Watershed in Your Hand

***Summary**: Students design a simple map and create a 3-dimensional watershed.*

Background

A watershed is an area of land that drains surface and groundwater into a common body of water like a stream, creek, reservoir, or bay. You can think of a watershed as all the land that "sheds" water onto the lower area of land. Watersheds are also referred to as drainage basins or catchment areas because they "drain" or "catch" the rain and snowmelt that falls onto the land, which then flows into a common body of water.

A watershed connects 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 water flows through and across the land toward a creek or stream, it picks up materials in its path. In a natural setting, sediment and minerals from plants, soils and rocks are transported in water. In an urban setting, fertilizers, pesticides, herbicides, leaves, grass clippings, oil and litter on our yards and streets can also be washed into creeks and the Bay.

Suggestion: Use water-soluble markers to create the watersheds. As water is added, the markers bleed and demonstrate how water moves through the watershed, picking up materials in its path.

Grades K-6

Time: 15-30 minutes

Setting: Classroom

Materials:

- A relief map: local, state, or country
- One sheet of white 8 1/2 x 11-inch paper for each student
- A selection of water soluble markers (at least 3 different colors)
- Spray bottles filled with water
- Paper towels (for clean-up)

Guiding Question

How does water flow in a watershed?

Key Concept:

Surface water flows from high to low points on a landscape (following the direction of gravity) and drains into a common body of water

Objectives:

Students will:

- Create a mini watershed
- Make conclusions about water flow
- See actual water flow on a 3-D watershed model

Activity

1. Show students a physical relief map of California, the United States, and/or your local region. Have students share a few things they notice.
2. Give each student an 8 1/2 x 11 inch piece of paper and ask them to crumple it into a tight ball, and then gently open up the paper, being careful to not flatten it out completely. Ask students how their paper might look like the relief map. The highest points on the paper now represent mountaintops, and the low places represent valleys.
3. Have students choose one color marker and draw lines to connect the highest points on the map. These are the mountain ridgelines.
4. Have students choose a second color and mark the low places where different bodies of water might be found: creeks, rivers, lakes, etc.
5. With a third color, have students mark four or five places to represent places of human activity: housing, factories, shopping centers, schools, trash etc.
6. Have students predict the path water might take on their paper (students may use pencils to draw the path on their maps).
7. Lightly spray the maps using spray bottles. Ask students what the water from the spray bottle represents (rain falling onto the landscape).
8. Discuss:
   - What path did the water follow? Were their initial predictions correct?
9. Define a watershed (an area of land that drains surface and groundwater into a common body of water like a stream, creek, reservoir, or bay). Ask students to describe how they created mini watersheds in their hands.
10. Discuss the following in small groups or as a class:
    - How does water flow in the watershed?
    - Where did you place the human activity on your map? Why?
    - 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?
11. Have students locate watersheds on the relief map.
12. Open up the papers and let the watersheds dry out. These can be displayed in the classroom.

Branching Out

Language Arts:

- Ask your students to write a story about their watershed.

Mathematics:

- Have students look at a topographic map of the neighborhood to see if they can locate ridge lines, creeks, and rivers that make up their school's watershed. Calculate the area of the watershed. Complete our Mapping Your Watershed activity.

- Have students figure out how much water falls on their watershed. Find out how much rain or snow falls in your region. One inch of rain is the amount of water it takes to cover the ground to a depth of one inch. (For an 8 1/2 x 11 inch watershed, this is *about* 6 cups of water per inch of rain.)

Arts:

- Have students build a model of a watershed, based on what they learned through this activity.