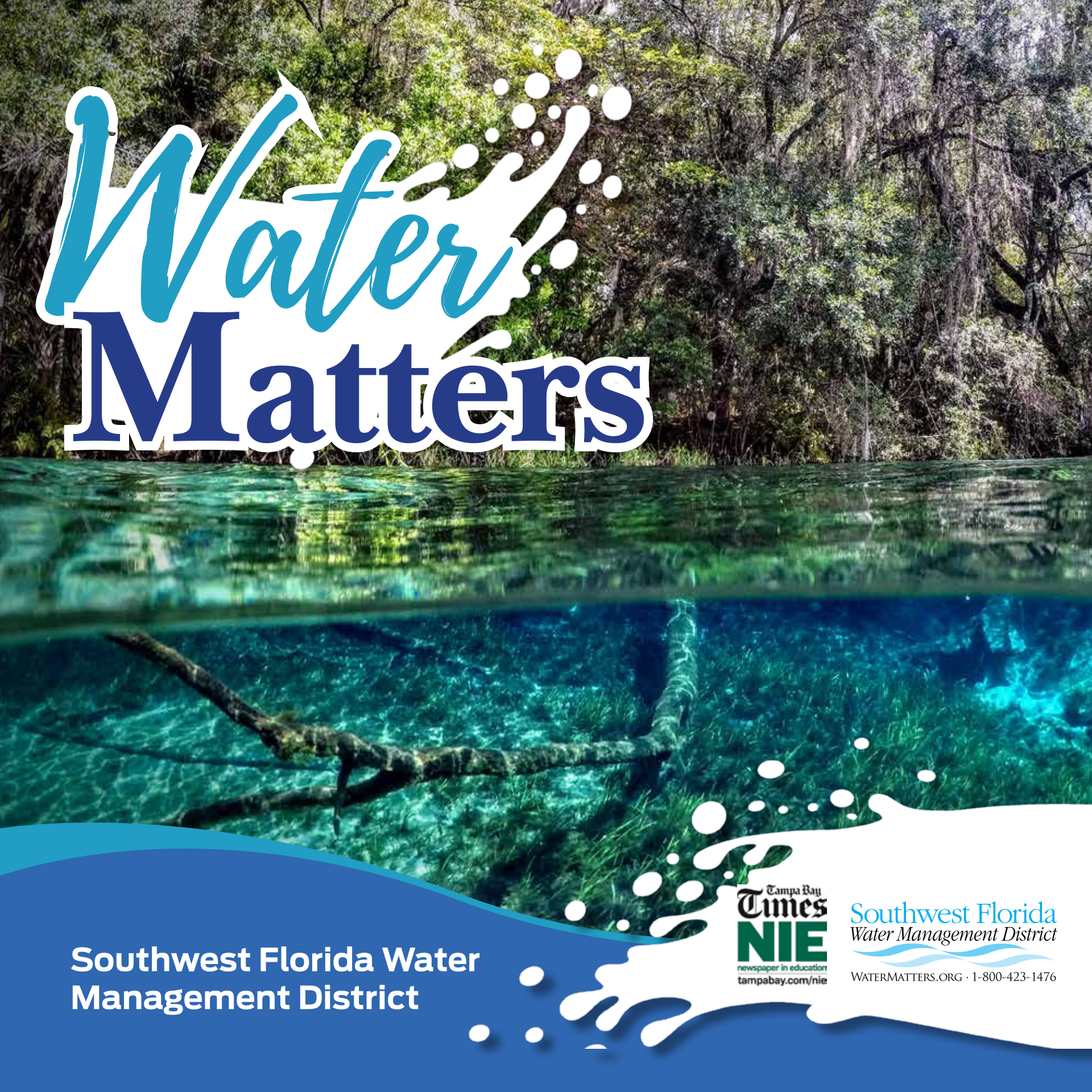

Southwest Florida Water Management District

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Southwest Florida Water Management District

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Southwest Florida Water Management District

A thirst for water

Freshwater is an essential part of human life. We rely on freshwater for drinking, cooking, agriculture, recreation, businesses and more! With more than 328 million people, the population of the United States has doubled over the past 50 years, while our thirst for water has tripled, according to the Environmental Protection Agency. With nearly 21.5 million residents, Florida's population is on the rise as well. At least 40 states anticipate water shortages by 2024, making the need to conserve water very important.

Sources: U.S. Environmental Protection Agency; U.S. Census Bureau

The necessity of conservation

To conserve water means to use it wisely and to not be wasteful. Water conservation is important to meet our current and future water needs as humans, as well as the needs of plants, animals and the environment! In west-central Florida, more than 90 percent of our freshwater supply comes from groundwater, most commonly the Floridan Aquifer. An aquifer is an underground layer of spongelike rock that holds water. Other natural freshwater sources include surface waters, such as lakes, rivers or ponds. Both surface and groundwater supplies are primarily recharged by rainfall. As you read this publication, you'll learn more about how the water cycle impacts our water supply, along with facts about the Floridan aquifer, our amazing springs and more!

