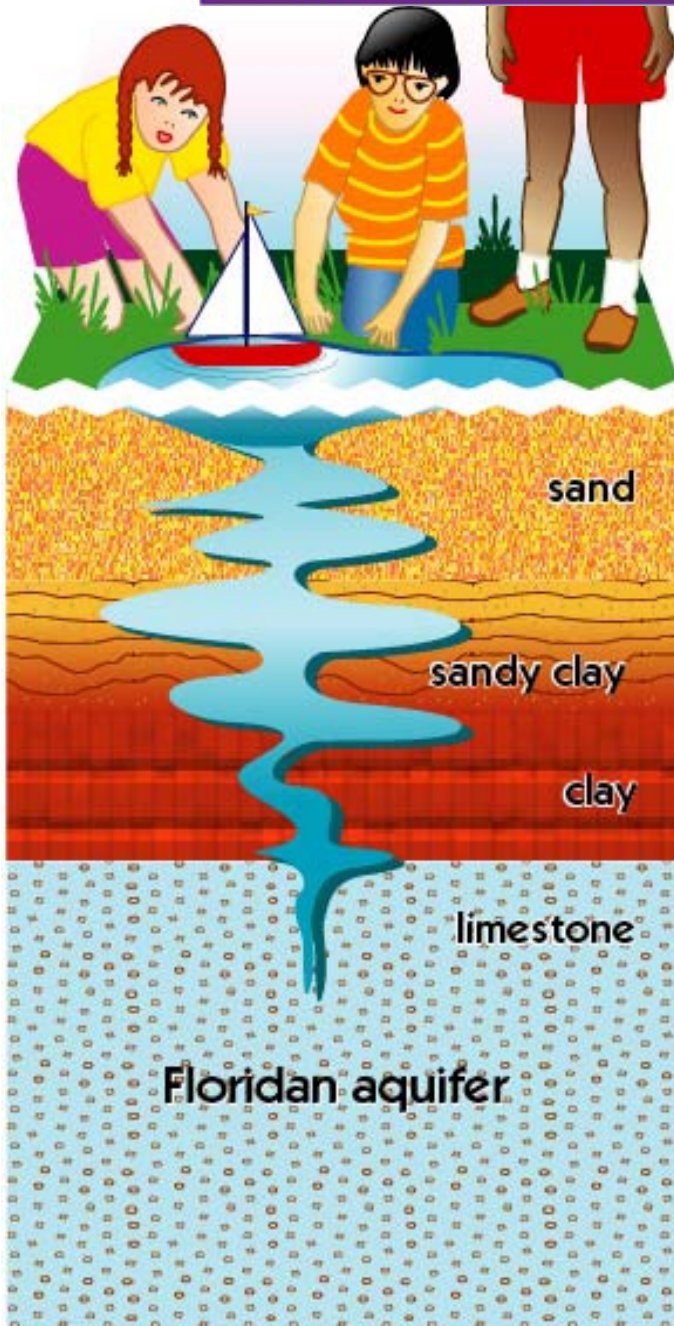


WATERDROPS

Ground Water Issue

A Southwest Florida Water Management District, Water Resources Newsletter



Hello Readers!

This issue of *WaterDrops* is on the subject of ground water. Whether you know it or not, if you are outside, you are probably standing on top of ground water right now! Ground water lies almost everywhere beneath the Earth's surface. Ground water is very important to us. To help you learn more about ground water, we have included a feature story, articles, activities and games. When you finish this issue, we hope that you will teach others about ground water and why we need to protect it.

In other issues of *WaterDrops*, you'll learn more about how important water is to us. Don't forget to send in the activity on the back page for a free game called *Stormwater Consequences!*

Happy Splashing!



Splash! is a program available from the Southwest Florida Water Management District. Splash! helps us learn about our water resources. Let's help protect our water supply now and in the future.



Water Drips & Drops

Feature Story

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Feature Story

AN ADVENTURE IN THE AQUIFER

Cindy leaned on her bed pillow as she read about divers who swim through caves in an aquifer. At school, Cindy's class was learning about aquifers. She was planning to write about the Floridan aquifer, which is the largest and deepest aquifer in Florida.

