



LESSON PLANS

LESSON #8: WATERSHED CLEAN UP

3RD > 5TH
GRADE

LEARNING OUTCOMES

Brainstorm in small groups on the watershed reflection paper what they know about the essential questions.

Make a combined list on the board of all the landmarks that are found in a watershed (mountains, rivers, lakes, wetlands, plants, animals.) and draw and label each with index cards and pencil.

Make a combined list on the board of all the man-made landmarks/sources of pollution from human and land animals (trash from homes and schools, oil from cars, fertilizers from gardens and fields, waste from animals) and draw and label each with index cards and markers.

Work together to create a class watershed with a shower curtain using their bodies (around outside edges with knees or feet), chairs, or other classroom items that can get wet (Ideally, this part should be done outside!)

Predict and observe the watershed demonstration using their index card labels to represent landmarks and pollution sources.

Return to watershed reflection to individually update their knowledge about watersheds.

TIME REQUIRED FOR LESSON: 1 40 minutes

BIG IDEA

Students will understand how and why our pollution ends up in our natural waterways.

BACKGROUND

Wherever people live, there is a watershed. A watershed is an area where rain, snow and other water drains from the land into a common waterway. Drainage systems are part of every watershed and consists of a network of ground water, streams and rivers that channel the water, sediment and other materials to a common waterway and eventually into the ocean. Runoff is the water in a watershed that flows across the ground and picks up extra materials in its path such as fertilizers, car oil and pet waste. Pollutants can be categorized into point source and non-point source. Point source pollution occurs when pollutants are discharged from a identifiable source, like a pipe, a well or a ditch. Non-point source pollution does not originate from one location but multiple sources or a large area. Examples include fertilizers from farms, oil from cars, toxic materials from factories and industries, salt from snow removal, sediment from construction, and bacteria from livestock. Non-point source pollution can also originate from people as the choices we make at home, such as the soap from washing your car which, goes directly into the street drains and will flow directly into a nearby water source. People can easily reduce their non-point source pollution by being aware of their actions. Using a carwash to wash your car, purchasing organic or biodegradable pesticides, disposing of oil, antifreeze, and keeping pet waste out of the streets are all ways to reduce pollution in our watersheds.

ESSENTIAL QUESTIONS

- What is a watershed?
- How does human pollution end up in the waterways?
- What is point source pollution? What is non point source pollution?
- What actions can humans take to keep a watershed healthy?

MATERIALS/SOURCES

- Watershed Reflection (SEE BELOW)
- Index cards and markers
- Shower curtain or large plastic tarp (white works best).
- Watering can with sprinkle spout

ACTIVITIES

ENGAGE

Students will begin by brainstorming in groups what they know about the essential questions, which are written on “Watershed Reflection”. Teacher will ask students “What is a watershed and what landmarks are included in a watershed?” Teacher will write down the class’s brainstormed list of all the natural landmarks that can be part of a watershed. Then, teacher will write down the class’s brainstormed list of all the man-made landmarks, which are sources of pollution. Assign each student a different landmark from the list to label and illustrate on a small index card. Have students who are illustrating natural landmarks to just use pencil and those who have man-made landmarks/sources of pollution to use markers (colored pencils or crayons will not work).

DISCUSS/EXPLORE

Bring the class back together and take them outside each carrying their index card. Ask them how we can make a watershed example using a plastic tarp, watering can, our index cards, and their bodies? Allow them to make a configuration with tarp but laying **ONLY THE NATURAL LANDMARKS OUT** on the tarp **FIRST**. Let the students that aren’t using their bodies in the watershed to use the watering can to sprinkle water over the tarp and explain that this represents rain. Ask students where the water is going and allow them to share their observations. Then allow students with the man-made pollution index cards to find a realistic location for their landmarks considering where the natural ones are already located. Sprinkle more rain all over the tarp. The marker from the man-made landmarks should bleed off and create multiple colors of pollution into the watershed. Explain to students that there are two types of human pollution run-off in watersheds: point source pollution and non-point source pollution. Point source pollution is when pollution is identified from specific sources like a pipe, well or ditch. Nonpoint source pollution does not come from one specific location but originates from multiple sources such as herbicides and fertilizers from small or large farms, oil and toxic chemicals from factories or cars on the roads, or bacteria from livestock waste. Ask students to think-pair-share which landmarks on the map they think may be point-source and which ones are non-point source pollution. After the students have shared, have them work together to quickly clean up demonstration and head back to class.

SHARE/EVALUATE/REFLECT

Once back in class, allow students to take a few quiet minutes to work independently to improve and complete their answers on the “Watershed Reflection” paper and then go over as a class if needed.

EXTENSIONS

- Use the zip code of your school and locate your local watershed at “Surf Your Watershed” on the EPA website. Compare class watershed model with local map and make predictions about how the run-off might travel through familiar territory.
- Make a salt dough map to demonstrate the watershed and measure to scale.

CONNECTIONS TO STANDARDS

3rd grade:

- **NGSS.3-LS4-1 Analyze and interpret data to make sense of phenomena using logical reasoning.**
- **NGSS. 3-LS1-1 Develop models to describe phenomena.**
- **CCSS.ELA-LITERACY.SL.3.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others’ ideas and expressing their own clearly.**

4th grade:

- **NGSS.4-PS4-2 Develop a model to describe phenomena.**
- **CCSS.ELA-LITERACY.SL.4.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others’ ideas and expressing their own clearly.**

5th grade:

- **NGSS.5-PS3-1 Use models to describe phenomena.**
- **CCSS.ELA-LITERACY.SL.5.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others’ ideas and expressing their own clearly.**



WATERSHED REFLECTION

NAME _____



WORK IN SMALL GROUPS TO BRAINSTORM TOGETHER WHAT YOU KNOW ABOUT WATERSHEDS BEFORE YOU CREATE ONE WITH YOUR CLASS.

What is a watershed?

How does human pollution end up in the waterways?

What is point source pollution?

What is non point source pollution?

What actions can humans take to keep a watershed healthy?

NOW THAT YOU HAVE LEARNED MORE ABOUT WATERSHEDS PLEASE ANSWER THE QUESTIONS BELOW.

What is a watershed?

How does human pollution end up in the waterways?

What is point source pollution?

What is non point source pollution?

What actions can you take to keep a watershed healthy?