TEAM KENTUCKY
ENERGY AND ENVIRONMENT CABINET

MONTHLY WATER RESOURCE REPORT

Kentucky Division of Water
Water Supply Section

February 2025

Precipitation

All of Kentucky received above normal precipitation in February. Much of the precipitation fell during the second week of the month when multiple precipitation events occurred. This culminated in 2" to 6"+ of precipitation on February 14th and 15th, which resulted in widespread flooding, locally severe, across the entire state. This was followed by a winter storm that brought several inches of snow to much of the state on the 18th. The last 10 days of the month featured much needed drier weather.

The February 25th edition of the US Drought Monitor (USDM) depicted Kentucky as being entirely free of drought or abnormally dry conditions.

Preliminary data estimates that the average precipitation during February was 8.40" (4.66" above normal) for the state. This would make it the 5th wettest February, out of 131, on record. According to the Kentucky Mesonet, the highest precipitation amount was in Harlan County, 9.99", and the lowest was in Carroll County, 4.28".

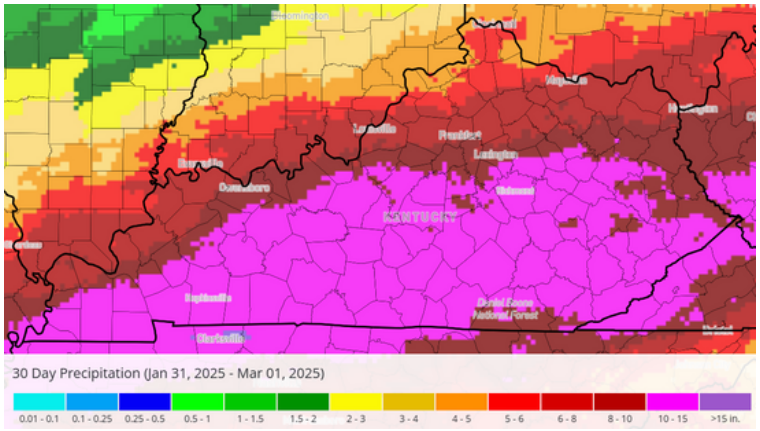

Figure 1. *Monthly precipitation map.*

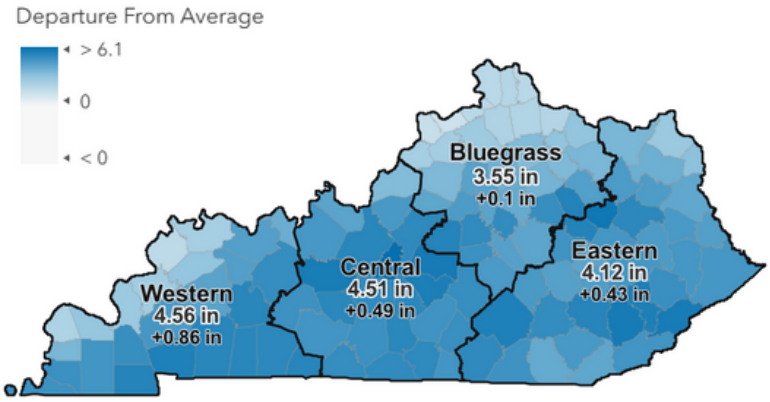

Figure 2. *Departure from normal precipitation by county and climate division.*

Table 1. *Regional precipitation patterns*

Climate Region	Departure From Normal (inches)					Palmer Drought Severity Index*
	This Month	Past 2 Mos.	Past 3 Mos	Past 6 Mos	Past 12 Mos	
Western	3.88	4.95	6.78	23.39	13.90	2.17
Central	5.00	5.60	6.66	24.37	9.47	1.17
Bluegrass	4.21	4.38	4.31	20.73	3.93	-1.00
Eastern	5.31	5.66	6.27	21.10	5.30	-0.95