Here are a few facts that she learned about the Floridan aquifer:

- It is the largest and deepest aquifer in Florida.
- It stretches 82,000 square miles beneath Florida and parts of Alabama, Georgia and South Carolina.
- It is made up mostly of limestone, which acts as a sponge to hold [water](#).
- It contains about 1 quadrillion (1,000,000,000,000,000) gallons of fresh [water](#).
- The holes in the rock allow [water](#) to flow freely through it.
- Rocks that dissolve from acidic [water](#) can cause caves and sinkholes.

"It's time to turn off your light and go to sleep," called Cindy's mother from another room.

"May I please have a few more minutes, Mom?" asked Cindy. She finished reading about how divers put on their fins, masks and oxygen tanks that helped them breathe under [water](#) and jumped into the springs connected to the aquifer. Wow, thought Cindy. I sure would like to swim through the pockets of limestone that hold our ground [water](#). It would be really cool.

Cindy closed the book and turned off her light. Within a few minutes, she was fast asleep and began to dream...

Cindy dreamed that she was an [underwater](#) photographer. She was assigned to take pictures of other divers in the Floridan aquifer. To prepare for her assignment, she had to learn a lot because swimming in [underwater](#) caves can sometimes be dangerous.

Cindy felt very lucky to have the assignment because Florida is one of the few places in the world where divers can go exploring in an aquifer system. As she jumped into the spring, she could feel the force of fresh [water](#) on her mask. Cindy swam deeper and deeper. She noticed how the limestone



rock of the aquifer really did look like a sponge. This is amazing, she thought to herself. She began taking pictures of the rocks and fish that surrounded her. She could feel the movement of fresh water flowing freely through the holes of the limestone. She clicked her camera several times as schools of big and small fish swam through the different pockets in the underwater cave system. Just as she entered another part of the aquifer, she heard her mother's voice and a knock on her bedroom door.

"It's time to wake up, Cindy," said Mother. "You don't want to be late for school."

Cindy rolled over and slowly opened her eyes. Wow, that was quite a dream, she thought to herself. Cindy decided that she would write about her dream as part of her school project. Maybe when I grow up I will have a job that is as cool as the one I dreamed about, she thought, as she got ready for school.

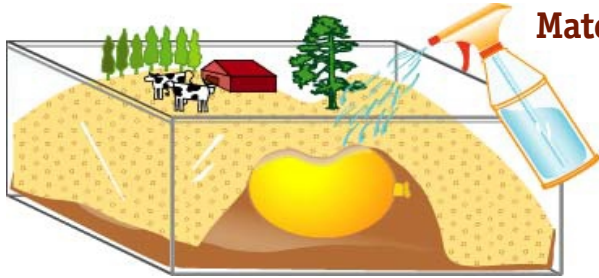


Pretend that you have the opportunity to dive into the Floridan aquifer. Write about your experience. Be sure to include a few of the facts about the Floridan aquifer in your story.

Take It Home

Make Your Own Sinkhole — a sinkhole is a collapsed underground space caused when bedrock erodes and dissolves from acidic **water**.

Here is an easy experiment that you can do at home.



- Materials**
- shoebox or other container
 - small balloon
 - sand or dirt
 - spray bottle of **water**
 - straight pin
 - miniature homes, trees, farm animals, etc.

Directions

1. Fill the bottom of the container with a few inches of dirt or sand.
2. Blow up the balloon and lay it on the surface.
3. Completely cover the balloon with damp dirt or sand.
4. Place miniature pieces on surface.
5. Dampen the surface by spraying **water** on it.
6. Pop the balloon and observe the results. (If the model doesn't collapse, continue spraying **water** on the surface.)

You have caused a sinkhole to develop! Take notes on what you observed in this experiment. What happened to the surface after you popped the balloon? What happened to the miniature pieces? Share your findings with your class.



