



# WATER CONSERVATION

*A Comprehensive  
Program for  
South Florida*

September 2008



REDUCE YOUR  
**WATER  
USE**  
*no excuse!*

A graphic of a blue water drop with white splashes, positioned to the left of the text.

# WATER CONSERVATION – *A Comprehensive Program for South Florida*

Developed by the South Florida Water Management District with input from a diverse stakeholder group of water use interests.

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## CHAIR'S message



*Eric Buermann*

South Florida is at a critical turning point. Population growth combined with periodic and multi-year droughts remind us that the days of cheap and unlimited water are over. Residents and businesses must develop a culture of conservation to protect our limited water resources. We all recognize the need for a long-term water conservation program that is

active all year round – not just during droughts – and results in a measurable and lasting difference.

Working through the South Florida Water Management District's Water Resources Advisory Commission, we convened a public water conservation summit and put together a team of stakeholders to help us develop a comprehensive program designed to reduce South Florida's current water use consumption of 179 gallons per person per day. Together, we can, and we must, do better.

As a resource management tool, water conservation is the most economical option for addressing long-term water demands. When effectively applied, it has the very real potential to defer or reduce the need for more-costly development of new sources and facilities.

By its very nature, water conservation is an environmentally-friendly policy supporting Governor Charlie Crist's leadership in this vital area. It underscores the growing mindset of "green" living, in which lifestyles embrace recyclable materials, waste reduction and sustainability. Significant amounts of energy are used to produce and distribute potable water. By using less water, less energy is required. Using less water also means less wastewater has to be treated and disposed – another environmental concern. To set an example, the District will continue to seek ways to reduce our own energy consumption and water use.

We and our neighboring water management districts are building momentum toward a statewide ethic of water conservation. We encourage you to join us.



**W**ater is the essence that inextricably intertwines the environment, economy and quality of life in South Florida. Just as abundant water gives vitality to the region, a lack of water strains natural resources, stifles economic growth and periodically disrupts our daily routines.

Water conservation, also known as demand management, promotes permanent water use efficiencies and is a prudent component of water resource management. Demand reduction increases the available supply of water from existing sources to support new economic growth. It is also more immediate, significantly less costly and more energy efficient than developing new sources of water.

The comprehensive program embodied in this collaborative plan aims to break the current reactionary approach of focusing on the benefits of water conservation primarily in response to emergencies. The end-goal is to replace today's "as needed" thinking with a more beneficial, year-round water conservation ethic.

Successfully fostering a strong ethic of conservation will protect South Florida's sensitive water resources and help ensure a more sustainable supply of water for both natural systems and people. Achieving long-term water use reductions will require a combination of new technology, best business and management practices and behavioral changes.

An added benefit of water conservation is its supporting role in environmental restoration and protection. Demand reduction decreases the competition for water between the needs of the urban and agricultural areas and the needs of the environment. Water saved can be used to meet new needs, in effect expanding current water supplies, while protecting the environment by reducing both runoff and the need for wastewater disposal. In addition to the construction of restoration projects, consistently applied and lasting water conservation practices will continue to be a vital component in successfully meeting South Florida's water needs.

## WHERE FLORIDA'S WATER COMES FROM

According to the Water Resources Atlas of Florida, average annual rainfall in Florida is 53 inches, making it one of the wettest states in the nation. The state's differing climate types yield much rainfall variability from region-to-region and from year-to-year. In central and South Florida, most of the rain falls during four summer months and much of the annual amount is "lost" to the natural hydrologic system through evaporation. The region is prone to wide weather extremes of flood and drought.

Nearly two-thirds of Florida's freshwater use is pumped from vast underground reservoirs called aquifers. Of Florida's groundwater sources, the deep Floridan Aquifer, which spans the majority of the state, supplies 62 percent; the shallower Biscayne Aquifer (underlying most of Miami-Dade and Broward and portions of Palm Beach and Monroe counties), provides 17 percent; the remaining 21 percent is supplied by surficial and intermediate unnamed aquifers. The state's remaining freshwater is supplied from surface waters, including lakes and rivers.

In South Florida, approximately 90 percent of the water used in homes and businesses comes from groundwater sources. The remaining 10 percent comes from surface waters. Both surface and groundwater supplies are highly dependent on rainfall for replenishment.

At the heart of the South Florida system sits Lake Okeechobee – the largest natural water body in the southeastern United States. It serves as a source of public water supply for the City of Okeechobee (16,000 utility customers) and provides a supplemental source of irrigation water to more than 700,000 acres in agricultural production. In addition, it serves as the back up water supply for more than five million residents. The massive lake also plays a critical environmental and economic role as a sport and commercial fishery, navigation/recreation waterway and natural habitat for fish, wading birds and other wildlife, including a variety of endangered and threatened species.

While heavy rainfall throughout South Florida benefits and recharges underground supplies, the ability to capture and store the rainwater for future use is extremely limited. When floods threaten – even during water shortage situations – the top priority is channeling the excess water away from homes and businesses as quickly as possible. To lower the levels in coastal canals and accommodate direct rainfall and stormwater runoff, freshwater must oftentimes be released to the ocean or gulf.

## EXECUTIVE DIRECTOR'S *message*

Residents and businesses have repeatedly demonstrated their willingness to reduce water use during times of adversity. And, now, thanks to the foresight of our Governing Board, we are building on that positive momentum – actively turning a short-term challenge into an opportunity for long-term change.



*Carol Ann Wehle*

With the involvement and input from a diverse group of water use representatives, we are ready to move forward with a series of recommendations and implementation strategies designed to bring about a permanent reduction in individual water use over the next decade. Strong partnerships are key to successful implementation.

Organized into regulatory, voluntary and incentive-based, and education and marketing initiatives, the program components are designed to build on and complement successful water conservation initiatives at the local, state and national levels. The program is dynamic and adaptable, with an on-going commitment to explore and consider additional water-saving opportunities, technologies, research and partnerships.

### **Key Strategies and Action Steps Include:**

- A focus on goal-based conservation planning, implementation and improved reporting for large, permitted water users
- Conservation-based rate structures designed to encourage water savings and discourage high volume use
- Retrofitting of outdated, water-guzzling plumbing devices
- Year-round landscape irrigation measures
- Adopting and incorporating Florida-friendly landscaping principles
- Increased public and classroom education and social marketing
- A call for governments and large users to lead by example

The cheapest gallon of water is the gallon we don't waste through efficient water use and conservation.

## Low Water Rates

Floridians pay some of the lowest rates for water in the country. Monthly water utility bills in cities throughout Florida average \$54 per month, with some as low as \$25 per month. By comparison, residents of Houston average \$140 per month; in Chicago the average is \$127 per month; and on the west coast, Seattle and San Diego households pay an average of \$63 per month.



## Landscape Irrigation Conservation

Implementation of year-round landscape irrigation measures in Charlotte, Collier and Lee counties in 2003 suggests that District-wide expansion of 2-day-a-week landscape irrigation rules will curtail wasteful irrigation practices and may help reduce overall water demand by as much as 10 percent.

## WATER USE IN SOUTH FLORIDA

Floridians use approximately 6.5 billion gallons of freshwater every day. With 40 percent of the state's population and a sizable agriculture industry, South Florida consumes 3.4 billion gallons – more than half the state total.

Local government and private water utilities treat and provide water to most homes and businesses. A much smaller number of people rely on individual wells as their source for drinking and/or irrigation water. Most water uses, such as water used for public water supply, industrial purposes and agricultural irrigation, are regulated by the regional water management districts through Water Use Permits.

According to the latest U.S. Geological Survey water use report, South Florida residents average 179 gallons per person per day – the highest usage in the state. The statewide average is 158 gallons. It is estimated that up to half of that goes to outdoor irrigation and more than 50 percent of the water typically applied to lawns is lost to evaporation or run-off due to overwatering.

Within the South Florida Water Management District's 16-county region, agricultural irrigation accounts for 53 percent while public supply accounts for 37 percent of overall water use. Power generation, industrial use, recreational irrigation and private water wells comprise the remaining 10 percent.

By 2025, six million new residents are projected to make Florida their home, swelling the population to more than 24 million. More than half of the new residents will settle in South Florida. At the same time, South Florida's demand for freshwater is projected to increase to 4.3 billion gallons per day – a 22 percent increase over today's use.

As more agricultural land is expected to be replaced with urban development, public supply is expected to overtake farming as the largest use, consuming an anticipated 54 percent of the total. While agriculture is expected to be a smaller percentage of the overall future demand, it still represents a significant slice of the water use pie and continues to be a major economic force within the state. Existing regulations calling for better on-farm water use efficiencies have produced positive results.

In total, the demand for urban and agricultural water uses is projected to increase significantly over the next 20 years. Future water demands must be met without causing harm to the environment and water resources.

## EXISTING WATER SUPPLY AND WATER CONSERVATION EFFORT

The South Florida Water Management District's (SFWMD) long-standing conservation goal is to prevent and reduce wasteful, uneconomical, impractical or unreasonable uses of water resources. Traditionally, this has been addressed through a combination of planning; regulation; supply augmentation through alternative sources including the reuse of reclaimed water; demand reduction through conservation technology, best management practices and water-saving funding programs; and public education.

