



Take a Virtual Watershed Excursion  
at [WaterMatters.org/watershed](http://WaterMatters.org/watershed)

Teacher's Guide

## Dear Teacher:

Welcome to *Watershed Excursion*! This teacher's guide has been developed to use in conjunction with the *Watershed Excursion* booklet. The purpose of the booklet is to educate students, residents and visitors about watersheds and water resources issues and to encourage protection of our water resources.

*Watershed Excursion* is targeted for students in grades 4–7 to increase their awareness and respect for Florida's precious water resources. The booklet is correlated to grades 3–5 and 6–8 of the Sunshine State Standards. It includes a variety of nonfiction articles, checkpoints, investigations, games, activities, side trips, factoids and web sites to explore. All the information and activities are designed to teach students about watersheds. In addition, we have included the *Watershed Excursion* Challenge, which contains items similar to those that students could expect to find on the Florida Comprehensive Assessment Test.

Many other free materials are available from the Southwest Florida Water Management District (SWFWMD) and can be ordered online at [WaterMatters.org/publications/](http://WaterMatters.org/publications/). We also offer water resources workshops for teachers. For additional information, please contact the Communications Department of the SWFWMD at 1-800-423-1476 (FL only), or (352) 796-7211, ext. 4757. You can also visit the Education section of the SWFWMD's web site at [WaterMatters.org](http://WaterMatters.org).

## Watershed Excursion Guide

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# Background

During the course of *Watershed Excursion*, your students will learn that regardless of where they live, they live in a watershed. A watershed is an area that water flows across as it moves toward a common body of water such as a stream, river, lake or coast. Although Florida has a relatively flat land surface, even small variations in elevation can separate different watersheds. There are 11 major watersheds within the boundaries of the Southwest Florida Water Management District (SWFWMD). The SWFWMD is the regional agency responsible for managing water resources and maintaining a balance between the water needs of current and future water users without damaging the environment. The future of our watersheds depends on all of us working together.

The following tips are provided to help you guide your students through *Watershed Excursion* and the teacher's guide. Be sure to read the entire booklet and teacher's guide in preparation for use with your students.

## For each station:

- Make copies of the "Watershed Activity" found in this teacher's guide.
- Read and discuss with your students the station presented in the student booklet.
- Assign one or two of the "Watershed Investigations" in the student booklet. Have copies of newspapers and/or magazines available for completing the second investigation.
- Complete the "Watershed Activity" and the "Excursion Side Trip" with your students. Share the "Watershed Factoid."
- Ask students to complete the "Excursion Checkpoint" in the student booklet and check their answers before moving on to the next station.

## Other activities:

- As a class, review the vocabulary listed on page 15 of the student booklet.
- Encourage students to use the Internet to surf the web sites included on page 15 of the student booklet.
- Read and discuss the center-spread poster of the student booklet called "Watersheds Within the SWFWMD." Display the poster in your classroom.
- Have students complete the activities on page 14 of the student booklet and check their answers, which are included on page 15.
- Make copies and administer the "Watershed Excursion Challenge" on pages 14–15 of this teacher's guide.

Items included in the *Watershed Excursion Challenge* are similar to those presented on the Florida Comprehensive Assessment Test (FCAT).

**Answers to multiple-choice items:** 1-d, 2-b, 3-a, 4-d, 5-a, 6-b, 7-c, 8-b, 9-c, 10-d

## Answers to extended-response items:

**Question 1.** Responses will vary. Students should be able to demonstrate an understanding that all things within a watershed are important to the health of a watershed.

**Score 2 points if...** The response indicates that the student has a thorough understanding that all things within a watershed are important to the health of a watershed.

**Score 1 point if...** The response indicates that the student has a partial understanding that all things within a watershed are important to the health of a watershed.

**Score 0 points if...** The response is inaccurate, confused or irrelevant.

**Question 2.** Responses will vary. Students should be able to assimilate information about protecting watersheds.

**Score 2 points if...** The response indicates that the student was able to assimilate information about protecting watersheds.

**Score 1 point if...** The response indicates that the student was able to partially assimilate information about protecting watersheds.

