

# Water Supply Outlook

April 7, 2022

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## Interstate Commission on the Potomac River Basin (ICPRB)

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*The ICPRB, through its Section for Cooperative Water Supply Operations on the Potomac (CO-OP), coordinates water supply operations during times of drought and recommends releases of stored water. These operations ensure adequate water supplies for Washington metropolitan area water users and for environmental flow levels. The water supply outlooks are published by CO-OP on a monthly basis between April and October. They are meant to provide an update on the possibility of low-flow conditions in the Potomac basin.*

### Summary/Conclusions:

**There is an above normal probability of releases from the Washington metropolitan area's back-up water supply reservoirs for the 2022 summer and fall seasons.** The use of Jennings Randolph and Little Seneca reservoirs is generally triggered by low flows brought about by a combination of low summer precipitation and low groundwater levels. Average precipitation in the Potomac Basin in March was 1.5 inches below normal. The region has been experiencing an extended period of below-normal precipitation. The 12-month cumulative basin precipitation is 5.6 inches below normal as of March 31. Streamflow is currently below normal, and groundwater levels remain normal for most of the monitoring wells in the basin, though many wells are in the below normal range. The Middle Atlantic River Forecast Center's (MARFC) outlook for water resources and supplies for the Potomac Basin is fair. At present, there is sufficient flow in the Potomac River to meet the Washington metropolitan area's water demands without releases from upstream reservoirs. In the event that low-flow conditions do develop, the Washington metropolitan area is well-protected from a water supply shortage owing to carefully designed drought-contingency plans.

### ICPRB's Low Flow Outlook:

**There is a 10 to 17 percent conditional probability that natural Potomac flow will drop below 600 to 700 million gallons per day (MGD) at Little Falls through December 31 of this year; at these flow levels, water supply releases from Jennings Randolph and Little Seneca reservoirs may occur.** Releases occur when predicted flow is less than demand plus a required environmental flow-by. Drinking water demand ranges from 400 to 700 MGD during the summer months and the minimum flow-by at Little Falls is 100 MGD. Note that natural flow is defined as observed flow at the Little Falls gage plus total Washington metropolitan Potomac withdrawals, with an adjustment made to remove the effect of North Branch reservoir releases on stream flow.

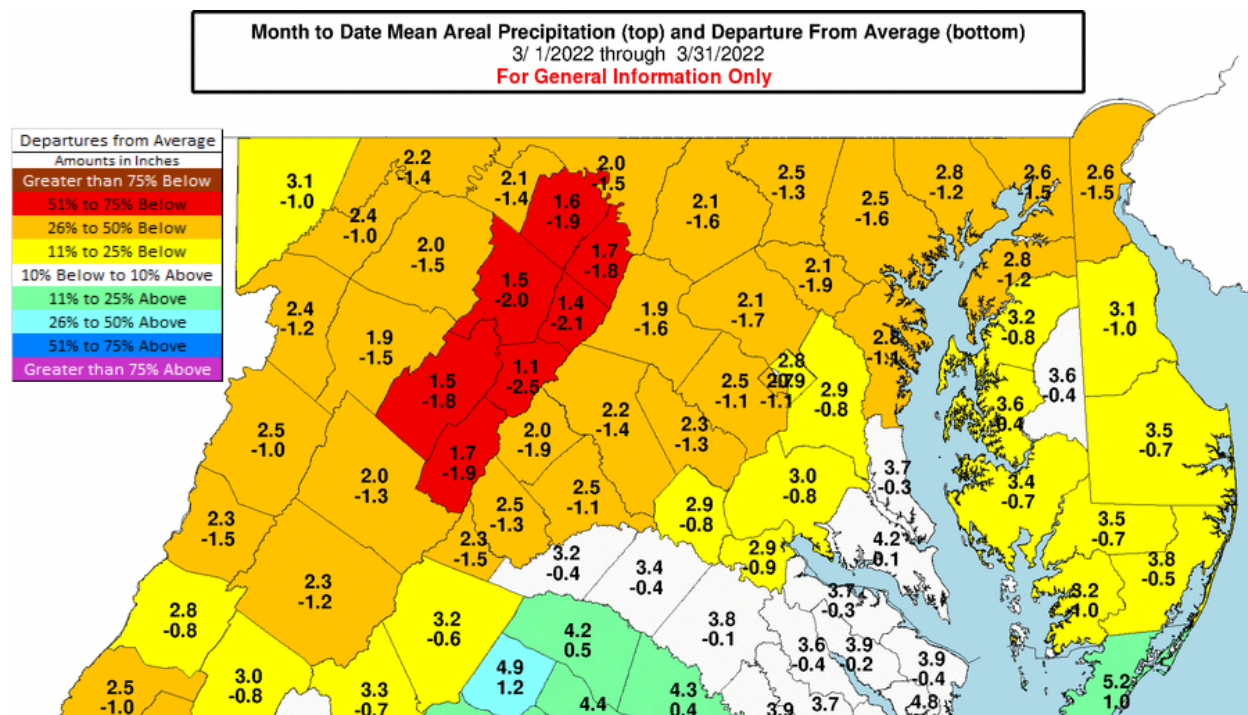
The conditional probability is estimated by analyzing the historical stream flow records and giving consideration to recent stream flow values, precipitation totals for the prior 12 months, current groundwater levels, and the current Palmer Drought Index. Past years in which watershed conditions most closely resemble current conditions are weighted more heavily in the determination of conditional probability. The historical, or unconditional, probability is based on an analysis of the historical record without weighing for current conditions. The 10 to 17 percent conditional probability compares to the 8 to 15 percent historical probability and is considered the more reliable indicator.

