



Hydrologic Conditions Report

May 2025

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Summary

May 2025 was characterized by above-normal precipitation and above-normal temperatures (averaging around 76.1 degrees Fahrenheit) that contributed to generally normal hydrologic conditions across the Panhandle. Drought conditions were removed in the western portion of the District and reduced to abnormally dry conditions in the eastern portion due to the spatial variation of rainfall throughout the month.



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Rainfall

In May 2025, an average of 6.59 inches of rain was recorded across the Panhandle. This amount was 2.87 inches (55.7%) above the District normal rainfall for the month of May, which is 3.72 inches (Table 1; Figures 1 - 7). Normal rainfall is defined as average monthly rainfall for the 1991-2020 reference period.

Nearly twice as much rainfall was observed on average in the western portion of the Panhandle than in the eastern portion in May 2025 (Figure 1). A vast majority of the Panhandle received enough rainfall over the month to have a surplus of rain compared to normal for May (Figure 2). The percentage of the District affected by a rainfall deficit reduced greatly due to the frequent rain events that occurred in May 2025 (Figure 3).

There were many significant rain events throughout May 2025 caused by a multitude of atmospheric conditions including convection, weak cold fronts, and shortwave troughs. A shortwave trough is a small temporary ripple of relatively lower pressure embedded in a larger mid- to upper-atmospheric trough-ridge pattern. Shortwave troughs are associated with rising air which can lead to storm formation.

The most significant rain event of May 2025 occurred on May 9-12, 2025, when an atmospheric river moved slowly across the Panhandle, an unusual phenomenon for the eastern United States. This event provided 48% (3.37 inches) of Pensacola's May 2025 rainfall and 67% (8.59 inches) of Niceville's May 2025 rainfall total. Niceville's total rainfall for May 2025 was 12.81 inches, setting a new record for maximum rainfall observed in May. This value exceeded the previous maximum of 10.77 inches by 2.04 inches.

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

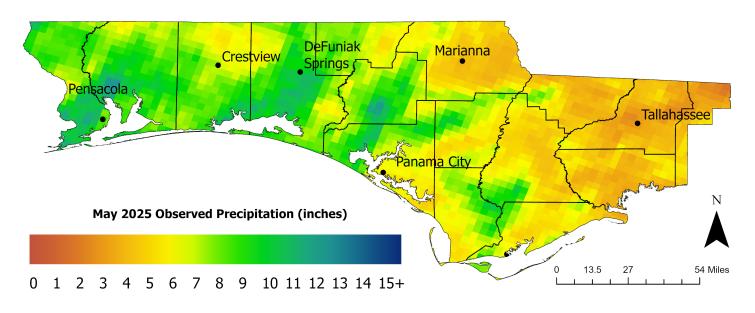


Table 1: May 2025 rainfall compared to 30-year normal monthly rainfall for Tallahassee, Marianna, Niceville, and Pensacola

| Station | May Normal Rainfall (1991 to 2020) | May 2025 Observed Rainfall | Percent Difference | | |
|------------------------------|---------------------------------------|-------------------------------|--------------------|--|--|
| Tallahassee Regional Airport | 3.36 | 3.43 | 2.1% | | |
| Marianna Regional Airport | 3.15 | 3.91 | 21.5% | | |
| Niceville, FL | 3.78 | 12.81 | 108.9% | | |
| Pensacola Regional Airport | 3.90 | 6.99 | 56.7% | | |

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

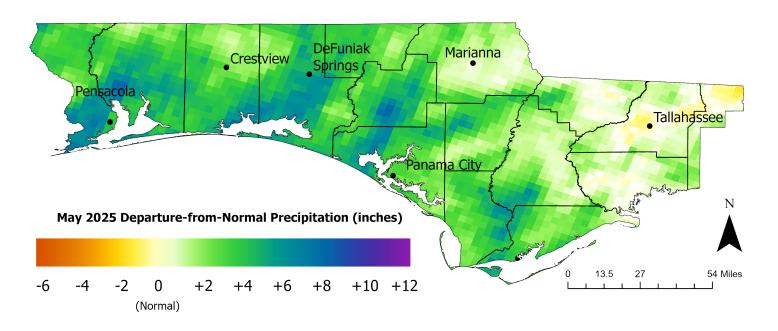
Figure 1: District-wide May 2025 observed rainfall



