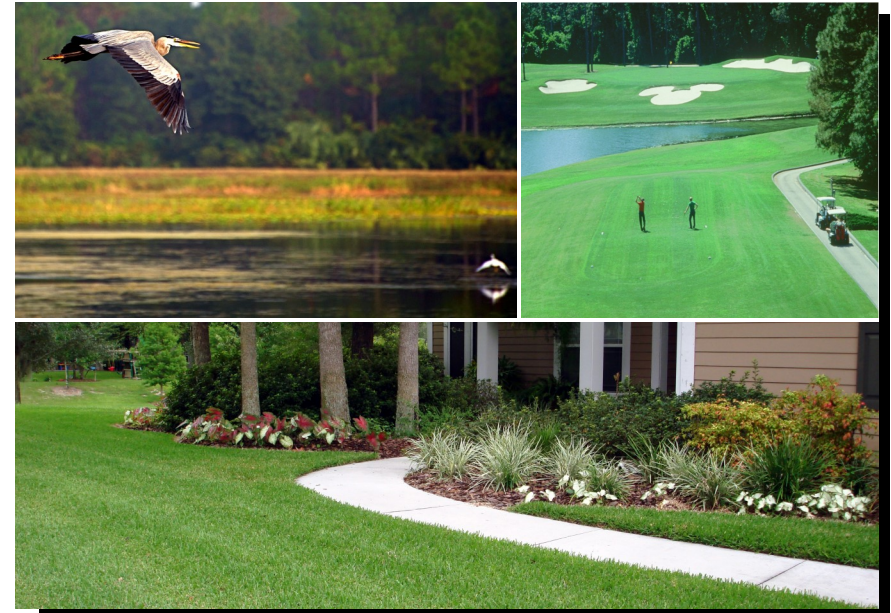




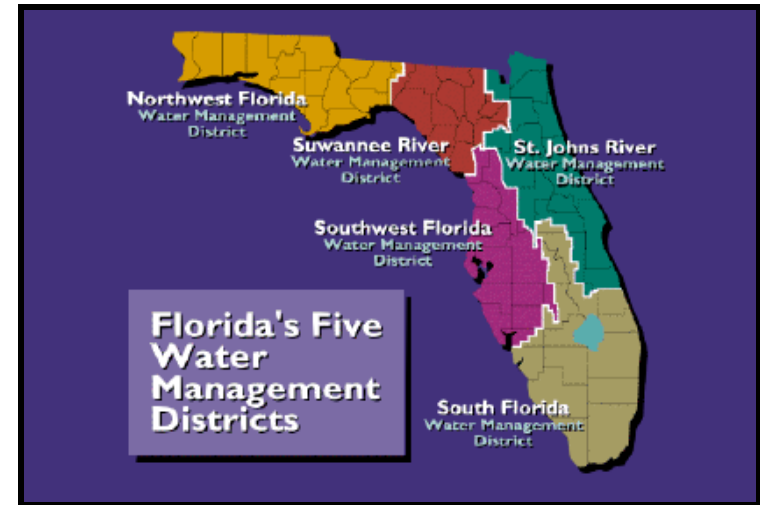
Water Reuse



Florida Department of
Environmental Protection

Use it Again, Florida!





WMD	Location	Phone	Toll-Free Number
Northwest Florida	81 Water Management Dr. Havana, FL 32333	850-539-5999	-
Suwannee River	9225 CR 49 Live Oak, FL 32060	386-362-1001	800-226-1066 (Florida only)
St. Johns River	P.O. Box 1429 Palatka, FL 32178	386-329-4500	800-451-7106
Southwest Florida	2379 Broad Street Brooksville, FL 34609	352-796-7211	800-423-1476 (Florida only)
South Florida	3301 Gun Club Road West Palm Beach, FL 33416	561-686-8800	800-432-2045 (Florida only)

www.dep.state.fl.us/secretary/watman

Cover photographs (clockwise from upper left):

*Great Blue Heron at Orlando Easterly Wetlands
(Photo by Winston Russell)*

*Magnolia Golf Course at Disney World, Orlando, Florida
(© The Walt Disney Company, used with permission)*