Outlook for natural Potomac River flow at Little Falls – Watershed conditions as of April 1, 2022

Low flow threshold (MGD)	Low flow threshold (cfs)	Historical probability of lower flow April 1 through December 31	Conditional probability of lower flow April 1 through December 31
1200	1858	68%	73%
1000	1548	49%	55%
800	1238	25%	27%
700	1084	15%	17%
600	929	8%	10%

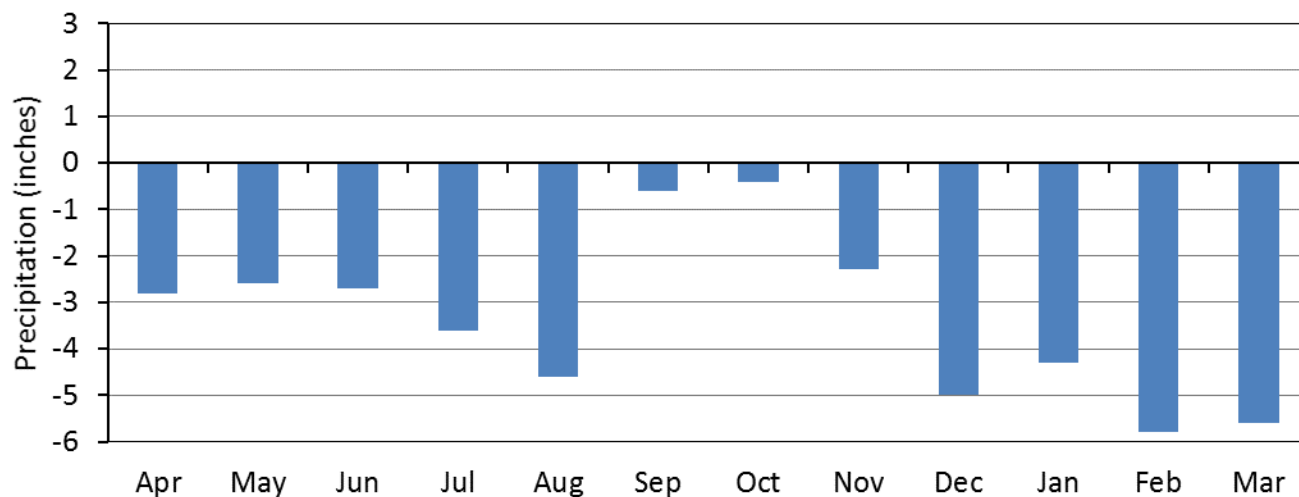
## Past Precipitation:

Data from the National Weather Service's Middle Atlantic River Forecast Center (MARFC) shows that the Potomac basin upstream of Washington, D.C. has received 2 inches of precipitation for the month of March, which is 1.5 inches below normal. The region has been experiencing an extended period of below-normal precipitation. The 12-month cumulative basin precipitation is 5.6 inches below normal as of March 31 (see graph).

