December 2010 USGS Maryland-Delaware-District of Columbia Water Conditions Summary

December streamflow and groundwater levels were normal in 25 of the 33 streams and 16 of the 26 wells monitored by the U.S. Geological Survey (USGS) to assess the response to climatic conditions in Maryland, Delaware, and the District of Columbia region. Monthly mean streamflow was below normal in the remaining eight streams and in the lowest 10th percentile in three of these streams. None of the streams had above normal streamflow in December.

Groundwater levels were below normal in 9 of the 26 wells and a new December low record was set in Carroll County, Maryland. The well in Kent County, Maryland had above normal groundwater levels for the third consecutive month and it was the only site with above normal groundwater levels in December. Groundwater levels in the remaining 16 wells were in the normal range.

Precipitation and temperature were below normal across Maryland, Delaware, and the District of Columbia in December. Cold weather effects on groundwater and streamflow levels began to appear on December 8 and continued through to the end of the month. The monthly streamflow data presented here are based on daily values that will be examined closely to see if the streamflow was affected by ice and if so, the values will be estimated for this period. The data are provisional until the data have been reviewed and approved.

Precipitation

Precipitation in December was below normal in Maryland, Delaware, and the District of Columbia. The National Weather Service station with the lowest amount of precipitation in December was at the Ronald Reagan Washington National Airport in Virginia, which is the closest National Weather Service station to the District of Columbia. This station had only 1.78 inches of precipitation, and was 1.27 inches below normal.



Sources:

National Weather Service

MD and DC: <u>http://www.weather.gov/climate/index.php?wfo=lwx</u> DE: <u>http://www.erh.noaa.gov/phi/</u> Middle Atlantic River Forecast Center (MARFC): http://www.erh.noaa.gov/marfc/Maps/precip.shtml

Temperatures were unusually cold or below normal across the region and for the first time in 10 months at the Baltimore-Washington International Thurgood Marshall Airport (BWI) weather station, according to the National Weather Service.

The Middle Atlantic River Forecast Center's 365-day and "year-to-date" departure from the average precipitation maps show the region within the normal range. The December values ranged from a rainfall deficit of 1.6 inches in Garrett, Howard, Wicomico, and Worcester Counties to a rainfall surplus of 0.6 inches in Calvert, Cecil, and Washington Counties. December precipitation was more than an inch below normal in Delaware.

Streamflow

In December, monthly mean streamflow was normal at 25 of the 33 USGS streamgages used to assess climatic conditions in Maryland, Delaware, and the District of Columbia. Streamflow in the remaining eight streams was below normal and in the lowest 10th percentile in three rivers: the Chicamacomico River, Nassawango Creek, and Pocomoke Rivers.



The monthly mean streamflow on the Chicamacomico River near Salem dropped from above normal levels in October and November, to below normal, or 6.64 ft^3 /s (cubic feet per second) in December. The low streamflow could be a result of ice since temperatures at Georgetown were 6.4 degrees Fahrenheit below normal. Streamflow levels also dropped in a similar manner on the Pocomoke River. 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 beginning in 1951.



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

Groundwater

Groundwater levels were normal in 16 of the 26 wells used by the USGS to assess climatic conditions in December. For the third consecutive month, the groundwater level in the well in Kent County, Maryland was above normal and this well was the only well with an above normal groundwater level in December. In contrast, groundwater levels were at a record December low and in the lowest 10th percentile in wells in Carroll County in December.



For the fifth time in 2010, the groundwater level in well CL Ad 47 in Carroll County, Maryland was at a monthly record low. Other record low groundwater levels at this well were set in April, May, June, and September. The 5-year hydrograph shows the water level as a dark line and the normal range (between the 25th and 74th percentiles) as a white band based on the period of record (1985 to present).



Five-year groundwater hydrographs can be viewed at: http://md.water.usgs.gov/groundwater/web_wells/current/water_table/counties

Reservoir Levels

At the end of December, storage in the Baltimore reservoirs (Loch Raven, Liberty, and Prettyboy) was 87 percent of available storage capacity, with 66.27 billion gallons in available storage.

The Triadelphia and Duckett Reservoirs, which serve Howard, Montgomery, and Prince George's Counties, were an average of 80 percent of normal storage capacity, with 8.45 billion gallons at the end of December 2010.

December 2010	Percent available/ normal storage	Volume (billion gallons)	Source
Baltimore Reservoirs			Baltimore City – Environmental Services Division
Liberty	84%	30.80	
Loch Raven	90%	19.12	
Prettyboy	92%	16.35	
Total	87%	66.27	

Patux	ent Reservoi	rs	Washington Suburban Sanitary Commission (WSSC)
Triadelphia	84%	4.71	
Duckett	75%	3.74	
Total	80%	8.45	