### ■ Regional Water Supply Planning

As mandated by Florida law, regional water supply plans identify needs and develop strategies for meeting future water demands of urban and agricultural uses, while meeting the needs of the environment. This process highlights areas where historically-used sources of water will not be adequate to meet future demands, and evaluates several water source options – including water conservation – to meet those demands. The plans are based on a 20-year planning horizon and must be updated every five years. Each regional water supply plan includes water demand estimates and projections; an evaluation of existing regional water resources; identification of water supply-related issues and options; water resource and water supply development components, including funding strategies; and, recommendations for meeting projected demands.

### ■ Water Use Regulation

The consumptive use of water in the State of Florida is regulated by programs implemented by the state's five water management districts (Chapter 373, Florida Statutes). Applications for water use are evaluated under a "three-pronged" test: the proposed use must be reasonable-beneficial, it must not interfere with any presently existing legal use of water and it must be consistent with the public interest. Since 1991, water conservation must also be addressed as part of the SFWMD application process. Specific conservation requirements and elements are listed in the "Basis of Review for Water Use Permit Applications Within the South Florida Water Management District" for each water use type. Elements for public water supply applicants include local government ordinances limiting irrigation hours, promoting water-efficient landscaping and the installation of ultra-low volume plumbing fixtures in all new construction; the adoption of a water conservation-based rate structure; leak detection programs for utilities with unaccounted-for water losses of greater than 10 percent; rain sensors on new automatic irrigation systems; and public education programs. Requirements for landscape and golf applicants include use of water-efficient landscaping principles and installation and use of rain sensors or similar devices.

## Stronger Growth Management

In 2005, the first overhaul of Florida's growth management laws in more than two decades strengthened the link between local government comprehensive planning and water management district water supply plans. Referred to as "concurrency," the law's requirements ensure that local governments identify how future water supply needs will be met; prepare a 10-year facilities work plan; and incorporate the work plan into state-approved local comprehensive plans. Further, the work plan must identify specific water supply projects, along with conservation and reuse efforts, for meeting existing and future water needs.



## Protecting the Everglades

In April 2007, a groundbreaking rule approved by the South Florida Water Management District went into effect that guarantees water to protect and restore America's Everglades. Known as the Regional Water Availability Rule, this first-of-its kind requirement prevents water users from tapping the River of Grass for new or additional supplies of water – setting aside the water in the Everglades for environmental restoration. The rule boldly addresses regional growth and the need to protect the natural system for future generations. Cities needing additional water supplies are now required to seek alternative sources that are not dependent on the Everglades for recharge. These alternative solutions may include recycling water, using reclaimed water to recharge the Biscayne Aquifer, drawing water from the deeper Floridan Aquifer and/or water conservation.

## Alternative Water Supplies

Over the last three years, the Water Protection and Sustainability program has provided \$212 million statewide to develop alternative water supplies, with close to \$64 million going to communities in South Florida. The South Florida Water Management District added \$50 million to this cost-share effort to help create more water capacity.



## Water Reuse

During the past 20 years, Florida has risen to be recognized as a national leader in water reuse. Approximately 663 million gallons per day (mgd) of reclaimed water was reused for beneficial purposes in 2006. The total reuse capacity of Florida's domestic wastewater treatment facilities has gone from 362 mgd in 1986 to 1,368 mgd in 2006 – a 278 percent increase. In 2006, almost 229 million gallons per day of reclaimed water was reused in South Florida for many uses, including irrigation of 80,813 residential lots, 168 golf courses, 113 parks and 52 schools.

### ■ Supply Augmentation -

#### Alternative Water Supply Funding Program

Since 1996, the SFWMD has provided funding to water users for alternative water supply capital projects. This program has provided over \$150 million to more than 400 projects. Almost half of the funded water supply projects are water reuse facilities and expansions, and about a quarter of the projects process brackish water sources for potable water using reverse osmosis treatment. The remainder are aquifer storage and recovery, and “other” projects such as stormwater reuse or brackish water irrigation of salt tolerant grass in golf course applications. To further encourage the development of alternative water supplies as a growth management tool, the Florida Legislature in 2005 created the Water Protection and Sustainability Trust Fund, increasing funding for local alternative water supply projects.

### ■ The Reuse of Reclaimed Water

Water reuse is an integral part of overall efforts to manage water resources. The reuse of reclaimed water is the utilization of highly treated domestic wastewater for beneficial purposes such as: irrigation of yards, agriculture, golf courses, and other green space; industrial purposes such as cooling water and process water; ground water recharge; toilet flushing; dust control and environmental restoration. Reuse reduces the reliance on ground water, surface water and potable water for these uses.

In 2008, the Florida Legislature authorized the elimination of the six remaining ocean outfalls in Florida. This legislation requires utilities currently using ocean outfalls as a wastewater disposal method to go to advanced wastewater treatment by 2018; to eliminate discharges (except for wet weather) by 2025; and to achieve, at a minimum, 60 percent reuse of the facility's actual annual flow by December 31, 2025. The elimination of ocean outfalls – all of which are located within the South Florida Water Management District's boundaries – will generate an estimated 300 million gallons per day of reclaimed water for use within some of the most heavily-populated areas of South Florida. To assist in the application of this reclaimed water, the law also requires the District to include water supply development projects that support the reuse of this treated wastewater in its regional water supply plans and to require its beneficial use through consumptive use permits.

### ■ Demand Reduction - WaterSIP Program

Since 2002, the South Florida Water Management District has annually provided matching funds of up to \$50,000 to individual water providers and users for installing hardware and water saving technology, such as low-flow plumbing fixtures, rain sensors, and fire hydrant flushing devices through its Water Savings Incentive Program, or WaterSIP. These funds are

available to cities, public utilities and water providers, homeowners' associations, schools and commercial facilities. Special consideration is granted to qualified Rural Economic Development Initiatives (REDI) communities.

#### ■ Demand Reduction - Mobile Irrigation Labs

Of all water used in South Florida, nearly 90 percent is used for lawn and agriculture irrigation. Mobile irrigation labs perform evaluations and provide recommendations for efficient outdoor water use. These specialized labs-on-wheels evaluate the effectiveness of agricultural and homeowner irrigation systems and then make recommendations on how the existing system can be made more efficient. The result is a savings in water, energy, time and money for the user.

Mobile irrigation labs underscore the benefits of partnerships. The South Florida Water Management District, in partnership with the Florida Department of Agriculture and Consumer Services, the National Resources Conservation Service and the Soil and Water Conservation Districts, share not only funding, but technical expertise and public education programs. Since 2000, the 11 mobile irrigation labs currently in operation in South Florida have saved an estimated 4.7 billion gallons per year.

#### ■ Public Education

Over the last two decades, the District has developed a wide range of materials and engaged in a number of multi-media campaigns to share information with the public about water conservation - from billboards to printed publications and public service announcements. Emphasis has also been placed on teacher training and school-based curricula to ensure that the region's future leaders and decision-makers are informed and educated on the importance of conserving water. Participation in District-wide community and environmental-appreciation events also provide venues for information sharing with various audiences throughout the region.

Since 1985, the SFWMD has engaged in seven media campaigns, including the "Turn It Off" campaign used in 1990 and 2000, and "Florida's Water, It's Worth Saving" in 2003 in coordination with the St. Johns River Water Management District. Each of these campaigns has coincided with a water shortage. Recognizing the broad reach and immediacy of the internet as a source of information for all ages, the SFWMD developed a comprehensive web site that speaks to all audiences about water conservation ([www.savewaterfl.com](http://www.savewaterfl.com)).

## WaterSIP Savings

To date, WaterSIP has committed more than \$2.3 million in cooperative funding for more than 70 water conservation projects, resulting in an estimated water savings of 1.56 billion gallons per year. An example of an innovative project funded through the WaterSIP grant is Hunter's Creek in Orange County. Using a state-of-the-art irrigation system including a weather station (pictured below) and soil moisture sensors, managers of this community can determine when and where irrigation is needed, and water only those areas. Hunter's Creek has saved an estimated 90 million gallons of water annually since 2004 through its innovative irrigation system.



## Ensuring Water for the Everglades



Together with traditional demand management programs, efforts are under way to capture, conserve and more effectively utilize water for the natural system through environmental restoration. With limited surface water storage and an infrastructure designed for flood control, it is estimated that a staggering 1.7 billion gallons of water per day on average is “lost” due to diversion through an extensive man-made canal system and discharge to tide.

Today, the South Florida Water Management District and the State of Florida, along with the U.S. Army Corps of Engineers and other partner agencies, are working to undo the environmental damage inadvertently caused by a century of drainage. Restoration of the historic Everglades ecosystem is the largest environmental restoration in the world. The overarching goal is to capture the fresh water that now flows unused to the ocean and the gulf and redirect it to storage for natural areas that need it most for restoration purposes. Returning a more historic flow of water to the remnant River of Grass will not only revive the native habitat for 68 threatened and endangered species, it will also naturally replenish the underground aquifers that supply drinking water to the population.

### **THE REGIONAL SYSTEM**

The management of South Florida’s water resources is made extremely complex by Florida’s sub-tropical climate of extreme wet and dry periods. Compounding the natural challenges to water management in South Florida is the region’s history of urban and infrastructure development. Just a century ago, water flowed – and sometimes overflowed – from the Chain of Lakes

in the central part of the state, through the naturally-winding Kissimmee River into Lake Okeechobee, then spread south through the southern Everglades to the flats of Florida Bay.

While native habitats and wildlife thrived on the weather extremes of flood and drought, it was not as hospitable to people. In the mid-1800s, taming this wet wilderness was viewed as a linchpin to attracting more settlers to the state. Efforts to “dredge and drain the swamp” accelerated after the turn of the century. Drying out the wetlands created large tracts of productive farmland. Soon, cities and towns developed along the coast.

