



Hydrologic Conditions Report

August 2024

Rainfall.....	1
Climate Outlook	6
Drought Conditions.....	6
Surface Water.....	7
Spring Flows	12
Aquifer Levels	15

Summary

August 2024 was characterized by below normal precipitation and above normal temperatures (averaging around 83.5 degrees Fahrenheit) that contributed to generally normal aquifer levels, normal or below normal streamflow, and normal spring flow across most of the Panhandle. Below normal precipitation amounts resulted in a return of drought conditions, particularly in the western portion of the District.

Rainfall

The District in August 2024 recorded an average of 3.92 inches of rain across the Panhandle. This was 3.05 inches (56.0%) below the District normal rainfall amount for the month of August, 6.97 inches. Normal rainfall is defined as average monthly rainfall for the 1991 to 2020 reference period. Though the average observed rainfall across the District was classified as below normal, precipitation amounts varied spatially. The highest rainfall amounts of around 10.00 inches occurred in parts of western Jefferson County and between Choctawhatchee Bay and West Bay while the lowest rainfall amounts of around 0.75 inches occurred near Pensacola, where the third driest August was recorded, and in western Holmes County (**Table 1; Figures 1 – 7**). The most significant rain event occurred on August 5, 2024, when Hurricane Debby, a Category 1 hurricane, pushed into the Big Bend area. Although the worst impacts occurred to the east of the District, parts of Jefferson County within the District received 3.50 inches of rain as a result of the hurricane.



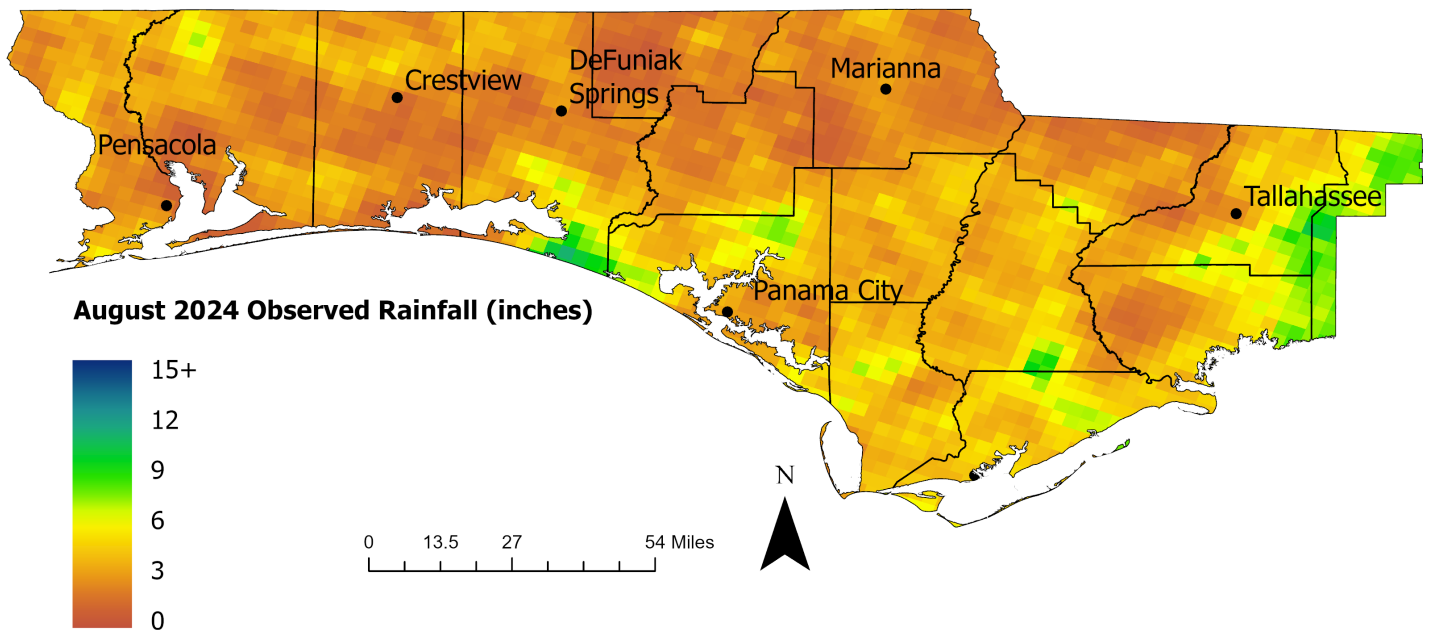
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Northwest Florida Water Management District
81 Water Management Drive
Havana, FL 32333-4712
(850) 539-5999
www.nwfwater.com

Table 1: August 2024 rainfall compared to 30-year normal monthly rainfall for Tallahassee, Marianna, Niceville, and Pensacola

Station	August Normal Rainfall (1991 to 2020)	August 2024 Observed Rainfall	Percent Difference
Tallahassee Regional Airport	7.60	4.11	-59.6%
Marianna Regional Airport	4.93	2.32	-72.0%
Niceville, FL	9.21	1.39	-147.5%
Pensacola Regional Airport	7.50	0.96	-154.6%

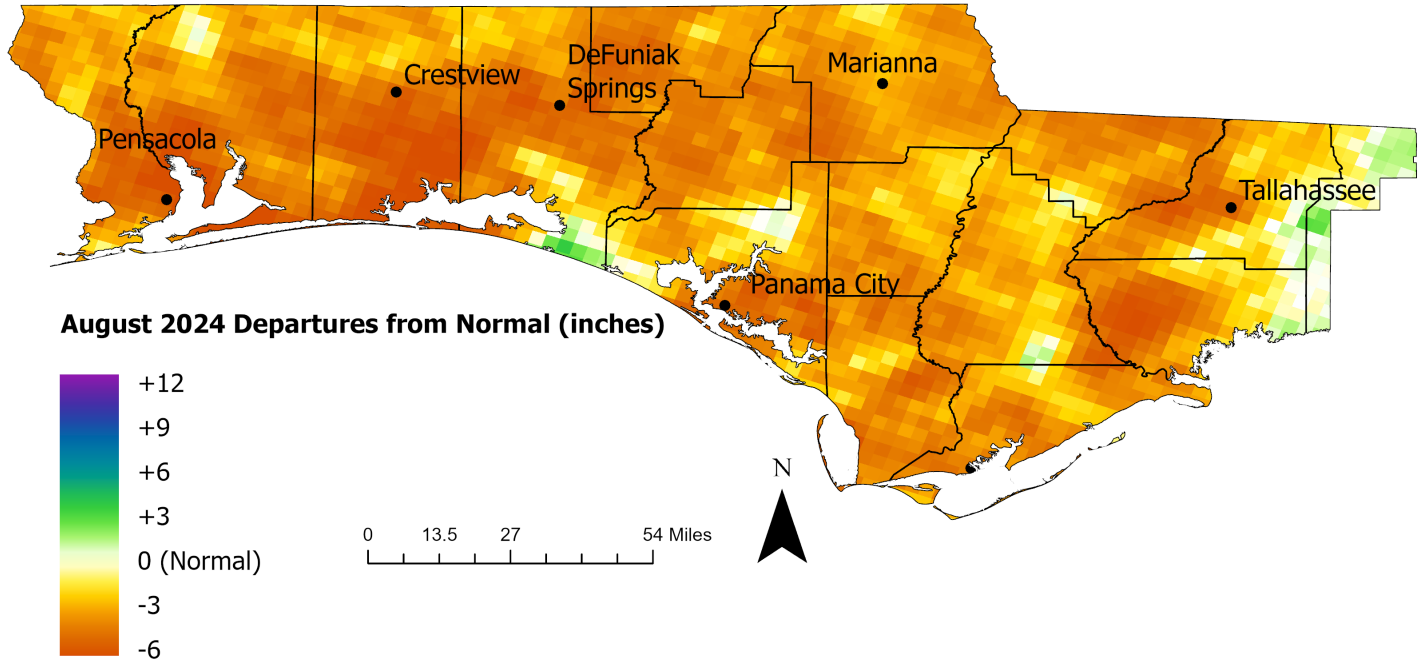
Source: <https://www.weather.gov/wrh/Climate?wfo=tae>
<https://www.weather.gov/wrh/Climate?wfo=mob>

