

U.S. Geological Survey (USGS) Maryland-Delaware-District of Columbia Monthly Water Conditions Summary

January 2012

Why is it important for the USGS to collect and analyze water-resources data?

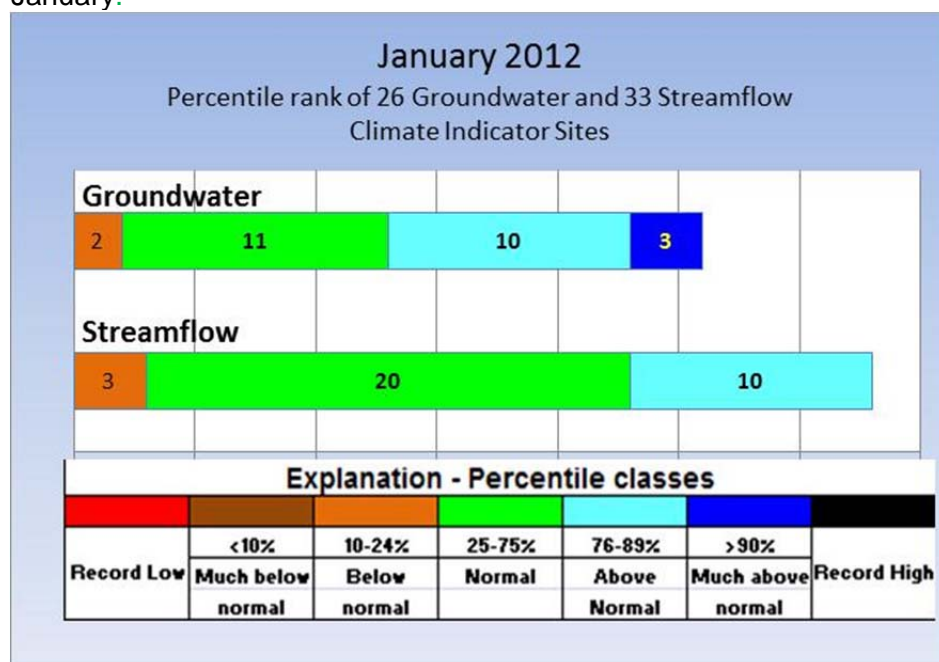
USGS water data is valuable to the public, researchers, water managers, planners, and agricultural users, especially during floods and droughts. These data can be used to assess how water resources respond to changes in climate. Scientists at the USGS have measured streamflow and groundwater levels in wells to assess water resources for over 125 years.

In addition to providing the most extensive set of historical streamflow and groundwater data available to the public, the USGS collects water data and quality-assures the data by employing standardized techniques across the country. The uniformity of the dataset allows for multi-state comparisons and other comparative statistical analyses that better inform policy makers of the possible water resource conditions they might encounter in the future.

The sites used in this water summary were carefully selected to show the response of streamflow and groundwater levels to precipitation. Ideally, these sites will show no effects from human influences. The streamflow and groundwater data are ranked in comparison to the historical record and summarized. Precipitation and reservoir data are also presented to give a more complete picture of the region's water resources.

USGS January 2012 Water Conditions Summary

In January 2012, most monthly mean streamflow and groundwater levels were normal to above normal at the sites monitored by the USGS to assess the response to climatic conditions in the Maryland, Delaware, and District of Columbia region. This includes 30 of the 33 streamgaging sites (90 percent) and 24 of the 26 wells (92 percent). There were three streams with below normal monthly mean streamflow and two wells with below normal groundwater levels in January.



