

## Photo Description



This image shows a blue water valve (fire hydrant) and an orange traffic cone next to a sidewalk beside a body of water. Water is visible pooling on the grass and seeping into the ground. The scene demonstrates how water moves and changes in our environment, with some water appearing as a liquid flowing from the valve and other water visible in the canal or drainage area.

## Scientific Phenomena

Anchoring Phenomenon: Water leaking from an underground infrastructure system and pooling on the surface.

Why This Happens: Water flows through pipes underground to deliver or drain water. When pipes crack, leak, or valves open, water escapes and moves downward due to gravity. The water pools on the surface because the ground cannot absorb it fast enough, or it flows toward lower areas. This demonstrates that liquids flow and take the shape of their containers—in this case, the ground and grass act as a container for the escaping water.

## Core Science Concepts

\* Gravity and Liquids: Water always flows downward and toward lower areas because of gravity pulling it down. Liquids cannot hold their own shape and will spread out and flow to fill available spaces.

\* Water as a Liquid: Water in its liquid state is wet, flows freely, and can soak into materials like soil and grass. Unlike solids (the concrete, the cone), liquids don't have a fixed shape.

Observable Evidence of Change: The wet grass, pooling water, and need for the warning cone show that water is moving and changing the environment around it. We can see and feel\* evidence of water's movement.

\* Human Infrastructure and Nature: People build pipes and valves to control water, but when they leak, water behaves according to natural laws (gravity, absorption) and spreads across the landscape.

### Pedagogical Tip:

Second graders are concrete learners who benefit from direct observation. Rather than explaining water states abstractly, invite students to observe real water in your classroom—pouring it, watching it pool, and feeling it wet their hands. Connect these tactile experiences to the "leaking pipe" phenomenon in the photo. Ask: "If we poured water on a plate, where would it go? Why does it go there?"

### UDL Suggestions:

Representation: Use videos, photographs, and real water demonstrations to show water in action. Some students may benefit from tactile models (sponges, towels) to feel how water is absorbed. Action & Expression: Allow students to show understanding through drawing water movement, acting out gravity's effect, or building models with containers.

Engagement: Connect to students' real-world experience—many have seen puddles, wet grass, or water leaks at home. Invite them to share observations, validating their curiosity.

## Discussion Questions

1. What do you observe happening to the water coming from the pipe? (Bloom's: Remember | DOK: 1)
2. Why do you think the water is spreading across the grass instead of staying in one spot? (Bloom's: Analyze | DOK: 2)
3. How is the water in this picture different from the water in a cup you drink from? (Bloom's: Compare | DOK: 2)
4. What do you think will happen to all this water over time—where might it go? (Bloom's: Predict | DOK: 3)

## Extension Activities

1. Water Flow Experiment: Set up a shallow tray with soil, sand, and grass. Pour water at the top and observe where it flows, where it pools, and where it gets absorbed. Have students draw or describe the path the water takes. Discuss how this is similar to the leaking pipe in the photo.
2. Solid, Liquid, Gas Sort: Bring in pictures or real objects (ice cube, water in a cup, a sponge, a balloon with air, a rock). Have students sort items into categories: things that keep their shape (solids) and things that flow and change shape (liquids). Connect this to the water in the photo.
3. Puddle Observation Walk: (Weather permitting) Take students outside after rain to observe puddles. Have them predict which puddles will disappear first (sunny vs. shady spots), then check back later. Discuss where the water went (evaporation, absorption, drainage)—connecting to the phenomenon in the photo.

## NGSS Connections

Performance Expectation: 2-PS1-1 – Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

Disciplinary Core Ideas:

- 2-PS1.A – Different kinds of matter exist (solids, liquids, gases) and have observable properties
- 2-ESS2.A – Water is found in different places and can be solid or liquid

Crosscutting Concepts:

- Patterns – Water follows predictable patterns (flows downward, spreads across surfaces)
- Cause and Effect – The leak (cause) results in wet grass and pooling water (effects)

## Science Vocabulary

- \* Liquid: A form of matter that is wet, flows freely, and takes the shape of whatever container it's in (like water or milk).
- \* Gravity: An invisible force that pulls things downward toward the Earth, making water flow down and fall to the ground.
- \* Absorb: When a material soaks up liquid, like how a sponge or soil takes in water.
- \* Leak: When liquid escapes from a pipe or container where it's not supposed to go.
- \* Property: A characteristic or quality of something that you can observe, like how wet something feels or what color it is.

## External Resources

Children's Books:

- Rain by Manya Stojic (explores water movement and weather)

- A Drop of Water: A Book of Science and Wonder by Walter Wick (stunning photography of water states and properties)
- Water is Water by Miranda Paul (shows water in different forms and places)

### YouTube Videos:

- "States of Water" by Crash Course Kids – <https://www.youtube.com/watch?v=K5hOFXS5vZE> (2:55 min; explains liquid water simply with engaging visuals)
- "Gravity and Liquids" by National Geographic Kids – [https://www.youtube.com/watch?v=\\_fDkKVnH1dA](https://www.youtube.com/watch?v=_fDkKVnH1dA) (3:15 min; demonstrates how gravity affects water movement and pooling)