Figure 1: District-wide August 2024 observed rainfall



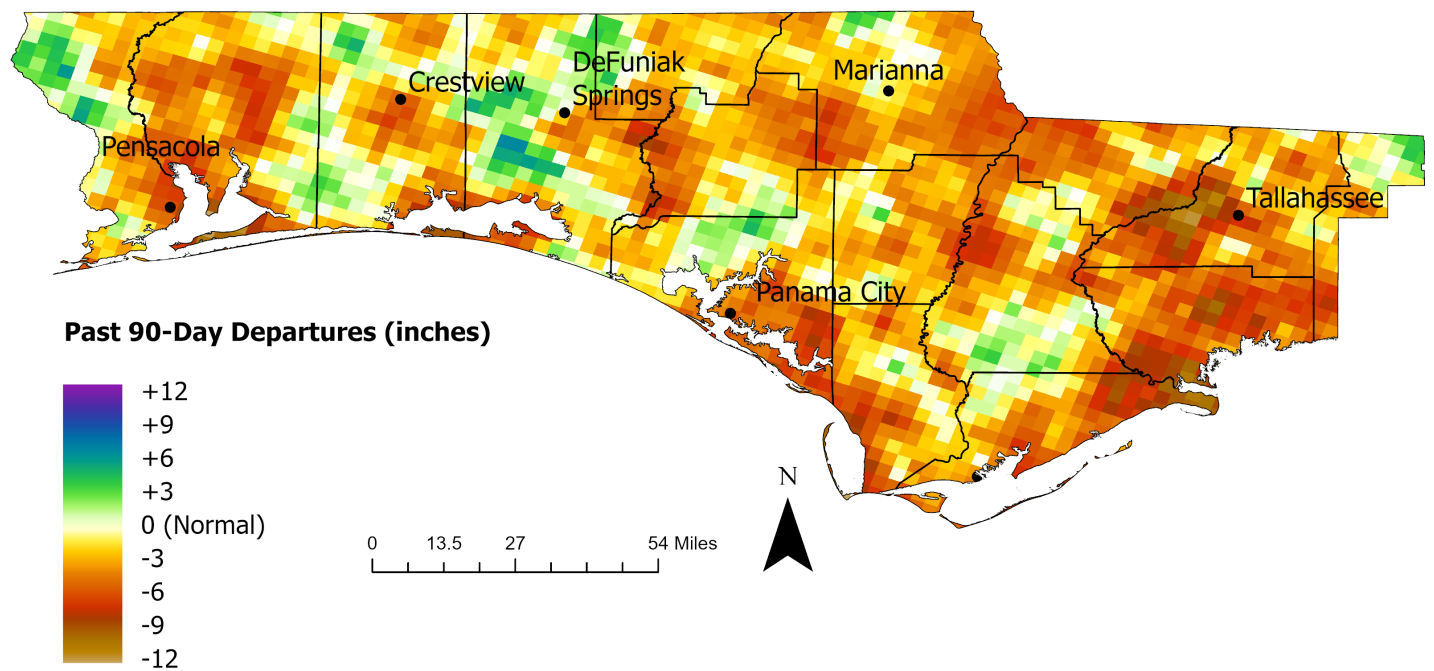
Source: <https://water.weather.gov/precip/download.php>

Figure 2: District-wide August 2024 precipitation departure from normal



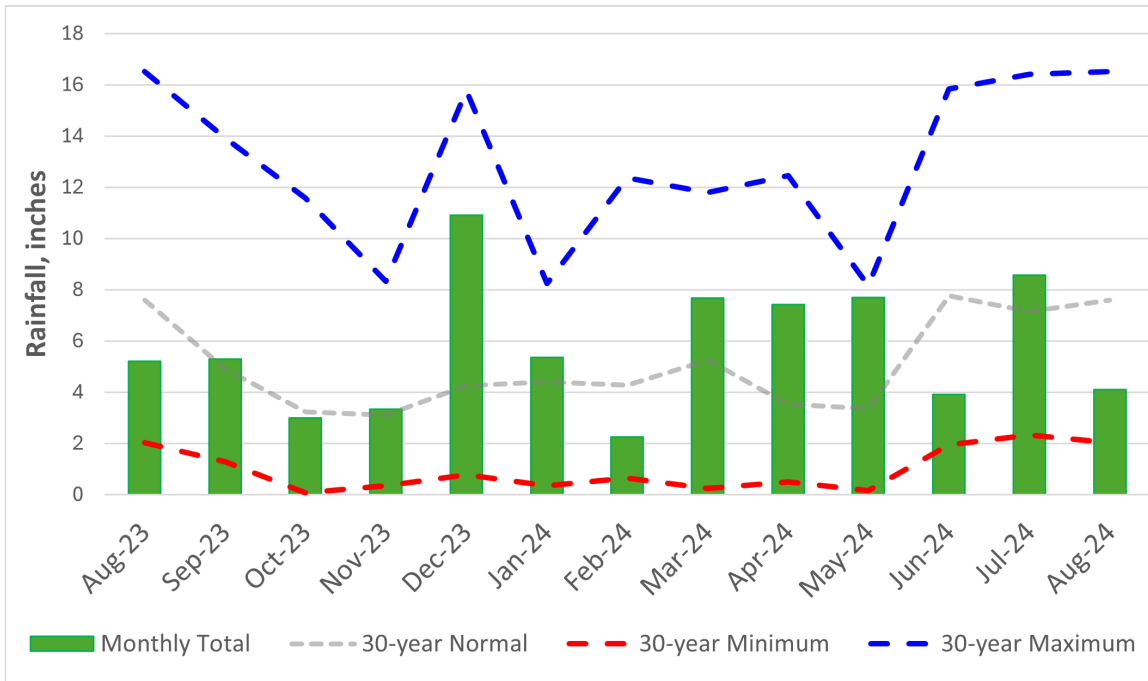
Source: <https://water.weather.gov/precip/download.php>

Figure 3: District-wide precipitation departure from normal precipitation for the previous 90 days



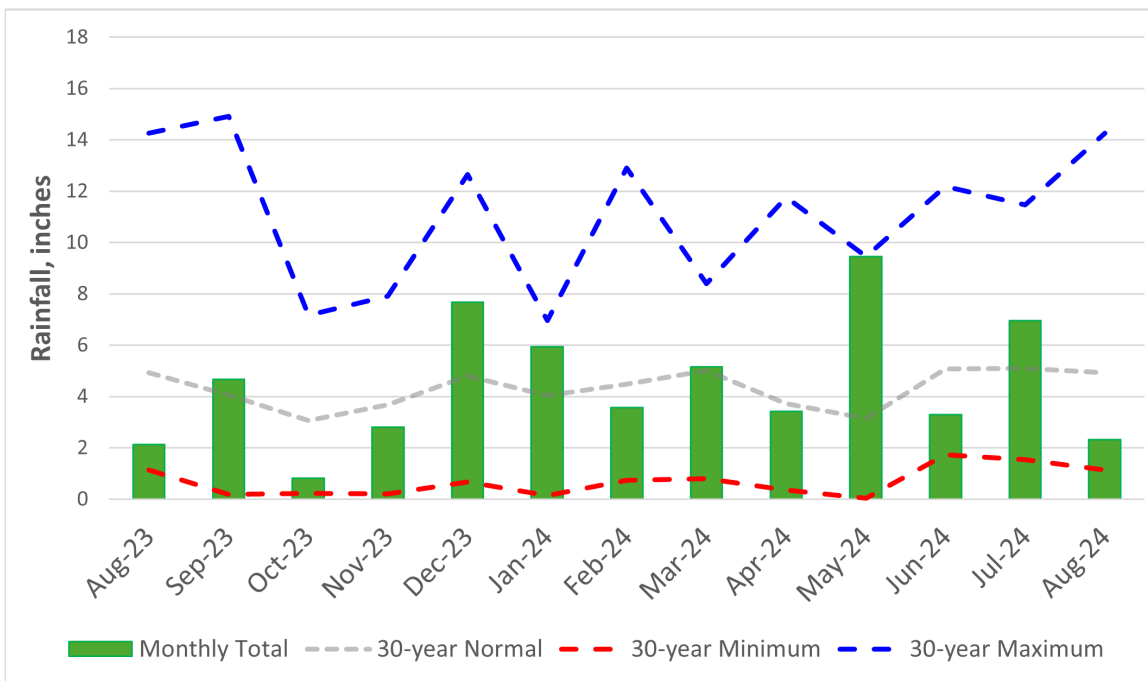
Source: <https://water.weather.gov/precip/download.php>

Figure 4: Observed rainfall at Tallahassee Regional Airport for August 2023 to August 2024 compared to the 30-year normal, minimum, and maximum precipitation for each month



Source: <https://www.weather.gov/wrh/Climate?wfo=tae>

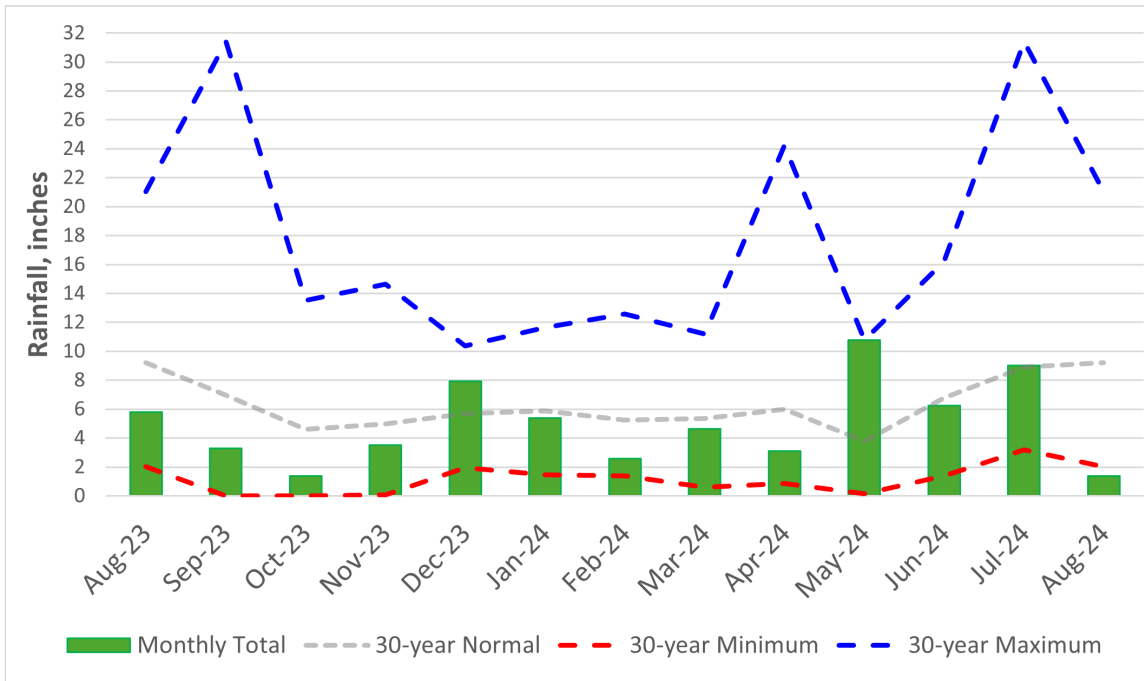
Figure 5: Observed rainfall at Marianna Regional Airport for August 2023 to August 2024 compared to the 30-year normal, minimum, and maximum precipitation for each month