**Score 0 points if...** The response is inaccurate, confused or irrelevant.

Station 1



# Watershed Basics

**Watershed Activity:**

## The Watershed and Community Connection

**Directions:**

You have learned that a watershed is like a community. Think about ways to describe your watershed. List these words or phrases in the column under "My Watershed." Then do the same for "My Community." Next, write a few sentences that tell about how your watershed and community are alike. When you finish, you will have made the watershed and community connection!

**My Watershed**

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**My Community**

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Use the lines below to describe how your watershed and community are alike.

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## Excursion Side Trip

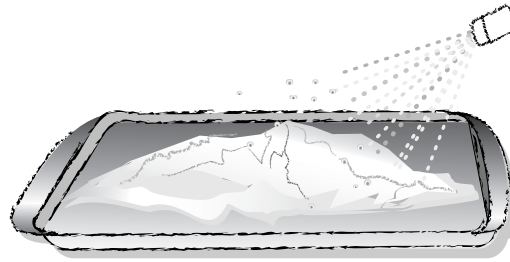
# Make Your Own Watershed

Station 1

This is a fun, easy activity that you can do at home. Be sure to take notes on what you observe during the activity. You can use this activity to teach others about how important it is to keep watersheds clean and healthy.

### Materials:

- sheet of white paper
- shallow pan
- water-based colored markers
- spray bottle of water



### Directions:

1. Take the sheet of paper and crumple it. Next, partially smooth it out, leaving some ridges.
2. Use the markers to color along the edge of the creases. You may want to use different colors to represent a variety of pollutants, such as fertilizer, oil, pesticides, litter, etc.
3. Lay the paper out on the shallow pan to represent a watershed. Use the creased lines to show elevated land areas.
4. Using the bottle of water, gently spray the top of the watershed. Keep spraying the paper until the colors begin to flow.
5. Describe what happened. Did the different pollutants mix together? If so, where did this happen in the watershed?
6. This is an example of a watershed in action, with water flowing downhill picking up pollution as it goes. So let's keep it clean!

## Watershed Factoid

### Did you know that ...

if you viewed a watershed from an airplane, you would most likely see a very interesting sight below! The drainage patterns of the watershed may look like the branches of a tree, a complex road system or even the human nervous system.





Station 2

# All About Water

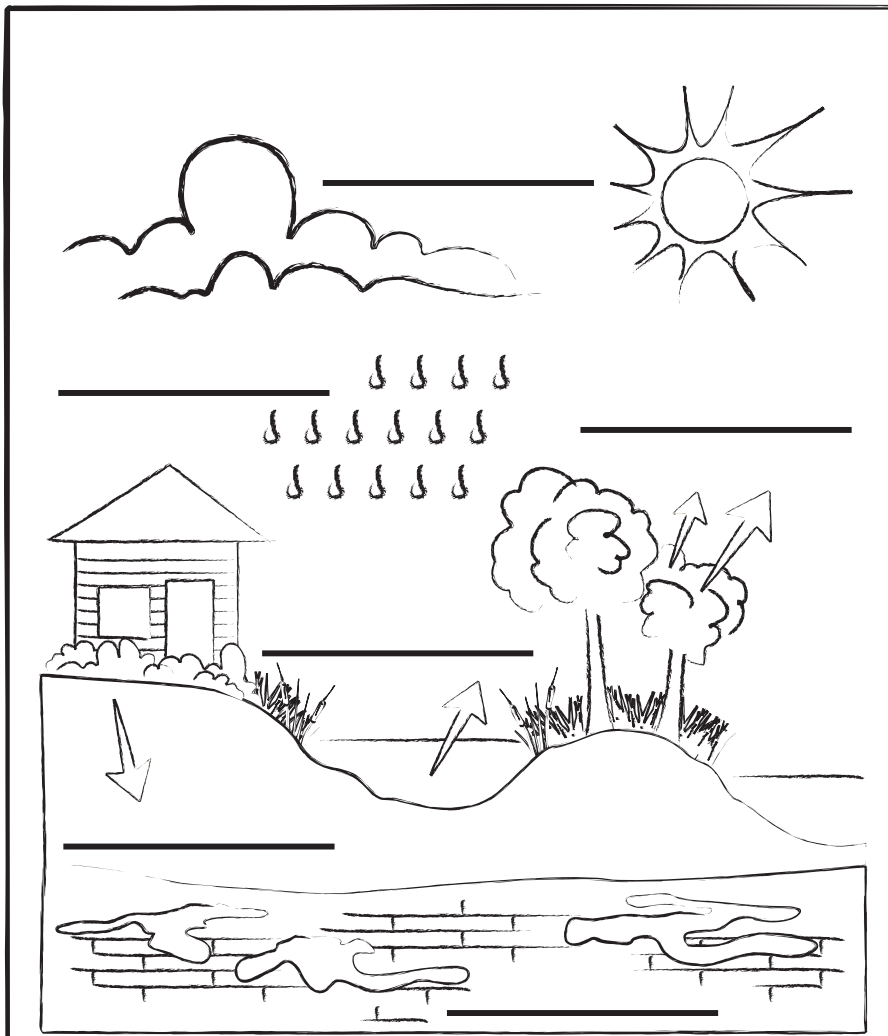
## Watershed Activity:

## The Never-Ending Water Cycle

### Directions:

You have learned that the water in our environment recycles itself over and over again. Study the illustration of the hydrologic cycle below and label each of the parts. Use the chart of the hydrologic cycle on page 4 of the student booklet to help you identify the correct parts of this never-ending cycle. To create a poster, you can color the picture, cut it out and display it on a wall.

## The Hydrologic Cycle

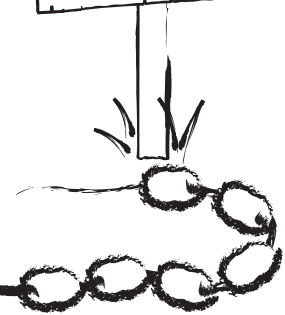




### Excursion Side Trip

## Make Your Own Water Cycle Wristband

Station 2



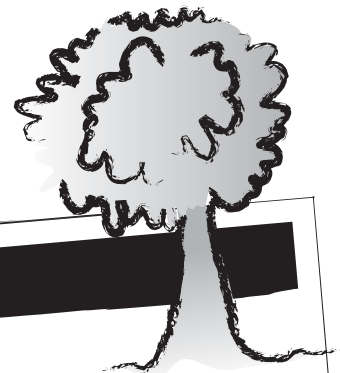
The water cycle is a never-ending process within our environment. The earth's water supply continuously moves from the atmosphere down into the earth's surface and back. By making the wristband, you can gain an even greater appreciation of this wondrous cycle in action.

### Materials:

- Piece of string or thin elastic cord about 9 inches in length
- Six beads representing different features of the cycle
  - yellow.....solar energy
  - clear..... evaporation
  - green.....transpiration
  - white.....condensation
  - blue.....precipitation
  - brown ..... percolation
- Or contact the SWFWMD at 1-800-423-1476, ext. 4612, for a free water cycle wristband kit. You can also order online at [WaterMatters.org/publications/](http://WaterMatters.org/publications/).

### Directions:

1. Using the string or elastic cord, thread the beads to represent the different parts of the cycle. You may place them in any order you like, but here is the order most commonly used: yellow, clear, green, white, blue and brown.
2. Place the string around your wrist and tie it.
3. Rotate the beads around your wrist to see the cycle in action.
4. Describe the water cycle to your family so that they can learn about it too.



### Watershed Factoid

## Did you know that ...

in one year a large oak tree will transpire about 40,000 gallons of water (152,200 liters)? That's a lot of water!