Florida's Water Management Districts

There are five water management districts throughout the state of Florida that are responsible for managing the state's water resources as directed by state law. The Southwest Florida Water Management District (District) manages the water resources for west-central Florida in all or part of 16 counties. The mission of the District is to ensure the public's water needs are met, protect our water resources and minimize flood risks. As a resident of west-central Florida, you play a very important role in helping the District achieve its mission!

Sources: Southwest Florida Water Management District

Be creative

Using the model of the hydrologic cycle, create a 3-D version of the cycle. Create your model to show others how the hydrologic cycle works.

Working together

As the number of people moving to Florida continues to grow, that means there will be more people who need to share the water that is available.

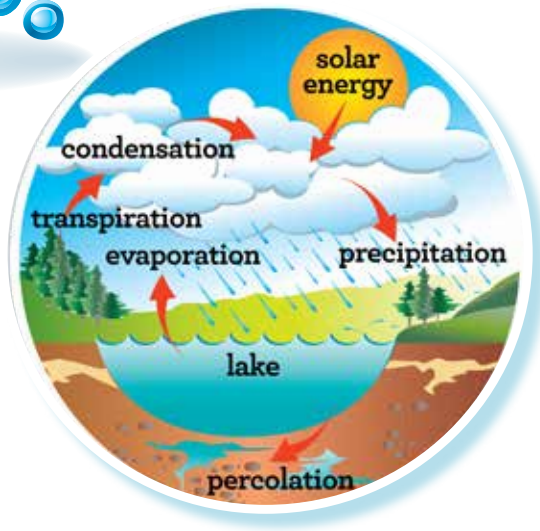
Water conservation will help us to make sure we have enough clean, safe water for the future. To do this, state agencies, local water utilities, businesses and residents will all need to work together!

Source: Southwest Florida Water Management District

Where the rain goes

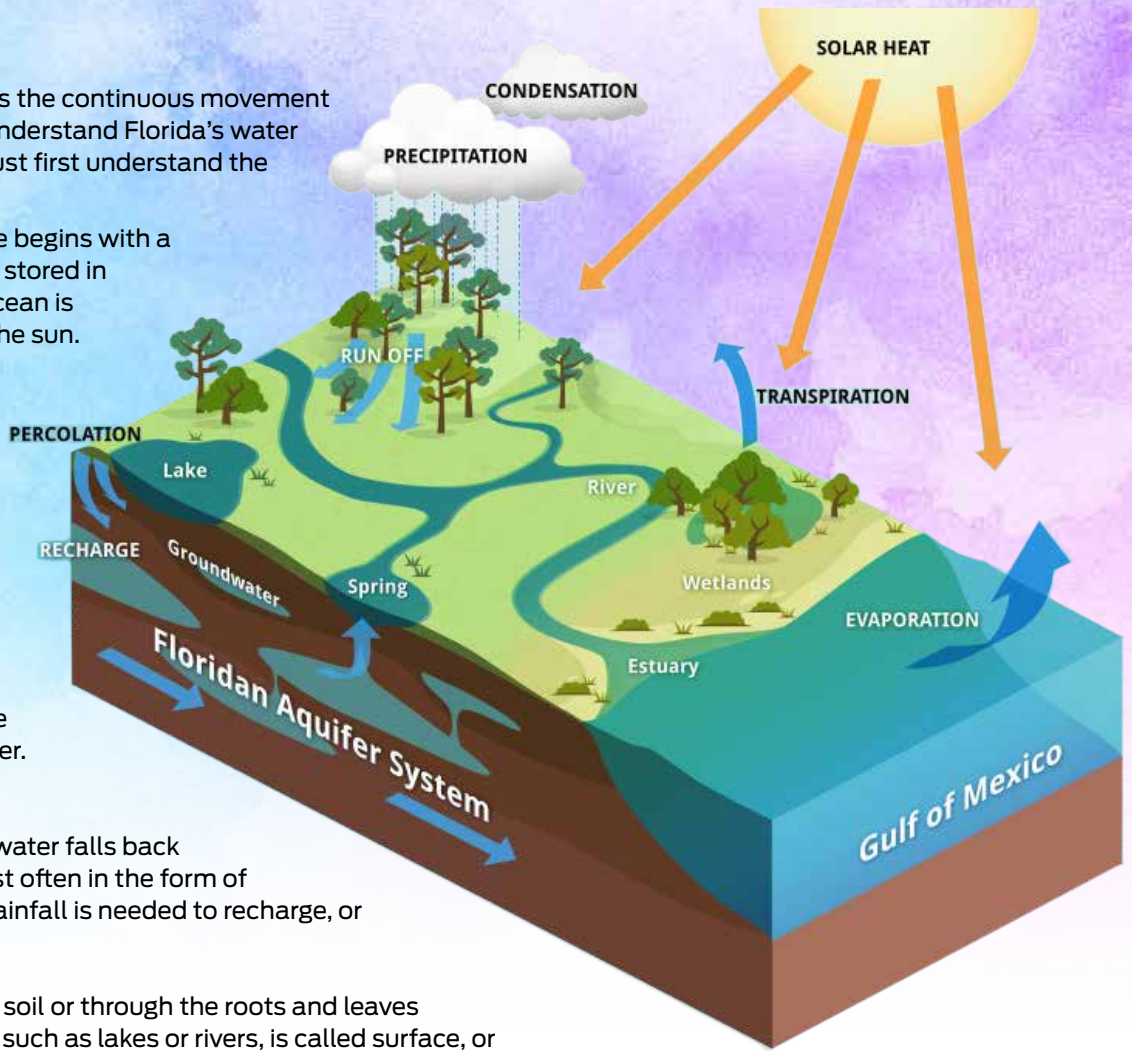
Although west-central Florida receives an average of 53 inches of rainfall a year, only 2 to 40 percent of that will percolate down into the ground to help recharge the aquifer. Most of the rainfall we receive either returns to the atmosphere through evaporation or transpiration, or runs off of the land into surface water bodies and the ocean. In fact, did you know that about 97 percent of the water on Earth is found in our oceans? While oceans are important, they are filled with saltwater, which we cannot use for drinking or for our daily needs. Of the small portion of the Earth's water that is freshwater, most of it is frozen in glaciers, leaving only 1/100 of all the water on Earth available for use by people, animals, and plants!

