

South Indian River Water Control District  
District Engineer's  
Annual Report



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# South Indian River Water Control District™

## District Engineer's Annual Report

September 2016

### Introduction

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Formed pursuant to Chapter 298, Florida Statutes in 1923, South Indian River Water Control District's (SIRWCD or the District) initial focus was flood control and drainage canals, mostly focused on the local agriculture industry. Due to the land use changes over the years from more of an agricultural use to more of a residential use, today, the District not only provides drainage and flood control, but also maintains and improves roads, bridges, and even a park to serve its landowners. SIRWCD will strive to continue serving its landowners with ongoing operation and maintenance plans, as well as implementing capital improvement projects and landowner initiated improvements when required.

SIRWCD is positioned in Northern Palm Beach County as a strategic entity in the planning and management of water resources to the surrounding area. Approximately 12,500 acres of SIRWCD discharges in the Loxahatchee River Basin as shown in *Figure 1*, and therefore, as plans are being developed and implemented, the geographic location of the District is an element in any water management plan for the Loxahatchee River Basin.



Figure 1. District Boundary

The potential impacts from development, such as water quantity and quality, are being monitored by agencies and/or individuals that have a focused interest on maintaining a healthy ecosystem within the Loxahatchee River Basin and, specifically, the Northwest Fork of the Loxahatchee River. The Board of Supervisors and staff actively engage in the many external dealings that are influencing the District from a water supply, flood control, water quality, and ecosystem management perspective. The Board of Supervisors and staff are focused on making sure that the goals and expectations of these external activities do not conflict with the District's best interests with regard to the functioning of SIRWCD's system and the ability to deliver an appropriate level of service.

With regards to operations and maintenance, the District continues activities involving site specific drainage improvements that impact landowners, canal and culvert maintenance, and replacement or renewal of facilities that affect the works of the District. The District also continues to operate and maintain roadways and a park, as well as plan new capital and landowner initiated improvements.

Throughout the year, landowner initiated roadway improvement petitions for the application of Palm Beach County Standard Asphalt or Open Graded Emulsified Mix (OGEM) are received and reviewed by District staff. Additionally, the staff investigates whether improvements should be made to other existing infrastructure, such as canals, bridges, or drainage structures.

Each year, it is appropriately restated and recognized in the engineering report that the SIRWCD Board of Supervisors, through its policies and procedures, is responsible for formulating direction regarding District operations and intergovernmental issues. This is accomplished through a respected structure in which the District is managed through its Board of Supervisors and supporting staff. The Board of Supervisors establishes policy and provides direction to staff concerning budget, priorities, relationship with other public entities, and landowner issues. Staff is responsible for implementing Board policy. Accordingly, staff responds pursuant to the Board's direction. Engineering tasks continue to be formulated to respond to the Board of Supervisors by implementing their policies and directives, as well as supporting the General Manager in resolving various landowner issues. The relationship between the Board of Supervisors and District staff has been extremely effective in both the delivery of services to the residents and landowners within the District, and prospective management in response to requirements that are imposed upon the District by other governmental entities.

With regard to the current status of the District, to the best of my knowledge and belief, the District is in compliance with all regulatory requirements that affect works of the District and their operation, and the works of the District continue to be operated and maintained in a manner that achieves the available level of service. A separate report prepared by the District's Operations Manager discussing operation and maintenance of District facilities is included as an appendix to this document.

## Capital Improvements

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### Eighteenth Plan of Improvements

Based on a landowner initiative, a referendum was prepared by SIRWCD and verified by the Palm Beach County Supervisor of Elections to implement the application of Palm Beach County Standard asphalt on the petitioners' roadway surfaces as a roadway improvement project. On May 14, 2015, the Board of Supervisors authorized staff to develop the Eighteenth (18<sup>th</sup>) Plan of Improvements. A public hearing was held August 20, 2015 where the plan was approved and the Board authorized the Engineer's Report for the 18<sup>th</sup> Plan of Improvements. The public hearing for the Engineer's Report was held October 15, 2015 and the plan was approved. This plan includes the Unit of Development RI-18, which consists of the application of Palm Beach County Standard asphalt on approximately 3.8 miles within Palm Beach Country Estates. These roads are listed as follows and are shown in *Figure 2*.

#### Unit of Development RI-18 (3.8 miles)

- 64th Way N Between 146th Road N and 149th Place N
- 67th Trail N Between 146th Road N and 149th Place N
- 68th Drive N between 146th Road N and 149th Place N
- 74th Avenue N Between 155th Place N and 159th Court N
- 75th Way N between 150th Court N and 154th Court N
- 77th Trail N between 150th Court N and 154th Court N
- 78th Drive N between 155th Place N and 159th Court N
- 81st Terrace N between 150th Court and 154th Court N
- 149th Place between 69th Drive N and 64th Way N
- 163rd Court N between 75th Avenue N and 79th Terrace N
- 163rd Ct N between 75th Avenue N to East End

On May 20, 2016, an advertisement for bid on the project was published in the Palm Beach Post and the bids were due on June 27, 2016. After negotiations with the low bidder, contract documents were finalized and construction is anticipated in September 2016.

