# **FFL Principle 7- Reduce Stormwater Runoff**UF CPETUF CPETUF CPET

# **Elementary School**

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Reduce Stormwater Runoff Lesson Plan (English)

**Field of Science:** Environmental Science

**Grade Level:** First Grade (can be adapted for Kindergarten and Second grade)

**Concepts Explored:** Stormwater runoff, pollution, soak

**Big Idea:**

What happens to rain when it can’t soak into the ground?

**Learning Target:**

Students will explore how plants near lakes and rivers keep soil in place and make the water cleaner and safer when the stormwater is being taken care of properly.

**Standards:**

- **SC.1.E.6.1** Recognize that water, rocks, soil, and living organisms are found on

Earth’s surface. (Recall, level 1)

- **SC.1.E.6.2** Describe the need for water and how to be safe around water.

(Basic application of skills and concepts, level 2)

- **ELA.1.V.1.1** Use grade-level academic vocabulary appropriately in speaking and writing.

- **ELA.1.V.1.3** Identify and use picture clues, context clues, word relationships, reference

materials, and/or background knowledge to determine the meaning of unknown words.

**Materials:**

* 2 paint tray (with textures -bumps in the tray)
* 2 printable stormwater runoff worksheet
* Markers or crayons
* Tape
* Water spray bottle
* Pollutant examples: oil, chocolate syrup, frosting, shaving cream, salt, sand, etc.
* artificial plants/leaves

**Introduction:**

Stormwater is water from rain (or melting snow) that isn’t absorbed into the ground. In cities and towns, hard surfaces like roads and sidewalks prevent water from soaking into the soil. Instead, it runs off these surfaces, collecting dirt, oil, garbage, and other pollutants. This is called **stormwater runoff**. **Stormwater** can carry pollutants into local rivers, lakes, and oceans, harming aquatic life and water quality.

**Lesson:**

**Stormwater runoff** happens when rainwater (or melted snow) can’t soak into the ground. Instead, it flows over surfaces like roads, driveways, and rooftops. This runoff can pick up harmful materials such as car oil, trash, and lawn chemicals.

Urban areas are more affected because of all the paved surfaces. **Stormwater** pollution can harm fish, plants, and other animals living in rivers and oceans. It also makes cleaning our drinking water more difficult and expensive.

Farms also contribute to **stormwater runoff**. Fertilizers and pesticides can wash into streams and lakes, causing algae blooms that reduce oxygen and harm aquatic ecosystems.

**Some facts:**

* Stormwater is one of the leading causes of water pollution in urban areas.
* Storm drains often lead directly to rivers, lakes, or oceans without treatment.
* Even leaves, grass clippings, and pet waste can cause pollution when washed away by rain.

**What helps?**

* Planting more trees and gardens, creating rain gardens (Green infrastructure, like rain gardens and permeable pavements, can help soak up rainwater.)
* Using rain barrels.
* Cleaning up trash.
* Reducing lawn chemicals.

**Vocabulary:**

**stormwater runoff** - water from rain (or melting snow) that isn’t absorbed

into the ground.

**pollution** - making the Earth dirty and unhealthy. It happens when harmful things like trash, chemicals, or even extra noise get into our air, water, or land, making them unsafe for living things.

**soak** - means to make something very, very wet, like putting a sponge in water or

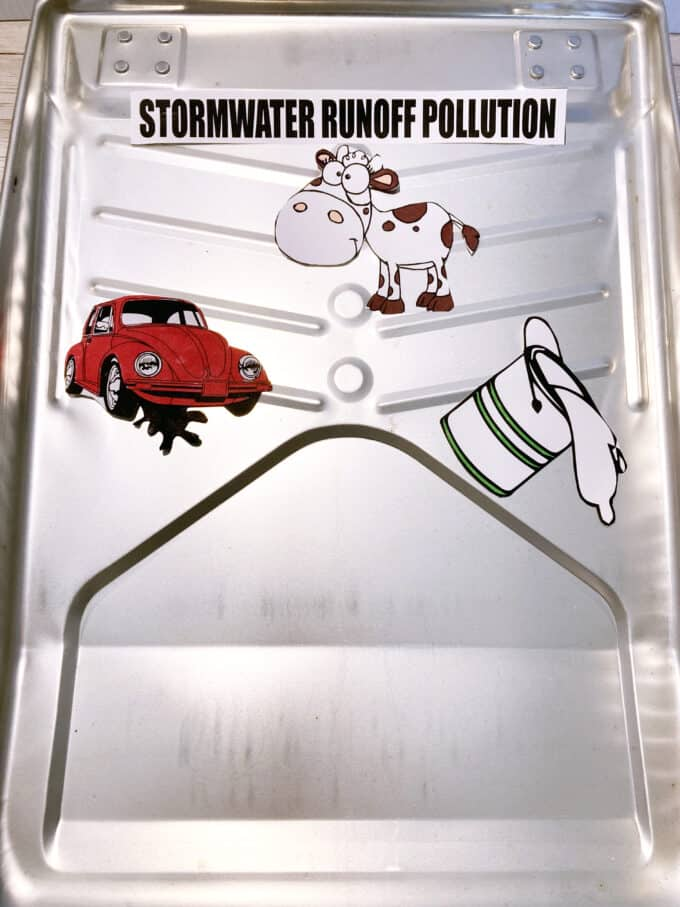
getting caught in the rain. It can also mean to absorb something, like a sponge soaking up water.

