SOUTH FLORIDA WATER MANAGEMENT DISTRICT

the RIPPLE effect

March 2012

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Chairman's Message

Joe Collins, Governing Board Chairman

This month brought several notable highlights at the South Florida Water Management District. At the March meeting, the Governing Board received an in-depth update on the District's source control program, which is aimed at water quality improvements through management of nutrients. The District's efforts, which include highly effective agricultural best management practices, complement programs at the Florida Department of Environmental Protection and the Florida Department of Agriculture and Consumer Services. The combined result is a cost-effective and robust approach to reducing nutrient impacts across South Florida's landscape.

A comprehensive update on the District's source control program is also found in the annual *South Florida Environmental Report.* Published every March, this three-volume report documents a year of restoration, scientific and engineering accomplishments in the Kissimmee Basin, Lake Okeechobee, the Everglades and South Florida coastal areas.

Featured in this year's report is the success of our Stormwater Treatment Areas, which significantly improved water quality by reducing nutrient loads to the Everglades Protection Area by 79 percent this past year. In addition, outflow concentrations were in the lowest range ever for all of the treatment areas. To date, the STAs — together with best management practices — have prevented more than 2,411 metric tons of phosphorus from entering the Everglades.

A new feature on the District's website is enhancing customer service and business transparency for our ePermitting system. ePermitting is an online resource that offers improved accessibility and streamlined service for District permits. Google Earth mapping software was recently added to the system, offering ready access via aerial photographs to site-specific regulatory information.

A note of recognition is in order for exceptional District staff recognized by the Governing Board this month. Dr. Alaa Ali was honored as the 2011 Employee of the Year for developing an innovative, next-generation computer model. Dr. Ali's cutting-edge work, which is based on rainfall data, has the potential to improve the way water is managed for Everglades restoration by guiding water managers in better replicating water movement in natural systems.

SFWMD Team of the Year honors went to our Restoration Strategies Team, a 24-person interdisciplinary team that is addressing — and helping to solve — complex water quality issues in the Everglades Protection Area. The team worked to provide scientific, engineering and legal expertise throughout the year, successfully producing several important technical documents. Their accomplishments were the result of hard work, commitment to task and, most importantly, well-orchestrated teamwork.

These are agency values that we strive to achieve every day. In everything we do, excellence, efficiency, transparency and meaningful results continue to drive the work at the District on behalf of South Florida's citizens.

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South Florida Environmental Report Highlights Restoration Progress, State of the Ecosystem

2012 report marks 14th year of unified environmental reporting by DEP, SFWD

The Florida Department of Environmental Protection (DEP) and the South Florida Water Management District (SFWMD) released the *2012 South Florida Environmental Report* detailing a year of restoration, scientific and engineering accomplishments in the Kissimmee

Basin, Lake Okeechobee, the Everglades and South Florida coastal areas. The 2012 report marks the 14th year of unified, streamlined environmental reporting by the two agencies.

"The considerable progress detailed in this report demonstrates Florida's commitment to the environment and our continued focus on improving water quality and restoring America's Everglades," said DEP Secretary Herschel T. Vinyard, Jr. "The *South Florida Environmental Report* provides a comprehensive overview of the science, research and resource management that allows us to protect South Florida's unique ecosystems."

Spanning three volumes, the *2012 South Florida Environmental Report* contains more than 50 individual reports. The volumes provide extensive research summaries, data analyses, financial updates and a searchable database of environmental projects. An illustrated Executive Summary is viewable online via a new PDF viewer, which makes the document more reader-friendly on a computer monitor.

The *2012 South Florida Environmental Report* covers environmental information for Water Year 2011 (May 1, 2010, through April 30, 2011) and project/budgetary information for Fiscal Year 2011 (October 1, 2010, through September 30, 2011).

"This comprehensive report provides a centralized source for documenting a year's worth of work to improve South Florida's ecosystem," said SFWMD Executive Director Melissa L. Meeker. "It represents the depth of our scientific expertise as well as the considerable environmental benefits being achieved on behalf of Florida's taxpayers."

