



Hydrologic Conditions Report

December 2024

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Summary

December 2024 was characterized by below normal precipitation and near normal temperatures (averaging around 53.4 degrees Fahrenheit) that contributed to generally normal or below normal hydrologic conditions across most of the Panhandle. Drought was alleviated in Escambia and Santa Rosa Counties, but dry conditions persist in much of the District.

Rainfall

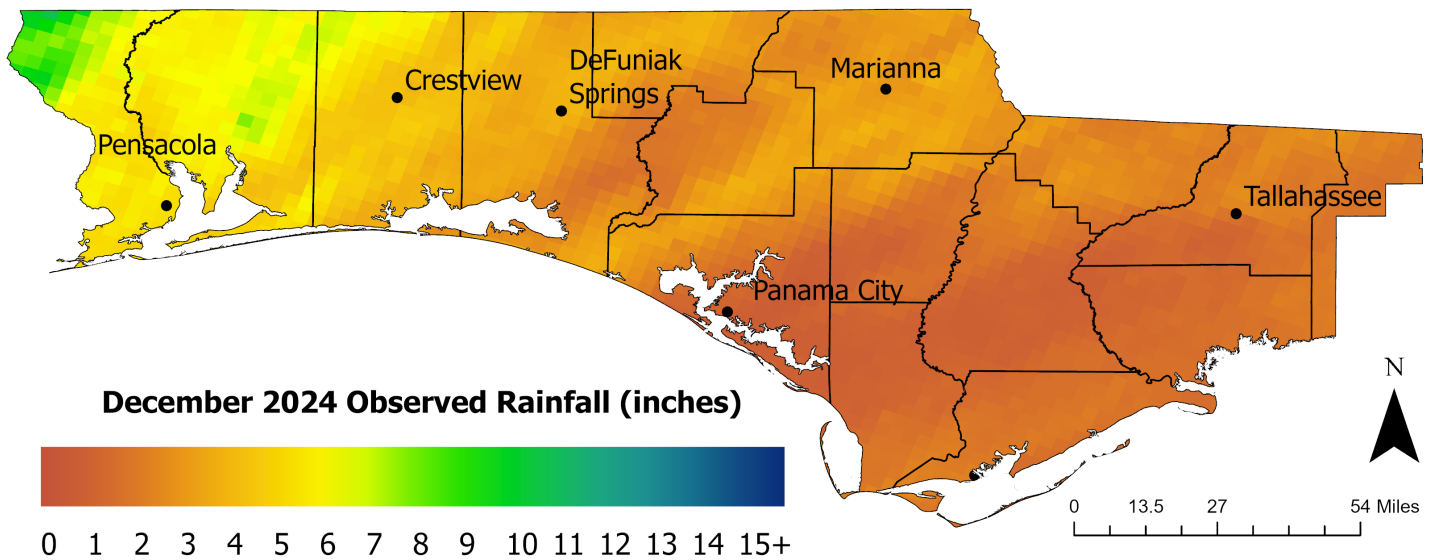
In December 2024, an average of 3.02 inches of rain was recorded across the Panhandle. This amount was 1.61 inches (42.1%) below the District normal rainfall amount for the month of December, 4.63 inches (**Table 1; Figures 1 - 7**). Normal rainfall is defined as average monthly rainfall for the 1991 to 2020 reference period. The most significant rain event occurred December 28 through 30, 2024, when a squall line associated with a cold front passed through the District. The cold front associated system produced between 0.50 and 4.00 inches of rain across the Panhandle. The highest amounts of rain from this system were observed in the western portion of the District, particularly northwestern Escambia County (**Figure 1**).

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

Station	December Normal Rainfall (1991 to 2020)	December 2024 Observed Rainfall	Percent Difference
Tallahassee Regional Airport	4.24	1.19	-112%
Marianna Regional Airport	4.81	2.30	-70.6%
Niceville, FL	5.68	3.58	-45.4%
Pensacola Regional Airport	5.40	5.12	-5.30%

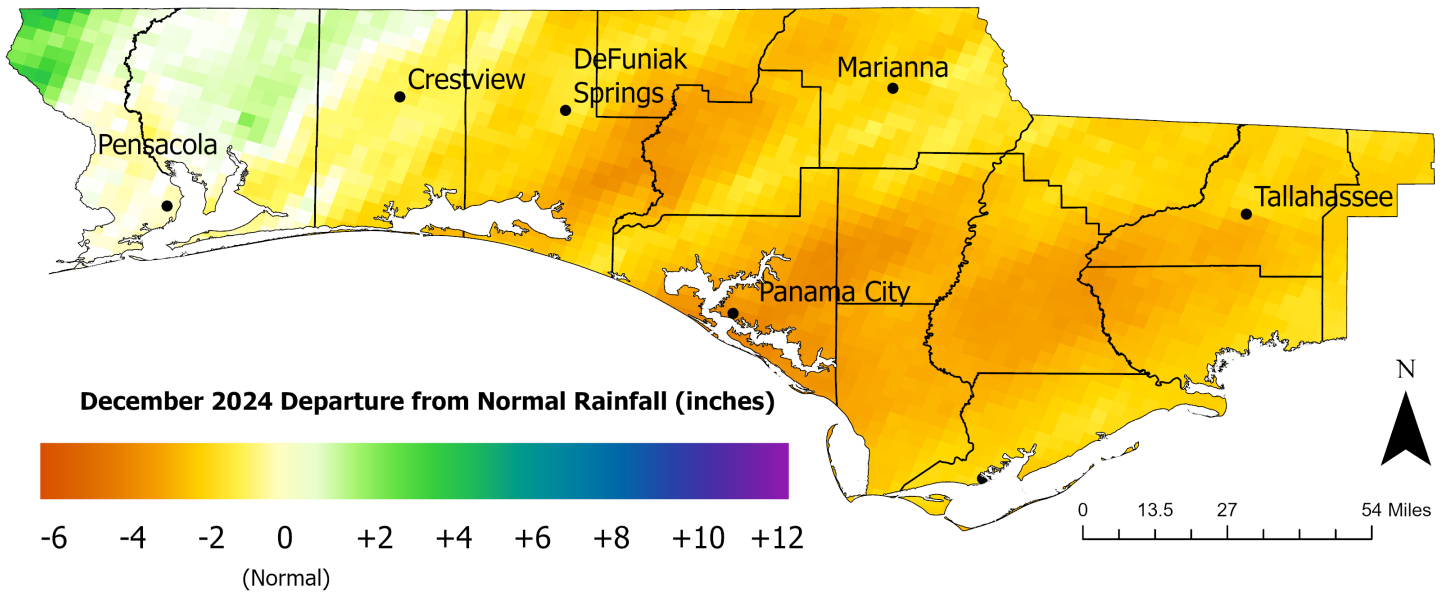
Source: <https://www.weather.gov/wrh/Climate?wfo=tae>
<https://www.weather.gov/wrh/Climate?wfo=mob>

Figure 1: District-wide December 2024 observed rainfall



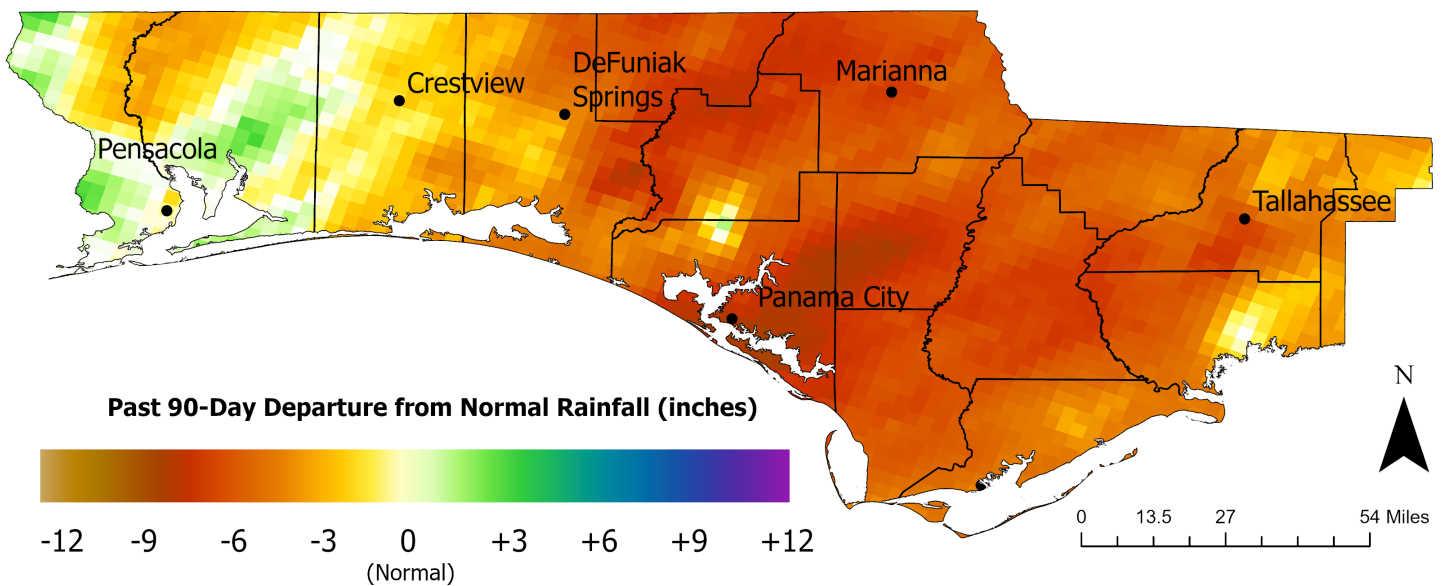
Source: <https://water.weather.gov/precip/download.php>