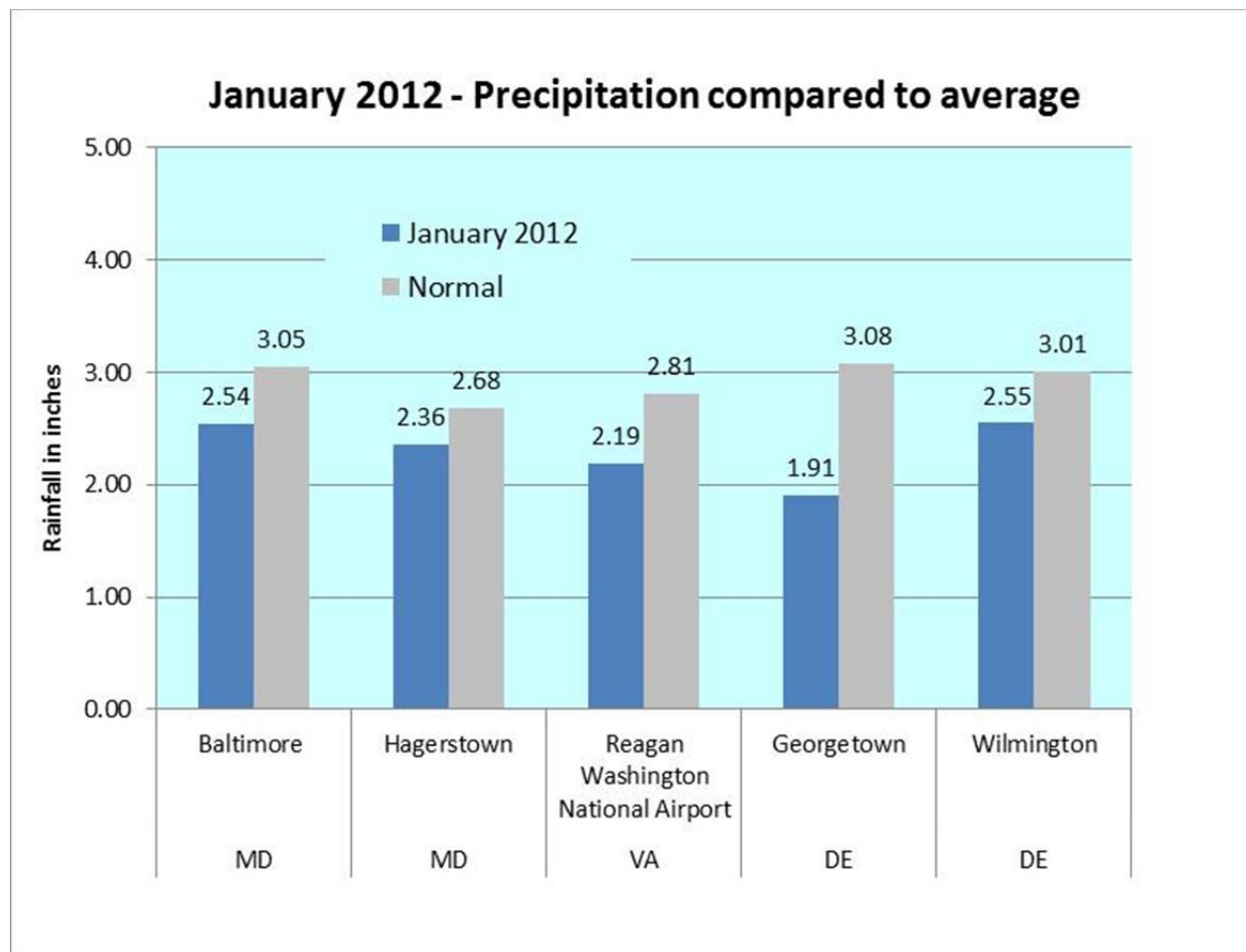
A **percentile** is a value on a scale from 0 to 100 that indicates the percent of a distribution that is equal to or below it. A percentile between 25 and 75 is considered normal.

For example, a groundwater level in the 90th percentile is equal to or greater than 90 percent of the values recorded for that month.

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Precipitation

January 2012 rainfall was below average for the climate normal period* at National Weather Service (NWS) stations in Baltimore, Maryland, Wilmington, Delaware, and Ronald Reagan Washington National Airport in Virginia. For the five weather stations in the plot below, rainfall was lowest at Georgetown, Delaware with 1.91 inches, and highest at Wilmington, Delaware with 2.55 inches.



The Middle Atlantic River Forecast Center's data for January 2012 show the largest precipitation deficit was in two counties in Maryland: Talbot and Dorchester Counties. There were another 17 counties with precipitation departures below average. Only the Allegany County precipitation departure was above average in January 2012.