Station 3

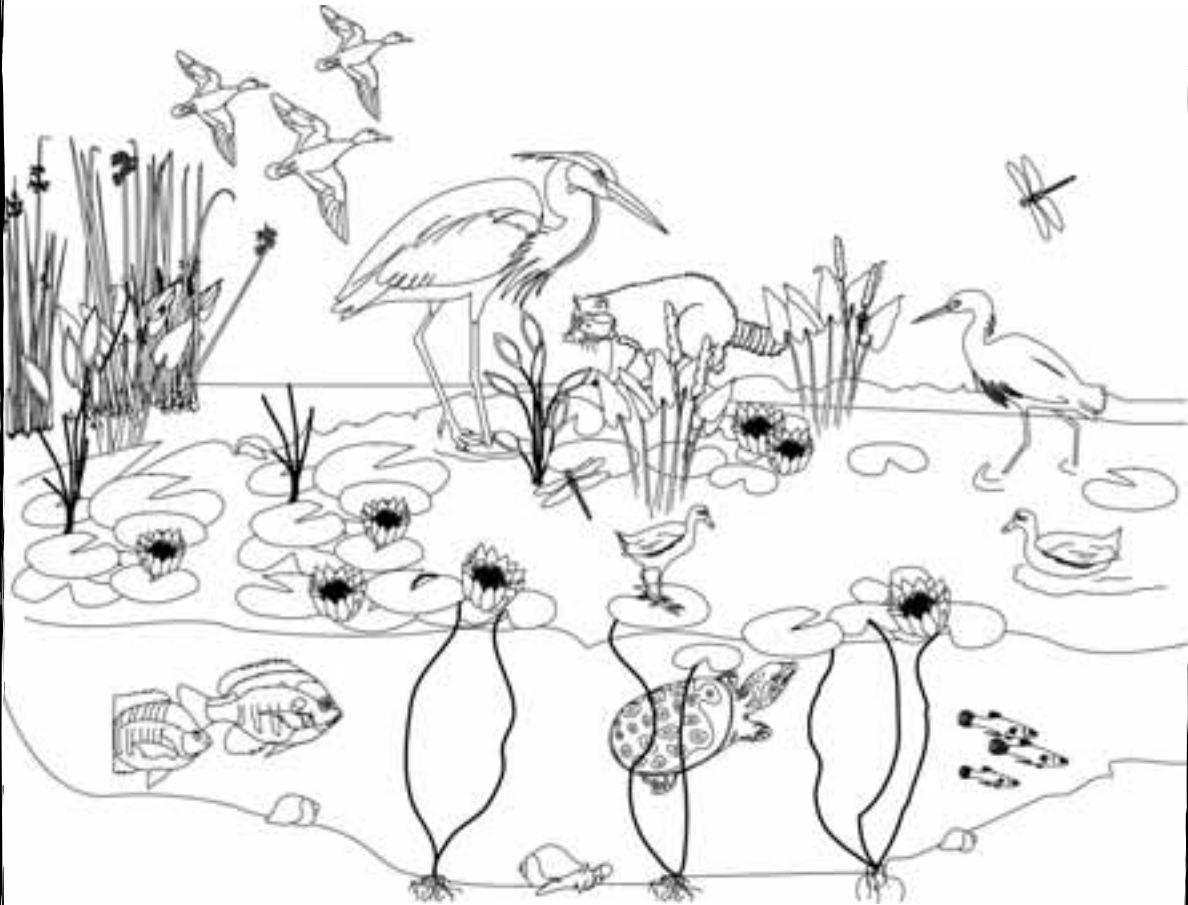
# Watersheds in Our Area

## Watershed Activity: Wetlands Are Wonderful

### Directions:

You have learned that wetlands play a very important role in maintaining a healthy watershed. Use colored pencils or crayons to color the illustration of wetlands. Cut out and display the poster to emphasize how important wetlands are for protecting the quality of our watersheds.

## Wetlands Are Wonderful!



Wetlands are vital to a healthy watershed. They act as reservoirs for storm water and help clean it. They also provide homes and breeding grounds for birds and other wildlife. Wetlands truly are wonderful!





