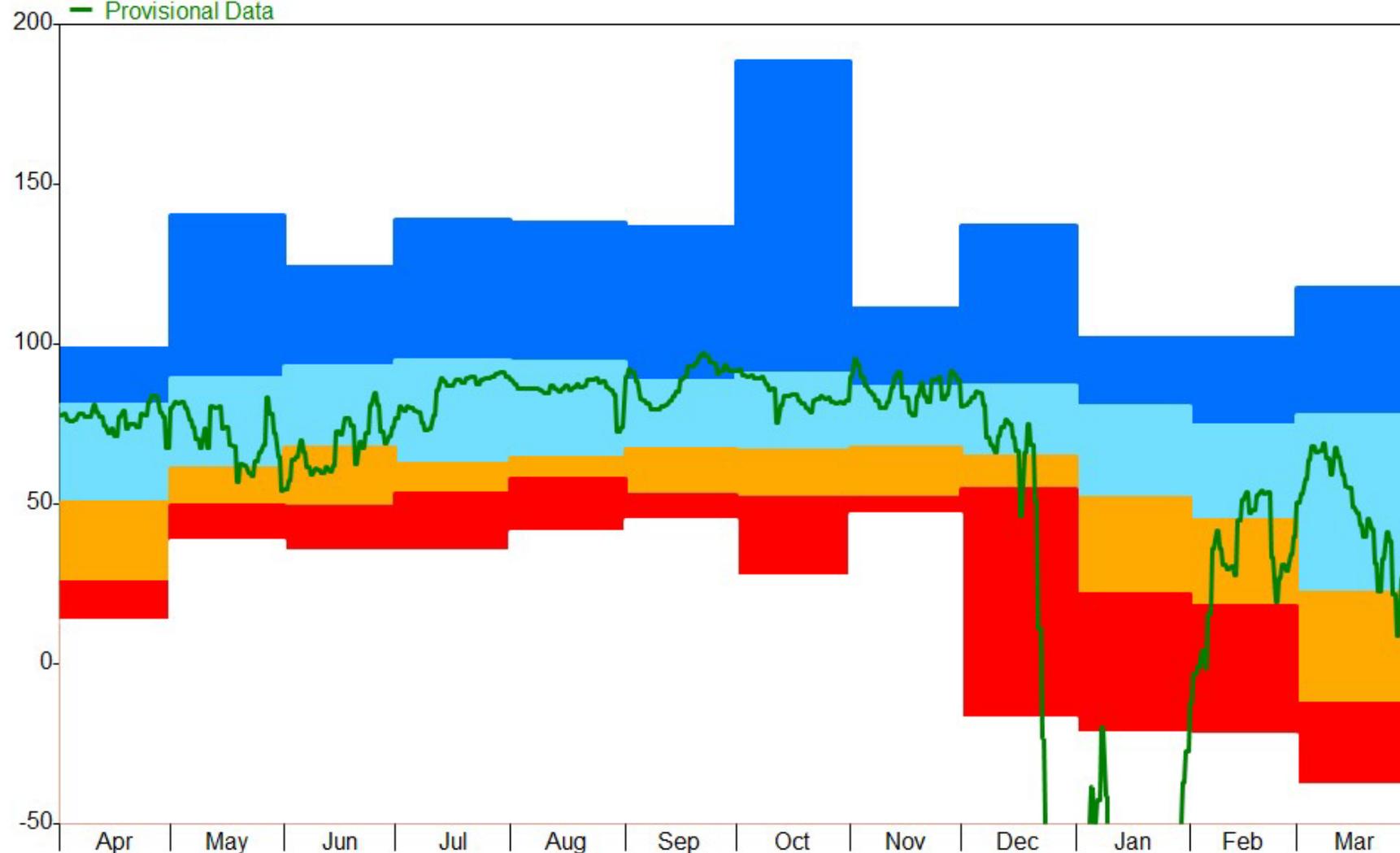
■ Q75-Q25

■ Q25-Q10

■ Q10-Min

— Archived Data

— Provisional Data



**Figure 9:** Flow Over the Past 12 Months, Manatee Springs (cubic feet per second)

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

Period 12 Month 04/01/2023 to 04/01/2024

2023-24

Percentile statistics are calculated using data from 03/01/1932 to 09/30/2022