**Note from the National Weather Service: September 2011 was the first month to incorporate the new 1981--2010 climate normals that were calculated by the National Climatic Data Center. The new normals replaced the 1971--2000 normals.*

Sources:

National Weather Service

MD and DC: <http://www.weather.gov/climate/index.php?wfo=lsx>

DE: <http://www.erh.noaa.gov/phi/>

Middle Atlantic River Forecast Center (MARFC): <http://www.weather.gov/marfc/Precipitation/Departures>

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Streamflow

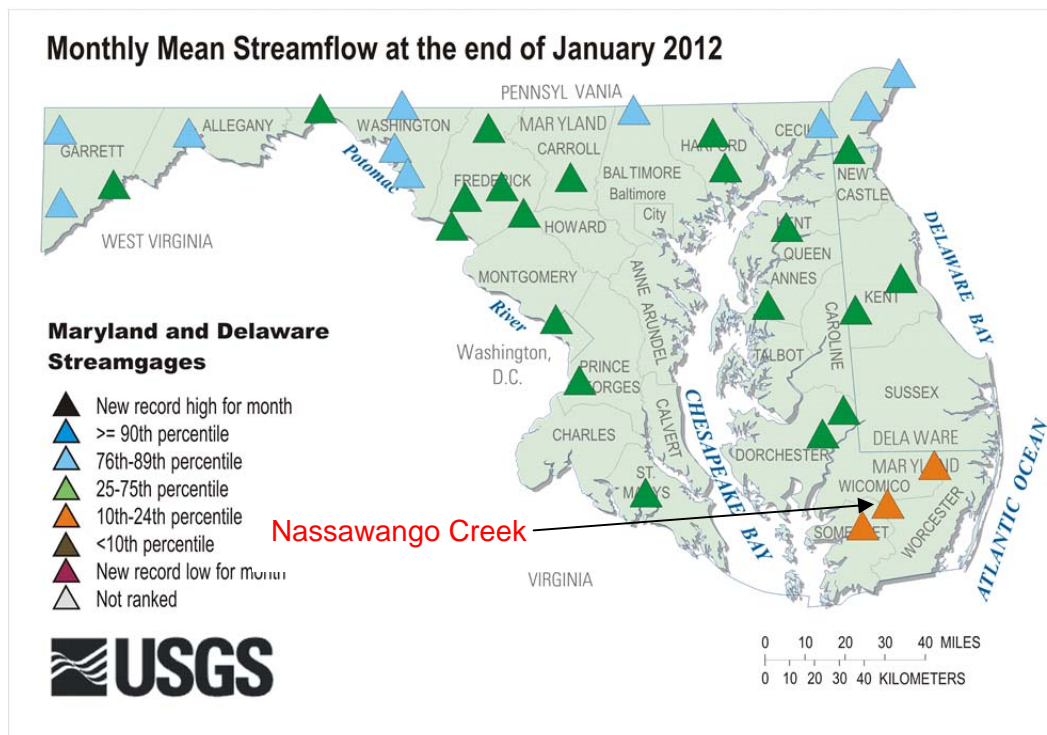
Streamflow data are used for many purposes. A few of the most obvious uses are to assess water supply and the risk of droughts and floods. Streamflow data are also used to calculate loads of chemical constituents and to assess how biological communities are affected by hydrologic conditions. The USGS operates the most extensive network of streamgages in the region.

The streamflow locations chosen for the monthly water summary were selected based on the following criteria:

- Minimum period of record is 10 years of continuous data;
- Watersheds greater than 5 square miles;
- Streamflow is not regulated, or has relatively natural flow;
- Streamflow data reflect climatic conditions; and
- The surrounding area and watershed are not urban.

