

Watersheds with the Enviroscape Model

Eco-Schools Topic:

Water

Grade Level:

Grades K-8

Guiding Question:

What are watersheds and water pollution?

Key Questions, Attitudes and Behaviors to Teach:

- We live in the _____ Bay Watershed. (K)
- The health of the Chesapeake Bay is important to me. (A)
- I turn off the sink when I brush my teeth. (B)

Lesson Objectives:

- Students will understand watersheds and know what watershed they live in.
- Students will want to conserve water and adopt water saving practices at home.

Materials:

- The Enviroscape model (if you can't borrow it, make your own- use crumpled paper as the mountainous land, color different parts of the paper with different colors, pour water on it and see where the water runs)
 - Enviroscape OR
 - Paper/ wax paper , Dyes/kool-aid/ markers to represent pollution, Spray bottle with water
- Picking Up Pollution
 - Traffic cones (or some other way of marking a river)
 - Colored poker chips or popsicle sticks
 - Whiteboard/markers

Prep:

- Contact ESLI to borrow the Enviroscape model and read the instructions so you understand how to use it.
- Ask your SACC director if you can do the watershed game outside on a small hill
- Test out activity with volunteers

Engaging Intro (10 min)

- Ask the kids what they use water for/why is it important
 - We drink it to stay alive!
 - It provides a habitat for plants and animals.
 - We can get food by fishing in lakes, rivers, and oceans.
- Ask the kids if they know what water pollution is/what it does to water
 - It makes the water dirty and unhealthy, hurt marine animals
- Share definitions:



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- **Watershed:** An area of land where all of the water (rain, creek, human uses, etc.) will eventually drain into a larger body of water (we live in the The Potomac Watershed that filters into the Chesapeake Bay watershed).
- **Pollutant:** something harmful to the environment (ex. Trash, chemicals, greenhouse gases)
- **Impervious Surface:** Land where **nothing** can be absorbed
- **Pervious Surface:** Land where **water and pollutants** can be absorbed
- *For older kids*
 - **Point pollution:** pollution from a specific source, such as a factory or water treatment plant.
 - **Nonpoint source pollution:** pollution from a non-specific or variety of sources. Ex: Water running from a parking lot picking up oil dripped from cars, then through a manicured lawn picking up fertilizers and pesticides, and then into a river.
- **Demonstrate what watersheds and water pollution are by using the Enviroscape model.**
 - Pour water on the model and have the kids watch where the pollutants flow to
- **Demonstrate watersheds by acting out the different parts. Each group gathers and runs to the next water body on the list to show how smaller creeks flow into rivers and those into the bay. Below are examples. Have kids attach their water role to their shirt.**
 - Water droplets (24)
 - Creeks: Mt. Creek, Millbank Creek, Turkey Run, Seneca Creek (4)
 - Rivers: Potomac River, Rappahannock River (2)
 - Bay: Chesapeake Bay (1)

Exploratory Activity: ROTATION #1-- Picking up Pollution (10-15 min)

START: A forest with lots of trees	END: A parking lot made of concrete concrete
<p>1. Set up scene:</p> <ul style="list-style-type: none"> a. Put cones at bottom of hill as the "river" b. Make 5 kids "raindrops" at the top of the hill c. Make remaining kids "trees" scattered on the hill between the top of hill and river d. Scatter "pollutants" throughout the "forest" 	<p>1. Set up scene:</p> <ul style="list-style-type: none"> a. Keep cone "river" b. All kids are raindrops at top of the hill c. There are no trees d. Scatter poker chips throughout the "parking lot"
<p>2. Trees Role: Pick up as many "pollutants" as possible and tag raindrops without moving your feet.</p> <p>3. Raindrops Role: Get to "river" and pick up as many "pollutants" on the way. If you are tagged by a tree, you must drop all your "pollutants" and run around the tree 3 times</p>	<p>2. Raindrops Role: Get to "river" and pick up as many pieces of "pollutants" on the way.</p>



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before running toward the “river.”	
4. Count the total number of pollutants in river after the run and write it on whiteboard.	3. Count the total number of pollutants in river and write it on whiteboard.
5. Repeat the game 3 more times. For each next run, half of the number of trees are cut down and become raindrops.	
6. Compare the amounts of pollution and connection to number of trees from each round	
7. Draw a simple bar graph to show comparison	

Exploratory Activity: ROTATION #2: Enviroscope Model (10-15 min)

- Use the Enviroscope model to show how pollution and water flows in a watershed
- *Alternative if NO Enviroscope model:* Make your own watershed, enviroscope model by crumpling up paper to represent the mountains, valleys, waterways in watershed. Add in “pollutants” (with markers, kool-aid packets, etc) and then spray with spray bottle