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

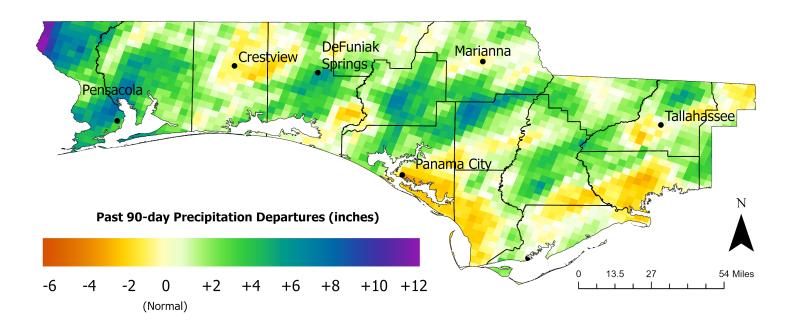


Figure 2: District-wide May 2025 precipitation departure from normal



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

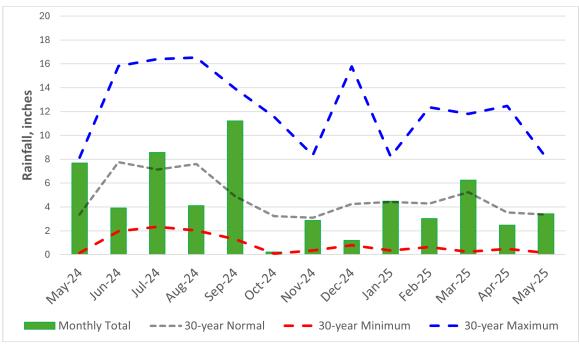
Figure 3: District-wide precipitation departure from normal precipitation for the previous 90 days



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

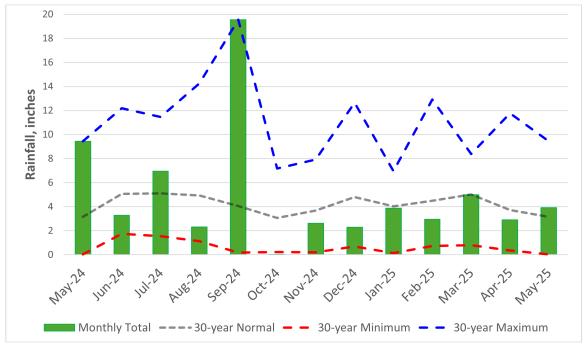


Figure 4: Observed rainfall at Tallahassee Regional Airport for May 2024 to May 2025 compared to the 30-year normal, minimum, and maximum precipitation for each month



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

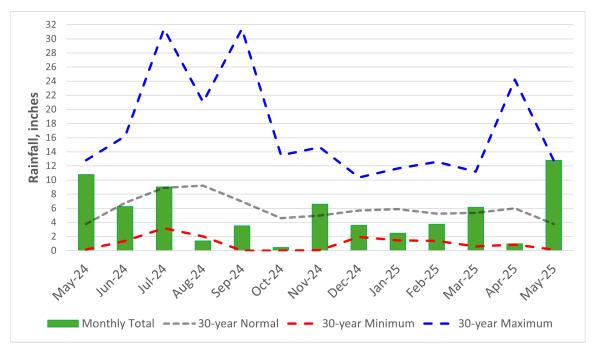
Figure 5: Observed rainfall at Marianna Regional Airport for May 2024 to May 2025 compared to the 30-year normal, minimum, and maximum precipitation for each month



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

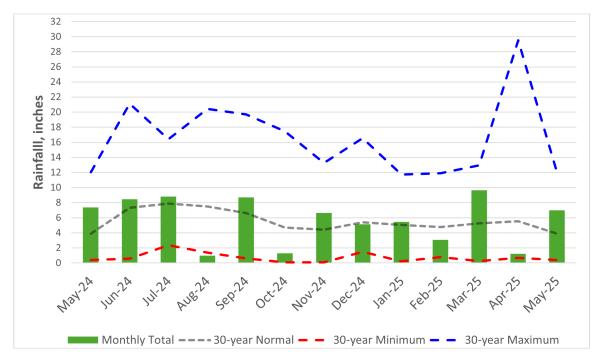


Figure 6: Observed rainfall in Niceville for May 2024 to May 2025 compared to the 30-year normal, minimum, and maximum precipitation for each month



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

Figure 7: Observed rainfall at Pensacola Regional Airport for May 2024 to May 2025 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 May 31, 2025, for June 2025 shows a likely chance for above-normal temperatures and a slight chance for above-normal rainfall amounts across the Panhandle (Figure 8).