Source: United States Geological Survey



The water cycle

The water cycle, also called the hydrologic cycle, describes the continuous movement of water above, on, and below the surface of the Earth. To understand Florida's water resources and the importance of water conservation, we must first understand the water cycle and its impact on water availability.



- **Evaporation** – Water's journey through the water cycle begins with a process called evaporation. Evaporation is when water stored in surface bodies of water, such as lakes, rivers and the ocean is changed from a liquid into water vapor by the heat of the sun.

- **Transpiration** – Similar to evaporation, water is released into the atmosphere by trees and plants in a process called transpiration. Plants absorb water from the soil through their roots and then transpire this water back into the atmosphere through their leaves and stems. About 70 percent of all rainfall returns to the atmosphere in the form of evaporation and transpiration.

- **Condensation** – Condensation is when water vapor from evaporation and transpiration rises and meets the colder air higher in the sky, forming tiny droplets of water. These water droplets stick together to make clouds.

- **Precipitation** – When clouds become full and heavy, water falls back to Earth as precipitation. In Florida, precipitation is most often in the form of rain, but precipitation can also be snow, sleet or hail. Rainfall is needed to recharge, or refill, underground aquifers.

- **Runoff** – Rainfall that is not absorbed directly into the soil or through the roots and leaves of plants, or accumulated into existing bodies of water such as lakes or rivers, is called surface, or stormwater, runoff.

- **Percolation** – Rainfall seeps underground through a process called percolation, when water travels downward through the tiny spaces between rocks and soil particles, and within the structure of the limestone. The water eventually saturates the underlying limestone in much the same way water fills the tiny holes of a sponge.

Source: Florida Department of Environmental Protection

GOING BEYOND the text

We can work it out

We all need to work together to protect our environment. Conserving water, recycling and protecting our wildlife are important for the future of Earth. Look for articles in the *Tampa Bay Times* that show or focus on examples of people, groups or organizations that are working to protect the environment. Make a list of those involved and the actions they are taking. Select one of the environmental groups or issues you have read about and do some research about it. Then think about what actions you can take to protect the environment. Share your ideas and what you have learned by writing a blog post or short essay that incorporates the information you have learned.

From ground to faucet

With groundwater providing the majority of the public water supply in Florida, you may be wondering how we get water from underground aquifers into our homes. This is done using wells. A well is a hole drilled into the aquifer that can be used to pump groundwater up to the surface. Think of a well like a giant straw that is put into the Earth to suck water up. In Florida, there are thousands of wells that pump water from five major aquifers or aquifer systems.

The Floridan aquifer system, which lies under the entire state and is the largest aquifer in Florida, is the major source of our groundwater supply used for drinking, household needs, irrigation and more. In the far western panhandle and in southern Florida, the Floridan aquifer system is deep and produces salty and mineralized water. In these areas, the shallower Sand-and-Gravel Aquifer in the west, and the Biscayne Aquifer in the south, are used for water supply.

Surficial and intermediate aquifer systems are not as deep as the Floridan aquifer and hold less water. These types of aquifers are used for households and smaller public supply wells. Intermediate aquifer systems are located in between the surficial aquifers that are close to the Earth's surface, and the deeper Floridan aquifer. Here, clay layers slow the movement of water as it flows underground.

The Florida Department of Environmental Protection defines the Floridan aquifer as "one of the highest producing aquifers in the world." It stretches 100,000 square miles beneath Florida and parts of Alabama, Georgia, and South Carolina. This aquifer system is made up of limestone and dolomite, which thickens from about 250 feet in Georgia to about 3,000 feet in south Florida.

Source: Florida Department of Environmental Protection

Floridan aquifer system

The Floridan aquifer system has been divided into the Upper Floridan aquifer and Lower Floridan aquifer. The bottom of the Upper Floridan aquifer is made of impermeable rock that water cannot easily flow through. This separates the water in the upper aquifer from water in the lower aquifer. In other words, water becomes trapped in these lower aquifers. The Upper Floridan aquifer is the primary source of water supply in most of north and central Florida. In the southern portion of the state, the aquifer is deeper and contains brackish, or slightly salty water. This aquifer has been used for the injection of sewage and industrial waste. The Floridan aquifer is the source of many springs in Florida and is also connected to other surface water bodies.

