

# USGS Activities in the Potomac River Basin

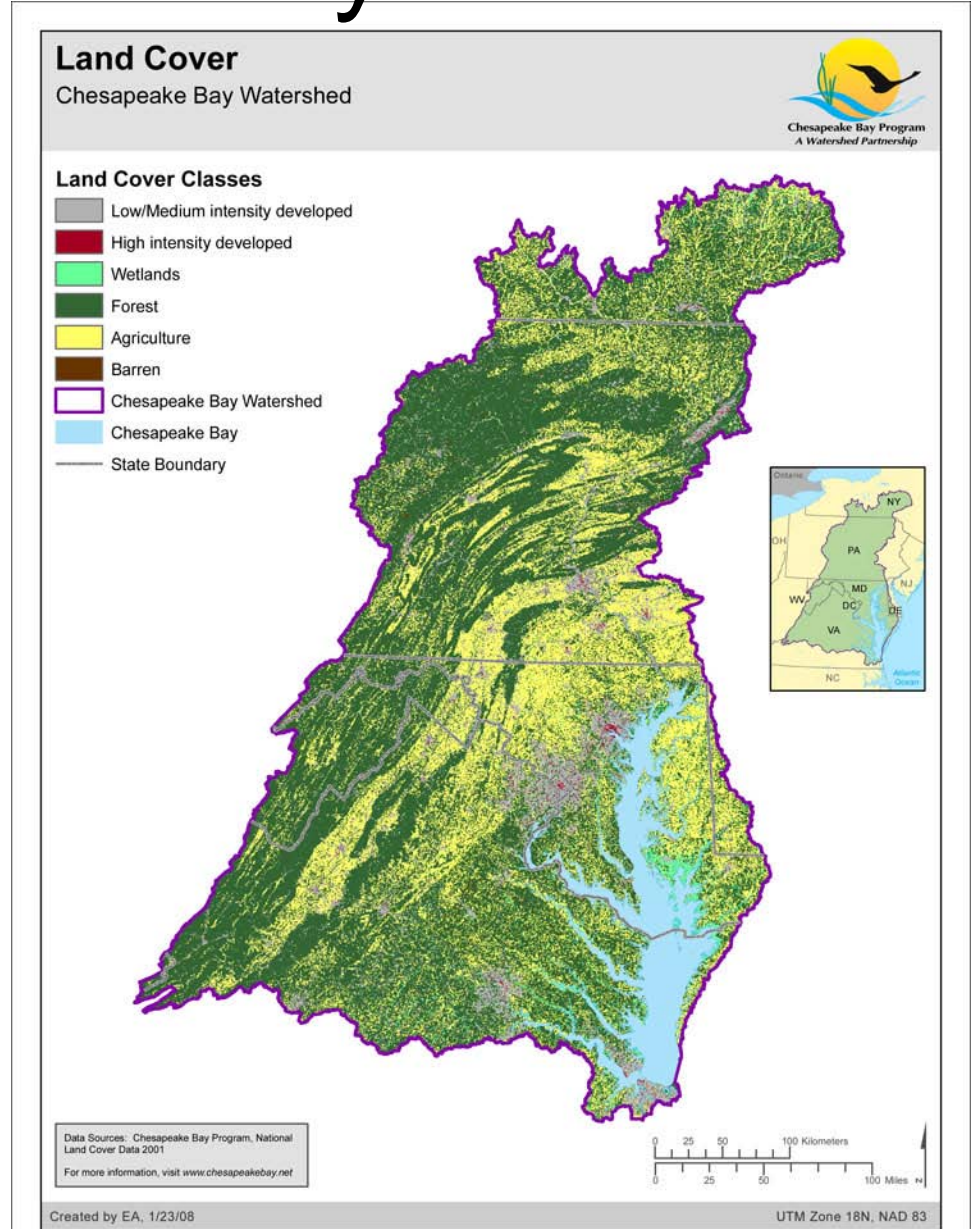
**USGS West Virginia Water Science Center**

# Overview

- Chesapeake Bay Studies
  - RIM
  - Non-Tidal Network
  - Fish Health Studies
- NAWQA
  - SPARROW Models
- Water Science Center Studies
  - Gaging network
  - Other studies

