



Jacoby Creek Land Trust

PO Box 33 • Bayside, CA 95524

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Watching Over Our Watershed

Grades: K-8 **Subjects:** Science, Social Studies, Environmental Studies

Group Size: 2+ **Duration:** 20-45 min.

Setting: Outside or inside

Key Words: watershed, water cycle, salmon lifecycle and habitat, point and non-point pollution, riparian restoration, native species and wildlife habitat, and ecology

Goals/Objectives: Students will observe a model of a typical Humboldt watershed and understand the following concepts: watershed, water cycle, salmon lifecycle and habitat, and point and non-point pollution.

Background: What is a watershed? What is and lives inside a watershed? What watershed do you live in? Where does your water come from? Where does it go? What kinds of effects, both good and bad, do humans and human activities have on a watershed? What actions can we take to improve the health of our watersheds? These are some of the questions that will be explored during this interactive watershed model presentation.

Materials & Prep: Watershed model from the Northcoast Environmental Center (call 822-6918 to reserve model). Make sure all of the supplies come with the model, such as a watering can, a spray bottle, 2 buckets, 2 rubber tubes, pump (if you want to use it), cocoa powder ("silt"), chocolate syrup ("motor oil"), green food coloring and water ("antifreeze"), red food coloring and water ("chemical pesticide"), rags, and sponges. You will need a table to elevate the model. Fill up the watering can and the spray bottle with water before you begin. Attach a rubber tube to the spigot on the bay/ocean side of the model and put the other end in a bucket to catch the water and "pollution" you will add to the model. If you want to use the pump and have flowing water, fill one of the buckets with water, put the water-filled bucket at the 'uphill' side of the watershed so the water will flow through the river toward the bay and out into the other bucket. Have the different types of "pollution," spray bottle, watering can, sponges and towels easily accessible during your presentation. You may want to have a map to reference the local watersheds.



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Activity: This activity can be altered in many ways for different groups, but the #1 rule is always ‘Don’t touch the model!’ We need to preserve the integrity of this one-of-a-kind model so that it continues to be used for many years to come. Please make sure everyone understands and follows this rule. Below are some options for this activity.

- Introduce the concept of a watershed. Discuss what exists inside a watershed (i.e., water, land, mountains, plants, animals, and people).
- Discuss the local Humboldt County watersheds: Mad-Redwood, Lower Eel, South Fork Eel, Mattole, Lower Klamath, Salmon, Trinity, and South Fork Trinity. View them on a map if you can.
- Discuss where your drinking water comes from and where it goes when it goes down your drain. Discuss some things that go ‘down the drain’ that could harm your watershed.
- Discuss and apply different forms of “pollution” including:
 - “Silt”: Discuss the deforested hillside and its effect on the watershed. Sprinkle “silt” along that hillside. Discuss how this can be prevented and mediated. Discuss alternatives to deforestation (i.e., selective cutting, recycled paper, bamboo, hemp, etc.).
 - “Motor Oil”: Discuss how motor oil affects the watershed. Pollute the watershed by squirting “oil” near the vehicles, boats, auto shop, and landfill. Larger oil spills can also occur. Discuss prevention of spills and alternatives to using motor oil (i.e., proper vehicle maintenance, walking, biking, skating, carpooling, public transportation, electric vehicles).
 - “Anti-freeze”: Talk about how anti-freeze is used in vehicles to prevent their engines from freezing. Explain that it is very toxic, and that the students should be especially careful about where they store it at home because, unfortunately, it tastes sweet, but can be fatal to pets and people. Drip some “anti-freeze” near the vehicles, boats, auto shop, and landfill. Discuss hazardous materials (i.e., motor oil, electronics, CFLs, batteries) and how they require extra care when handling, storing, and disposing them.
 - “Chemical Pesticide”: Spray the “chemical pesticide” on and around the orchard, homes, and landfill. Discuss different types of pesticides (i.e., herbicides, insecticides, rodenticides, fungicides) and their uses and alternatives (i.e., Integrated Pest Management, natural pesticides, supporting organic farmers).



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- After adding all of the pollution, discuss what might happen when it “rains.” Discuss how storm water can contain silt and polluted run-off, and how it affects the watershed, the bay, and the ocean. Use the spray bottle at first to make a “misty rain” and then slowly make it “rain” with the watering can washing all the pollutants into the river. After the excitement and the water level die down, try to rinse down the model to make cleaning it easier later.
- Discuss point and nonpoint pollution. Point, or point-source, pollution originates from a single identifiable source, such as a discharge pipe from a factory or sewage plant. Nonpoint, or nonpoint-source, pollution occurs as water moves across land or through the ground and picks up natural and human-made pollutants, which can then be deposited in lakes, rivers, wetlands, coastal waters, and even groundwater. How should the pollutants simulated with the model be categorized?
- Discuss ways that the students can lessen their impact on their watershed and help repair their watershed. Consider doing the JCLT Activity “*Repairing A Riparian.*”