As of June 2, 2025, ENSO-neutral conditions were present and are favored to persist through the summer months (74% chance). During the summer months, ENSO-neutral conditions tend to produce less vertical wind shear which is favorable for hurricane development.

The 2025 Atlantic Hurricane Season began on June 1, 2025, and runs through November 30, 2025. According to the hurricane season outlook released May 22, 2025, NOAA is predicting above-normal hurricane activity in the Atlantic basin this year with 60% confidence. NOAA and the NWS are forecasting 13 to 19 total named storms (winds of 39 mph or higher) with six to ten expected to become hurricanes (winds of 74 mph or higher). Of those, three to five hurricanes are expected to become major hurricanes (winds of 111 mph or higher).

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

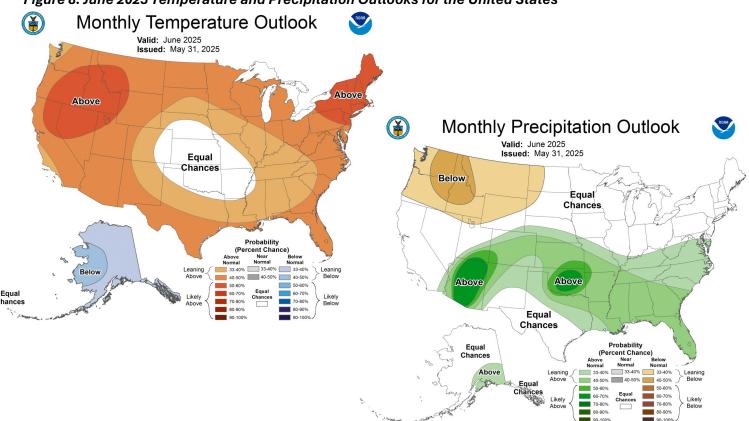


Figure 8: June 2025 Temperature and Precipitation Outlooks for the United States





Drought Conditions

Frequent rain events throughout May 2025 improved drought conditions in the Panhandle in May 2025. The U.S. Drought Monitor report released for June 3, 2025, showed abnormally dry conditions present in the eastern portion of the District (Figure 9). The remaining abnormally dry conditions in the eastern portion of the District were due to the spatial variation in rainfall during the month (Figure 1).

According to the U.S. Monthly Drought Outlook for June 2025, reduction or removal of drought in the Panhandle is expected as Florida transitions from its climatological dry season to its rainy season.

Figure 9: Florida Drought Conditions on June 3, 2025

U.S. Drought Monitor Florida

June 3, 2025 (Released Thursday, Jun. 5, 2025) Valid 8 a.m. EDT

Drought Conditions (Percent Area)

| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
|---|-------|-------|-------|-------|-------|------|
| Current | 29.29 | 70.71 | 41.25 | 28.31 | 3.74 | 0.00 |
| Last Week 05-27-2025 | 21.13 | 78.87 | 48.22 | 32.12 | 12.98 | 0.00 |
| 3 Month's Ago 03-04-2025 | 36.33 | 63.67 | 37.52 | 5.84 | 0.00 | 0.00 |
| Start of Calendar Year 01-07-2025 | 10.12 | 89.88 | 29.22 | 0.00 | 0.00 | 0.00 |
| Start of Water Year 10-01-2024 | 94.54 | 5.46 | 0.00 | 0.00 | 0.00 | 0.00 |
| One Year Ago 06-04-2024 | 49.68 | 50.32 | 41.52 | 20.34 | 0.00 | 0.00 |

Intensity:

None D2 Severe Drought
D0 Abnormally Dry D3 Extreme Drought
D1 Moderate Drought
D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

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<u>USDA</u>







droughtmonitor.unl.edu

 $Source: \underline{https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?FL}\\$