### Excursion Side Trip

## Get Your Watershed Profile



Station 3



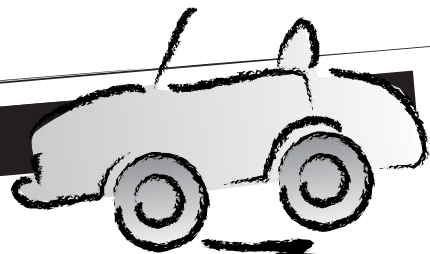
A lot of information about watersheds is available on the Internet. To locate your watershed and get a profile of it, simply follow these steps:

1. Go to the United States Environmental Protection Agency (EPA) web site at [cfpub.epa.gov/surf/locate/map2.cfm/](http://cfpub.epa.gov/surf/locate/map2.cfm/).
2. On the map, click on Florida.
3. Locate your watershed by clicking on the area in Florida where you live.
4. Review the information about your watershed that includes an environmental profile, water, land, people and air.
5. To learn more about watersheds, click on the web site links that are underlined.

### Watershed Factoid

## Did you know that ...

one quart of motor oil can pollute 250,000 gallons of water?  
Help preserve the quality of our water and the natural beauty of a watershed by taking used automobile fluids, such as oil, to a gas station or auto parts store that recycles.



Station 4



# Protecting Our Watersheds

## Watershed Activity: Challenges in My Watershed

### Directions:

Study the list of challenges facing the area's watersheds. Then write a letter describing a few challenges you think may exist in your watershed. Describe actions that could be taken to meet these challenges. Mail the letter to us and we will send you a free gift.

Watershed Manager  
c/o Youth Education  
Communications Department  
Southwest Florida Water Management District  
2379 Broad Street  
Brooksville, FL 34609

Dear Watershed Manager:

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Sincerely,

\_\_\_\_\_  
(Your name)



## Excursion Side Trip

### Water Users



Station 4

Use the following information to create a pie chart that illustrates the different categories of total water withdrawal within the boundaries of the Southwest Florida Water Management District, based on data for 2005. These percentages have been rounded for easier use. Draw conclusions based on the information.

Percent %	Category of Water User
45	Drinking Water
40	Farms & Groves
10	Factories & Mining
5	Golf Courses & Parks

## Watershed Factoid

### Did you know that ...

an average family of four in our area uses almost 500 gallons of water a day? If each family member cut their water use by just 10 percent, the family could save almost 18,250 gallons a year. You can make a difference!



Station 5

# Citizens Get Involved

## Watershed Activity:

## Keep My Neighborhood Clean

### Directions:

Take the following survey to find out if you are helping prevent water pollution in your watershed. For each question, check "Yes" or "No."

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> How many questions did you answer Yes? _____	
<input type="checkbox"/> How many questions did you answer No? _____	

Do you flush household chemicals down the drain?

If you have a pet, do you leave pet waste on your yard instead of disposing of it properly?

Do you use a lot of fertilizers and pesticides on your yard?

Do you litter your neighborhood?

Do you apply chemicals near wells and water bodies?

Do you burn or bury leftover chemicals or their containers?

Do you wash the car with a running hose instead of using a hose with a shutoff nozzle or going to a commercial car wash?

Do you have grass, shrubs and trees that need a lot of water?



How many questions did you answer Yes? \_\_\_\_\_



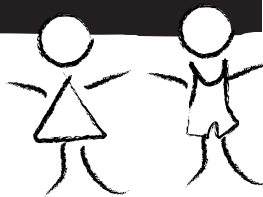
How many questions did you answer No? \_\_\_\_\_

The more questions you answered "No," the more you are helping prevent pollution in your watershed. For each question you answered "Yes," describe how you could improve the situation. Remember, it is up to all of us to keep our watersheds clean.



### Excursion Side Trip

## What Can I Do?



Station 5



There are many ways for citizens to get involved in protecting their watersheds. For information about participating in a shoreline cleanup program called Tampa Bay Beach Buddies, go to the University of South Florida, Department of Marine Science web site at [www.marine.usf.edu/beachbuddies/](http://www.marine.usf.edu/beachbuddies/). The program is designed to help citizens get involved in cleaning Tampa Bay's shorelines. Several links are included at this site.