Source: <https://www.weather.gov/wrh/Climate?wfo=tae>

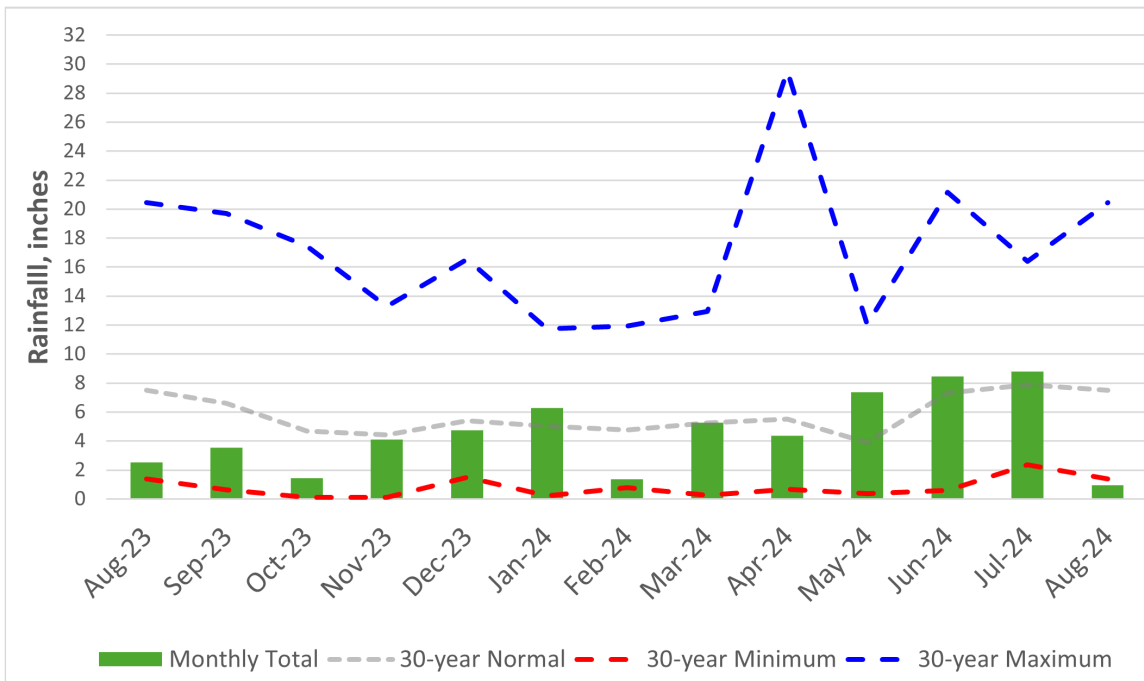


Figure 6: Observed rainfall in Niceville for August 2023 to August 2024 compared to the 30-year normal, minimum, and maximum precipitation for each month



Source: <https://www.weather.gov/wrh/Climate?wfo=mob>

Figure 7: Observed rainfall at Pensacola Regional Airport for August 2023 to August 2024 compared to the 30-year normal, minimum, and maximum precipitation for each month



Source: <https://www.weather.gov/wrh/Climate?wfo=mob>



Climate Outlook

According to NOAA’s climate prediction center, the forecast issued September 3, 2024, for September 2024 shows a slight probability for above normal temperatures and a slight probability of above normal rainfall amounts across the District.

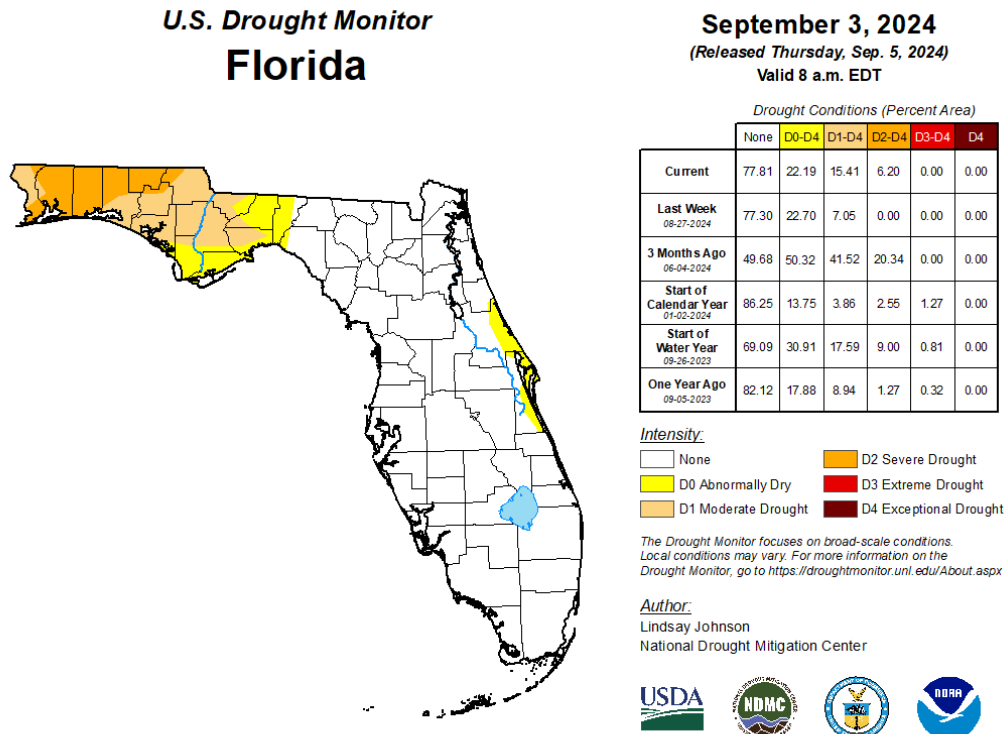
As of September 3, 2024, ENSO-neutral conditions are present and a La Niña Watch has been advised. La Niña conditions are favored to develop during September through November (66% chance) and are forecast to persist into the upcoming winter season. A La Niña pattern during hurricane season creates ideal conditions for the development of tropical cyclones in the Atlantic basin. In the winter, La Niña is associated with warmer and drier conditions than usual for the southern United States.

Source: <https://www.climate.gov/news-features/understanding-climate/us-climate-outlook-august-2024>
https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf

Drought Conditions

The U.S. Drought Monitor report released September 3, 2024, showed the entire District under drought conditions varying from Abnormally Dry towards the east and Severe Drought conditions towards the west (Figure 8). This is a result of the lack of rainfall received throughout the month of August 2024 (Figure 2). According to the U.S. Monthly Drought Outlook valid for September 2024, drought conditions in the panhandle are expected to be alleviated by the conclusion of the month.

Figure 8. Florida Drought Conditions on September 3, 2024



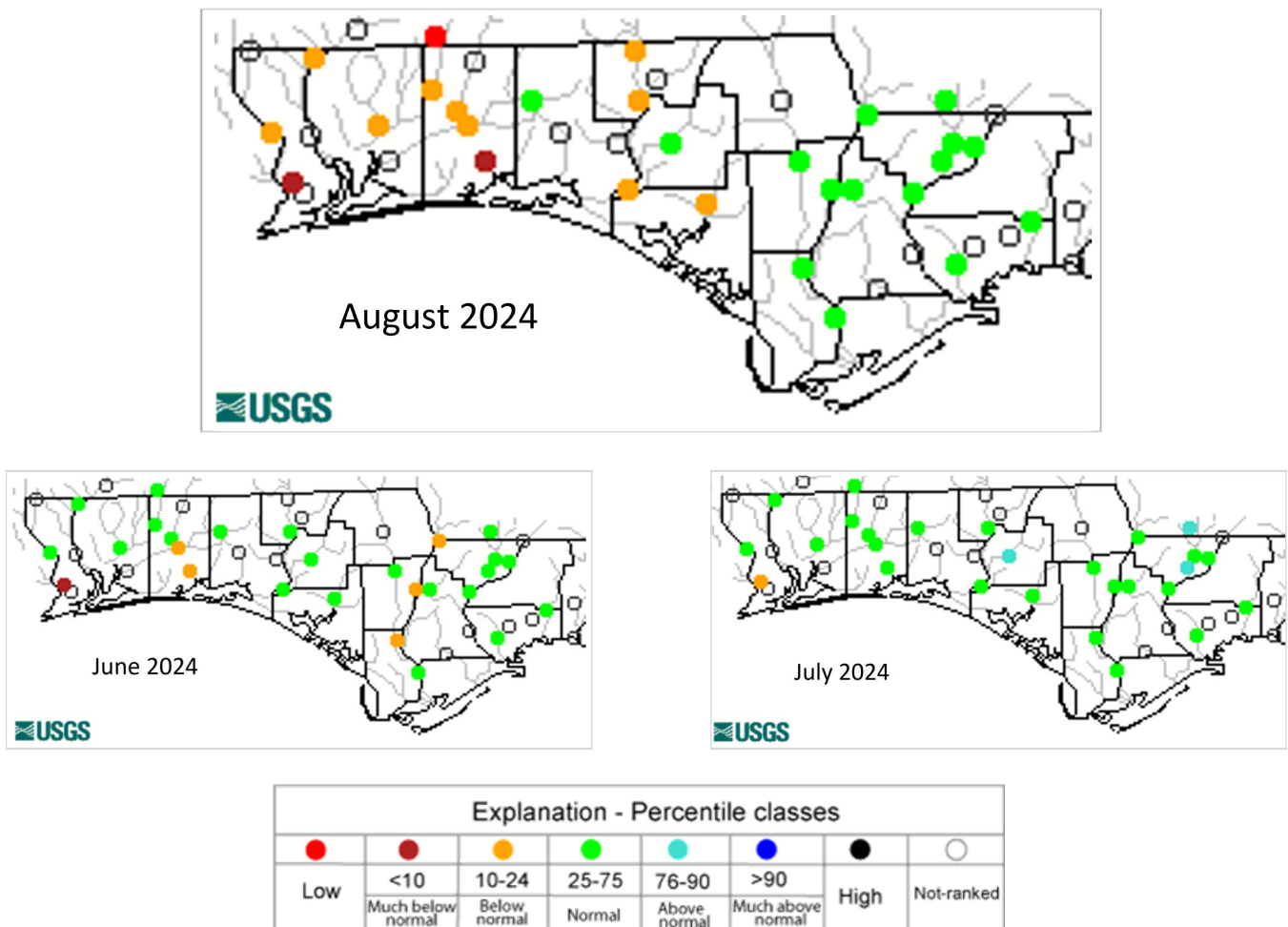
Source: <https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?FL>