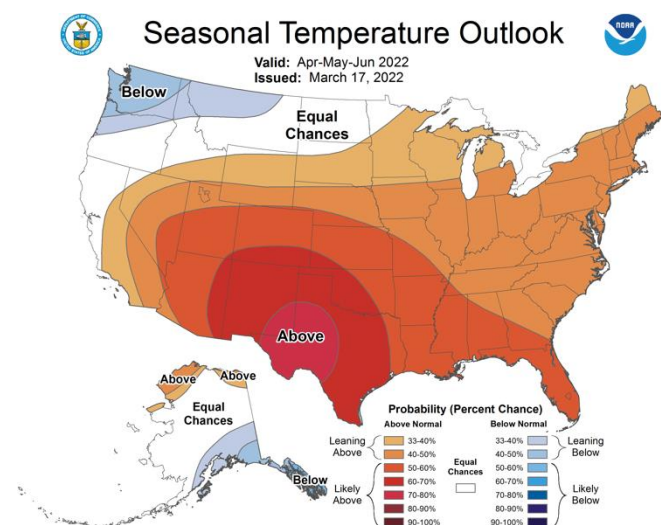


Source: Middle Atlantic River Forecast Center, National Weather Service

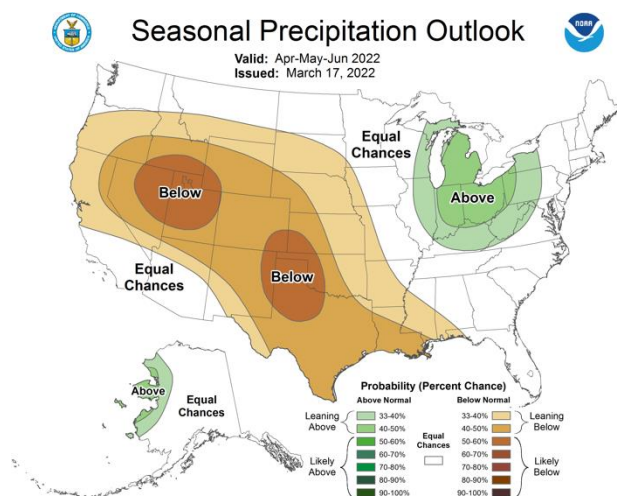
## 12-month cumulative departure from normal, through March 2022



## Precipitation and Drought Outlook for April, May, and June 2022:



The National Weather Service Climate Prediction Center's one-month outlook for April calls for above normal temperature, and normal to above normal precipitation in the Potomac Basin. The 90-day outlook for April through June calls for above normal temperature and normal precipitation.

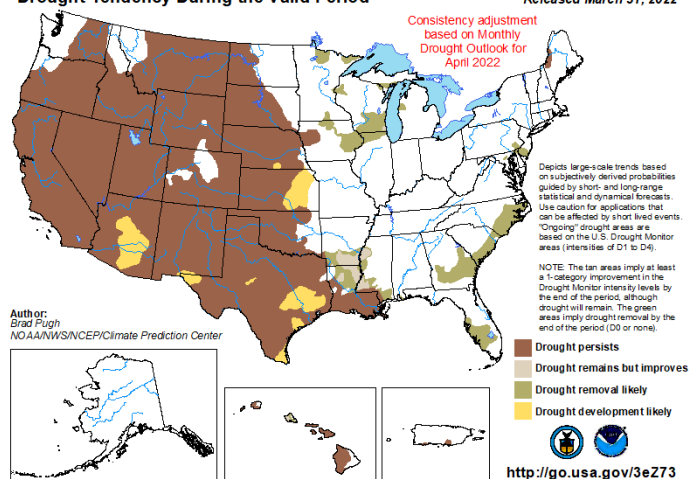


As of March 31, 2022, the Climate Prediction Center's U.S. Seasonal Drought Outlook reports no drought development in the Potomac basin.

The Middle Atlantic River Forecast Center's (MARFC) outlook for water resources and supplies is fair for the southern two-thirds of the Middle Atlantic Region.