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



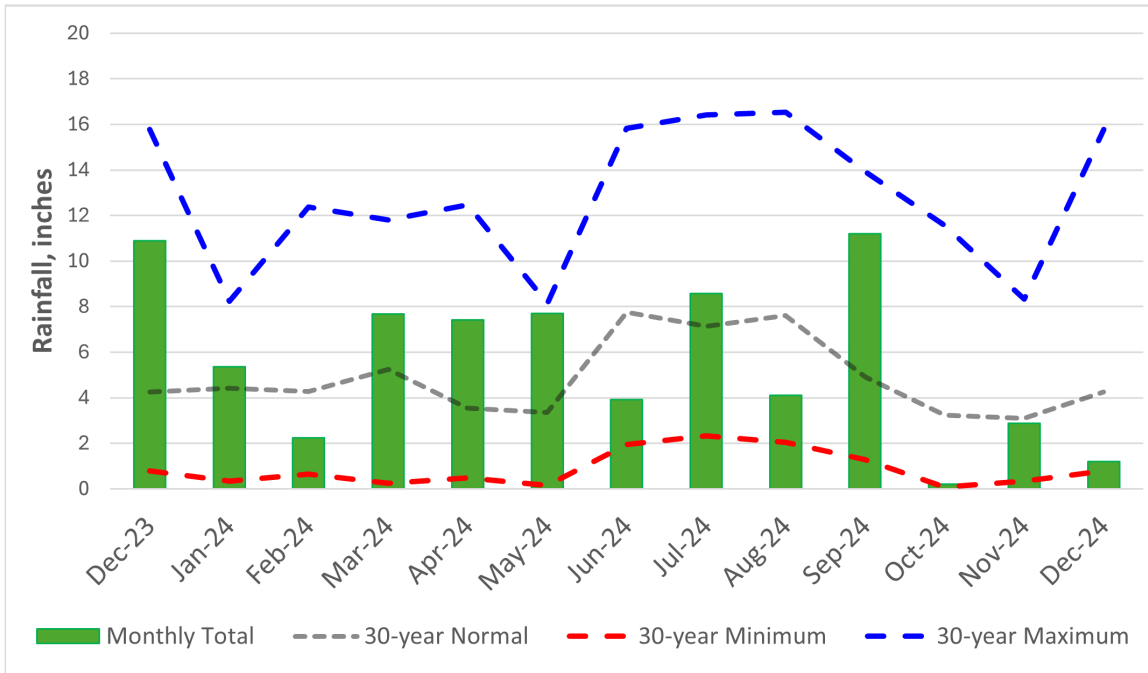
Source: <https://water.weather.gov/precip/download.php>

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



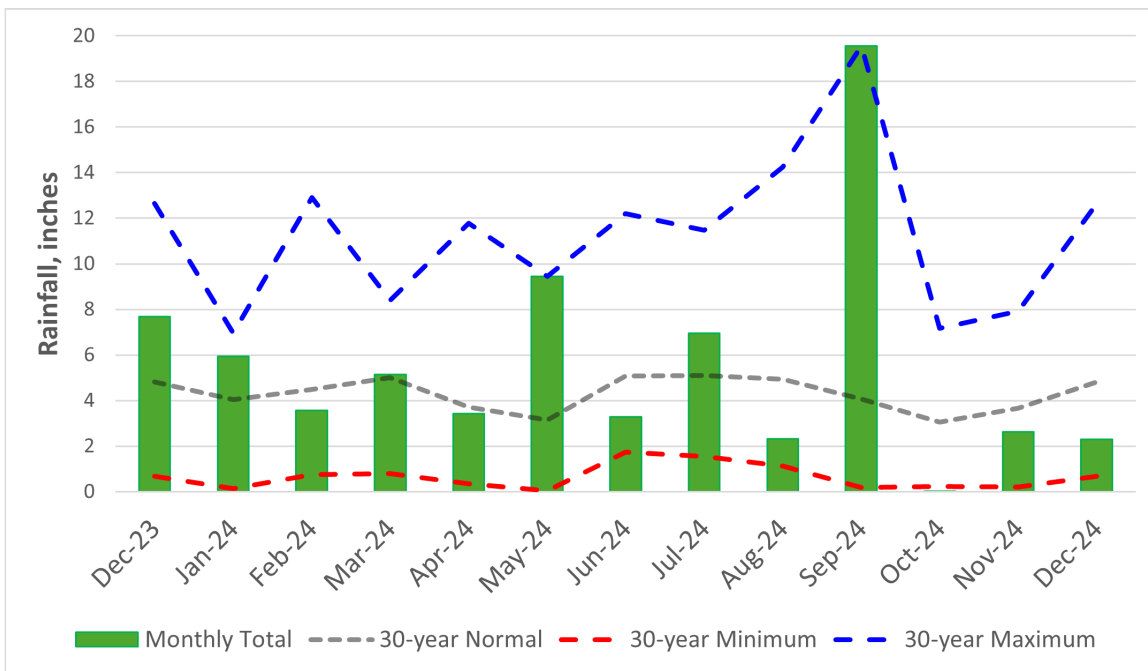
Source: <https://water.weather.gov/precip/download.php>

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



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

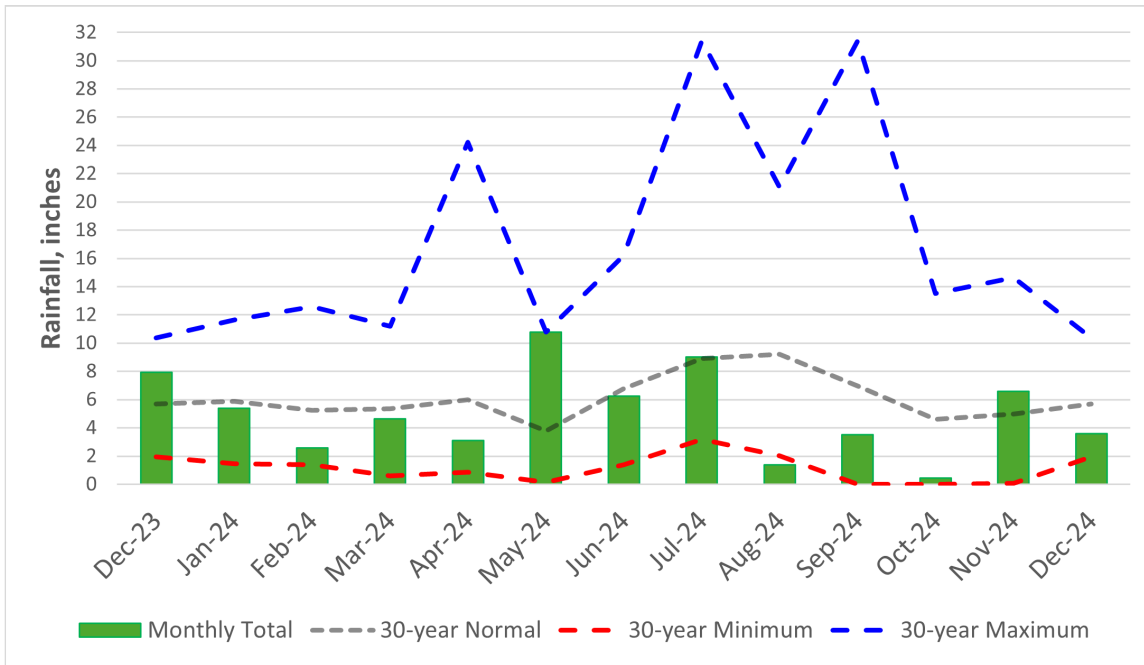
Figure 5: Observed rainfall at Marianna Regional Airport for December 2023 to December 2024 compared to the 30-year normal, minimum, and maximum precipitation for each month



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

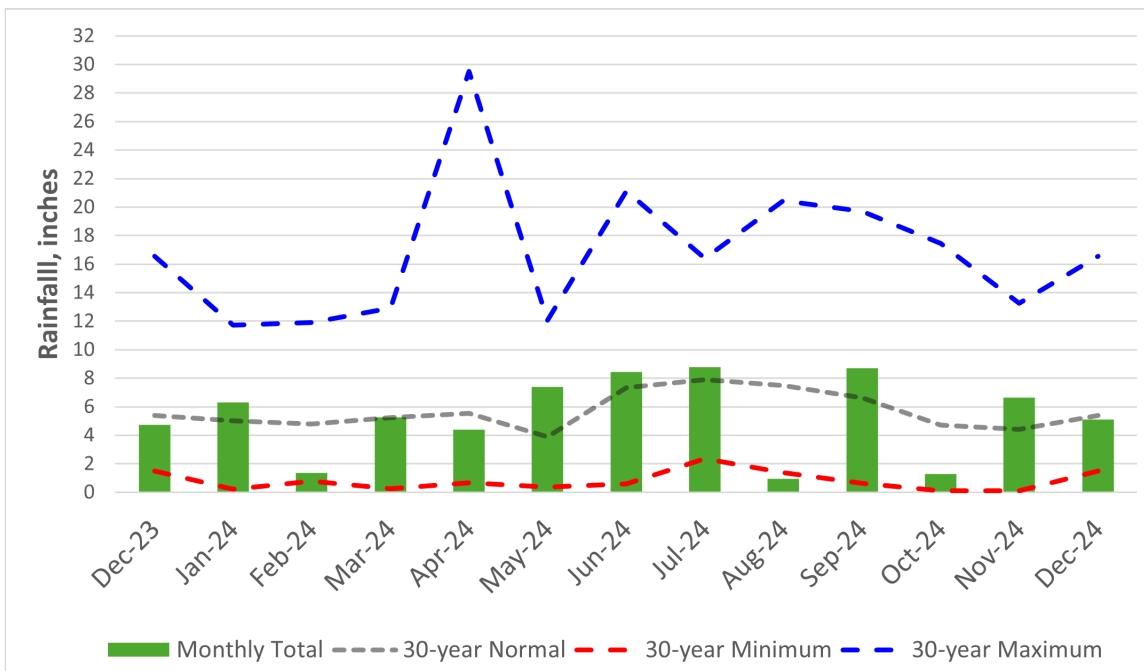


Figure 6: Observed rainfall in Niceville for December 2023 to December 2024 compared to the 30-year normal, minimum, and maximum precipitation for each month



