

# WATERSHEDS AND AQUIFERS

## AGES

Children 6+ years

## PROGRAM DESCRIPTION

Introduce children to watersheds or aquifers—or both!—with these activity ideas.

For the watershed, children build a model landscape using recycled materials, then add water to watch how the shape of the land helps collect water. Older children can use modeling clay, salt dough, or landscaping materials to form the watershed. For the aquifer, children layer landscaping materials (or edible food items) in a translucent container to watch how water (or soda) seeps through the layers. For an outreach component, invite local soil and water conservationists to talk about the watershed in your area. See Resources for a groundwater worksheet and video clip suggestions that can be used to introduce either topic. Suggested runtime for each activity: 30–45 min.

## MATERIALS AND PREPARATION

### Watersheds

Materials:

- Large shallow pans (one per group)
- Recycled materials such as newspaper, cups, and plastic bottles
- Water, blue food coloring, and spray bottles
- Clear or light-colored plastic, such as tarps or garbage bags
- Glitter, spices, or sprinkles to represent litter
- Plastic table coverings for easy cleanup
- Paper towels

Before the program, cover the tables with plastic table coverings for easy cleanup. Set out one shallow pan, recycled materials, and tape for each workstation.



Image source: Joelle Wake of Whiting Public Library, Whiting, IN

## DEFINITIONS:

**Watershed:** A land area whose runoff drains into any river, stream, lake, or ocean. Watersheds transport water over the Earth's surface.

## AQUIFER:

A geologic formation of soil, sand, and rock that stores groundwater that has seeped down from the surface.

## FUN FACT:

70% of the Earth is covered in water, but only 1% is readily available for human use!

## TIP:

If making edible aquifers for children to eat, be sure to list all ingredients and check for any dietary restrictions before the program.

During the program, instruct children to use the recycled materials to build a model landscape with valleys, rivers, hills, and lakes. For example, they can crumble newspapers into balls of different shapes and sizes. Have them tape all landscape elements to the bottom of the pan. When they're finished, cover the models with clear or light-colored plastic, pressing it down in between the landscape features. They can now spray their landscape with "rain."

Discussion questions/topics:

- Did the rain go where they expected it to go?
- How many hills/mountains and valleys does the model have?
- Is there a drainage divide (imaginary lines along which "rain" goes to one side or another)?
- Where are there rivers and streams (where water runs downhill)?
- Where are the ponds and lakes (where river pools in low areas)?
- Where does your water come from? Your local watershed! Which is why it is important to not pollute land and water.

Ask participants to soak up all the rain water from their models with paper towels. This time, add litter to the tops of hills and mountains (i.e., sprinkles, glitter, or spices). Where does the litter end up?

### Aquifers

Materials:

- Clear containers (such as large mason jars or plastic cups)
- Landscaping materials such as sand, pebbles, or rocks
- Water to pour over the aquifers

An edible version might contain layers of ice cream, breakfast cereal, crushed ice, chocolate chips, crushed cookies, sprinkles, and clear soda. For this version, have a volunteer on hand to scoop the ice cream into each cup, and cover the tables with plastic for easy cleanup. After children layer their aquifers, they pour water into the container and watch how it collects. (For the edible version, pour clear soda over the layers instead of water.)



Image source: Joelle Wake of Whiting Public Library, Whiting, IN

### ADAPTATIONS:

Use an adaptive cup to pour the "rain" on the model instead of using a spray bottle. The model can also be done on the floor or at a table depending on ability. Clear mugs can be substituted for plastic cups that are hard to grasp. Be sure to use closed captioning on video, and printed materials can be enlarged for low vision.

## UNIQUE SPACE AND/OR PERSONNEL NEEDS

When making large models, this program works best outdoors.

## RESOURCES

### Web

“Build a Watershed” from PBS Kids: <https://to.pbs.org/3usuwVA>

“What is Groundwater?” video from KQED Quest: <https://bit.ly/3hWZmmw>

Watershed protection activity booklet from Project Wet:  
<https://bit.ly/3wzQaIX>

“Edible Aquifers” from The Groundwater Foundation: <https://bit.ly/3c0ZrSn>

### Books

#### Non-fiction

*The Water Princess* (2016) by Susan Verde, Georgie Badiel, and Peter H. Reynolds (children’s)

*We Are Water Protectors* (2020) by Carole Lindstrom and Michaela Goade (children’s)

*The Ocean in Your Bathtub* (2020) by Seth Fishman and Isabel Greenberg (children’s)

*Blue Planet: Life in Our Oceans and Rivers* (2019) by Moira Butterfield and Jonathan Woodward (children’s)

