splash!

quick facts on...

Everglades Restoration Progress

JANUARY 2016

BACKGROUND:
America's Everglades was once a vibrant, free-flowing River of Grass, extending from the Kissimmee Chain of Lakes near Orlando to the southern tip of the peninsula at Florida Bay. Over time, significant development allowed for population and economic growth. The construction of canals and water control structures, along with increased water needs due to urban and agricultural expansion, also contributed to unintended environmental consequences.

Recognizing that a healthy ecosystem is vital to a healthy economy, a number of initiatives are under way to improve water quality, increase storage and reestablish more historic flows.

Improving Water Quality

Since 1994, the State of Florida has invested more than $1.8 billion toward lowering phosphorus levels in Everglades-bound waters through a combination of source control Best Management Practices (BMPs) via regulations and constructed wetlands, known as Stormwater Treatment Areas (STAs). BMPs fine-tune onsite processes to prevent or reduce phosphorus in discharges from the source and STAs use "green technology" to further remove excess phosphorus.

- Five Everglades STAs are operational with an effective treatment area of 57,000 acres, including 12,000 acres completed in 2012.
- In Water Year 2015, these constructed wetlands treated approximately 1.4 million acre-feet of water, reducing phosphorus loads by more than 80 percent. To date, the STAs have treated more than 16 million acre-feet of water and have retained approximately 2,012 metric tons of phosphorus.
- Under the SFWMD regulatory source control program, BMPs on 470,000 acres of agricultural lands south of Lake Okeechobee have resulted in a long-term average phosphorus reduction greater than 50 percent since 1995, more than twice the amount required by state law.
- To date, BMPs at the source and regional STAs together have prevented approximately 4,860 metric tons of phosphorus from entering the Everglades.
- **Restoration Strategies** - The SFWMD is creating more than 6,500 acres of new STAs and 116,000 acre-feet of additional water storage through construction of shallow impoundments called Flow Equalization Basins (FEBs). These FEBs capture runoff during storm events and provide a more steady flow of water to the STAs, helping to maintain desired water levels needed to achieve optimal performance.
  - **A-1 FEB** construction is complete and operational (60,000 acre-feet of storage).
  - **L-8 FEB** construction is ongoing and is expected to be complete by April 2016 (45,000 acre-feet of storage).
  - **STA-1 West Expansion #1** construction is ongoing and is expected to be complete by December 2018 (approximately 4,200 acres of effective treatment area).

America's Everglades

The South Florida Water Management District *is a regional governmental agency that manages the water resources in the southern part of the state. It is the oldest and largest of the state's five water management districts.*

Our Mission *is to manage and protect water resources of the region by balancing and improving flood control, water supply, water quality and natural systems.*

sfwmd.gov

- **Conveyance improvements** required for the movement of water to and from the new FEBs and STAs are under construction.
- Sub-regional source control projects are ongoing. They include a canal cleaning demonstration project and a water quality data and documentation summary project.
- Eight **Science Plan** studies designed to better understand the sustainability of STA performance at low phosphorus concentrations are ongoing.

Western Everglades Initiatives

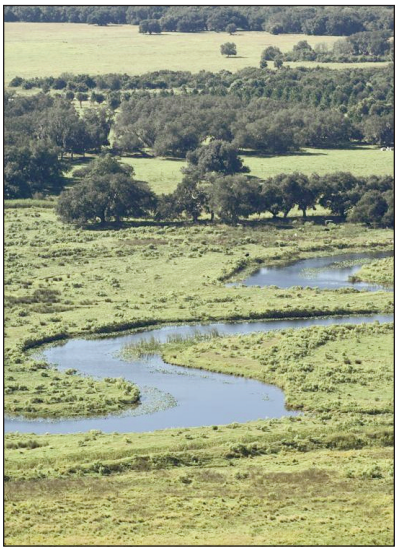
- Several ongoing efforts to improve water resources in the **Western Basins Region** (lands and water bodies within the Feeder Canal Basin, the C-139 Annex Basin, and the L-28 Basin) are underway.
  - The **Western Basins Water Resource Evaluation** is underway and will identify opportunities for additional hydrologic and water quality improvements. This study will identify missing data, assess potential projects with landowners and identify potential state and federal funding opportunities.
  - The **Sam Jones/Abiaki Prairie (C-139 Annex) Restoration Project** will complement Restoration Strategies by converting approximately 15,000 acres of former citrus grove to historical Everglades conditions consisting of an expansive wet prairie system with depressional marshes, cypress domes and hardwood hammocks. The project will improve groundwater and surface water hydrology, water supply and water quality. In addition to ongoing invasive species management, approximately 2,600 acres of citrus have been removed.

