

## News Release

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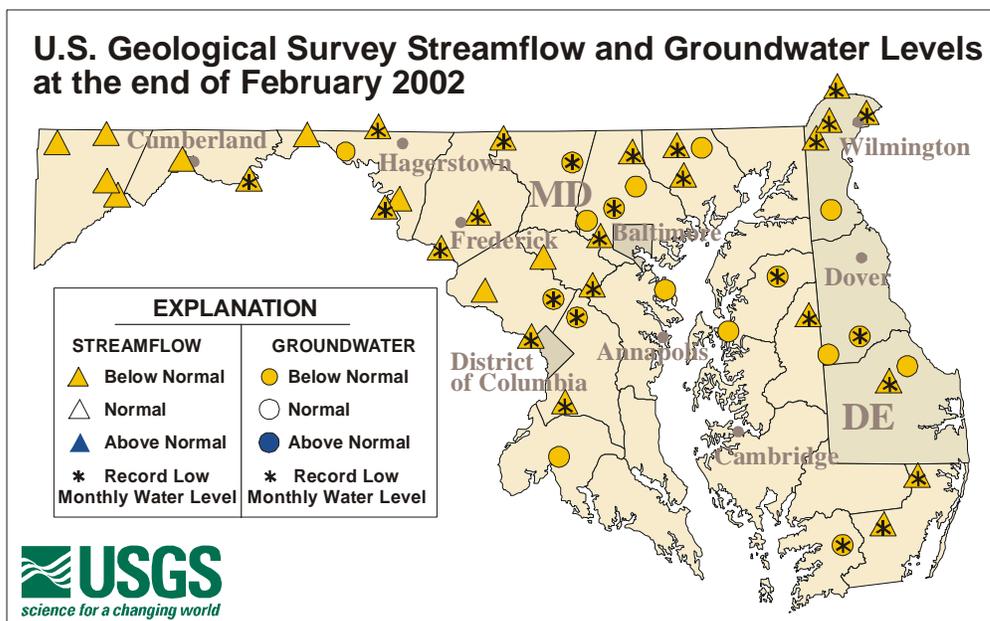
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# Drought Conditions Lead to Record-Breaking Low Water Levels Across Maryland and Delaware

New record low monthly water levels were set at 21 of the 30 U.S. Geological Survey (USGS) real-time streamflow stations and 7 of the 17 wells used to monitor the drought for the end of February across Maryland and Delaware, according to hydrologists at the USGS in Baltimore, Maryland. These monthly records are lower than the low water levels set for February during the 1960s drought and some water levels are lower for February than during the drought of the 1930s. Streamflow levels rose with the March 2-3 rainfall, but quickly decreased to near record low levels within days.

Lack of rain, snow, and ice, in addition to warm temperatures during the fall and winter, have led to below normal monthly streamflow at 100 percent of the real-time USGS gaging stations (see real-time graphs at <http://md.water.usgs.gov/realtime/>) and 100 percent of the USGS observation wells across Maryland and Delaware at the end of February. The below normal water levels reflect the hydrologic drought (streamflow and groundwater) that the region has been experiencing since the fall of 1998. The region has also been experiencing warmer temperatures since the 1990s, which increases the amount of water lost to evaporation and transpiration (water used by plants). The persistence of the drought was masked by hurricanes in 1999 and 2000 that contributed to above normal precipitation to the region.



For news release and images, go to [http://md.water.usgs.gov/publications/press\\_release/2002/2002-03/2002-03-06.html](http://md.water.usgs.gov/publications/press_release/2002/2002-03/2002-03-06.html)

Last month was the driest February on record with only 0.36 inch total precipitation at the Baltimore-Washington International Airport, according to the National Weather Service. Rainfall has been below normal for the last 6 months and temperatures have been warmer than usual during this period. Precipitation during late fall and winter usually replenishes/recharges the groundwater supply (aquifers), which contributes flow to rivers during times of low flow. Recharge to groundwater has been minimal to nonexistent this year, and there is little water in storage from snowpack or ice to replenish the supply.

Total flow into the Chesapeake Bay averaged 34.2 bgd (billion gallons per day), which is only half the average flow into the Bay. Streamflow entering the Bay increased in February because of almost three times the January flow from the Susquehanna River. February flow for the Potomac and James Rivers, which also empty into the Chesapeake Bay, reached record lows not seen since 1934. Monthly streamflow in the Potomac River set a record low for February averaging 1.6 bgd. The previous record low for February was 2.1 bgd in 1934.

One of the most affected streams was Deer Creek in Maryland, where streamflow has been below normal in 9 of the last 10 months, and for February, monthly flow decreased to an average flow of 23 mgd (million gallons per day), far exceeding the previous record of 39 mgd set in 1932 (see graphs at <http://md.water.usgs.gov/monthly/bay.html>). A new record daily low for February was also set when streamflow was 19 mgd for three days, from February 24-26, 2002.

Groundwater levels were below normal at all wells in Maryland and Delaware at the end of February. Record low groundwater levels were set at eight water-table observation wells in Baltimore, Carroll, Montgomery, Prince Georges, Queen Annes, and Somerset Counties in Maryland, and Kent County in Delaware (see graphs at <http://md.water.usgs.gov/groundwater/>). Groundwater levels for February are now lower than they were during the drought of 1999 and the severe drought of the 1960s.

Storage in the Baltimore reservoir system decreased to 57 percent of capacity in February. In Maryland and Delaware, rainfall was more than 10 inches below normal for the past 6 months, according to the Middle Atlantic River Forecast Center. Above normal rain or snow is critical during the next few months to replenish low streamflow and groundwater levels. To recover from the current drought by summer, the region needs 15 to 27 inches of rainfall over the next 3 months, according to the National Climatic Data Center.

Tracking streamflow and groundwater levels is essential to gauge drought severity and recovery. Short-term rainfall will improve soil moisture and aid farmers, but only adequate rainfall over many months can replenish groundwater and streamflow and fill reservoirs, which together supply water to all public and private users in the Mid-Atlantic region.

The real-time streamflow stations used in this analysis are operated in cooperation with the Maryland and Delaware Geological Surveys, the Maryland State Highway Administration, the U.S. Army Corps of Engineers, the Maryland Department of Natural Resources, the Maryland Department of the Environment, and other agencies. The observation wells used in this analysis are operated in cooperation with the Maryland and Delaware Geological Surveys. The USGS publishes data for 128 streamflow stations and 379 wells across Maryland and Delaware.

The U.S. Geological Survey is the Nation's largest water, earth and biological science, and civilian mapping agency providing reliable, impartial scientific information to resource managers, planners, and other customers. This information is gathered in every state by USGS scientists to minimize the loss of life and property from natural disasters, contribute to the sound conservation and the economic and physical development of the Nation's natural resources, and enhance the quality of life by monitoring water, biological, energy, and mineral resources.

**\*\*\* USGS \*\*\***

In-depth information about USGS programs may be found on the USGS home page at <http://www.usgs.gov> and <http://chesapeake.usgs.gov/> for Chesapeake Bay activities.