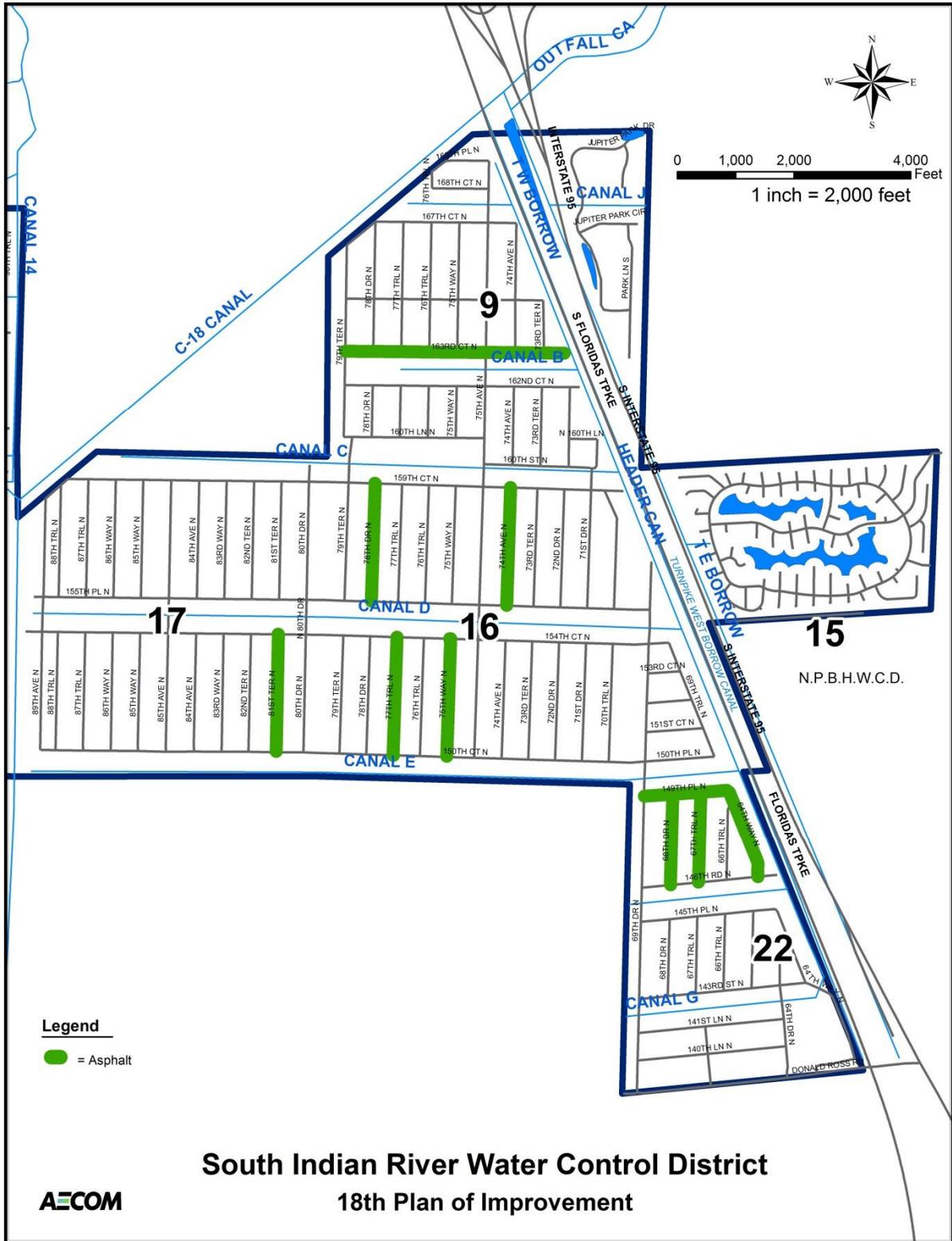


Figure 2. Proposed 18th Plan of Improvements

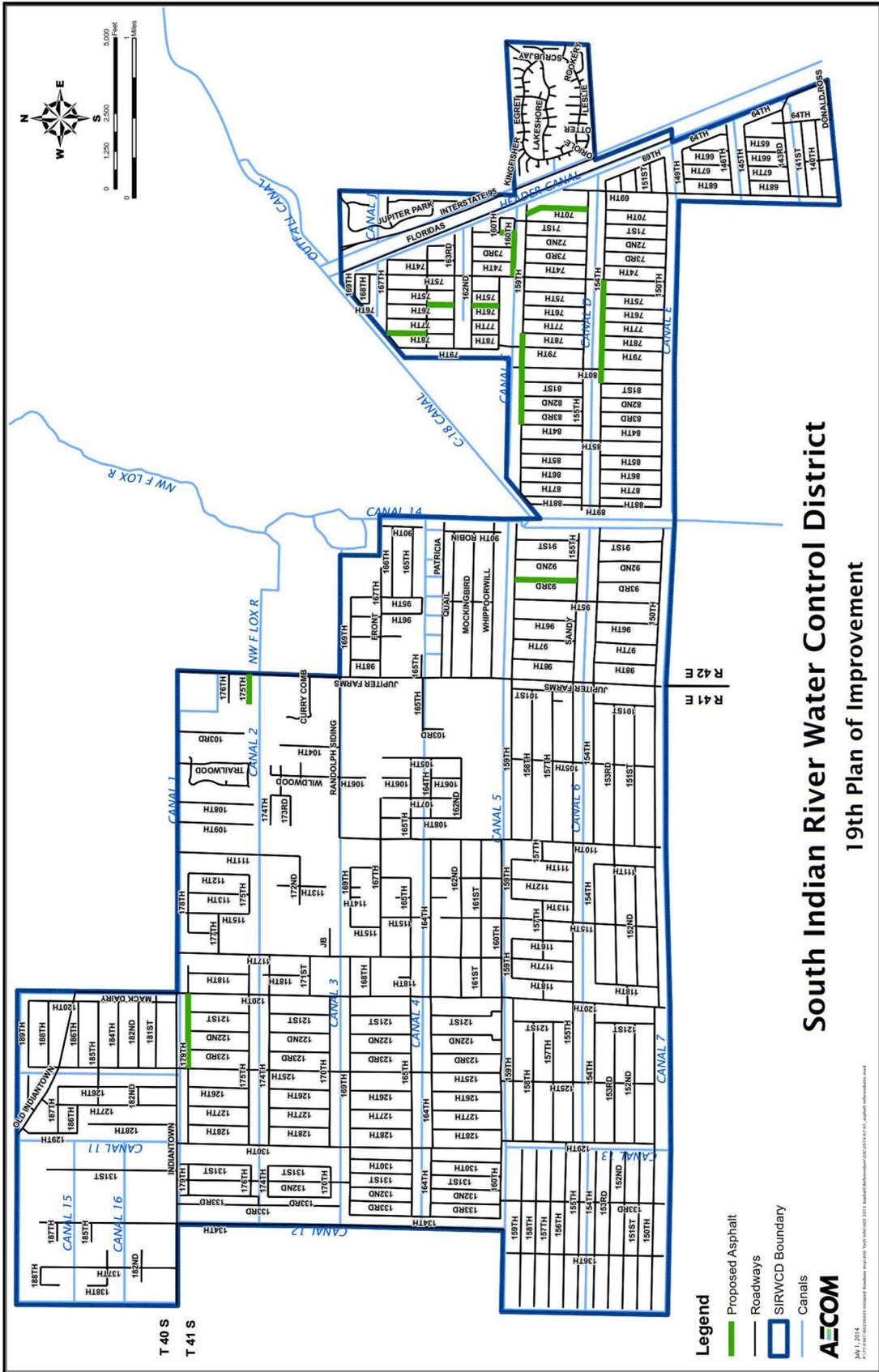
## Proposed 19<sup>th</sup> Plan of Improvements

The District has received petitions from landowners to apply asphalt on certain roadways within the District. Landowners on the following roadways are petitioning to distribute a referendum for applying asphalt in both Palm Beach Country Estates and Jupiter Farms (approximately 3.6 miles) as shown on *Figure 3*:

### Asphalt

- 70<sup>th</sup> Terrace N between 155<sup>th</sup> Place N and 159<sup>th</sup> Court N
- 76<sup>th</sup> Trail N between 160<sup>th</sup> Lane and 162<sup>nd</sup> Court N
- 76<sup>th</sup> Terrace N between 163<sup>rd</sup> Court N and 165<sup>th</sup> Street N
- 78<sup>th</sup> Drive N between 165<sup>th</sup> Street N and 167<sup>th</sup> Court N
- 93<sup>rd</sup> Lane N between 155<sup>th</sup> Road N and 159<sup>th</sup> Court N
- 154<sup>th</sup> Court N between 75<sup>th</sup> Avenue N and 81<sup>st</sup> Terrace N
- 159<sup>th</sup> Court N between 78<sup>th</sup> Terrace N and 84<sup>th</sup> Avenue N
- 160<sup>th</sup> Street N between 72<sup>nd</sup> Drive N and 75<sup>th</sup> Avenue N and 72<sup>nd</sup> Drive N between 160<sup>th</sup> Street N and 160<sup>th</sup> Lane N
- 175<sup>th</sup> Road N from Jupiter Farms Road west to the end
- 179<sup>th</sup> Court N between Alexander Run and 125<sup>th</sup> Avenue N

At the May 19, 2016 meeting, the Board authorized the engineer to move forward with identifying the benefitted area and preparing the engineer's estimate of probable cost for the development of the referendum. The referendum for the 19<sup>th</sup> Plan of Improvements is expected to be mailed in October 2016.



# South Indian River Water Control District 19th Plan of Improvement

Figure 3. Proposed 19th Plan of Improvements

## Resource Regulations

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### National Pollutant Discharge Elimination System (NPDES)

The current Palm Beach County Municipal NPDES Permit was issued by the Florida Department of Environmental Protection (FDEP) on March 2, 2011. SIRWCD is a co-permittee along with 34 municipalities, the Department of Transportation, Palm Beach County, and four special districts. In order to complete the permit-related activities that are performed collectively by the co-permittees, an NPDES Steering Committee was formed. The Steering Committee meets on a regular basis to evaluate the program, to



provide training and resources to the co-permittees, and to assist with the preparation of the annual reports. Staff continues to attend the Committee Meetings as a Steering Committee Board member. This past year, which is the 6<sup>th</sup> year of the Cycle 3 Permit, the meetings included a discussion of Waters of the United States rule, Total Maximum Daily Load's (TMDLs) for the next permit cycle, public education, the Annual Reports and Joint Report, and required refresher training videos on illicit discharges and sediment and erosion control. Staff also attended the two day Stormwater, Erosion & Sedimentation Control Inspector Training program on behalf of SIRWCD. The fifth year Annual Reports were submitted to FDEP in January. In addition, FDEP presented their comments on the previous year's Annual Report.

### Waters of the United States (WOTUS) Proposed Rule

On April 21, 2014, the EPA and the Army Corps of Engineers proposed draft rules revising the definitions of Water of the United States or "WOTUS". The stated intent of the changes is to clarify what is and what is not a WOTUS. After many agency comments on the proposed rule, the rule was revised and the EPA and the Army Corps of Engineers published final rules revising the definitions of WOTUS that became effective on August 28, 2015. However if implemented as adopted, the new regulations will result in significant impacts on the NPDES program and municipal separate storm sewer system (MS4) permit holders because most ditches, stormwater conveyances, and certain flood control devices will be considered to be "WOTUS" and subject to permit conditions and numeric nutrient criteria.



On August 27, 2015, a federal judge in North Dakota granted a petition filed by 13 western states to enjoin implementation of the rules – making implementation and application of the rules throughout the rest of the country even less certain. In addition, other states including Florida have filed lawsuits challenging the rule.

On October 9, 2015, the Sixth Judicial Circuit Court of Appeals issued a nationwide injunction stopping the WOTUS rule from being implemented. Over the past year, there have been several discussions by the courts as to which court has the authority to decide the matter. The rule has not

been implemented due to the court process. Staff will continue to monitor the proposed rule and provide updates to the District.

## Public Facilities Report/Water Control Plan

Chapter 189 of the Florida Statutes, the Uniform Special District Accountability Act, requires the preparation and submission of a Public Facilities Report to governmental jurisdictions in which the District resides such as Palm Beach County, the Town of Jupiter, and South Florida Water Management District. Special Districts are required to submit an update to this report every five years and, at a minimum, the report must contain information as to the status of the District's public facilities and changes or revisions to those facilities that have occurred in the past year.

Since 1991, when the District filed its first Public Facilities Report, data collection has been an on-going process to provide for better and more accurate mapping of the works of the District. The Public Facilities Report is continually modified as each Plan of Improvement is added to the District's facilities. The current modification includes the Eighteenth Plan of Improvements. In accordance with Chapter 298.225 Florida Statutes, the Water Control Plan has been amended consistent with the preparation of the proposed Plan of Improvements during the last year.

## Government Agencies

A summary of regulatory agencies and cooperative associations affecting SIRWCD is listed in the Annual Report each year. The following list is offered to inform the landowners of the number of regulatory agencies and cooperative associations with which the District conducts business and their potential impact on the District's capital improvements, operations, and maintenance.

- United States Environmental Protection Agency (EPA)
- United States Army Corps of Engineers (ACOE)
- United States Fish and Wildlife Service
- Florida Department of Environmental Protection (FDEP)
- Florida Department of Economic Opportunity (DEO)
- Florida Department of Transportation (FDOT)
- Florida Fish and Wildlife Conservation Commission
- South Florida Water Management District (SFWMD)
- Palm Beach County
- Loxahatchee River Environmental Control District (LRD)
- Town of Jupiter
- Loxahatchee River Preserve Initiative (LRPI)
- Northern Palm Beach County Improvement District (NPBCID)
- City of West Palm Beach
- Indian Trail Improvement District
- Jupiter Inlet District
- City of Palm Beach Gardens
- Martin County
- United States Geological Survey (USGS)
- Loxahatchee River Ecosystem Management Area Committee
- Loxahatchee River Management Coordinating Council (LRMCC)
- Solid Waste Authority of Palm Beach County (SWA)
- Numerous Citizen Interest Groups and Committees

## Intergovernmental Coordination

### Loxahatchee River Management Coordinating Council (LRMCC)

SIRWCD continues to participate as an active member of the Loxahatchee River Management Coordinating Council. This Council was established by Chapter 83-358, F.S. The Council is comprised of federal, state, and regional agencies and local representatives. It advises the FDEP and SFWMD on matters that affect administration of the Loxahatchee River, to identify and resolve inter-governmental coordination problems and to enhance communications.

SIRWCD participates as a member of the Coordinating Council due to the fact that the Northwest Fork of the Loxahatchee River is the primary stormwater outfall for the entire portion of SIRWCD lying west of the SFWMD C-18 Canal, and the area east of the SFWMD C-18 discharges into the middle of the Loxahatchee River. SIRWCD and the LRMCC also have several mutual issues and interests.

Over the past year, the LRMCC has been actively monitoring projects that could affect the Loxahatchee River. These projects include an update on the Lainhart and Masten Dam, the development of Avenir within Palm Beach Gardens, the C-51 Reservoir Concept, the Loxahatchee River Watershed Restoration Plan, and the development of TMDLs for the Loxahatchee River.