Implementing State-Federal Restoration Projects

Florida and the U.S. Army Corps of Engineers (USACE) are partners on large-scale, precedent-setting restoration efforts, including returning ecological integrity to the channelized Kissimmee River and floodplain and implementing wide-ranging Comprehensive Everglades Restoration Plan (CERP) projects to benefit the interconnected South Florida ecosystem.

Kissimmee River Restoration

- When complete, 40 square miles of Kissimmee River and floodplain ecosystem will be restored, including almost 25,000 acres of wetlands and 40 miles of historic river channel.
- Florida/SFWMD has acquired more than 100,000 acres of land needed for the project.
- The USACE initiated construction in 1999. Three phases are now complete – backfilling 14 miles of C-38 canal and reestablishing continuous water flow to 24 miles of river channel. Seasonal rains and flows now inundate 15,000 acres of restored floodplain habitat. Another 9 miles of canal is being backfilled to restore flow to 16 additional miles of the river. Project completion is scheduled for 2019.
- To provide the continuous water flows necessary to fully implement river restoration, planning and land acquisition are also underway to increase storage capacity in the Kissimmee Chain of Lakes – the headwaters of the river system.
- Environmental monitoring is ongoing by the SFWMD to evaluate ecosystem responses to the canal backfilling and other changes.



Kissimmee River Restoration

Foundation Projects

- The **C-111 South Dade** project will restore more natural hydrologic conditions in Taylor Slough and Florida Bay in Everglades National Park.
  - The SFWMD is almost complete with acquisition of approximately 41,000 acres of land, while the USACE prepares to initiate three construction contracts over 2016. These contracts will complete the northern detention area and other components, completing the hydrologic link between the C-111 South Dade and Modified Water Deliveries projects. This effort is critical to the District's ability to retain water within Everglades National Park and maintain flood protection for urban and agricultural lands to the east.

