Watershed Activity

DO/SHOW	SAY
Review the water cycle	Water is necessary for life on earth and plays a key role in all environmental systems. In animal cells, water facilitates the flow of nutrients within and between cells. On a larger environmental scale, water carries nutrients, sediments, and pollutants from the land to the oceans via runoff, streams, and rivers. Water also carries atmospheric pollution in the form of precipitation. The flow of water through the environment is called the water cycle, or hydrologic cycle. Evaporation: The heat from the sun causes liquid water in oceans, lakes, rivers, moist soils, etc. to transform into water vapor (gaseous form) and enter the atmosphere. Transpiration: Water is released from plants during photosynthesis and enters the atmosphere. 90% of the water that reaches the atmosphere comes from plants. Condensation: Water vapor in the atmosphere cools and forms clouds and water droplets. Precipitation: Water in the form of rain, sleet, or snow is released from the atmosphere and travels to the earth
Define watershed	A watershed is the area of land where all of the water that falls in it and drains off of it goes to a common outlet. The word watershed is sometimes used interchangeably with drainage basin or catchment. Watersheds are important because the streamflow and the water quality of a river are affected by things, human-induced or not, happening in the land area "above" the common outlet.
Watersheds continued	1. What are natural watersheds? 2. What are man-made watersheds?

Introduce the activity	Prepare to be civil engineers developing the watersheds of a new town. Each group will need: • A poster board • A permanent marker • A squirt bottle set to mist and full of water • 4-7 washable markers of different colors.
Get started	1. Create the land: Make a topography, the nature of the physical features of an area, by crumpling your poster board and gently and only slightly unfolding it so that you have hills and valleys. 2. Create the features: • Use one color washable marker to create some farms *What kind of runoff can we expect from farms?* *(nitrates from fertilizer, animal waste, pesticides, etc.)* • Use a different color marker to create a power plant *What kind of runoff can we expect from power plants?* • Use a different color marker to create some homes *What kind of runoff can we expect from homes?* *(Litter, car byproducts, fertilizers and pesticides, lawn trimmings, chlorine from pools, sewage, etc.)* • Use a different color marker to create a garbage dump *What kind of runoff can we expect from the dump?* • Use a different color marker to create some roads *What kind of runoff can we expect from roads?* *(Litter, oil, gas, antifreeze, rubber, etc.)* [With a very engaged group, you can add another dimension to the project and have them lay their towns in a grid in the middle of the room]
Let it rain!	Now that you have created a town, it's time for the rain the come. Have students mist their papers so that the colored ink starts to run and follow the water flowing into the low points on their map. Call out interesting points in the various towns for the other students to look at.
Discussion	• What sort of runoff are they seeing in their towns? • Did you expect the runoff to pool where it did? • Did the dump run into the neighborhood? • Did the power plant run into the farm? If your group laid their projects together, point out where one town is polluting another. Summarize that watersheds are a crucial component in nature and civilization. There is water all around us and not only do we have to be concerned with runoff into the ocean, we also have to be aware of where it gathers in lakes and ponds and puddles as part of the recharge zones for an aquifer.