Plans to further control the flow of water intensified after deadly hurricanes in the 1920s caused floods that took the lives of nearly 2,000 people living around Lake Okeechobee. By 1937, an earthen dike (later to be named the Herbert Hoover Dike) encircled the huge water body, giving it more defined boundaries than nature had originally created and reducing the lake’s natural storage by a third. Following the dike’s construction, a series of droughts and floods culminated in catastrophic regional flooding in the late 1940s and prompted calls for more relief. In response, the U.S. Congress authorized construction of the Central and Southern Florida Project – a massive network of canals, levees and water control structures that drastically changed the watery landscape.

Completion of the water management system allowed for tremendous population and economic growth. Originally designed

to meet the needs of a projected two million people, today, more than 7.5 million live and work in the 16-county region. In addition, the population annually swells with the seasonal influx of part-time residents and year-round tourists. The region also supports a major agricultural industry and other water-dependent businesses.

The success of this engineering marvel also came at the expense of the natural environment including plant and wildlife species – shrinking the Everglades ecosystem by some two million acres and impacting water quality, natural water storage capacity and natural patterns of water flow.

### **RESTORATION OF AMERICA'S EVERGLADES**

Recognizing that construction of the federally-built water management system resulted in unintended consequences on the natural system, Congress authorized the Restudy of the Central and Southern Florida Project in the early 1990s to assess the measures necessary to restore the south Florida ecosystem. During this time, a number of "Critical Restoration Projects" were identified to provide immediate, substantial, and independent benefits to the Everglades and were specifically authorized by the 1996 Water Resources Development Act.

The broader-scope Comprehensive Everglades Restoration Plan (CERP) was proposed in 1999 and was authorized in the Water Resources Development Act of 2000. The joint state-federal partnership of CERP provides a thirty-year framework to restore, protect and preserve the water resources of central and southern Florida, including the Everglades. CERP includes more than 60 elements. Any water resulting from the

construction of restoration projects will, first and foremost, be devoted to environmental restoration. Major components of CERP include surface water storage reservoirs; water preserve areas; management of Lake Okeechobee as an ecological resource; improved water deliveries to the St. Lucie and Caloosahatchee estuaries; underground water storage; treatment wetlands; improved water deliveries to the Everglades; removal of barriers to the natural sheetflow of water; storage of water in existing quarries; reuse of wastewater and improved water conservation.

To kick-start restoration, in 2004, the state and SFWMD launched a plan to expedite the construction of a suite of projects to achieve early benefits. Further underscoring the state's commitment to ecosystem restoration, the Florida Legislature in 2007 created the "Northern Everglades and Estuaries Protection Program" to promote a comprehensive, interconnected watershed approach to protecting Lake Okeechobee and the Caloosahatchee and St. Lucie rivers and estuaries. Ultimately, improving the natural system north of the lake will help better manage water flowing south to the Everglades.

### **RESTORATION PROGRESS**

More than half of the nearly 400,000 acres of lands needed to move forward with the state-federal CERP partnership are in public ownership, including all of the land needed to construct the suite of expedited projects. Design and/or construction of projects to increase storage, improve water quality and reestablish more historic flow patterns and hydrologic characteristics are also under way.



## Florida's Drought Action Plan

In response to the 2007 drought, the Florida Department of Environmental Protection, in coordination with the Department of Agriculture and Consumer Services, the South Florida Water Management District and the Florida Division of Emergency Management, produced the Florida Drought Action Plan. The agencies worked closely with Conserve Florida to develop the Action Plan recommendations. Among the tasks in that plan is the development of practical recommendations and policy changes to alleviate the severity of future droughts in Florida. The Florida Drought Action Plan focuses on improving water use efficiency through agricultural operations; public water supply; and commercial and industrial practices and programs.



## CONSERVE FLORIDA – A STRONG FOUNDATION

Through the years, the State of Florida has responded to sustained droughts with a variety of initiatives. In early 2000, the Florida Department of Environmental Protection (FDEP) led a statewide effort that resulted in the 2002 “Florida Water Conservation Initiative,” which identified ways to improve efficiency in all categories of water use.

The Water Conservation Initiative evolved into “Conserve Florida” with three main program elements:

- Develop and implement standardized public water supply conservation definitions and standardized quantitative and qualitative performance measures for an overall system of assessing and benchmarking the effectiveness of water conservation programs and practices. *(Completed March 2005.)*
- Establish a clearinghouse and pilot applications for water conservation programs and practices as a part of an integrated statewide database for the collection, evaluation and dissemination of quantitative and qualitative information about water conservation. *(Under contract with the FDEP and the University of Florida.)*
- Develop and maintain a Florida-specific water conservation guidance document, including a standardized process to assist public water suppliers in the design and implementation of goal-based, utility-specific water conservation plans. *(Completed May 2006.)*

The Water Conservation Clearinghouse, hosted by the Department of Engineering Sciences at the University of Florida, provides information and associated online resources. The mission of the Clearinghouse is to collect, analyze, catalog and make available research information. In addition, the Clearinghouse provides technical assistance to public water supply utilities and water managers for use in developing effective and efficient water conservation programs. The Clearinghouse also evaluates conservation programs, promotes continuous, long-term improvement in water conservation practices, and provides potential methods to utilities seeking to implement conservation programs.

A guidance document aids utilities in developing goal-based water conservation programs, and includes a standard methodology and process for developing utility water use profiles and measuring conservation results. Many of the strategies and action items outlined in this collaborative document acknowledge and build on the groundwork and resource tools developed through the Conserve Florida program.

## BEYOND DROUGHT – INSTILLING A YEAR-ROUND ETHIC

While the public readily steps up and responds to calls for temporary cutbacks in water use during emergencies, past experience shows that once the water shortage is over, the commitment to practicing water conservation is over as well. Constantly modifying expectations during emergency situations created by rainfall deficits and low water levels does little to promote enduring changes to behavior that will better protect the resource for the long-term. Replacing short-term restrictions with a clear, consistent and broader strategy for increasing the overall efficient use of water will help bring stability and predictability to the region.

To jumpstart that paradigm shift, in October 2007 the SFWMD Governing Board unanimously adopted a resolution calling for a Water Conservation Summit. The purpose of the public forum was to draw insight from the experience of other organizations having developed and implemented successful year-round water conservation programs in other regions of the country. The Summit also served as the kick-off for developing a comprehensive water conservation program for South Florida.

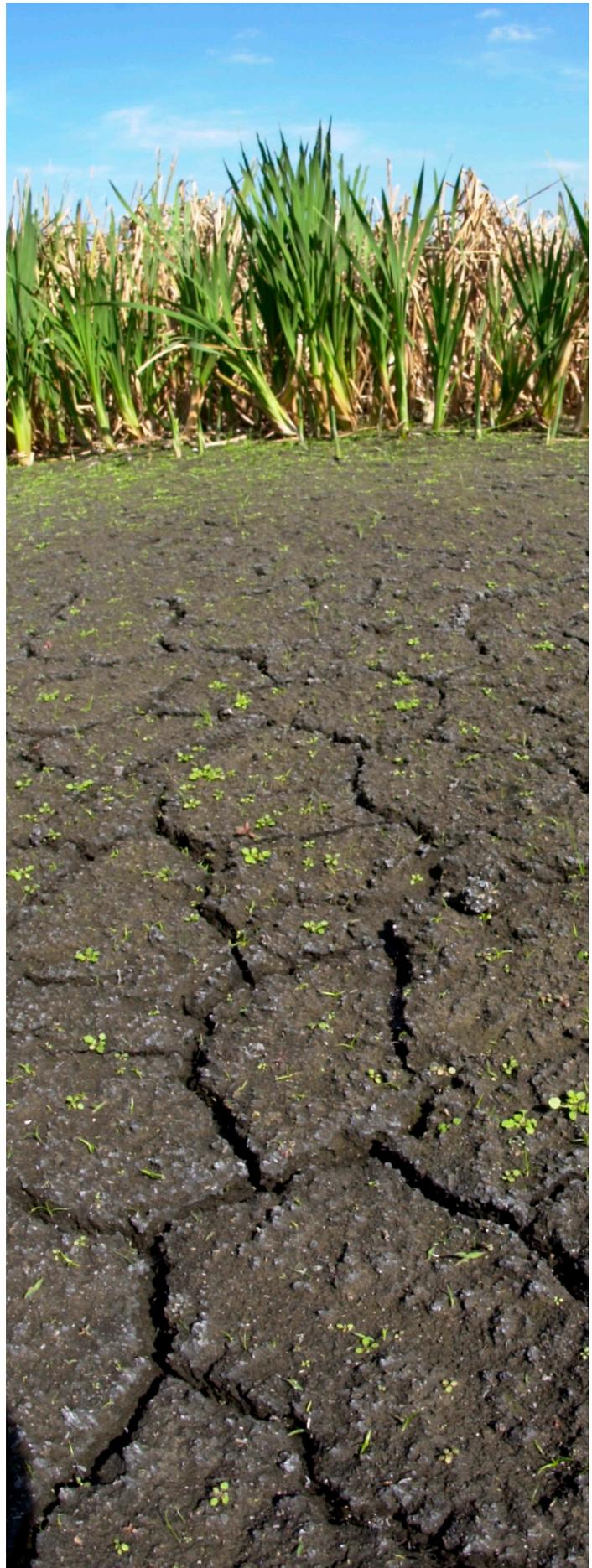
### ■ A Participatory Approach

Continuing the agency policy of seeking stakeholder involvement in addressing key water resource issues and recognizing the importance of partnerships in effectively implementing plan components, the Governing Board directed that a participatory approach be utilized in developing the conservation program.