Manatee\_Spg

■ Max-Q75

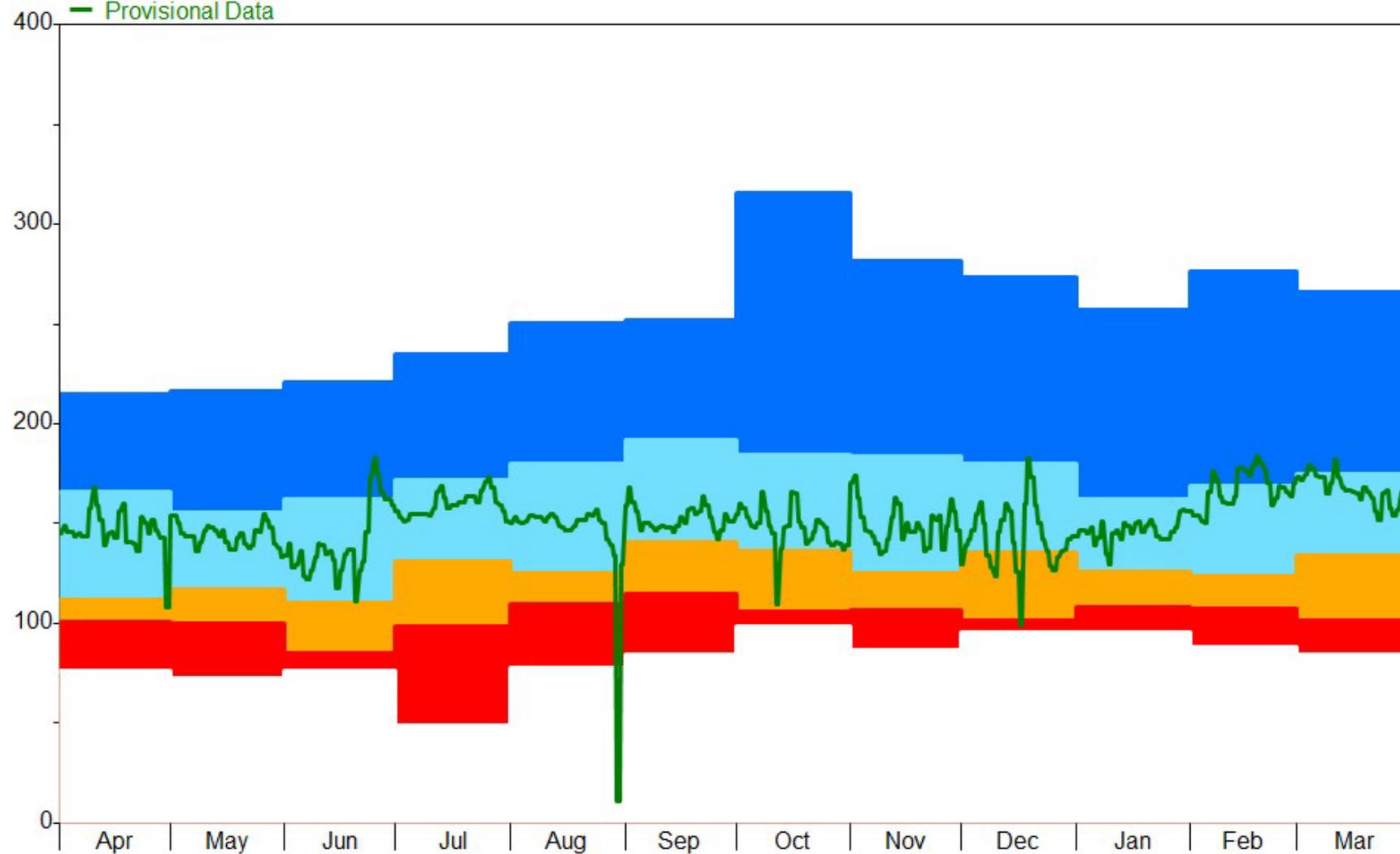
■ Q75-Q25

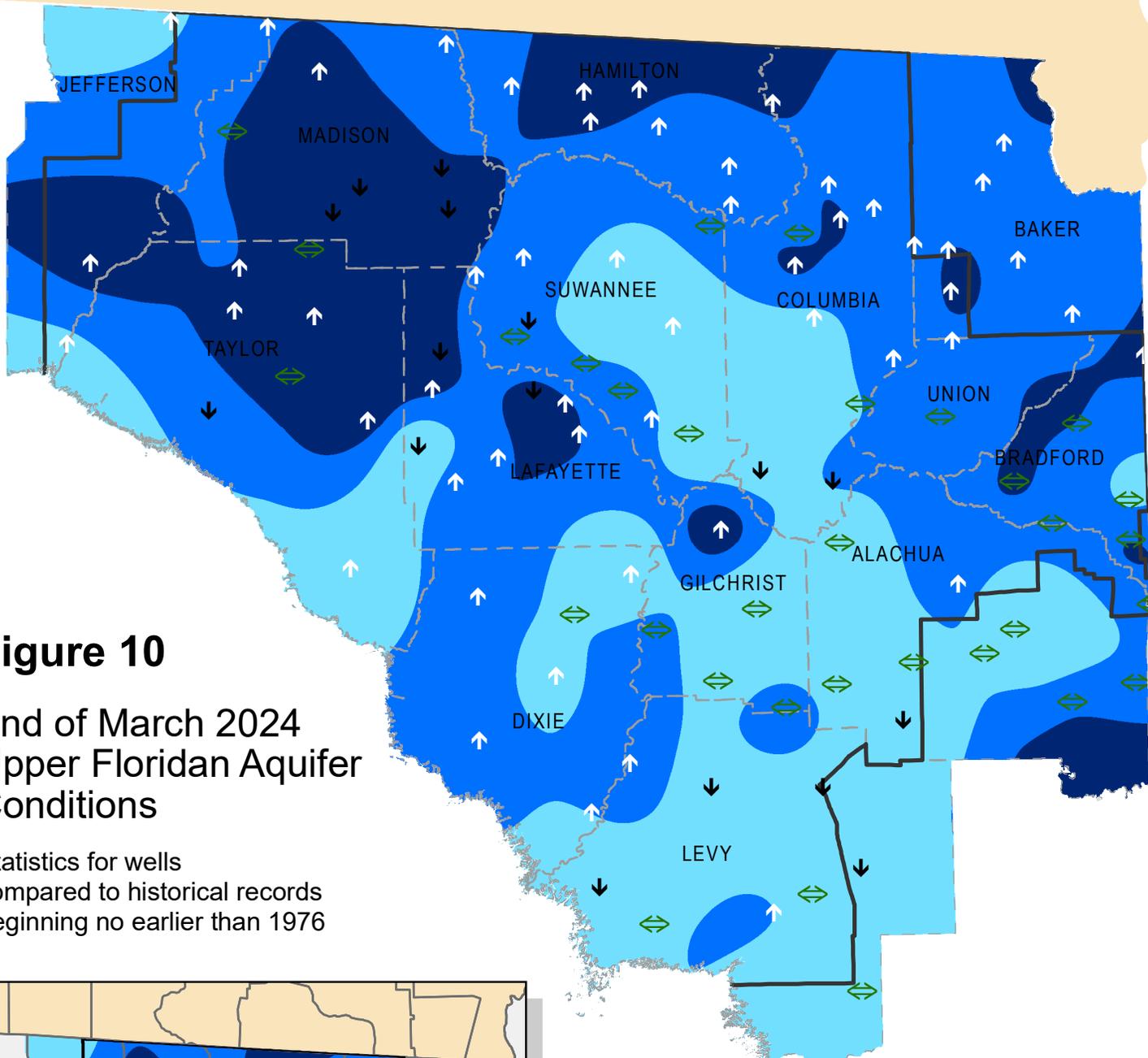
■ Q25-Q10

■ Q10-Min

— Archived Data

— Provisional Data

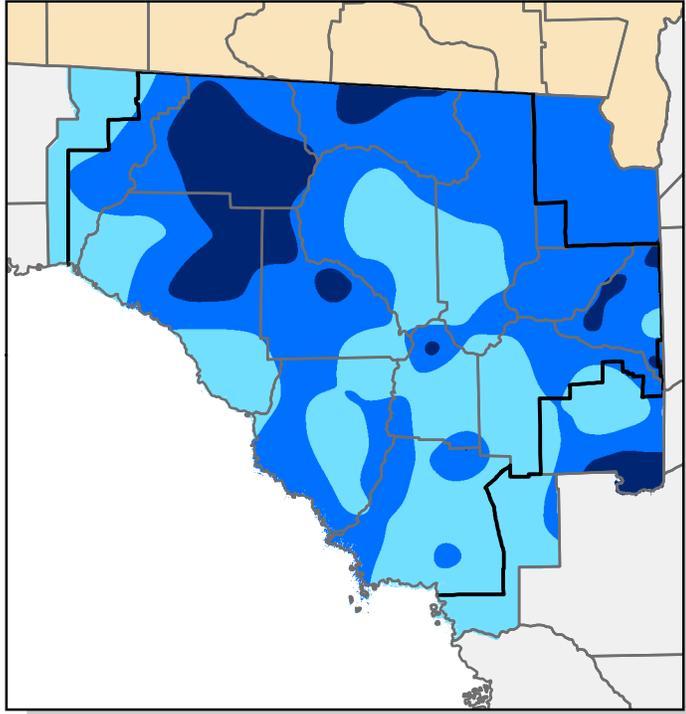




# Figure 10

## End of March 2024 Upper Floridan Aquifer Conditions

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