### U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

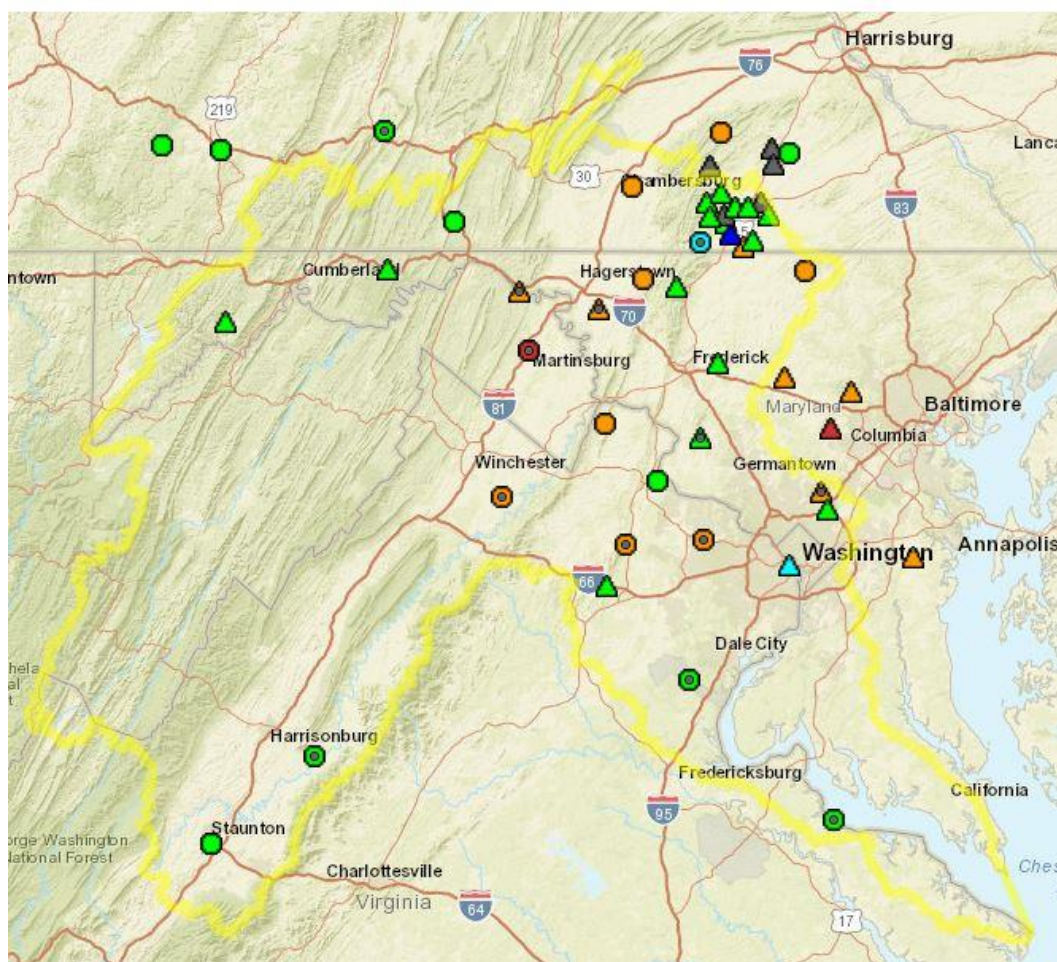
Valid for April 1 - June 30, 2022  
Released March 31, 2022





### Groundwater – Current Conditions:

The groundwater map below, developed by the U.S. Geological Survey (USGS), Pennsylvania Water Science Center, shows that current water levels in most monitoring wells in the Potomac basin are in the “Normal” range. However, many wells in the central and northeastern portions of the basin register below normal water levels. Wells with a gray dot inside the symbol identify Water Supply Outlook wells. In this map, the USGS defines “Normal” as between the 25<sup>th</sup> and 75<sup>th</sup> percentiles, and “Below Normal” as between the 10<sup>th</sup> and 24<sup>th</sup> percentile. “Much Below Normal” is defined as below the 10<sup>th</sup> percentile.



Wells with a gray dot inside the symbol identify water supply outlook wells

Explanation - Percentile classes (symbol color based on most recent measurement)						
Low	<10	10-24	25-75	76-90	>90	High
	Much Below Normal	Below Normal	Normal	Above Normal	Much Above Normal	Not Ranked

Wells

- Real Time
- Continuous
- △ Periodic Measurement

### Reservoir Storage – Current Conditions:

No water supply releases from the CO-OP shared system have been made this year. A whitewater release from Jennings Randolph Reservoir is scheduled for April 9 and 10, 2022.