The 2012 report includes the following highlights:

- Enhanced Stormwater Treatment Areas reduce nutrients. The District's 45,000 acres of Stormwater Treatment Areas (STAs) treated more than 735,000 acre-feet of water last year and cut nutrient loads to the Everglades by more than 79 percent. Enhancements to the STAs helped to deliver outflow concentrations of phosphorus at the lowest range observed since STA operations began in 1994. In addition, construction is nearly complete on 11,500 acres of STAs, which will increase treatment capacity by another 25 percent.
- Source controls contribute to improved water quality. For the 16th consecutive year, the Everglades Agricultural Area exceeded its 25 percent phosphorus-reduction requirement by delivering a 79 percent reduction — three times what is required by law. To date, these best management practices, along with STAs, have prevented more than 2,411 metric tons of phosphorus from entering the Everglades.
- Kissimmee River restoration attracts wildlife. The Kissimmee River Restoration Project continues toward completion, with 24 miles of re-established river channel and intermittent inundation of 7,710 acres of floodplain. Environmental monitoring has recently shown an increase in waterfowl and other aquatic life in restored portions of the river, which serves as the headwaters to the Everglades.
- Projects to improve rivers and coastal estuaries continue. Healthy coastal estuaries depend on fresh water. In the Loxahatchee River, a pilot project successfully added fresh water to river flows during the dry season. In lower Biscayne Bay, portions of a flow redistribution project have begun. Water control improvement projects were also completed to benefit Fakahatchee Estuary and Naples Bay.

The *2012 South Florida Environmental Report* — now entirely electronic at a savings of $98,000 — is available to view or print at www.sfwmd.gov/sfer.

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Opinion: Creative Solutions are Key to Everglades Restoration, Water Supply

Melissa L. Meeker, SFWMD Executive Director

As South Florida's regional water management agency, the South Florida Water Management District is responsible for providing flood control, restoring natural systems and ensuring a sustainable water supply for more than 7.7 million residents.

This can be a daunting task. One of the most challenging aspects of water management in South Florida is not the 50-plus inches of rain that falls in our backyards each year. Rather, it is finding a place to store that water for beneficial use during dry times.

South Florida's flat landscape means that when it rains, without storage, water must be

discharged through our extensive canal system to the ocean to prevent flooding. To capture this "lost" water and use it to support Everglades restoration and regional water supply needs, the District is working hard to identify and implement storage solutions. These can come in many shapes and sizes, from aboveground reservoirs and deep injection wells to shallow storage on agricultural lands.

A unique geological formation in Palm Beach County is providing us with one of the more creative water storage solutions. The 950-acre L-8 reservoir is a strategically located former rock mine with a watertight geology. A component of Everglades restoration, this deep-ground reservoir will contribute to cleaner water for the Everglades, restoration of the Loxahatchee River and improved water quality in the Lake Worth Lagoon. Along with environmental benefits, it also offers residential advantages such as flood control and supplementing urban water supplies.

Approved in 2002, this first-of-its-kind project provides 15 billion gallons of water storage, enough to fill 24,000 football fields one foot deep in water. And, at an investment of $6,000 per acre-foot, the rock mine saves taxpayers millions of dollars compared to constructing an aboveground reservoir.

Since its acquisition, various criticisms have been leveled at the L-8 reservoir. The fact is that this reservoir is a viable project capable of delivering results and the return on investment we expect to achieve. When I became the District's Executive Director last June, I prioritized this project to get it operating as promised. Here's the good news: This month, the District issued a Request for Qualifications from firms to design and build the massive pump station needed to move water out of the reservoir and deliver it to the natural system. This is a giant leap forward, and it means we are on our way to project completion — and project results.

It's important to note that instead of sitting idle, the L-8 reservoir has provided interim benefits. During the 2004 and 2005 hurricane seasons, the reservoir provided much-needed water storage that reduced residential flooding. In 2007, the City of West Palm Beach utilized more than 600 million gallons of water from the reservoir during the drought. Residents were again able to rely on the L-8 reservoir for their water supply this past summer when the city's water resources ran dangerously low. In 2009, FPL used reservoir water for its cooling system, conserving millions of gallons of groundwater. And, most recently, the District utilized small pumps to send fresh water from the reservoir north to the Loxahatchee River during 2011's dry conditions. This pilot project demonstrated that the L-8 reservoir works.

Nearby to the L-8 project, another rock pit is under construction. Known as the C-51 reservoir, this project is being analyzed by the District and a coalition of utilities as a potential public water supply source. Under the right conditions, the C-51 could potentially store water currently lost to tide and deliver it to recharge wellfields. Similar to the L-8 project, it is a viable concept that could be utilized to effectively meet future water supply demands and improve the Lake Worth Lagoon. While the challenges are in the details, the project deserves a thorough evaluation and our continued dialogue.

