

# Water Supply

## *Developing Sustainable Water Supplies to Meet Current and Future Demands*

A booming population is challenging west-central Florida's ability to ensure adequate water supplies for residents, businesses and agriculture. 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 4 million people currently live within the boundaries of the District. The population in the 16 counties under District jurisdiction grew 58 percent between 1980 and 2000, and is projected to increase by another 30 percent to approximately 5.2 million residents by 2020.

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**

Currently, 85 percent of water used within the District comes from traditional groundwater sources. Most ground water is drawn from the Floridan aquifer, which was once thought to be a virtually inexhaustible source. However, overreliance on pumping ground water has now 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 substantial 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 significant amount of water from any source requires a water use permit (WUP) issued by the District.

In general, to obtain a WUP an applicant must demonstrate that the proposed use will be in the public interest, is reasonable and beneficial, and will not interfere with existing legal users. 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 or are expected in the foreseeable future. Special rules and criteria have been adopted for each WUCA in order to help alleviate stress on the water resources.

Scientific advances developed by the District and stronger rules have increased protection and management of our water resources, but 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 components 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 local 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, desalination, reservoirs, and aquifer storage and recovery. Recent legislation increased state funding for developing alternative water supplies.

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 adverse impacts to water resources
- Replace existing sources to meet minimum flows and levels
- Support a sustainable water supply that would otherwise not be financially feasible

### Conservation

The most cost-effective alternative water source is conservation. Conservation includes being more efficient and less wasteful with water resources. District water conservation projects implemented since the early 1990s have saved more than 11 million gallons of water per day (mgd).

The District promotes conservation by increasing public awareness through education, funding programs to make plumbing fixtures more efficient, working with industry and agriculture to reduce their use of ground water, 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 usage. For example, the District partnered with the Florida Department of Agriculture and Consumer Services to implement 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 can be reused in compliance with Department of Environmental Protection and District rules for agricultural irrigation, groundwater recharge, industrial processes and lawn irrigation.

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 pumped to homes in the Tampa Bay area is used for landscaping and irrigation. Reclaimed water could be used to supply some of those water needs instead of using drinkable water.

The District encourages reuse of reclaimed water and funds water reclamation projects through programs including the Cooperative Funding Initiative, the New Water Sources Initiative, the Water Protection and Sustainability Trust Fund and the Water Supply and Resource Development Fund. District funding of more than 259 reuse projects will enable more than 215 mgd of reclaimed water to be reused, saving about 150 mgd of potable-quality water.

In addition, the District is working with Tampa Bay Water (a regional wholesale water utility) and three of its local governments to develop a regional reclaimed water project. This project would utilize reclaimed water from the city of Tampa's wastewater treatment facility to meet irrigation needs and provide environmental restoration.

### Rehydration

Rehydration is the process of increasing the amount of water in the aquifer by applying storm water 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 during wet periods can instead be used to restore impacted wetlands.

*continued on next page...*

## Water Supply Sources

### Traditional Sources



**Ground Water:** Water that is pumped from the aquifer. Most ground water within the District is drawn from the Floridan aquifer. Ground water accounts for 85 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 local 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. The most cost-effective way to accommodate increasing water demand.

**Reclaimed Water:** Used water 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 storm water 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 is limited by seasonal rainfall totals and pollution.

**Reservoirs:** Man-made 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, treated and then reused.

**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 creeks and rivers within the District are currently used for municipal water supplies, serving Tampa, Bradenton, Punta Gorda, Port Charlotte and North Port, as well as Hillsborough, Charlotte, Manatee and Sarasota counties.

Efficient use of surface water can reduce the need for groundwater pumping and help restore water resources impacted by groundwater pumping. But there are limitations to the amount of surface water that can be used. Approximately 60 percent of Florida's total yearly rainfall occurs from June through September. During dry seasons, surface water use can tax 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 periods. This storage may occur in aboveground reservoirs or below the surface in the aquifer.

### **Reservoirs**

A reservoir is a man-made area where water is collected and stored for future use. During periods of increased rainfall, excess water can be skimmed from surface waters and stored in reservoirs for use during dry seasons.

There are five major reservoirs within the boundaries of the District. The new 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, the Alafia River and the Hillsborough River. When needed, water from the reservoir will be sent to the Tampa Regional Surface Water Treatment Plant and then on to residents and businesses.

### **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 ground water and the injected water, nearly three-fourths of the injected water can be recovered. In addition, ASR stores water for longer periods of time than reservoirs, eliminates water loss due to evaporation and minimizes the impact on the land.

There are at least 26 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 utilizing 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 and recent studies indicate no significant environmental impacts from the process.

The District has pledged to reimburse Tampa Bay Water up to \$85 million toward the cost of constructing its seawater desalination plant once the facility meets performance standards. When fully operational, the plant will produce up to 25 mgd of fresh water.