### Watershed Factoid

## Did you know that ...

when thousands of people visit our bay area beaches, many of them leave behind trash that gets into the marine environment? Examples of this kind of debris include wrappers, cigarette butts, cans, bottles and beach toys such as shovels, pails and beach balls. Encourage people to avoid generating litter.





## Correlation with Sunshine State Standards

The activities presented in the five stations of *Watershed Excursion* and the Teacher's Guide have been correlated to the Sunshine State Standards.

### Station 1: Watershed Basics

#### Watershed Investigations

**Elementary School (3-5).** Science: SC.G.1.2, SC.G.2.2; Language Arts: LA.A.1.2, LA.A.2.2, LA.B.1.2, LA.B.2.2; Social Studies: SS.B.2.2.

**Middle School (6-8).** Science: SC.G.1.3, SC.G.2.3; Language Arts: LA.A.1.3, LA.A.2.3, LA.B.1.3, LA.B.2.3; Social Studies: SS.B.2.3.

#### Excursion Checkpoint

**Elementary School (3-5).** Science: SC.G.1.2, SC.G.2.2; Language Arts: LA.A.1.2, LA.A.2.2.

**Middle School (6-8).** Science: SC.G.1.3, SC.G.2.3; Language Arts: LA.A.1.3, LA.A.2.3.

#### Watershed Activity

**Elementary School (3-5).** Science: SC.G.1.2, SC.G.2.2; Language Arts: LA.A.2.2, LA.B.1.2, LA.B.2.2; Social Studies: SS.B.2.2.

**Middle School (6-8).** Science: SC.G.1.3, SC.G.2.3; Language Arts: LA.A.2.3, LA.B.1.3, LA.B.2.3; Social Studies: SS.B.2.3.

#### Excursion Side Trip

**Elementary School (3-5).** Science: SC.D.1.2, SC.D.2.2, SC.H.1.2, SC.H.2.2; Language Arts: LA.A.2.2; Social Studies: SS.B.2.2; Visual Arts: VA.A.1.2.

**Middle School (6-8).** Science: SC.D.1.3, SC.D.2.3, SC.H.1.3, SC.H.2.3; Language Arts: LA.A.2.3; Social Studies: SS.B.2.3; Visual Arts: VA.A.1.3.

### Station 2: All About Water

#### Watershed Investigations

**Elementary School (3-5).** Science: SC.B.2.2, SC.D.1.2, SC.D.2.2; Language Arts: LA.A.1.2, LA.A.2.2, LA.B.1.2, LA.B.2.2; Social Studies: SS.B.2.2.

**Middle School (6-8).** Science: SC.B.2.3, SC.D.1.3, SC.D.2.3; Language Arts: LA.A.1.3, LA.A.2.3, LA.B.1.3, LA.B.2.3; Social Studies: SS.B.2.3.

#### Excursion Checkpoint

**Elementary School (3-5).** Science: SC.B.2.2, SC.D.1.2, SC.D.2.2; Language Arts: LA.A.1.2, LA.A.2.2.

**Middle School (6-8).** Science: SC.B.2.3, SC.D.1.3, SC.D.2.3; Language Arts: LA.A.1.3, LA.A.2.3.

#### Watershed Activity

**Elementary School (3-5).** Science: SC.D.1.2, SC.H.2.2; Language Arts: LA.A.2.2.

**Middle School (6-8).** Science: SC.D.1.3, SC.H.2.3; Language Arts: LA.A.2.3.

#### Excursion Side Trip

**Elementary School (3-5).** Science: SC.D.1.2, SC.H.2.2; Language Arts: LA.A.2.2; Social Studies: SS.B.1.2; Visual Arts: VA.A.1.2.

**Middle School (6-8).** Science: SC.D.1.3, SC.H.2.3; Language Arts: LA.A.2.3; Social Studies: SS.B.1.3; Visual Arts: VA.A.1.3.

### Station 3: Watersheds in Our Area

#### Watershed Investigations

**Elementary School (3-5).** Science: SC.D.1.2, SC.D.2.2, SC.G.1.2; Language Arts: LA.A.1.2, LA.A.2.2, LA.B.1.2, LA.B.2.2; Social Studies: SS.B.1.2, SS.B.2.2.