Streamflow for January 2012

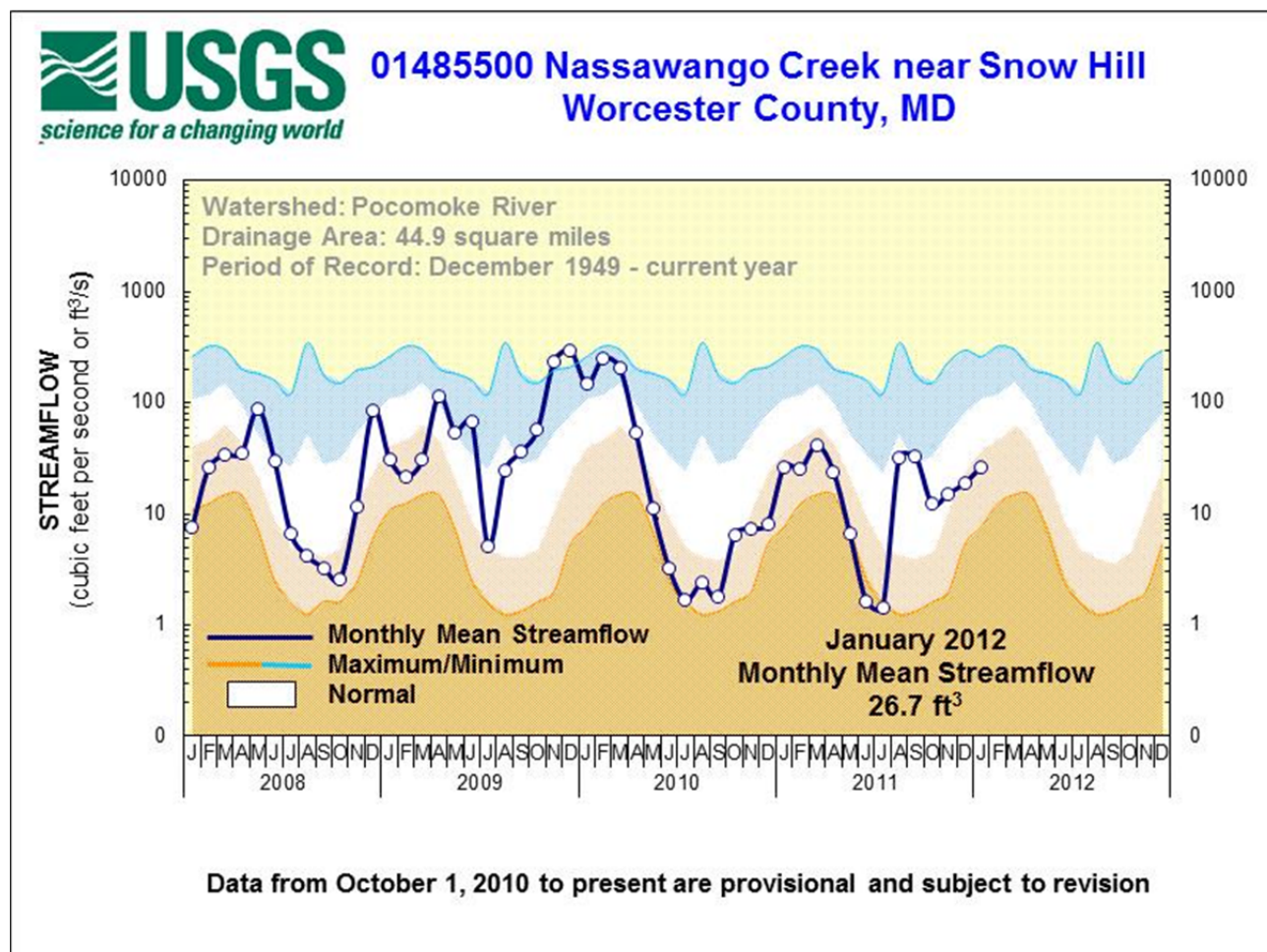
Monthly mean streamflow in January 2012 was normal at 20 of the 33 sites used to monitor climatic response in Maryland, Delaware, and the District of Columbia. Most of the 10 sites with above normal monthly mean streamflow were in western Maryland and northern Delaware. The remaining three sites were on the southern Delmarva Peninsula, where monthly mean streamflow remains below normal. Nassawango Creek and the Pocomoke River had monthly mean streamflows below normal for the second consecutive month.



To access the clickable streamflow map, go to:
<http://md.water.usgs.gov/surfacewater/streamflow/>

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The January 2012 monthly mean streamflow at Nassawango Creek in Worcester County, Maryland on the southern Delmarva Peninsula was 26.7 ft³/s (cubic feet per second). Streamflow at this site had been at record low levels in June and July 2011, then rose significantly after rainfall from Hurricane Irene and Tropical Storm Lee, and returned to below normal levels in December 2011 and January 2012.



Five-year hydrographs can be viewed at:
<http://md.water.usgs.gov/surfacewater/streamflow/>

The dark line in the 5-year hydrograph represents the current monthly mean streamflow and the white band shows the normal range (25th to 74th percentile) based on the period of record. The maximum monthly mean streamflow is at the top of the blue shaded section, and the lowest monthly mean streamflow is at the top of the dark orange area.