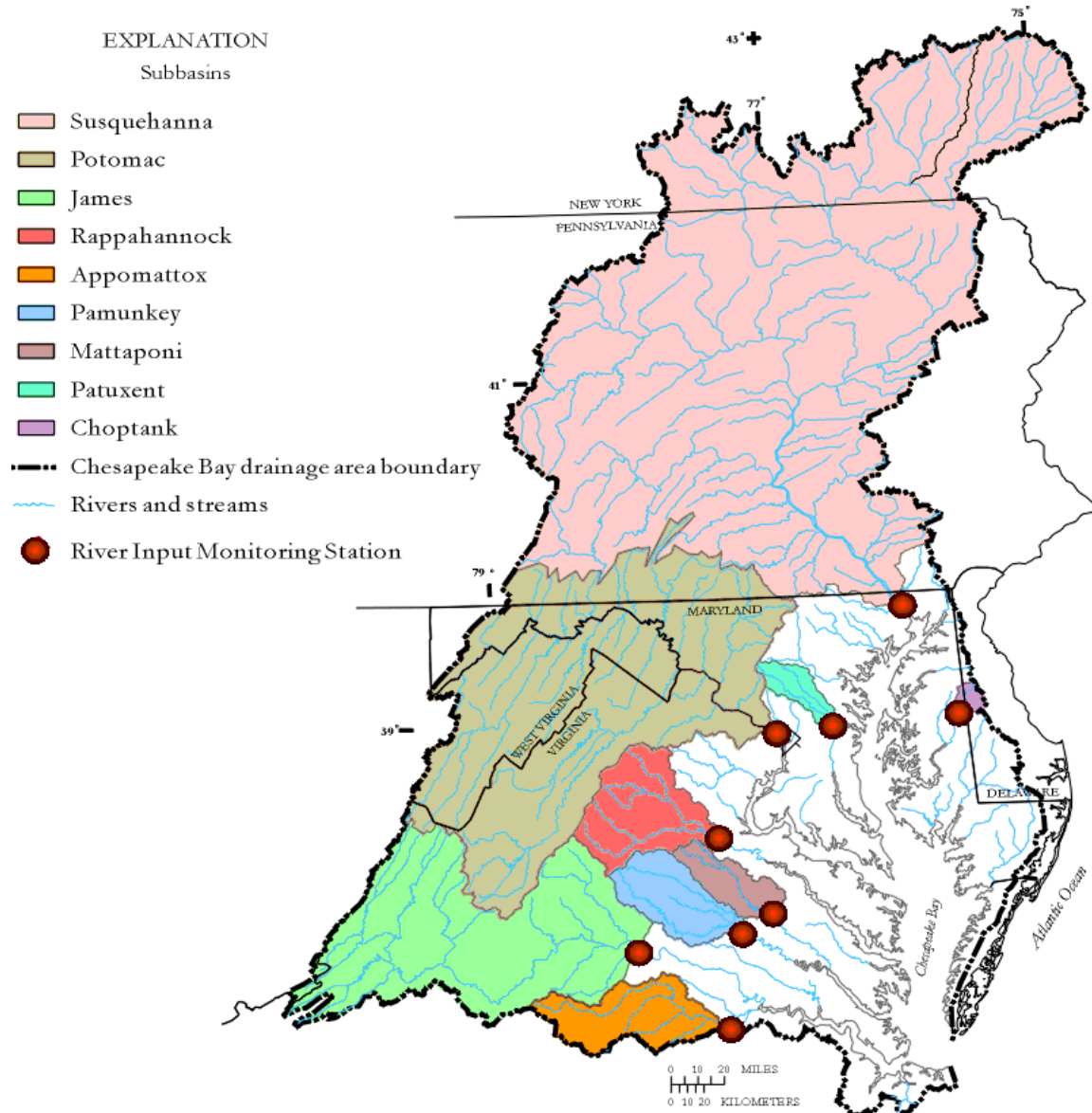
# Chesapeake Bay Studies

- River Input Monitoring (RIM)
- Non-Tidal Monitoring Network
- Fish Health Studies