Surface Water

Streamflows. Decreased rainfall amounts throughout August 2024 (Figures 1 & 2) contributed to a decrease in percentiles in the western portion of the District compared to July 2024. Stations located in areas under severe drought conditions had the lowest flow percentiles, including all represented stations in Escambia, Santa Rosa, and Walton Counties. Stations located in counties under moderate drought or abnormally dry conditions generally also recorded decreases in flow despite not changing percentile classification (Figures 9 – 15).

Figure 9: Northwest Florida June 2024 to August 2024 monthly streamflow percentiles



Source: <http://waterwatch.usgs.gov/index.php>



Figure 10: Daily streamflows and percentile ranges for USGS station 02326900 St. Marks River Near Newport, Florida

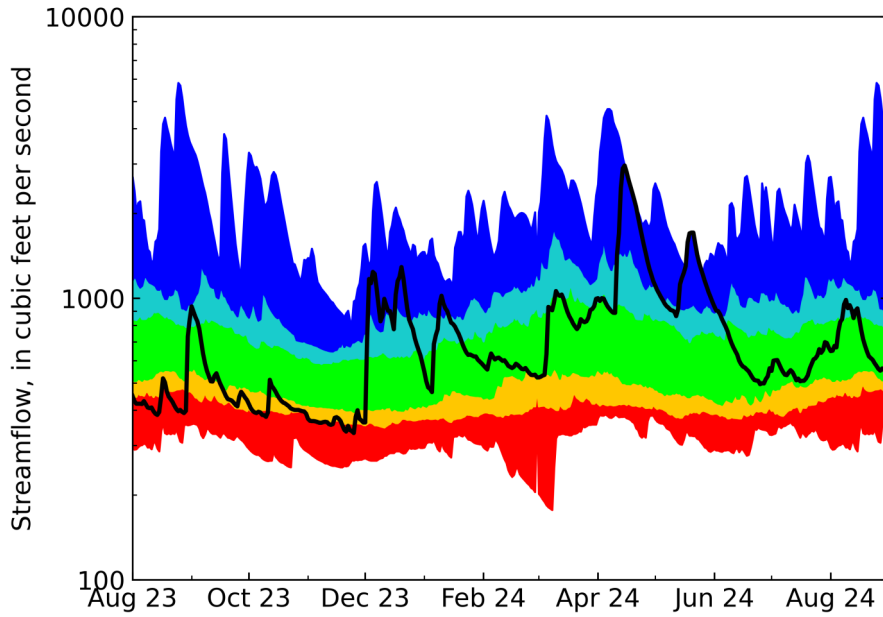
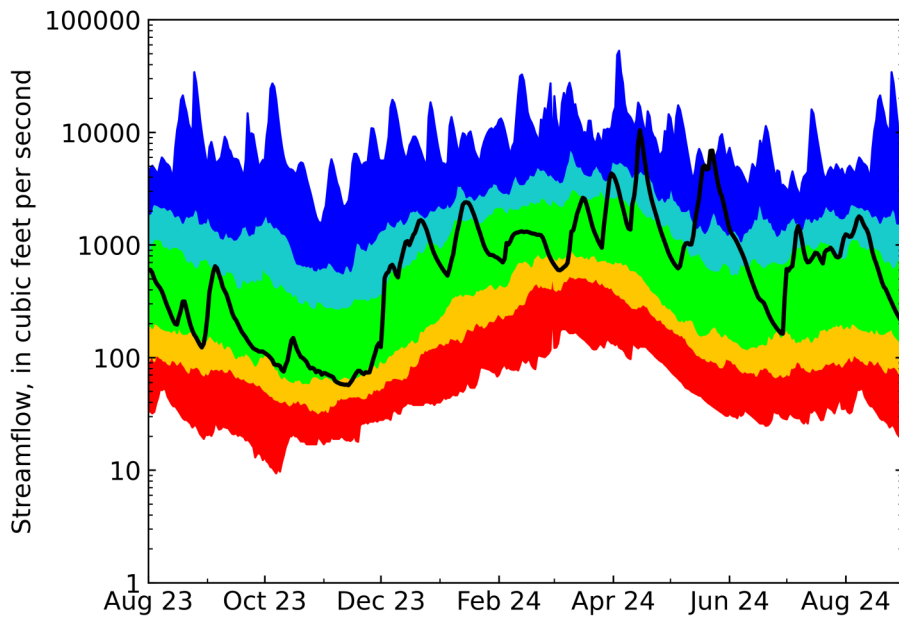


Figure 11: Daily streamflows and percentile ranges for USGS Station 02329000 Ochlockonee River Near Havana, Florida



Explanation - Percentile classes				
< 10	10-24	25-75	76-90	> 90
Much below normal	Below normal	Normal	Above normal	Much above normal



Figure 12: Daily streamflows and percentile ranges for USGS Station 02358700 Apalachicola River Near Blountstown, Florida

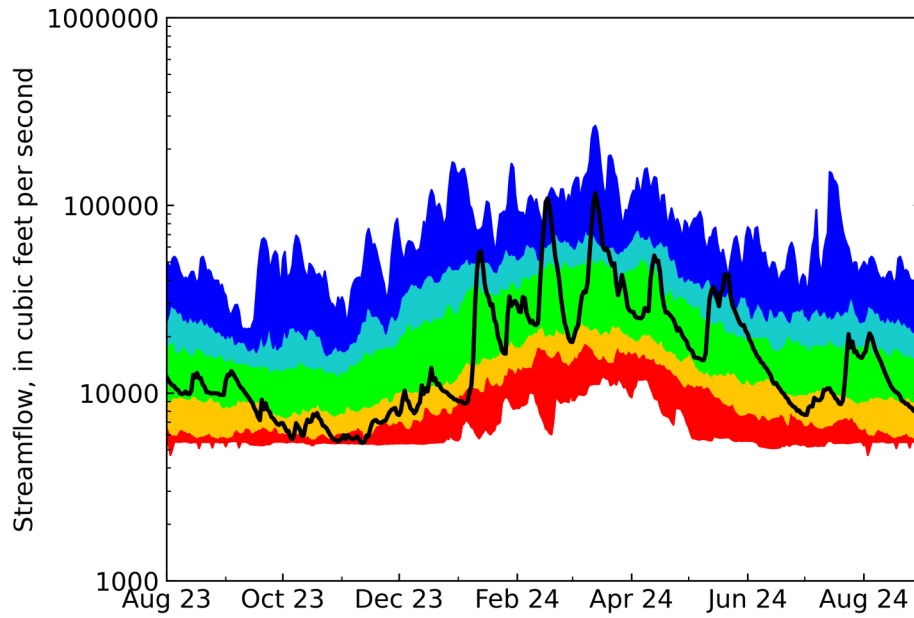
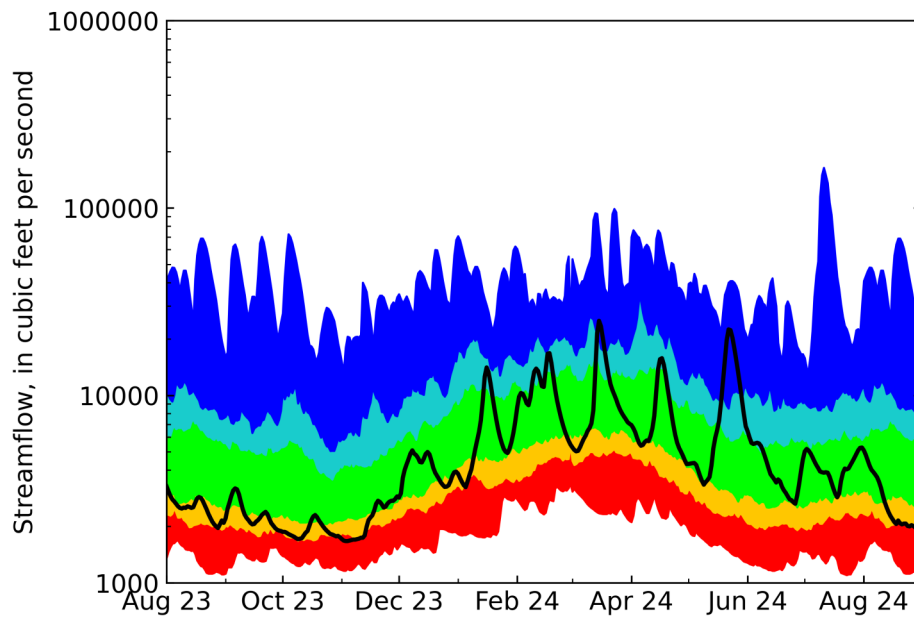


