



# Use Water Wisely

*Why use less water?*

## GRADE LEVEL

- 3-6

## SUBJECT AREAS

- Environmental Science, Ecology

## SKILLS

- Analyze, Interpret, Apply, Evaluate, Technology

## VOCABULARY

Best management practice, conserve, conservation controlled-flow nozzle, erosion, evaporation, litter, mulch, native plants, protect potable, rain barrel, rainwater, runoff, soaker hose, storm drain, water treatment, watershed, wetland

## CONTENTS

### Measurable Objectives

### Background and Text Overview

### Vocabulary

### Activities

- Water Detectives Activity and Answer Key

### Take Action!

- Poster Items
- Activities

### Assessments

- Pretest/Posttest and Answer Key
- Critical Thinking Questions
- What Did I Learn? Online Quiz Answer Key

### Extensions

### Resources

- Project WET Resources
- Additional Student Resources
- Additional Educator Resources

## MEASURABLE OBJECTIVES

The learner will:

- Recognize that everyone contributes to and is responsible for the quality and quantity of the water we share.
- Analyze everyday actions to determine if they positively or negatively impact water quantity and/or quality.
- Give examples of actions (best

management practices) that individuals can take to promote water conservation and protection.

## BACKGROUND AND TEXT OVERVIEW

### INTRODUCTION

If we are such watery creatures living in a watery world, why do we need to use water wisely? It sounds like there is a lot of water. There is, but that same amount was here millions of years ago, and there are millions more people using it.

By doing our part to use less water—conserve it, and keep water clean—protect it, the water we have available will go further.

### BEST MANAGEMENT PRACTICES

Methods recognized by water users to lessen harm to the environment that might result from their activities are called Best Management Practices (BMPs). For example, a BMP for conserving water is to turn off the faucet while brushing your teeth. A BMP for water protection is to pick up pet waste so that it doesn't flow into a river or stream.

### WATER CONSERVATION

Conservation of water means using water-saving methods to reduce the amount of water consumed. Because most of us can get water easily (just by turning on the faucet), we may take it

for granted and use a lot. Water flows from its source—such as a river or well—through pipes to water treatment plants where it is cleaned. From the water treatment plant, it moves through pipes to our homes. Then it flows out of our faucets on demand. After water swirls down the drain or is flushed down the toilet, it flows to a wastewater treatment plant where it is cleaned before being released into a river or other water source.

### **WHY USE LESS?**

Water conservation can save money, help solve existing water shortage problems and help a community plan for the future. Water treatment costs money. It requires workers, buildings, pipes and materials to clean or treat the water. The more water we use, the more water must be treated or cleaned and that costs money. When communities suffer water shortages because of dry weather or sudden population growth, they can increase their water supply by building larger water treatment plants, dams or pipe systems to bring water from far away. However, a community may not have the money to take these steps. What can citizens do? They can use less water.

Water conservation can help solve water shortage problems. Many businesses reduce their water use by recycling water and using new equipment that requires less water. Many farmers and ranchers are using more efficient irrigation systems. Water conservation can be very complicated, but sometimes it is simple. For example, one ice cream company found that by changing the order of the flavors

they produce (that is, making vanilla first and then chocolate), they saved thousands of gallons of water.

Benjamin Franklin once said we only worry about water when the well runs dry. That's probably true for most of us. There seems to be enough water, so sometimes we take it for granted. Even if your community is not experiencing a water shortage today, it may in the future. Getting into the water conservation habit today is a good idea to prepare for tomorrow. In times when there is plentiful rainfall, it is still important to practice water conservation.

### **WATER PROTECTION**

Protection of water means keeping the water we have clean. How we treat the land is reflected in the quality of the water. Surfaces around us include cities; farms and ranches; industries and businesses; open spaces, wildlife refuges, parks and nature areas; parking lots; streets and highways; schools; and homes. Maybe you've heard people say that rain washes the streets clean, but have you ever thought about where that water ends up? These surfaces often contain pollutants that are picked up by the flow of storm water (water that falls from the sky as rain or snow) or other water (from washing cars, draining pools, leaking pipes, etc.) and can adversely affect the water quality. Water that falls on these surfaces can move in one of three ways: it can soak in to the ground if the surface is permeable or run off if the surface is impermeable (does not allow water to soak in). Surface runoff may either flow over land before draining directly into a

river or lake, or flow into a storm drain and pipes and ultimately end up in a river, lake or wetland.

The cleaner we keep the land, the cleaner our water will remain. Best Management Practices to protect the cleanliness of water often involve our actions on the land.

## **ACTIVITIES**

### **WATER DETECTIVES ACTIVITY**

Please see *Water Detectives Activity* student copy page.

