

Water Supply

Developing Sustainable Water Supplies to Meet Current and Future Demands

West-central Florida's ability to ensure adequate water supplies for residents, businesses and agriculture is a constant challenge. The Southwest Florida Water Management District (District) has been given the responsibility to manage the water and related resources to meet current and future demands while also protecting our valuable water resources.

Why Do We Need to Manage the Water Supply?

Approximately 5.1 million people currently live within the boundaries of the District. The population in the 16 counties under District jurisdiction grew 65 percent between 1985 and 2005 and is projected to increase by another 46 percent to approximately 7.1 million residents by 2030.

With each additional Floridian, the need for sustainable water supplies increases. But it's not just people who need water. Agriculture, business and recreational water activities also increase the demand for water.

Traditional Sources

In recent years, approximately 80 percent of water used within the District has come from traditional groundwater sources. Most of this groundwater was withdrawn from the Upper Floridan aquifer and, as a result, the overreliance on pumping groundwater has produced visible consequences.

Excessive groundwater pumping has lowered water levels in lakes and wetlands, reduced river flows and increased saltwater intrusion in the aquifer along the coast. Saltwater intrusion makes water unfit for drinking or irrigation without considerable treatment.

Protecting Water Sources

One way the District addresses the water supply problem is by carefully managing water uses. In Florida, water is considered a public resource. To withdraw a large amount of water from any source requires a water use permit (WUP) issued by the District or the Florida Department of Environmental Protection.



In general, to get a WUP, an applicant must demonstrate that the proposed use will be in the public interest, is reasonable and beneficial, will not interfere with existing legal users and will not harm the environment. The District has published a *Water Use Permit Information Manual* to assist applicants through the permitting process.

The District has established water use caution areas (WUCAs) in portions of the District where water resource problems exist. In those areas, special rules and criteria have been adopted to help reduce stress on the water resources.

Scientific advances developed by the District and stronger rules have increased protection and management of our water resources, but they have also highlighted the limits of traditional sources to meet existing and growing demands. To address this problem, the District encourages the development and use of alternative water sources.

Alternative Water Sources

By Florida law, the District must conduct water supply planning for areas where existing sources of water are not adequate to meet current or future needs. The District developed the *Regional Water Supply Plan* to provide a framework for future water management decisions. Important elements of the plan include an emphasis on conservation and efficient water use, as well as the development of alternative, nontraditional water sources.

The District partners with local governments and regional water supply authorities to investigate, develop and implement a wide range of alternative sources and storage methods, including conservation, reclaimed water, rehydration of natural systems, surface water supplies, reservoirs, aquifer storage and recovery, and desalination.

In keeping with legislative direction in section 373.0831, Florida Statutes, the District gives priority funding assistance to water supply projects that:

- Implement reuse, storage, recharge or conservation.
- Provide substantial environmental benefits by preventing or limiting negative impacts to water resources.
- Replace existing sources to meet minimum flows and levels.
- Support a sustainable water supply that would otherwise not be financially possible.
- Provide a regional benefit to multiple users for potable water supply.

Conservation

The most cost-effective alternative water source is conservation. Conservation includes being more efficient and less wasteful with water resources. Since the early 1990s, District water conservation projects have saved more than 14 million gallons of water per day (mgd).

The District promotes conservation by increasing public awareness through education, funding programs to replace older water fixtures with more efficient models, working with industry and agriculture to reduce their

use of groundwater and promoting Florida-Friendly Landscaping™.

By working with local partners, the District helps fund a variety of research, rebate and educational programs to promote efficient water use. For example, the District partnered with the Florida Department of Agriculture and Consumer Services to develop the Facilitating Agricultural Resource Management Systems (FARMS) Program. Through FARMS, agricultural interests can be reimbursed for up to 75 percent of their costs for projects that conserve, restore or augment local water resources.

Although conservation can greatly contribute to solving our water supply problems, conservation alone will not be enough to restore impacts to natural resources and ensure sufficient water to meet current and future needs. Other alternative supplies will be needed.

Reclaimed Water

Reclaimed water is a high-quality alternative water source that has received at least secondary treatment and is reused after being discharged from a domestic wastewater treatment plant. Reclaimed water is not drinkable, but it can be reused in compliance with Florida Department of Environmental Protection and District rules for lawn irrigation, agricultural irrigation, groundwater recharge and industrial processes.

Reuse of reclaimed water reduces the demand for water from traditional sources by saving potable water for drinking and other daily needs. Up to 50 percent of water supplied to homes is used for landscaping and irrigation. Reclaimed water is used to supply some of those water needs instead of using drinkable water.

The District encourages the efficient use of reclaimed water and funds reuse projects through programs such as the Cooperative Funding Initiative, the West-Central Florida Water Restoration Action Plan, the Water Protection and Sustainability Trust Fund and the Water Supply and Resource Development Fund. District funding of more than 297 reuse projects will enable more than 221 mgd of reclaimed water to be reused, saving about 148 mgd of potable-quality water.

Rehydration

Rehydration is the process of increasing the amount of water in the aquifer by applying stormwater or reclaimed water to the surface of upland areas or wetlands. The applied water would undergo additional cleansing by natural processes as it filters down to the aquifer.

In addition, rehydration provides a positive use for reclaimed water during wet periods when irrigation demand is low. Reclaimed water that would otherwise have been discharged into water bodies during wet periods can instead be used to restore impacted wetlands.