Figure 13: Daily streamflows and percentile ranges for USGS Station 02366500 Choctawhatchee River Near Bruce, Florida



Explanation - Percentile classes				
< 10	10-24	25-75	76-90	> 90
Much below normal	Below normal	Normal	Above normal	Much above normal



Figure 14: Daily streamflows and percentile ranges for USGS Station 02370000 Blackwater River Near Baker, Florida

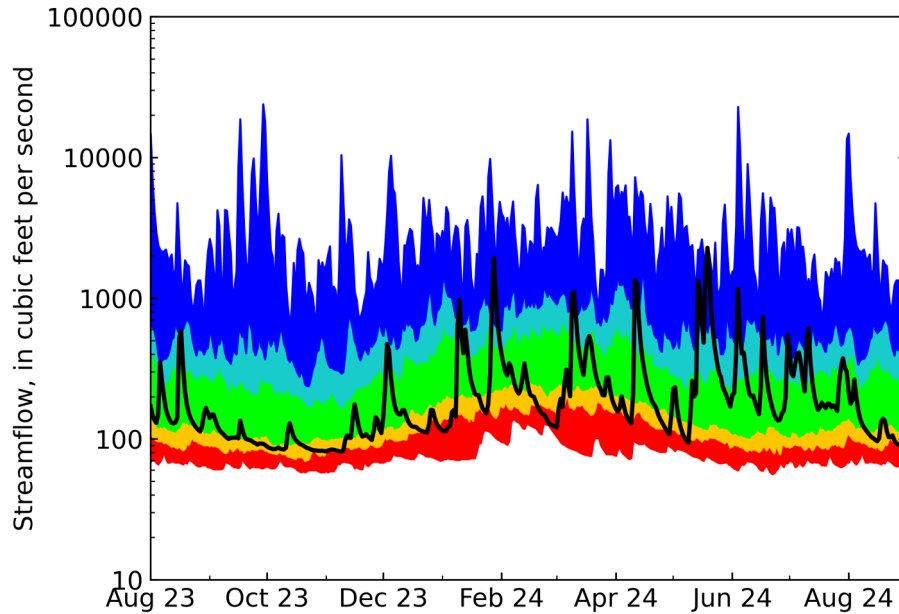
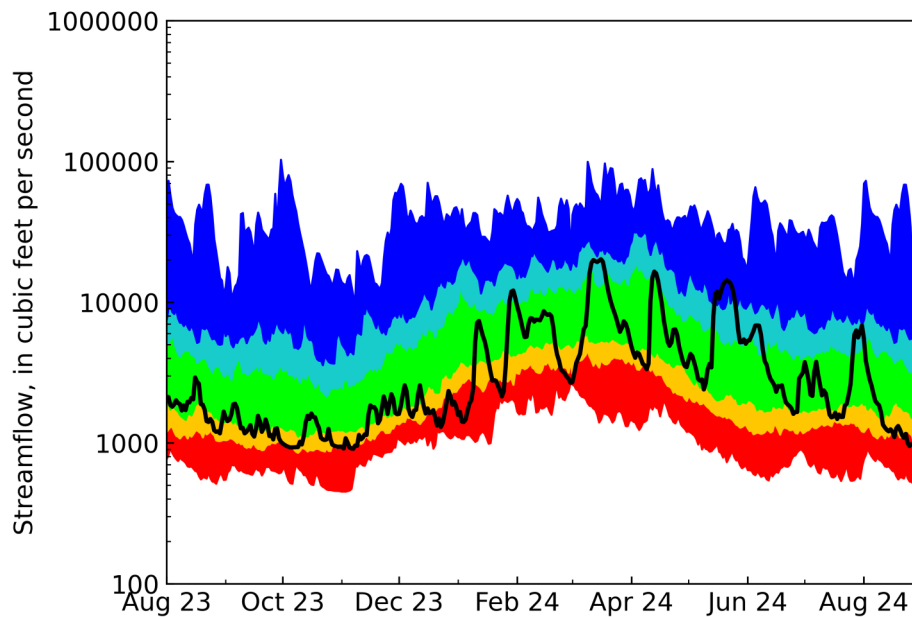


Figure 15: Daily streamflows and percentile ranges for USGS Station 02375500 Escambia River Near Century, Florida



Explanation - Percentile classes				
< 10	10-24	25-75	76-90	> 90
Much below normal	Below normal	Normal	Above normal	Much above normal



Lake Levels. Water levels at Lake Jackson in Leon County continued to remain generally stable around 81.68 feet, NAVD 1988, into August 2024 before decreasing by 0.49 feet by the end of the month (**Figure 16**). The long-term (January 29, 2003 to July 31, 2024) average stage level for Lake Jackson is 80.87 feet, NAVD 1988, and the full pool level is 85.74 feet, NAVD 1988.

Throughout the month, water levels at Piney Lake in southern Washington County decreased by 0.57 feet to reach the lowest level since monitoring began during the 2022 flooding event (**Figure 17**). Piney Lake ended the month with a stage level of 49.07 feet, NAVD 1988.

Figure 16: Daily water levels at Lake Jackson at Miller Landing, Leon County

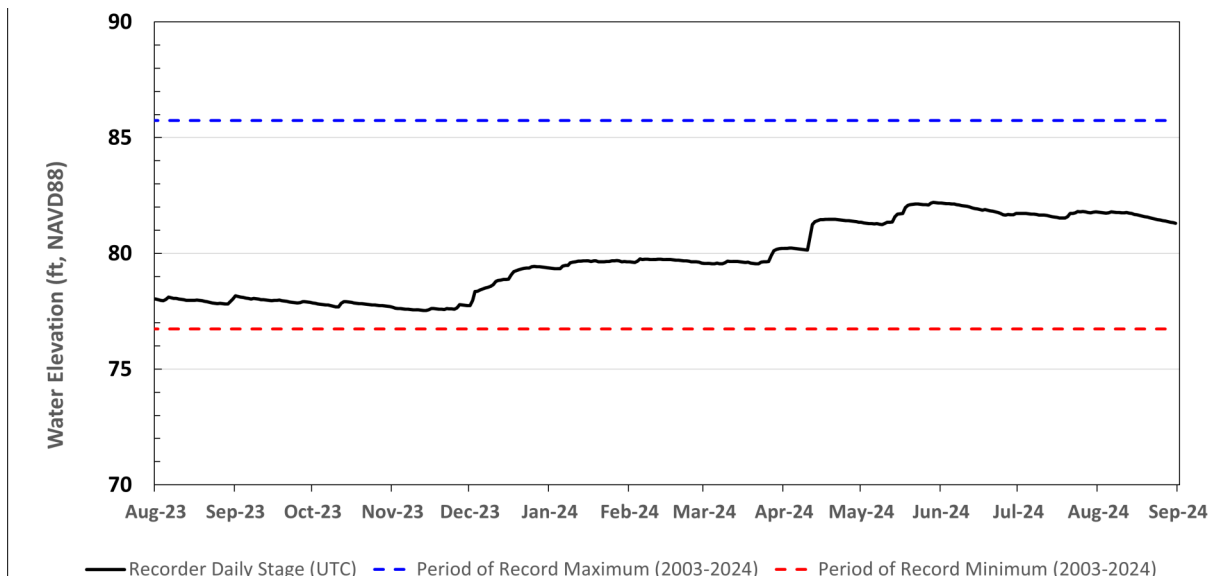
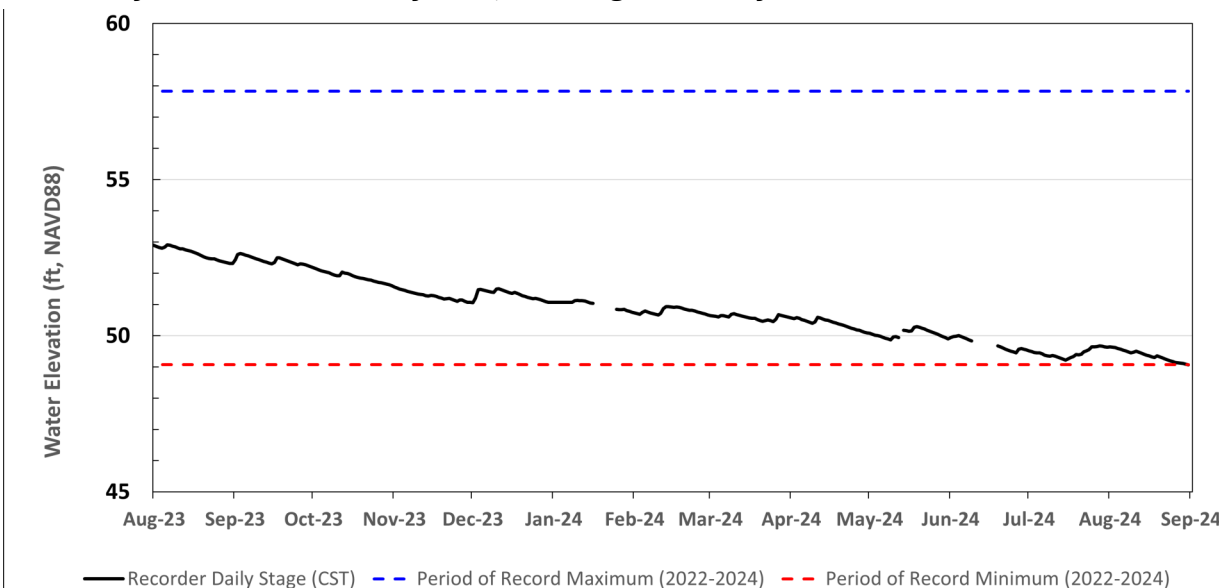