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

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



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



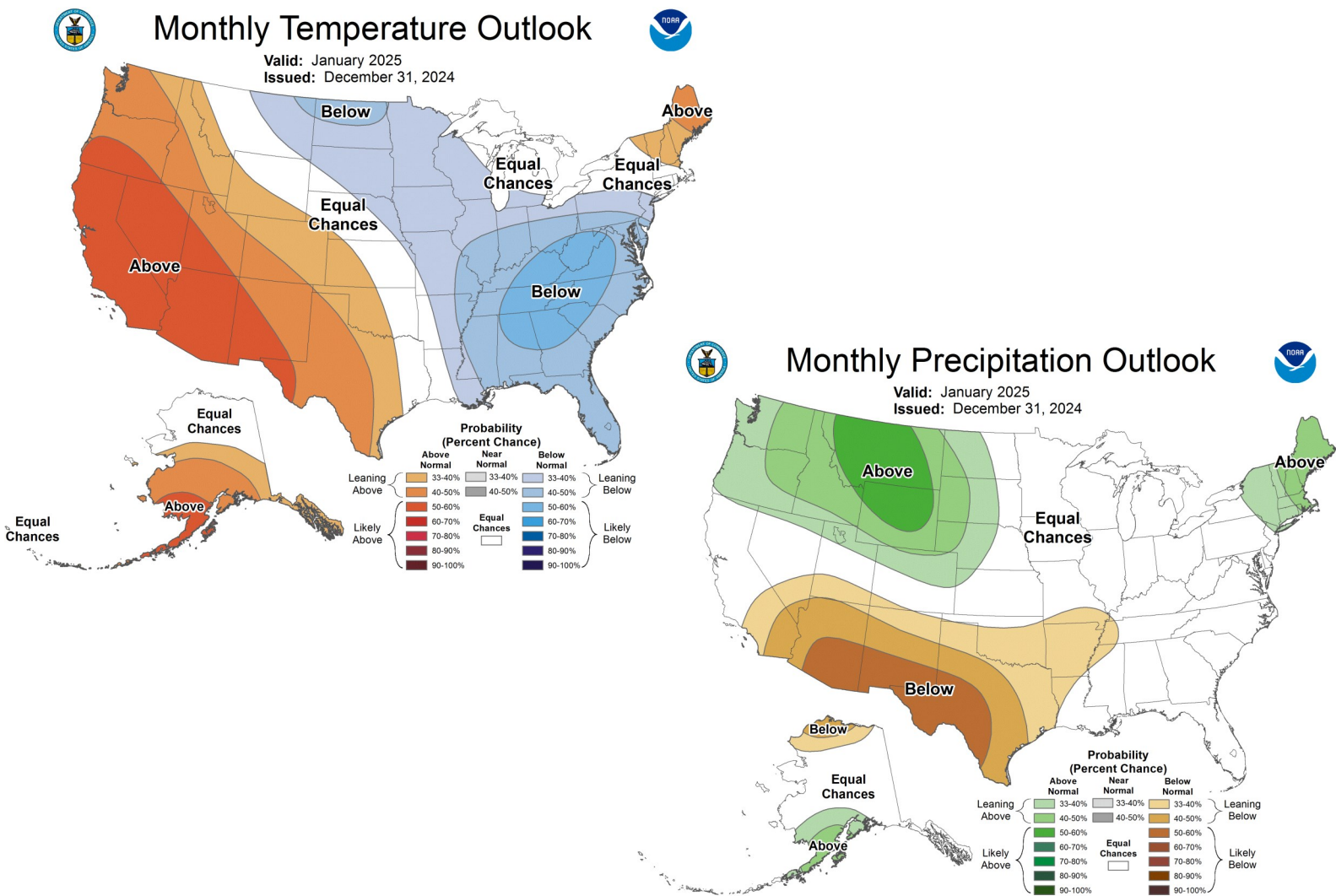
Climate Outlook

According to NOAA’s Climate Prediction Center, the forecast issued December 31, 2024, for January 2025 shows a slight chance for temperatures leaning below normal and equal chances of above or below normal rainfall amounts across the District (**Figure 8**).

As of January 6, 2025, ENSO-neutral conditions are present and a La Niña Watch has been advised. La Niña conditions are favored to develop during January 2025 (59% chance) and are forecast to persist through March 2025. In the winter, La Niña is associated with warmer and drier conditions than usual for the southern United States.

Source: <https://www.cpc.ncep.noaa.gov/products/predictions/30day/>
https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf

Figure 8: January 2025 Temperature and Precipitation Outlooks for the United States



Source: <https://www.cpc.ncep.noaa.gov/products/predictions/30day/>

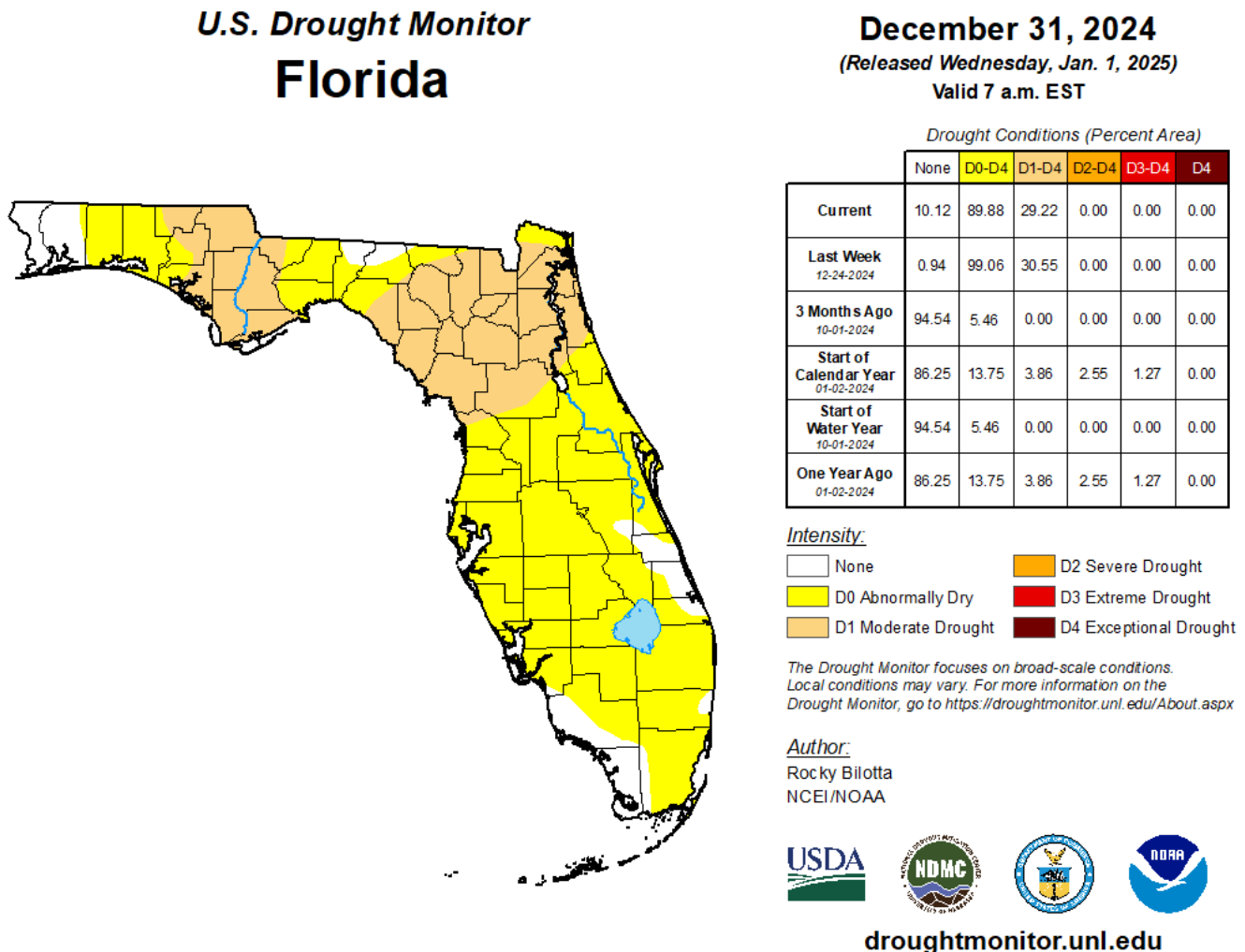


Drought Conditions

The U.S. Drought Monitor report released for December 31, 2024, showed nearly the entire Panhandle as abnormally dry or under moderate drought conditions. The only areas in the District not under any drought conditions were Escambia County, most of Santa Rosa County, and a small portion of northwest Jefferson County (**Figure 9**).

This was an improvement from the U.S. Drought Monitor report from November 26, 2024, with the main difference being the alleviation of drought conditions in Escambia and Santa Rosa Counties. This improvement came as a result of the rainfall received from the cold front associated squall line that passed through the District on December 28-30, 2024. According to the U.S. Monthly Drought Outlook, drought conditions in the Panhandle are expected to persist through January 2025.