Source: Florida Department of Environmental Protection

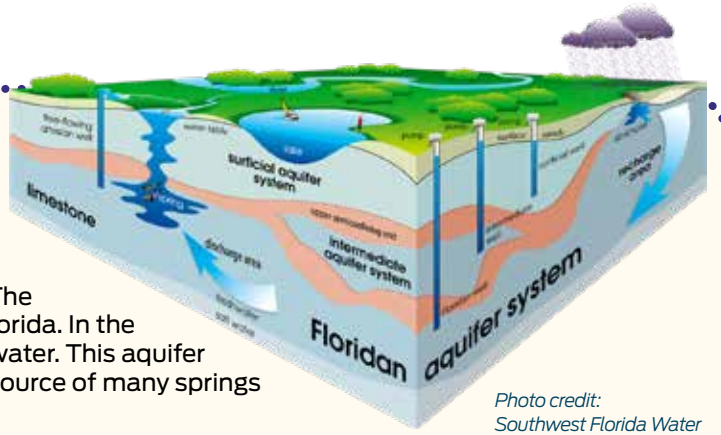


Photo credit: Southwest Florida Water Management District

Karst terrain

To better understand how the water cycle replenishes Florida's aquifers and surface water bodies, let's learn more about the landform that makes it possible. Much of Florida is composed of "karst" landforms. Karst terrain is a land surface produced when bedrock — mostly limestone in Florida — dissolves slowly over time as acidic rainwater passes through it. Karst terrain is characterized by springs, sinkholes, caverns and disappearing streams.

Florida's limestone bedrock is honeycombed with underground fractures, cavities and tunnels that allow water to move easily through them and into the aquifer. Water stored in the Floridan aquifer system provides 80 percent of the water supply in west-central Florida.

Florida residents depend on groundwater and the environment does, too. Weather conditions, such as a drought or a steady decline in rainfall, can reduce the amount of water available to refill groundwater or maintain the minimum water levels and flows required by surface water bodies. Too little water can have negative impacts on an area's ecology and recreational opportunities.

Source: Southwest Florida Water Management District

Groundwater under pressure

A spring is a natural opening in the ground where water flows directly from the aquifer to the Earth's surface. The source of this freshwater is seasonal rainfall that soaks into the ground, which is referred to as groundwater.

Springs form when groundwater is under pressure and flows up through an opening called a spring vent, supplying water flow to a river or other water body. Springs are vital headwaters, the upper tributaries, of many local rivers. Springs are unique water resources that provide natural, recreational and economic benefits. For thousands of years people have been attracted to the natural beauty and habitat of these ecosystems.

Springs in west-central Florida are supplied from groundwater in the Upper Floridan aquifer — the same aquifer that provides most of the region's drinking water. However, these spring systems have been changing for nearly a century due to increases in nutrients, loss of habitat, increases in salinity and a decline in rainfall since the 1960s.

It is important to learn what we can do to help protect and restore these natural treasures. There are four attributes that make up a healthy spring. They are fish and wildlife, water flow, water clarity and aquatic vegetation.

Source: Southwest Florida Water Management District

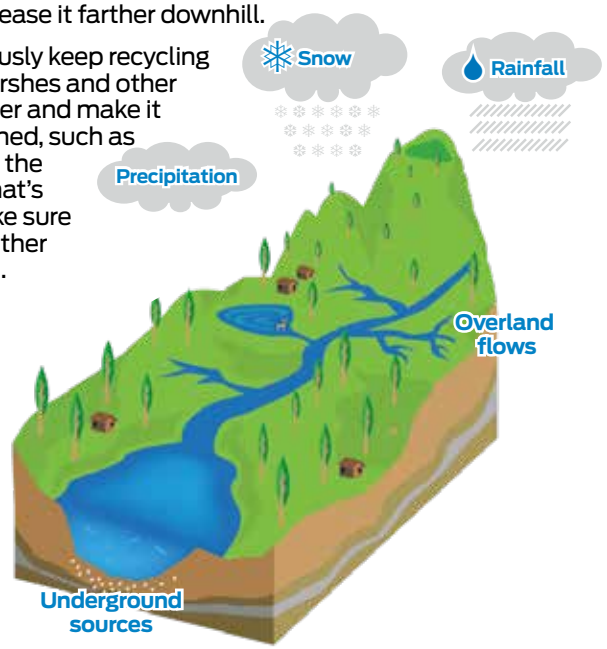
The flow of water

Land is very important to the water cycle. A watershed is any area of land that water flows across or through. Water in a watershed trickles and flows toward a common body of water, such as a stream, river, lake or coast. Watersheds capture water, store it and eventually release it farther downhill.

Healthy watersheds continuously keep recycling clean, fresh water. Swamps, marshes and other wetlands can filter polluted water and make it cleaner. Other parts of a watershed, such as streams, groundwater and even the beach, are important as well. That's one reason why we need to make sure to leave enough wetlands and other natural areas in each watershed.