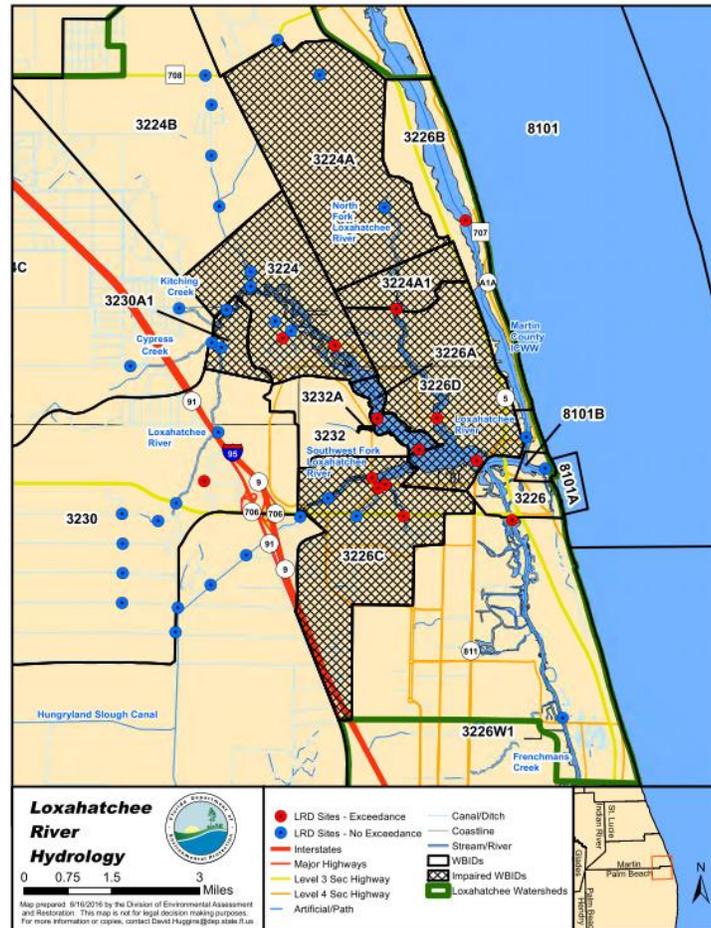


Figure 4. Impaired WBIDs

On March 28, 2016, the FDEP approached the LRMCC on the proposed development of a TMDL within some waterbody identification (WBID) units within the Loxahatchee River that have shown impairments as shown in Figure 4. FDEP suggested that instead of development of a TMDL through the state process, LRMCC could take the lead on developing a Reasonable Assurance Plan (RAP), which would replace the TMDL and subsequent Basin Action Management Plan. The RAP is a stakeholder driven plan that examines the impairments and prepares solutions to aid in restoring the Loxahatchee River from impairment. FDEP would still develop a TMDL but it would be included in the RAP instead of a state process. Staff will continue to follow this process throughout the next year.

## Loxahatchee River Preservation Initiative

The Loxahatchee River Preservation Initiative (LRPI) is the outgrowth of a watershed management effort that the FDEP spearheaded in 1996. This multi-agency and stakeholder based advisory group was organized primarily for the purpose of soliciting, ranking and submitting to the Florida Legislature a list of projects focused on the preservation and restoration of the water quality and habitats of the Loxahatchee River and its watershed. Agencies and stakeholders are given an avenue to apply for funding on several key projects that are critical to preserving the long-term health of the Loxahatchee and have not been implemented due to lack of resources and other regional priorities taking precedence.

SIRWCD participates as a member of the LRPI due to its location within the Loxahatchee River watershed. This year, SIRWCD applied for grant funding for a drainage improvement project on 127<sup>th</sup> Drive North located north of Indiantown Road and clearing several outfalls. A presentation for the approval of these projects is anticipated in October 2016 with funds being distributed for the fiscal year 2018. SIRWCD will continue to apply for grants in the future.

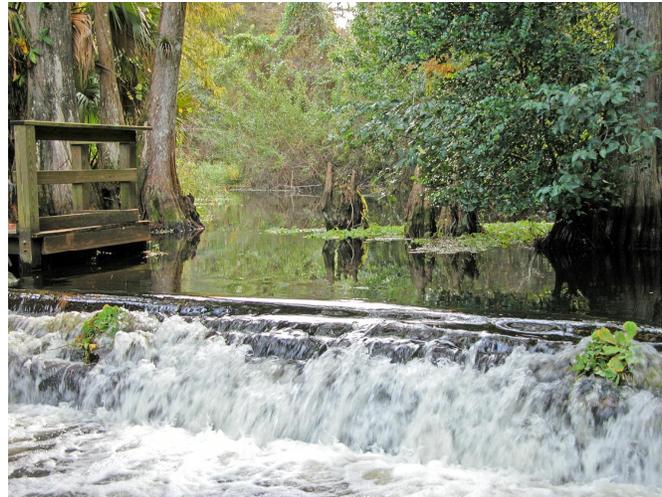


Figure 5. Lainhart Dam

## South Florida Water Management District (SFWMD) Everglades Restoration Strategies

SFWMD's Everglades Restoration Strategies Regional Water Quality Plan has been developed in order to address water quality-based effluent limits for Stormwater Treatment Areas to meet NPDES permitting requirements by EPA. Under these strategies, the SFWMD is implementing a technical plan to complete several projects that will create more than 6,500 acres of new stormwater treatment areas (STAs) and 116,000 acre-feet of additional water storage through construction of flow equalization basins (FEBs). FEBs provide a more steady flow of water to the STAs, helping to maintain desired water levels needed to achieve optimal water quality treatment performance.

Design and construction of the treatment and storage projects in the Restoration Strategies Regional Water Quality Plan will take place in three phases with completion of all projects set for 2025. These projects are shown in *Figure 6*.

As part of the program's Technical Plan, both STA expansions and Flow Equalization Basins (FEB) upstream of STA's are proposed. The plan includes designation of the L-8 Reservoir as a 45,000 ac-ft FEB that will have a multipurpose function to capture, store and deliver water to STA-1 East, STA-1 West, and the Loxahatchee River and for other restoration purposes. When the STA-1 West expansion is completed and in-basin storage for the Loxahatchee River comes online, the L-8 FEB will transition to primarily delivering consistent flows needed to optimize performance of STA-1 East and STA-1 West as

part of the plan. The L-8 Flow Equalization Basin is expected to complete construction in December 2016. The STA-1 West Phase 1 Expansion is expected to be completed by 2018.

