Finding Its Lowest Level: Building, Polluting and Testing a Watershed

A hands-on demonstration about the damage point and non-point source pollution creates in a watershed.

> *Watershed:* A land region that drains all the precipitation, from the upper portion to the lower portion of the region, into a lake, river or ocean.

Important to Know:

- Anything that happens in the upper drainage area of a watershed has an impact on the water quality of the lower region.
- These impacts can be natural and human-made.
- Natural conditions are made up of the types of vegetation and soils in the region.
- Human-made conditions include pollution (point and non-point source), deforestation and development.
- Point source pollution comes from a clearly identified point like a specific pipe or ditch. It is usually produced by an industry or factory or chemical spills.
- Non-point source pollution cannot be traced to any single source. It comes from low quantities of pollutants scattered over a watershed by many people.

You will need:

- A plastic pan or basin, such as 10” x 14” plastic food storage container
- Crumpled sheets of newspaper
- Sheets of thin plastic (plastic wrap) to cover the newspaper
- Spray bottle full of clean water
- A small dropper bottle of blue food coloring
- Paper towels
- Selection of “pollutants” such as red, green, and yellow food coloring, colored drink powder, vinegar, cooking oil, small confetti and dried herbs (to represent organic material)

Get started:

- For easier clean up: Line the bottom of the container with two sheets of plastic wrap
- Crumple up five or six sheets of newspaper and place them in the bottom of the plastic container so they make the shape of hills and valleys.
- Cover the newspaper and the sides of the plastic container with plastic wrap. Do this step carefully so the newspaper will stay as dry as possible.
- Fill the spray bottle with water and add two drops of blue food coloring (representing fresh water).
- Spray it on the watershed model, creating a model rainstorm. Observe the path of the water as it flows through the watershed. How does it collect in "streams," "lakes," and "marshes?" Think about how the flow might have been different if you had changed the "surface coverage" to a different type of landscape.

Polluting the watershed

- Add a drop of red food coloring—representing point source pollution—to a single location within the watershed. Add a drop of green and yellow elsewhere.
- Sprinkle tiny bits of colored drink powder at different locations to represent non-point source pollution.
- Use the spray bottle to create a model rainstorm over the watershed.
- Observe and describe the paths of the two types of water pollution in the watershed.
- Can you tell the source of the pollution in the streams? Lakes?
- Even though the pollutants mix, dip a piece of paper towel in a polluted "pond" and let it dry. Once it dries you will be able to see the source of the pollution.
- Questions: Could you clean this pollution up? What processes do agencies have in the real-world to try and clean up this type of pollution? How do you slow down the spread of pollution in a watershed?

What Did You Learn?

- It is difficult to trace, test and clean point and non-point source pollution from watershed regions, once it occurs.
- Many factors such as the type of soil, rock, landscape, organic materials, elevation and others elements, determine the direction, speed, percolation rate, etc.
- Early pollution prevention and environmental regulations are the best public policy.