Reservoir storage as of April 7, 2022

Facility	Percent Full	Current usable storage, BG	Total usable capacity, BG
WSSC Water's Patuxent reservoirs <sup>1</sup>	90	9.4	10.5
Fairfax Water's Occoquan Reservoir <sup>2</sup>	100	8.1	8.1
Little Seneca Reservoir <sup>3</sup>	100	3.9	3.9
Jennings Randolph water supply <sup>4</sup>	100	13.1	13.1
Jennings Randolph water quality <sup>4</sup>	100	16.3	16.3
Savage Reservoir <sup>5</sup>	88	5.5	6.3

<sup>1</sup> Bathymetric study conducted December 2015 with revisions in December 2016, and unusable storage corrected June 2017.

<sup>2</sup> Bathymetric study conducted in 2020.

<sup>3</sup> Usable capacity consistent with Ortt, *et al.* (2011).

<sup>4</sup> 2013 revised stage-storage curve provided by Bill Haines, US Army Corps of Engineers, Baltimore District.

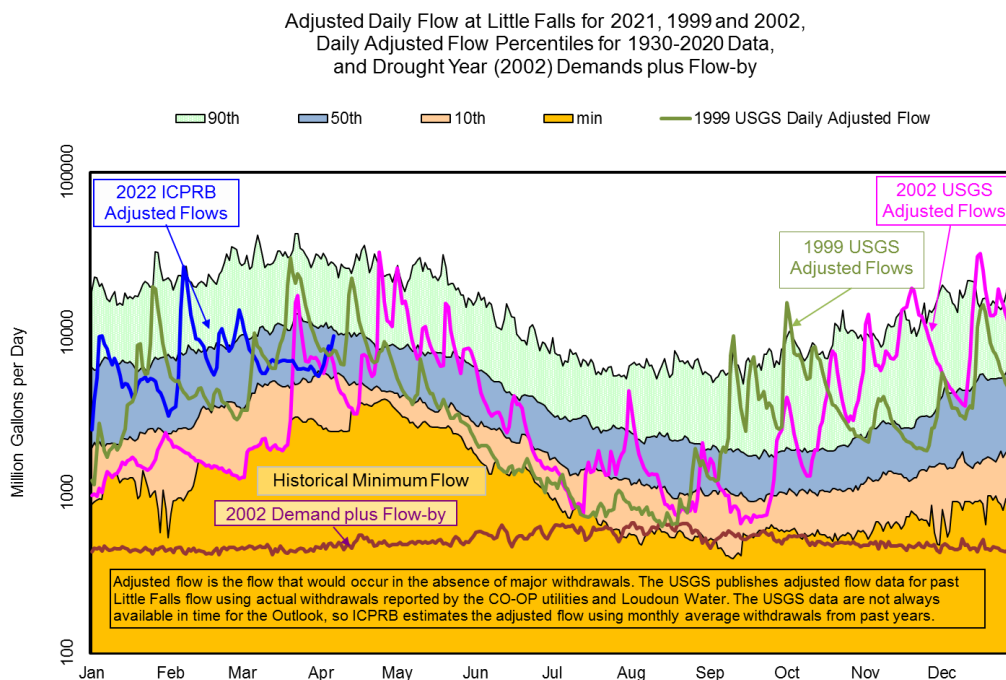
<sup>5</sup> 1998 revised stage-storage curve provided by Bill Haines, US Army Corps of Engineers, Baltimore District.

### Potomac River Flow:

The estimated adjusted Potomac flow at Little Falls on April 1 was 5.7 billion gallons per day (BGD). For this day of the year, this value was below the 50<sup>th</sup> percentile flow value of 11.1 BGD and slightly above the 10<sup>th</sup> percentile flow value of 5.6 BGD. Adjusted flow, shown in the figure below, is the flow that would occur in the absence of major Washington metropolitan area withdrawals, but includes releases from upstream reservoirs. Adjusted flow averaged 7.2 BGD for the past three months and 6.7 BGD in March.

### Environmental Flow-by:

Average observed Potomac flow at Little Falls in March was well above the minimum recommendation of 100 MGD.