Figure 17: Daily water levels at Piney Lake, Washington County



Spring Flows

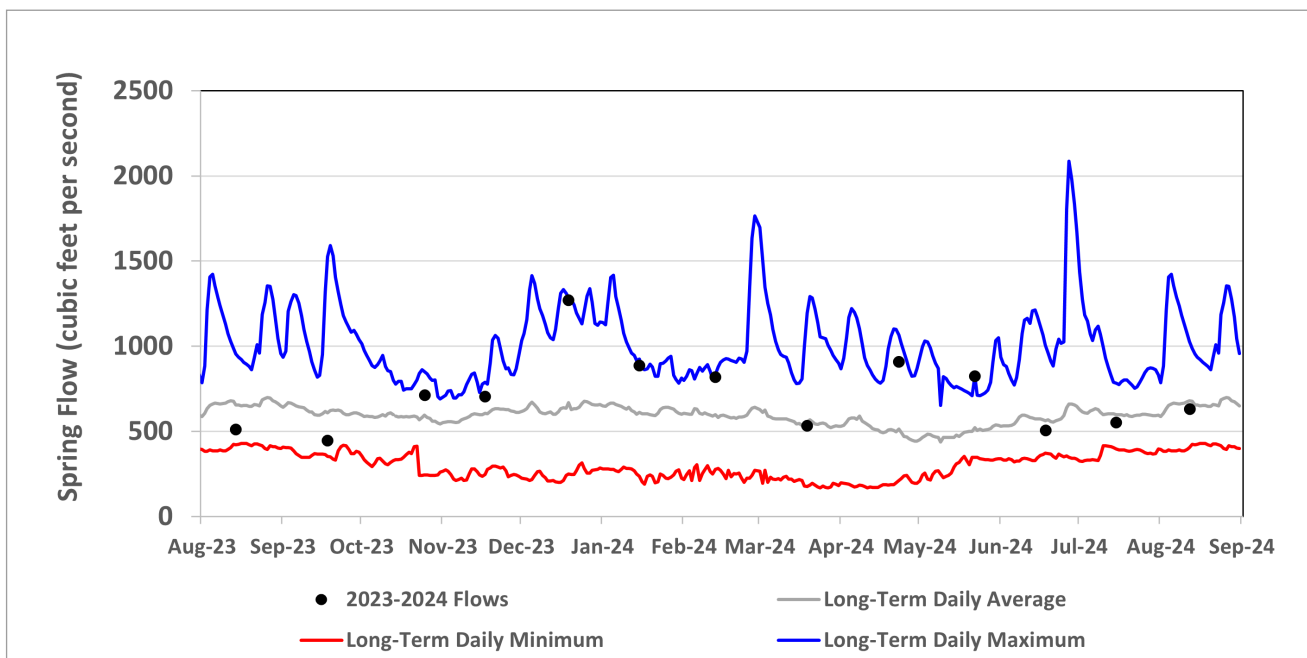
Wakulla and Sally Ward Spring System. Flows at Wakulla Spring continued to increase slightly but remained below the long-term average flow during August 2024. The most recent flow measurement for Wakulla Spring was 631 cubic feet per second (cfs), which was conducted on August 12, 2024 (Figure 18). The long-term (November 2004 to August 2024) average flow for the month of August is 659 cfs.

Flow at Sally Ward Spring increased by 4.4 cfs between the measurements taken in July and August. The most recent flow measurement for Sally Ward was 25.1 cfs on August 12, 2024. The August average Sally Ward Spring flow, based on the November 1, 2004, to August 12, 2024, period of record, is 27.9 cfs.

The Minimum Flow established for the combined Wakulla and Sally Ward Spring System under Florida Administrative Code chapter 40A-8.041 continues to be met. The long-term (October 23, 2004, through June 2024) average flows for Wakulla and Sally Ward Springs are 588 cfs and 24.2 cfs, respectively. The combined long-term spring flow for both systems is 612 cfs, which exceeds the established Minimum Flow of 539 cfs by 73 cfs.

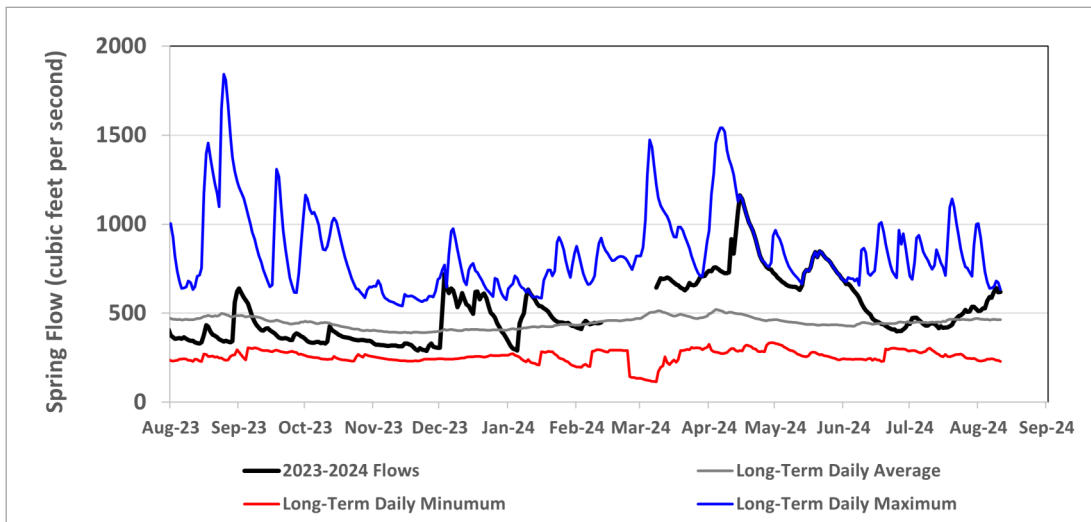
Figure 18: Daily Wakulla Spring flows

Data from August 1, 2023, through August 31, 2024, represent discrete measurements. Daily statistics are based on the October 23, 2004, through August 12, 2024, period of record.



St. Marks River Rise. The mean daily spring flow for August 2024 at the St. Marks River Rise was 723 cfs, based on the available USGS provisional data which extends through August 31, 2024 (Figure 19). The current 30-year moving average spring flow for the St. Marks River Rise based on the most recent approved USGS data (November 15, 1993, through November 14, 2023) is 429 cfs. If the provisional data from November 15, 2023, through August 31, 2024, are included, the 30-year moving average spring flow for the St. Marks River Rise is 428 cfs. The established Minimum Flow for the St. Marks River Rise is 419 cfs. Whether using the approved or provisional data, the 30-year moving average flow exceeded the established Minimum Flow for the St. Marks River Rise by 10 cfs and 9 cfs, respectively.

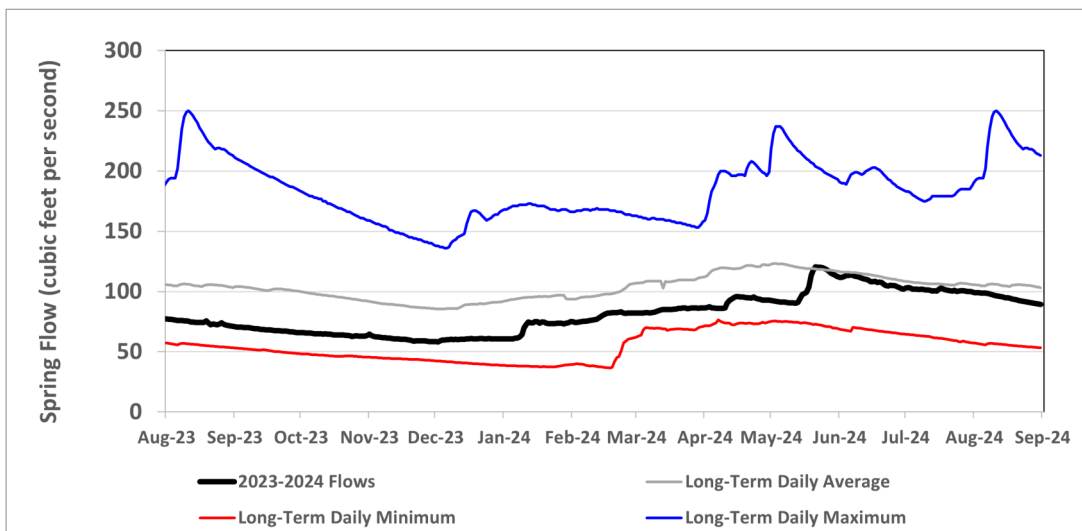
Figure 19: Daily spring flows for the St. Marks River Rise



Jackson Blue Spring. Daily average flows at Jackson Blue Spring for the month of August 2024 averaged 95 cfs, which is below the August monthly average of 105 cfs (Figure 20).