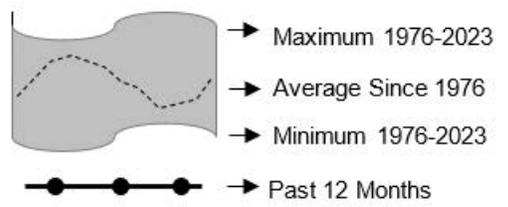
Inset: February Groundwater Percentiles

Additional wells courtesy of SJRWMD, SWFWMD and USGS

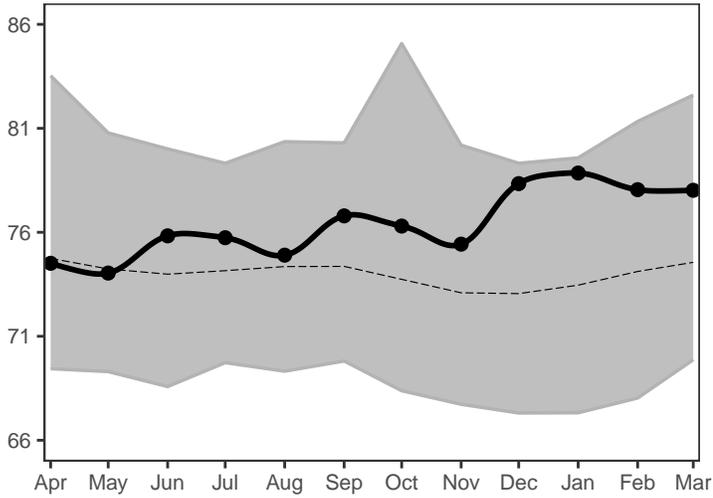
- Extremely High  
(Greater than 90th Percentile)
- High  
(75th to 90th Percentile)
- Normal  
(25th to 75th Percentile)
- Low  
(10th to 25th Percentile)