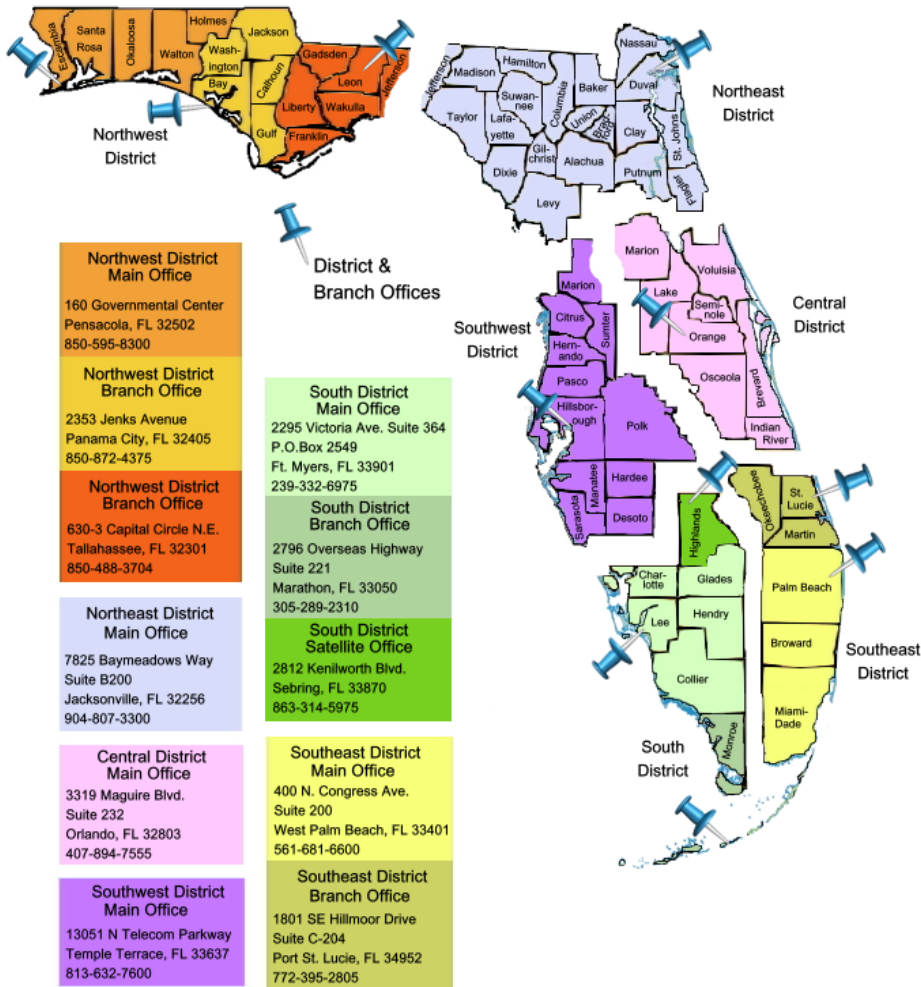
*Residential Landscape Irrigated with Reclaimed Water, Gainesville, Florida
(Photo by George J. Hochmuth II)*





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Florida Department of Environmental Protection District and District Branch Offices



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Reuse Makes Sense for Florida



John Pennekamp Coral Reef State Park
(Photo courtesy Florida Department of Environmental Protection)

Reuse is beneficial because reclaimed water:

- Reduces demands on valuable surface and ground waters used for drinking water sources,
- Eliminates discharges that may pollute valuable surface waters,
- Postpones costly investment for development of new water sources and supplies,
- Recharges ground water,
- Can save money, and
- Can provide aesthetic value.

You Can Help!

If reclaimed water is available in your area:

- Contact your local wastewater or water utility to get connected.
- Use reclaimed water instead of drinking water or ground water for landscape irrigation.
- Use reclaimed water wisely. Follow the guidelines provided by the reuse utility.



If reclaimed water is not available in your area:

- Contact your local wastewater utility, local water management district, and local elected officials to learn about their plans for reuse and to urge development of reuse programs.

To learn more about water reuse, visit our water reuse web page at:

www.dep.state.fl.us/water/reuse

Make **PURPLE** the New **GREEN** and
Join us in the Move to...