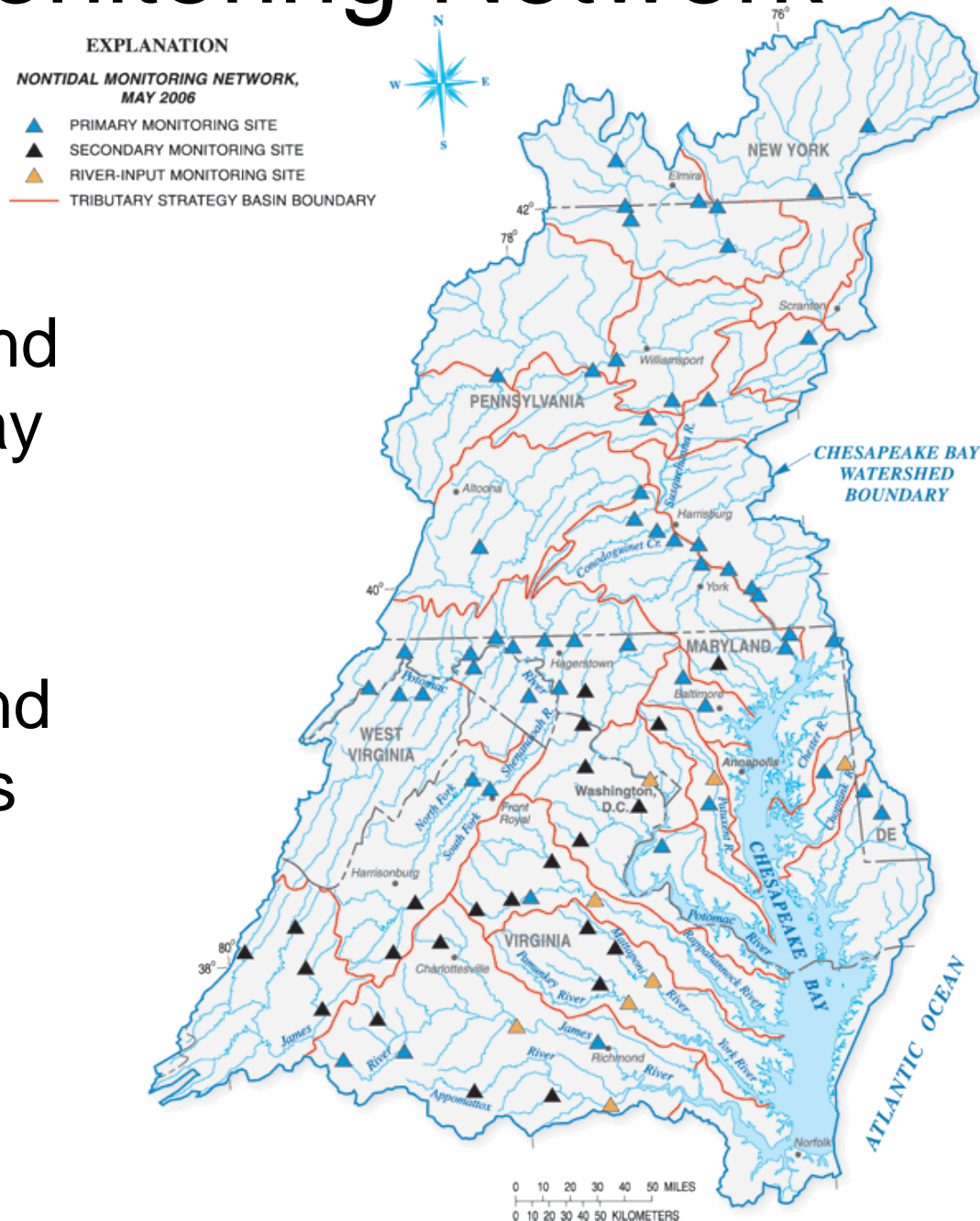
# River Input Monitoring

- Quantify loads and long-term trends in nutrients and suspended material entering the tidal part of the Chesapeake Bay
- Sampling 9 major tributaries to Chesapeake Bay
- Potomac River at Chain Bridge