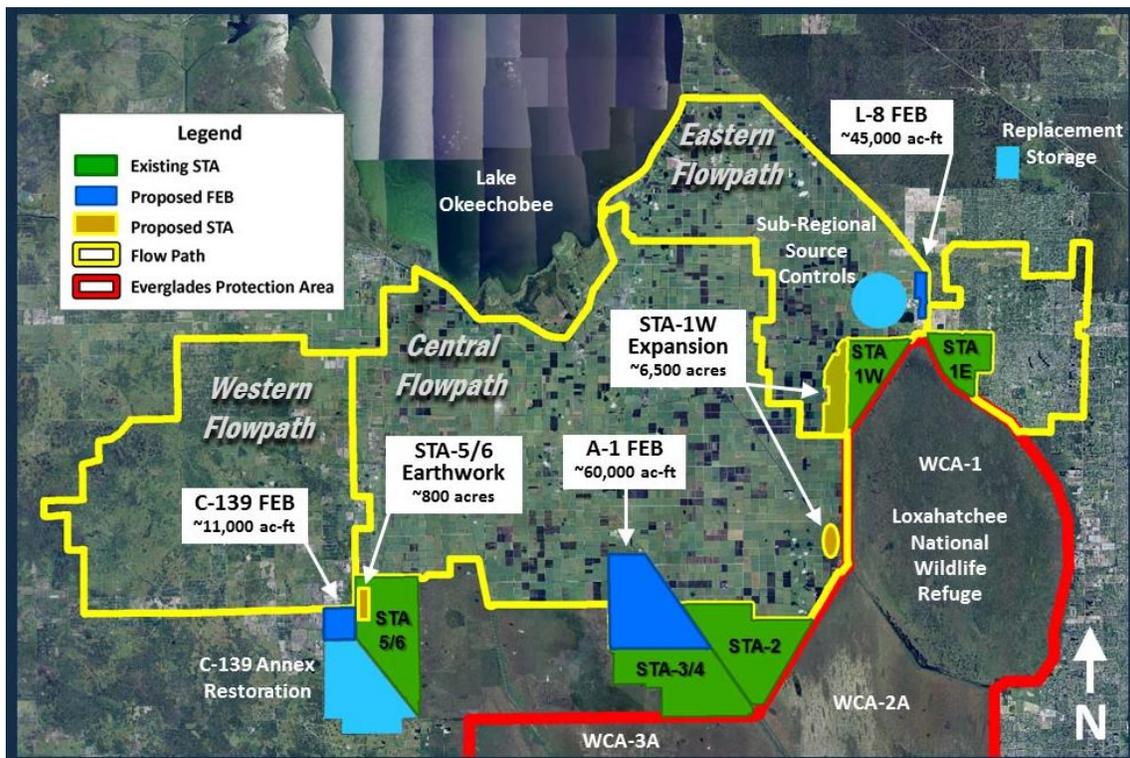


Figure 6. Final State Proposal of Key Projects and Components

## Loxahatchee River Watershed Restoration Project (LRWRP)

In December 2014, SFWMD and the Army Corp of Engineers (ACOE) kicked off the Loxahatchee River Watershed Restoration Project (formerly known as North Palm Beach County – Part 1), which is part of the Comprehensive Everglades Restoration Plan (CERP). The renewed purpose of the project is to restore and sustain the overall quantity, quality, timing, and distribution of freshwaters to the federally designated “National Wild and Scenic” Northwest Fork of the Loxahatchee River for current and future generations. This project also seeks to restore, sustain, and reconnect the area’s wetlands and watersheds that form the historic headwaters for the river and its tributaries. *Figure 7* indicates the basins that the project area includes.

Planning efforts for the project were put on hold in 2011 and have now been restarted. Currently, the project is being re-scoped under ACOE’s New Planning Paradigm and existing plan formulation data and analysis will be used in the development of a final plan, known as a Project Implementation Report and Environmental Impact Statement, to prepare for congressional authorization.

Over the past year, the SFWMD and the ACOE have been conducting the alternative formulation and analysis process of the plan formation. This consisted of meeting to discuss alternative plan selections to determine modeling scenarios for determining the best project scenarios. SIRWCD has been attending these meetings along with participating in the modeling subteam to ensure that SIRWCD’s operations are being represented correctly within the modeling effort.

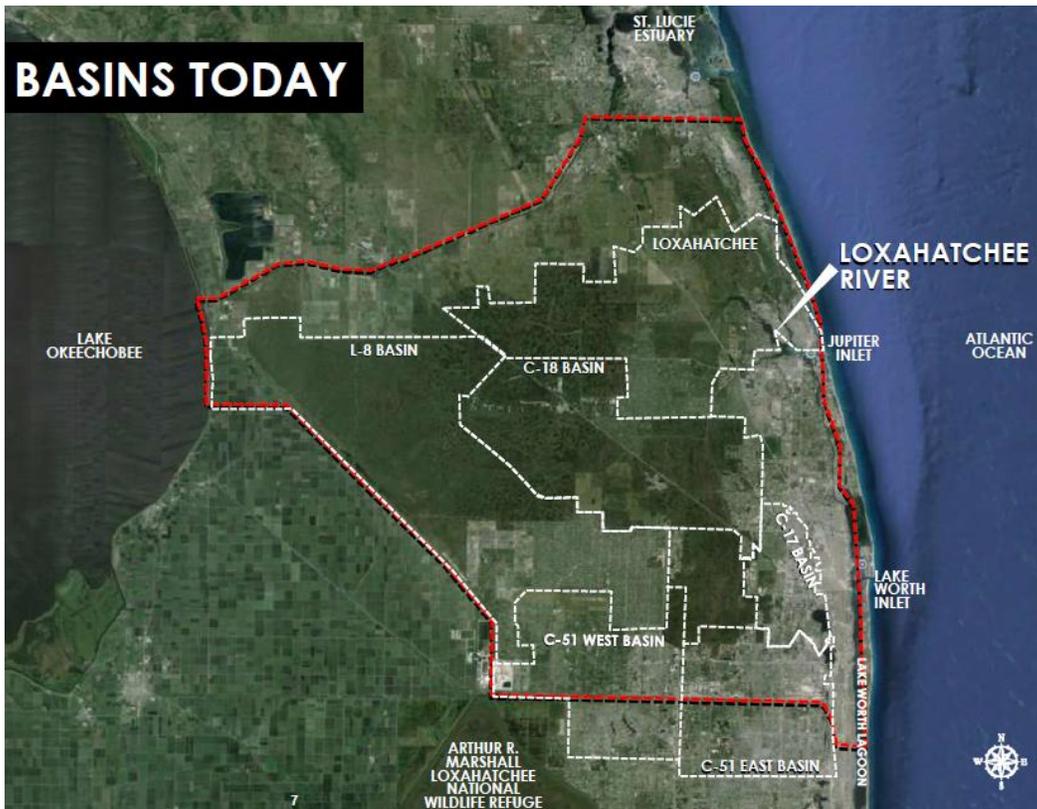


Figure 7. LRWRP Project Area

## Florida Association of Special Districts

*Serving the Special Needs of Your Community*



SIRWCD's Board of Supervisors and staff are active participants in the Florida Association of Special Districts (FASD). FASD is the recognized, collective voice of special purpose government across the State of Florida. This diverse network of both Independent and Dependent Special Districts have come together to provide resources uniquely developed to meet the needs of Florida's Special Districts. The purpose of the FASD is to keep the public informed of the benefits of Special Districts, update members with information useful to themselves and their community, review all government activities as they affect the interest of Special Districts, and to forward requests and comments to the Florida Legislature. FASD provides primary education and training to satisfy the educational requirements of Ch. 189, Florida Statutes. The purpose of the education program is to ensure that elected boards and district managers comply with Florida Statutes governing special districts. The Department of Economic Opportunity, Division of Community Development, assists with educational programs for board members and the annual conference by partnering with the Association.