Modified Water Deliveries Project

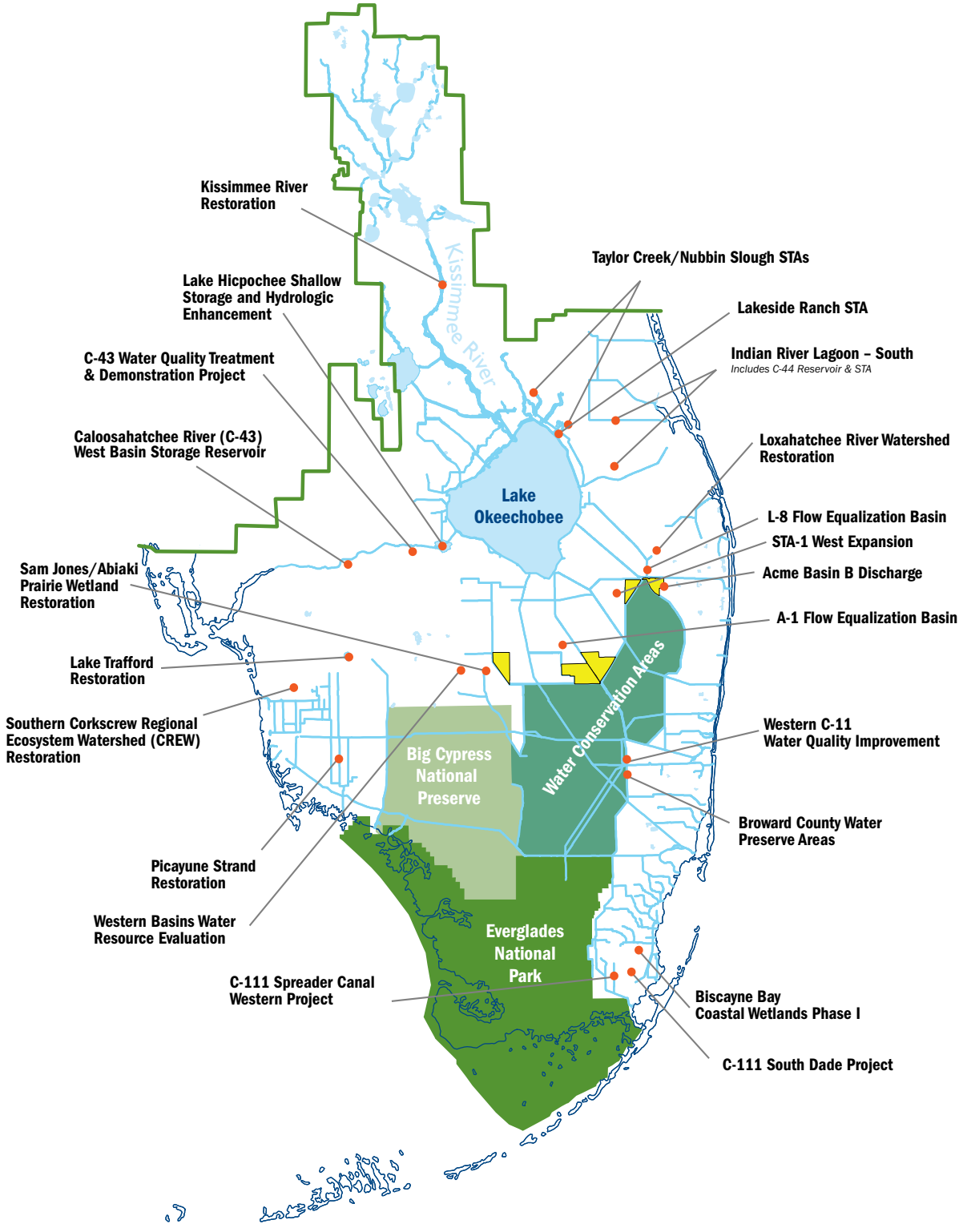
  - Construction of the **Modified Water Deliveries Project** is nearing completion, and new water delivery operations to Everglades National Park are being tested.

CERP & Critical Restoration Projects

- Florida and the SFWMD have invested approximately $2 billion toward implementing the Comprehensive Everglades Restoration Plan. Through September 2015, nearly 64 percent or 259,521 acres of lands needed for CERP have been acquired.

- **The Indian River Lagoon – South** restoration project will reduce harmful freshwater inflows and generate habitat and water quality improvements in the St. Lucie Estuary and the Indian River Lagoon. Project components include the C-44 Reservoir and STA, C-23/C-24 North and South Reservoirs and STA, C-25 Reservoir and STA, muck removal, natural storage and treatment areas and the North Fork Natural Floodplain Restoration.
  - The SFWMD completed land acquisition and design for the C-44 Reservoir and STA component. The USACE completed the first phase of construction, which includes the intake canal, and began work on the 3,400-acre reservoir in late 2015. The

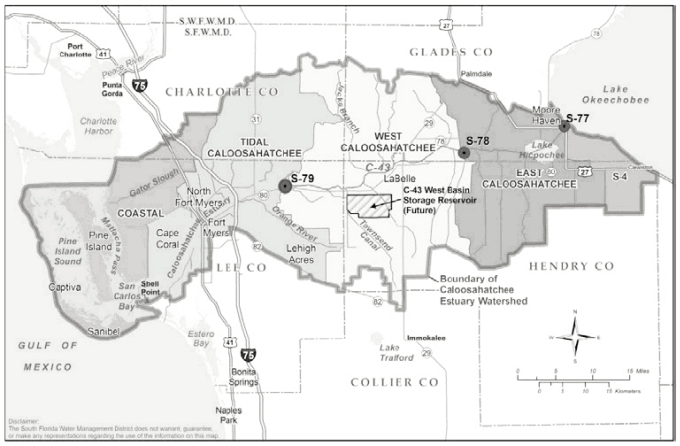
Highlighted Restoration Projects



The **Central Everglades Planning Project** includes a suite of storage, treatment, conveyance and seepage management measures that will provide the necessary components to deliver additional fresh water from Lake Okeechobee south to Water Conservation Area 3, Everglades National Park and Florida Bay. Once implemented, the project features will restore more natural quantity, quality, timing and distribution of water flows to the remaining portions of The *River of Grass*. The Final Integrated Project Implementation Report was published in the Federal Register in July 2014. The Chief of Engineers Report was signed in December.