*4.0 and above (Extremely Moist)
3.0 to 3.9 (Very Moist Spell)
2.0 to 2.9 (Unusual Moist Spell)
-1.9 to 1.9 (Near Normal)
-2.0 to -2.9 (Moderate Drought)
-3.0 to -3.9 (Severe Drought)
-4.0 or less (Extreme Drought)

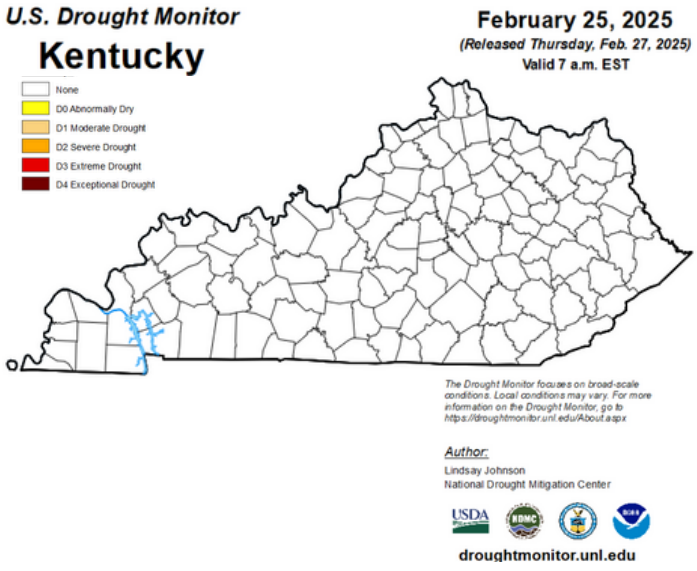

Figure 3. *Current US Drought Monitor Map.*

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Streamflow

February streamflow was well above normal for the month. The month started with above normal streamflow due to precipitation at the end of January. Multiple rounds of precipitation kept flows elevated and even above flood stage, setting the stage for a historic flooding event after heavy precipitation during the middle of the month. Several USGS gage stations recorded top 5 flood crests. Every major watershed in the state experienced some degree of flooding. The greatest damage occurred in eastern Kentucky, especially along the Levisa Fork. Flood warnings on the Green and Ohio rivers were still active at the end of the month.

There are currently no concerns regarding streamflow in the state.

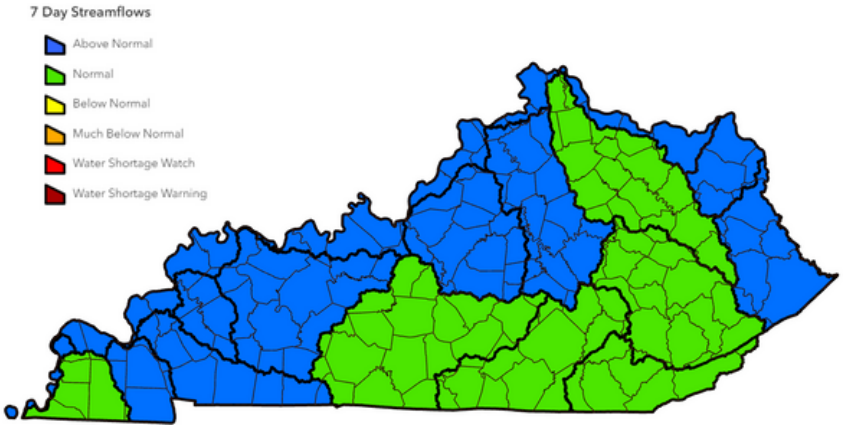

Figure 5. *Average streamflow by watershed over the past 7-days (February 22-28).*