### **WATER DETECTIVES ACTIVITY ANSWER KEY**

Please see answer key

## **TAKE ACTION!**

### **POSTER ITEMS**

1. I will take a shorter shower to conserve water.
2. I will wash the car using a bucket and sponge instead of a hose to save water.
3. I will use a broom instead of a hose to sweep the driveway or sidewalk.

### **ACTIVITIES**

## **ASSESSMENTS**

### **PRETEST/POSTTEST**

Before you visit the *Use Water Wisely Unit* of the *Discover Water* website, take the following quiz to see what students already know about conserving and protecting water. Have students take the same quiz again as a posttest to measure learning.

### **PRETEST/POSTTEST ANSWER KEY**

1. True
2. All of the above
3. All of the above

4. True
5. True
6. True
7. All of the above

## CRITICAL THINKING QUESTIONS

### LEVEL 1

Are you a wise water user? What could you do to conserve more water?

*Answers may include discussion of some of the things students already do to conserve water, as well as a few new ideas that they can adopt. Any of the actions from the Water Detectives Activity might be discussed here, as well as other ideas from students.*

### LEVEL 2

Why use less water?

*Answers may include discussion about the cost of water and water shortages, as well as the idea that there are more and more people sharing the same quantity of water.*

### LEVEL 3

What is a Best Management Practice (BMP)? Are there places in your life where you are not currently using BMP's for water use that you could change? How?

*Answers should include discussion of BMP's from the Water Detectives Activity, as well as other ideas from students, and discussion about how to change personal practices to adopt BMP's.*

## WHAT DID I LEARN? ONLINE QUIZ ANSWER KEY

**Q.** It is a best management practice to pick up pet waste.

**A.** True

**Q.** The best place to wash your family's car is on:

**A.** The lawn

**Q.** An oil leak under a car can pollute water.

**A.** True

**Q.** If you need to wash one plate and fork, you should run the dishwasher.

**A.** False

**Q.** There is approximately the same amount of water on Earth today as there was a million years ago.

**A.** True

## EXTENSIONS

Ideas for ways to support and expand lesson plans about this topic or provide additional activities for advanced learners.

- Ask students to draw a picture of their own home in similar style to the illustration from the *Water Detectives Activity* online depicting Wise Water Using and Water Wasting practices that happen at home. If Water Wasting practices are identified, ask students to make a plan to change those practices.
- Encourage students to share the *Water Detectives Activity* online with their parents and discuss (or write about) a plan for the family to adopt Best Management Practices.

## RESOURCES

### PROJECT WET RESOURCES

Project WET KIDS (Kids in Discovery Series) Booklets

- [Conserve Water](#)
- [Discover Bays and Estuaries](#)

- [Discover California Coastal Ecosystems](#)
- [Discover Coral Reefs](#)
- [Discover Marine Mammals](#)
- [Discover Ports & Harbors](#)
- [Discover Recycling, Take Action!](#)
- [Discover Storm Water](#)
- [Discover the Colorado River](#)
- [Discover the Hudson River](#)
- [Discover the Missouri River](#)
- [Discover the Red River](#)
- [Discover the Waters of Nebraska](#)
- [Discover the Waters of Nevada](#)
- [Discover the Waters of Tennessee](#)
- [Discovering Drought](#)
- [Explore Oceans](#)
- [Fish & Fishing](#)
- [Healthy Water, Healthy People](#)
- [The Water Story](#)
- [Water, Every Drop Counts](#)
- [Watershed Protection](#)

### Project WET Curriculum and Activity Guide 2.0 Activities

- [8-4-1, One for All](#)
- [A Drop in the Bucket](#)
- [Common Water](#)
- [Money Down the Drain](#)
- [My Water Footprint](#)
- [Snow and Tell](#)
- [Storm Water](#)
- [Sum of the Parts](#)
- [Super Bowl Surge](#)
- [The Long Haul](#)
- [The Price is Right](#)
- [Virtual Water](#)
- [Water Audit](#)
- [Your Hydrologic Bank Account](#)

## ADDITIONAL STUDENT RESOURCES

Calhoun, Yael. 2007. *Water in the News*. New York, NY: Chelsea House.

Coombs, Karen Mueller. 1995. *Flush!: Treating Wastewater*. Minneapolis, MN: Carolrhoda.

Hollyer, Beatrice. 2009. *Our World of Water*. New York, NY: Henry Holt and Company.

Olien, Rebecca. 2005. *Sources of Water*. Manheto, MN.: Capstone Press.

Spilsbury, Richard. 2009. *Managing Water*. Chicago, IL: Heinemann Library. Examine water from the molecular level through its importance in biological processes and why this resource is finite.

*When the Water Tap Runs Dry*. DVD. Directed by Ron Meyer. New York, NY: Ambrose Video Publishing, Inc. 2009.