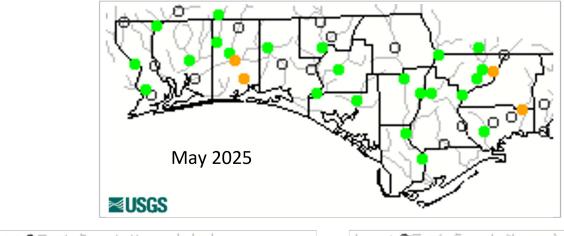


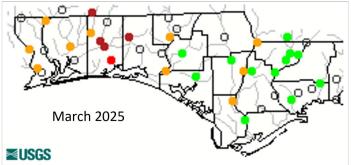
Surface Water

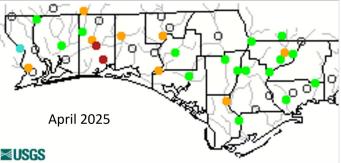
Streamflows. During May 2025, streamflow stations in the District nearly all recorded flows within normal ranges (Figures 10 – 16). This is likely due to the frequent significant precipitation events that occurred throughout the month, creating an overall surplus of rainfall for much of the District (Figures 2 & 3). The only stations recording flows below normal ranges were at Shoal River near Crestview, Juniper Creek near Niceville, Ochlockonee River near Havana (Figure 12), and St. Marks River near Newport (Figure 11).

All depicted time-series plots recorded an increase in flow during and immediately following the atmospheric river significant rain event on May 9-13, 2025. Streamflow stations east of the Apalachicola River recorded decreasing flow for the remainder of the month, likely due to the reduced rainfall observed in the eastern portion of the District compared to the western portion (Figure 1).

Figure 10: Northwest Florida March 2025 to May 2025 monthly streamflow percentiles







| Explanation - Percentile classes | | | | | | | |
|----------------------------------|----------------------|-----------------|--------|-----------------|----------------------|-------|------------|
| • | | • | • | • | • | • | 0 |
| Low | <10 | 10-24 | 25-75 | 76-90 | >90 | Lliab | Not-ranked |
| LOW | Much below normal | Below normal | Normal | Above normal | Much above normal | High | HOUTAIIREG |

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



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

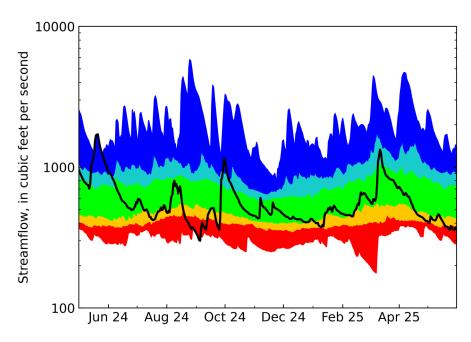


Figure 12: Daily streamflows and percentile ranges for USGS Station 02329000 Ochlockonee River Near Havana, Florida

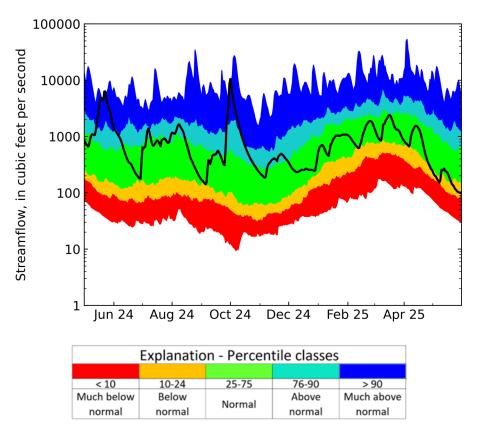




Figure 13: Daily streamflows and percentile ranges for USGS Station 02358700 Apalachicola River Near Blountstown, Florida