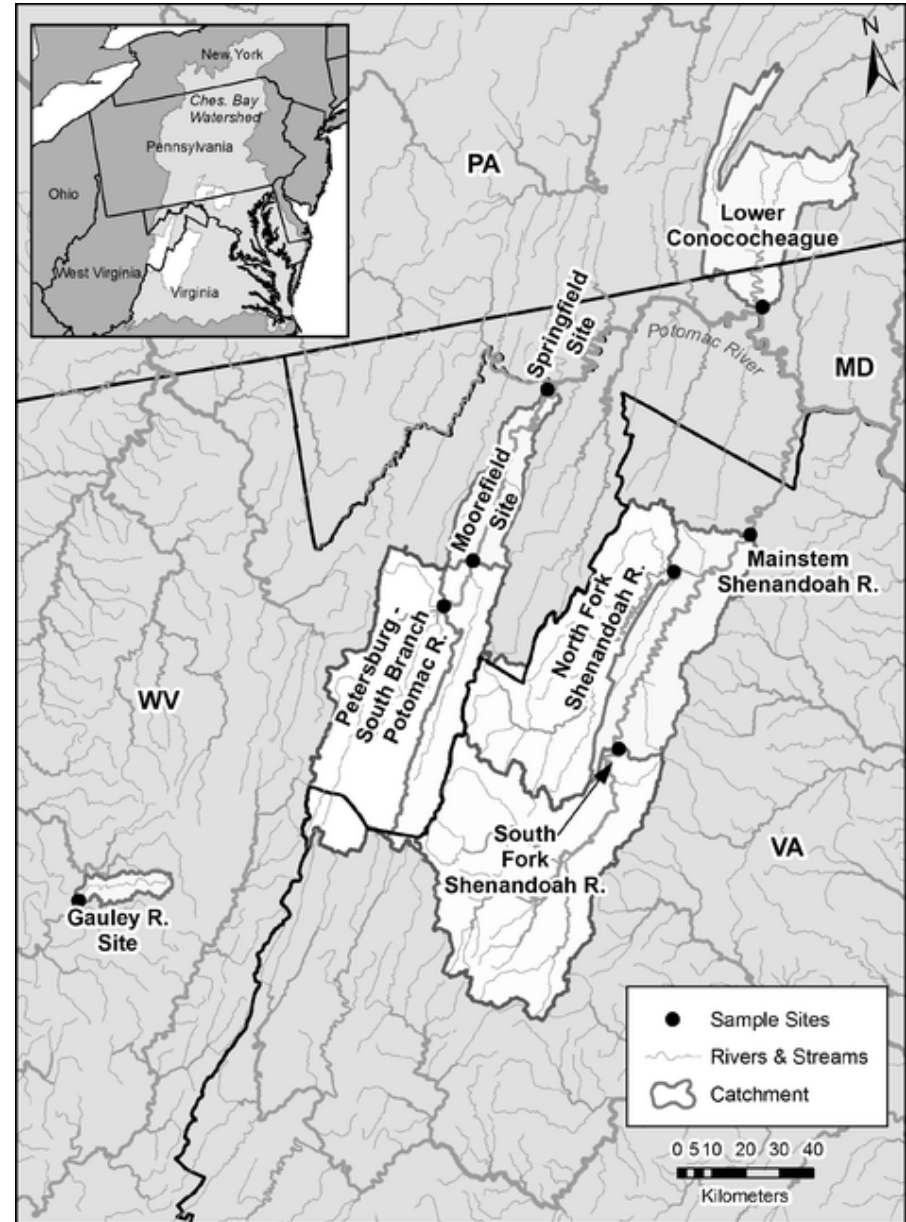
# Non-Tidal Monitoring Network

- To better estimate loads of nutrients and sediments to the Bay
- 20 primary sites, 4 secondary
- Monthly samples and eight storm samples
- USGS and other agencies