## ADDITIONAL EDUCATOR RESOURCES

Araya, Yoseph Negusse and Edward H. Moyer. 2006. "Global Public Water Education: The World Water Monitoring Day Experience." *Applied Environmental Education and Communication*, 5 (4), 263-267.

Church, Ellen Booth. 2006. "Keep the Ideas Flowing at Your Water Table! Ideas to Help Children Get to Know H-2-O." *Early Childhood Today*, 20 (4), 4.

Hall, Randy. 2008. "Science Sampler: Water-use Awareness." *Science Scope*, 31 (7), 62-66.

Heinhorst, Sabine and Gordon Cannon. 2004. Nature: "Water, Water, Everywhere, nor Any Drop to Drink." *Journal of Chemical Education*, 81 (2), 170-171.

Marcello, Jody Smothers. 2007. "When the Rivers Run Dry." *Geography Teacher*, 4 (1), 18-19.

Solis, Patricia. 2005. "Water as Rural Heritage: Reworking Modernity through Resource Conflict in Edwards County, Kansas." *Journal of Rural Studies*, 21 (1), 55-66.



**WATER DETECTIVES ACTIVITY**

As you complete the online *Water Detectives Activity*, follow along using this worksheet to see if you can find and list 18 Best Management Practices (BMP) for Wise Water Use and explain why each is a BMP. For each Water Waster you find, write down what they are doing wrong, and what BMP they should try next time instead.

**Wise Water Users**

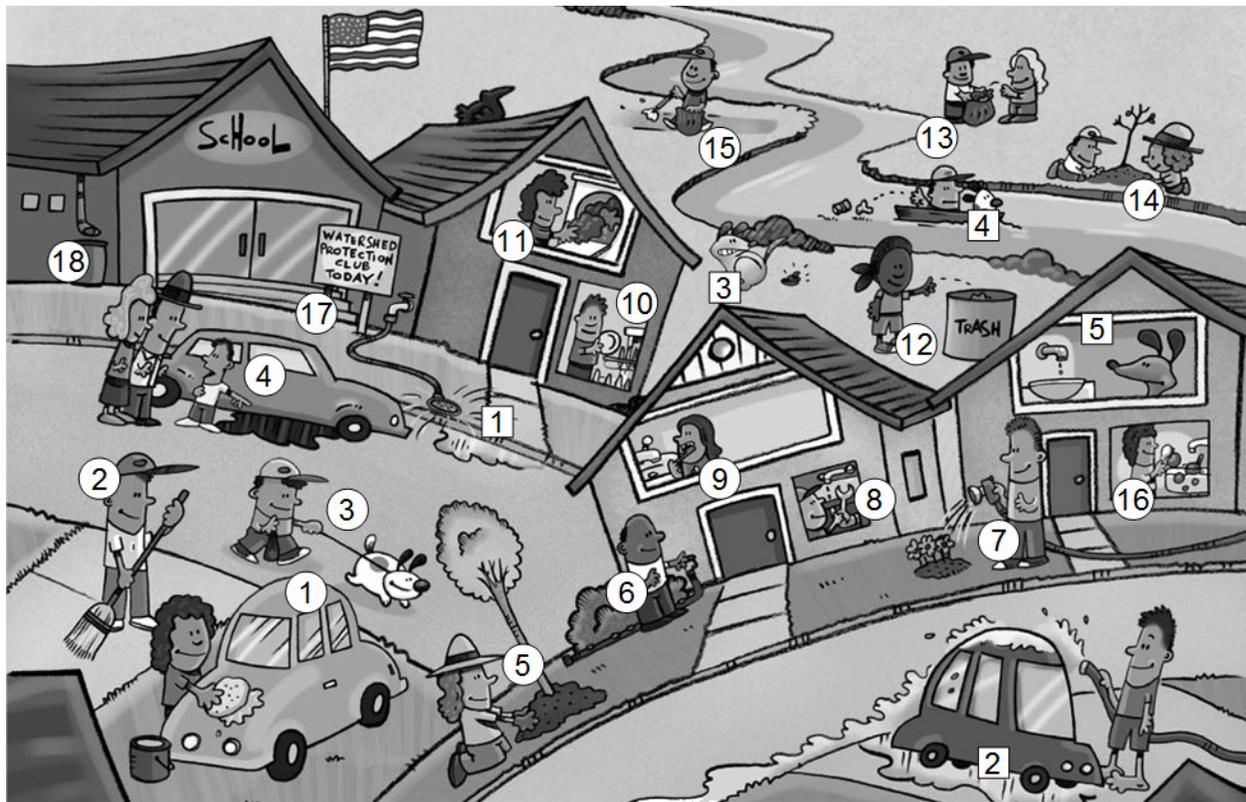
	<b>Best Management Practice</b>	<b>How this BMP helps preserve or protect water</b>
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		