Hosted by the Governing Board's Water Resources Advisory Commission (WRAC), a public Water Conservation Summit was held December 4, 2007, to gather information and input from local, state and national experts on the components of an achievable, meaningful and lasting water conservation program. Participants highlighted case studies on water conservation programs and identified practical components, successes and obstacles the District may face in design and implementation.

The Summit also launched an intensive stakeholder-driven process to gather input from a wide variety of interests for development of a comprehensive plan. The District identified and assembled a diverse group of 21 members representing 13 water use groups and interests.

The stakeholder group met monthly from December 2007 through May 2008 with the goal of assisting the District in the development of a proactive and achievable water conservation program. Input and suggestions from the stakeholder representatives and the WRAC membership were considered and incorporated, where appropriate, into the following plan of action.



## STAKEHOLDER PARTICIPANTS

Facilitator: Janice M. Fleischer, J.D., *Principal, FLASH Resolutions*

### Agriculture:

- Tom MacVicar, P.E., *President, MacVicar, Federico & Lamb, Inc.*
- Charles M. Shinn III, *Assistant Director, Government & Community Affairs - Florida Farm Bureau Federation*

### Developers:

- Susan Hebel Watts, *Senior Vice President, Bonita Bay Group*

### Environmental Organizations:

- Jacquie Weisblum, *Everglades Team Leader, Audubon of Florida*
- Margaret McPherson, *Vice President, The Everglades Foundation*

### Hospitality and Service Industries:

- Rick Hawkins, *Director of Materials Management, The Breakers Palm Beach*
- Armando Rodriguez, *Director Environmental Affairs Division, Walt Disney World Co.*

### Industrial and Manufacturing:

- Sheila M. Wilkinson, *Power Generation Division Interim General Manager II, Florida Power & Light, Co.*

### Local Government:

- Commissioner Tammarra "Tammy" Hall, *Lee County Board of County Commissioners*
- Commissioner Kristin Jacobs, *Broward County Board of County Commissioners*
- Anne Murray, P.G., *Martin County, County Hydrogeologist*
- Mark Hull, *Manager, Village of Golf*

### Nursery and Landscape Business:

- Dave Self, *President, Board of Directors, Florida Nursery Growers & Landscape Association*

### Property Owners/Homeowners Associations:

- Andrew Lester, *Regional President, The Continental Group*

### Parks and Recreation:

- Eric Call, *Assistant Director, Palm Beach County Parks & Recreation Department; Member, Florida Recreation & Parks Association*

### Small Businesses:

- Kevin Cavaioli, ASLA; *Hoover Pumping Systems, Vice President; Board of Directors, Florida Irrigation Society; Authorized Instructor, Irrigation Association*

### Sports and Leisure (Golf Courses):

- Joel Jackson, CGCS, *Executive Director, Florida Golf Course Superintendents Association*

### Utilities:

- A. Randolph Brown, *Utilities Director, City of Pompano Beach*
- Paul Mattausch, *Director, Water Department, Collier County Public Utilities Division*
- Maribel Balbin, *Water Use Efficiency Manager, Miami-Dade Water and Sewer Department*

### Wholesale Water Purchasers:

- John Stunson, *City Manager, City of Oakland Park*

### State Agency Technical Resources:

- Camilo Gaitan P. E., *Senior Water Resources Engineer, Office of Agricultural Water Policy, Florida Department of Agriculture and Consumer Services*
- Vicki Morrison, *Principal Planner, Division of Community Planning, Florida Department of Community Affairs*
- Tom Swihart, *Environmental Administrator, Office of Water Policy, Florida Department of Environmental Protection*

## STAKEHOLDER ALTERNATES

**Dr. Jennifer Jurado**, *Director, Broward County Natural Resources Planning and Management Division*

**Susan Smith**, *Assistant Public Works Director/Operations, City of Oakland Park*

**Dennis Church**, *Vice President, Planning & Development, Bonita Bay Group*

**Gary Monnett**, *Operations Superintendent, Palm Beach County Parks & Recreation*

**Andy Flajole**, *Environmental Specialist, Power Generation Division, Florida Power & Light*

**Douglas L. Meurer, P.E.**, *Director, Lee County Utilities*

**Jay Bridge**, *Landscape Architect, Urban Design Studio*



# water conservation program for South Florida



Create and implement a comprehensive and enduring water conservation program for South Florida. This successful program achieves a measurable reduction in water use, inspires governments, citizens and businesses to value and embrace a conservation ethic and serves as a national model for water conservation.

## **PROGRAM INITIATIVES AND STRATEGIES**

To realize the vision of the South Florida Water Management District's water conservation program, the following plan is organized into three program initiatives: regulatory, voluntary and incentive-based, and education and marketing. Each of these major initiatives has a corresponding goal, implementation strategies and a schedule of action steps.

The plan's goals and implementation strategies are designed to establish a proactive water conservation program that ensures, in conjunction with other District initiatives, an adequate and reliable supply of water to both protect the health of the ecosystem and satisfy current and future water demands. The overall program is built on a set of core values identified by the District's stakeholder group and is designed to be sustainable, science-based, measurable, goal-based, environmentally-protective and equitable wherever possible and practicable.

## **IMPLEMENTATION**

Developing a reliable and sustainable funding strategy is essential for institutionalizing the components of the water conservation program. To this end and to ensure Floridians realize the most benefit from their investment in water conservation, implementation of strategies take into account cost, ease of implementation, and potential water savings. Based on the availability of funding and the collective and collaborative actions of the South Florida citizenry, the program is designed to be implemented through immediate, short-term, mid-term and long-term action steps.

The program recognizes and bases decisions on the premise that water conservation is the least costly and most readily available source of water. It also intended as a fluid program that may evolve over time based on the latest laws, technologies, scientific research, best business practices, partnerships and available funding.



# regulatory initiatives

## GOAL

In partnership with utilities and local governments, adopt and implement goal-based water conservation regulations, local ordinances and utility practices to promote water efficiencies, further advance water management and achieve measurable reductions in public and private water use.

**F**rom consumptive use permitting and local landscape ordinances to year-round irrigation conservation measures, rules and regulations have a role in advancing water use efficiency, promoting water conservation as the least-cost source of new water, sustaining limited water supplies and protecting the natural environment.

Regulatory tools can not only increase water use efficiency, they can also lead to significant water savings by requiring conservation practices in water use permits. Together with State regulations, local government ordinances can also result in reductions of water use through landscape irrigation measures, assuring the planting of low-water-using vegetation and incorporating a sensible water use ethic for communities.

## PUBLIC WATER SUPPLY

**STRATEGY:** Require utilities to establish conservation plans with a numeric goal for water savings that is achievable.

### SHORT-TERM ACTION STEPS:

- Modify the District's Water Use Basis of Review through rulemaking to require utility-specific goal-based conservation plans.
- Use the Conserve Florida Guide, or similar tools with equivalent conservation standards, to assist utilities in developing a conservation plan to achieve goals.
- Provide technical assistance to utilities for using the Conserve Florida Guide.

### MID-TERM ACTION STEPS:

- Work with utilities to develop goal-based conservation plans in three phases - large, medium, then small utilities.

**STRATEGY:** Require utilities to adopt rate structures that promote conservation as part of their conservation plan to achieve their water savings goal.

### SHORT-TERM ACTION STEPS:

- Work with utilities to identify and define minimum standards for water conservation rate structures.
- Modify the District's Basis of Review to adopt minimum standards for water conservation rate structures.

**STRATEGY:** Require utilities to adopt retrofit programs as part of their conservation plan to achieve their water savings goal.

### SHORT-TERM ACTION STEPS:

- Adopt a consistent definition for the term "non-revenue generating water" and "unaccounted-for water."
- Develop a database of "non-revenue generating water" and "unaccounted-for water" by utility throughout the District.
- Work with utilities to develop and implement leak-detection programs when "unaccounted-for water" exceeds permit requirements.
- Develop guidelines and technical assistance for determining water savings of retrofit programs, such as indoor plumbing enhancements.

### MID-TERM ACTION STEPS:

- Work with local governments and utilities to determine and evaluate water savings from potential retrofit programs and implement programs within the service area where economically feasible.



Achievement of utility-specific water saving goals through adopted goal-based water conservation plans, which include conservation-based rate structures, retrofit programs and education and outreach.

## AGRICULTURAL IRRIGATION

**STRATEGY:** Maintain current irrigation requirements for new agriculture development.

### IMMEDIATE ACTION STEP:

- Continue to require new agricultural development to incorporate accepted and crop-specific standard irrigation systems as part of the Water Use Permitting process.



Water use efficiency achieved through incorporation of high efficiency irrigation systems in new agricultural development.

## LANDSCAPE IRRIGATION

**STRATEGY:** Establish district-wide requirements for consistent, year-round landscape irrigation.

### SHORT-TERM ACTION STEPS:

- Complete rule development and adopt a year-round landscape irrigation rule.
- Develop a model year-round landscape irrigation ordinance for adoption by local governments.
- Provide information and conduct workshops for local governments and enforcement officials regarding the landscape irrigation rule.

