News Release

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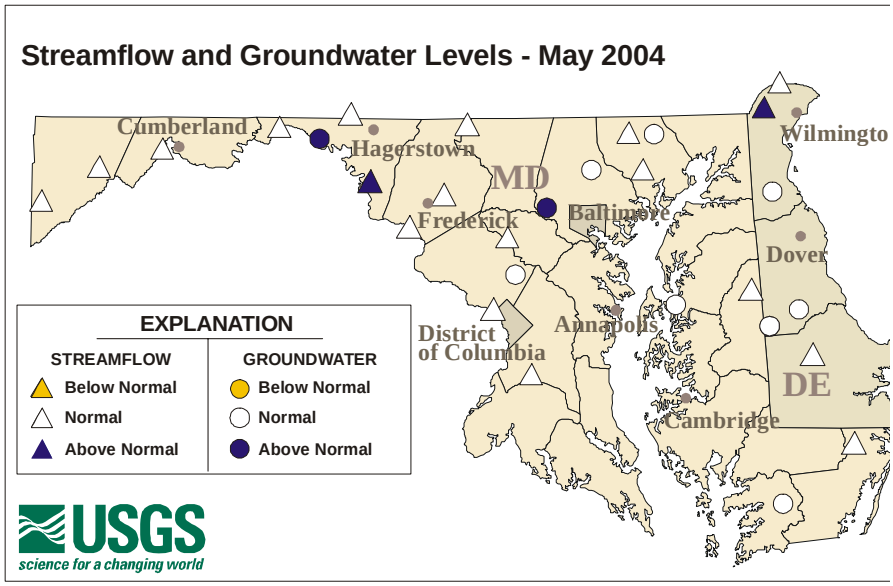
Streams Return to Normal Levels in Maryland and Delaware during May 2004

Near-Record High Nutrient and Sediment Loads to Bay in 2003

Water levels in streams and wells in Maryland and Delaware continued their downward trend from above normal levels, yet many were at normal levels in May 2004, according to hydrologists at the U.S. Geological Survey (USGS). Streamflow and groundwater levels typically decrease this time of year as evapotranspiration (water used by plants and evaporation) rates increase. High flows last year lead to near-record high levels of nutrient and sediment in the Chesapeake Bay in 2003.

Status of Streams and Wells

The map to the right shows the location of the wells and streams used by the USGS to monitor water conditions in Maryland, Delaware, and the District of Columbia. In May, water levels in streams and wells were normal except for two wells and Antietam Creek in Maryland, and White Clay Creek in Delaware, which remain above normal.

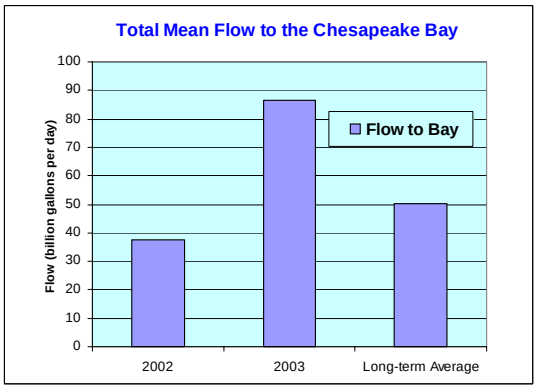


Precipitation

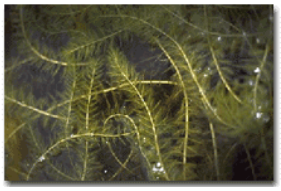
Preliminary rainfall data from the National Weather Service shows that rainfall ranged from below normal at Washington National Airport (2.98 inches) to above normal at Baltimore (5.06 inches) across the region in May. Normal rainfall for May is about 3.8 inches.

Chesapeake Bay

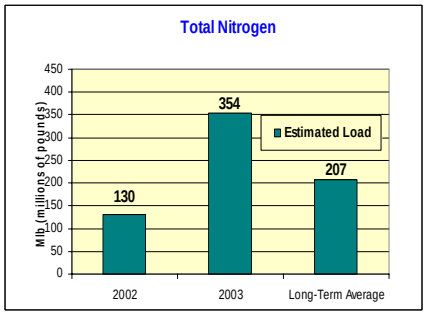
Monthly mean streamflow into the Chesapeake Bay during May averaged 69.5 bgd (billion gallons per day), which is 9 percent above normal. In 2004, flow to the Bay has been near average. This is in contrast to May 2003 when flows and the corresponding amount of nutrients and sediment were near record high levels.

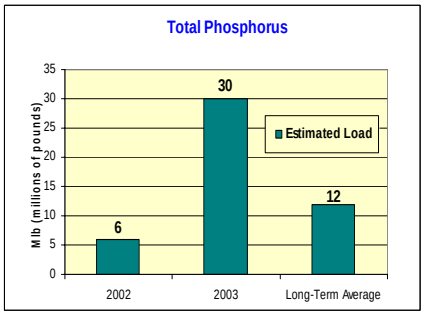


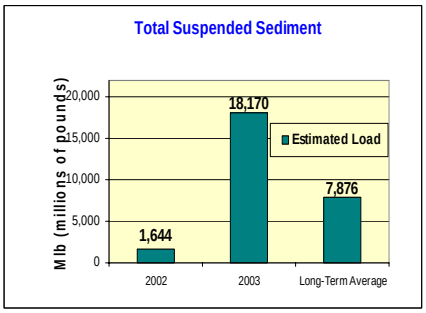
The USGS just completed estimates of nutrient and sediment loads to the Bay for 2003. The graph to the right shows that in 2003, more than twice the amount of river flow (86. 7 billion gallons per day) entered the Bay than in 2002 (37.7 billion gallons per day). This was the third highest amount since 1937, when the USGS began keeping records to compute estimates of the total flow to the Bay. Nutrient and sediment loads in 2003 were influenced by near-record river flow to the Bay. In 2003, nutrient and sediment loads to the Chesapeake Bay from its major rivers were the second highest since 1990. The increased nutrient and sediment loads resulted in less light in Bay waters, which contributed to a decline of submerged aquatic vegetation (SAV). The increased nutrient loads also contributed to the low dissolved oxygen levels in the Bay during the summer of 2003.