Use it Again, Florida!

For more information on water reuse, please contact:

Domestic Wastewater Section
2600 Blair Stone Road MS-3540
Tallahassee, Florida 32399-2400

850-245-8605

www.dep.state.fl.us/water/reuse



St. Petersburg Master Urban Reuse System— Highly treated reclaimed water is made available in a separate piping system for landscape irrigation, including the irrigation of more than 10,200 residential lawns, 64 schools, 101 parks, and 6 golf courses. This is the most widely known reuse system in the world. The system has been in operation since 1977. An average of about 19 mgd of reclaimed water was used in 2008.

Project Apricot— This project provides reclaimed water for irrigation of over 5,800 residential lawns, a golf course, 7 parks, and 6 schools in Altamonte Springs. Reclaimed water is also used in a commercial car wash and in street sweeping equipment. The total capacity of this reuse system is approximately 16 mgd and about 5 mgd of reclaimed water was reused in 2008.

Conserv II— This award-winning project serves portions of both Orange County and Orlando. Highly treated reclaimed water is piped about 20 miles west of Orlando and is used to irrigate the Orange County National Golf Center, over 2,900 acres of citrus groves, 7 foliage and landscape nurseries, 4 tree farms, and 2 ferneries. An extensive network of rapid infiltration basins is used to recharge ground water. The total capacity of the reuse system is about 80 mgd. Approximately 20 mgd of reclaimed water was used for irrigation and 5 mgd was used for ground water recharge in 2008.

Industrial Uses

Tampa's McKay Bay Refuse-to-Energy— This facility uses reclaimed water from the Howard F. Curran treatment plant for noncontact cooling water. In 2008, reclaimed water was used in 63 cooling towers at this facility.

Loxahatchee River Environmental Control District—Reclaimed water from this utility is used to irrigate the Roger Dean Stadium which hosts the Florida Marlins and the St. Louis Cardinals for spring training. In 2008, more than 6.5 mgd of reclaimed water was used to irrigate 14 golf courses, 2,891 residences, 3 school, and 14 parks. The capacity of the reuse system is 11 mgd.

Gainesville— The City makes extensive use of reclaimed water from the 15-mgd Kanapaha treatment facility. In the Southwest Reuse Project, reclaimed water is used to irrigate residential lawns, golf courses, parks, and other landscaped areas. Reclaimed water is used for irrigation and in water features at the Kanapaha Botanical Gardens. An average of about 3 mgd of reclaimed water was used in 2008. See photo on cover.



*Curtis Stanton Energy Center
(Photo by Lisa Marie Prieto)*

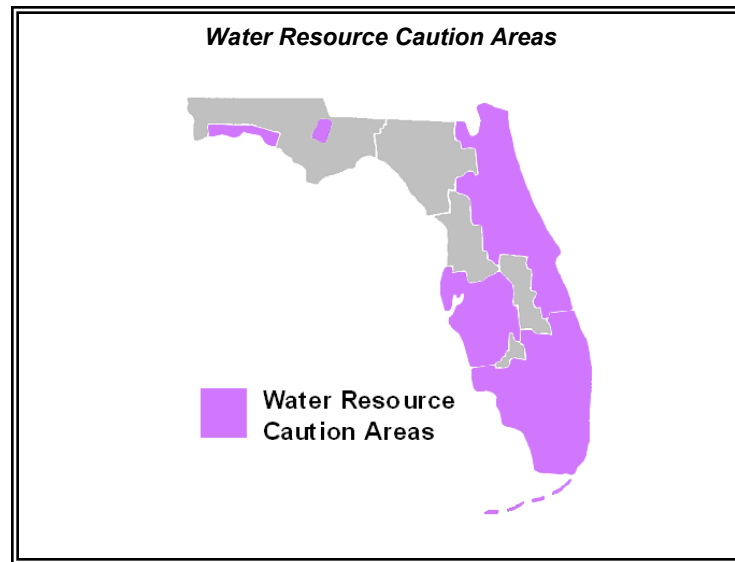
Curtis Stanton Energy Center— This coal-fired power plant cools its boilers with 13 mgd of reclaimed water from the Orange County Eastern Water Reclamation Facility.