Figure 9: Florida Drought Conditions on December 31, 2024



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

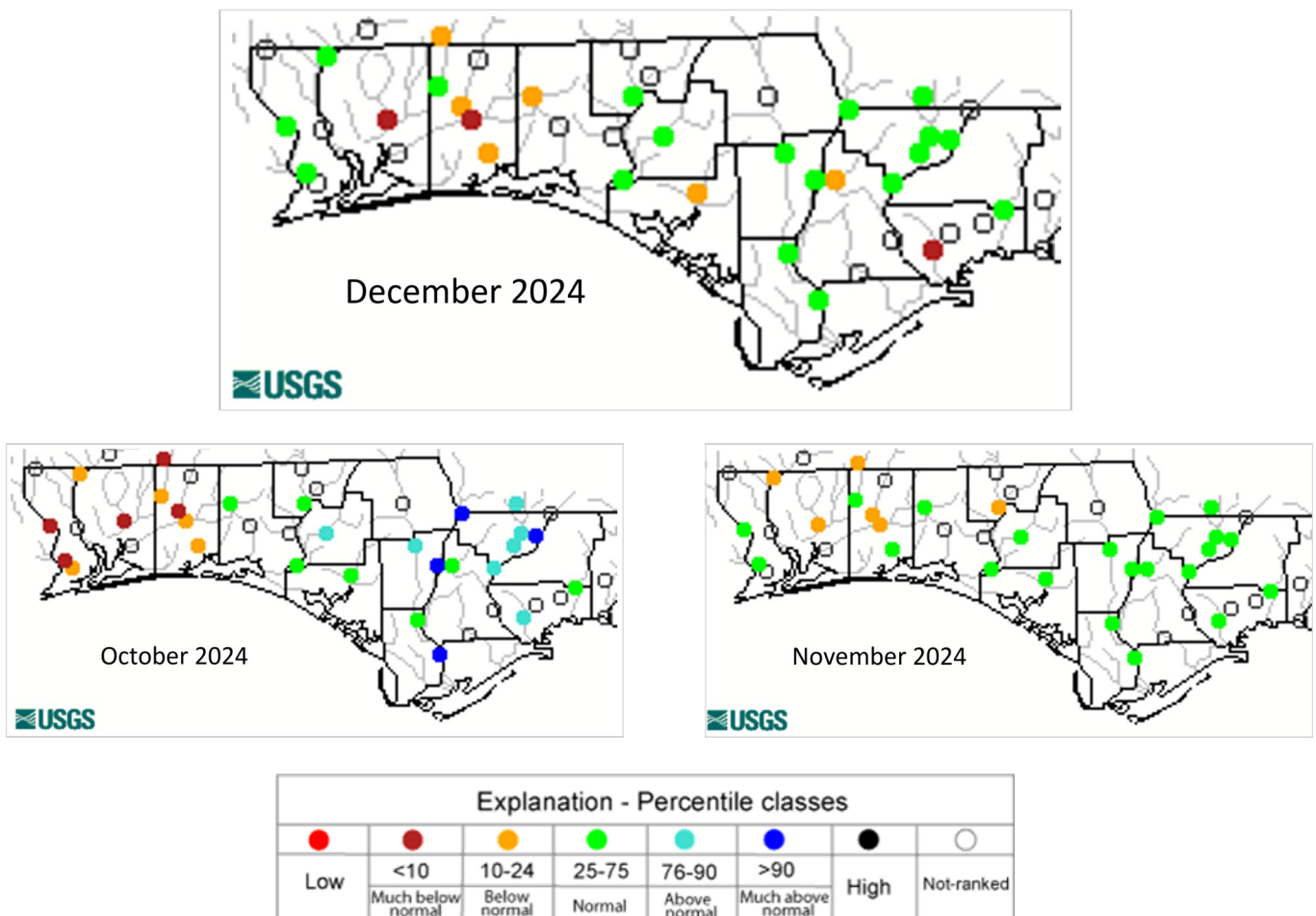


Surface Water

Streamflows. Decreased rainfall amounts throughout December 2024 (Figures 1 & 2) contributed generally to streamflow percentiles across the Panhandle remaining within normal ranges or decreasing in percentile class compared to November 2024 (Figures 10 – 16). Three stations in Santa Rosa, Okaloosa, and Wakulla Counties decreased to much below normal ranges, a result of the continued dry conditions in those areas during the majority of December 2024 (Figure 9).

The USGS streamflow stations at Blackwater River Near Baker, Florida (Figure 15) and Escambia River Near Century, Florida (Figure 16) recorded much above normal flows following the significant cold front associated rain event December 28 through 30, 2024.

Figure 10: Northwest Florida October 2024 to December 2024 monthly streamflow percentiles



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



Figure 11: Daily streamflows and percentile ranges for USGS station 02326900 St. Marks River Near Newport, Florida

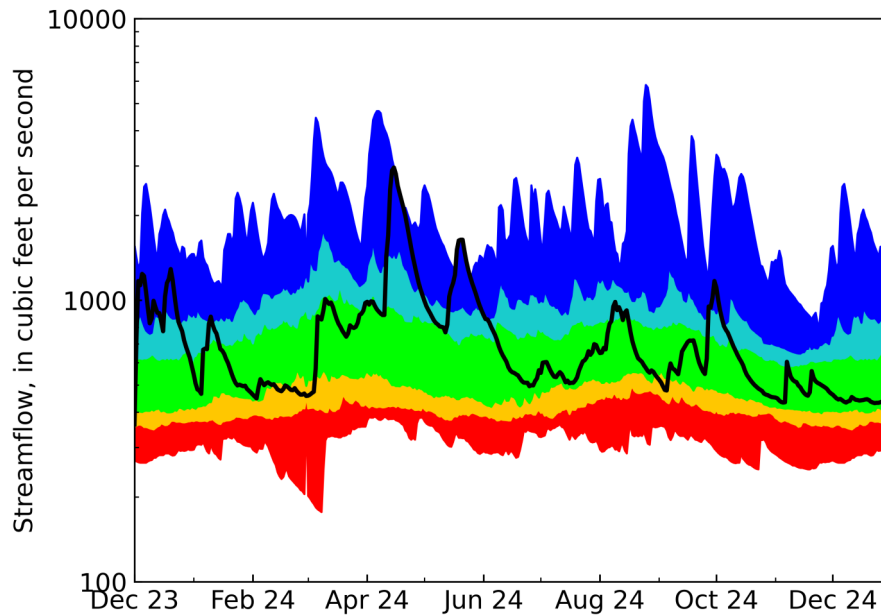
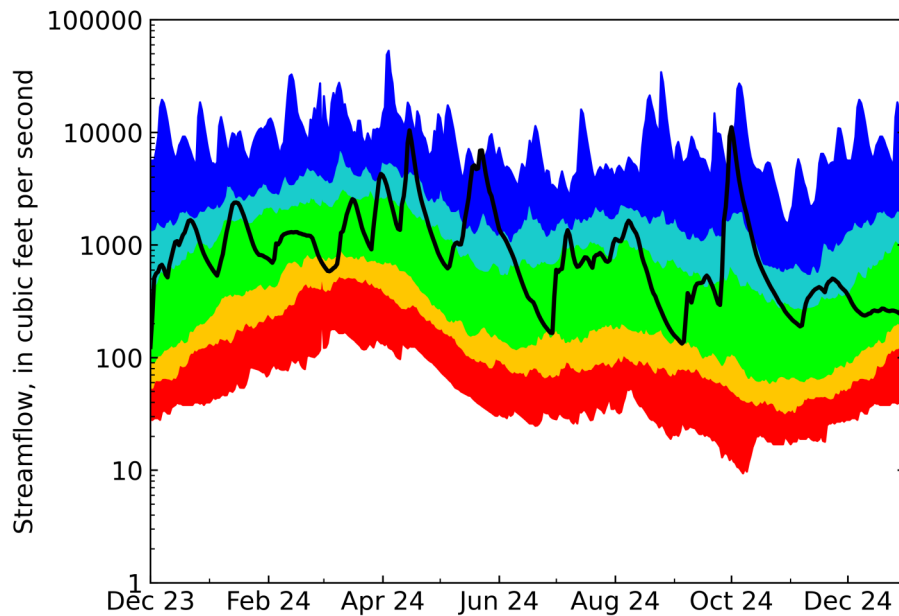


Figure 12: Daily streamflows and percentile ranges for USGS Station 02329000 Ochlockonee River Near Havana, Florida



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



Figure 13: Daily streamflows and percentile ranges for USGS Station 02358700 Apalachicola River Near Blountstown, Florida

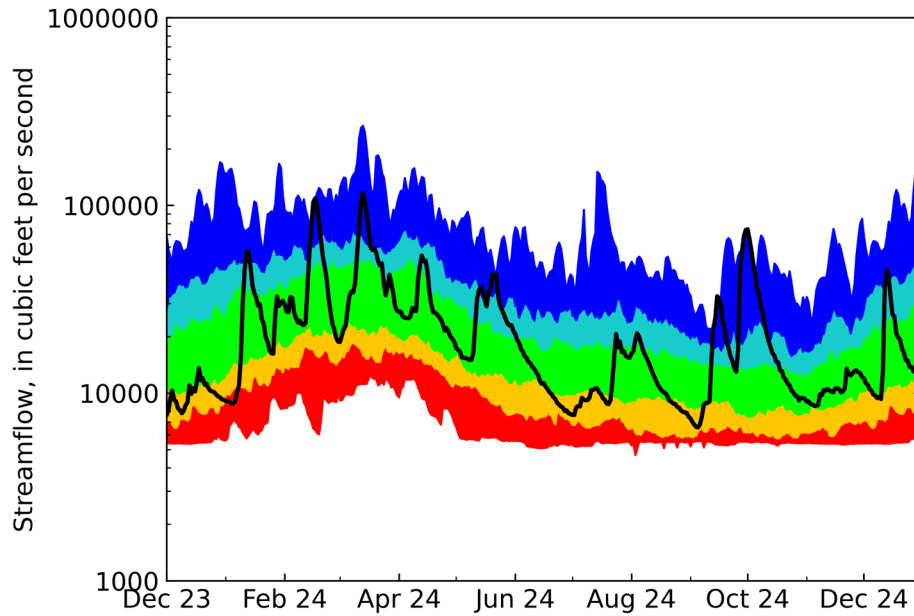
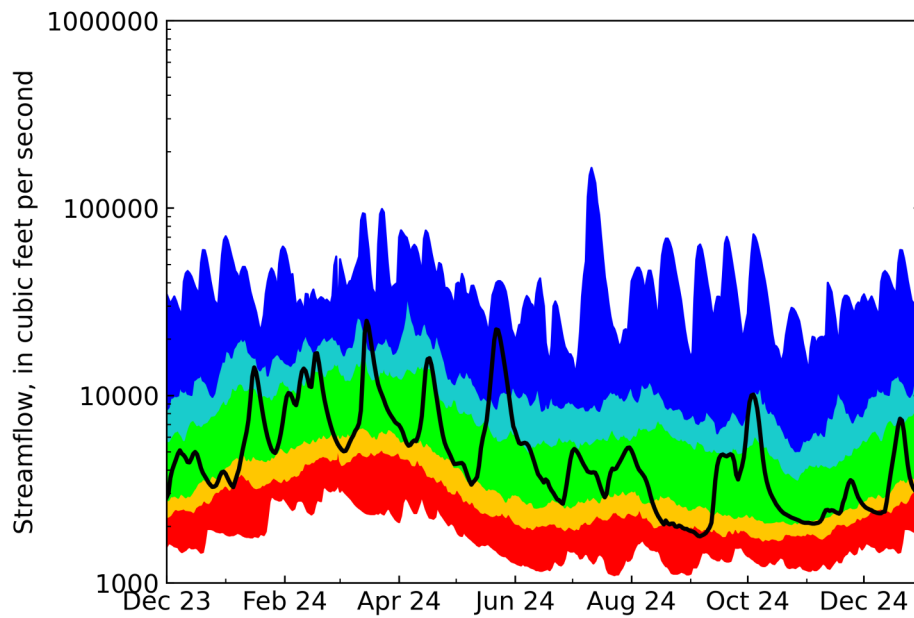