- Extremely Low  
(Less than 10th Percentile)
- ↑ ↓ Increase/decrease in level since last month
- ↔ Increase/decrease since last month less than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

# Figure 11: Monthly Groundwater Statistics

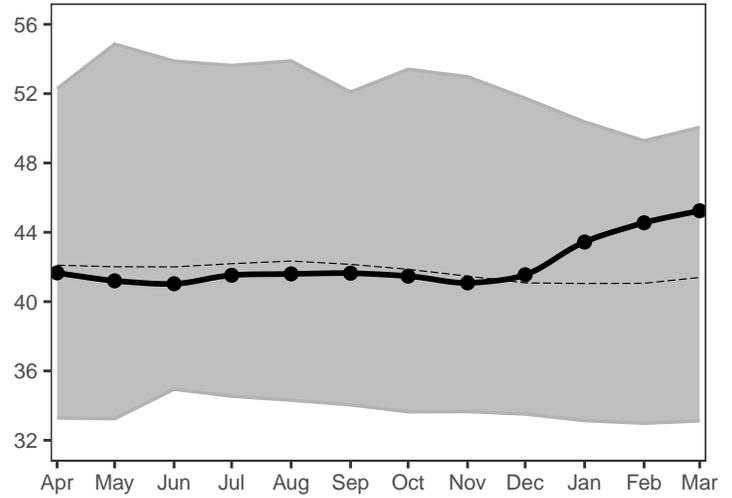
Levels April 2023 through March 2024  
 Period of Record Beginning 1976