Introduction

Florida's population has increased by over 20 percent over the past decade. This means that the demand for fresh, clean water has also increased - which could lead to more widespread, severe, and prolonged water shortages. Recognizing this, Florida's water management districts have designated "water resource caution areas." These are areas which are having water resource problems today, and other areas which are expected to develop problems within the next 20 years. Within these water resource caution areas, the reuse of reclaimed water is required whenever possible.



*Reuse Sign at Tarpon Springs RWF
(Photo by Hsiang-Yu Chou-Hoofman)*



The majority of Florida's population is living near the coast and population continues to grow in the coastal areas. It is in these areas that ground water supplies are the most limited and vulnerable to overdraft, contamination, and salt water intrusion.

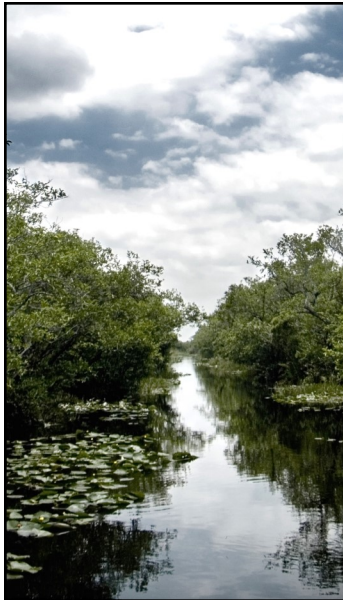
"If water is life...water conservation and reuse must be our way of life."
*-David W. York, Ph.D., P.E.
 Water Reuse Expert*



Furthermore, in a state that depends upon the high quality of its surface waters and springs for an important tourist industry, as a drawing card for growth and development, and as a basis for a high quality of life, protection of these surface waters is critical.

Florida does not have large, rapidly flowing streams to assimilate large discharges of the wastewater generated by its growing population. Its numerous streams tend to be small. They flow slowly and are warm year-round. They flow into lakes or coastal waters that are prone to excessive growth of algae, water hyacinths, and other nuisance aquatic weeds.

To protect the quality of our valuable surface waters, more advanced and sophisticated — and expensive — wastewater treatment facilities are required. Because of the limited ability to discharge large volumes of treated wastewater into surface streams, more and more communities are turning to reuse of reclaimed water as a way to manage their wastewater.



Everglades National Park

Reuse helps the State meet the water supply and wastewater management needs of its growing population. Recognizing this, Florida promotes reuse of reclaimed water and water conservation as major state objectives.



Ichetucknee Springs. This spring is one of more than 700 freshwater springs in Florida. (Photo courtesy Florida Department of Environmental Protection)

State Objectives

The encouragement and promotion of reuse of reclaimed water and water conservation are state objectives.

— *Chapters 373 and 403, Florida Statutes*



Florida's Reuse Experience

Reuse is growing in popularity in Florida. In 2008, there were about 481 treatment systems in Florida that provided approximately 667 million gallons of reclaimed water each day for beneficial purposes. The total reuse capacity of these facilities was 1,536 million gallons per day (mgd), which is about 62 percent of the total permitted domestic wastewater treatment capacity in Florida. During the last 21 years, Florida became a national leader in reuse of reclaimed water.

Some examples of reuse in Florida

Reedy Creek Improvement District— This utility provides reclaimed water for irrigation of landscaped areas within the Walt Disney World Resort Complex. Four golf courses, landscaped areas at eight hotels, highway medians, a major athletic complex, and a water park are irrigated using reclaimed water, totaling over 1,300 acres. Reclaimed water is also used to irrigate a 110-acre tree farm which produces horticultural materials for use throughout the Disney Complex. Lastly, reclaimed water is used for cooling tower make-up, vehicle washing, street and sidewalk cleaning and for fire suppression and protection. A network of 86 rapid infiltration basins are used for ground water recharge. The permitted capacity of the reuse system is 22.5 mgd. About 6 mgd of reclaimed water was used for irrigation and 6 mgd was used for ground water recharge in 2008. See photos on cover and pages 3 and 4.