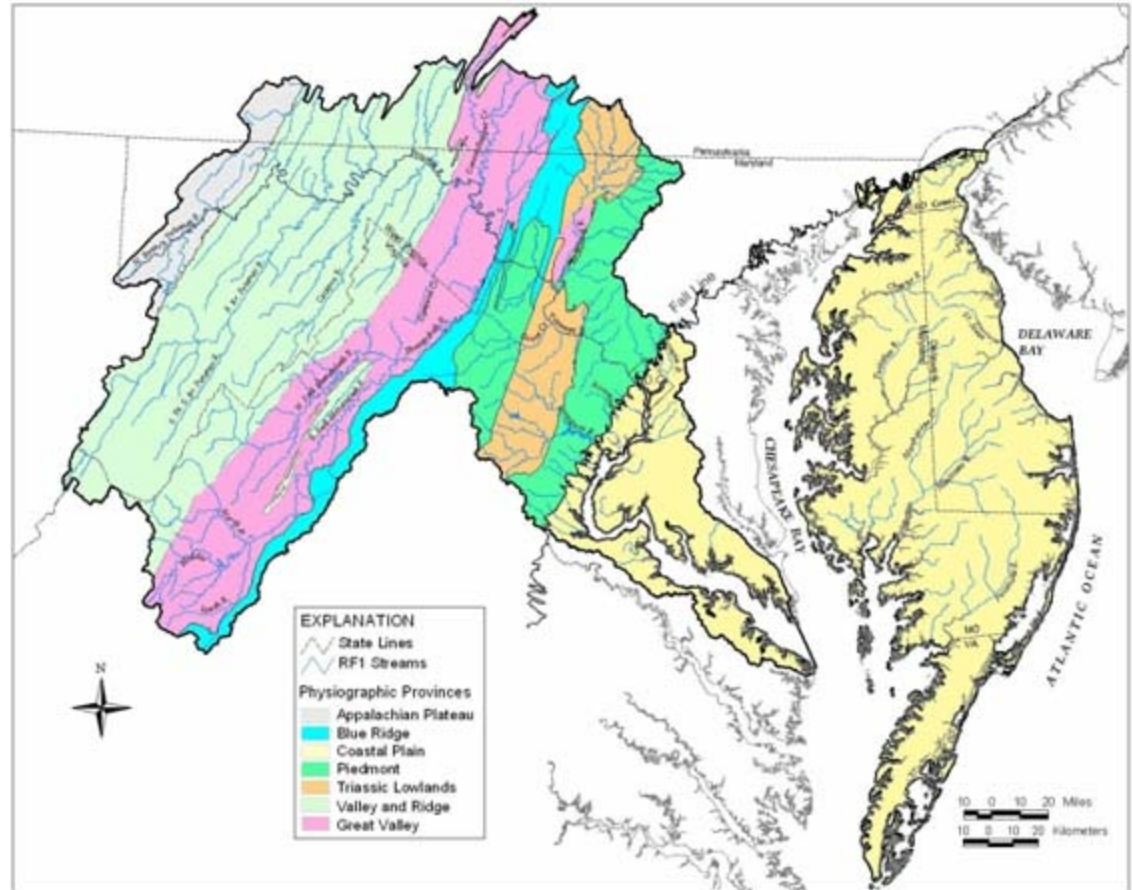
# Fish Health Studies

- Occurrence of testicular oocytes noted in Potomac Tributary streams
- Studies to look at spatial and temporal patterns