Ask Water Cycle Wanda

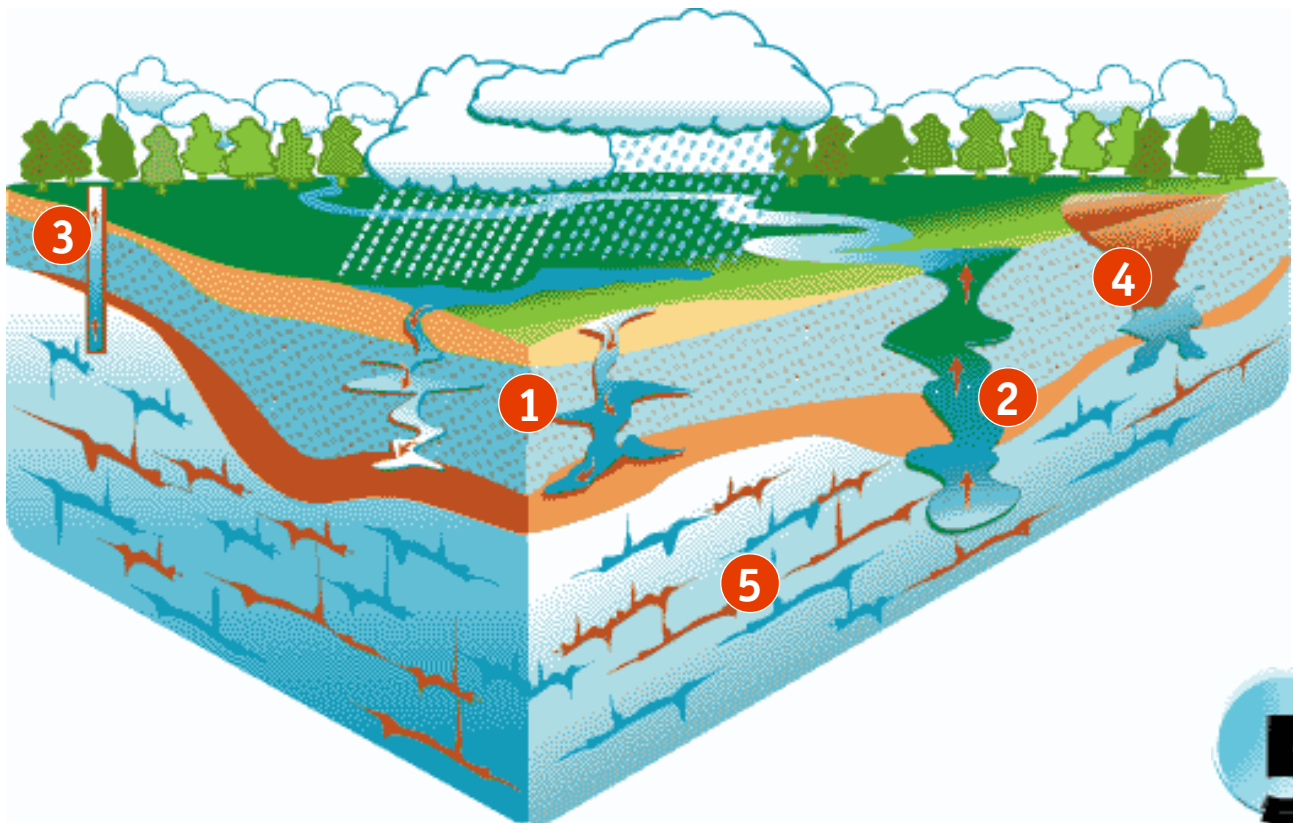
Wally asks: My friend says that the reason we have lots of sinkholes and springs is because we live in a karst area? What does *karst* mean?

Water Cycle Wanda: Your friend is right. A karst landform comes about when parts of the underlying bedrock dissolve because of acidic **water** passing through it. The bedrock is made up of mostly limestone. Much of Florida has a karst landform. This is why we also have many springs and sinkholes. A spring is where ground **water** flows out of a natural opening in the Earth's surface. A sinkhole is a collapsed underground space caused when bedrock erodes and dissolves from acidic **water**. Try the experiment on this page to learn more about sinkholes.