Figure 20: Daily spring flows for Jackson Blue Spring

Data represents daily averages. Long-term flows represent the daily average between December 21, 2004, and August 31, 2024.

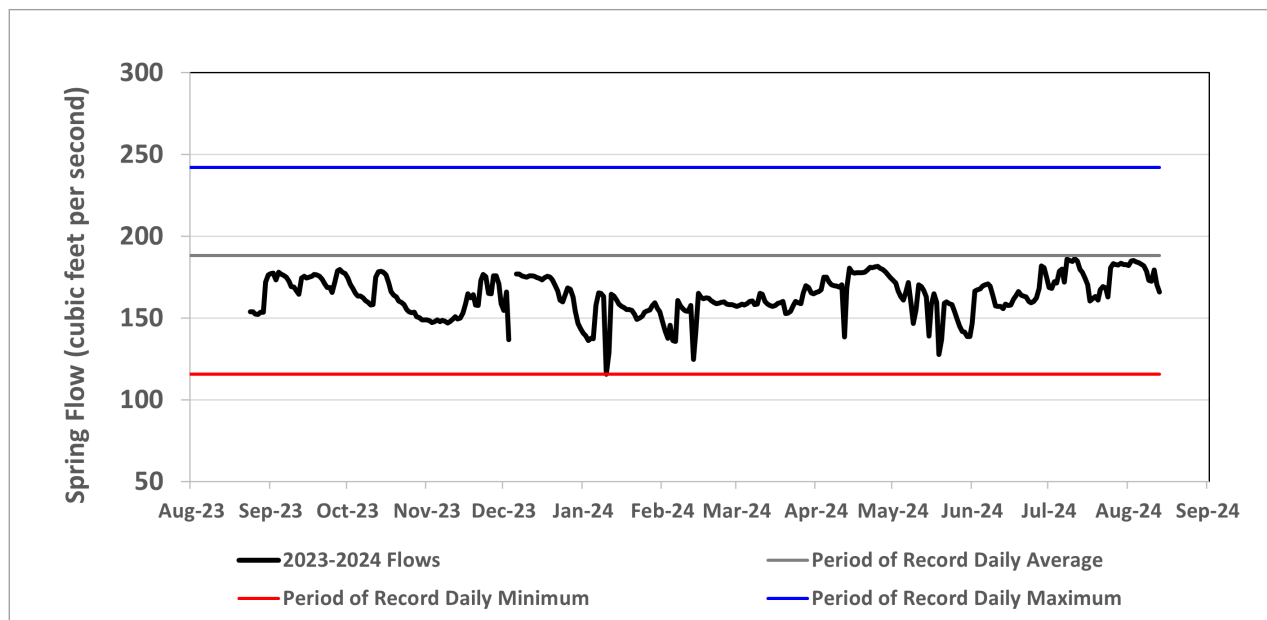


Gainer Spring Group. The average daily flow at the Gainer Spring Group was 179 cfs during August 2024 (August 1 through August 13, 2024) and represents the second lowest recorded monthly average for August for the period of continuous flow data, which extends from October 28, 2019, through August 13, 2024 (Figure 21). The long-term average monthly spring flow for August is 189 cfs.

Throughout the timeseries, there are several drops and recoveries in the spring flow. This is caused by Econfina Creek spiking in stage adjacent to the spring group after rain events. The extra pressure exerted on the groundwater by the surface water in the stream slows flow from the spring group. Since Econfina Creek does not tend to stay high for long after the conclusion of a rain event, as the stage level quickly drops, the flow from the spring group recovers since there is less pressure from the stream. It should be noted that there is a relatively brief period of record for this system, and spring flows among the highest and lowest on record are to be expected.

Figure 21: Gainer Spring Group flows

Data represents daily averages. Streamflow statistics are not shown due to the relatively short period of daily data.



Aquifer Levels

Classifications of Floridan aquifer monitor wells across the District were mostly within normal ranges in the middle of August 2024 (Figures 22 – 27). There were two stations where the groundwater levels were classified outside of normal ranges. In north Okaloosa County, groundwater levels at the NFWMD-Sand Hill Upper Floridan monitor well (NWFID 5597) decreased and was classified as below normal (Figure 22). In central Bay County, groundwater levels at the Fannin Airport Monitor well (NWFID 697) decreased during the beginning half of August 2024, spending most of the month classified as much below normal (Figure 26). All sand-and-gravel aquifer wells depicted were within normal ranges except for NFWMD-Oak Grove Deep monitor well (NWFID 5479) in northern Santa Rosa County, which decreased from previously normal ranges during August 2024 (Figure 22).

Figure 22: Floridan aquifer monitor wells and aquifer level percentiles for August 2024

Percentile class rankings are based on each well’s period of record. All wells have a minimum of 20 years of data.

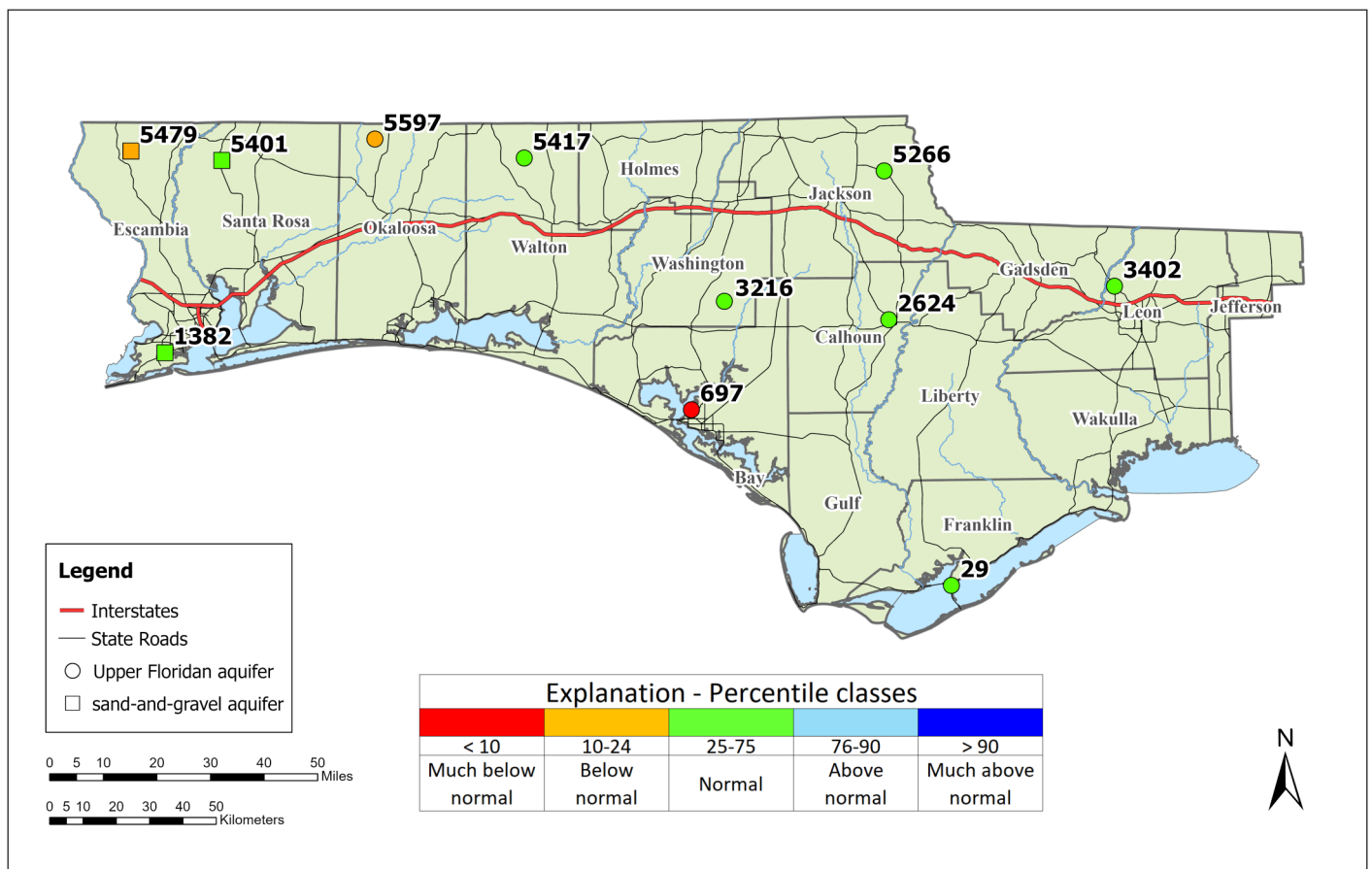


Figure 23: Daily Upper Floridan aquifer levels at USGS-Lake Jackson well (NWFID 3402), Leon County