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Groundwater

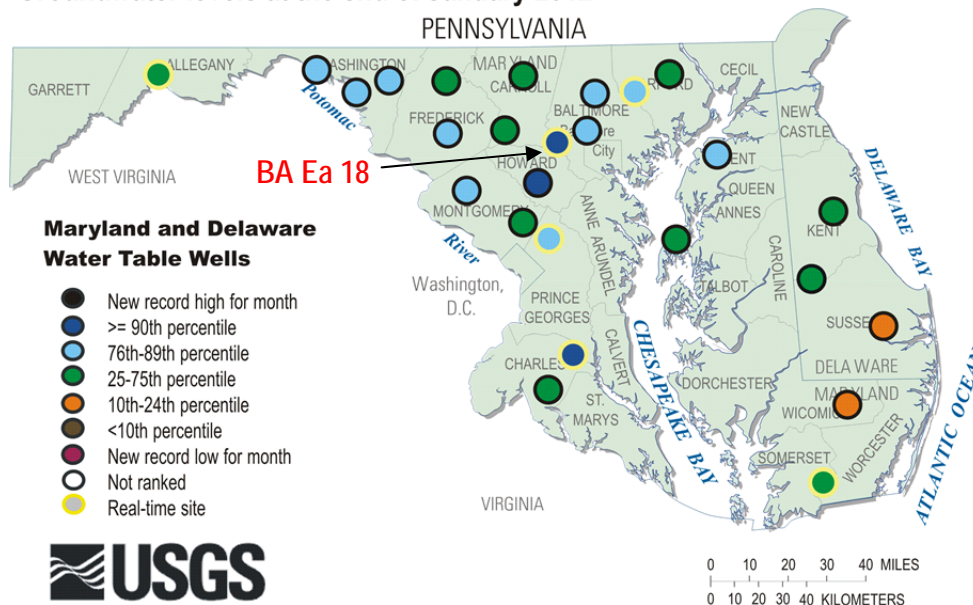
The USGS monitors groundwater levels in unconfined aquifers, providing observations that can be compared to both short-term and long-term changes in climatic conditions. Twenty-six groundwater wells were selected based on the following criteria:

- Located in an unconfined (water-table) aquifer;
- Open to a single, known hydrogeologic unit/aquifer;
- Groundwater hydrograph reflects changes in climatic conditions;
- No indicated nearby pumpage and likely to remain uninfluenced by pumpage, regulated streamflow, or changes related to human activities;
- Minimum period of record is 10 years of continuous/monthly records;
- Minimally affected by irrigation, canals, drains, pipelines, and other potential sources of artificial recharge;
- Well has casing--dug wells not used;
- Water levels show no apparent hydrologic connection to nearby streams;
- Well has never gone dry; and
- Long-term accessibility likely.

January 2012 Groundwater Levels

Groundwater levels across Maryland and Delaware were normal to above normal in 24 of the 26 wells used by the USGS to assess climatic conditions in January 2012 for the fifth consecutive month. Groundwater levels were below normal in one observation well in Sussex County, Delaware, and one observation well in Wicomico County, Maryland.