WATER ACTION UNDER THE GROUND

Did you know that there is a lot of **water** action taking place under the Earth's surface? **Water** is constantly moving through different underground areas. Study the picture below that shows what happens to **water** under the ground. Then draw a line from the vocabulary words to the correct numbers in the picture below.

- 1** **percolation** movement of the **water** through the ground
- 2** **spring** area where ground **water** flows out of a natural opening in the Earth's surface
- 3** **well** a hole drilled into the aquifer so that ground **water** can be brought to the surface
- 4** **sinkhole** a collapsed underground space caused when bedrock erodes and dissolves from acidic **water**
- 5** **aquifer** underground layer of sponge-like rock that holds **water**



Water in Our World

KEEPING OUR UNDERGROUND WATER HEALTHY



We have all probably seen surface lakes, rivers, streams and ponds that are polluted. But did you know that underground **water** areas can also become polluted? There are many different kinds of materials that can cause our ground **water** to become unhealthy. Materials such as pesticides and fertilizers, septic tank seepage and storm**water** runoff can pollute ground **water**.

Think about your neighborhood. List several suggestions that people can follow to help avoid polluting our ground **water**.

Fill-in-the-blank

Complete each sentence by writing the correct word.

Materials that cause our **water** to become _____ are called pollutants.

There are many things that _____ can do to avoid being ground**water** polluters.

Pesticides, fertilizers and _____ runoff are examples of materials that can pollute our ground **water**.



WORD SEARCH

Can you find these words?

Word Bank

clean

karst

percolation

pollution

resource



Word Bank

sinkhole

spring

underground

water

well

WATER WORDS

Unscramble the following groups of letters to form **water** words. Then use these words to tell a **water** story.

stark _____

qufaier _____

kinsloeh _____

stomenile _____

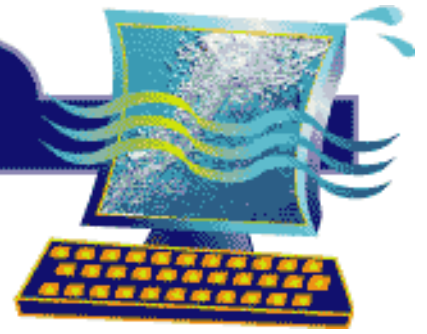
gonesp _____

pisnrgs _____

Answers to *WaterDrops* activities are printed in the Teacher's Guide. View the Teacher's Guide and other *WaterDrops* issues at the Information & Education section at: www.swfwmd.state.fl.us, or request a copy by calling 1-800-423-1476, ext. 4757 (Florida only).



What's Wet on the Web!



Are you ready to learn more about ground **water**? Surf this general site: www.groundwater.org

Click on **Kids Corner**. Then surf these two areas:

- **What is Ground Water?**
- **Cool Groundwater Activity**

Visit www.swfwmd.state.fl.us to learn more about **water** resources in west-central Florida.



FIND THE HIDDEN WATER MESSAGE

1= a	14= n
2= b	15= o
3= c	16= p
4= d	17= q
5= e	18= r
6= f	19= s
7= g	20= t
8= h	21= u
9= i	22= v
10= j	23= w
11= k	24= x
12= l	25= y
13= m	26= z

20 8 5 6 12 15 18 9 4 1 14 1 17 21 9 6 5 18

3 15 14 20 1 9 14 19 15 21 18 16 18 5 3 9 15 21 19

4 18 9 14 11 9 14 7 23 1 20 5 18



Mail your message to us! We will send you a *Stormwater Consequences* game!

Name _____

Address _____

City _____ State _____ ZIP _____

Phone _____ County _____

School _____ Teacher _____ Grade _____

Send to: **In-School Education**
Communications and Community Affairs Department
 Southwest Florida **Water** Management District
 2379 Broad Street
 Brooksville, FL 34604-6899



If a disabled individual wishes to obtain the information contained in this document in another form, please contact the Communications and Community Affairs Department at (352) 796-7211, extension 4757; TDD only 1-800-231-6103 (FL); fax: (352) 754-6883; Suncom 628-4150 or visit our Web site on the World Wide Web at water.swfwmd.state.fl.us

Southwest Florida
 Water Management District