Meaningful Discussion (5 min)

- Review the activity with the students. What happened? How did pollution get into the stream?
 - Run-off brought it there
- What happened when the land was developed?
 - There was more pollution in the water
- Why are there less pollutants that end up in the river when the rain goes through a forest rather than concrete?
 - Grass & trees: they absorb pollutants and they clean water that runs through it
 - Concrete: nothing can be absorbed and everything runs off into the river
- How does this model represent a watershed? .
- Ask students where they think pollution comes from. Is it just one place, one person?
 - No, there are lots of different pollution sources! Review point source and nonpoint source pollution
- Brainstorm together what those different sources of pollution and solutions
- Now, ask students what effect they think the pollution has on the stream environment.
 - Lower quality water, less animals and plants
- Ask them why they should be concerned about any one river.
 - We get our drinking water from there! Fairfax County gets their water from the Occoquan reservoir and Potomac River: See steps below.
<https://www.fairfaxcounty.gov/soil-water-conservation/where-does-drinking-water-come-from-fairfax-county>

Links and Resources



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- Water pollutants:
<http://www.environmentlaw.org.uk/rte.asp?id=90>
- What is a Watershed?:
<https://oceanservice.noaa.gov/facts/watershed.html>
- Point vs. nonpoint pollution:
<https://oceanservice.noaa.gov/facts/watershed.html>



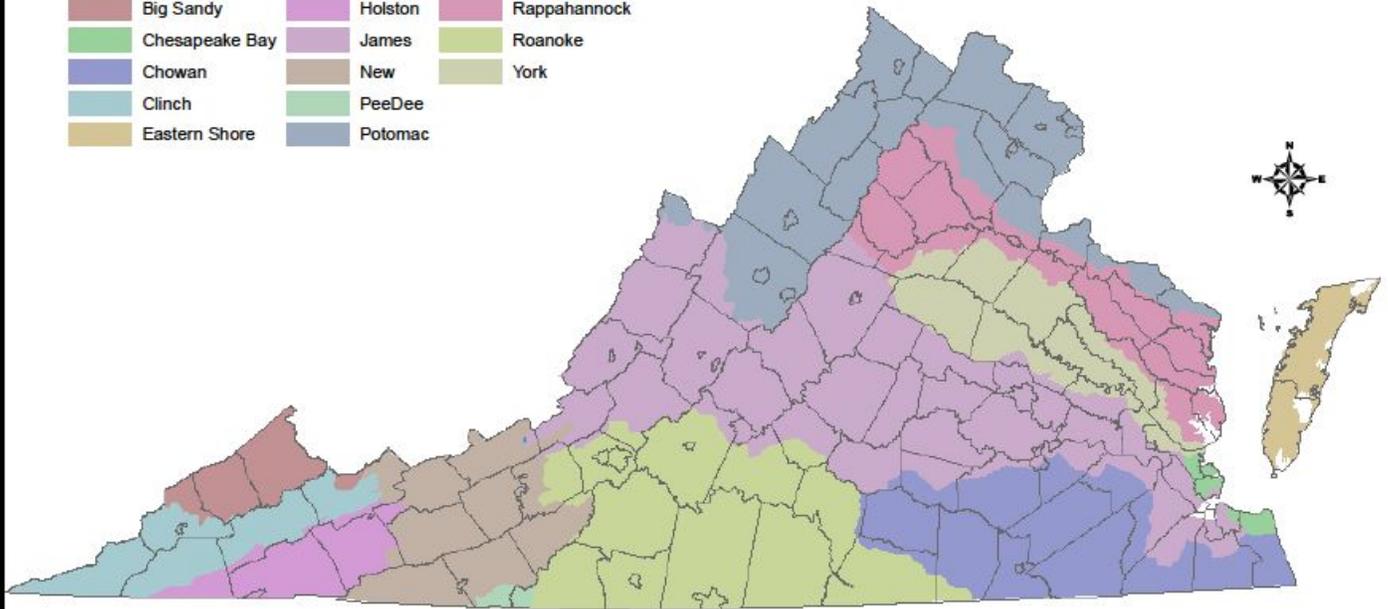
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Virginia's Watersheds



Drainage

	Big Sandy		Holston		Rappahannock
	Chesapeake Bay		James		Roanoke
	Chowan		New		York
	Clinch		PeeDee		
	Eastern Shore		Potomac		



0 25 50 75 100 Miles

DEPT PWB-010 DDM 7/2009
Revised
Statewide Update - 1/10
Watershed Boundaries 1/2009



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