

## Creating a Watershed in Your Hand: What Is a Watershed?

### Summary

Students use crumpled paper to create a miniature watershed model to learn how water flows through this system and to discover how toxic chemicals used at school and at home can find their way into our waterways.

Grades: *K-6*

Time: 10 to 30 minutes

#### Materials:

- 8½ inch by 11 inch paper; one sheet for each student
- a selection of water soluble markers - three different colors
- spray bottles filled with water

Setting: classroom

### Background

A watershed is a geographic area in which water, sediments, and dissolved minerals all drain into a common body of water like a stream, creek, reservoir, or bay. A watershed includes all the plants, animals, and people that live in it, as well as the non-living components like rocks and soil. We are all part of a watershed, and everything we do can affect the surface- and groundwater that runs through this system.

As runoff from rain or overwatering flows across the land toward a creek or stream, it picks up materials in its path. Fertilizers, pesticides, herbicides, leaves, grass clippings from yards, oil and litter that ends up on the ground can be washed into our storm drain system. Since water that enters a storm drain goes right into our creeks without going through a water treatment plant, all of these contaminants will eventually drain into our Bay. These types of pollutants cannot usually be traced back to their source, so we call them nonpoint source pollutants. Our actions on our schoolyards and in our neighborhoods can contribute to this nonpoint source pollution and cause environmental damage to our creeks and Bay.

When you create your miniature watersheds, be sure to use water soluble markers - as the markers bleed, they demonstrate how water moves through the watershed, picking up materials in its path.

### Activity

1. To create the watershed, ask students to crumple a piece of paper up into a tight ball, then have them gently open up the paper, but don't flatten it out completely. The highest points on the paper now represent mountaintops, and the lowest wrinkles represent valleys.
2. Have students choose one color marker and use it to mark the highest points on the map. These points are the mountain ridge lines.
3. Have students choose a second color and mark the places where different bodies of water might be found: creeks, rivers, lakes, etc.
4. With a third color, have students mark four or five places to represent human settlements: housing tracts, factories, shopping centers, office buildings, schools, etc.
5. Have students use the spray bottles to lightly spray the finished maps. This spray represents rain falling into the watershed. Discuss any observations about how water travels through this system.

### **Discussion**

- What changes do you observe in the watersheds?
- Where does most of the rain fall? What path does the water follow? Where does the rain end up?
- What types of materials might the water pick up as it moves through the watershed? Where do these materials come from? Where do you think these materials will end up?
- How can chemicals we use in our gardens have an effect on wildlife in the bay?
- What kinds of changes might we make at home or at school to lessen the problem of nonpoint source pollution?

### **Branching Out**

- Look at a topographic map of the neighborhood to see if you can locate ridge lines, creeks, and rivers that make up your school's watershed. Try to determine how a heavy rainfall or overwatering the school lawn might impact your neighborhood.
- Discuss issues of land use and water quality.
- Take a walk around the neighborhood of the school to locate storm drains and creeks. Determine how the homes and lawns you see might have an impact on your watershed.

Adapted from: Kids in Creeks. Aquatic Outreach Institute, 1327 South 46<sup>th</sup> Street, 155 Richmond Field Station, Richmond, CA 94804. [www.aoinstitute.org](http://www.aoinstitute.org)