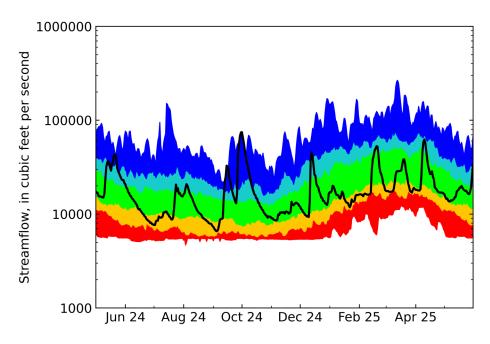
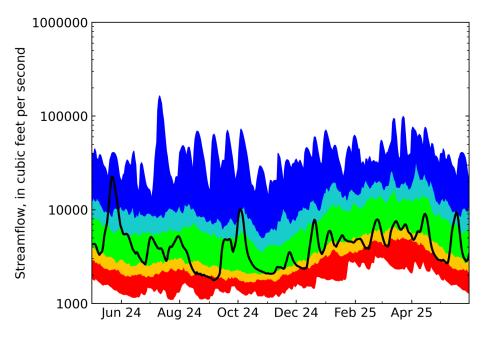


Figure 14: Daily streamflows and percentile ranges for USGS Station 02366500 Choctawhatchee River Near Bruce, Florida



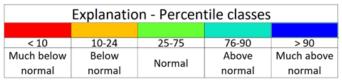




Figure 15: Daily streamflows and percentile ranges for USGS Station 02370000 Blackwater River Near Baker, Florida

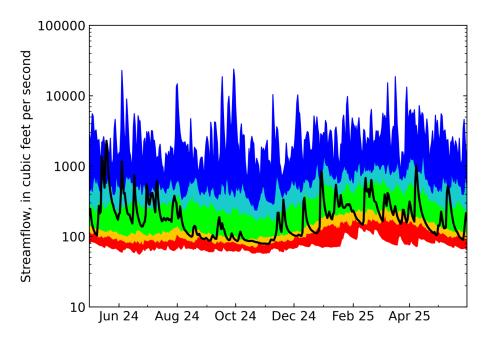
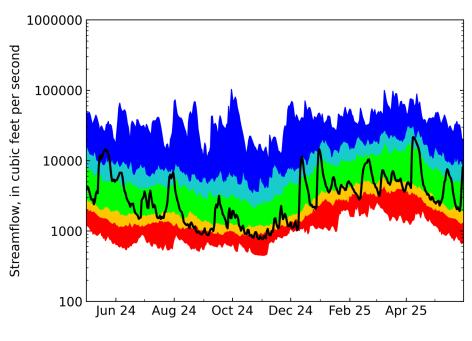
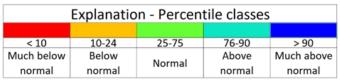


Figure 16: Daily streamflows and percentile ranges for USGS Station 02375500 Escambia River Near Century, Florida







Lake Levels. Water levels at Lake Jackson in Leon County increased slightly with the rainfall received from the atmospheric river rain event on May 10-12, 2025, before decreasing 0.32 feet for the rest of the month. Lake Jackson ended the month with a stage level of 81.31 feet, NAVD 1988. (Figure 17). The long-term (January 29, 2003, to May 31, 2025) average stage level for Lake Jackson is 80.90 feet, NAVD 1988, and the full pool level is 85.74 feet, NAVD 1988.

At Piney Lake in southern Washington County, water levels increased by 0.63 feet during the atmospheric river rain event on May 9-12, 2025, before gradually decreasing 0.21 feet for the remainder of the month. Piney Lake ended the month with a stage level of 48.53 feet, NAVD 1988 (Figure 18).

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

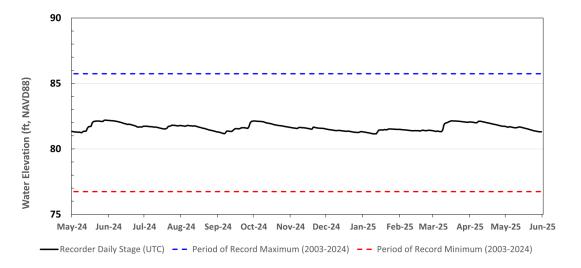
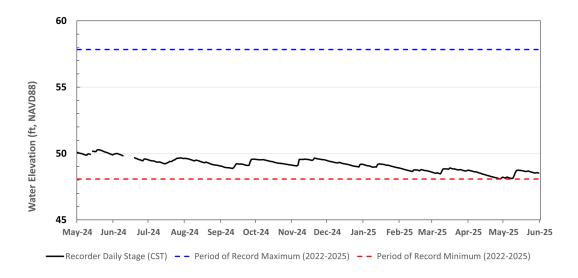