The FASD holds regular meetings throughout the year where information from other water control districts, improvement districts, community development districts, and special taxing districts can be

shared with regard to policies, procedures, operation, and maintenance issues. In addition, members of the Association are “watchdogs” for codes, ordinances, rules, and/or legislation that can either help or hinder the activities of Special Districts. To this end, a significant effort is put forward during the annual legislative session. FASD members continue to benefit from each other’s experiences.

The FASD will continue to follow this order and represent the interests of its members and provide information on pertinent legal requirements, sunshine laws, economic challenges, environmental, emergency management, and homeland security issues.

## Operation and Maintenance

### 128<sup>th</sup> Trail N. Drainage Improvement Project

In 2014, the District submitted a grant funding application to the Loxahatchee River Preservation Initiative (LRPI) committee for constructing roadside swales on both sides of 128<sup>th</sup> Trail North beginning at the intersection of Indiantown Road to approximately 0.5 mile north along with clearing existing outfall ditches that extend from 127<sup>th</sup> Drive to Canal 11 and replacing existing cross drains across 128<sup>th</sup> Trail North. This project was included in the approved list to receive funding from the Florida Legislation, but no funds became available for fiscal year 2016.

The District moved forward with the project this year, which improved the water quantity and water quality of the area. To date, the outfall ditches and the cross drains have been completed. *Figure 8* shows the completion of an outfall ditch that was cleared.



*Figure 8. Outfall Ditch*



*Figure 9. Driveway Culvert Installation*

### Culvert Replacement Program

Culverts under driveways have been aging over the years. These culverts are the landowner's responsibility to maintain and to replace them when their life span has ended. These culverts, when not maintained, are collapsing and blocking the secondary drainage system of the district. The District has instituted a culvert replacement program which allows the landowner's to pay the District for the replacement of their culverts. *Figure 9* shows a typical driveway culvert installation

In addition to driveway culverts, the District inspects the outfall culverts to the canals, cross drain culverts under roadways, and other culverts that the District operates and maintains. The District assesses the condition of these culverts and replaces them as needed.

### Culvert Installation in Canal 6 and Canal 8

The District has been investigating options for the potential of reducing its operation and maintenance costs. One way those costs could be reduced would be to add additional access points to the canal system. The first location is across Canal 6 just west of 129<sup>th</sup> Place N, and the second location is across Canal 8 just east of Canal 10. The project will include the installation of approximately 60 feet of 72-inch diameter pipe across Canal 6, approximately 60 feet of 48-inch diameter pipe across Canal 8, fill material, rip rap, and sod. The construction cost is estimated at \$78,000.

## Canal Clearing and Maintenance



Figure 10. New Excavator

The District's canal network consists of over 60 miles of canals which are continuously in need of being maintained, restored, and enhanced. The canal clearing and maintenance program's objective is to keep the canal sections easily accessible and, to the best extent possible, free from trees and other vegetation that may potentially enter the canal during a major storm event and thereby create a restriction that would aggravate flooding.

The canal clearing and maintenance program provides services that include clearing, grading and shaping of the canals as well as restoring, replacing or enhancing structural improvements. The program is an ongoing effort and the District has continued to work to maintain and achieve the desired goals.

The Board has authorized an on-going swale maintenance program which allows the District Engineer and General Manager to identify areas within SIRWCD that could be improved for conveyance and storage. District staff will continue to work toward the desired goals of the District in the swale maintenance program. *Figure 10* shows equipment that is used to clean swales.

## Reese Bridge

South Florida Water Management District (SFWMD) approached SIRWCD about taking over operation and maintenance of the bridge (Reese Bridge) that crosses the C-18 Canal. This bridge provides access for SIRWCD to transport maintenance equipment to operate and maintain SIRWCD facilities within Palm Beach Country Estates.

The SFWMD has transferred the Right of Way Occupancy Permit to SIRWCD. Improvements and restoration to extend the life span and safety of the bridge included signage, expansion joint repair, curb repair, rip rap slope protection, cleaning and sealing the substructure, pedestrian railing, and right of way gates. The construction was completed in August 2016 and the total costs were \$59,386. *Figure 11* shows the completed restoration.



Figure 11. Reese Bridge

## Policies and Procedures Manual

In accordance with the provisions of the Florida Statutes, the District maintains a Policies and Procedures Manual that is available to the public. The Manual presents and discusses items including: District organization, agenda formulation and execution, processing of permits that affect works of the District, the budget process, etc. Periodic revisions including deletions, additions, and amendments are made to maintain consistency with Florida Statutes and other codes and rules. This year, the entire manual is being updated to include new policies that have been added throughout the year. The update will continue through next year.

## Roadways

There are approximately 189 miles of roads within SIRWCD. These roads give access to each subdivided parcel of land. Currently there are 89.9 miles of improved roads (paved and OGEM) and 98.1 miles of unpaved roads in SIRWCD. The improved roads include roads that are operated and maintained by Palm Beach County, the Town of Jupiter, and private entities or owners, which consist of approximately 42 miles of roadway.

## Aquatic Weed Control Program

SIRWCD implements an Aquatic Weed Control Program in order to maintain the primary canals throughout the District. This Program is an ongoing process aimed at reducing and managing the amount of weeds in the canal network to allow unobstructed drainage following rain events. The Aquatic Weed Control Program is necessary to prevent canals from becoming overgrown and to provide a clean channel through the canal system to the outfall.

The program controls emergent vegetation growth through the use of herbicides approved in permits obtained from the State of Florida as well as mechanical removal of dead or accumulated vegetation that may present a potential for impeding the flow of storm water through the primary canal system.

In the future, greater emphasis may be needed for this program as a result of NPDES water quality programs, the FDEP and EPA proposed storm water criteria, the Ecosystem Management Area Plan, and other intergovernmental coordinating activities.



