

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

**Meaningful Watershed Experiences
for Grade 6 Students**

Created by:



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In partnership with:



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



Using Watershed Models to Demonstrate The Importance of Riparian Buffer Zones

Overview:

By observing a demonstration of a watershed model, the students will understand how various types of pollution enter the water. They will also discover how Riparian Zones help to improve water quality.

Teacher Background:

- Riparian buffers are vegetated zones of land located next to water sources. Adequate Riparian Buffer zones provide many environmental benefits.
- One important function of these zones is that they act as a filter for water flowing into the water source, and studies show that they greatly reduce water pollution.
- The zones also absorb runoff water that contains pollutants, sediments and nutrients that are harmful to the water supply. The absorption of runoff water has other benefits: it resupplies the ground water supply, and can reduce and prevent flooding.
- Riparian Buffer Zones also help to control erosion because the roots of the plants help hold soil in place.
- Buffer Zones can also reduce the amount of public spending on storm water management and pollution removal.

Materials:

- Watershed model (obtain from PWCS science office or PWC Soil and Water Conservation District **703.594.3621** pwsacd@pwsacd.org)
- Composition Notebook

Setting the Stage:

Bring out watershed model and place in center of room. (Note: be sure plastic container is in place under model and plug is in the hole)

Have students form circle around model, have students that are closer to the model sit, and the other students stand behind them. Ask students what the model represents.

Acquisition of Learning:

1. Go over the types of water bodies that are shown, tributaries, river, bay.
2. Ask the students what else would be in the watershed. As they mention things, have the students place them on the watershed model. Items include: houses, factory building, farm house, barn, cows, cars, tractor, trees, bridges etc...
3. Does this community look like a nice place to live?

4. What are some of the activities that the people would do in this community? As students provide answers, add additional substances to watershed model; (don't use sponges yet- they are the Riparian buffer zones for later)
 - Farm- pesticides and herbicides- Blue Koolaid
 - Houses and farms- fertilizers- Red Koolaid
 - Parking lot and on roads- soy sauce for oil leaks
 - Factory- soy sauce for pollutants
 - Water treatment plant- soy sauce for waste
 - Cows and houses- chocolate bits for manure & pet waste
 - Around community- colored sprinkles for trash
 - Construction site and farm- cocoa powder for soil
1. After all the substances have been put down, ask the question again "Does this look like a nice community to live in?"
2. Announce that there is going to be a change in the weather. Give two students the spray bottles filled with water and have them "make it rain" on the watershed. Let students make observations to what happens to the different pollutants
3. Where did the pollutants end up? Would you want to swim in or drink that water? What about the fish and other organisms?
4. Clean up the watershed model and replace items. Explain that this time the people of the community are going to practice better pollution control policies and take better care of the environment.
5. Have the students give some ideas about how the community could reduce pollution: ideas could include:
 - Farm- less pesticides and herbicides
 - Houses- use compost instead of fertilizers
 - Pick up after pets and cows so less waste
 - Don't litter so less trash
 - Higher standards on factories so less pollution
 - Fences to keep animals out of water
 - Sponges- represent Riparian Buffer Zones- help absorb water and filter pollutants- place next to water
 - Take care of cars so no oil leaks
 - Construction sites use erosion guards to keep soil from getting into water
6. There should be a lot less pollutants in the watershed. Have students spray water again and compare it to the results they got the first time.
7. Is it more expensive to prevent pollution in the first place or clean it up?
8. Have students return to their seats

Closure:

Have students get their composition book and write five things that they can do to improve water quality. Have them draw a picture of a community that is practicing pollution prevention.