Figure 18: Daily water levels at Piney Lake, Washington County





Spring Flows

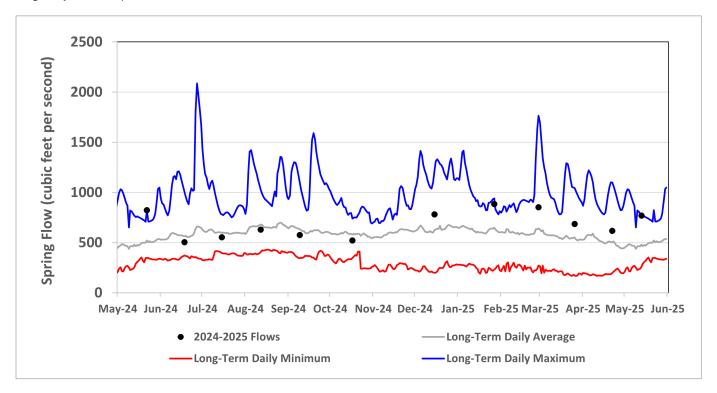
Wakulla and Sally Ward Spring System. Flow at Wakulla Spring increased 151 cubic feet per second (cfs) between the measurements taken in April and May 2025, increasing above the long-term daily maximum discharge. The most recent flow measurement for Wakulla Spring was 769 cfs, which was conducted on May 13, 2025 (Figure 19). The long-term (October 23, 2024, to May 13, 2025) average flow for the month of May is 489 cfs.

Flow at Sally Ward Spring increased by 2.2 cfs between the measurements taken in April and May 2025. The most recent flow measurement for Sally Ward was 22.6 cfs on May 13, 2025. This measurement was 0.7 cfs higher than the long-term (November 1, 2024, to May 13, 2025) average flow for the month of May of 21.9 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 April 22, 2025) average flows for Wakulla and Sally Ward springs are 589 cfs and 24.3 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 October 1, 2023, through May 13, 2025, represent discrete measurements. Daily statistics are based on the October 23, 2004, through May 13, 2025, period of record.



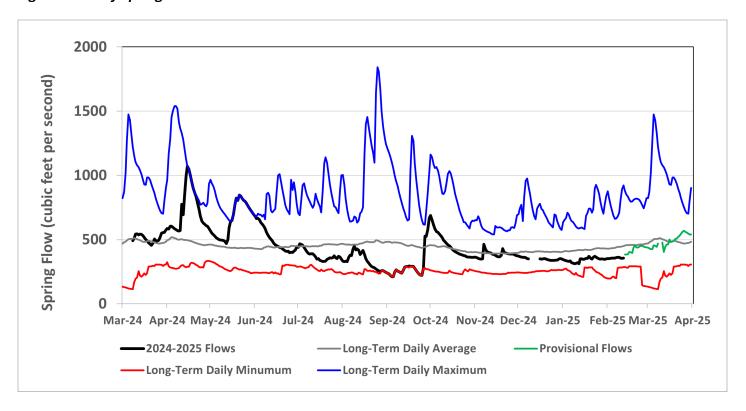


St. Marks River Rise. The mean daily spring flow for April 2025 at the St. Marks River Rise was 491 cfs, based on the available USGS provisional data which extends through April 26, 2025 (Figure 20). This was above the long-term (October 1, 1956 through April 26, 2025) average flow for the month of April of 487 cfs. Data collection paused on April 27, 2025, due to malfunctioning equipment and resumed June 5, 2025.

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 December 3, 2024) is 423 cfs. If the provisional data from December 4, 2024, through April 26, 2025, are included, the 30-year moving average spring flow for the St. Marks River Rise is 422 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 4 cfs and 3 cfs, respectively.