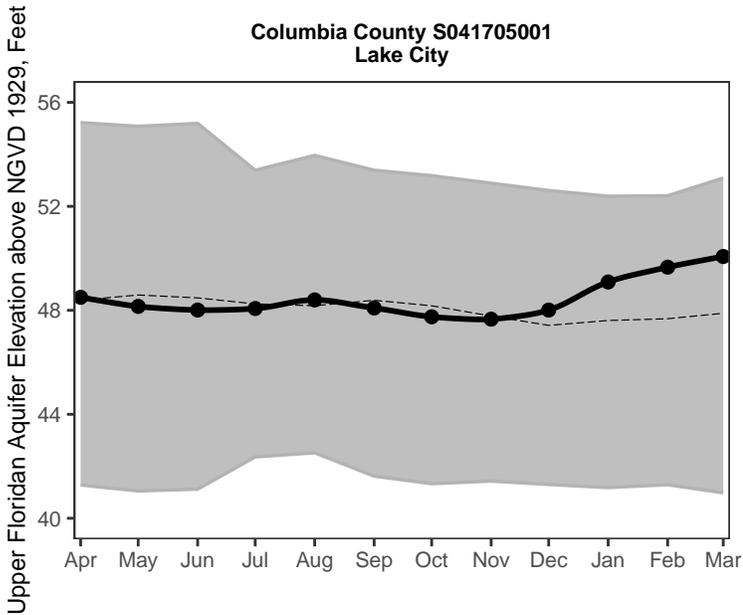
**Madison County N010719001**  
near Greenville



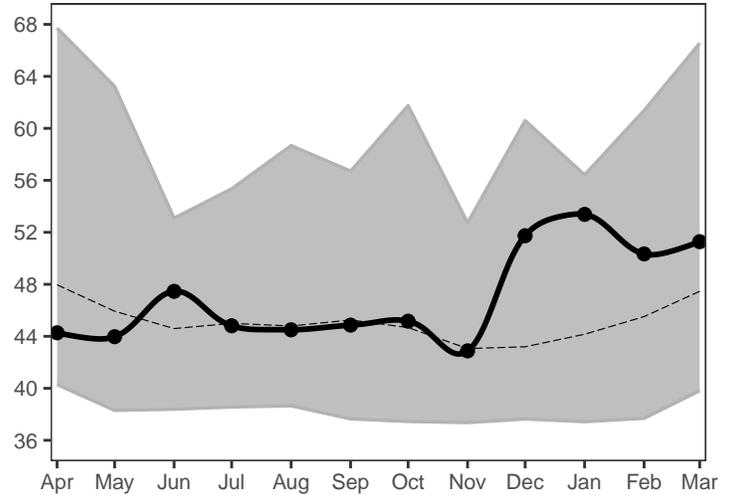
**Suwannee County S021335001**  
near Live Oak



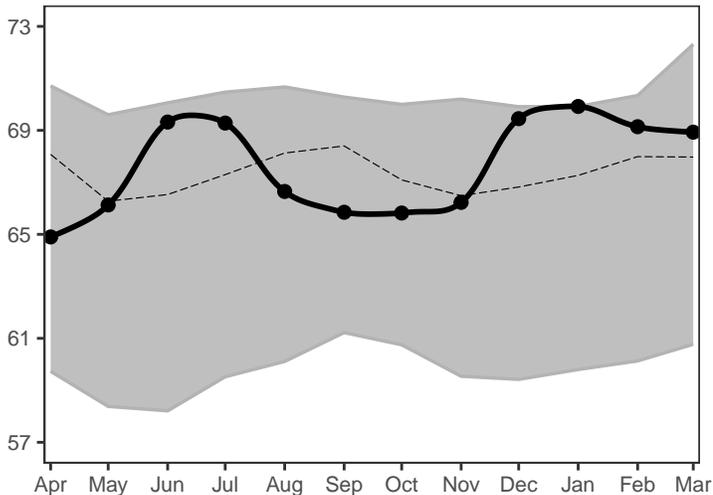
**Columbia County S041705001**  
Lake City