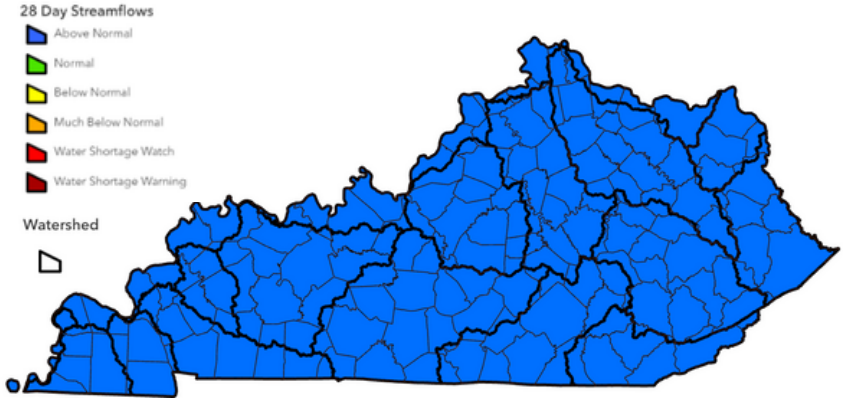

Figure 6. *Average streamflow by watershed over the past 28-days (February 1-28).*

Table 2. *Mean Stream Discharge select stream gages.*

River and Location	Drainage Area (mi2)	7 Day		28 Day	
		Average Flow (cfs)	% of Normal*	Average Flow (cfs)	% of Normal*
Levisa Fork at Pikeville	2144	4631	339	2958	213
Little Sandy River near Grayson	400	1438	309	718	150
North Fork Licking River nr Mt Olivet	226	897	295	484	151
Kentucky River at Lock 14	2657	10583	279	6694	170
Kentucky River at Lock 2	6180	17745	217	13584	160
Cumberland River at Cumberland Falls	1977	5809	187	4368	137
Beaver Creek near Monticello	43	119	230	57	106
Beech Fork at Bardstown	669	3903	419	2174	222
Barren River at Bowling Green	1849	3680	148	3398	134
Green River at Calhoun	7566	19865	188	20266	186
Tradewater River at Olney	255	1195	356	793	229
Clarks River at Almo	134	1285	733	576	321
Bayou De Chien near Clinton	69	547	654	272	269
Ohio River at Greenup Dam	62000	86800	103	64045	74
Ohio River at Cannelton Dam	97000	91957	72	104179	80
Mississippi River @ Thebes, IL	713200	101863	41	109203	45