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

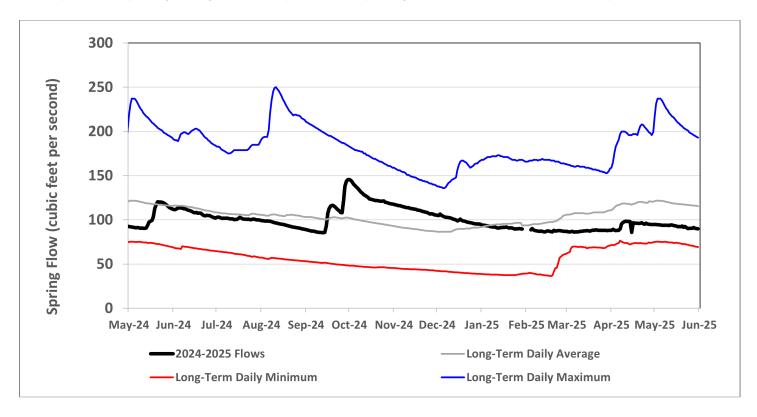




Jackson Blue Spring. Daily flows at Jackson Blue Spring for the month of April 2025 averaged 92.7 cfs. This was below the long-term average flow of 118.7 cfs for the month of May, based on the December 21, 2004, through May 31, 2025 period of record (Figure 21).

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 May 31, 2025.



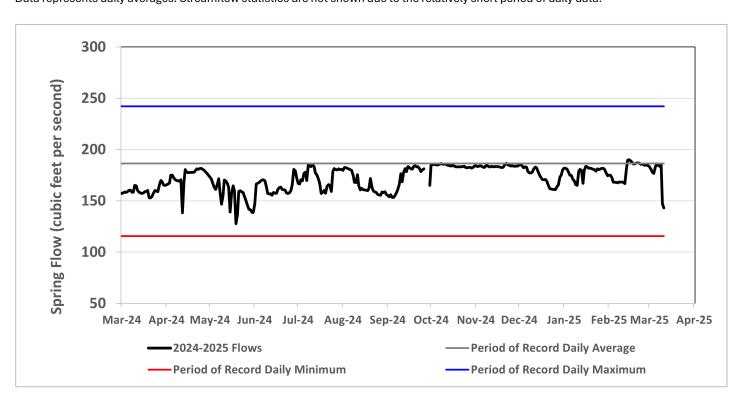


Gainer Spring Group. During May 2025 (May 1 to May 20, 2025), flow at the Gainer Spring Group was 161 cfs (Figure 22). The record period (October 28, 2019, through May 20, 2025) average monthly spring flow for the month of May is 183 cfs. It should be noted there is a relatively brief period of record for this system, and spring flows among the highest and lowest on record are to be expected.

Throughout the time-series, 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 May 2025, Floridan aquifer monitor wells were classified as within normal ranges except for three wells that were below normal ranges (Figures 23 – 29). The Floridan wells classified as below normal were Jackson Still Floridan monitor well (NWFID 5417) in northern Walton County, Sand Hill Upper Floridan monitor well (NWFID 5597) in northwestern Okaloosa County, and USGS Benchmark Floridan monitor well (NWFID 392) in west-central Wakulla County. Jackson Still and Sand Hill Upper Floridan monitor wells have continued to have low water levels for the past several months.

Sand-and-gravel aquifer monitor wells have continued to record below normal groundwater levels except for the Weller Ave Deep monitor well (NWFID 1382) in southern Escambia County (Figure 23), which had been classified as above normal for several months. At the end of April 2025, water levels at the Weller Ave Deep monitor well decreased into normal ranges for the first time since November 2024 before levels rose again into above normal ranges during May 2025 (Figure 29).

Figure 23: Floridan aquifer monitor wells and aquifer level percentiles for mid-May 2025 Percentile class rankings are based on each well's period of record. All wells have a minimum of 20 years of data.

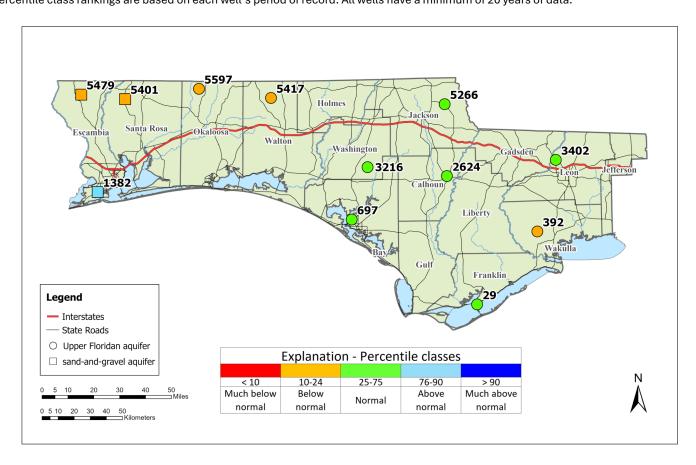




Figure 24: Daily Upper Floridan aquifer levels at USGS-Lake Jackson well (NWFID 3402), Leon County Land surface elevation is 121.40 ft, NAVD 88