*Figure 12. Canal 2*

## Water Quality Monitoring

Due to the many ecological and regulatory pressures being exerted over the Loxahatchee River Basin area, it was recommended that the District sample and monitor water quality within and adjacent to its boundaries. SIRWCD had historically taken samples through a co-operative agreement with the United States Geological Survey (USGS), but due to reduced funding by the federal government, the program was abandoned. The Loxahatchee River Environmental Control District (LRD) has been obtaining water quality samples in recent years. The existing locations sampled by LRD are depicted on

Figure 13. Due to the new water quality legislation, the Board of Supervisors instructed staff to implement a water quality monitoring program that augments and expands the current LRD program.

In July 2011, SIRWCD entered into a contract with a water sampling and testing firm. The samples are tested to analyze the surface water and groundwater for various metal, organic and inorganic contaminants as well as water quality criteria. Figure 14 illustrates the sampling locations for this program. The Lateral Control Structures constructed as part of the 9<sup>th</sup> Plan of Improvements have provided the District with a significant amount of water level monitoring data that is very valuable to the District to better manage the system for flood protection and environmental benefits.

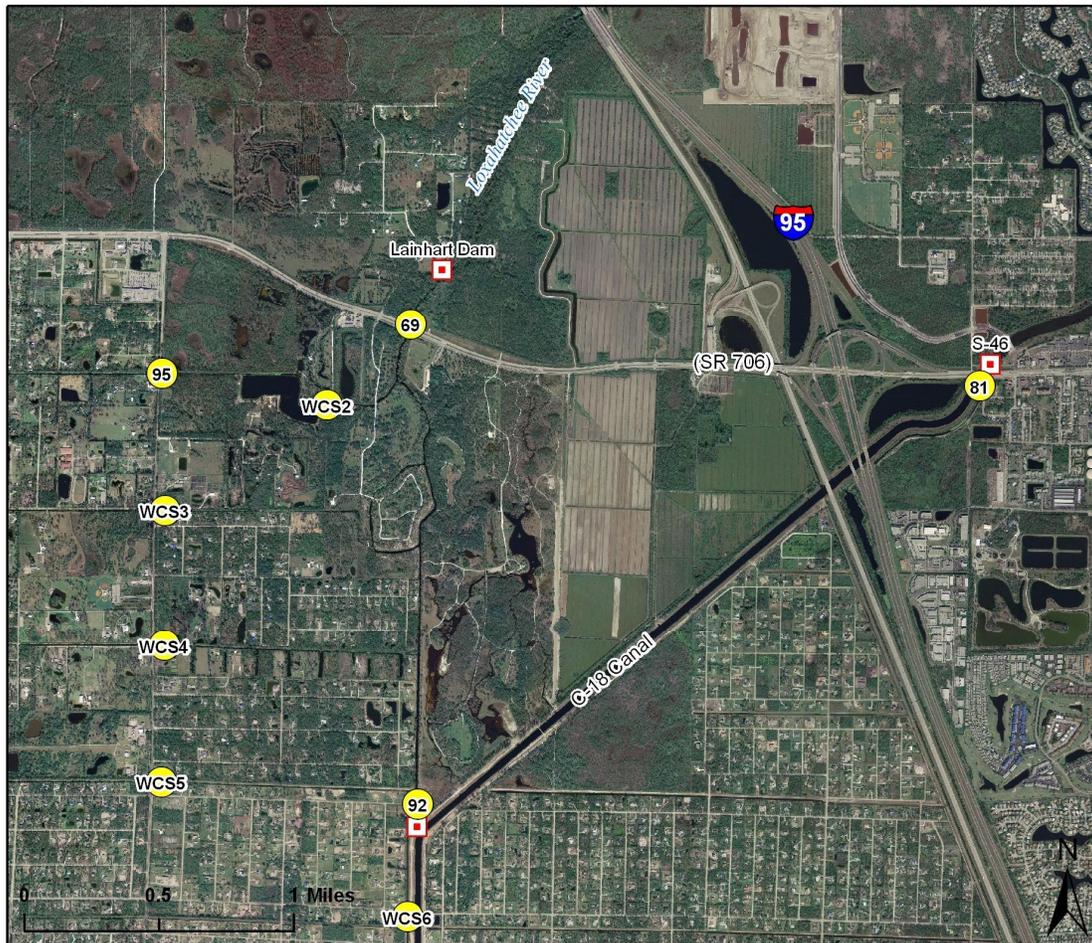


Figure 13. LRD Sampling Locations

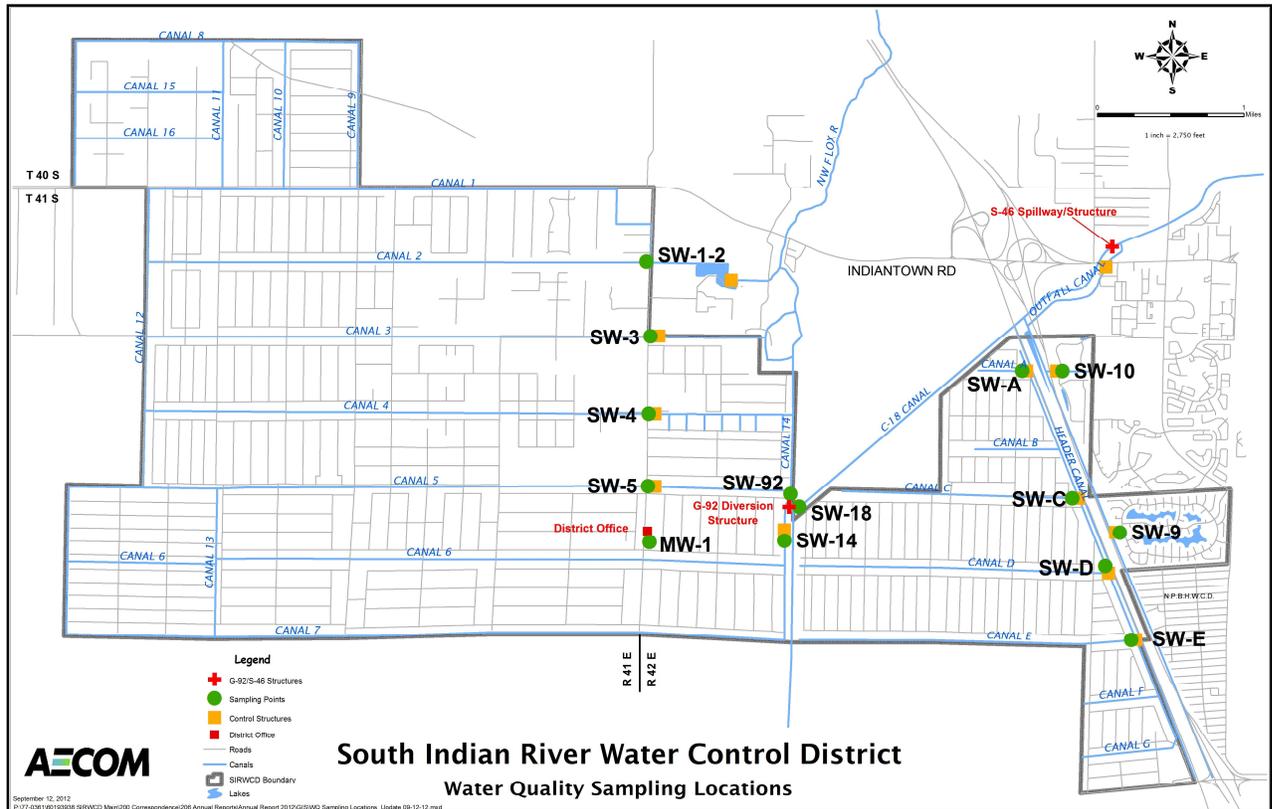


Figure 14. SIRWCD Sampling Locations

## Rainfall

The SIRWCD work center monitors and records the total rainfall the District receives throughout the year. For the twelve month period from September 2015 through August 2016, the District received 68.38 inches of rainfall. The District's historical monthly rainfall data dating back to 1987 as well as the calculated monthly average rainfall is illustrated in *Table 1*. The average annual rainfall for SIRWCD is 65.22 inches. The 2015-2016 year rainfall was higher than the historical rainfall average within the District. Historical rainfall data obtained by LRD, the Town of Jupiter Water Department (TOJ), and the SFWMD is shown below in *Tables 2, 3, and 4*, respectively.

The 2015-2016 monthly rainfall data from SIRWCD, LRD, and TOJ have been averaged to determine the rainfall for an area referred to as North County. The average total year rainfall in North County from September 2015 to August 2016 was 69.92 inches. The North County Averages can be found in *Table 5*.

The SFWMD data represents the historical averages of numerous rainfall measuring stations throughout Palm Beach County. *Table 6* and *Figure 15* compare the rainfall data from 2015-2016 SIRWCD, the 30 year SFWMD average, and the 2015-2016 North County average. The cumulative rainfall for 2015-2016 SIRWCD, the 30 year SFWMD average, and the North County average are shown in *Table 7* and *Figure 16*.