* Base Period 1980-2023

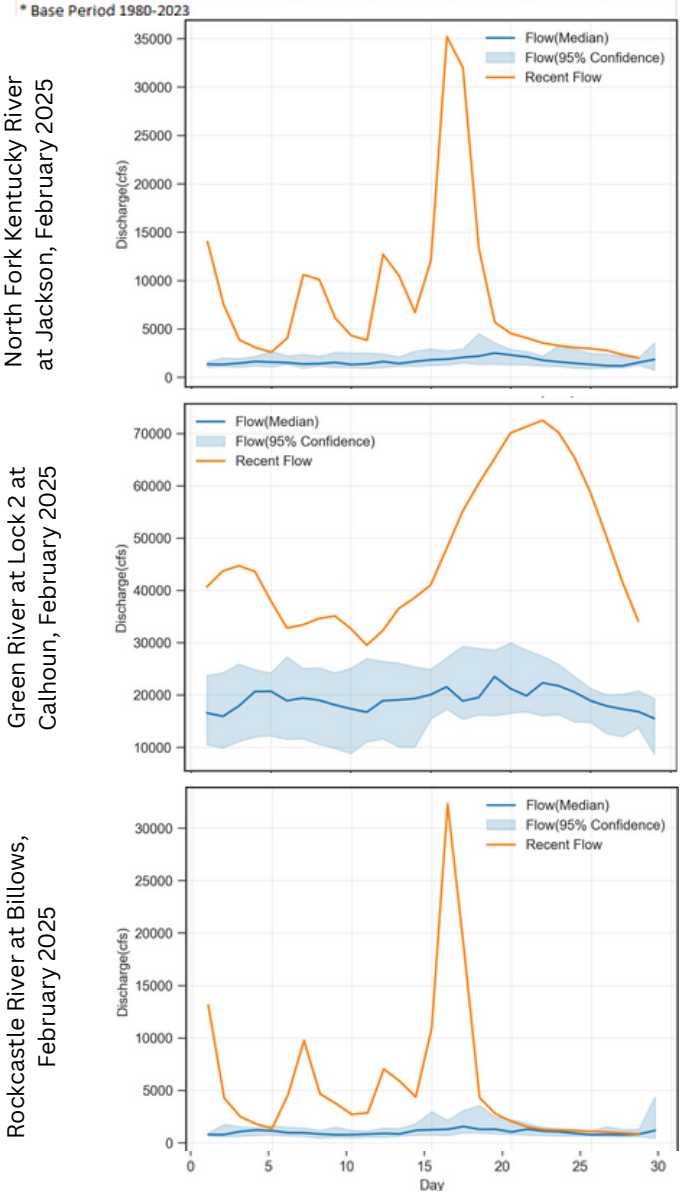

Figure 7. *Streamflows compared to median flows for the month.*

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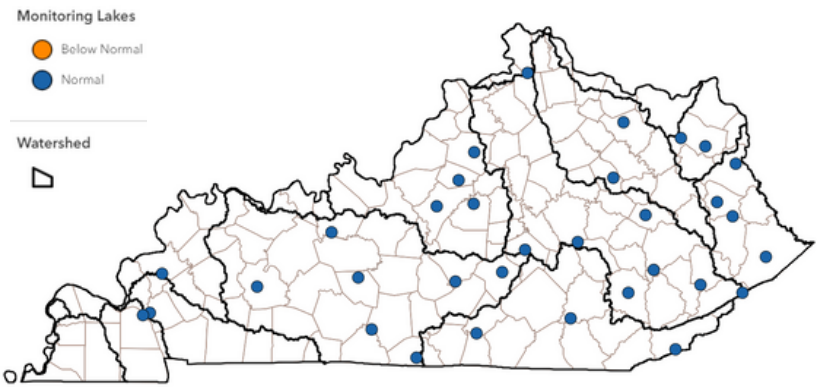
Reservoir Storage

Reservoir storage for water supply lakes remain normal for the entire state.

We are currently in the time of year where reservoirs refill. Reservoirs were already at or above pool before this month's heavy precipitation. There are no concerns with reservoir levels at this time.

Figure 8. *Locations of reference reservoirs across the state. Status of reservoir levels indicated by color.*



Groundwater

General Statement: Kentucky is a geologically, and hydrogeologically, diverse state. Groundwater data is limited in availability and where available may only be applicable to the immediate area given regional geologic variability. Local conditions may not be accurately reflected by the reference locations selected and local rainfall and surface water conditions may provide additional or more representative information. Current data is compared to a 30-year reference period (1980 – 2010) or the longest available period of continuous data.