Sometimes it's tricky to balance the needs of people with the needs of their watershed, but we must try to keep that balance. If we do it right, there's still room for plants and animals to live and everybody to receive the amount of clean water they need.

Source: Southwest Florida Water Management District



A healthy watershed = healthy ecology

Why should you care if your watershed is healthy or not?

- Do you drink water, or something with water in it like juice or soda?
- Do you brush your teeth?
- Do you wash your hands, or take a bath or shower?
- Do you give some water to your pets or plants?

We use water plenty of times, each and every day. Over half your body is composed of water. Living in a healthy watershed means having clean water that you need every day, along with water for wildlife, nutrition, businesses and recreation.

Source: Southwest Florida Water Management District

GOING BEYOND the text

Protecting our water

It's everyone's job to protect Florida's waterways and to ensure there will be plenty of clean, safe water for future generations. The ecology of Florida springs is a vital part of our world. Look in the *Tampa Bay Times* to find at least five images or stories that show or tell about a situation in which the ecology may be harmed. Write a description of each of the situations you find and identify how the ecology could be harmed. Are there laws against the situation presented? If so, are there penalties?

Next, research the Safe Drinking Water Act and its history. Why was the law implemented? What changes were made in 1986 and in 1996? Create an infographic showing the information you find. Note the most interesting fact that you learned and share that with your class. Explain why you found that specific information interesting. Also, be sure to note what you learned from your research.

Using the articles in the *Tampa Bay Times* as models, write a news or feature article to accompany your infographic. Share what you have learned with your class.

Habitats and ecosystems

A habitat is the specific place where living organisms find the things they need to survive, such as food, shelter, water and space. Just like your habitat is your home, plants and animals have a place where they can live, grow and thrive.

An ecosystem is a living community of plants and animals and their relationships with the environment around them. Just as you depend on farms, groves, grocery stores, schools and the government to supply the things you need, plants and animals depend on their environment to supply the things they need, such as sun, water and food.

Source: Southwest Florida Water Management District

Water habitats

One of the great features of Florida is the diversity of its habitats. Water is a major attribute of the state. Florida has five regional agencies, known as water management districts, responsible for protecting water resources. The Southwest Florida Water Management District is responsible for an area that includes part or all of the following counties: Charlotte, Citrus, DeSoto, Hardee, Hernando, Highlands, Hillsborough, Lake, Levy, Manatee, Marion, Pasco, Pinellas, Polk, Sarasota and Sumter.

Did you know there are 14 major rivers, 1,800 lakes that are 10 acres or larger and more than one million acres of wetlands within the District? That is a lot of water, and all of that water supports thousands of diverse living organisms.

West-central Florida is shaped, defined and, in many ways, dependent on water. There are many types of water habitats including estuaries, lakes, wetlands, rivers and springs. Throughout Florida, undeveloped land areas provide groundwater recharge by absorbing rainwater, which then seeps into the ground to replenish the aquifers.

Source: Southwest Florida Water Management District

Think about it

There are nearly 6 million people living within the Southwest Florida Water Management District, and more than 80 million people visiting Florida each year. Water resources have been significantly impacted because of the increased need for water and living space for people. In addition, draining wetlands alters the natural flow of water and may lower underground water levels. When people or animals bring invasive species into Florida habitats, devastation can occur to the ecosystem. While many native plant and animal species have drastically declined in numbers, some have completely vanished.

Source: Southwest Florida Water Management District

The **largest estuary** within the **Southwest Florida Water Management District is Tampa Bay.** Tampa Bay has a watershed that **covers 2,200 square miles!** There are **approximately 1,800 lakes 10 acres or larger** within the District.

GOING BEYOND the text

Water habitats

Research the following water habitats that are in our west-central Florida ecosystem: estuaries, lakes, wetlands, rivers and springs. Have your teacher split your class into five groups. Each group will research one of the water habitats, finding out the primary components of each habitat, what living organisms are in the habitat, why the habitat is important and how people can protect the habitat and the flora and fauna living within that habitat. Create a PowerPoint, Prezi or Google slides presentation with the information you have learned. In addition, using the advertisements in the *Tampa Bay Times* as models, create a full-page advertorial for the habitat. Share your presentation and advertorial with your class.

Biodiversity

According to the American Museum of Natural History, "The term biodiversity (from "biological diversity") refers to the variety of life on Earth at all its levels, from genes to ecosystems, and can encompass the evolutionary, ecological, and cultural processes that sustain life." All living organisms fall into this category, including plants, animals, microbes, fungi and invertebrates. Biodiversity is important to most aspects of our lives as well as to the planet. Changes to ecosystems affect the living organisms within those habitats. Those changes occur naturally, as with hurricanes or drought, but they also can be influenced by human intervention.

When human intervention occurs, such as changing the land for development, population booms, pollution or cutting down trees, plants and animals may lose their habitats and be unable to survive. Florida has a high level of biodiversity. The Southwest Florida Water Management District notes that "Ten percent of Florida's plants and animals can only be found in Florida," for the following reasons:

- Florida's location as a peninsula
- Florida's wet environment
- Florida's long geologic past with natural features ranging from 2,000 to 25 million years

Sources: Southwest Florida Water Management District; The American Museum of Natural History

Wonderful wetlands

Wetlands are areas of land that remain wet all, or part, of the year. They lie between dry lands, or uplands, and water or aquatic systems. Wetlands are either freshwater or saltwater, and they are essential to the diverse living organisms in the state.