**Middle School (6-8).** Science: SC.D.1.3, SC.D.2.3, SC.G.1.3; Language Arts: LA.A.1.3, LA.A.2.3, LA.B.1.3, LA.B.2.3; Social Studies: SS.B.1.3, SS.B.2.3.

#### Excursion Checkpoint

**Elementary School (3-5).** Science: SC.D.1.2, SC.D.2.2, SC.G.1.2; Language Arts: LA.A.1.2, LA.A.2.2.

**Middle School (6-8).** Science: SC.D.1.3, SC.D.2.3, SC.G.1.3; Language Arts: LA.A.1.3, LA.A.2.3.

#### Watershed Activity

**Elementary School (3-5).** Science: SC.D.1.2, SC.D.2.2, SC.G.1.2, SC.G.2.2; Language Arts: LA.A.2.2.

**Middle School (6-8).** Science: SC.D.1.3, SC.D.2.3, SC.G.1.3, SC.G.2.3; Language Arts: LA.A.2.3.

#### Excursion Side Trip

**Elementary School (3-5).** Language Arts: LA.A.1.2, LA.A.2.2; Social Studies: SS.B.1.2.

**Middle School (6-8).** Language Arts: LA.A.1.3, LA.A.2.3; Social Studies: SS.B.1.3.

### Station 4: Protecting Our Watersheds

#### Watershed Investigations

**Elementary School (3-5).** Science: SC.D.2.2, SC.G.1.2; Language Arts: LA.A.1.2, LA.A.2.2, LA.B.1.2, LA.B.2.2; Social Studies: SS.B.2.2, SS.C.1.2, SS.C.2.2, SS.D.1.2.

**Middle School (6-8).** Science: SC.D.2.3, SC.G.1.3; Language Arts: LA.A.1.3, LA.A.2.3, LA.B.1.3, LA.B.2.3; Social Studies: SS.B.2.3, SS.C.1.3, SS.C.2.3, SS.D.1.3.

#### Excursion Checkpoint

**Elementary School (3-5).** Science: SC.D.2.2, SC.G.1.2; Language Arts: LA.A.1.2, LA.A.2.2; Social Studies: SS.C.1.2, SS.C.2.2, SS.D.1.2.

**Middle School (6-8).** Science: SC.D.2.3, SC.G.1.3; Language Arts: LA.A.1.3, LA.A.2.3; Social Studies: SS.C.1.3, SS.C.2.3, SS.D.1.3.

#### Watershed Activity

**Elementary School (3-5).** Language Arts: LA.A.2.2, LA.B.1.2, LA.B.2.2; Social Studies: SS.C.2.2.

**Middle School (6-8).** Language Arts: LA.A.2.3, LA.B.1.3, LA.B.2.3; Social Studies: SS.C.2.3.

#### Excursion Side Trip

**Elementary School (3-5).** Mathematics: MA.A.1.2, MA.A.4.2, MA.B.1.2, MA.C.1.2.

**Middle School (6-8).** Mathematics: MA.A.1.3, MA.A.4.3, MA.B.1.3, MA.C.1.3.

### Station 5: Citizens Get Involved

#### Watershed Investigations

**Elementary School (3-5).** Science: SC.D.2.2, SC.G.1.2; Language Arts: LA.A.1.2, LA.A.2.2, LA.B.1.2, LA.B.2.2; Social Studies: SS.B.2.2, SS.C.2.2.

**Middle School (6-8).** Science: SC.D.2.3, SC.G.1.3; Language Arts: LA.A.1.3, LA.A.2.3, LA.B.1.3, LA.B.2.3; Social Studies: SS.B.2.3, SS.C.2.3.

#### Excursion Checkpoint

**Elementary School (3-5).** Science: SC.D.2.2, SC.G.1.2; Language Arts: LA.A.1.2, LA.A.2.2.

**Middle School (6-8).** Science: SC.D.2.3, SC.G.1.3; Language Arts: LA.A.1.3, LA.A.2.3.

#### Watershed Activity

**Elementary School (3-5).** Science: SC.D.2.2, SC.G.1.2, SC.G.2.2; Language Arts: LA.A.2.2; Social Studies: SS.C.2.2, SS.D.1.2.