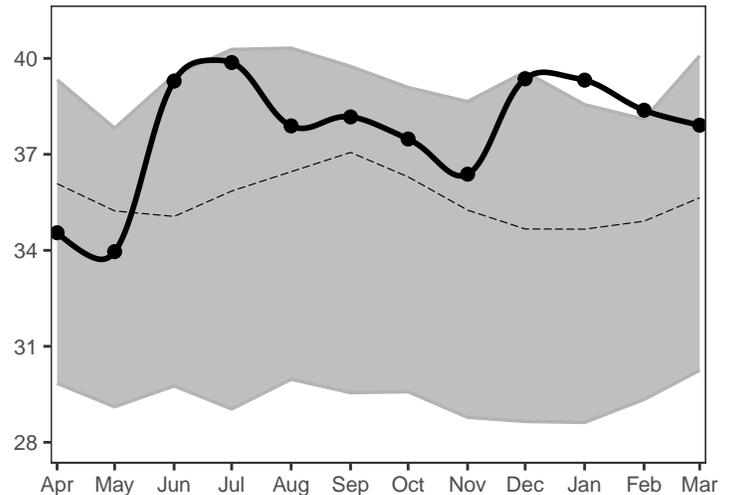
**Hamilton County N011422007**  
near Jasper



**Lafayette County S061114001**  
near Mayo

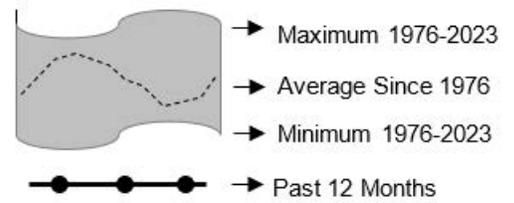


**Taylor County S040736005**  
Perry

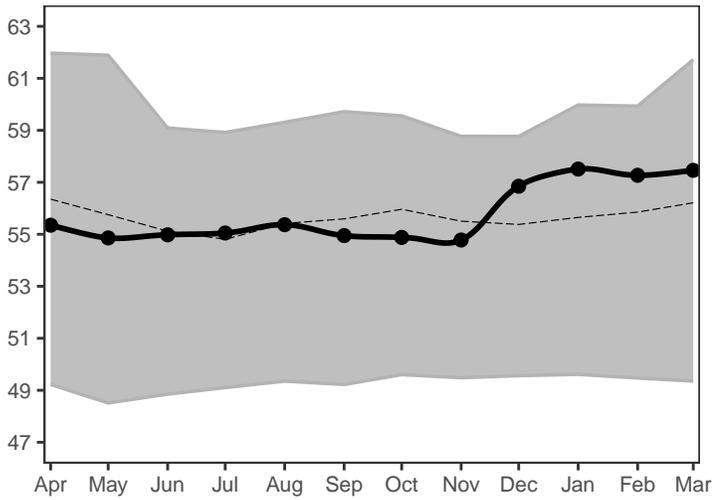


# Figure 11, cont.: Monthly Groundwater Statistics

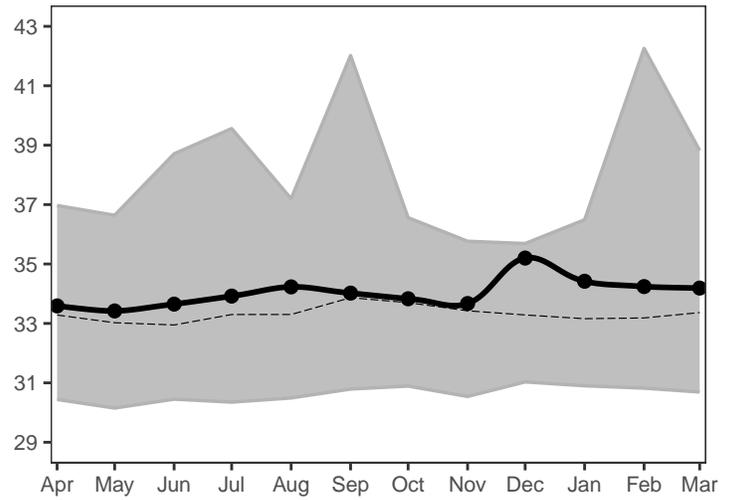
Levels April 2023 through March 2024  
 Period of Record Beginning 1976



