



Learn about watersheds and how our freshwater systems work.

Explore this guide and consider hosting your own **Build a Watershed** activity to learn how water moves through a watershed and how our actions on the landscape can affect freshwater ecosystems.

Recommended event duration: 45 minutes

Suitable for: Elementary classrooms, families, community groups

Group size: 2–30+ participants

Main activity: Build and test a watershed model using a tray simulation

Estimated cost: \$20–40

Build a Watershed Activity

A watershed model is a hands-on way to explore how water moves across landscapes. Participants build a simple physical model using rocks, foil, and natural materials, then simulate rainfall to observe how water becomes runoff, where it flows, and how pollution can travel through a watershed. This activity helps participants understand real-world watershed systems and the connection between land use and water quality.

1. Select Your Site

- Choose a safe, flat indoor or outdoor workspace. Protect tables or other surfaces, as water will be used during the activity.

2. Plan Logistics

- Confirm:
 - Materials and equipment
 - Group sizes
 - Roles for facilitators or volunteers
 - Time for setup and cleanup

3. Introduce the Activity

Before participants begin, explain:

- The purpose of the activity: to understand watersheds and how water moves through the landscape.
- The activity structure: build the watershed, test it with rainfall, observe the results, and discuss what happened.

- Group expectations and responsibilities.
- How to safely use the materials.

4. Prepare Materials

- Ensure each group has all of the materials listed in the Basic Equipment Checklist below.
- A verbal demonstration is recommended before participants begin so

5. Build the Watershed Model

Step 1 – Create the Landscape

Using a paint tray or shallow container as your base:

- Arrange rocks to create hills, mountains, and valleys.
- Add small sticks or plants to represent vegetation.
- Cover the landscape with a large sheet of aluminum foil, shiny side facing up.
- Gently press the foil around the rocks to create the shape of the landscape without tearing it.
- Fold the extra foil over the edges of the tray.
- Use the low areas in the tray to represent rivers or lakes, and outline them with a permanent marker if desired.

Step 2 – Add Land Uses

Draw different land uses throughout the watershed, such as:

- Houses and neighbourhoods
- Roads and parking lots
- Farms and livestock areas
- Construction sites
- Parks and forests
- Stores or factories

Discuss how activities in each of these areas could affect nearby water.

6. Add the "Pollution"

Sprinkle small amounts of powdered drink mix around the watershed. Each colour can represent a different type of pollution.

For example:

- Red: Fertilizers or pesticides
- Green: Oil, fuel, or road salt
- Brown: Soil from erosion or construction
- Blue: Pet or livestock waste

Use only a small amount so it is easy to observe how it moves through the watershed.

7. Make a Prediction

Before adding water, ask participants:

- What do you think will happen when it rains?
- Where will the water flow?

- Where will the pollution end up?
- Will pollution stay where it started or move downstream?

8. Create a Rainstorm

Using a spray bottle, gently spray water over the landscape to simulate rainfall. Continue spraying until water begins flowing through the rivers and collecting in the lower areas.

Avoid spraying too much water at once so participants can clearly observe how runoff develops.

9. Observe What Happens

Watch how the coloured pollution moves with the water.

Discuss:

- Which direction the water flows
- Where streams begin to form
- Which pollutants enter the waterways
- Where pollution collects
- How pollution from one area can affect places farther downstream

Explain that rainwater that cannot soak into the ground becomes runoff and can carry sediment, chemicals, and other pollutants into nearby lakes, rivers, streams, and wetlands.

10. Discuss the Results

Ask participants:

- What happened when it rained?
- Where did most of the water collect?
- Which pollutants reached the waterways?
- Did any pollution stay where it started?
- How could pollution upstream affect communities, wildlife, or drinking water downstream?
- What actions could help reduce pollution entering our freshwater systems?

Basic Equipment Checklist

- Paint tray or shallow container
- Spray bottle
- Aluminum foil
- Rocks (to create hills and valleys)
- Small plants, moss, or sticks (to represent vegetation)
- Permanent markers (to draw roads and structures)
- Two or three colours of unsweetened powdered drink mix
- Water
- Paper towels or cleanup supplies

Optional Materials

- Cooking oil to represent an oil spill or water contamination
- Cotton balls, spoons, or pipettes to simulate an oil spill cleanup
- Field notebook or observation sheet for recording predictions and observations

Outcomes

Participants will:

- Identify how landforms influence water direction and speed
- Understand how water moves through a system
- Recognize how different surfaces and features affect water flow
- Learn about environmental impacts and how difficult cleanups can be

Disclaimer

This guide is intended to support community-led educational and stewardship activities for informational purposes only. Organizers are responsible for assessing the site conditions, participant safety, and any permits or permissions that may be required. Participation is voluntary and at the participant's own risk.

We recommend connecting with Living Lakes Canada or a local stewardship organization for additional guidance and support.