Cypress swamps, hydric hammocks, hardwood swamps, marshes and wet prairies are freshwater wetlands. Saltwater wetlands include coastal saltwater marshes and forested wetlands known as mangrove swamps.

Each kind of wetland supports different animals and plants that have adapted to living in or close to water. While swamps are dominated by trees, marshes are dominated by grasses and plants.

Wetlands are important to Florida because they clean out pollutants and store extra water to protect the Sunshine State from floods. Wetlands also provide homes for plants and animals. Wetlands provide places for recreational opportunities and fishing. One acre of wetland can contain 300,000 gallons of water!

Source: Southwest Florida Water Management District

Stewardship – it is all about harmony

Humans, birds, plants, trees, animals, insects and microorganisms are all part of the ecosystem that makes up west-central Florida. The Southwest Florida Water Management District, along with all of the residents of the area, need to have a sense of shared responsibility, otherwise known as stewardship, for our natural resources. Stewardship means that "each of us needs to accept our connection to a larger community of living things that make their homes in southwest Florida. We are interdependent with the natural world around us," notes the District. Since each of us has a responsibility to the environment, we need to share in the costs and challenges for habitat and water resources protection.

GOING BEYOND the text

Stewardship in action

Go to the Southwest Florida Water Management District website, WaterMatters.org, to see what the District is doing to protect its ecosystems and learn what you can do. Make a list of these things, and then write a newspaper article or editorial focusing on protecting one or more of Florida's water habitats. Use the articles, columns and editorials in the *Tampa Bay Times* as models.

Natural phenomena

When groundwater is removed faster than rainfall or surface water can replace it, the ground can sink beneath our feet and homes. That sinking ground is known as a sinkhole. Sinkholes are a naturally occurring geologic phenomenon and are common features of Florida's karst terrain.

Since the land beneath karst topography is very unstable, it may become too fragile to support the surface and may collapse, creating a sinkhole. Sinkholes are depressions or holes in the land surface that can be shallow or deep, small or large. In fact, many of the lakes in Florida are remnant sinkholes.

Hydrologic conditions, including a lack of rainfall, excessive rainfall in a short period of time or lowered water levels can all contribute to sinkhole development.

Source: Southwest Florida Water Management District

Protecting our springs

A springshed is the area of land that contributes water to a spring. This area includes much more than just land surrounding a spring. In fact, you can live miles away from a spring and still be located within its springshed.

Your actions at home can affect a spring miles away. Many of the problems affecting the springs occur many miles upstream in the spring recharge area. The water quality of springs can be harmed by a variety of actions, including incorrect fertilizing techniques, infrequent septic tank maintenance, improper disposal of garbage and untreated stormwater runoff.

Just as Sir Issac Newton discovered, "For every action, there is an equal and opposite reaction." Activities within springsheds can, and do, have impacts on groundwater. Therefore, these activities affect the ecosystem of the spring and spring-fed river. A spring is only as healthy as its springshed, and protection of springs must occur before the water reaches the spring.

Impacting groundwater

Oftentimes, sinkholes are directly connected to the aquifer. As a result, debris found in them can have a significant impact on the quality of the water leaving a spring. Therefore, you should always dispose of hazardous household chemicals such as industrial cleaners, solvents, automotive fluids and paints at an approved landfill. In addition, you should never discard trash or debris into a sinkhole because hazardous contaminants can seep into the aquifer, our drinking water and springs.

Source: Southwest Florida Water Management District

GOING BEYOND the text

Newton's Third Law

Everything in the natural world is connected. Safe drinking water may start with a raindrop, but its journey to the tap is extensive. As inhabitants of Earth, it is our job to not only realize that, but also to make an effort to protect the parts, which contribute to the whole. An ecosystem is a biological community of interacting organisms and their physical environment. In other words, an ecosystem is a community of living and nonliving things that work together. Think about the different parts of the water ecosystems in our lives and how they interact. Look for articles, cartoons, advertisements and photos in the *Tampa Bay Times* about your community. Make a list of the parts of your ecosystem. Choose some of the most important parts and create a cartoon depicting your personal ecosystem and how your actions impact that ecosystem.

Invasive issues

Pests, diseases and other environmental conditions that naturally limit the growth of invasive plants in their native lands are not present in Florida. Therefore, invasive aquatic plants spread rapidly and can become an environmental problem. When large numbers of invasive aquatic plants accumulate, they can interfere with boat navigation, recreation and flood control, and may also decrease property values. Additionally, infestations of invasive aquatic plants can damage fish and wildlife habitat, significantly hinder fish management and habitat restoration efforts, and reduce oxygen levels in the water — increasing the potential for fish kills.

Source: Southwest Florida Water Management District

Managing invasive aquatic plants

Since many invasive species are well established and are extremely difficult and expensive to eliminate, prevention is the best way to keep new invasive plants out of Florida's natural areas. The methods used depend on the plant species being targeted, the level of infestation, and the size of the water body and its primary use, among other factors. No single method is effective for all situations.