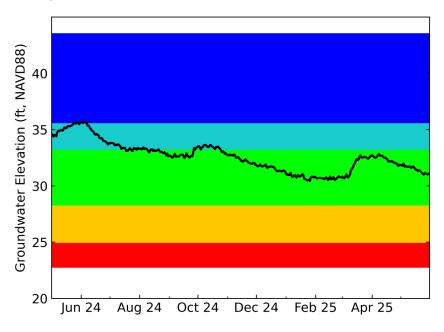


Figure 25: Daily Upper Floridan aquifer levels at USGS Benchmark well (NWFID 392), Wakulla County Land surface elevation is 46.27 ft, NAVD 88

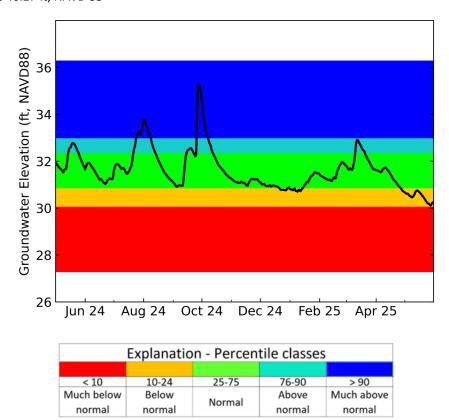




Figure 26: Daily Upper Floridan aquifer levels at NWFWMD Pittman Visa well (NWFID 5266), Jackson County Land surface elevation is 127.31 ft, NAVD 88

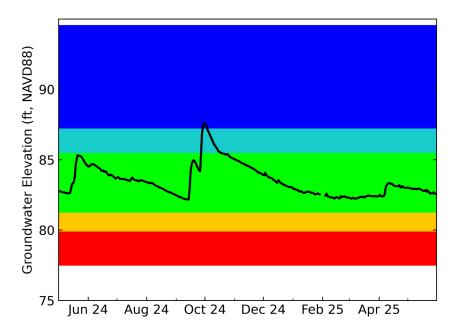


Figure 27: Daily Upper Floridan aquifer levels at USGS-422A Near Greenhead well (NWFID 3216), Washington County

Land surface elevation is 66.75 ft, NAVD 88

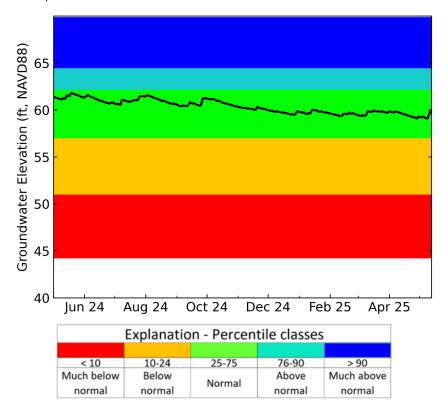




Figure 28: Daily Upper Floridan aquifer levels at Fannin Airport well (NWFID 697), Washington County Land surface elevation is 4.05 ft, NAVD 88

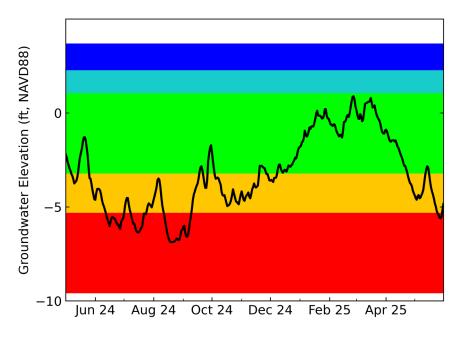


Figure 29: Daily sand-and-gravel aquifer levels at NWFWMD Weller Ave Deep well (NWFID 1382), Escambia County

Land surface elevation is 25.09 ft, NAVD 88