# National Water Quality Assessment (NAWQA)

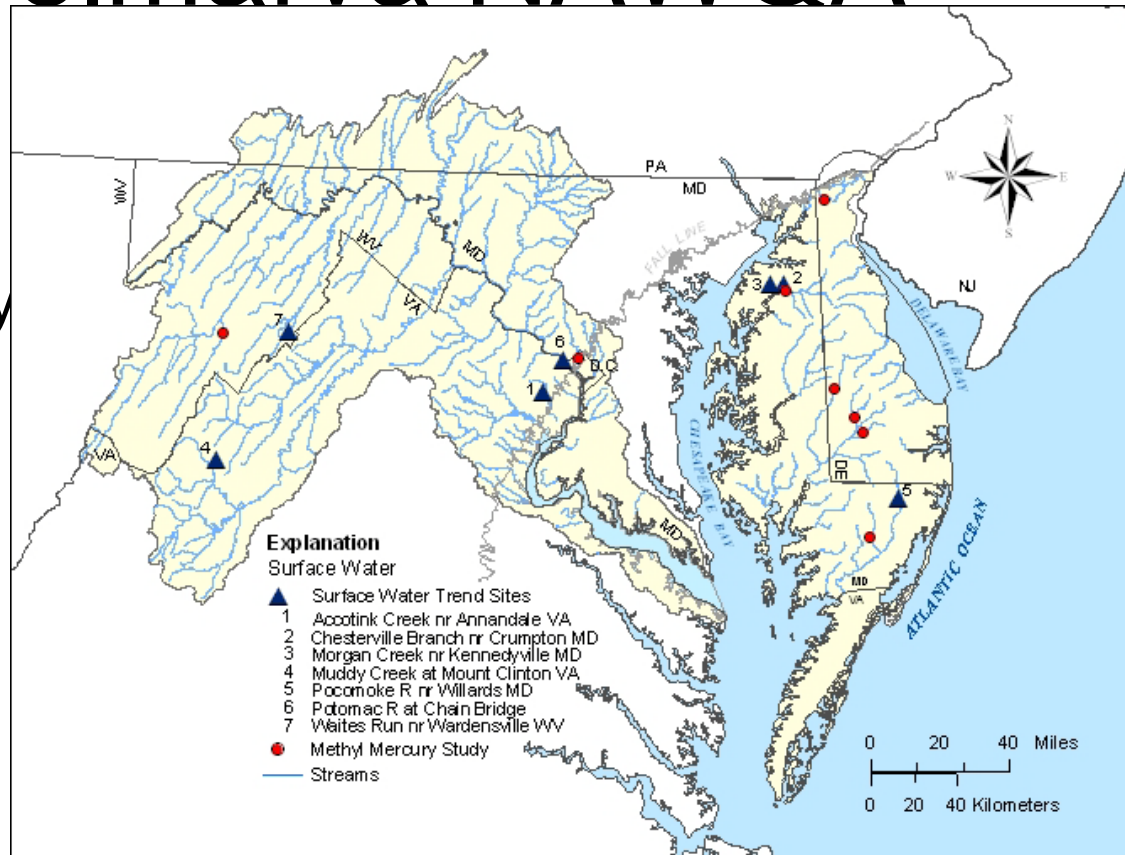
- Primary goals of the NAWQA:
  - determining the status of streams and groundwater
  - identifying changes over time
  - Understanding natural and human influences on status and trends