SFWMD has initiated construction of the 6,300-acre STA and associated features, and has also initiated construction of the reservoir pump station. The SFWMD will complete construction of the STA in 2017 and the pump station in 2018.
- The SFWMD has also acquired more than 20,000 acres of land for natural storage and treatment areas and initiated wetland restoration activities on the Allapattah Flats Natural Storage and Treatment Area in collaboration with Martin County and USDA under the Wetlands Reserve Program.

- The **Loxahatchee River Watershed Restoration Project** will identify management measures and develop a recommended plan to restore freshwater flows to the federally designated "National Wild and Scenic" Northwest Fork of the Loxahatchee River, as well as reconnect the area's wetlands and watersheds that are the headwaters to the northwest fork. Planning is underway on a Project Implementation Report. Components that have been constructed include the G-160 and G-161 structures.
  - Preliminary design for the Mecca FEB, a shallow impoundment which will provide storage in the C-18 Basin, is underway. This feature replaces the L-8 Reservoir, which was repurposed as an Everglades water quality feature.



Caloosahatchee Estuary Watershed

- The **Caloosahatchee River (C-43) West Basin Storage Reservoir**, authorized in the Water Resources Reform and Development Act (WRRDA) of 2014, will capture and store stormwater runoff from the C-43 Basin and reduce excess freshwater flow to the Caloosahatchee Estuary. It will also capture and store regulatory releases from Lake Okeechobee, reducing discharges to coastal estuaries during wet periods and providing flows to the estuary during dry periods.
  - The SFWMD acquired the land with significant cost-share from the U.S. Department of the Interior. All necessary permitting is complete.
  - Update of design is underway, which will allow the construction of Phase 1 of the project. Phase 1 consists of both pump stations, Cell 1 (western cell), the perimeter canal and all improvements to the Townsend Canal.
  - The first construction package has been issued and work has begun. The second and third construction packages are scheduled for April 2016 and December 2016, respectively.
  - A Project Partnership Agreement between the SFWMD and the USACE is being developed for execution in the spring of 2016.

- The **Lake Trafford Critical Restoration Project** was completed in 2010. The removal of muck build-up from the lake bottom and nearshore areas, combined with native vegetation replanting, has resulted in recovery of aquatic plants, providing important habitat for wildlife and fish to thrive in the 1,600-acre lake.
  - Submerged aquatic vegetation mapping and plantings were conducted in 2014.
  - In 2015, submerged aquatic vegetation was remapped to evaluate restoration success and to provide additional monitoring of hydrilla.
  - A study is underway to develop an accurate watershed boundary and delineate the flow network for Lake Trafford, which will be used to increase understanding of nutrient inputs and outputs for the lake and for development of a future watershed management plan.

- The **Southern CREW (Corkscrew Regional Ecosystem Watershed) Critical Restoration Project** will improve or restore the hydrology and ecology of the project area along with resulting benefits to upstream and downstream lands.
  - Final project design was completed in 2013 and permits for restoration have been received.
  - Florida/SFWMD has partnered with other governmental and conservation organizations to collectively acquire 45,000 acres of the vast 60,000-acre CREW. The Southern CREW project will restore approximately 2,280 acres to wetlands.
  - Construction is scheduled to begin in January 2016.

- The **Picayune Strand Restoration** project will reestablish natural sheetflow to enhance wetlands in the 55,000-acre Picayune Strand and provide more natural freshwater inflow to the Ten Thousand Islands National Wildlife Refuge. The project includes construction of three pump stations with spreader canals, plugging 40 miles of canals and removing 227 miles of roads.
  - The SFWMD backfilled 7 miles of Prairie Canal and removed 65 miles of roadways, resulting in more than 13,000 acres of restored and enhanced habitat.
  - A series of culverts constructed under U.S. Highway 41 will restore natural sheetflow to wetlands south of the road.
  - The USACE completed the Merritt Canal pump station in 2014, with canal backfilling completed in 2015. Construction of the Faka Union pump station was completed in December 2015 and the Miller pump station is scheduled for completion in summer 2017.
  - Construction of the Manatee Mitigation Feature, south of Port of the Islands, began in summer 2015 and will be completed in April 2016.