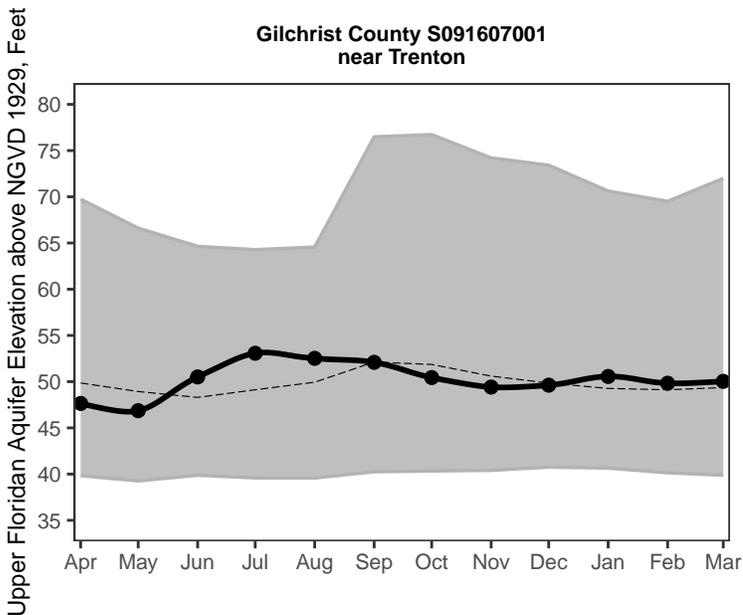
**Union County S051933001**  
near Lake Butler



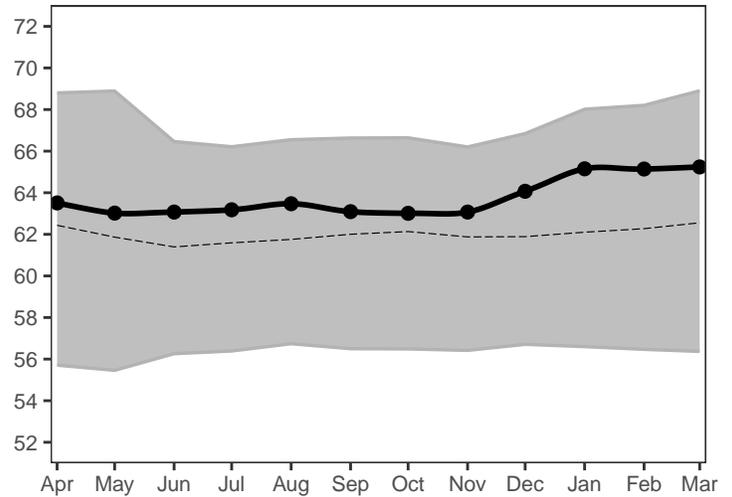
**Alachua County S081703001**  
at High Springs



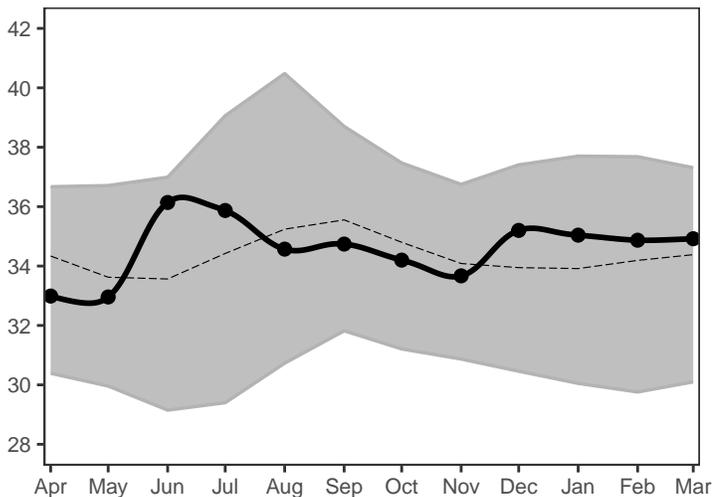
**Gilchrist County S091607001**  
near Trenton



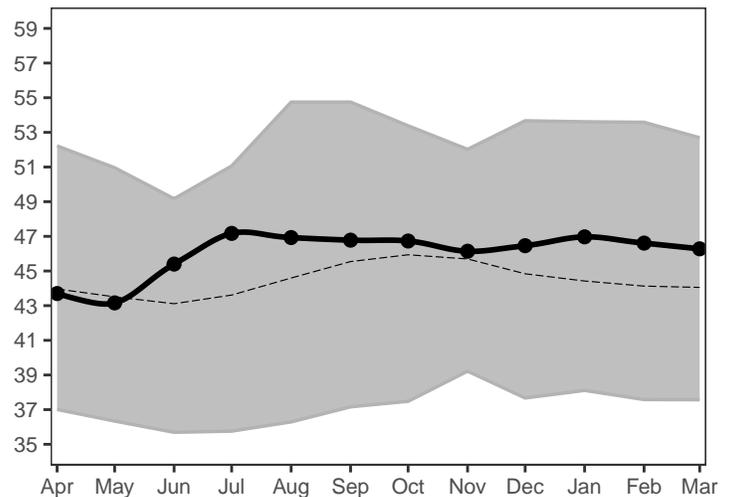
**Bradford County S072132001**  
near Graham