- Started 1991
- Merged with Delmarva study 2001

# Potomac Delmarva NAWQA

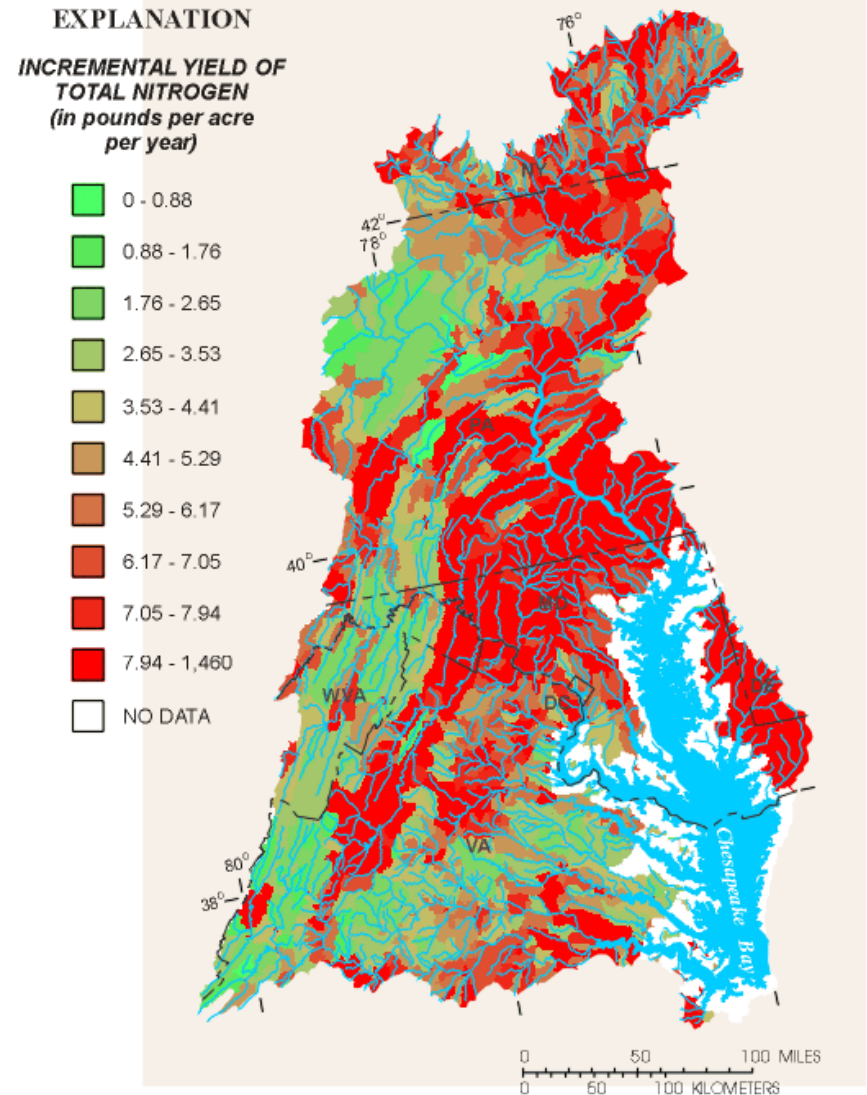
- Trends and status monitoring
  - Water-quality, ecology and habitat
    - Accotink Creek
    - Muddy Creek
    - Waites Run
- Groundwater sampling
  - Periodic sampling of sentinel wells





# SPARROW Model

- ***Spatially-Referenced Regression On Watershed*** attributes
- Used to understand sources and transport of:
  - Nitrogen
  - Phosphorus
  - Suspended Sediment
- Decision Support Tool can be used to predict outcomes of management decisions

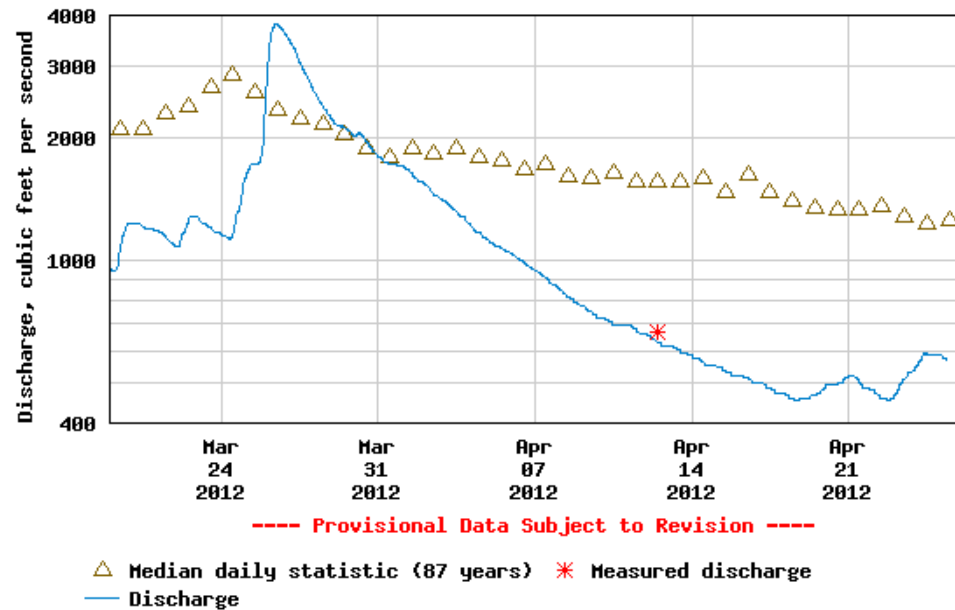


**Figure 8.** Incremental yield of total nitrogen in the Chesapeake Bay watershed during 1987. (Incremental yield is the amount of total nitrogen that is generated locally and contributed to each stream reach.)

