

Be Water Wise Miami

Background Information

I. Earth's Water and the Water Cycle

From space, the Earth looks like a blue-green orb, abundant in water supplies. Indeed, roughly 70 percent of the Earth's surface is made up of water. But 97 percent of Earth's water is ocean water too salty for human consumption. Of the remaining 3 percent of potable fresh water on Earth, the majority is locked up in ice caps and glaciers. In total, only about 1 percent of Earth's water is available for human use, either in aquifers as groundwater or in lakes and streams as surface water.¹

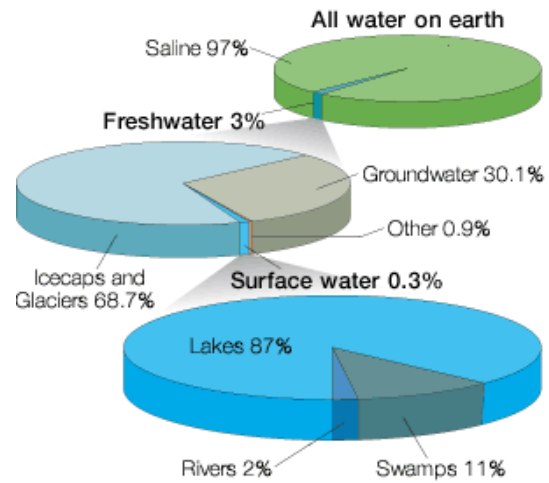


Image source: Pacific Islands Applied Geoscience Commission

The amount of water on Earth today is the same as millions of years ago. As water moves continuously through the hydrologic cycle, it changes in state from liquid water, to water vapor, to ice. Throughout the cycle, water can be found in the oceans, in ice caps and glaciers, in lakes and streams, in the clouds, underground in aquifers and inside of plants and animals.²

Water is continually moving through the water cycle. Some processes may be relatively quick – water that evaporates from the ocean, for example, might come down to Earth again as precipitation after a relatively short time. But water that infiltrates into the ground can sink down into deep aquifers where it can take thousands of years for the water to reach the surface again.³

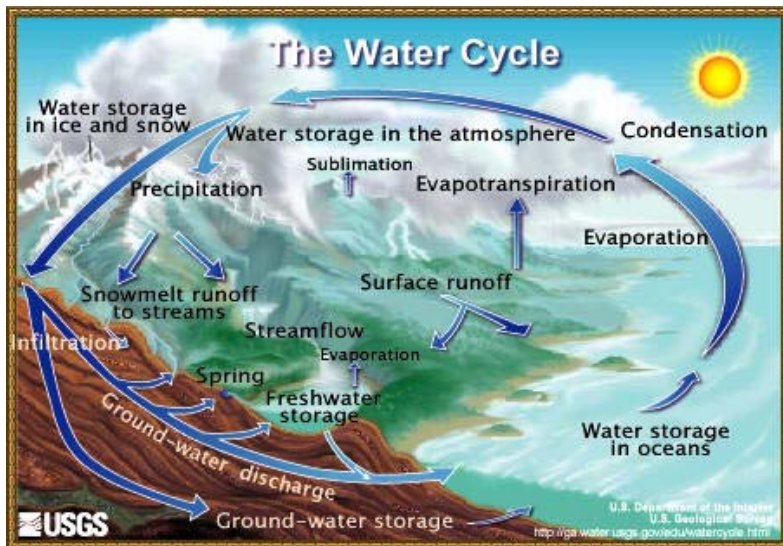


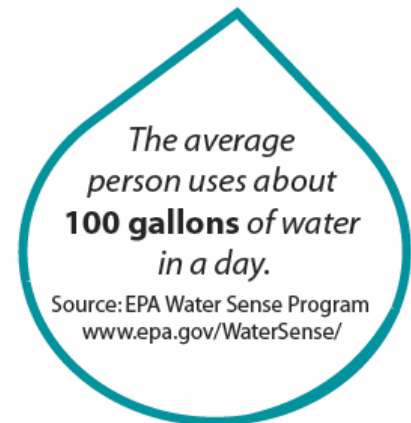
Image Source: U.S. Geological Survey

While water supplies remain finite and constant, water demand worldwide has increased, putting pressure on water resources and creating disparities in the availability of water.