Orlando Wetlands— Orlando created a 1,220-acre wetlands system using reclaimed water from the Iron Bridge advanced wastewater treatment facility. The wetland is the centerpiece of a public park and nature preserve featuring hiking, jogging, biking, and nature observation. Up to 35 mgd of reclaimed water may be used to supply this wetland system. In 2008, about 13 mgd of reclaimed water was used. See photo on cover.

Pompano Beach OASIS— The City of Pompano Beach has been producing reclaimed water for irrigation of golf courses, parks, and medians for over 20 years. The City recently added residential customers to the reuse service grid. What makes the Pompano Beach reuse facility unique is that the City, not having a wastewater treatment facility, pirates water from the Broward County Regional Wastewater Facility ocean outfall line. During the 20 years that the reuse plant has been online, over 10 billion gallons of water from the Biscayne Aquifer has been conserved. This reduction in potable water demand has resulted in a reversal of the saltwater intrusion encroachment upon the well fields and aids in the protection of the Biscayne Aquifer (the City's sole source of potable water).



Pompano Beach OASIS facility.



Reuse is Safe

We can treat wastewater to extremely high levels and then reclaim the water for beneficial uses. The degree of treatment and disinfection the wastewater receives depends on the use of the reclaimed water. Levels of treatment and disinfection have been established to protect public health and environmental quality. Secondary treatment and basic disinfection are required if the water will be used to irrigate pastures and crops that will not be eaten by humans. Much higher levels of treatment and disinfection are required for reusing water in areas where the public has access (such as parks, golf courses, playgrounds, school yards, landscaped areas, highway medians, and homes) or for irrigation of edible food crops.



Reuse Storage Tank at Spencer WWTF
(Photo by Shanin Speas-Frost)

The Florida Department of Environmental Protection has written rules to ensure that communities and utilities that practice reuse provide enough treatment and disinfection, and that continuous and reliable supplies of high-quality reclaimed water are produced. Florida's reuse rules fully protect public health and are consistent with national guidelines for reuse published by the U.S. Environmental Protection Agency.

The Color Purple

In Florida, pipes carrying reclaimed water are color-coded with purple to differentiate reclaimed water from drinking water or other water supply lines. The color purple for reclaimed water is also used in other states and as well as recognized internationally. Purple helps readily identify reclaimed water that is not suitable for drinking from other water sources. It is in fact illegal to connect a reclaimed water line to a drinking water supply line. Proper backflow prevention is also required to protect the drinking water supply from any illegal cross-connection.

"Reuse is a key part and the largest part of Florida's water future. We lead the nation; reusing 660 million gallons of reclaimed water each day to conserve freshwater supplies and replenish our rivers, streams, lakes and the aquifers."

-Michael W. Sole
Secretary

Department of Environmental Protection



Reuse— The Concept

Reuse involves taking what we once considered to be wastewater, giving it a high degree of treatment, and using the resulting high-quality reclaimed water for a new, beneficial use. Extensive treatment and disinfection ensure that public health and environmental quality are protected.



Did you Know?

The first planned urban reuse system in the United States started in 1912 at the Golden Gate State Park in San Francisco, California. However, the first large-scale planned urban reuse system in the United States wasn't established until sixty-five years later in St. Petersburg, Florida, as a result of critical regional water supply issues in the area. This system remains one of the single largest reclaimed water irrigation networks in the world.

Reuse Applications

Finding a use for reclaimed water is easy. It can be used for:

◆ **Irrigating Landscapes**— Reclaimed water, which can contain a trace amount of plant nutrients, can effectively be used to irrigate parks, golf courses, highway medians, even residential lawns.



Water efficiently, reduce fertilizer usage, and never let reclaimed water run needlessly into the street.



This 110-acre tree farm at Disney World is irrigated with reclaimed water. The farm is also used to produce feed/fodder for Animal Kingdom.
(© The Walt Disney Company, used with permission)



◆**Agricultural Irrigation**— Reclaimed water can be safely used to irrigate citrus, pasture lands, and other crops.

◆**Wetlands**— High-quality reclaimed water can be used to create, restore, and enhance wetlands.

◆**Recharging Ground Water**— Rapid infiltration basins can be used to allow high-quality reclaimed water to soak into the ground to recharge valuable ground water. Reclaimed water that meets drinking water standards can be injected directly into ground water supplies.