Figure 14: Daily streamflows and percentile ranges for USGS Station 02366500 Choctawhatchee River Near Bruce, Florida



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



Figure 15: Daily streamflows and percentile ranges for USGS Station 02370000 Blackwater River Near Baker, Florida

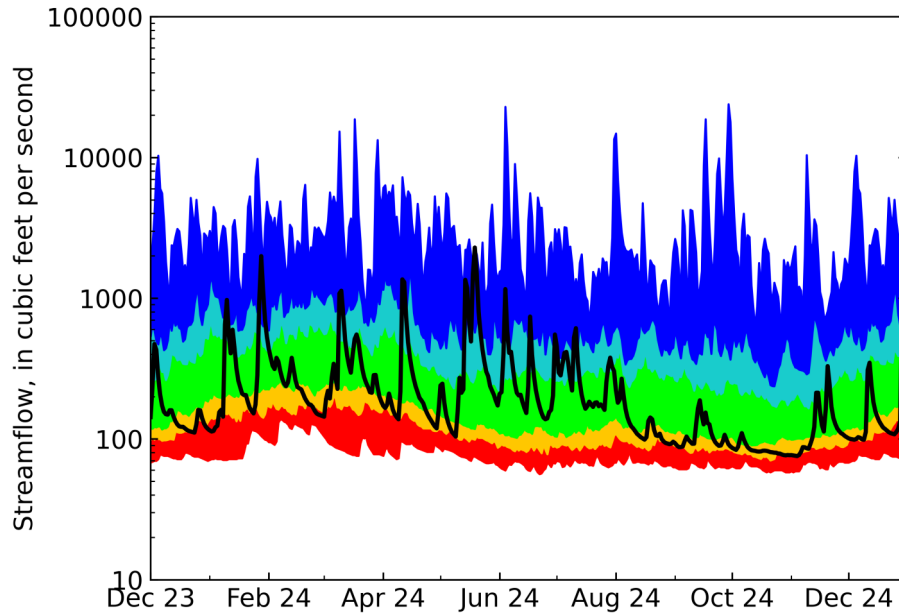
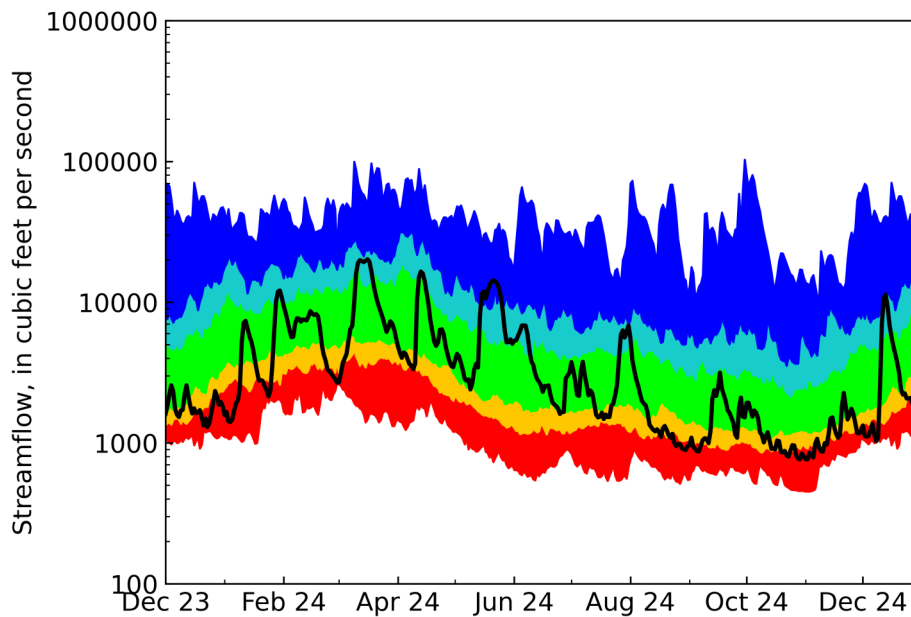


Figure 16: Daily streamflows and percentile ranges for USGS Station 02375500 Escambia River Near Century, Florida



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 decreased by 0.24 feet throughout the month of December 2024, ending the month with a stage level of 81.31 feet, NAVD 1988 (Figure 17). The long-term (January 29, 2003 to December 31, 2024) average stage level for Lake Jackson is 80.89 feet, NAVD 1988, and the full pool level is 85.74 feet, NAVD 1988.

Water levels at Piney Lake in southern Washington County decreased by 0.47 feet throughout December 2024 until the significant rain event on December 29, 2024, increased the stage by 0.21 feet. Piney Lake ended the month with a stage level of 49.19 feet, NAVD 1988 (Figure 18).

Figure 17: Daily water levels at Lake Jackson at Miller Landing, Leon County

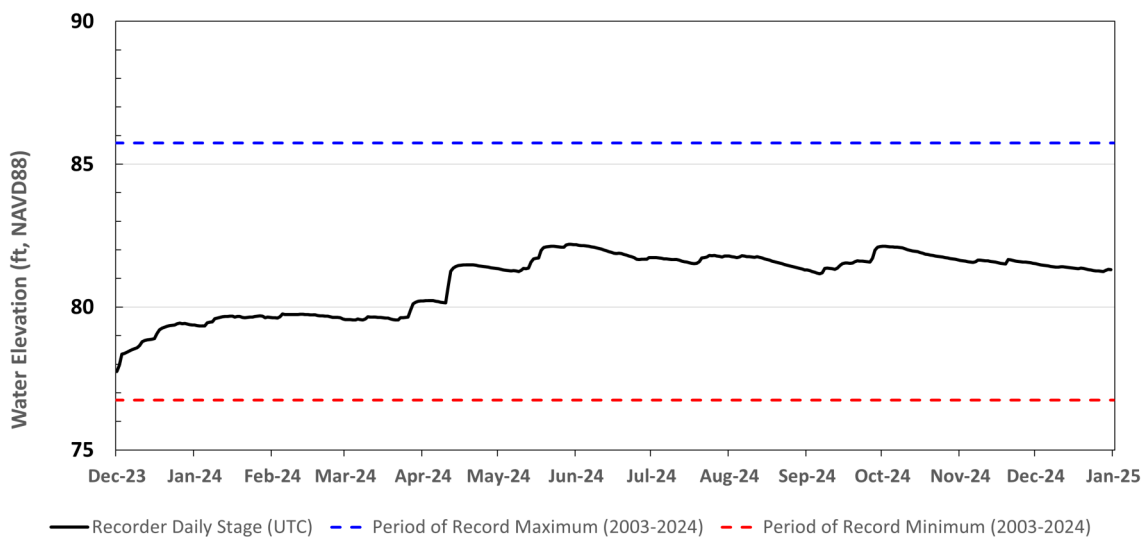
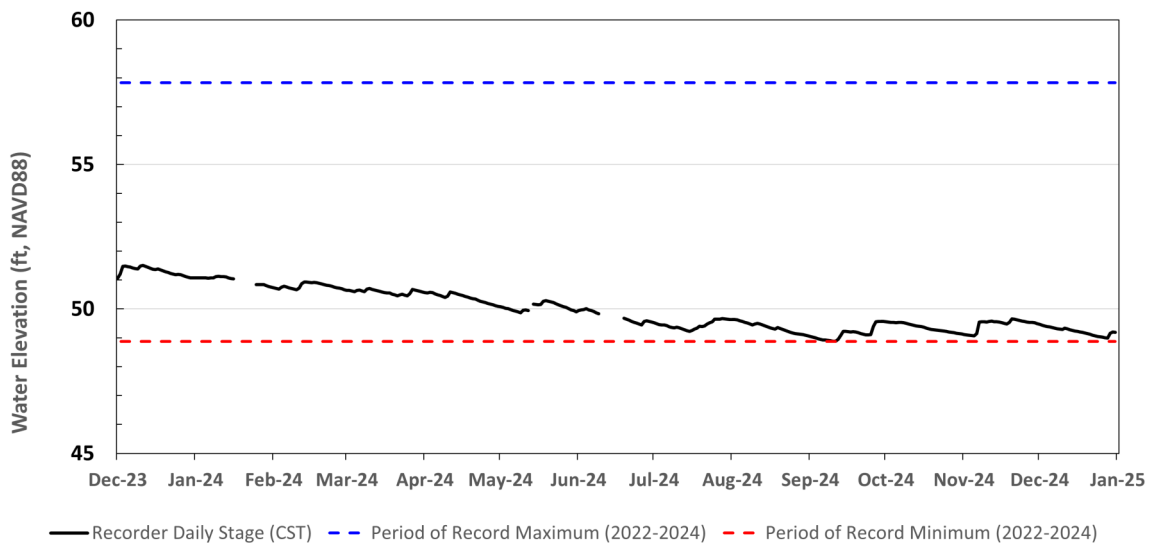