Source: Southwest Florida Water Management District

Keeping invasive plants away

Prevention is the best way to fight invasive aquatic plants, so it's important that you get involved. Aside from the Southwest Florida Water Management District's efforts in managing thousands of acres of public waters, you can do your part in helping to stop the spread of invasive aquatic plants by:

- Learning what plants you should and should not plant in aquatic areas.
- Ensuring that all aquatic plant material is removed from your boat and trailer before and after launching your boat.
- Contacting the Invasive Plant Management Section of the Florida Fish and Wildlife Conservation Commission at 850-245-2809 if you observe invasive plants on your private water body.

Source: Southwest Florida Water Management District

GOING BEYOND the text

Invasive species

The National Ocean Service defines an invasive species, also known as an exotic or nuisance species, as "an organism or plant that is introduced into a new environment, where it is not native." Invasive species can be in the form of plants or animals. The non-native dwellers can be hazardous to an ecosystem, especially in a spring. Look for articles in the *Tampa Bay Times* that focus on local ecosystems, and invasive and threatened species. Pay special attention to the information about the effects of human activities and invasive species on ecosystems. Keep track in your journal of the articles you find. Choose one of the topics you have read about to do further research. Using the *Times* articles as models, write a newspaper feature-style article about what you have discovered. Share this article with your class.

Water matters

The U.S. population has doubled over the past 50 years. It is anticipated that by 2025, 6 million new residents are projected to make Florida their home, swelling the population to more than 24 million. That would be 24 million people tapping into Florida's fragile water resources daily. Not only is water conservation a key component of the Southwest Florida Water Management District's mission, but also it should be a key goal of Florida residents. The District's Comprehensive Water Conservation Plan includes voluntary and incentive-based initiatives, regulatory work, education and outreach.

Sources: The United States Environmental Protection Agency; Southwest Florida Water Management District

Water-saving tips

Florida's lifestyle depends on a clean, ample supply of water. You can help conserve this limited resource by using these tips at home. It's important that we all do our part. For more tips on conserving water, go to the Residents tab at WaterMatters.org, and click on Water Conservation.

Indoor water saving tips:

- Take shorter showers. Challenge everyone in your house to take a 5-minute shower to save water.
- Turn off the faucet when brushing your teeth or washing your hands. By turning off the tap when you brush your teeth in the morning and before bed, you could save more than 200 gallons of water a month!
- Flush less and check for leaks. Only flush the toilet when you need to and don't use it as a trash can. Check toilets and faucets for leaks regularly. A leaky toilet can waste up to 200 gallons of water a day! To check for a leak, start with a clean toilet bowl. Place a few drops of food coloring into the toilet tank and wait 10-15 minutes. If the tank is leaking, color will appear in the bowl.
- Install water-saving fixtures. Low-flow showerheads and faucet aerators help to reduce the amount of water being used per minute.

Outdoor water saving tips:

- Water your lawn and plants only when needed. It is easy to overwater your lawn and other plants, which creates an unhealthy environment for them and wastes water. Read the Florida-Friendly Landscaping™ guidelines at the right to learn more about how to keep an outdoor area looking beautiful, while also saving water!
- Use a nozzle on your garden hose. By adding a nozzle to your garden hose, you'll be able to turn the water on and off and reduce water waste.
- Watch the weather and wait to water your lawn. Remember, rainfall is a natural and free source of water! Only water your lawn if it needs more water.

Source: Southwest Florida Water Management District

Nine Principles of Florida-Friendly Landscaping™

1. **Right plant, right place:** Select plants that match your yard's soil type, amount of sun and shade, and amount of water received.
2. **Water efficiently:** Group plants with similar water needs together and only water in the early morning. Be sure to follow your local watering restrictions.
3. **Fertilize appropriately:** Never fertilize within 10 feet of a water body or before it rains.
4. **Mulch:** Keep 2-3 inches of mulch in plant beds to hold in moisture, protect plants and prevent weeds. Leave 2 inches of space around trees to prevent rot.
5. **Attract wildlife:** Choose plants with seeds, fruit, foliage and flowers to attract wildlife and insects that eat pests and pollinate flowers.
6. **Manage yard pests responsibly:** Minimize pesticide use by choosing pest-resistant plants.
7. **Recycle yard waste:** Try composting yard clippings and trimmings. You can mix grass, branches, weeds, egg shells, coffee grounds, tea bags, pine needles, corncobs and even shredded cardboard. Adding this mixture to your soil releases nutrients back into your yard for a healthy landscape – and less garbage in landfills.
8. **Reduce stormwater runoff:** Create permeable walkways and driveways to allow rain to soak into the ground.
9. **Protect the waterfront:** If you live on or near the water, create a 10-foot "maintenance free" zone around your landscape where you don't have to mow, fertilize or use pesticide.

Source: Southwest Florida Water Management District

Florida Water Star℠

One example of a statewide program that promotes water conservation is the Florida Water Star℠ program. Florida Water Star℠ outlines standards for houses, apartments and business properties that the builder or owner can choose to follow to receive a Florida Water Star℠ certification. The program encourages the use of appliances, plumbing fixtures, irrigation systems and landscapes that use less water. Water saving fixtures include toilets, showerheads and sink faucets that use less water. Water-saving appliances include water-conserving dishwashers and clothes washers.