Balancing the District's missions of flood control, water supply and restoration often requires innovative thinking, which both of these reservoirs represent. Add in creative partnerships, perseverance and continued collaboration, and we have a formula for success.

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Restoration Reviving Collier County's Lake Trafford

Wildlife, water quality continue to improve a year after major restoration effort

Aquatic plants are experiencing a dramatic recovery to provide important and expansive habitat for wildlife. Largemouth bass are reproducing. And wildlife is thriving on the 1,600-acre Lake Trafford in Southwest Florida.

A year after the South Florida Water Management District (SFWMD) and its partners completed a major restoration effort on the popular lake in Collier County, scientists are reporting bourgeoning signs of success. Monitoring efforts have identified numerous improvements, including:

Aquatic plants such as *Vallisneria*, bulrush, lilies and lotus are flourishing.
- Plankton populations, at the base of the food chain, are stabilizing.
- Visibility has nearly doubled from less than 6 inches to about 1 foot.
- Wildlife such as black crappie and alligators are thriving.
- Anglers are catching 10-inch, robust largemouth bass.

"The most exciting part of a restoration project is actually seeing recovery of the ecosystem," said SFWMD Governing Board member and Big Cypress Basin Board Chairman Daniel DeLisi. "Flourishing wildlife, along with improved water quality and clarity, are the result of significant investment in Lake Trafford. This beautiful lake is an important part of the greater Everglades as well as a recreation destination and an economic engine for our area."

One of the most successful components of the lake's restoration has been the planting and subsequent recovery of submerged aquatic vegetation. Well-established aquatic plants prevent sediments from clouding the water and blocking sunlight, which is vital to plant growth. Plants also provide the primary habitat for fish and invertebrates, critical components in the food chain for wildlife such as wading birds.

Restoration of Lake Trafford will continue with activities to maintain its health, including:

- Re-establishing native submerged aquatic vegetation, such as *Vallisneria*, through plantings
- Monitoring the long-term health of the lake using water quality parameters such as dissolved oxygen, environmental indicators and the recovery of native fish communities
- Promoting additional studies to develop best management practices to control nutrient runoff and minimize growth of invasive aquatic vegetation

With an investment of approximately $21.4 million, the District achieved a host of restoration goals for Lake Trafford, including:

- **Removing 3 feet of muck from the lake bottom during 2004–2007**
- **Removing 2 feet of muck from the nearshore areas during 2009–2010**
- **Restoring native fisheries**
- **Developing a Watershed Protection Plan to reduce nutrients**

Background

Lake Trafford is a shallow lake, marking the headwaters of the Corkscrew Swamp and the watersheds of the Imperial and Cocohatchee rivers, along with the Camp Keais Strand and the Florida Panther National Wildlife Refuge watershed that drains into the Ten Thousand Islands. Lake Trafford is the largest natural lake south of Lake Okeechobee in South Florida, serving as an important ecotourism resource for recreational boating and fishing.

At one time, the lake was sand bottomed. However, nutrient runoff in the watershed resulted in a shift from native aquatic vegetation to dense mats of hydrilla, an invasive exotic plant. The hydrilla that remains in the lake today is being successfully controlled using herbicides to prevent the accumulation of dead plant material on the lake bottom and the release of excess nutrients, which in the past triggered algal blooms and impacted prime habitat for native fish species.

The District began the first phase of dredging Lake Trafford in 2004, with a focus on its center, completing the project two years later. A second muck-removal effort began in November 2006 for the nearshore area and, after being temporarily suspended due to drought conditions in 2007, was recently completed. The District has invested $21.4 million to restore the lake over the last eight years.

Restoration of Lake Trafford was achieved by local citizens, public agencies and private organizations working together to restore this resource. The project was initiated by the Immokalee Chamber of Commerce. A Lake Trafford Task Force was formed, jointly sponsored by the Big Cypress Basin of the South Florida Water Management District and Collier County, with support from the Florida Department of Environmental Protection, the Florida Fish and Wildlife Conservation Commission and the U.S. Army Corps of Engineers. Environmental interest organizations, such as the Audubon Society and the Conservancy of Southwest Florida, also

have supported the project. Florida Gulf Coast University has been a restoration partner in monitoring and vegetation planting activities.