**Activity:**

(For the teacher:) By exploring this simple model, kids learn how human activity affects the environment and how they can make a difference.

**Set up the activity:**

Print and color two sets of the stormwater runoff worksheet. Cut out the images. Tape the images into the first paint tray to represent roads, grass, storm drains, etc. Then, do the same in the second tray, but this time, glue the plastic plants at the top of the pictures.



**STEP 1:** Add substances like oil or syrup to represent pollutants. Place small amounts on the hard surfaces.



**STEP 2:** Add clean water to the lower part of the tray to simulate a river or stream.

**STEP 3:** Use the spray bottle to simulate rainfall. Watch what happens to the water and where the pollutants go. 

Discuss with students their observations.

**Guided questions:**

* Where does the dirty water go?
* What do you notice about the pollution?

(Now, repeat the activity using the second tray, with the artificial plants.)

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* Where does the dirty water go?
* What do you notice about the pollution?

**Conclusion and concept learn application:**

(Give the students a paper with a “T” chart.) Now, I want you to draw what you saw. On the left side of your “T” chart, you are going to draw what happened on the tray without plants. On the right side, you are going to draw what happened in the tray with the plants.

Then, I want you to write your conclusions. Use these questions to help you to write your conclusion:

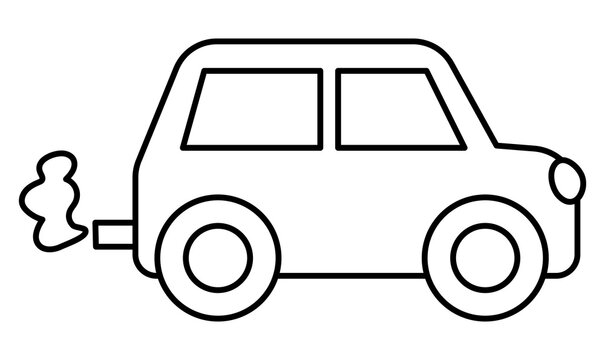
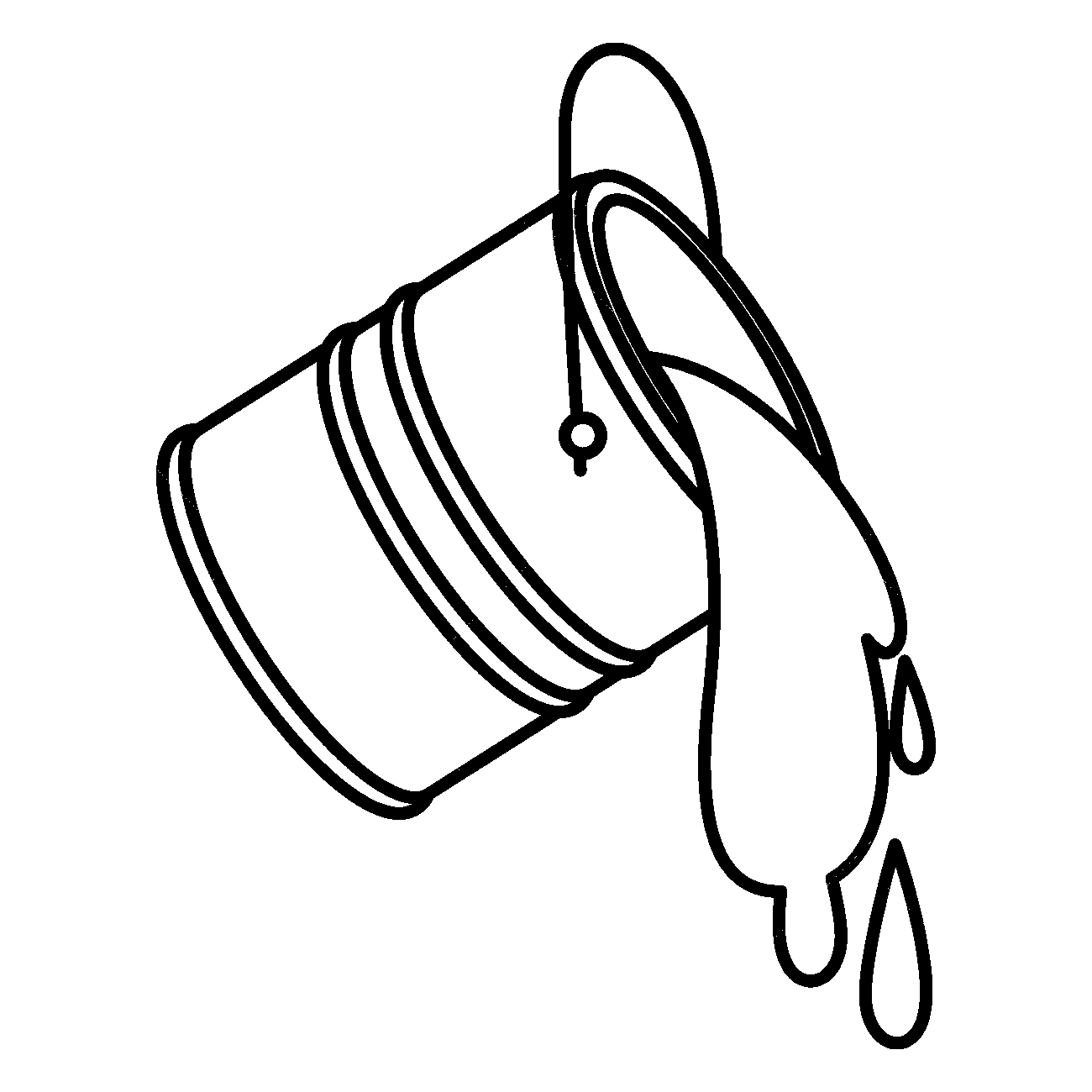
- Which side holds cleaner water?