- The **Broward County Water Preserve Areas** project was authorized in the WRRDA 2014 and is designed to enhance the buffer between residential development and protected Everglades wetlands, capturing and diverting stormwater runoff and reducing underground seepage from the Everglades. There are three components: WCA 3A/3B Seepage Management Area, C-11 Impoundment and C-9 Impoundment.
  - The SFWMD, with cost-share contributions from the U.S. Department of Interior, has acquired the necessary lands for this project.
  - Construction of the Northern Mitigation Area portion. Federal

appropriations are needed to enter into a Project Partnership Agreement.

- The **Biscayne Bay Coastal Wetlands Phase I** project was authorized in the WRRDA 2014 and will restore natural water flows to Biscayne Bay and Biscayne National Park, improving salinity distribution near the shoreline. This will reestablish productive juvenile nursery habitats for shrimp, shellfish and other near-shore species.
  - The SFWMD completed construction and began operation of the Deering Estate Flow-Way component. Four of the ten culverts planned for the L-31 East component have been completed.
  - The SFWMD conducted a pilot pump test at the L-31E Flow-way during the 2015 dry season. The pump test will continue for the next several years until the permanent S-709 pump is constructed by the USACE.
  - Federal appropriations are needed to enter into a Project Partnership Agreement.

Biscayne Bay Coastal Wetlands

- The **C-111 Spreader Canal Western Project** was authorized in the WRRDA 2014 and will help to restore more natural freshwater flows and levels in Taylor Slough, Model Lands and Southern Glades, with direct benefits to Everglades National Park and Florida Bay.
  - The SFWMD has implemented a majority of the project features. Construction was completed in 2012, tested in 2013, and has been operational since then.
  - Federal appropriations are needed to enter into a Project Partnership Agreement.

- The **Central Everglades Planning Project** includes a suite of storage, treatment, conveyance and seepage management measures that will provide the necessary components to deliver additional fresh water from Lake Okeechobee south to Water Conservation Area 3, Everglades National Park and Florida Bay. Once implemented, the project will restore more natural quantity, quality, timing and distribution of water flows to the remaining portions of The River of Grass. The Final Integrated Project Implementation Report was published in the Federal Register in July 2014, the Chief of Engineers Report was signed in December 2014 and the Record of Decision was signed in August 2015. The project is awaiting Congressional authorization and appropriations.

Protecting the Lake and Estuaries

Passed by the Florida Legislature in 2007, the Northern Everglades and Estuaries Protection Program promotes a watershed approach to protecting Lake Okeechobee and the Caloosahatchee and St. Lucie rivers and estuaries. Protection plans (updated every three years), in concert with Florida Department of Environmental Protection (FDEP) adopted Basin Management Action Plans (BMAPs), include a mix of both water quality and water storage initiatives.

- **Regulatory and voluntary source control programs** by the Florida Department of Agriculture and Consumer Services (FDACS), FDEP and the SFWMD are being implemented and have been demonstrated to be cost-effective strategies for reducing nutrients in offsite discharges from the point of origin.

- The construction of three regional Stormwater Treatment Areas is expected to reduce the average phosphorus load to Lake Okeechobee by approximately 25 metric tons per year when fully operational.
  - The **Lakeside Ranch STA** is a 2,700-acre STA adjacent to Lake Okeechobee in western Martin County. The first phase (920-acre treatment area) was completed in 2012 and construction of the second phase will begin in January 2016. The Lakeside Ranch STA Phase I removed 13.9 metric tons of total phosphorus in Water Year 2015.

