Outdoor School at Home

Calapooia Watershed Council

Title: What is a Watershed?
Grade: 6
Duration: 40 minutes
Location: Classroom, Home, Outside

Materials:

- Trays/Bakings Pans or Sheets
- Water bottles or pitcher
- Food coloring
- Vegetable oil, syrups
- White/clear trash bags or plastic table cloth
- Tupperware, cups, containers
- Aluminum foil
- Masking tape
- Markers
- Sprinkles
- Paper towels
- Watershed Clues

Objectives: Students will

- Define what a watershed is as a group based on visual clues provided
- Create a miniature watershed using provided materials.
- Demonstrate the effects of pollution and run off by pouring water into their watershed and adding food coloring, oils, syrup, etc.
- Brainstorm one way to improve their watershed.

Introduction (5 min)	**Hook:** Ask student(s) "What do you think a watershed is?" ● Allow students to share their ideas and explanations
Body (30)	● Share with students to help them further figure out what a watershed is, you have some clues. ○ Share clue visuals on a tablet/computer/print out

	○ Have students create their own definition using the clues ○ Review Background Information for definition ● After a definition has been created, tell students that today they will build their own mini watershed! ○ Have materials available for student use ○ Students should build their mountains first by setting up cups, tupperware, aluminum foil, etc. (tape down mountains if needed) in a tray. ○ After the mountains are set up, lay a plastic sheet/garbage bag over the mountains and valleys (push down on plastic gently to create a landscape (tape down plastic if needed) ○ Have students decorate their landscape by drawing forests, farms, homes, schools, ski lodges, etc. on the plastic with markers ○ Next, have students place "pollution" in the mini watershed (oil/food coloring/syrup). Pollution should be in places where people are living in the watershed. ● Once student(s) have completed building their watershed, have them predict what will happen when it rains in their watershed. Where will the pollution go? ● Spray/pour water slowly onto the mini watershed and have the student(s) observe what happens ● After the watershed has been observed, ask the student(s) to share what they observed. Would they drink water from this watershed or swim in the river?? ● Ask students what happens to the polluted water? Does it just stay in our watershed? ○ No - the polluted water can travel to neighboring watershed and eventually out to the ocean, impacting many people, plants, and wildlife along the way
Closing (5 minutes)	● Ask each student(s) to discuss and share how they might help our watersheds - have each student(s) share an idea and something they learned today ● Thank student(s) for their ideas and time and have them clean up their materials

Background Information:

Watershed - an area of land where bodies of water, such as tributaries, creeks, and streams, drain into a common body of water, like rivers, lakes, and oceans. Everyone lives in a watershed.

Negative Impacts on Watersheds:

- **Pollution**
    - There is a wide array of pollutants that negatively impact our watersheds today. Some of these include plastics, oils, chemicals, human and animal waste, pesticides, and fertilizers.
    - Pollution impacts water quality, wildlife populations, and habitats along our water bodies.
    - Pollution travels throughout watersheds and can pass through others, eventually out to the ocean. The further downstream you are, the more pollution you will come into contact with.
- **Overfishing**
    - In Oregon, native salmon populations are in decline. Due to poaching salmon and not following fishing regulations, there are less wild salmon able to breed to create future generations of wild salmon.
    - Overfishing also can cause a decrease in nutrients, provided by dead salmon for our habitats along these water bodies. Dead salmon provide important nutrients for plant growth, and are important to the diets of scavenger species, like Bald Eagles.
- **Habitat Fragmentation**
    - Loss of habitat or breaking up habitat (fragmentation) can disrupt the ecosystem within our watersheds by disrupting natural waterway and wildlife movements.
    - Depending on the type of fragmentation, this could increase pollution or sedimentation. It can also prevent salmon from migrating to their breeding grounds.
        - Today's dams have fish ladders to help salmon migrate. Unfortunately, another native species, the Pacific Lamprey, has difficulty using fish ladders, and struggles to reach their breeding grounds.

Ideas for Helping Your Watershed: (a few examples)

- Conserve Water
- Pick Up After Yourself and Others
- Volunteer at Clean Ups or Planting Native Plant Species
- Share What You Learned Today

Additional Resources:

Watershed Facts: https://oceanservice.noaa.gov/facts/watershed.html

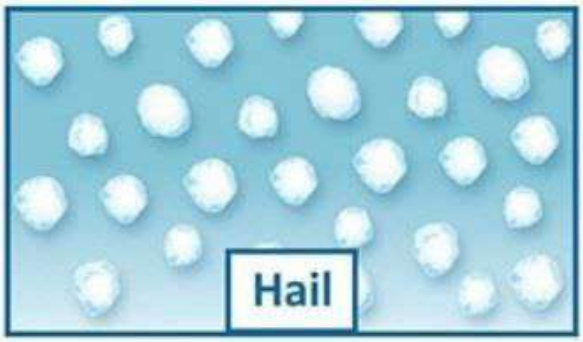
Video of Watershed Lesson: https://www.youtube.com/watch?v=lBMgGWM-8mQ