14		
15		
16		
17		
18		

**Water Wasters**

	<b>How is this water user wasting water?</b>	<b>What BMPs should this Water Waster try?</b>
1		
2		
3		
4		
5		

**WATER DETECTIVES ACTIVITY (ANSWER KEY)**



① Wise Water Users

① Water Wasters

**Wise Water Users - Best Management Practices**

	<b>Best Management Practice</b>	<b>How this BMP helps preserve or protect water</b>
1	Wash the car using a bucket and sponge instead of a hose and on the grass instead of the driveway	Using a bucket and sponge saves water wasted by a running hose. The lawn allows the soap and dirt to be filtered into the grass instead of flowing into storm drains.
2	Sweep the driveway with a broom instead of using a hose	Using a broom instead of a hose to clean the driveway or sidewalks saves water.
3	Clean up after your pet	Cleaning up after your pet keeps waste from entering nearby streams and keeps water cleaner.
4	Tell your parents if you see an oil leak under the car	Oil leaks drip onto the pavement, and can then runoff into streams and lakes when it rains. By fixing the leak, you help keep water cleaner.
5	Cover soil around trees with mulch	Mulch helps water soak into the soil and helps keep water from evaporating.

6	Use a soaker hose instead of a sprinkler	A soaker hose keeps the water close to the ground so less evaporates into the air.
7	Use a controlled-flow nozzle on your hose	A controlled-flow nozzle on the hose allows you to turn it on and off or adjust the flow as you need to right at your fingertips.
8	Fix a leaky faucet	A leaking faucet can waste a lot of water. By asking your parents to fix leaking faucets you are conserving water.
9	Turn off the faucet while brushing your teeth	Turning off the tap while you aren't using the water makes sense and saves water.
10	Put a large load of dishes in the dishwasher	If you are going to use water and energy to wash a load of dishes, wash as many as you can fit.
11	Put a large load of clothes in the washing machine	If you are going to use water and energy to wash a load of clothes, wash as many as you can fit.
12	Put trash in a trash can instead of littering	Putting trash in a trash can instead of littering keeps the trash out of streams and lakes and keeps water cleaner.
13	Participate in a river, pond or highway cleanup	By helping remove garbage from rivers, ponds and highways you are keeping your water cleaner.
14	Plant trees and grasses along a riverbank	Grasses and trees on the banks of streams and lakes help protect the shore from erosion and help keep the water cleaner.
15	Help keep open spaces clean by collecting trash along trails and in parks	By picking up trash in parks and along trails, you are keeping the trash from ending up in streams or lakes and keeping the water cleaner.
16	Clean veggies in a basin of water using a brush	Using a brush and basin of water to wash veggies uses less water than a running tap.
17	Start a Watershed Protection Club at school	By starting a Watershed Protection Club, you can teach friends and family about conserving and protecting water.
18	Use a rain barrel to collect rain water	Collecting rainwater and using it to water your plants conserves water.

### Water Wasters

	<b>How is this water user wasting water?</b>	<b>What BMPs should this Water Waster try?</b>
1	Watering the sidewalk and street	Making sure that the sprinkler is actually watering plants and not concrete saves water.
2	Letting the hose run while you wash the car	Letting the hose run while you wash the car wastes water. Use a bucket and sponge to save water.
3	Leave pet waste on the ground	Pet waste can wash into streams and lakes. Pick it up and dispose of it properly (in a garbage can) to keep your water cleaner.
4	Litter	Litter may end up in streams or lakes making your water less clean. Put litter in to a trash can to keep it out of the water.
5	Let a leaky faucet drip	Leaky faucets waste a lot of water. If there is a leaky faucet in your house, ask your parents to repair it.

# Use Water Wisely Unit Pretest/Posttest



1. True or false, water conservation means using less water.
2. Why should you conserve water?
  - a. Water treatment costs money
  - b. Conserving water can help solve current water shortage problems
  - c. Conserving water can help you prepare for future water shortage problems
  - d. All of the above
3. A simple action you can take to conserve water is:
  - a. Turn off the faucet while brushing your teeth
  - b. Wash the car using a bucket and sponge instead of a hose
  - c. Make sure the dishwasher is full before it is started
  - d. All of the above
4. True or false, in times when there is plentiful rainfall, it is still important to practice water conservation to plan for future water shortages.
5. True or false, water protection means keeping water clean.
6. True or false, a Best Management Practice is a method recognized by water users to lessen harm to the environment that might result from their actions.
7. Storm water that falls on a land surface can:
  - a. Soak in
  - b. Run off directly into rivers, lakes and wetlands
  - c. Flow into storm drains and pipes to ultimately end up in rivers, lakes and wetlands.
  - d. All of the above

Score: \_\_\_/7