Figure 18: Daily water levels at Piney Lake, Washington County



Spring Flows

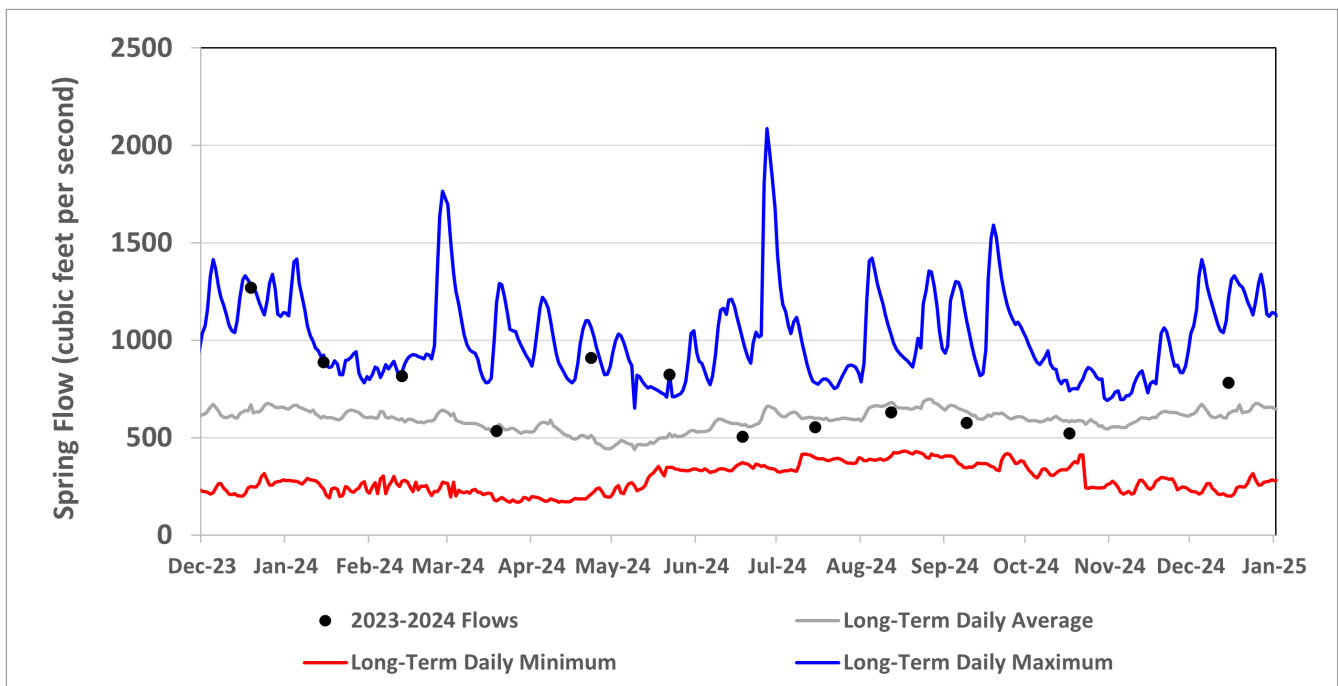
Wakulla and Sally Ward Spring System. Flow at Wakulla Spring increased between the measurements taken in October and December 2024, rising above the long-term average flow. The most recent flow measurement for Wakulla Spring was 782 cubic feet per second (cfs), which was conducted on December 15, 2024 (Figure 19). The long-term (November 2004 to December 2024) average flow for the month of December is 639 cfs.

Flow at Sally Ward Spring increased by 1.5 cfs between the measurements taken in October and December. The most recent flow measurement for Sally Ward was 25.9 cfs on December 15, 2024. This measurement was 1.0 cfs higher than the long-term average flow for the month of December, 26.9 cfs. The long-term average flow is based on the November 1, 2004, to December 15, 2024, period of record.

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 December 15, 2024) average flows for Wakulla and Sally Ward Springs are 589 cfs and 24.2 cfs, respectively. The combined long-term spring flow for both systems is 613 cfs, which exceeds the established Minimum Flow of 539 cfs by 73 cfs.

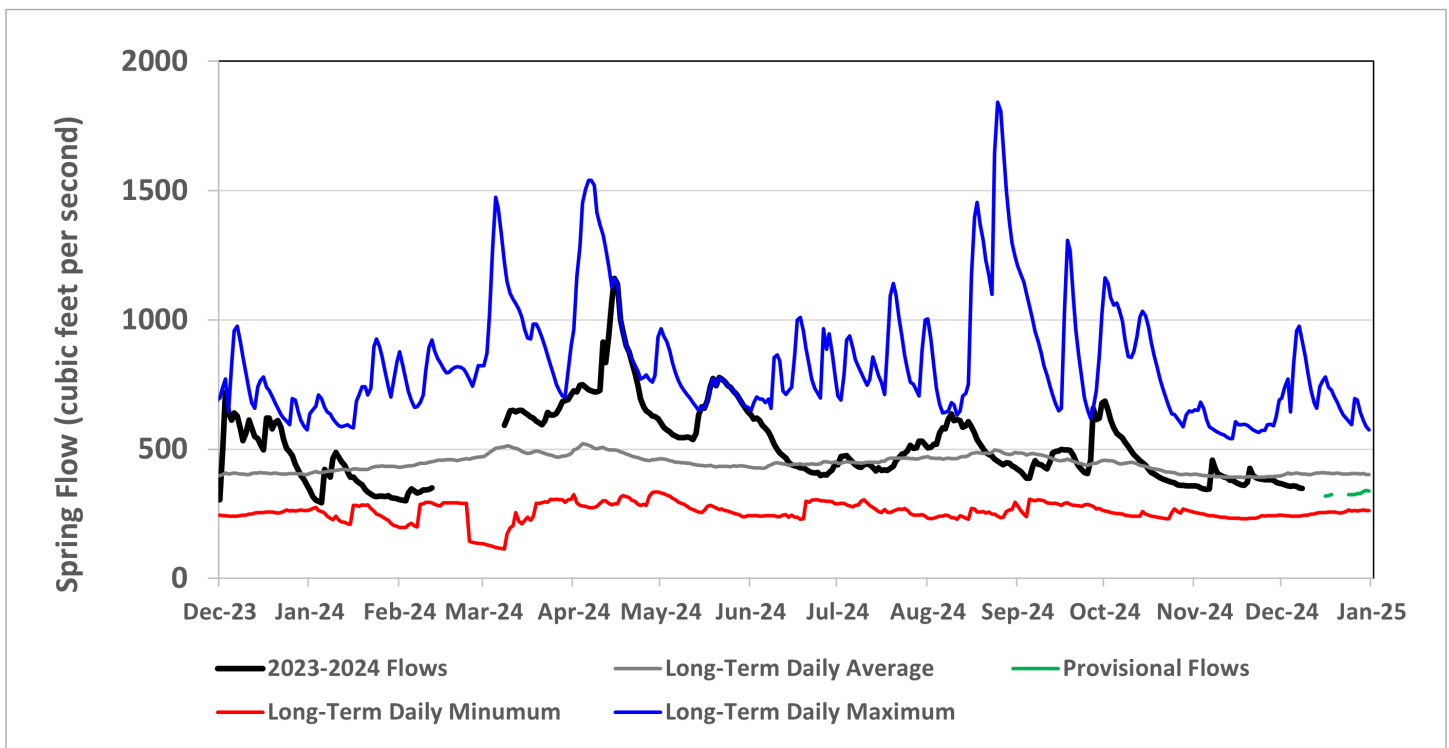
Figure 19: Daily Wakulla Spring flows

Data from November 1, 2023, through December 31, 2024, represent discrete measurements. Daily statistics are based on the October 23, 2004, through December 15, 2024, period of record.



St. Marks River Rise. The mean daily spring flow for December 2024 at the St. Marks River Rise was 405 cfs, based on the available USGS provisional data which extends through December 31, 2024 (Figure 20). 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 December 31, 2024, are included, the 30-year moving average spring flow for the St. Marks River Rise is 424 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 5 cfs, respectively.

Figure 20: Daily spring flows for the St. Marks River Rise

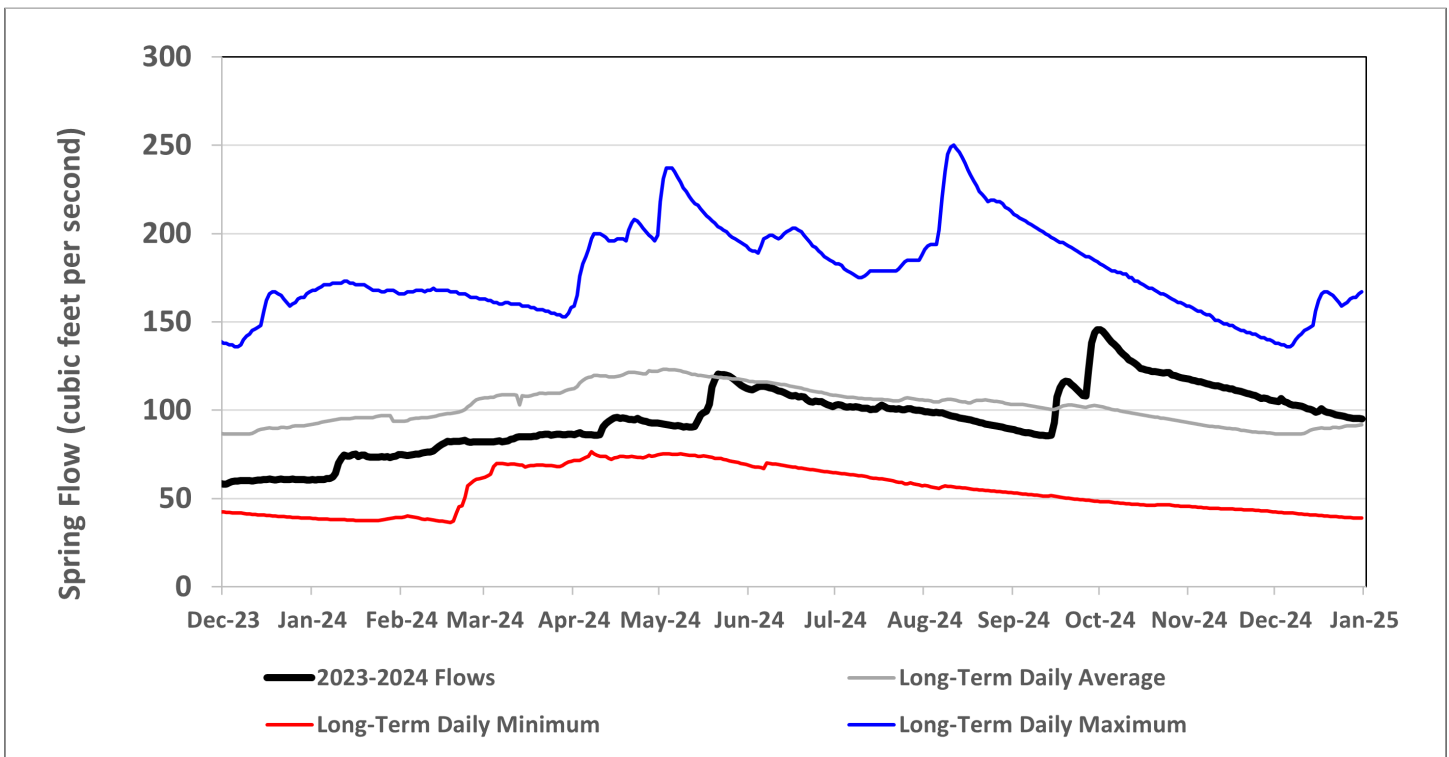


Jackson Blue Spring. Daily average flows at Jackson Blue Spring for the month of December 2024 averaged 99.9 cfs. This was above the long-term (December 21, 2004, through December 31, 2024) average flow for the month of December, 89.0 cfs (**Figure 21**).