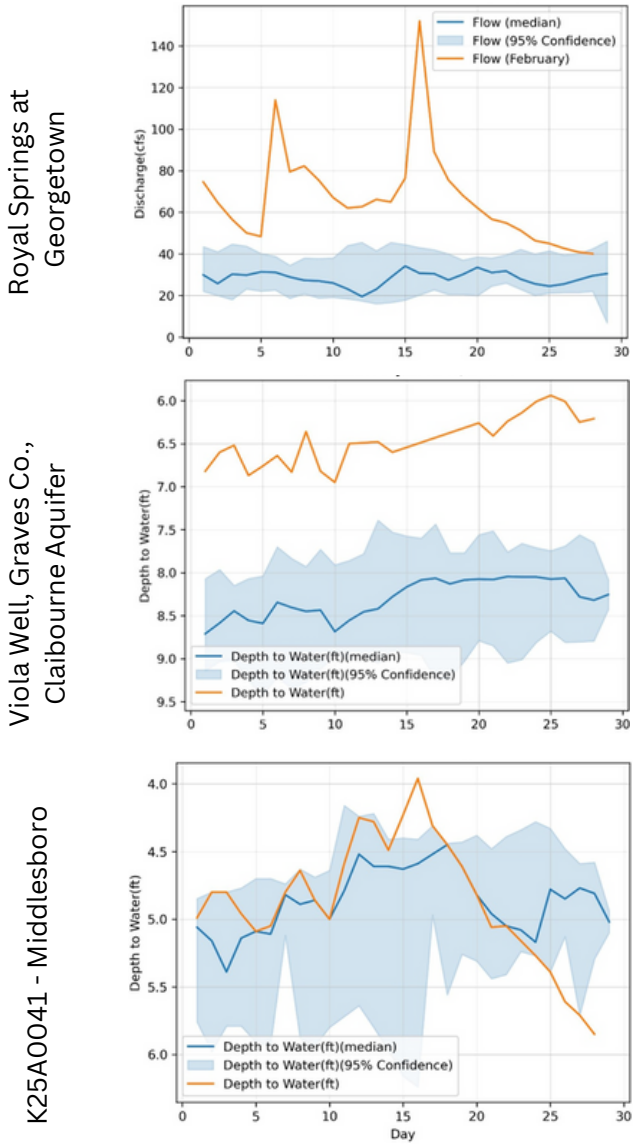
Inner Bluegrass: Flow was above the reference period median for the entire month following snow and heavy rains. Flow duration (the amount of time flow of a specific volume is occurring) is well above the reference period for the year. Winter and early spring is a recharge period for groundwater and barring the onset of abnormal rainfall, groundwater levels are expected to be above or within the reference confidence interval.

Jackson Purchase: The water level within the Viola well stayed roughly 2-feet above the reference median for the month of February in response to plentiful rain. Groundwater levels are expected to continue to rise or remain above the reference median as a response to recharge during the winter - early spring.

Middlesboro: Groundwater levels within the Middlesboro well followed the reference median for the month until falling below the last few days of February. For the year, water levels have been above the reference median.

Additional data can be found at:
https://www.uky.edu/KGS/water/water-groundwater-monitoring.php

Figure 9. *Groundwater observations compared to normal for the month.*



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Forecast

The Climate Prediction Center (CPC) is currently predicting increased chances for above normal precipitation in Kentucky during March as well as March through May. The darker green indicates a higher amount of confidence in above normal precipitation. Short term forecasts are predicting above normal precipitation and above normal temperatures for the first half of March, indicating the potential for additional flooding and severe weather in Kentucky.

The current U.S. Monthly Drought Outlook shows no drought is expected to develop in Kentucky during the month of March.

Note: these forecasts do not provide the quantity above or below normal, just the probability it will occur.