An average Florida Water Star℠ homeowner can save up to $530 on annual utility bills and up to 48,000 gallons of water each year. The program outlines standards for a broad range of homes — from a condominium with no yard to an older home on a half-acre lot with an aging irrigation system. Commercial properties can save even more with lower water and energy bills.

Florida Water Star℠ certification provides assurance that a house or building meets the criteria for a higher standard of water efficiency.

To learn more, visit FloridaWaterStar.com.

AVERAGE USE

Activity	Water used	Number of times	Gallons used
Dishwasher	12 gallons per load		
Toilet f lushing	4 gallons per flush		
Bathing	45 gallons (full tub)		
Laundry	43 gallons per load		

CALCULATED USE

Activity	Water used	Total minutes	Gallons used
Garbage disposal	4 gallons per minute		
Brushing teeth	4 gallons per minute		
Washing hands	4 gallons per minute		
Washing dishes by hand	4 gallons per minute		
Shower	4 gallons per minute		
Yard watering by hand	9 gallons per minute		
		Total gallons used	

GOING BEYOND the text

Doing the math

Complete this survey to estimate how much water is used in your home daily.

Average Use: Write the number of times you and your family members do each activity in one day. Then multiply the number for Water Used by the Number of Times the activity is done. This will give you the number for the Gallons Used column.

Calculated Use: Record the number of total minutes used for each activity. Then multiply the number for Water Used by the number of Total Minutes to find the number for the Gallons Used column. For an activity you didn't do, place a 0 under Gallons Used. Add all the numbers under Gallons Used to find the Total Gallons.

Using the information you have calculated, create an advertorial explaining to others why water conservation is important. Include tips for conserving water at home in the advertorial. Use the examples of advertorials in the *Tampa Bay Times* as models.

The Southwest Florida Water Management District

The Southwest Florida Water Management District (District) manages the water resources for west-central Florida as directed by state law. The District encompasses roughly 10,000 square miles in all or part of 16 counties and serves a population of nearly 6 million people. The goal of the District is to meet the water needs of current and future water users while protecting and preserving the water resources within its boundaries. The District's four areas of responsibility are water supply, flood protection, water quality and natural systems. Learn more about the District at WaterMatters.org.

Splash! School Grants

The District's Splash! school grant program provides up to $3,000 per school to enhance student knowledge of freshwater resources issues. Public and charter school teachers of grades K-12 located within the District's boundary are eligible to apply. Visit WaterMatters.org/SchoolGrants for more information.

FLORIDA STANDARDS
This publication and its activities incorporate the following Florida Standards for elementary school students.
Language Arts: LAFS.35.L.1.1; LAFS.35.L.1.2; LAFS.35.L.2.3; LAFS.35.L.3.4; LAFS.35.RI.1.1; LAFS.35.RI.1.2; LAFS.35.RI.1.3; LAFS.35.RI.2.6; LAFS.35.RI.3.7; LAFS.35.RST.1.3; LAFS.35.RST.3.7; LAFS.35.RST.3.9; LAFS.35.SL.1.1; LAFS.35.SL.1.2; LAFS.35.SL.1.3; LAFS.35.SL.2.4; LAFS.35.SL.2.5; LAFS.35.SL.2.6; LAFS.35.W.1.1; LAFS.35.W.1.2; LAFS.35.W.1.3; LAFS.35.W.2.4; LAFS.35.W.2.5; LAFS.35.W.2.7; LAFS.35.W.3.9 **Mathematics:** Math MAFS.3.MD.1.2; MAFS.3.NBT.1.2; MAFS.3.NBT.1.3; MAFS.3.OA.2.6; MAFS.3.OA.3.7; MAFS.45.MD.1.1; MAFS.45.NBT.1.2; MAFS.45.NBT.2.4; MAFS.45.OA.1.2; MAFS.45.OA.1.3
Science: SC.35.CS-CC.1.2; SC.35.CS-CP.1.3; SC.35.CS-CP.1.4; SC.35.CS-CS.2.1; SC.35.CS-PC.3.2; SC.4.E.6.2; SC.4.E.6.3; SC.4.E.6.4; SC.4.E.6.6; SC.4.N.1.1; SC.4.N.1.6; SC.5.E.7.1 SC.5.E.7.2

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Photos courtesy of Southwest Florida Water Management District

GOING BEYOND the text

Learning new words

When you study new things, you often come up against some tough vocabulary words, such as karst, springshed, invasive, porous. Most vocabulary words are learned from context clues or good old-fashioned dictionary work. Make a list of all of the new words you have encountered in this publication. Try to figure out the words' meanings by looking for clues in the sentences around them. Write down your best guess, and then look up the words in a dictionary. Two good sources are merriam-webster.com and dictionary.cambridge.org/us. Make a list of the words your classmates identified and see which ones stumped the class. Next, use these words for a news scavenger hunt. See if you can find these words in the *Tampa Bay Times*. The group that finds the most words wins the game. Create a word search, crossword or word jumble game with the words to challenge your classmates.