Groundwater levels at the end of January 2012

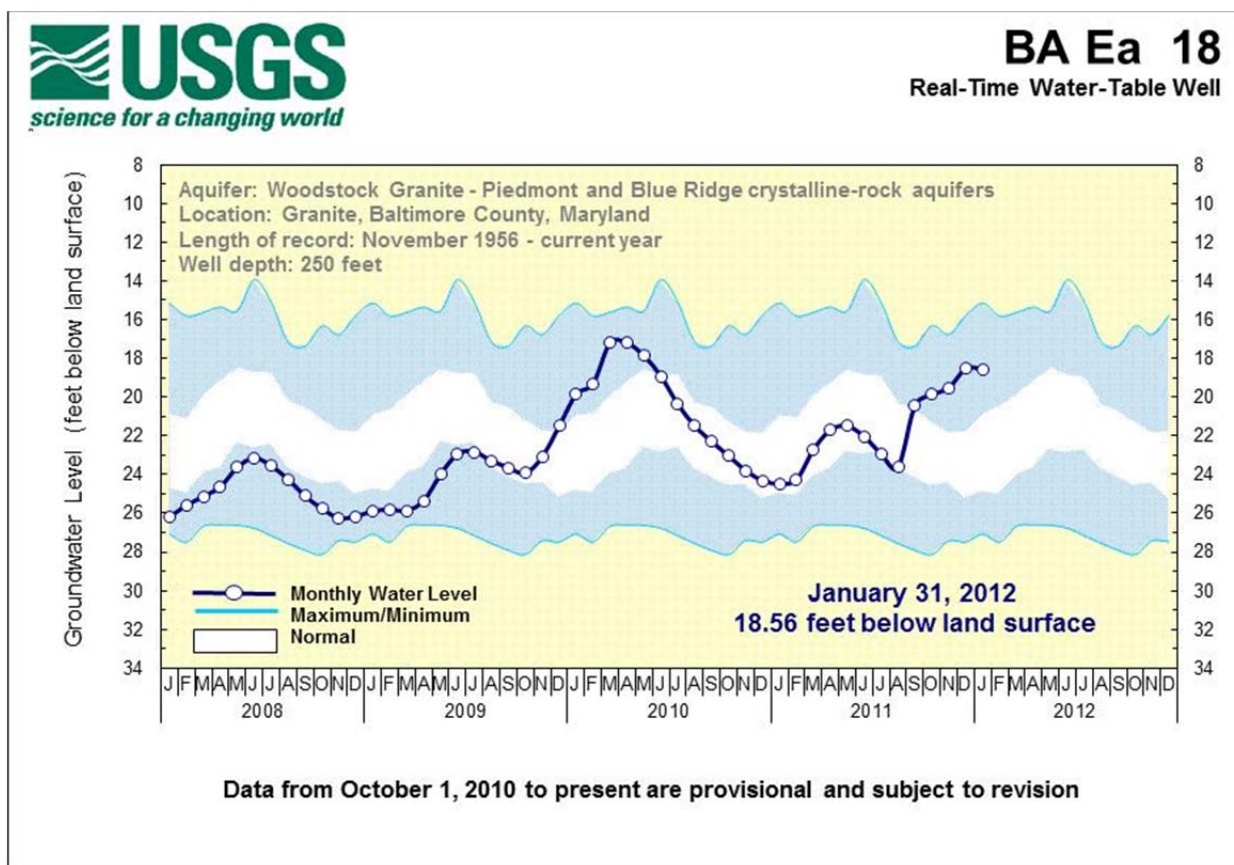


To access the clickable groundwater map, go to:

http://md.water.usgs.gov/groundwater/web_wells/current/water_table/counties/index.html

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Groundwater levels in observation well BA Ea 18 in Baltimore County, Maryland have been above normal since September 2011, when record-setting rainfall from Hurricane Irene and Tropical Storm Lee covered the area. The typical cyclic trend for this site, where normal is considered between the 25th and 75th percentiles and is depicted by the white band in the graphic below, indicates that the groundwater levels in January 2012 are more typical of the groundwater levels which reach their peak in June and July. Groundwater levels respond very slowly to climatic conditions at this deep well.



Five-year groundwater hydrographs can be viewed at:

http://md.water.usgs.gov/groundwater/web_wells/current/water_table/counties

The 5-year hydrograph shows groundwater levels as a dark line, the maximum and minimum monthly values, and the normal range (between the 25th and 74th percentiles) as a white band based on the period of record. The maximum water level is at the top of the blue section and the minimum water level is at the bottom of the blue section in the graph.

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Reservoir Levels

All regional reservoirs were full at the end of January 2012. Storage in the Baltimore reservoirs (Loch Raven, Liberty, and Prettyboy) remains at 100 percent of available storage capacity, or 75.85 billion gallons.

Storage in the Triadelphia and Duckett Reservoirs, which serve parts of Howard, Montgomery, and Prince George's Counties in suburban areas around the District of Columbia, remains at 100 percent of normal storage capacity, 11.08 billion gallons of water, at the end of January 2012.

January 2012	Percent available/ normal storage	Volume (billion gallons)	Source
Baltimore Reservoirs			Baltimore City – Environmental Services Division
Liberty	100%	36.80	
Loch Raven	100%	21.20	
Prettyboy	100%	17.85	
Total	100%	75.85	
Patuxent Reservoirs			Washington Suburban Sanitary Commission (WSSC)
Triadelphia	100%	5.84	
Duckett	100%	5.24	
Total	100%	11.08	