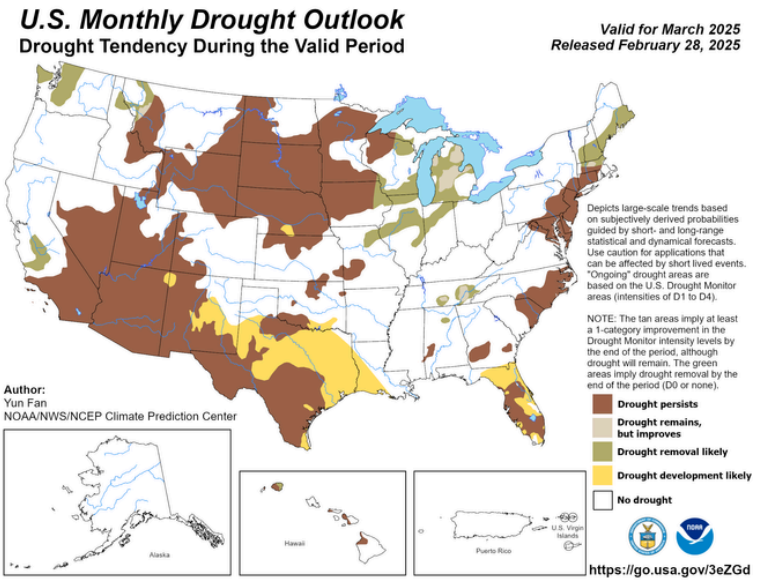

Figure 10. *Monthly drought outlook.*

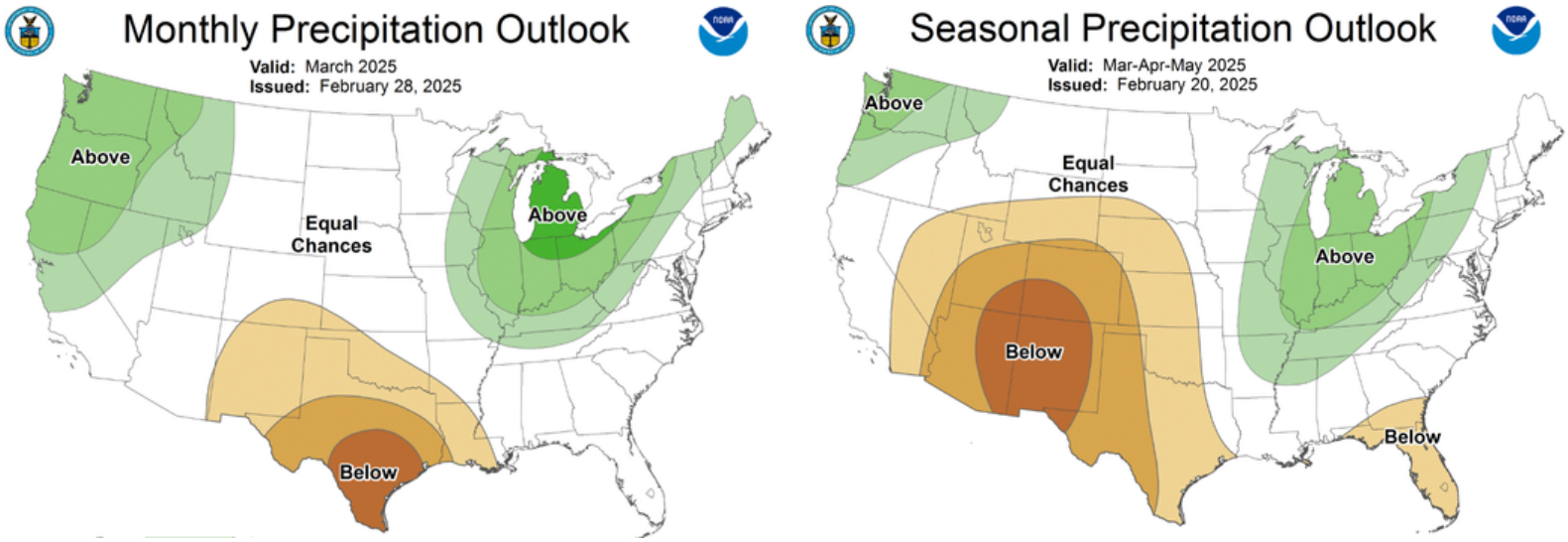

Figure 11. *Monthly and seasonal precipitation outlooks.*

Contact Us

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Report Drought Conditions

Acknowledgments

Precipitation Data:
U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Centers for Environmental Information; Kentucky Mesonet; Midwest Regional Climate Center; Southern Regional Climate Center.
Streamflow Data:
U.S. Geological Survey, Water Resources Division.
Reservoir Data:
U.S. Army Corps of Engineers, Huntington, Louisville, and Nashville Districts; Kentucky Division of Water, Water Supply Section.
Forecast Data:
U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Climate Prediction Center.