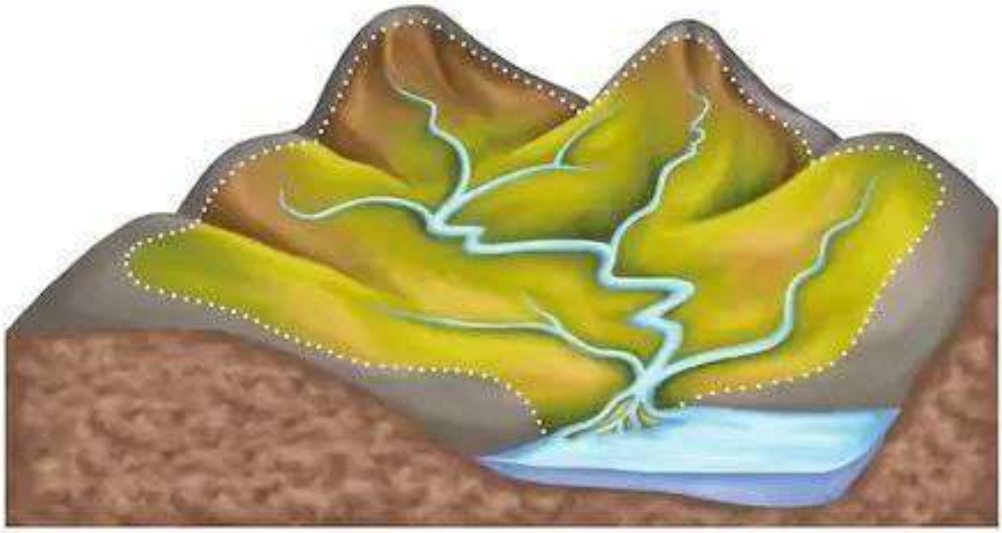
How to Help Watersheds:
https://www.nature.org/en-us/what-we-do/our-priorities/protect-water-and-land/land-and-water-stories/how-we-protect-watersheds/

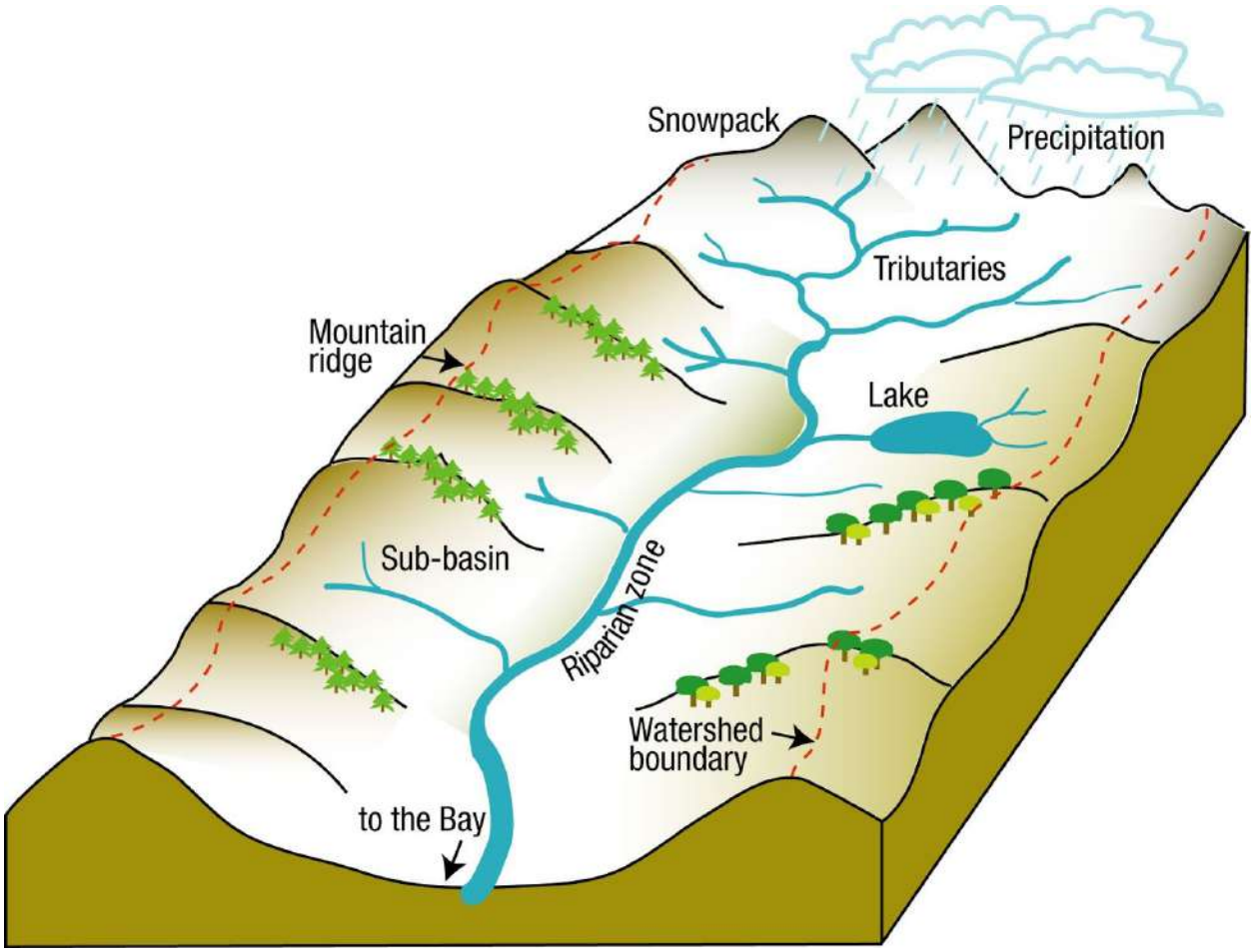
Salmon Carcass Nutrients & Tosses:
https://www.oregonlive.com/pacific-northwest-news/2013/02/oregon_program_recycles_salmon.html