Flow from Jackson Blue Spring decreased slightly through December 2024, ending the month with a flow of 95.2 cfs.

Figure 21: Daily spring flows for Jackson Blue Spring

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

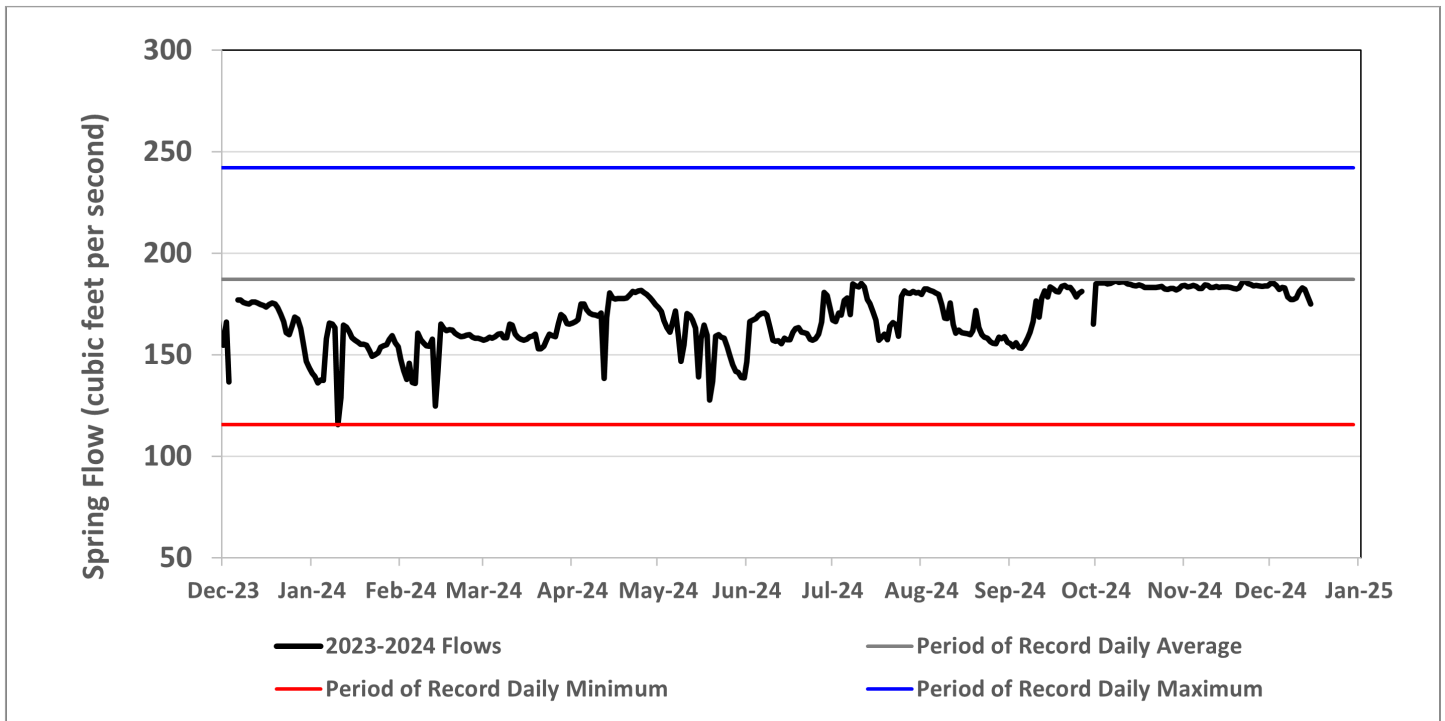


Gainer Spring Group. During December 2024 (December 1 through December 15, 2024), flow at the Gainer Spring Group was 181 cfs (**Figure 22**). The period of record (October 28, 2019, through December 15, 2024) average monthly spring flow for December is 189 cfs. It should be noted that there is a relatively brief period of record for this system, and spring flows among the highest and lowest on record are to be expected.

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.

Figure 22: Gainer Spring Group flows

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



Aquifer Levels

In the middle of December 2024, all depicted Floridan aquifer monitor wells were classified as within normal ranges except for Jackson Still Floridan monitor well (NWFID 5417) in northern Walton County and Sand Hill Upper Floridan monitor well (NWFID 5597) in northwestern Okaloosa County (Figures 23 - 29). These sites have continued to be classified as below normal and much below normal, respectively, likely as a result of the continued dry conditions present in this region of the District (Figure 9). Between mid-November and mid-December 2024, groundwater levels at McCulloch #1 well (NWFID 29) in coastal Franklin County decreased from above normal to be within normal ranges (Figure 23). Groundwater levels at Fannin Airport monitor well (NWFID 697) in coastal Washington County increased to be within normal ranges after several months of being classified as below normal or much below normal (Figure 28).

All depicted sand-and-gravel aquifer monitor wells have continued to record below normal groundwater levels except for NWFWMD - Weller Ave Deep monitor well (NWFID 1382) in southern Escambia County (Figure 23), which had remained within normal ranges for most of 2024 until levels rose into above normal ranges during November and December 2024 (Figure 29).

Figure 23: Floridan aquifer monitor wells and aquifer level percentiles for mid-December 2024

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

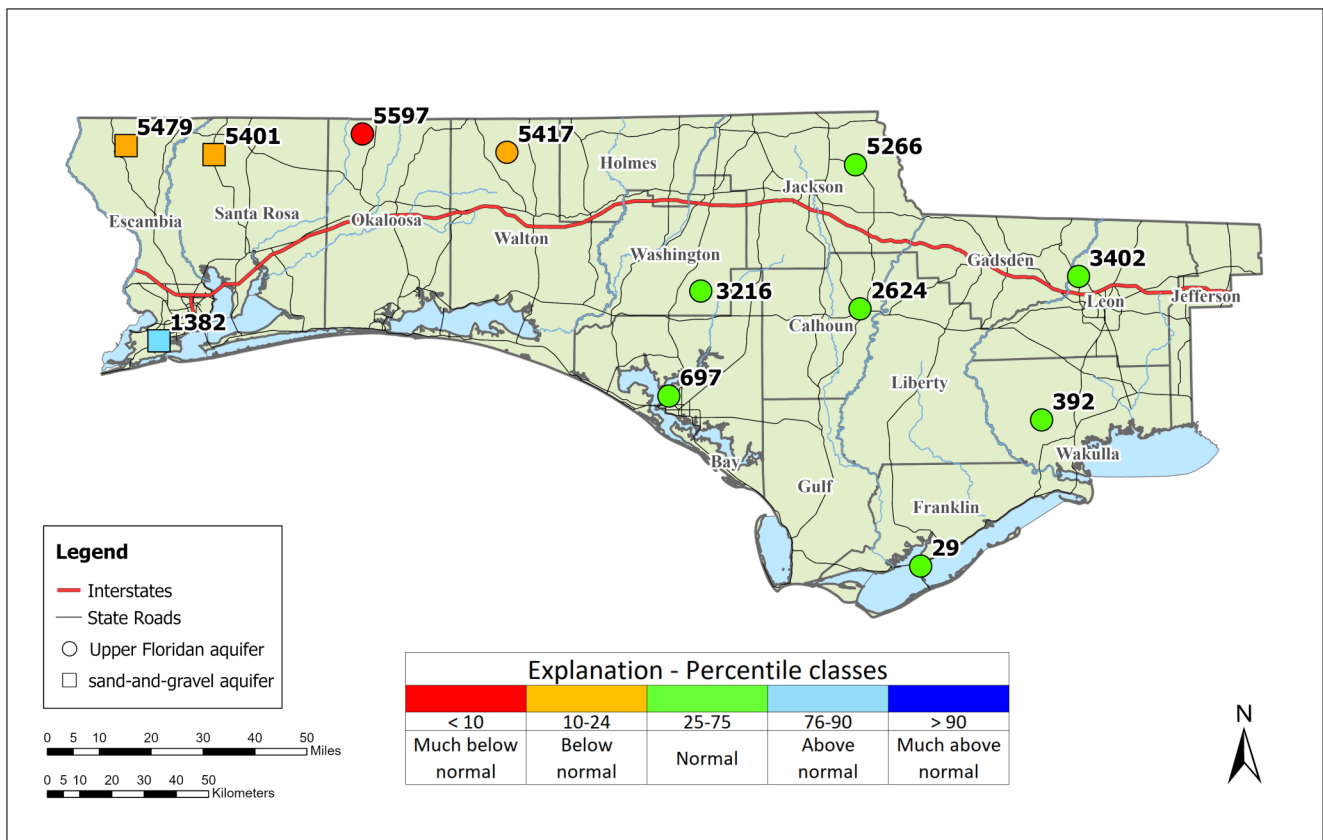


Figure 24: Daily Upper Floridan aquifer levels at USGS-Lake Jackson well (NWFID 3402), Leon County