# Gaging Network

- Streamflow at 118 stations
  - Key to understanding transport, loading, and trends
- Continuous Water-Quality monitors
  - Improve understanding of in-stream processes
  - Improve understanding of loads and transport

USGS 01608500 SOUTH BRANCH POTOMAC RIVER NEAR SPRINGFIELD, WV



USGS 01608500 SOUTH BRANCH POTOMAC RIVER NEAR SPRINGFIELD, WV

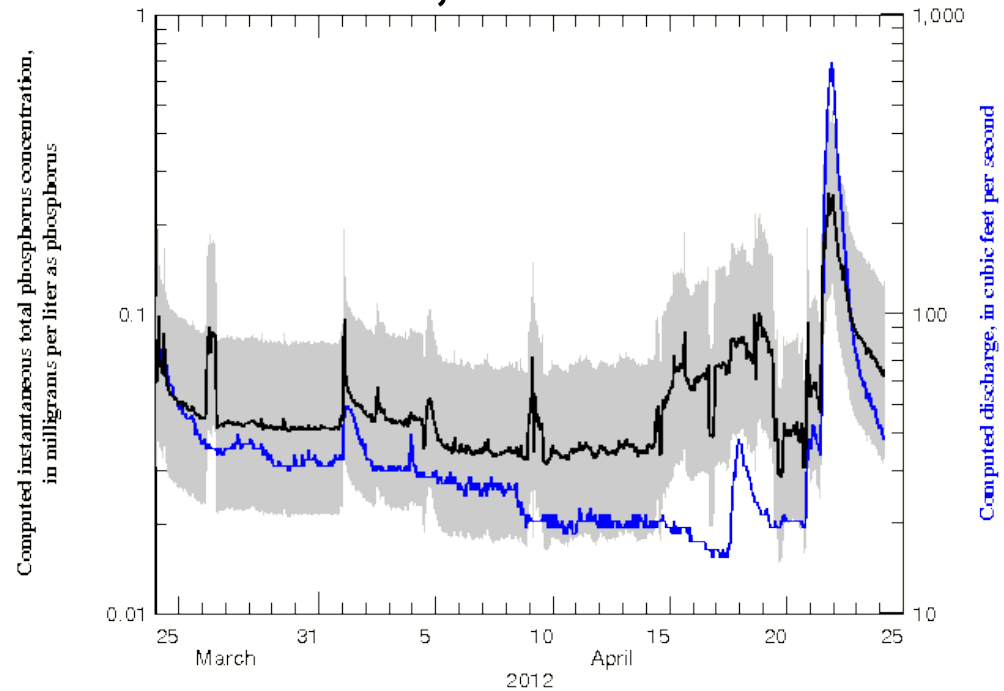


# Water Science Center Studies

- Evaluation of Best Management Practices, Fairfax County, Virginia
  - describe current conditions and trends in water quality and water quantity.
  - Compute loads of suspended sediment and nutrients.
  - Evaluate water-quality improvements associated with BMPs.
  - Evaluate the transferability of results from intensive monitoring stations to other watersheds.
- Pennsylvania Water-Quality Network
  - Long-term monitoring program. Collecting water and invertebrate samples
  - Sideling Hill Creek near Bellegrove, MD

# Water Science Center Studies, Continued

- Anacostia Real-time estimate model
  - Uses continuous monitor data to estimate other parameters
  - Site-specific models



Computed instantaneous total phosphorus concentration  
in Northeast Branch Anacostia River at Riverdale, MD

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- Shenandoah In-stream Flows

- Understand summer low-flow conditions in the North Fork, South Fork, and Shenandoah Rivers, relate water availability to physical habitat needs, and relate availability of suitable fish habitat to instream flows.

# Links to USGS Science Centers

- USGS West Virginia Water Science Center  
<http://wv.usgs.gov/>
- USGS Virginia Water Science Center  
<http://va.water.usgs.gov/>
- USGS Maryland-Delaware-District of Columbia Water Science Center  
<http://md.water.usgs.gov/>
- USGS Pennsylvania Water Science Center  
<http://pa.water.usgs.gov/>
- USGS Leetown Science Center  
<http://lsc.usgs.gov/>