

Soil & Water

What in the World is a Watershed?

There's a Watershed in My Backyard - Activity 1

Science, Geography

Materials

- Umbrella
- Spray bottle with water
- Large bath towel
- Supplemental watershed diagram (included with this lesson)

Overview

Students will connect to information about conservation and protection of natural resources. They will understand how each person in a watershed – all of us – can work together to protect the quality and quantity of water for our use.

Objectives

1. Students will learn the definition of a watershed.
2. Students will learn how water moves in a watershed.

Instant Experts

Exploring Kansas Natural Resources Educator's Guide. Unit 6 – Water Overview (101-110). Kansas Foundation for Agriculture in the Classroom. To order, visit www.ksagclassroom.org.

What is a Watershed? PA-420. USDA-NRCS Landcare Delivers Publications & Forms. <http://landcare.nrcs.usda.gov>

Background Information

A **watershed** is the land that water flows across or under on its way to a stream, river, or lake. Landscape is made up of many interconnected basins or watersheds. Within each watershed, all water runs to the lowest point such as a stream, river, or lake. On its way, water travels over the surface and across farms, fields, forest lands, suburban lawns, and city streets; or it seeps into the soil and travels as groundwater. Large watersheds like the ones for the Mississippi River, Columbia River, and Chesapeake Bay are made up of many smaller watersheds across several states.

Watersheds come in many different shapes and sizes. A watershed can be affected by many different activities and events. Construction of cities and towns, farming, logging, and the application and disposal of many garden and household chemicals can affect the quantity and quality of water flowing from a watershed.

Grade Level: 5-6

Time: 20 minutes

Standards:

Physical Science
Life Science
Geography

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Everyone lives in a watershed, and we are a part of a watershed community. The animals, birds and fish are, too! People influence what happens in watersheds, good or bad, by how the natural resources – the soil, water, air, plants, and animals – are treated. The quantity and quality of water draining from a watershed are dependent upon the climate, vegetation, soils, geology, and development of that watershed. Activities that change the vegetation and surface characteristics of some watersheds will affect the quantity and quality of water contributed to a stream. For example, a greater volume of water, perhaps of poorer quality, will flow from a parking lot than from a forest or pasture. This volume of water from a parking lot may result in increased flooding in a watershed because the greater volume exceeds the natural ability of the stream to transport the water. What happens in small watersheds, such as pollution, also affects the larger watersheds downstream.

There are three different types of watersheds:

Underdeveloped watersheds are drainage basins that have no development affecting the quality or quantity of water in that watershed. These watersheds are primarily on public-owned lands in national forests, national parks, and wilderness areas. Underdeveloped watersheds provide scientists with areas to study the natural processes of a watershed.

Planned Watersheds are drainage basins that contain planned development. Planning the development within a watershed requires consideration of the entire drainage basin. Planned actions consider the effect on the natural resources of the watershed and help preserve the quality and quantity of water flowing from the watershed. Actions such as controlling surface runoff and protecting stream channels help preserve the quality and quantity of water flowing from a watershed. Limiting the number and type of structures on a flood plain is one method of preventing loss of property from floods. Placing parks, golf courses or farmland on a flood plain can reduce property loss caused by floods.

Unplanned Watersheds are drainage basins that do not contain planned development. Unplanned development within a watershed has the potential for degradation of water quality and increased loss of property from flooding. Runoff from city streets, improper farms and logging techniques, poor residential and industrial chemical disposal practices can all affect water quality. Locating homes and businesses on flood plains greatly increases the chance of damage from flooding. Levees or dams may need to be put in place to protect development already located on the flood plain.

Instructional Format

1. Share background information with students.
2. This lesson will be a class demonstration with student participation.
3. Upon completing the lesson, students will answer conclusion questions and discuss the activity.

Procedures

1. Share background information with students, and show them the diagram of a watershed.

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2. *This part of the lesson may be done outside to prevent carpet from getting wet.* Have a student volunteer hold an opened umbrella with the top of the umbrella waist high so the students can gather round to look at the top of the umbrella. Have the students count the number of divides or ribs in the umbrella.
3. Have students hypothesize how water, if sprayed on the umbrella, would move.
4. Have another student volunteer spray the top, center of the umbrella and observe how the water moves down the ribs of the umbrella. Explain that each rib represents a divide with a watershed on each side.
5. Have students determine how many “watersheds” are on the umbrella. Explain this is how it is on earth, too.
6. Have student volunteer spray water on a bath towel, and have students compare the water activity between the umbrella and the towel.
7. Discuss activity and answer conclusion questions.

Conclusion Questions (Assessments)

1. What force of nature causes the water to flow on the sprayed umbrella?

Gravity

2. How many watersheds are represented in the umbrella?

Depending on the umbrella, it is usually six or eight?

3. What in nature in a real watershed soaks up the water and slows the water down?

Permeable surfaces, like soil.