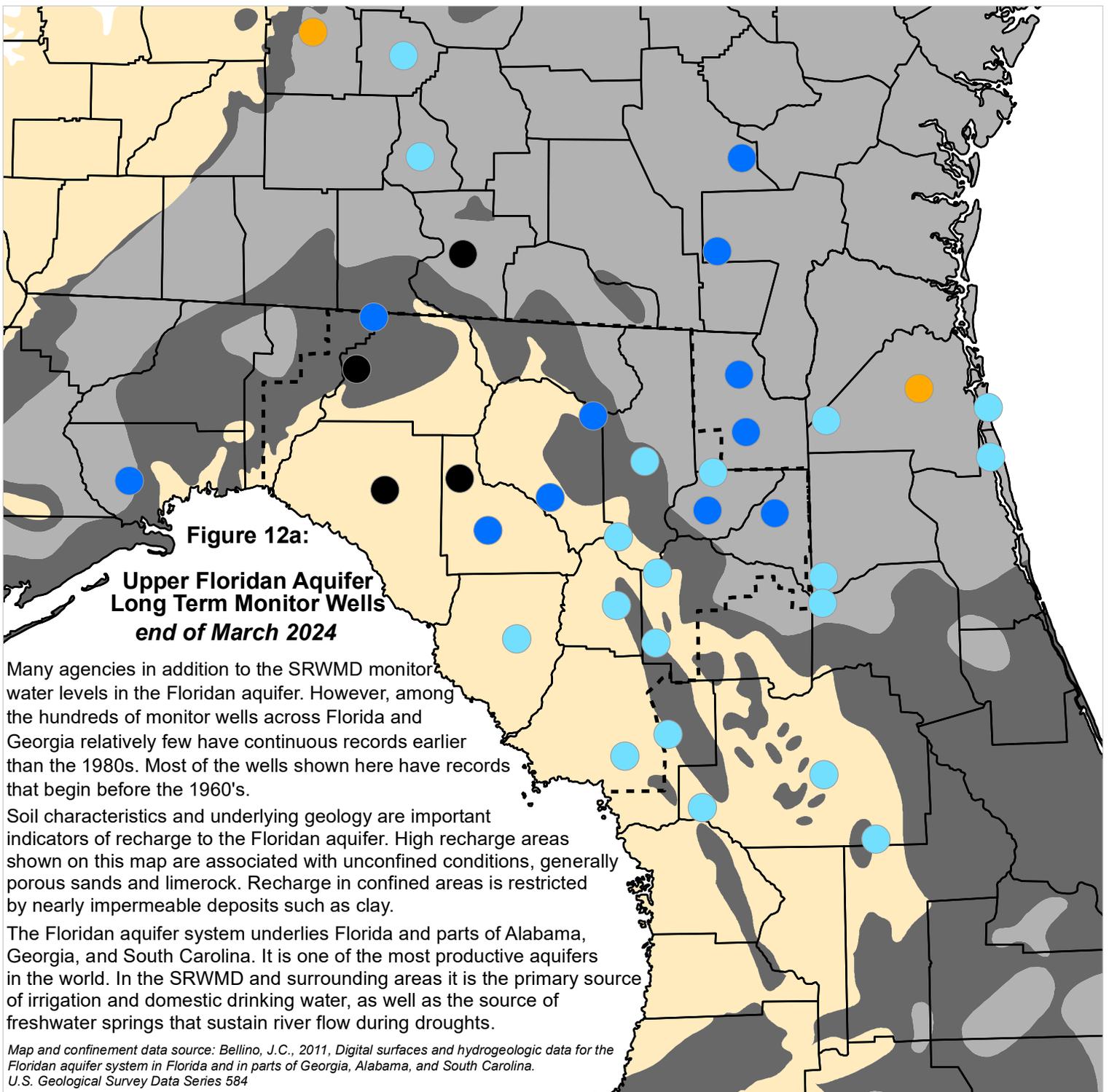


**Dixie County S101210001**  
at Cross City



**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 March 2024