**STRATEGY:** Require local governments, where applicable, to update local ordinances to incorporate landscape designs consistent with Florida-friendly landscapes.

### SHORT-TERM ACTION STEPS:

- Modify the District's Water Use Basis of Review to incorporate landscape standards consistent with Florida-friendly design.

### MID-TERM ACTION STEPS:

- Work with local governments to adopt a model landscape ordinance consistent with the "Landscape Irrigation and Florida-friendly Design Committee."



Reduction in outdoor water use through year-round landscape irrigation conservation.

## Goal-Based Programs

In 2007, the Miami-Dade Water & Sewer Department (WASD) launched a goal-based water conservation program based on the Conserve Florida guide and approved by the SFWMD as a condition of WASD's 20-year water use permit. Plan elements include a combination of quantifiable best management practices, such as rebates and retrofits, public education and outreach, and policy measures amending the building code to require the highest-efficiency water fixtures in new construction. The program reported first year water savings of 1.2 million gallons per day, exceeding the established goal by more than 20 percent. A total projected savings of 19.8 million gallons per day is expected to be achieved by 2026 – helping the utility to improve overall water use efficiency, accommodate projected growth and defer capital expenditures for the development of alternative water supplies.



## Conservation Rate Structures

Population growth, along with drought conditions, spurred the Irvine Ranch Water District (IRWD) in California to employ conservation measures to meet the growing demand for water. In June 1991, IRWD implemented a five-tiered rate structure which included a low-volume user discount as well as progressively expensive rates for excessive uses of water. Rates for each account were individualized based on landscape square footage, number of residents, any additional needs of individual customers (such as for medical uses), and daily climactic demands. The new structure served to alert residents to leaks and excessive use and allowed for the removal of penalty rates if adjustments to systems, such as leak repairs, were made. As a result, landscape irrigation dropped by 45 percent the first year. Over the next six years, IRWD invested approximately \$5 million in other conservation programs, avoiding \$33.2 million in water purchases. IRWD was also able to avoid raising water rates for five years.

## Replacement of Appliances/Fixtures

Retrofit programs for water-using appliances and fixtures are a vital component of conservation programs due to the tremendous water savings potential they offer. In 1994, the City of New York set out to replace one million older toilets with 1.6 gallon per flush high-efficiency models. By April 1997, 1.3 million toilets were replaced through a residential and commercial rebate program. The toilet retrofit alone accounted for 70 to 80 million gallons of water saved per day. A 2000 study in Seattle, Washington found that full retrofit of all indoor water appliances and fixtures in a typical residence can cut consumption by more than 35 percent.



## Local Irrigation Initiatives

Following implementation of the SFWMD's year-round landscape irrigation measures for Lee, Collier and Charlotte counties in 2003, the City of Cape Coral adopted a more stringent, two-day-a-week schedule by local ordinance. Since then, the city has realized a 20 percent reduction in total water use for irrigation while at the same time increasing its customer base by more than 20 percent. Cape Coral boasts a dedicated reuse system supplied by two water reclamation facilities serving nearly 40,000 irrigation system utility customers.

## INDUSTRIAL, COMMERCIAL AND INSTITUTIONAL USES

**STRATEGY:** Improve compliance reporting by permitted Industrial, Commercial and Institutional users.

### SHORT-TERM ACTION STEP:

- Expand the District's web-based e-permitting tool to facilitate timely self-reporting of the implementation of conservation plans for Industrial, Commercial and Institutional Uses.



Electronic compliance reporting by permitted Industrial, Commercial and Institutional users.

## GOLF COURSES

**STRATEGY:** Maintain current technology and landscape requirements in water conservation plans for existing golf courses.

### SHORT-TERM ACTION STEP:

- Confirm that appropriate technology, such as rain sensors or soil moisture sensors, are installed and operational on existing golf courses.

**STRATEGY:** Use technology and design to improve water conservation for golf courses.

### SHORT-TERM ACTION STEPS:

- Modify the District's Water Use Basis of Review to require new golf courses and those requesting additional water to use landscape design consistent with Florida-friendly landscaping.
- Modify the District's Water Use Basis of Review to require new golf courses and those requesting additional water to install integrated rain sensor/weather station systems.

**STRATEGY:** Improve reporting of compliance with permit requirements by golf courses.

### SHORT-TERM ACTION STEP:

- Expand the District's web-based e-permitting tool to facilitate timely self-reporting of the implementation of conservation plans for golf courses.



Enhanced water conservation at golf courses.

## Golf Course Management Strategies

According to a 2000 Economic Impact Study by the University of Florida, the golfing industry injects more than \$4.4 billion into Florida's economy and employs about 72,000 people statewide. Golf courses use about 3 percent of the total water use statewide to irrigate 140,530 acres of land and nearly 33 percent of all courses irrigate with reclaimed water. Many courses actively take steps to reduce water use, installing automatic or computer-controlled irrigation systems, using alternative water sources and converting turf acreage to natural areas requiring less maintenance and watering.

"The Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses" document reflects the collaborative efforts of the Florida Department of Environmental Protection, the Florida Golf Course Superintendents Association, the University of Florida and many private sector partners to develop non-regulatory guidelines for minimizing pollution and conserving Florida's precious water resources. The manual provides superintendents and golf course operators with sound management strategies to maintain a golf course in a positive manner with respect to environmental protection, water quality protection and conservation.



## Keeping Greens "Green"

The Boca Rio Golf Club utilizes some of the most modern rain sensor technology to keep greens green while adhering to water-saving practices. Rain and evapotranspiration sensors dot the landscape, while feeding information to a dedicated irrigation control room, where staff can monitor conditions in any area of the 7,100 yard course. Most importantly, the course was designed with water conservation in mind, including drought-tolerant or native landscaping and Bermuda grass. Additionally, there is little water in play on the entire course; interesting bunkering patterns (pictured below), as opposed to water hazards, guide the golfer's strategy.



## Brackish Water for Irrigation

The City of Miami Beach's Normandy Shores Golf Course installed a dual-source irrigation system to take advantage of the property's brackish water ponds. The grounds have been replanted with Paspalum grass, a warm season grass, which can tolerate the brackish water with occasional flushing of salts with the City's water system. This ground cover conversion enables the golf course to use the onsite brackish water source and reduce its potable water usage by 713,000 gallons per day.



# voluntary & incentive-based initiatives

## GOAL

Expand voluntary government and industry partnerships and strengthen economic incentives to encourage public and private investments in water conservation. Create and make available to water using sectors incentive programs and technical assistance for water conservation projects and programs.

**V**oluntary and incentive-based initiatives, including financial assistance, technical assistance and recognition programs, often surpass the effectiveness of the traditional command and control approach to business, industry and individual practices. Rather than solely relying on rules, cooperative public-private partnerships can supplement regulations and build goodwill, leverage investments, bring wider environmental benefits and significantly improve the quality of life of our communities. In today's environment, businesses along with governments and consumers recognize the cost-savings associated with best management and conservation practices. Consequently, individuals and commercial enterprises are voluntarily changing behaviors and adopting environmentally-conscious and best management practices not only for the social value but also because of the economic returns.

## LEADING BY EXAMPLE

**STRATEGY:** Reduce water use at District facilities.

### SHORT-TERM ACTION STEP:

- Conduct water audits, update water conservation plans and implement recommendations for District facilities.

**STRATEGY:** Reduce water use at public facilities.

### MID-TERM ACTION STEPS:

- Provide technical assistance to State and local governments, including school districts and parks and recreation programs, to develop and conduct water audits and implement conservation plans for public facilities.
- Create a web-based repository for water savings data and water audit results for District and participating public facilities.

**STRATEGY:** Use recognition programs to encourage water conservation beyond regulatory requirements.

### SHORT-TERM ACTION STEPS:

- Identify, evaluate and support existing water conservation recognition programs to reduce overlap and duplication.
- Provide technical assistance to support and expand appropriate water conservation recognition programs, such as but not limited to the Florida Department of Environmental Protection's Green Lodging Program, the St. Johns River Water Management District's Florida Water Star, and the Florida Farm Bureau's County Alliance for Responsible Environmental Stewardship (CARES) Program.

### MID-TERM ACTION STEPS:

- Work with industries and associations to develop criteria and standards for new recognition programs to reward water users that achieve water savings through conservation. Recognition programs may include utilities, government, commercial and industrial users, golf courses, builders, restaurants and lodging establishments.
- Develop or support existing water conservation programs that designate and recognize "Florida Water Wise" homes, communities or cities similar to Certified Florida Yards.
- Explore integration of water audits into complementary recognition programs and initiatives for energy conservation, hurricane mitigation and green building.



Reduction in water consumption  
at District and public facilities.

## FINANCIAL INCENTIVES

**STRATEGY:** Strengthen existing and identify new financial incentives for water conservation.

### IMMEDIATE ACTION STEP:

- Support continued funding and technical assistance for development of alternative water supplies including reclaimed water, use of brackish and/or seawater sources, and aquifer storage and recovery (ASR).

### SHORT-TERM ACTION STEPS:

- Identify opportunities to expand the SFWMD's Water Savings Incentive Program (WaterSIP).
- Work with local governments and other entities to increase funding for mobile irrigation labs (MILs).
- Identify opportunities for public/private partnerships to fund water conservation projects and programs.



Water savings achieved through grant-funded projects and incentive programs.