*This Raindrop: Has a Billion Stories to Tell* (2020) by Linda Ragsdale and Srimalie Bassani (children’s)

*I Am the Rain* (2018) by John Paterson (children’s)

#### Fiction

*River* (2019) by Elisha Cooper (children’s)

*Crawdad Creek* (2002) by Scott Russell Sanders (children’s)

*The River Bank* (2017) by Kij Johnson and Kathleen Jennings (children’s)

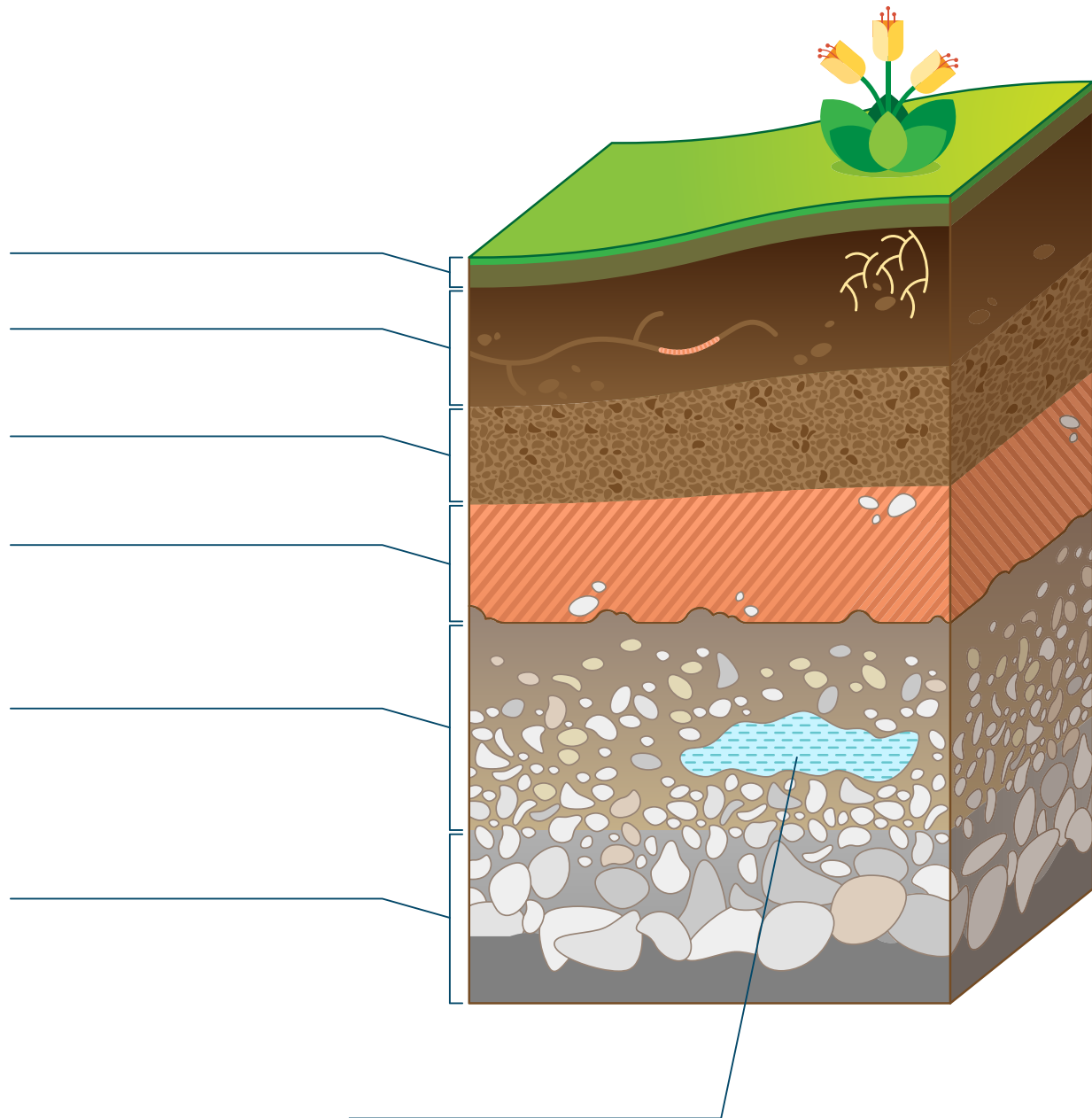
*Song of the River* (2020) by Joy Cowley and Kimberly Andrews (children’s)

### Printables

Ground Layers Worksheet

# Ground Layers

## Worksheet



**Sub Soil**

**Top Soil**

**Eluviated (Leaching Layer)**

**Rock (Parent Material)**

**Organic (Litter Layer)**

**Groundwater**

**Weathered Parent Material**