4. What in a real watershed acts like the surface on the umbrella (where water does not soak in to the earth)?

Less permeable or non-permeable surfaces, like pavement or house roofs.

Resources

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Want More? Extensions

To determine how your land is being used in your watershed, visit <http://www.ks.nrcs.usda.gov/technical/RWA/index.html>. Scroll down to your watershed, and click on the watershed and pages of information.

Contact your NRCS personnel in your county and get the contact name for the WRAPS coordinator for your watershed. Invite this person to present the current health of the watershed and plans of action to maintain or improve the health of the watershed.

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Additional Resources

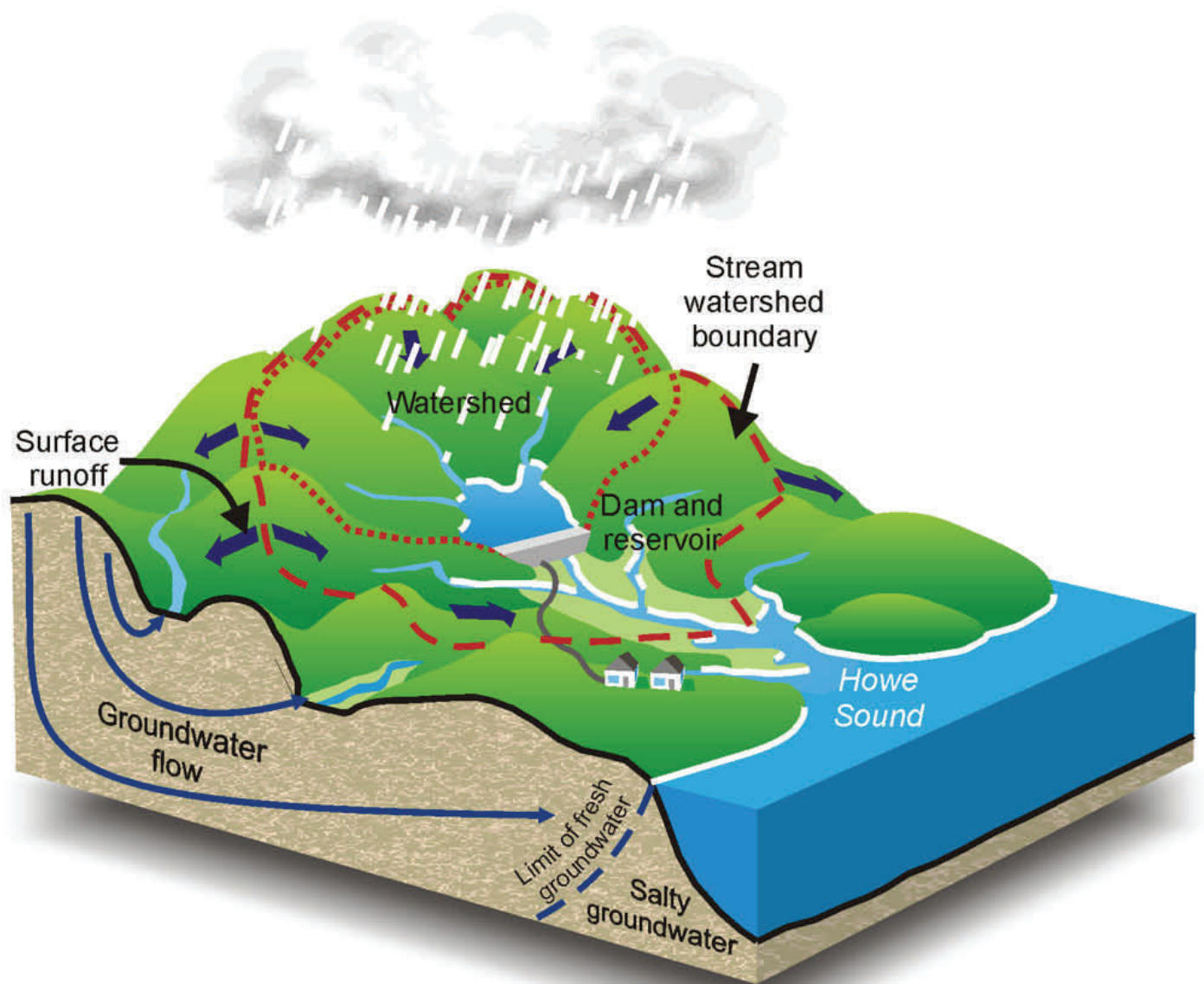
USDA Natural Resources Conservation Service. Water resources. <http://www.nrcs.usda.gov/technical/water.html> /

What is a watershed? <http://www.walkkillriver.org/watershed.gif>



What in the World is a Watershed?

Watershed Diagram



From: http://geoscape.nrcan.gc.ca/h2o/bowen/images/watershed_e.jpg