## ALTERNATIVE WATER SOURCES

**STRATEGY:** Encourage the diversification of water supply and reduce dependence on regional freshwater resources through development of alternative water supplies.

### IMMEDIATE ACTION STEPS:

- Assist municipalities, utilities and other water users with the installation and expansion of reclaimed water systems, where appropriate.
- Allow special provisions in the year-round landscape irrigation rule for water users that utilize an alternative water supply.
- Allow special provisions during water shortages for water users that utilize an alternative water supply.



Increased diversification of water supply and reduced dependence on regional freshwater resources through development of alternative water supplies.

## Investing in a Greener Future

The South Florida Water Management District is making environmentally focused changes to improve energy efficiency, reduce water use and take advantage of alternative fuels. Facility upgrades include switching to high-efficiency lighting, retrofitting air conditioner chillers to remove ozone-depleting refrigerants and installing more low-flow, waterless and dual flush bathroom fixtures. Already the District has reduced its water use by over 750,000 gallons per year.



## School District Actions

For more than 20 years, the Palm Beach County School District has taken a leadership role in energy and water conservation and has reaped financial savings as a result. The school district recently mandated that lavatories use 0.5 gallons per minute faucets, 1.6 gallon per flush toilets and waterless urinals in all newly constructed schools. In a 2003 retrofit initiative, 40 three-gallon-per-flush urinals in one high school were replaced with waterless urinals at a cost of \$350 each. Through this effort alone, the school is saving \$6,000 per year in water bills. However, the school district's greatest water conservation efforts can be attributed to aggressive leak detection monitoring. While difficult to determine, actual savings from these concerted efforts to identify and quickly repair leaks are conservatively estimated to be in the millions of gallons a year.

## Florida Green Lodging Program

Launched in 2004 by the Florida Department of Environmental Protection, the Florida Green Lodging Program establishes environmental guidelines for hotels and motels to conserve natural resources and prevent pollution. To become a designated member, hotels must follow certain green practices, including water conservation measures through low-flow plumbing fixtures and a linen reuse program. As reward for designation, the State recommends designated properties in the Florida Green Lodging Program to companies and trade organizations seeking environmentally conscious lodging and convention facilities. In addition, state agencies are now required to hold meetings and conferences only at hotels with Florida Green Lodging designation. As of May 2008, the program had 183 designated properties and more than 345 applicants.



### Walt Disney World Resort

Recognized as an industry leader in water conservation, all Disney World irrigation is controlled by a centralized computer system linked to weather stations that constantly measure environmental factors to determine the appropriate run time of sprinklers. The irrigation rates reflect the recommended minimum rates established by the University of Florida's Institute of Food and Agricultural Sciences and 80 percent of irrigation needs are met with reclaimed water. An aggressive leak detection and correction program and other water conservation initiatives have resulted in a 20 percent reduction in potable water use since 2000. These include recirculating decorative and interactive fountains, widespread use of reclaimed water (e.g. vehicle fleet washing) and two day per week irrigation, among others. All the hotels at the resort have attained Green Lodging certification by the State of Florida, and are thereby committed to saving water.

## PUBLIC WATER SUPPLY

**STRATEGY:** Work with individual utilities to improve implementation of water conservation plans.

### SHORT-TERM ACTION STEPS:

- Encourage utilities to establish a water conservation officer or empower a senior staff member to facilitate implementation of the conservation plan and to serve as the primary liaison with the District to improve coordination.
- Work with utilities to implement water audit programs and water conservation plans for high volume water users.
- Work with bulk customers and secondary users to identify and implement conservation opportunities.

**STRATEGY:** Work collaboratively with utility representatives to develop regional opportunities to enhance water conservation.

### SHORT-TERM ACTION STEP:

- Promote information sharing and best management practices among utilities to facilitate implementation of individual water conservation plans.

**STRATEGY:** Encourage utilities to use the most effective and efficient water conservation technologies.

### SHORT-TERM ACTION STEP:

- Encourage utilities to use automatic line flushing devices to reduce water waste during maintenance operations for water quality.

### MID-TERM ACTION STEP:

- Encourage utilities to use automated meter reading devices, or other appropriate technologies to detect high-water usage, where feasible and appropriate.



Implementation of the best available water saving technologies and management practices.

## AGRICULTURAL IRRIGATION

**STRATEGY:** Collaborate with the Florida Department of Agriculture and Consumer Services, the University of Florida's Institute of Food and Agricultural Sciences, federal agencies and the agricultural industry to implement agricultural water conservation programs and best management practices.

**IMMEDIATE ACTION STEP:**

- Utilize agricultural mobile irrigation labs to conduct follow-up inspections, confirm implementation and determine effectiveness of water conservation recommendations.

**SHORT-TERM ACTION STEPS:**

- Work with the agricultural industry and agencies to expand the availability of agricultural mobile irrigation labs (MILs).
- Encourage higher efficiency agricultural irrigation systems, where applicable and appropriate for the crop type.

**MID-TERM ACTION STEPS:**

- Develop a District-wide database to catalog soil type, primary crop, irrigation method and source of irrigation supply for the major agricultural areas within the District.
- Identify and promote new, more efficient irrigation technologies and best management practices for agriculture, including technologies to more accurately measure agricultural water use.

**LANDSCAPE IRRIGATION**

**STRATEGY:** Work with local governments and utilities to maximize the effectiveness of urban mobile irrigation labs.

**SHORT-TERM ACTION STEPS:**

- Work with utilities and local governments to identify potential high water users and increase the effectiveness of urban mobile irrigation labs.
- Utilize urban mobile irrigation labs to conduct follow-up inspections to confirm implementation and determine effectiveness of water conservation recommendations.

**MID-TERM ACTION STEP:**

- Promote indoor conservation by offering simple, high-efficiency indoor devices with information on installation as a complement to urban mobile irrigation labs.

**STRATEGY:** Identify alternative practices to improve water conservation for landscape irrigation.

**SHORT-TERM ACTION STEPS:**

- Explore the use of cisterns or other rain collection devices to replace the use of potable water for irrigation and supplement other sources of water.

## Florida Water Star

Florida Water Star<sup>SM</sup> is a point-based, new home certification program, similar to the federal Energy Star<sup>®</sup> program that estimates water savings of up to 20 percent indoors and 40 percent outdoors through the use of water efficiency devices in the home. Florida Water Star<sup>SM</sup> workshops educate building and construction professionals about water-efficient appliances, irrigation systems, landscaping and practices that reduce the chances for mold, mildew and water damage. The certification gives homeowners peace of mind and saves them money while protecting the state's water resources. The St. Johns River Water Management District has certified 35 homes as Florida Water Star<sup>SM</sup> since its inception in July 2006.



## Water Conservation Hotel and Motel Program

The Southwest Florida Water Management District offers a free education program to help hotels and motels save water in ways that save money. Known as the Water Conservation Hotel and Motel Program, or Water CHAMP, the program supports the water conservation component of Florida's Green Lodging program. Part of the initiative involves a linen and towel reuse program that launders bed linens and towels every third day of a guest's stay, unless requested otherwise by guests. In 2006, more than 250 Water CHAMP properties participated in the program, saving more than 270 million gallons of water. Studies by Pinellas County Utilities and the City of Tampa Water Department showed that 71 hotels and motels saved 100 million gallons of water in only one year after implementing Water CHAMP. Hotels and motels can save an average of 20-30 percent on laundry costs and up to \$1.00 per occupied room per day by participating in CHAMP.

## Rainharvesting

Rainharvesting is the collection and storage of rainwater for irrigation and other purposes. A typical 0.5 inch rain over a 2,000-square-foot roof catchment area will capture and store 500 gallons of water. Systems can range from 50-75 gallon barrels used to irrigate small garden beds, to larger tanks used to irrigate landscaped areas or to supplement toilet flushing. In 2006, the City of North Miami Beach developed a rainharvesting project which captures and holds up to 30,000 gallons of rainwater for irrigating municipal landscapes. The system offers a potential water savings of approximately 690,000 gallons per year.



## Conservation in Cooling Towers

Most air conditioning systems in large office buildings, hospitals, and schools typically use one or more cooling towers. During the evaporative cooling process, large volumes of water are consumed. Through system modifications and improved maintenance, the amount can be greatly reduced. In 1999, the Pinellas County Courthouse in Clearwater began using a modified operating procedure for a 500-ton cooling tower that reduced "condensed" water loss close to 90 percent. Since the modifications were introduced, the Courthouse has saved an estimated 24.3 million gallons of water and a cumulative savings of \$315,600, after accounting for initial and monthly expenses. Fifteen percent of all U.S. cooling towers (estimated at 90,000) are in Florida, with Miami-Dade County holding the title of "Cooling Tower Capital of the World."

- Collaborate with the University of Florida's Institute of Food and Agricultural Sciences on research of turf grass and evaluations of science based irrigation methods.



Increased use of water efficient lawn and landscape irrigation practices.

## INDUSTRIAL, COMMERCIAL AND INDUSTRIAL WATER USES

**STRATEGY:** Work with Industrial, Commercial and Institutional water users to reduce water use.

### SHORT-TERM ACTION STEPS:

- Identify an appropriate entity to implement a water audit program for Industrial, Commercial and Institutional water users.
- Explore partnerships with energy providers that capitalize on the relationship between energy efficiency and water conservation.
- Encourage Leadership in Environmental Energy and Design (LEED) certification of new construction of Industrial, Commercial and Institutional facilities.