Loads from the nine major rivers entering the Bay in 2003 were much higher than in 2002, and contained about 3 times the amount of nitrogen, 5 times the amount of phosphorous, and 11 times the amount of sediment (see graphs below). The loads were higher due to both the near-record river flow and an increase in nutrient and sediment concentrations in the rivers. The increased nitrogen concentrations were a result of increased erosion of sediment and high amounts of nitrogen being flushed from the land and streams.







In 2004, flow to the Bay has been near average—therefore, sediment and nutrient loads could be less than in 2003. For more information on sediment and nutrients loads entering the Chesapeake Bay in 2002 and 2003, visit: http://chesapeake.usgs.gov/chesbay/featureflowandload.html. Additional information on the Chesapeake Bay can be found at: http://chesapeake.usgs.gov.

Streamflow

Streams in Maryland and Delaware were flowing at normal levels in May, except for Antietam Creek in Maryland and White Clay Creek in Delaware, which were above normal. Current and historical streamflow data can be monitored on the web at: http://waterdata.usgs.gov/. Five-year monthly streamflow hydrographs from the USGS stream-gaging network can be viewed on the USGS website at http:/md.water.usgs.gov/surfacewater/streamflow/.

Daily streamflow on the Potomac River near Washington, D.C. averaged 10.7 bgd in May, which is 13 percent above normal for the month of May. More information on the Potomac River is available at: http://md.water.usgs.gov/monthly/poto.html

Groundwater-Unconfined or Shallow Aquifers

Groundwater levels dropped in most of the wells used by the USGS to monitor unconfined or shallow aquifer response to climatic conditions in the bi-state region. However, all were in the normal range during May except for wells in Baltimore and Washington Counties in Maryland. Five-year hydrographs of groundwater levels for the climatic indicator wells can be viewed at: http://md.water.usgs.gov/groundwater/.

Groundwater-Confined or Deep Aquifers

Water is plentiful at the surface (streams, reservoirs, and shallow groundwater reserves are full), however some of the water levels in the deep confined aquifers used for water supply by many people living in southern and eastern Maryland and Delaware continue to decline. The decline is caused by pumping at greater rates than the rate at which deep groundwater is recharged, and because the confined aquifers are deep, water levels in confined aquifers take longer to respond to climatic conditions than water levels in shallow aquifers. Confined aquifer wells can be viewed at http://md.water.usgs.gov/groundwater. Real-time water-level data collection can be viewed at: http://waterdata.usgs.gov/md/nwis/gw

Reservoir Storage

Contents of the Baltimore reservoir system remained at 100 percent capacity. Storage in the Triadelphia and Duckett Reservoirs on the Patuxent River, which serve Montgomery and Prince Georges Counties, has dropped to 98 percent of capacity.

Water Monitoring

The USGS has been collecting National streamflow data for 120 years, since 1884. Regular streamflow monitoring began in Maryland on the Potomac River at Point of Rocks, Maryland in 1895 and continues today. Streamflow and groundwater levels are used to assess the current water conditions and can be used to predict the potential for flooding and drought conditions. These USGS data have been provided to State and local water resource managers and are critical for making appropriate decisions on water regulation. For more information on streamflow and groundwater levels in Maryland, Delaware, and the District of Columbia, visit WaterWatch at: http://md.water.usgs.gov/waterwatch/.

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, Baltimore County, Baltimore City, and other agencies. The observation wells used in this analysis are operated in cooperation with the Maryland and Delaware Geological Surveys and the Interstate Commission on the Potomac River Basin. The real-time wells are operated in cooperation with the Maryland and Delaware Geological Surveys, the Interstate Commission on the Potomac River Basin, and Calvert County, Maryland. The USGS publishes data for 137 streamflow stations and 389 observation wells across Maryland, Delaware, and the District of Columbia.

USGS Reports

The USGS Maryland, Delaware, and D.C. District publishes reports highlighting recent scientific work done by this office. Fact sheets and other publications are available online from the Publications section of the District homepage at: http://md.water.usgs.gov/publications/online.html.

Nitrates and Pesticides are Common in Delmarva Peninsula Ground Water and Streams

Many different chemicals from human sources, including nutrients, pesticides, and volatile organic compounds (VOCs), are found in the shallow ground water and streams of the Delmarva Peninsula, according to a recent study by the USGS. With the exception of nitrate, most of the chemical concentrations are below existing water-quality standards, but many of the chemicals detected do not have such standards or guidelines.

According to Judy Denver, USGS hydrologist in charge of the multi-year water quality study, “Nitrate in domestic wells is of concern because, unlike public-supply wells, most domestic wells are not monitored regularly and many homeowners are unaware of potential water-quality problems. Drinking water with high nitrate concentrations can cause health problems for infants.” And, as Denver notes, “There is little information about the potential additive or synergistic effect on human health and aquatic life of low levels of multiple compounds in streams and drinking water.”

USGS technician Deb Bringman collects ground-water sample for chemical analysis.

A news release based on this report can be accessed at: http://chesapeake.usgs.gov/chesbay/.
The report, "**Water Quality in the Delmarva Peninsula, Delaware, Maryland, and Virginia, 1999-2001**," can be accessed on the World Wide Web at http://water.usgs.gov/nawqa/nawqa_sumr.html.

The USGS serves the Nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

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