II. The Need to Conserve

Across the United States and around the globe, the growing human population stresses available water supplies. Between 1950 and 2000, the U.S. population nearly doubled, yet public demand for water more than tripled. This increased demand has put additional stress on water supplies and distribution systems, threatening both human health and the environment.⁴

In recent years, increased demand and climate change have placed unprecedented pressure on our water resources. The effects of this pressure are felt differently depending on the region of the country. While some areas have experienced higher than average rainfall, many parts of the United States are suffering droughts.⁵ A recent government survey showed that at least 36 states in the United States will be experiencing local, regional, or statewide water shortages by 2013.⁴



III. Water in South Florida

South Florida is a sub-tropic region, meaning that it experiences a rainy season and a dry season. This annual pattern can bring short-term excesses and shortages of water in a natural cycle of flood and drought.⁶

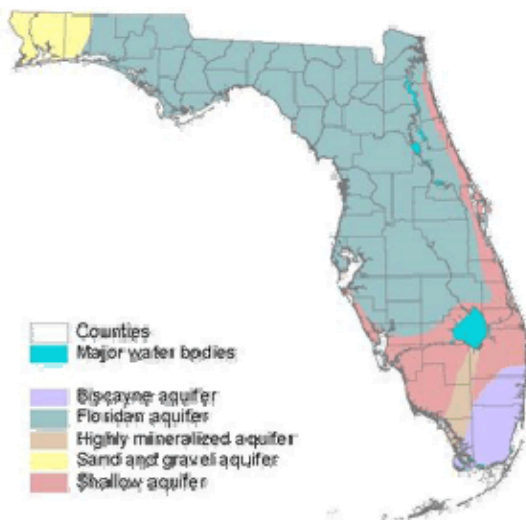


Image source: U.S. Geological Survey

Many counties in South Florida, including Miami-Dade, draw their drinking water from the Biscayne Aquifer. The Miami-Dade Water and Sewer Department provides water for most residents, visitors, and businesses of Miami-Dade County, drawing approximately 347 million gallons a day from the Biscayne Aquifer.⁶ The Biscayne Aquifer is composed of porous rock with tiny cracks and holes filled with water. Because the aquifer is shallow, it is especially susceptible to contamination. And because it extends into the Biscayne Bay and the Atlantic Ocean, it is also susceptible to saltwater intrusion, a source of contamination of this important source of drinking water.⁷

Population growth and urban development in recent years have placed considerable stress on South Florida water resources. South Florida has one of the nation's fastest growing populations, and its residents use more water per person than almost anywhere else in the country. In addition, millions of seasonal visitors visit the region from spring through winter, further increasing the demand for water.⁸

The increase in demand and development can make the natural occurrence of droughts in the South Florida region more severe. Because groundwater resources are primarily replenished by rainfall, seasonal rain shortfalls can stress groundwater supplies.^{9,6} This pressure can result in periodic water shortages, which require limits on irrigation and other water use practices.⁸

IV. The Role of the Everglades

The Everglades and its native plant species play an important role in water filtration and recharge to both ground and surface water resources. The diversion of water from the Everglades to supply residential and agricultural needs has had an adverse effect on this valuable ecosystem. Water loss, population decline in native animals and the invasion of exotic plants have compromised the Everglades' ability to filter, recharge and store water.¹⁰



Image source: U.S. Geological Survey

V. How to Conserve Water

In addition to limits on irrigation through city or county ordinances and smart lawn care practices, residents can be proactive in conserving water by making a few small lifestyle adjustments at home, at school, and at work. Water conservation not only saves water, it saves money and energy too.