Water Supply Sources



Traditional Sources

Groundwater: *Water that is pumped from the aquifer. Most groundwater within the District is drawn from the Upper Floridan aquifer. Groundwater accounts for approximately 80 percent of the fresh water used within the District.*



Alternative Sources

Consistent with statutory direction (section 373.0831, Florida Statutes), the District works with local governments and regional water supply authorities to investigate, develop and implement a wide range of alternative water sources.



Conservation: *Efficient water-saving practices including personal habits, Florida-Friendly Landscaping and low-flow fixtures. Conservation is the most cost-effective way to reduce water demand.*



Reclaimed Water: *Wastewater that has received at least secondary treatment and is reused after flowing out of a domestic wastewater treatment plant. Reclaimed water can be reused for irrigation, groundwater recharge and industrial processes.*



Rehydration: *The application of stormwater or reclaimed water to the surface of upland areas or wetlands to help increase the amount of water in the aquifer. The applied water undergoes additional cleansing as it filters down to the aquifer.*



Surface Water Supplies: *Water supplies drawn from creeks, rivers and lakes. This water source may be limited by seasonal rainfall totals.*



Reservoirs: *Constructed areas where water is collected and stored. When needed, water from reservoirs can be treated for use.*



Aquifer Storage and Recovery (ASR): *The process of treating water and injecting it into the aquifer for storage. When needed, the water can be recovered and treated for use.*



Desalination: *The removal of salt from seawater or brackish water to produce drinking-quality water. Desalination has the potential to be a droughtproof, inexhaustible alternative water source.*

Surface Water Supplies

Seven water bodies within the District are currently used for municipal water supplies: Alafia River, Braden River, Hillsborough River, Manatee River, Peace River, Myakkahatchee Creek and Shell Creek. These water bodies are used to supply communities in Charlotte, DeSoto, Hillsborough, Manatee, Pasco, Pinellas and Sarasota counties. Surface water supplies are distributed regionally by Tampa Bay Water and the Peace River Manasota Regional Water Supply Authority to reduce the dependence on groundwater and help restore water resources impacted by groundwater pumping.

The amount of surface water that can be used is limited by seasonal rainfall. Approximately 60 percent of Florida's total yearly rainfall occurs from June through September. During dry seasons, excessive surface water withdrawals can stress natural systems. One key to safely maximizing the use of surface water is to develop sufficient storage so water can be collected during high-flow periods for use in drier times. This storage may occur in aboveground reservoirs or below the surface in the aquifer.

Reservoirs

A reservoir is an area constructed to collect and store water for future use. Older reservoirs were typically developed in-stream by building a dam across a creek or river, but newer reservoirs in the District have been built aboveground and off-stream to preserve natural systems. During periods of increased rainfall, excess water can be skimmed from surface waters and stored in reservoirs for use during dry seasons. There are seven reservoirs used for public supply within the boundaries of the District. The C. W. "Bill" Young Regional Reservoir, built by Tampa Bay Water, is the largest. The District contributed \$26 million in state Florida Forever funding to purchase the property for the reservoir. This facility holds 15 billion gallons of water skimmed from the Tampa Bypass Canal and the Alafia and Hillsborough rivers. When needed, water from the reservoir is sent to the Tampa Regional Surface Water Treatment Plant and then on to residents and businesses. The Peace River Manasota Regional Water

Supply Authority's new reservoir was completed in 2009. This facility can hold up to six billion gallons of water from the Peace River to serve residents of Charlotte, DeSoto and Sarasota counties. The District contributed \$38 million through ad valorem taxes and state funds to assist with engineering and construction costs.

Aquifer Storage and Recovery (ASR)

Instead of storing excess storage water in aboveground reservoirs, water can be treated and injected into the aquifer for storage. When needed, the water can be recovered, treated and then pumped into the public water system. Although there is some mixing between the existing groundwater and the injected water, typically 70 to 100 percent of the injected water can be recovered. ASR systems store water for longer periods of time than reservoirs, eliminate water loss due to evaporation and reduce negative impacts on the land. There are at least 22 ASR sites in operation, under construction or being considered for construction within the District.

Desalination

Desalination is a process that removes salt from seawater or brackish water to produce drinking water. By using seawater from the Gulf of Mexico, desalination would reduce the need for groundwater pumping and allow residents within the District to benefit from a droughtproof alternative water source. Until recently, obstacles to seawater desalination have been the high cost of production and environmental concerns over the disposal of the concentrated salt byproduct. However, estimated costs of seawater desalination are now comparable to other alternative water sources. Recent studies show that with the proper disposal of concentrate, no significant environmental impacts from the process will occur. Tampa Bay Water's 25 mgd desalination plant became fully operational in 2007 and is currently the largest operating seawater desalination facility in North America. The plant has the ability to produce 10 percent of the Tampa Bay region's water supply needs. The District has reimbursed Tampa Bay Water \$85 million toward the cost of construction.

Southwest Florida
Water Management District



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The Southwest Florida Water Management District (District) does not discriminate on the basis of disability. This nondiscrimination policy involves every aspect of the District's functions, including access to and participation in the District's programs and activities. Anyone requiring reasonable accommodation as provided for in the Americans with Disabilities Act should contact the District's Human Resources Director, 2379 Broad St., Brooksville, FL 34604-6899; telephone (352) 796-7211 or 1-800-423-1476 (FL only), ext. 4702; TDD 1-800-231-6103 (FL only); or email ADACoordinator@WaterMatters.org.