**STRATEGY:** Reduce water use for heating, ventilation and air-conditioning (HVAC) cooling towers for Industrial, Commercial and Institutional water users.

### SHORT-TERM ACTION STEPS:

- Work with organizations that promote water conservation strategies to refine and recommend water conservation methods to reduce water use in HVAC cooling towers for Industrial, Commercial and Institutional water users.
- Collaborate with Industrial, Commercial and Institutional water users to implement reuse in HVAC cooling towers.

### MID-TERM ACTION STEPS:

- Create a web based tool to demonstrate potential water and financial savings by reducing water use in HVAC cooling tower systems.
- Encourage retrofit or replacement of inefficient HVAC cooling tower systems for Industrial, Commercial and Institutional water users.



Reduction in water use by Industrial, Commercial and Institutional water users.

## GOLF COURSES

**STRATEGY:** Work with golf courses to enhance water conservation.

### SHORT-TERM ACTION STEPS:

- Encourage the most appropriate water efficient ground covers for golf courses.
- Encourage existing golf courses to use landscape design consistent with Florida-friendly landscaping.



Enhanced water conservation measures at golf courses.

## NEW DEVELOPMENT

**STRATEGY:** Work with contractors, state agencies and local governments to promote the use of best available water efficient technologies in new development.

### SHORT-TERM ACTION STEPS:

- Encourage Leadership in Environmental Energy and Design (LEED) certification of new development.
- Develop and provide a model ordinance to local governments requiring new development to install high efficiency water saving devices that go beyond requirements of the Florida Building Code.



Increased integration of best available water efficient technologies in new development.

## HOSPITALITY

**STRATEGY:** Work with the Florida Department of Business and Professional Regulation, local governments and hospitality associations to improve water efficiency at restaurants and lodging establishments.

### SHORT-TERM ACTION STEP:

- Assist hospitality associations in creating a water auditing program for restaurants and lodging establishments.

### IMMEDIATE ACTION STEP:

- Encourage the use of pre-rinse spray valves and other high-efficiency devices at restaurants and lodging establishments.



Increased water efficiency at restaurants and lodging establishments.

## Citrus Micro-Irrigation

Through advancements in science and technology, farmers and ornamental plant nurseries have been able to maximize production per acre, while improving water use efficiency and reducing environmental impacts. For instance, the transition to micro-irrigation (pictured below) by the citrus industry alone jumped from 53 percent in 1991 (an annual savings of 52 billion gallons) to 80 percent by 2001 (an annual 90 billion gallons in savings). Additional conversions could save up to another 20 billion gallons per year.



## Automatic Hydrant Flushing

In addition to high-efficiency plumbing fixtures and irrigation systems, new technologies are emerging that have already begun saving water outside of the traditional areas. Automatic Hydrant Flushing Devices (AHFD) are one such technology. AHFDs are routinely used to maintain acceptable water quality within delivery lines by turning over stagnant water. AHFD's automatically flush supply lines at critical points within the distribution system on a set time interval and low flow rate. This is more efficient than the conventional method of line flushing, which requires a worker to manually open a hydrant and release larger volumes of water. The City of Pompano Beach recently installed seven AHFDs and estimates a water savings of 40,000 gallons per year per device.

# education & marketing initiatives

## GOAL

Collaborate and coordinate with regional partners to educate and inform residents and visitors about their environmental, economic and social responsibility, foster a culture of conservation and position the State of Florida as a recognized leader in water conservation.

**E**ducation, outreach and social marketing are essential for accomplishing a measurable change in water conservation and instilling a lasting conservation ethic in South Florida businesses and communities. Public information and involvement, along with education partnerships and support for existing successful local and statewide programs, are also critical to the success of South Florida's water conservation program. Targeted education, public information and social marketing provide opportunities for building a conservation culture, instilling a stewardship ethic and permanently reducing individual, industrial and commercial water use.

## SCHOOL-BASED EDUCATION

**STRATEGY:** Build on existing programs and initiatives to institute educational water conservation programs in public schools, educate school-aged children on the benefits of water conservation and create a consciousness for conservation for future generations.

### IMMEDIATE ACTION STEPS:

- Inventory existing elementary, middle and high school-based education programs in the District, across the state and throughout the nation.
- Expand the District's water conservation web site ([www.savewaterfl.com](http://www.savewaterfl.com)) to include a one-stop repository where teachers and students can download existing water conservation educational resources.
- Through the school districts, inform teachers and students about the availability of water conservation educational resources.

### SHORT-TERM ACTION STEPS:

- Work collaboratively with local governments and other regional organizations to identify, promote, support and, where appropriate, expand the reach of existing and successful school-based water conservation education curriculums and lessons, including The Great Water Odyssey, The Everglades: An American Treasure, Project WET, WET in the City, NatureScape and others.
- Expand the District's The Great Water Odyssey educational program. The computer-based interactive curriculum for 3rd, 4th and 5th grade students is an existing multidisciplinary education experience that correlates to Florida's Sunshine State Standards with a focus on water conservation.
- Offer The Great Water Odyssey teacher training workshops annually in each of the District's sixteen counties to promote water conservation in schools.

### MID-TERM ACTION STEPS:

- Evaluate the effectiveness of The Great Water Odyssey curriculum in supporting the educational requirements and goals of the Florida Comprehensive Assessment Test (FCAT).
- Create a Water-Wise School program for high schools and ambassadorship opportunities by tapping into required community service hours. The program would encourage students to follow water conservation criteria and conduct water conservation indoor retrofits and outdoor landscaping measures to receive Water-Wise designation.



School-based water conservation education in all 16 counties.

## PUBLIC INFORMATION

**STRATEGY:** Collaborate and coordinate with governments, non-governmental organizations and regional partners to inform and educate elected and community leaders, businesses and industry, along with visitors, permanent and seasonal residents, on the benefits of water conservation.

### IMMEDIATE ACTION STEPS:

- Work collaboratively with local governments and other state, local and regional organizations and subject-matter experts to inventory and utilize water conservation public information materials and “how to” guides, including publications on water efficiency, water conservation, the use of water saving products, Florida-friendly landscaping and water efficient urban enhancements.
- Work with the U.S. Environmental Protection Agency (EPA) to become a WaterSense promotional partner; encourage local governments to become WaterSense promotional partners. EPA is building WaterSense as a national brand for water efficiency that encourages water-efficient behaviors and the purchase of quality products that use less water. Becoming a promotional partner provides free marketing tools and resources and strengthens water-efficiency outreach efforts by utilities, state and local governments with a credible, national brand and a strong, consistent message.
- Continue to develop the District’s water conservation web site ([www.savewaterfl.com](http://www.savewaterfl.com)) as a central repository and portal for public information on water conservation and existing programs.
- Continue to work in partnership with the news media and local government programming to assist in the dissemination of water conservation public information.

### SHORT-TERM ACTION STEPS:

- Work collaboratively with local governments and other state, local and regional organizations and subject-matter experts to develop and distribute public information materials on reclaimed water.
- Work collaboratively with governments, utilities and state, local and regional organizations to integrate water conservation with energy conservation in public information campaigns and materials.
- Partner with the University of Florida’s Institute of Food and Agricultural Sciences (IFAS), the Florida Department of Environmental Protection and the State’s water management districts to create, support, promote and distribute a comprehensive guide to Florida-friendly landscaping.

## The Great Water Odyssey

A computer-based curriculum for 3rd, 4th and 5th grade students was developed by the St. Johns River Water Management District and is



now being used by the three largest of the state’s five water management districts. The creative, interactive lessons educate students about the importance of protecting and conserving Florida’s water. The curriculum is designed to meet the Florida Sunshine State Standards and help prepare students for the Florida Comprehensive Achievement Test (FCAT). To date, the South Florida Water Management District’s pilot program has sponsored 40 teacher workshops attended by more than 800 teachers, reaching more than 8,000 students.



[www.savewaterfl.com](http://www.savewaterfl.com)



In November 2007 the South Florida Water Management District launched a comprehensive web site, [www.savewaterfl.com](http://www.savewaterfl.com), that provides residents, businesses, utilities, local governments and educators with a one-stop shop for information about water conservation. The web site is designed to provide all Floridians with an online tool for learning about ways to save water and help protect the region’s resources. The site also features a water conservation opinion survey to encourage public feedback on water conservation awareness, individual water use habits and for suggestions on water-related issues. During its first six months, the site was visited more than 60,500 times.

## Florida Yards & Neighborhoods Program

The Florida Yards & Neighborhoods (FYN) Program is a partnership of the University of Florida/Institute of Food and Agricultural Sciences (UF/IFAS), Florida's water management districts, the Florida Department of Environmental Protection, the National Estuary Program, the Florida Sea Grant College Program, concerned citizens, members of private industry and numerous other nongovernmental agencies. FYN addresses problems associated with stormwater runoff, water shortages and habitat loss by enlisting Floridians in the development and implementation of solutions. The program, which is implemented through the counties' UF/IFAS Cooperative Extension Service, provides education and outreach activities in the community to help residents reduce pollution, conserve water and enhance their environment by improving home and landscape management.

The FYN guide to Florida-friendly landscaping is one tool for providing helpful concepts, tools and techniques for creating a Florida-friendly yard. The publication in wide circulation imparts the basics of designing a landscape that features carefully selected plants suited to climate, soil and wildlife. Tips on cost-saving, energy-efficient landscape maintenance are also included to help reduce water, fertilizer and pesticide use.