The average American household spends as much as \$500 a year on water and sewer bills. By using water more efficiently, the average residence can save about \$170 per year. If all U.S. households installed water-efficient appliances, the total savings across the country would result in 3 trillion gallons of water and more than \$18 billion dollars per year!¹¹

It takes a lot of energy to deliver and treat the water Americans consume everyday. American public water supply and treatment facilities use about 56 billion kilowatt-hours (kWh) per year—enough electricity to power more than 5 million homes for an entire year. Allowing the faucet to run for five minutes uses about the same amount of energy a 60-watt light bulb would use in 14 hours. If just one out of every 100 American homes were updated with water-efficient fixtures and appliances, the savings would be around 100 million kWh of electricity per year.¹¹

Here are a few water conservation tips that can be easily adopted at home or at school:

- **Don't use the toilet to dispose of tissues or other trash. Every flush uses 3.5 to seven gallons of water.** (Fairfax Water www.fcwa.org)

- **Shorten each shower by five minutes — you'll save up to 25 gallons of water per shower.** (Regional Water Providers Consortium <http://www.conserveh2o.org>)

- **Want a glass of cold water? Keep water in the fridge to get it cold, instead of running the tap.** (H2O Conserve <http://www.h2oconserve.org/>)

- **Turn off the water while you brush your teeth and save four gallons a minute. That's 200 gallons a week for a family of four.** (Water – Use It Wisely <http://www.wateruseitwisely.com/>)

- **Garbage disposals use one gallon of water every minute! Composting is a much better way to get rid of old food scraps and it makes healthy soil in the process.** (EPA Drinking Water & Ground Water Kid's Stuff <http://www.epa.gov/safewater/kids/waterfactsoflife.html>)



Image source: South Florida Water Management District

- **When using a drinking fountain, let go of the button/handle when pausing for a breath.** (S.E.E.K. Earth Buddies <http://library.thinkquest.org/06aug/00442/schoolwater.html>)
- **When getting rid of leaves and other debris on the driveway or sidewalk, make sure to use a broom or blower instead of a hose.** (SFWMD https://my.sfwmd.gov/portal/page?_pageid=3074,20103213&_dad=portal&_schema=PORTAL)
- **Collect rainwater in a barrel and use it to water your garden and other plants around your home.** (City of Arlington, Texas <http://www.ci.arlington.tx.us/waterdice/index.html>)
- **When you give your pet fresh water or when cleaning out old fish tanks, don't throw the old water down the drain. Use it to water the trees or shrubs outside your home.** (Water – Use It Wisely <http://www.wateruseitwisely.com/>)
- **Running hot water out of the kitchen tap not only wastes water, it can be dangerous to your health if it's coming from lead pipes. Heat cold water on the stove instead.** (EPA Drinking Water & Ground Water Kid's Stuff <http://www.epa.gov/safewater/kids/waterfactsoflife.html>)
- **Using a dishwasher isn't just easy, it saves water, too. The average dishwasher uses 10 gallons of water per load, while washing dishes by hand can use up to 16 gallons. Newer dishwashers even use as little as 5 gallons per load!** (Regional Water Providers Consortium <http://www.conserveh2o.org/>)

¹ “Earth’s Water Distribution,” United States Geological Society, March 4, 2009, <http://ga.water.usgs.gov/edu/waterdistribution.html>

² “Water Facts of Life,” Environmental Protection Agency, February 20, 2007, <http://www.epa.gov/safewater/kids/waterfactsoflife.html>

³ “The Water Cycle: Ground-Water Discharge,” *United States Geological Society*, November 7, 2008, <http://ga.water.usgs.gov/edu/watercyclegwdischarge.html>

⁴ “Why Water Efficiency?” *Environmental Protection Agency*, August 28, 2008, <http://www.epa.gov/watersense/water/why.htm>

⁵ “Water Use in the USA,” *H2O Conserve*, 2008, http://www.h2oconserve.org/?page_id=6&pd=america

⁶ “Water Quality,” *Miami-Dade County*, 2009, http://www.miamidade.gov/conservation/water_quality.asp

⁷ “Biscayne Aquifer,” *United States Geological Society*, http://pubs.usgs.gov/ha/ha730/ch_g/G-text4.html

⁸ “Water Conservation,” *Miami-Dade County*, 2009, http://www.miamidade.gov/derm/water_conservation.asp

⁹ “Water Shortage History,” *South Florida Water Management District*, https://my.sfwmd.gov/portal/page?_pageid=2854,19646095,2854_19650111&_dad=portal&_schema=PORTAL

¹⁰ “Everglades,” *Citizens for a Better South Florida*, 2005, <http://www.abettersouthflorida.org/index.html>

¹¹ “Benefits of Water Efficiency,” *Environmental Protection Agency*, January 8, 2009, <http://www.epa.gov/watersense/water/benefits.htm>