

# ***From the Mountains to the Estuary: From the Schoolyard to the Bay***

**Meaningful Watershed Experiences  
for Grade 6 Students**

**Created by:**



**With grant support from  
The NOAA Bay Watershed Education Training (B-WET) Program**



**In partnership with:**



**Occoquan Bay National Wildlife Refuge  
Manassas Battlefield National Park**



# From the Mountains to the Estuary: From the Schoolyard to the Bay

## Prince William Science Curriculum Resource Guide Grade 6

### Program Overview:

- “What is a watershed?”
- “Why is the state of the watershed important to people?”
- “How can we improve water quality in the watershed?”

### PWC Objectives and Virginia Standards of Learning (SOLs):

#### ***PWC Objective: 6.1 Science Process Skills***

The student will plan and conduct investigations that are increasingly sophisticated and involve a refinement of science process skills. Key concepts include:

- Making observations involving fine discrimination between similar objects and organisms (SOL 6.1a)
- Recording precise and approximate measures (SOL 6.1c)
- Using scale models to estimate distance, volume, and quantity (SOL 6.1d)
- Stating hypotheses in ways that identify the independent (manipulated) and dependent (responding) variables (SOL 6.1e)
- Devising a method to test the validity of predictions and inferences (SOL 6.1f)
- Manipulating one variable over time with repeated trials (SOL 6.1g)
- Collecting, analyzing, and reporting data using appropriate metric measurement (SOL 6.1h)
- Organizing and communicating data through graphical representations (graphs, charts, diagrams) (SOL 6.1i)
- Developing and reinforcing an understanding of the nature of science (SOL 6.1k)

#### ***PWC Objective: 6.4 Nature of Matter***

The student will investigate and understand that all matter is made up of atoms. Key concepts include:

- Chemical symbols (SOL 6.4.c)
- Chemical formulas (SOL 6.4e)
- Elements that comprise solid Earth, living matter, oceans, and atmosphere (SOL 6.4g)

#### ***PWC Objective: 6.5(b) Earth’s Waters: Role in the Environment***

The student will investigate and understand the role of water in the natural and human-made environment. Key concepts include:

- The origin and occurrence of water on Earth (SOL 6.5e)
- The importance of water for agriculture, power generation, and public health (SOL 6.5f)
- The importance of protecting and maintaining water resources (SOL 6.5g)

***PWC Objective: 6.7 Watershed Ecology***

**The student will investigate and understand the natural processes and human interactions that affect watersheds systems. Key concepts include:**

- The health of ecosystems and the abiotic factors of a watershed (SOL 6.7a)
- The location and structure of Virginia's regional watershed systems (SOL 6.7b)
- Divides, tributaries, river systems, and river and stream processes (SOL 6.7c)
- Wetlands (SOL 6.7d)
- Estuaries (SOL 6.7e)
- Major conservation, health, and safety issues associated with watersheds (SOL 6.7f)
- Water monitoring and analysis using field equipment including hand-held technology (SOL 6.7g)

***PWC Objective: 6.9: Natural Resources and Public Policy***

**The student will investigate and understand public policy decisions relating to the environment. Key concepts include:**

- Management of renewable resources and nonrenewable resources (SOL 6.9 a-b)
- The mitigation of land-use and environmental hazards through preventive measures (SOL 6.9c)
- Conservation policies, including consideration of costs and benefits (SOL 6.9d)

# Prince William County Schools

## Meaningful Watershed Experience

As part of the Chesapeake 2000 Agreement, the states of Virginia, Maryland, and Pennsylvania, along with the District of Columbia, the Chesapeake Bay Commission, and the U.S. Environmental Protection Agency, reaffirmed their long-term commitment to “protect and restore the Chesapeake Bay’s ecosystem.”

By co-signing this document, Virginia agreed to accomplish specific goals, including the following regarding public education:

- Beginning with the class of 2005, provide a meaningful Bay or stream outdoor experience for every school student in the watershed before graduation from high school.
- Provide students and teachers alike with opportunities to directly participate in local restoration and protection projects and to support stewardship efforts in schools and on school property.

In April 2005, the Virginia Department of Education began collecting data on Virginia’s progress toward meeting educational goals related to watersheds and related educational programs.

This program was compiled to assist sixth grade teachers in providing a meaningful watershed experience for their students.

A meaningful watershed experience should:

- Be investigative or project oriented.
- Be an integral part of the instructional program.
- Involve sustained activity.
- Be enhanced by natural resource personnel.
- Involve sharing and communication.
- Consider the watershed as a system.
- Be for all students.
- Be richly structured and of high quality design.

For more information on Meaningful Watershed Experiences please visit <http://www.deq.state.va.us/vanaturally/pdf/c2k.pdf>

For more information on the Chesapeake 2000 Agreement please visit [www.chesapeakebay.net/content/publications/cbp\\_12081.pdf](http://www.chesapeakebay.net/content/publications/cbp_12081.pdf)