## Broward County's NatureScape

Broward County's NatureScape program educates residents about creating Florida-friendly landscapes that conserve water, protect water quality and create wildlife habitat. The program works with homeowners, businesses and schools to encourage the use of native plants in landscaping, which are uniquely adapted to grow in South Florida and require less watering once established. More than 2,000 certified NatureScapes can be found within Broward County.

- Partner with the University of Florida's IFAS Extension – a partnership between state, federal, and county governments to provide scientific knowledge and expertise to the public – to utilize an existing network of scientists, educators and volunteers, support Florida-friendly landscaping programs and educate the public about water-wise irrigation practices.
- Work with nursery and grower commodity groups to develop water wise signage for Florida-friendly plants in nurseries and other retail outlets, promote their benefits and increase consumer knowledge and success in plantings.
- Work collaboratively with the Governor's Office, the Department of Environmental Protection, water management districts, local governments and other appropriate organizations to encourage consistency in the branding, messaging and public information collateral used to promote water use efficiency and conservation across the state.
- Based on any identified public information needs, develop any additional necessary collaterals in collaboration and partnership with the Department of Environmental Protection, water management districts, local governments and other appropriate organizations; ensure public information materials can be readily adapted, adopted and replicated in all regions of the state.
- Maximize resources by engaging community colleges and university students in the development of water conservation public service announcements for broadcast, if needed.
- Collaborate and coordinate with local governments to develop consistent and effective public information to promote compliance with landscape irrigation restrictions.
- Identify utilities that are implementing informative billing; work with large, medium and small utilities to encourage informative billing on water use, where possible.



Number and percent of population reached through print, broadcast and electronic water conservation public information.

## PROFESSIONAL DEVELOPMENT

**STRATEGY:** Offer voluntary training and certifications, where appropriate, to business and industry sectors (e.g. turf and landscape industries, plumbing, general contractors, educators, HVAC) on implementing conservation changes, water efficiencies and best management practices.

### SHORT-TERM ACTION STEPS:

- Work with the U.S. Environmental Protection Agency (EPA) and/or industry groups to encourage landscape irrigation professionals (including irrigation designers, irrigation contractors, golf irrigation auditors, landscape irrigation auditors and landscapers) to become certified through a WaterSense labeled, or equivalent, certification program and to implement water-efficiency best practices.
- Work with the U.S. EPA to promote WaterSense landscape irrigation professionals including designers, auditors, and installation and maintenance professionals that are certified to implement water efficiency best practices.
- Inventory existing training and certification programs in the District, across the state and throughout the nation.

### MID-TERM ACTION STEPS:

- Work with professional organizations, including the Florida Section American Water Works Association and the Alliance for Water Efficiency, to develop conservation courses for CEUs, and other continuing educational credits for water conservation professionals, planners, design, building and landscape professionals.

### LONG-TERM ACTION STEPS:

- Partner with trade schools, colleges and service industries to provide water conservation certifications to professionals.



## Informative Billing



From postcards and bill stuffers to sophisticated computer-based billing systems, informative billing has the potential to directly reach utility customers with useful information about personal use and individual water conservation.

The San Antonio Water System (SAWS) serves 326,000 customers. The utility draws from the Edwards Aquifer and each bill provides information on current levels of the aquifer in comparison to record highs and lows. The informative bill also displays graphs of the customer's water consumption for the past year, the neighborhood average consumption and the utility's overall average consumption. In addition, the bill includes a personalized message for each customer based on actual water use.



## WaterSense

A partnership program sponsored by EPA, WaterSense seeks to protect the future of our nation's water supply by promoting water efficiency and enhancing the market for water-efficient products, programs, and practices. WaterSense helps consumers identify water-efficient products and programs. It is also partnering with irrigation professionals and irrigation certification programs to promote water-efficient landscape irrigation practices. In addition, WaterSense is collaborating with manufacturers, retailers and distributors and utilities to bring WaterSense products to the marketplace and make it easy to purchase high-performing, water-efficient products.

## Community Challenge

San Antonio Water System's (SAWS) Season to Save community challenge enlists non-profit organizations to promote water conservation awareness in the community. The Challenge encourages non-profit members to team up, conserve water and earn funds to support their specific projects. Funding for projects are earned in two ways. Non-profit entities can sign up members to replace their old toilets with newer model "low-flow" toilets, earning \$25 for each member. Additional project money can also be earned when these groups meet their own water use reduction goals. In 2003, 40 non-profit organizations (about 3,000 families) partnered with SAWS to achieve their conservation goals. The result of this cooperative effort was that 4,000 inefficient toilets were exchanged for low-flow models saving more than 25 million gallons of water in five months, while earning fundraising groups approximately \$100,000. Additionally, this initiative projects a 10-year water savings of about 371 million gallons.



## Social Marketing

Different from public information, social marketing uses the principles of commercial marketing to influence social behaviors and bring about permanent behavior change. Up-front research provides insight into how to best motivate water users to adopt water conservation habits. The greater access people have to the new behavior (like installing a low-flow showerhead or using a commercial car wash to clean the car) and the easier it is to do, the greater the chance that people will implement the change.

## SOCIAL MARKETING

**STRATEGY:** Develop and implement an effective social marketing campaign that inspires an enduring water conservation ethic.

### IMMEDIATE ACTION STEPS:

- Identify government, corporate and institutional partners.
- Inventory existing social marketing campaigns centered on water conservation in the District, across the state and throughout the nation. As appropriate and available, the inventory would include messages, market share, sponsors, paid and earned media tools, budget, funding sources and empirical data demonstrating success.
- Make existing resources available on [www.savewaterfl.com](http://www.savewaterfl.com).
- Assess adaptability of messages and tools employed in existing campaigns to Florida markets.
- Collaborate with the Department of Environmental Protection and the State's water management districts to evaluate the potential for partnership and consistency in branding and messaging at the state and regional level.

### SHORT-TERM ACTION STEPS:

- Identify target audiences.
- Conduct market research to understand the audience, identify barriers to change, and eliminate the obstacles for adopting everyday, individual water conservation habits.
- Set goals for behavioral change within each target group based on market research.
- Develop water conservation messages; select mediums (including print, electronic and broadcast media) and tools for inspiring behavioral change.
- Pre-test the campaign.
- Implement a multi-media social marketing campaign to effect individual behavior change.
- Maximize earned media.

### MID-TERM ACTION STEPS:

- Develop and incorporate a voluntary water conservation challenge, encouraging Floridians to reduce their use as a part of the social marketing campaign.
- Evaluate the results and adapt the campaign as new information and data on the effectiveness of the campaign becomes available.



Region-wide public recognition of individual water use and the value of water conservation as a result of a successful social marketing campaign; adoption of individual water conservation behaviors.

## VOLUNTEER ACTIVITIES

**STRATEGY:** Augment District water conservation education, public information and outreach efforts by developing a grassroots, volunteer corps of “water ambassadors” that will leverage available resources and strengthen the District’s ability to reach different water using audiences about the value of water conservation.

### IMMEDIATE ACTION STEPS:

- Inventory existing programs in the District, across the state and throughout the nation.
- Support existing and successful local volunteer programs that promote water conservation, where appropriate.
- Identify the scope and target audience for a pilot volunteer initiative and professional/educational requirements for volunteers.

### SHORT-TERM ACTION STEPS:

- Identify a District program coordinator.
- Develop a recruitment strategy, training curriculum and implementation strategy for the pilot program.
- Recruit the first corps of volunteers.
- Conduct “water academies” to develop the knowledge base of recruited volunteer water ambassadors.

### MID-TERM ACTION STEPS:

- Task trained ambassadors with supplementing the District’s outreach activities and engaging and sharing information with their peers, communities and business sectors.
- Evaluate the effectiveness of the pilot volunteer initiative; adapt initiative as necessary and expand based on public/industry outreach needs.



Number of volunteers participating in a “water ambassadors” program; number of water conservation outreach events and engagements participated in by volunteers.

## Water – Use It Wisely

In 1999, the city of Mesa set about creating a social marketing campaign that would truly motivate change. With more than 350 private and public partners, Water - Use It Wisely has experienced success because of its ability to identify and break down behavioral barriers by giving consumers the tools needed for wise water use. Pre-campaign research identified severe drought as a high motivational factor for personal water conservation.

The campaign catalogs more than 100 water-saving devices with the most important one highlighting the consumers themselves: “There are a number of ways to save water, and they all start with you.” Follow-up surveys conducted every two years determined that, after four years, Water - Use It Wisely had achieved an 80 percent market penetration regarding awareness, and that 33 percent of those surveyed said they had made the desired behavior changes to use water more wisely due to the campaign.



## Watershed Action Volunteers

The St. Johns River Water Management District’s Watershed Action Volunteer program provides individuals the opportunity to personally help their communities and protect water resources. The program is active in 14 of the District’s 18-county service area. It matches committed individuals with Watershed Action Volunteer coordinators to train and equip volunteers for a variety of service-related tasks including educational presentations to school groups, civic associations, clubs and other organizations. Currently, there are 673 registered volunteers in the program participating, on average, in more than 1,600 special events and presentations annually.





[www.savewaterfl.com](http://www.savewaterfl.com)

South Florida Water Management District  
3301 Gun Club Road  
West Palm Beach, Florida 33406  
561-686-8800 • FL WATS 1-800-432-2045  
[www.sfwmd.gov](http://www.sfwmd.gov)

MAILING ADDRESS: P.O. Box 24680  
West Palm Beach, FL 33416-4680