For more information:

- Quick Facts: Lake Trafford Restoration
- Everglades Restoration

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SFWMD ePermitting Adds 'Google Earth' Enhancement, Improves Customer Service and Transparency

Online system features new map view of permits

The public can now view South Florida Water Management District (SFWMD) permitting information using Google Earth mapping software as part of a continuing commitment to enhance customer service, transparency and accessibility.

"This new mapping feature adds functionality to the District's already robust ePermitting database," said SFWMD Executive Director Melissa Meeker. "Technology tools allow us to boost public access and improve efficiency, making it easier for businesses, residents and other governments to accomplish work with this agency."

By integrating the Google Earth mapping program, the District is now able to present permitting information in a graphic format. Businesses and residents can search for permits by specific location and save their searches.

With a program feature that turns on and off map layers, database users can refine searches by permit type such as environmental resource, water use and works of the District.

"This is one of the more sophisticated databases, with features that significantly streamline the permitting process and increase transparency," said SFWMD Assistant Executive Director Bob Brown. "The District is committed to using the most efficient technology to enhance customer service for our stakeholders doing business with this agency."

The new mapping capability enhances the SFWMD ePermitting system, in which customers have convenient, 24-hour online access to conduct a variety of business, including:

- Submittal of applications for permit and/or permit compliance data
- Searching for application and permit information
- Submittal of payments for permit fees
- Applying to transfer an existing permit
- Subscribing to receive electronic noticing of permit-related information
- Obtaining help and instructional guides to use the system efficiently

ePermitting reduces applicant paperwork, eliminates printing and postage costs and reduces permit processing time. To assist customers with the ePermitting system, the SFWMD hosts free workshops focusing on Environmental Resource Permits and Consumptive Use Permits. A full list of training sessions throughout the District is available by clicking here. Pre-registration is required.

Launched in September 2005, SFWMD ePermitting now has more than 10,000 user accounts. To date, nearly 300 individuals subscribe to the system's automatic e-notice feature, allowing users to subscribe to receive electronic notifications regarding permit-related information. This information includes details on newly received applications, permits issued, regulatory agendas and rulemaking changes. The e-notices can be customized by each user, including by county or permit type.

The SFWMD continues to upgrade its services to permittees and other customers. Following an extensive conversion of microfiche files, more than 35 years of regulatory permit information are now available on the ePermitting online database, resulting in direct, easy and quick public access to permit files.

All converted data, as well as existing applications and information on the training sessions, can be accessed online at www.sfwmd.gov/ePermitting.

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Kissimmee River Restoration Attracts Wildlife

Ongoing restoration project dramatically improves wildlife populations while maintaining regional flood control

An environmental monitoring program to measure the effectiveness of the state-federal Kissimmee River Restoration Project has revealed a promising increase in wading birds and waterfowl, thriving aquatic invertebrates and improvements in water quality.

"The abundant wildlife now seen along the Kissimmee is a powerful indicator of the benefits of long-term investments in restoration," said South Florida Water Management District (SFWMD) Executive Director Melissa Meeker. "The District's documentation of these improvements provides us and our restoration partners — as well as the public — with critical insights into the ecosystem's ongoing recovery."

Environmental monitoring conducted since completion of the first phase of construction in 2001 has shown improvements in aquatic life, reductions in accumulated bottom sediments, re-establishment of floodplain wetlands and an increase in waterfowl and wading birds.

Among the observations:

- The number of wading birds observed increased by 64 percent. Three species long absent from the river are now documented regularly.
- Shorebird species commonly observed jumped from 2 to 11.
- Waterfowl sightings increased dramatically — by 29 times compared to pre-restoration sightings.

In addition, dissolved oxygen levels in the river have improved, which is critical for the long-term survival of fish and other aquatic organisms.

Wetland vegetation, which once covered only 37 percent of the Phase I restoration area prior to construction, has fully achieved the restoration target of 80 percent coverage. In addition to an increase in wading birds, shorebirds and waterfowl, the numbers of wetland-dependent marsh birds and songbirds have also increased since restoration began in 2001.