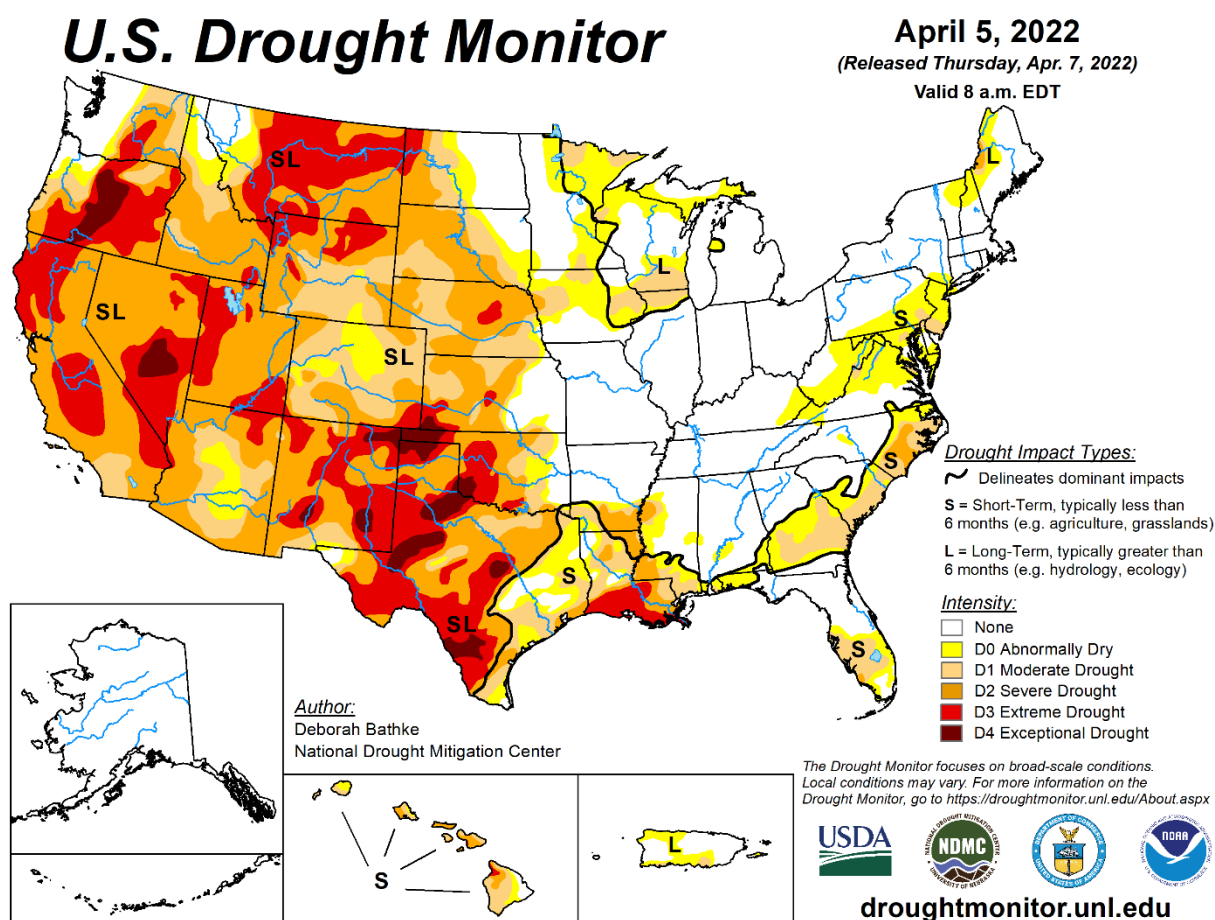
Little Falls flow statistics are based on 1930 through 2014 USGS published gage flow, "USGS 01646502 POTOMAC RIVER (ADJUSTED) NEAR WASH, DC". To create this flow record, the USGS has added historical water supply withdrawals from the Potomac as reported by FW, WSSC, the Aqueduct, and Rockville to the Little Falls gage flow record.

### Drought Status:

Drought status in [Maryland](#) and [Pennsylvania](#) is normal. Drought status in [Virginia](#) is normal in all but one drought region, located in the southern central part of the Commonwealth. The current drought stage as defined in the Metropolitan Washington Council of Governments (MWCOC)'s water supply and drought response awareness plan is normal.

### Drought Monitor and Soil Moisture:

The NOAA Climate Prediction Center's U.S. Drought Monitor map (see first figure below) indicates abnormally dry conditions for most of the Potomac basin in Maryland and Virginia. The Palmer Drought Severity Index by Division map (see second figure on next page) indicates extreme drought conditions in central portions of the basin.



# Drought Severity Index by Division Weekly Value for Period Ending Apr 02, 2022 Long Term Palmer