Lakeside Ranch STA

  - **Taylor Creek/Nubbin Slough STAs** are two pilot-scale STAs constructed by the USACE. The Taylor Creek STA removed 1.2 metric tons of total phosphorus in Water Year 2015. The Nubbin Slough STA was completed in March 2015 and is being managed to establish treatment vegetation prior to flow-through operation.
  - The **C-43 Water Quality Treatment and Demonstration Project** will demonstrate cost-effective, wetland-based strategies for reducing total nitrogen loads and other constituents from the C-43 to help meet the Total Maximum Daily Loads established for the Caloosahatchee River and Estuary. Project land was acquired with funds from Lee County, the SFWMD and Florida. The initial phase of testing (bioassays and mesocosms) started in 2014 and will continue through 2018. Information from Phase I demonstrations will be incorporated into future phases of the project.

- The **Lake Hicpochee Shallow Storage and Hydrologic Enhancement** project will capture surface water from the C-19 Canal, which discharges directly into the Caloosahatchee River (C-43), hold the water in a shallow storage feature north of the lake, and distribute the stored water via a spreader canal onto the northwest area of Lake Hicpochee.
  - The land has been acquired for Phase I and project design is anticipated to be complete in 2015.

- Through the **Dispersed Water Management** program, additional water retention is being provided in the Northern Everglades. Examples include cooperative agreements with public and private landowners to cost-share water resource improvement projects, retaining water on State-owned lands prior to the implementation of regional projects (interim lands), conducting pilot projects to document the costs and benefits of storing water on fallow citrus groves (water farming) and compensating ranchers for storage/nutrient reductions through the Northern Everglades Payment for Environmental Services Program.
  - Approximately 85,000 acre-feet of annual storage/retention has been achieved in the Northern Everglades, with the majority located in the Lake Okeechobee watershed.
  - Approximately 107,000 acre-feet of additional storage projects are in planning, design/permitting, or under construction.

Allapattah Flats Management Area water storage

- **Cost-Share Projects** with local governments assist with implementation of stormwater management, alternative water supply and water conservation projects. Florida supports these initiatives and has cost-shared numerous local projects in the Lake and River watersheds.
  - Since 2010, the SFWMD has supported nearly 50 local projects in the Big Cypress Basin and has provided more than $20 million in total to Collier County and the cities of Everglades City, Marco Island and Naples.
  - In cooperation with the Town of Windermere and Orange County, a series of stormwater projects were completed in 2015 to improve water quality in the Butler Chain of Lakes.
  - The SFWMD coordinates and partners on a number of initiatives including Charlotte Harbor Flatwoods, Lehigh Headwaters, Loxahatchee River Preservation (LRPI), St Lucie Issues Team and Lake Worth Lagoon Initiatives.
  - The SFWMD initiated a Cooperative Funding Program to support local water resource projects. Nearly 200 projects were submitted to the District for Fiscal Year 2016 funding.

- **New Alternative Technologies Assessment** provided a forum to explore additional ways to reduce nutrient loadings in both water and sediments. The SFWMD issued solicitations that resulted in the evaluation of numerous technologies. Phosphorus and nitrogen removal capacity was demonstrated by several of the products and processes. There are likely many more technologies which are potentially available and applicable for stormwater quality improvement in the South Florida environment. Although there are no current plans to conduct additional laboratory or field tests, the District remains interested in potential water treatment technologies, and a scientific review team continues to vet new products and processes on an as-needed basis.

- FDEP's **Basin Management Action Plans** (BMAPs) are the overarching water quality restoration plans for the Northern Everglades. They are essentially blueprints for restoring impaired waters by reducing pollutant loadings to meet the allowable loadings established in a Total Maximum Daily Load. The BMAP represents a comprehensive set of strategies such as permit limits on wastewater facilities, urban and agricultural best management practices, conservation programs, financial assistance and revenue-generating activities. These broad-based plans are developed with local stakeholder input and a commitment to implementation. The SFWMD is a collaborative partner in BMAP implementation for the Lake Okeechobee, St. Lucie and Caloosahatchee watersheds.

South Florida Water Management District
3301 Gun Club Road
West Palm Beach, Florida 33406
561-686-8800 • 800-432-2045 • www.sfwmd.gov
MAILING ADDRESS: P.O. Box 24680
West Palm Beach, FL 33416-4680

EN/01/16

For more information on this subject, scan this QR code using a barcode reader app on your smartphone.