Watershed Warriors

Pollution Prevention Lesson Series

Provided by:

REGIONAL WATER QUALITY CONTROL PLANT

Operated by the City of Palo Alto for the East Palo Alto Sanitary District, Los Altos, Los Altos Hills, Mountain View, Palo Alto and Stanford

GRASSROOTS ECOLOGY

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Watershed Warriors

Objectives

- Learn about watersheds and how people impact watershed health
- Examine the different sources of water pollution
- Find solutions to reduce water pollution and storm runoff

Introduction

For an introduction to water in our environment, check out this starting resource, then meet us back here!

A watershed is an area of land that drains to a common point, such as a creek, river, or bay. When it rains, the water that falls enters our watersheds. Paved and non-porous surfaces keep rain from soaking into the ground; instead, that water flows into storm drains. Storm drains lead rainfall to our local creeks with no filtration. Any pollutants that are picked up in stormwater runoff will end up in our creeks and bay. These pollutants can threaten the life that depends on the water in our watersheds - we all need clean water and healthy watersheds.

Activities

Materials

- Student worksheet (pages 4)
- Paper
- Colored markers
- Spray bottle

Make your own watershed: In this guided hands-on activity, students will use materials from home to create a simple watershed model. Watch a brief video, called Know Your Watershed, for a quick overview of the watershed construction process that students will be doing.

After modeling how water moves through a watershed, students will create a solution to the pollution. Students may watch a short video about the different kinds of pollution that enter the watershed and flow to the Bay. Alternately, they can brainstorm or research watershed pollutants. Students will finish by creating a mini-poster about one way to prevent water pollution.

Extended watershed video and questions**:** If you want your student to learn more about watersheds, there is an extended watersheds video and guided questions (page 5) that go along with the video.

Additional resources

- Find your local watershed! Use this Guide to San Francisco Bay Area Creeks**.**
- 10 things you can do to protect your watershed
- Nonpoint Source Pollution Awareness: What's Wrong with This Picture?

NGSS Alignment

Disciplinary core ideas	Science and engineering practices	Crosscutting concepts
LS2.B: Cycles of Matter and Energy Transfer in Ecosystems: Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment.	**Developing and using models** (creation of watershed model, water, pollutants)	**Systems and models**: A system can be described in terms of its components and their interactions. **Cause and Effect:** Cause and effect relationships are routinely identified, tested, and used to explain change. (3-ESS3-1)

Make your own watershed

Materials:

- Piece of paper, at least letter size
- Four colored washable markers - brown, blue, green, red (suggestions)
- Spray bottle with water

Instructions: Follow the written instructions below, or follow along with a brief video, to create your watershed.

1. Crumple up the piece of paper. Be careful not to tear it. On a flat surface, smooth the paper back out slightly, but keep most of the creasing. Make sure you have a few large "peaks" and deeper creases.
2. With the brown marker, trace along the high peaks and ridges. These high points represent the tops of mountains and hills.
3. With the blue marker, trace along the low crease lines. These lines represent creeks and rivers. Where a "creek" ends into a flat space on the paper, fill that area in with blue to represent a lake or bay.
4. With the green maker, draw lines (or doodles) to the sides of the creek lines and on the mountains. These represent the plant life that lives in the watershed.
5. With the red marker, draw small squares on the paper where people might have houses or where other buildings might be.
6. Spray water over your paper to represent rain. Start with 3 sprays, then add more if needed. Watch where the water goes!

Questions:

1. Summarize how water moved through your watershed model. Was there more than one watershed? How do you know?

2. Watch the linked video about pollutants entering our local waterways, or research local water pollution sources. Write down at least **three** different kinds of pollutants that can enter local watersheds.

3. Choose **one** of the pollutants above, and think about how it could be prevented. Then, on the back of this paper (or on a fresh sheet of paper) make a mini-poster for your home about how you and your community could help reduce that type of water pollution.

Watersheds Video and Worksheet

To learn more about watersheds, you can watch this 10-minute video and answer the following questions:

1. What are 4 types of precipitation?

2. A watershed is an _____that catches water that falls to the Earth surface and _____it over land or underground.

3. Why does water flow from higher to lower ground?

4. What is the largest watershed in the U.S.?

5. Habitats that are found near a stream or river are called_____habitats.

6. What is an example of a human activity that pollutes watersheds?

7. How do plants breathe?

8. As water flows through our landscape (runoff) what kinds of things does it pick up? (3 examples)

9. Groundwater provides how much drinking water to the U.S.?

10. The movement of rock, soil, and mud in water and on land is known as_____ .

11. What kind of human activities speed up erosion?

12. What can you do to protect our watershed?