These results suggest that after construction is complete in 2014 and hydrologic conditions are fully restored in 2015, the region is on track to achieve its goal of restored ecological integrity in the Kissimmee River and its floodplain. Ecological monitoring is scheduled to continue for at least five years after project completion to guide management of the flood control system and evaluate the ultimate success of the restoration project.

The Kissimmee Basin is the headwaters of Lake Okeechobee and the Everglades. The Kissimmee River Restoration Project is a partnership between the South Florida Water Management District and the U.S. Army Corps of Engineers that has been in place for more than 20 years. The Army Corps is responsible for construction, and the District is responsible for land acquisition and restoration evaluation monitoring. Project construction is scheduled for completion in December 2014.

Highlights of Current Construction Efforts:

- The C-37 Canal north of Lake Kissimmee is being enlarged as part of the overall flood control network.
- River Acres flood protection enhancements are nearly complete. This project protects homes and eliminates the need to acquire additional lands.
- River channel excavations are under way in Pool D where segments of the river channel are completely filled in. This work will streamline the effort for the next major back-filling effort.
- Construction began this month on a boat ramp that will replace the one located at control structure S-65C, which is scheduled for demolition in spring 2013.

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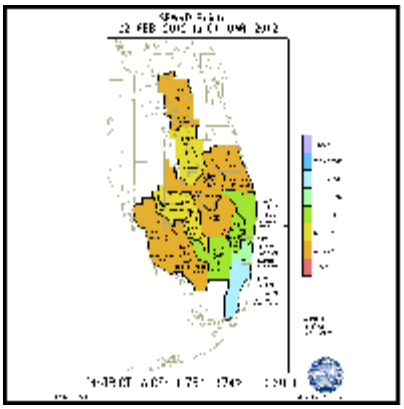
February Rainfall Provides a Mix of Dry and Supply

Water conservation will help sustain the public water supply

Following a record dry January, much of the South Florida Water Management District (SFWMD) from Orlando southwest to Naples continued to experience below-average rainfall



in February. Water supplies in the lower east coast, however, received a boost during the month from significant rainfall in Palm Beach, Broward and Miami-Dade counties.

"While many areas of the District remain below average, water levels are higher than a year ago, when the majority of the region was in drought conditions. Along with recent rainfall, this has helped slow down the normal dry season recession of the regional aquifers," said Susan Sylvester, SFWMD Chief of the Water Control Operations Bureau. "We are still concerned about the overall deficit of rainfall and continue to cautiously manage the water in the system because the driest months of the dry season are on the way."

For February, a total of 1.75 inches of rain fell across the District, representing 74 percent of the average for this time of year, or a deficit of 0.60 inches. Areas along the southwest coast received only 58 percent of the average rainfall for the month. Eastern Miami-Dade County received 2.04 inches above its normal, or 193 percent of its average.

Reminder: Customers of the West Palm Beach and Lake Worth utilities remain under local orders limiting landscape irrigation to one day per week.

In an interesting quirk of the calendar according to District meteorologists, a gauge at Palm Beach International Airport recorded 0.87 inches of rain on February 29, setting a record as the wettest Leap Day at that location since at least 1896. The previous record Leap Day at the airport was 0.68 inches of rain in 1976.

Lake Okeechobee stood at 12.68 feet NGVD on March 22, which is more than 1.5 feet below its historical average for this time of year but nearly a foot higher than a year ago. The 730-square-mile lake, which serves as a backup water supply for South Florida, received a major boost from October rains and remains above its water shortage management zone.

Looking forward, below-average rainfall is forecast for the remainder of this year's dry season. Longer days, more sunlight and higher evapotranspiration also mean that water levels can fall rapidly in April and May.

As a result, a water shortage warning remains in place across the entire 16-county District. Residents are reminded to conserve water and follow the Year-Round Landscape Irrigation Rule.

Year-Round Landscape Irrigation Rule

Adopted by the SFWMD Governing Board in November 2009, the Year-Round Landscape Irrigation Rule established a permanent two-day-a-week landscape watering schedule throughout the region, with a three-day-a-week provision for some counties.

Utilizing the rule's flexibility, some city and county governments have adopted alternative landscape irrigation ordinances or emergency actions based on local water demands or system limitations. For many areas, landscape watering schedules remain the same under year-round conservation measures as they were under water shortage restrictions.

Details on landscape irrigation limits are available by contacting your local government or by visiting www.sfwmd.gov/2days.