Land surface elevation is 121.40 ft, NAVD 88

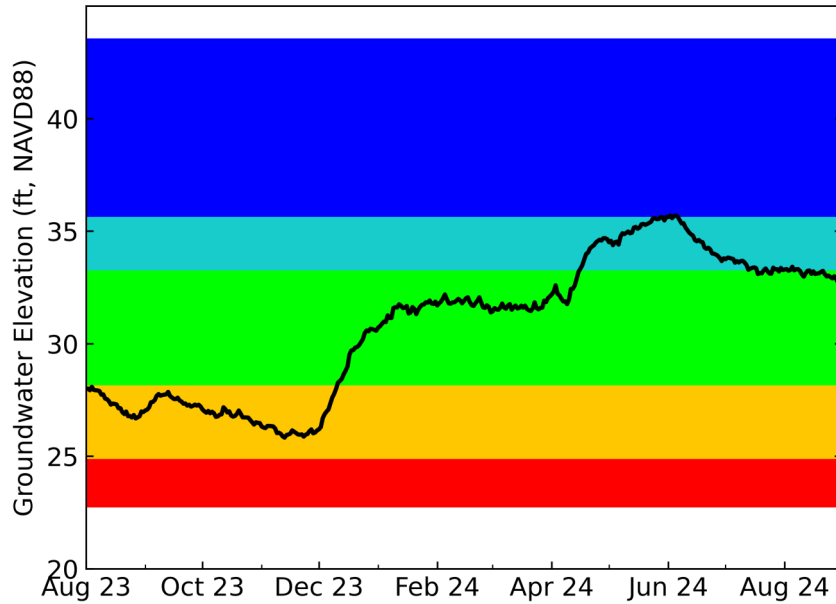
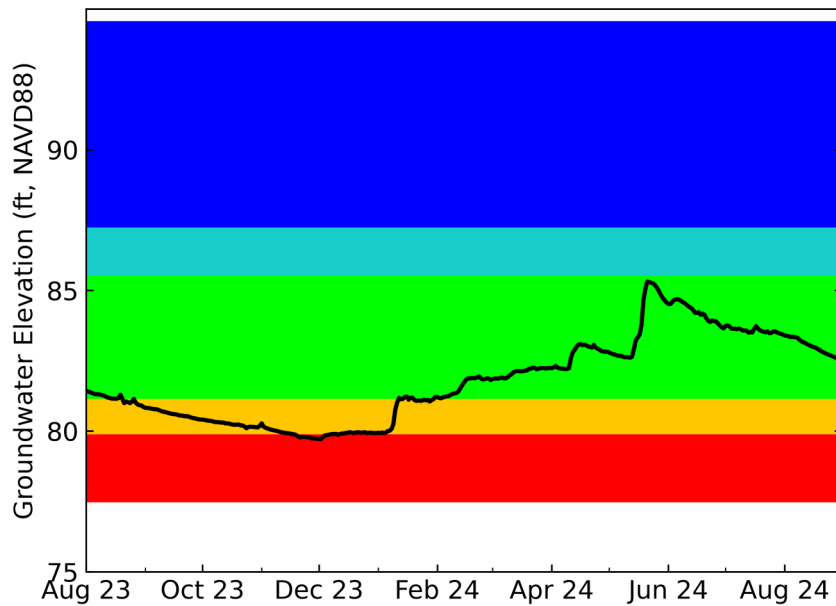


Figure 24: Daily Upper Floridan aquifer levels at NFWMD Pittman Visa well (NWFID 5266), Jackson County

Land surface elevation is 127.31 ft, NAVD 88



Explanation - Percentile classes				
< 10	10-24	25-75	76-90	> 90
Much below normal	Below normal	Normal	Above normal	Much above normal



Figure 25: Daily Upper Floridan aquifer levels at USGS-422A Near Greenhead well (NWFID 3216), Washington County

Land surface elevation is 66.75 ft, NAVD 88

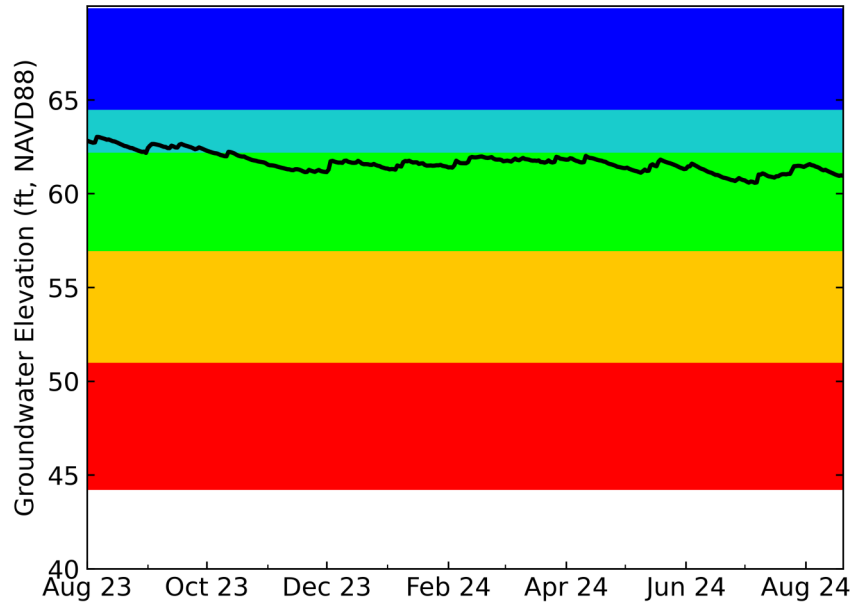
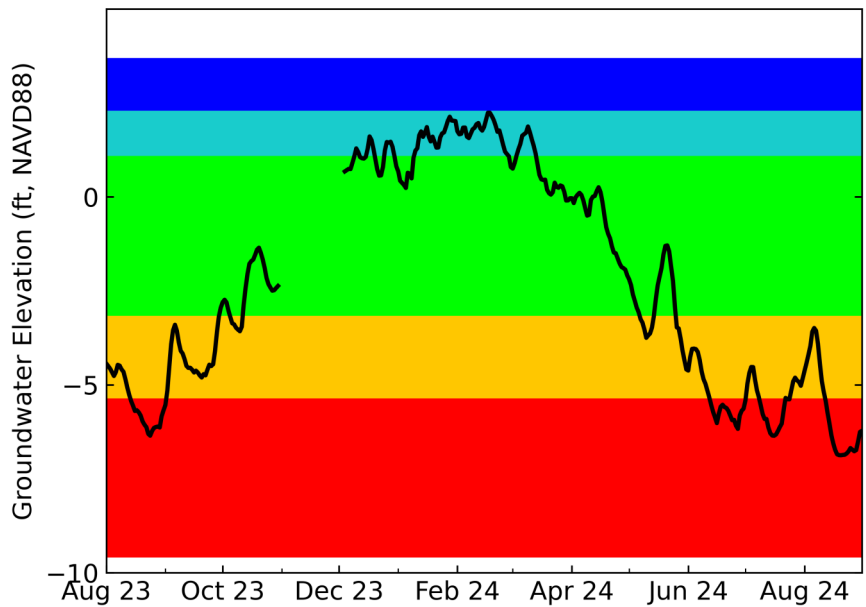


Figure 26: Daily Upper Floridan aquifer levels at Fannin Airport well (NWFID 697), Bay County

Land surface elevation is 4.05 ft, NAVD 88

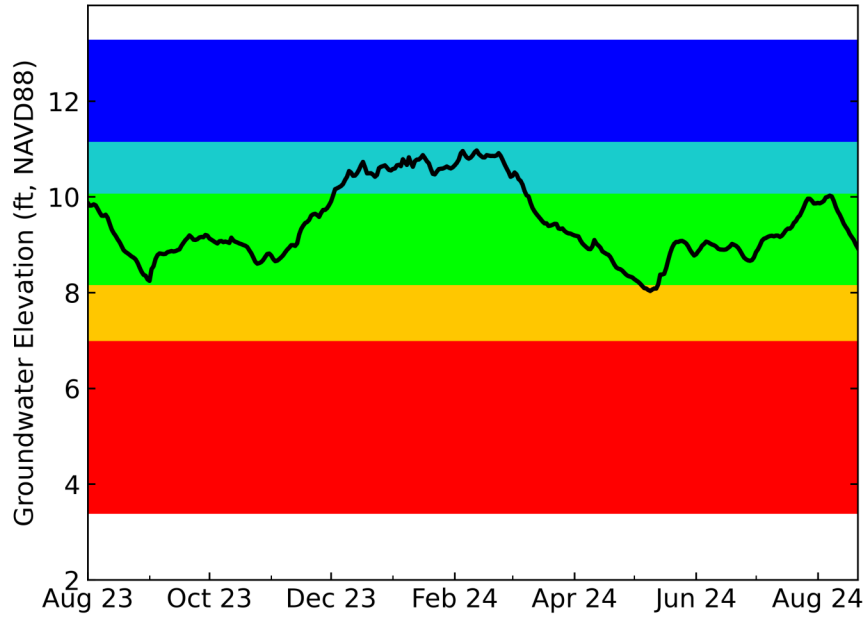


Explanation - Percentile classes				
< 10	10-24	25-75	76-90	> 90
Much below normal	Below normal	Normal	Above normal	Much above normal



Figure 27: Daily sand-and-gravel aquifer levels at Weller Ave Deep well (NWFID 1382), Escambia County

Land surface elevation is 25.09 ft, NAVD 88



Explanation - Percentile classes				
< 10	10-24	25-75	76-90	> 90
Much below normal	Below normal	Normal	Above normal	Much above normal