◆**Industrial Uses**— Industrial facilities and power plants can use reclaimed water as a source of water for cooling, or for some manufacturing processes.

◆**Fire Protection**— Reclaimed water can be supplied to fire hydrants and sprinkler systems for fire fighting.



This purple fire hydrant is supplied by reclaimed water from the City of Tallahassee's Tram Road Reuse Facility.

◆**Aesthetic Fountains and Ponds**— Reclaimed water can be used in decorative ponds, fountains, and other landscaping features.

◆**Dust Control**— Reclaimed water can be sprinkled at construction sites to reduce blowing dust.

◆**Toilets**— Reclaimed water can be used in a separate piping system to flush toilets in industrial and commercial buildings and in hotels, motels, and apartment buildings.

◆**Other Useful Purposes**— There are a wide range of potential uses for high-quality reclaimed water. It can be distributed in tank trucks to small areas that need irrigation.



Left: Street cleaning at Disney using reclaimed water.

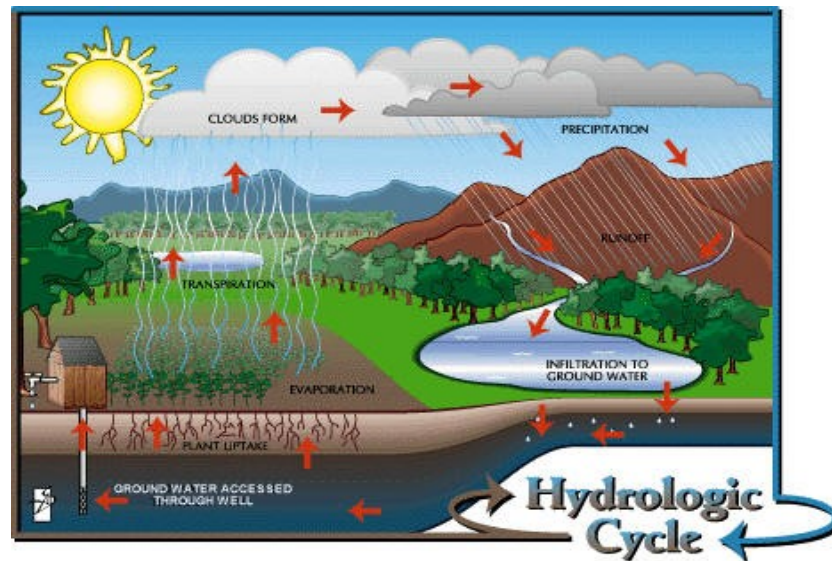
Upper right: These rapid infiltration basins at Reedy Creek Improvement District provide about 70% surficial Floridan aquifer recharge.

(© The Walt Disney Company, used with permission)

Nature Recycles Water

The supply of water in the world is finite. Water is neither being created nor destroyed. The same amount of water is available today as was available when dinosaurs roamed the earth, or when Christopher Columbus landed in the Americas.

The “hydrologic cycle” is an endless loop of water recycling. Water evaporates from lakes and the oceans to form clouds. Rainfall establishes lakes and streams. Some water percolates into the ground to become ground water, some of which flows into streams and lakes. Water in lakes and streams evaporates, or flows to the sea where it evaporates. And the cycle goes on and on. The same water has been used and reused through this cycle – millions and millions of times.



Man's Unplanned Reuse

For ages we have unintentionally reused water by withdrawing what we need to drink, for industry, and for agriculture, then discharging our “used” water as “wastewater” back into a stream. Later, downstream communities withdraw the mixture of “new” water plus treated wastewater to satisfy their water needs – and so on. People believe they are withdrawing “plain” water, but in reality it also contains treated domestic, industrial, and agricultural “wastewaters”. The use and reuse of water by communities along the Mississippi River and its tributaries is a good example. By the time the river reaches New Orleans, numerous power plants, industries, farms, and cities, such as Minneapolis, St. Paul, St. Louis, Pittsburgh, Youngstown, Wheeling, Cincinnati, Louisville, Knoxville, Chattanooga, Kansas City, and many others, have withdrawn water, used it, and discharged their treated wastewater back into the river.