What is a Watershed?

Use the following clues to create a definition for a watershed!






Snowpack
Precipitation
Tributaries
Mountain ridge
Lake
Sub-basin
Riparian zone
Watershed boundary
to the Bay

WATER CYCLE GLOSSARY OF TERMS *(from OBerk.com)*

The water supply of Earth is a required element for life to exist and thrive. The water cycle is a continuous cycle that keeps water moving on and around Earth in different forms. The different stages of the water cycle include evaporation, condensation, precipitation, and collection. Each stage of the cycle leads to the next stage, and each stage is an important part of a process that helps to water plants, fill cisterns, dry up puddles, and remove floodwaters.

Aquifer: An aquifer is an underground layer that contains groundwater.

Atmosphere: A unit of atmosphere measures the air pressure at sea level, which is about 14.7 pounds per square inch.

Climate: The climate of a location includes all of the weather conditions for this location over an extended period of time.

Cloud: A cloud is a visible mass of small water droplets or tiny ice crystals that are suspended in the atmosphere.

Cloud Condensation Nuclei: Water vapor surrounds tiny particles, condensing in clouds to become raindrops.

Condensation: Condensation is the process by which water vapor changes into liquid.

Current: Currents are predictable and steady flows of fluid in a larger body of fluid.

Density: Density describes the amount of things in a specific space.

Dew Point: Dew point is the temperature at which water in the air condenses to become water droplets near the ground.

Ecosystem: An ecosystem is a community of living and nonliving things in an area.

Erosion: Erosion happens when soil is worn away, usually by wind, water, or ice.

Evaporation: Evaporation is the process of water changing into water vapor.

Evapotranspiration: When moisture from the soil evaporates into the atmosphere or when transpiration from plants occurs, this is called evapotranspiration.

Fog: Clouds near the ground are known as fog.

Freshwater: A lake, river, or spring is a source of freshwater, which animals can drink.

Glacier: A glacier is a mass of ice that moves slowly across a land mass.

Great Lakes: The Great Lakes are the biggest freshwater bodies of water in the world, located in the United States.

Greenhouse Gas: Gases in the atmosphere that absorb solar heat reflected by Earth's surface, contributing to warming of the atmosphere, are greenhouse gases.

Groundwater: Groundwater is water found in an aquifer.

Humidity: The amount of water vapor in the air is the humidity.

Ice: Ice is water in solid form.

Ice Cap: An ice cap is an area of less than 19,000 square miles covered by ice.

Ice Sheet: Ice sheets are glacial ice areas that cover a large expanse.

Lake: A lake is a body of water that is surrounded by land.

Microscopic: Microscopic describes something very small.

Pollutant: A pollutant is a substance that harms a natural resource.

Precipitation: Precipitation includes all types of water that fall to Earth.

River: A river is a big stream of fresh water that flows.

Runoff: When fluid overflows from a farm or factory, it's known as runoff.

Snowmelt: Melted water from snow is snowmelt.

Temperature: The level of heat or cold, measured by a thermometer, is temperature.

Transpiration: Water that evaporates from plants is transpiration.

Vapor: Vapor is liquid that is suspended in air.

Water Cycle: Water moves between the land, bodies of water, and atmosphere in a process known as the water cycle.

Weather: Weather describes the state of the atmosphere, and it includes atmospheric pressure, temperature, humidity, cloudiness, precipitation, and wind.

Wind: Wind is air that moves from areas of high pressure to low-pressure zones.