**Middle School (6-8).** Science: SC.D.2.3, SC.G.1.3, SC.G.2.3; Language Arts: LA.A.2.3; Social Studies: SS.C.2.3, SS.D.1.3.

#### Excursion Side Trip

**Elementary School (3-5).** Language Arts: LA.A.1.2, LA.A.2.2; Social Studies: SS.C.2.2, SS.D.1.2.

**Middle School (6-8).** Language Arts: LA.A.1.3, LA.A.2.3; Social Studies: SS.C.2.3, SS.D.1.3.

# Watershed Excursion Challenge

**Directions:** This is your opportunity to demonstrate what you have learned about watersheds. It is also an opportunity for you to practice answering questions similar to those found on the FCAT. Do your best and meet the challenge!

**For each multiple-choice item, select the best answer**

1. During your excursion, you have learned a lot about living in a watershed. What is a watershed?
  - a. area of land that water flows across as it moves toward a larger water body
  - b. area of land from which water drains to a particular water body
  - c. moisture released from clouds in the form of rain, snow, hail, etc.
  - d. both a and b
2. Much of Florida's landscape is "karst" terrain. Which one below does NOT belong in a list of its features?
  - a. sinkholes   b. mountains   c. springs   d. caves
3. What is surface water?
  - a. water that has not seeped into the ground and is exposed to the air
  - b. water that is under the ground in the Floridan aquifer
  - c. water that runs through the pipes in our homes
  - d. water that is at the bottom of a well
4. Which one below is NOT an example of a freshwater body of water?
  - a. lakes   b. rivers   c. ponds   d. oceans
5. Wetlands play an important role in watersheds. What is a wetland?
  - a. an area of land that is wet at least part of the year
  - b. an area of land where few plants and animals can live
  - c. an area of salt water where whales can be found
  - d. a very dry area of land
6. Which one below does NOT belong in a list of characteristics about a wetland?
  - a. It acts as a reservoir for stormwater runoff.
  - b. It contributes to flooding.
  - c. It helps to filter pollution from water.
  - d. It may include ponds, marshes and swamps.
7. Which statement is TRUE about the hydrologic cycle?
  - a. The hydrologic cycle occurs only once each year.
  - b. Evaporation is the downward movement of water through the ground.
  - c. All the water in our environment recycles itself over and over again.
  - d. The moon is the energy source that causes the water to move through the cycle.
8. Choose the BEST reason for protecting the health and well-being of our watersheds?
  - a. So that more sinkholes can be formed.
  - b. So that our children and our children's children can live in a healthy watershed.
  - c. So that residential and industrial areas are no longer developed.
  - d. So that there are fewer plants and animals living in an area.
9. Which of the following statements does NOT belong in a list about water pollution?
  - a. Most water pollution is caused by the activities of humans.
  - b. Pollution that flows from pipes is an example of point-source pollution.
  - c. Water pollution is rarely caused by the activities of humans.
  - d. Trash, pesticides and fertilizers are examples of pollutants.
10. The future of our watersheds depends on all of us working together. How can citizens get involved?
  - a. by volunteering their time on environmental projects
  - b. by helping to organize a neighborhood cleanup
  - c. by teaching others about the importance of keeping their watershed healthy
  - d. all of the above

1.

Read
Think
Explain

You have learned that no matter where you live, you live in a watershed. Describe three ways that you could teach others about watersheds. One way might be to take someone on a walk and make a list of the living and nonliving things that were observed.

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2.

Read
Think
Explain

List several ways your friends and neighbors could help to protect their watershed. Support your answer with details and information you learned from *Watershed Excursion*.

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This information will be made available in accessible formats upon request. Please contact the Communications Department at (352) 796-7211 or 1-800-423-1476 (FL only), ext. 4757; TDD only at 1-800-231-6103 (FL only).