Land surface elevation is 121.40 ft, NAVD 88

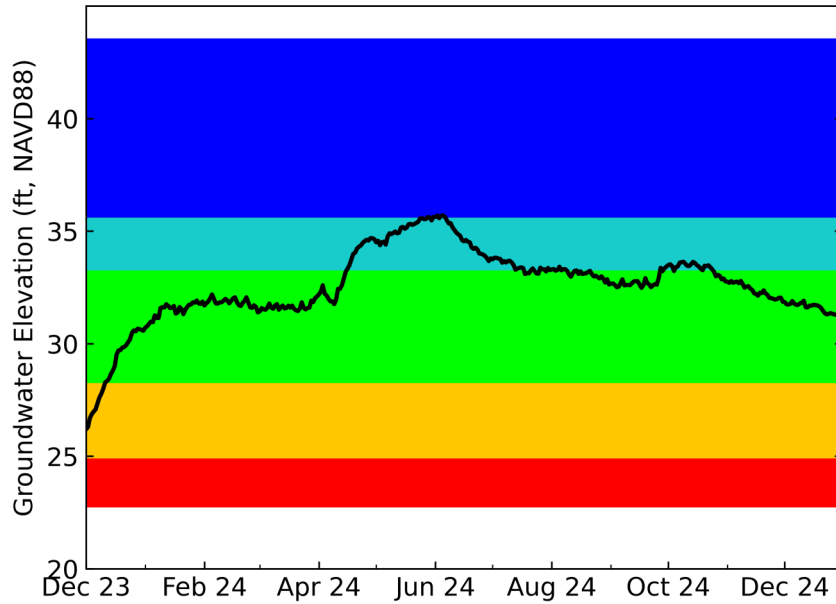
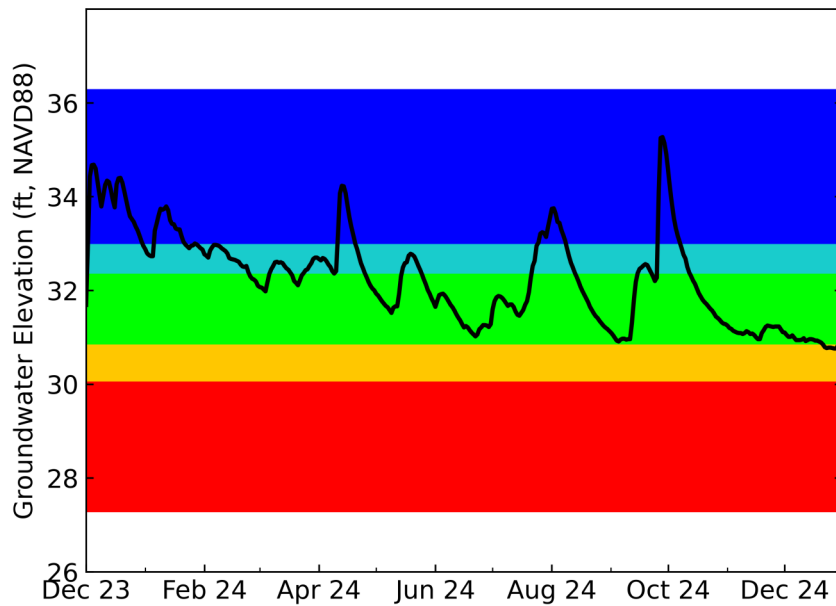


Figure 25: Daily Upper Floridan aquifer levels at USGS Benchmark well (NWFID 392), Wakulla County

Land surface elevation is 46.27 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 26: Daily Upper Floridan aquifer levels at NFWMD Pittman Visa well (NWFID 5266), Jackson County

Land surface elevation is 127.31 ft, NAVD 88

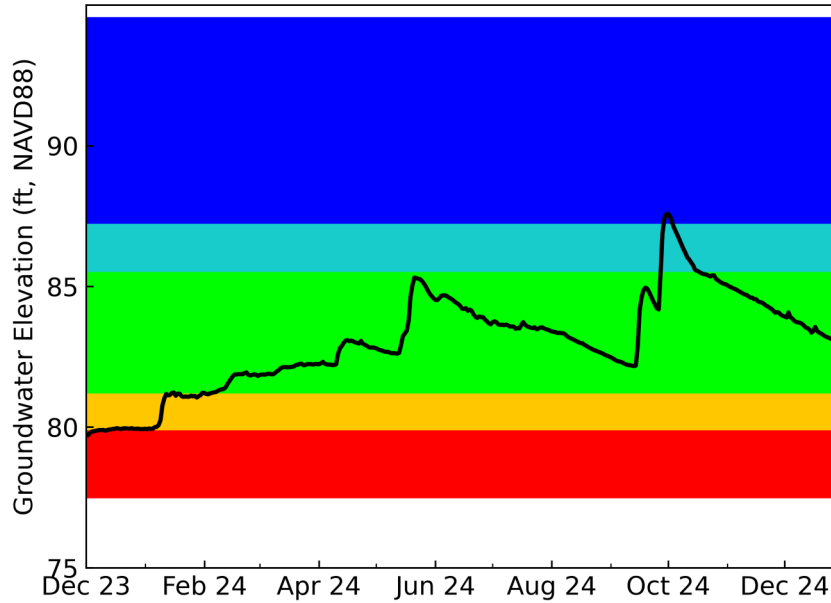
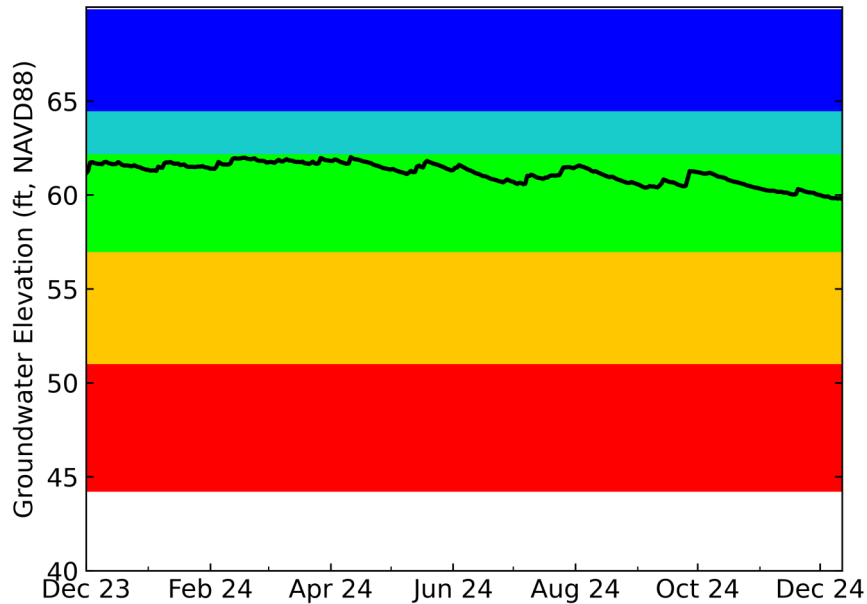


Figure 27: Daily Upper Floridan aquifer levels at USGS-422A Near Greenhead well (NWFID 3216), Washington County

Land surface elevation is 66.75 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 28: Daily Upper Floridan aquifer levels at Fannin Airport well (NWFID 697), Washington County

Land surface elevation is 4.05 ft, NAVD 88

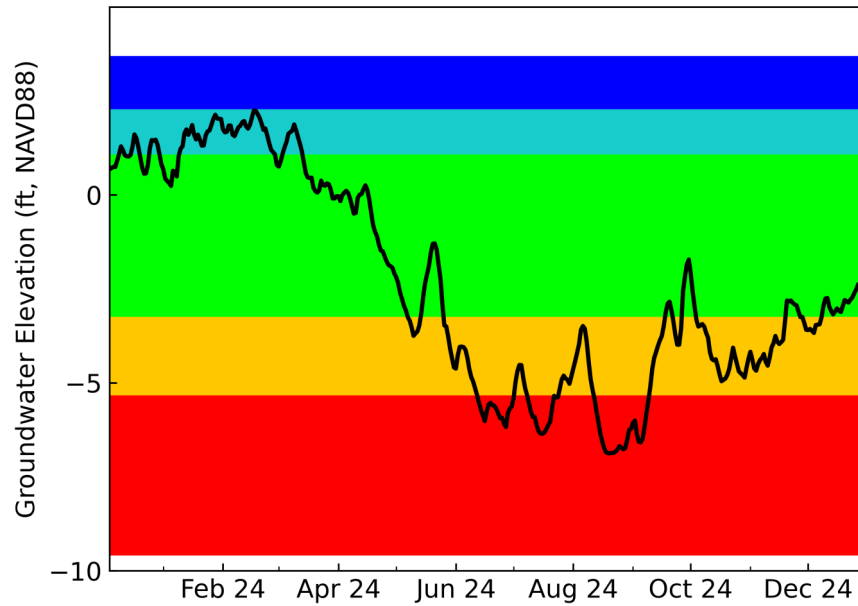
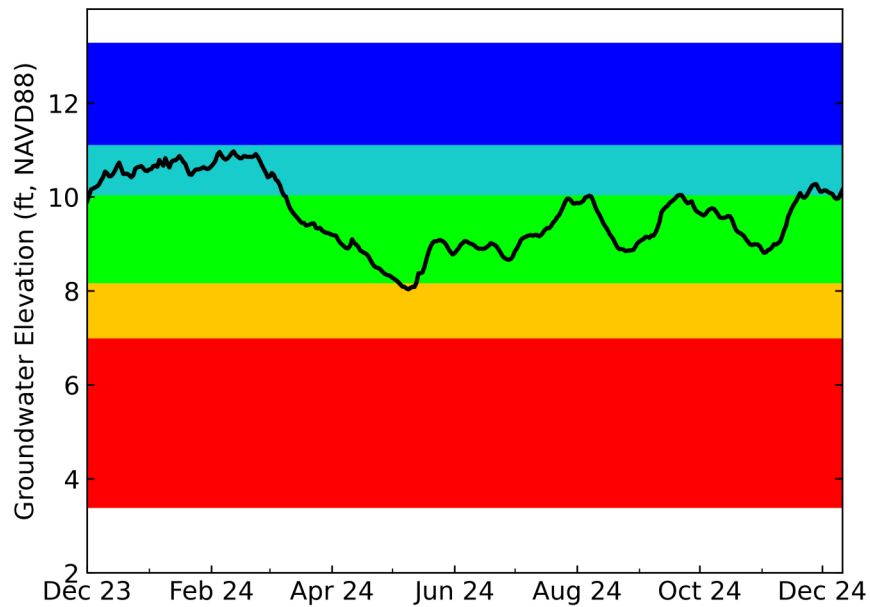


Figure 29: Daily sand-and-gravel aquifer levels at NFWMD Weller Ave Deep well (NWFID 1382), Escambia County

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