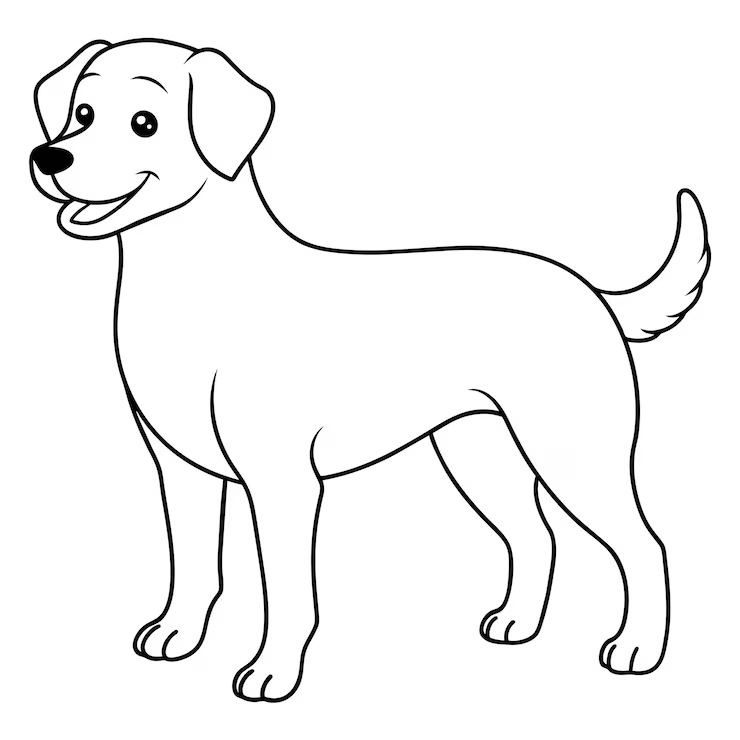
- Why do you think this happened?

As a class, discuss possible good practices and solutions to stop or minimize the effects of the stormwater pollution.

<https://littlebinsforlittlehands.com/stormwater-runoff>

**STORMWATER CUT OUTS PICTURES**

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**STORMWATER EFFECTS**

**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Instructions:** Make a picture of what you saw that happened in each tray, when the water was poured.

**Without plants With plants**

|  |  |
| --- | --- |

Using these questions as your guide, explain what happened on each tray.

Which side holds cleaner water? Why do you think this happened?

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