Table 1: SIRWCD Rainfall Data

Historical Rainfall Data (inches)													
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	TOTAL
1987-1988	8.08	6.03	12.92	1.25	4.00	2.60	3.20	2.50	9.30	13.25	14.20	10.75	88.08
1988-1989	1.00	1.35	1.70	1.75	0.40	0.25	4.10	5.50	1.90	6.95	7.90	6.75	39.55
1989-1990	3.80	3.75	1.40	2.15	1.10	1.80	6.20	2.20	4.85	5.85	4.85	9.40	47.35
1990-1991	11.35	3.05	2.65	2.55	7.75	4.20	4.25	7.35	5.50	15.90	9.80	5.72	80.07
1991-1992	9.95	4.35	4.85	0.55	0.75	6.25	4.70	3.00	2.45	16.85	2.80	11.95	68.45
1992-1993	9.00	0.75	9.85	0.75	12.60	4.15	10.75	2.10	7.18	7.30	4.75	3.73	72.91
1993-1994	8.15	12.00	2.57	0.47	2.09	4.12	1.67	2.50	2.65	7.23	4.91	9.77	58.13
1994-1995	7.55	7.15	7.87	7.51	2.32	1.83	2.68	3.57	1.43	10.08	10.73	14.80	77.52
1995-1996	4.78	25.90	0.71	1.22	1.39	1.00	11.94	2.01	10.62	7.39	9.74	8.31	85.01
1996-1997	7.41	6.60	4.37	0.98	4.11	6.41	2.51	7.24	5.45	14.60	6.18	12.39	78.25
1997-1998	10.26	1.78	3.53	5.45	6.54	7.84	4.78	5.71	1.91	1.88	8.74	7.13	65.55
1998-1999	10.81	4.03	10.86	1.26	9.76	0.68	0.37	0.87	2.59	16.38	7.21	15.22	80.04
1999-2000	9.79	17.41	0.76	5.39	1.23	1.55	3.27	4.16	0.89	3.21	7.33	2.49	57.48
2000-2001	6.45	12.06	1.03	3.15	1.10	0.03	5.56	0.65	5.92	9.78	8.28	11.81	65.82
2001-2002	14.26	6.65	3.17	2.73	1.25	6.41	1.29	5.31	2.03	10.56	9.71	5.63	69.00
2002-2003	3.67	2.40	3.13	2.95	0.17	1.61	7.62	6.22	10.70	5.81	2.62	9.41	56.31
2003-2004	4.65	6.45	5.81	3.38	2.09	2.07	0.81	2.11	3.11	3.95	8.66	7.70	50.79
2004-2005	25.72	1.44	1.39	1.04	1.50	1.44	9.44	2.05	6.80	12.69	4.07	7.00	74.58
2005-2006	13.21	11.80	3.08	0.74	0.43	2.97	0.67	2.67	2.39	8.59	6.06	12.04	64.65
2006-2007	4.56	2.22	1.58	3.58	0.28	1.40	0.74	3.37	5.09	10.72	12.93	9.44	55.91
2007-2008	12.38	7.55	1.92	4.43	0.95	4.07	4.15	2.32	4.78	8.14	5.40	9.07	65.16
2008-2009	4.98	4.62	1.47	2.08	0.05	0.74	4.89	1.39	11.15	6.30	8.87	6.68	53.22
2009-2010	3.82	1.92	2.92	7.32	1.86	2.15	9.46	4.98	6.50	7.06	5.71	9.99	63.69
2010-2011	9.20	1.20	1.59	0.44	3.21	0.39	2.33	1.02	3.91	7.10	7.63	7.70	45.72
2011-2012	9.72	11.30	1.59	2.00	0.75	6.62	4.50	1.18	6.93	5.97	4.30	15.66	70.52
2012-2013	3.87	4.59	0.51	3.66	1.22	2.40	1.18	3.60	8.72	9.65	10.74	9.35	59.49
2013-2014	9.40	0.81	6.98	1.49	11.65	2.84	4.43	1.62	6.14	11.80	9.37	5.90	72.43
2014-2015	7.23	4.25	1.58	1.27	1.41	10.97	3.06	4.36	2.67	4.63	7.26	8.69	57.38
2015-2016	9.50	0.98	3.62	10.04	7.91	3.51	6.40	1.67	5.65	6.47	2.21	10.42	68.38
AVG	8.43	6.01	3.63	2.81	3.10	3.18	4.38	3.21	5.15	8.83	7.34	9.13	65.22

Table 2: Loxahatchee River District (LRD) Rainfall

Historical Rainfall Data (inches)													
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	TOTAL
1974-1975	5.01	6.07	1.81	1.66	0.46	2.80	1.63	1.92	8.20	10.19	6.78	1.46	47.99
1975-1976	5.67	3.83	1.10	2.15	0.90	6.30	0.36	1.89	10.57	4.70	1.59	5.20	44.26
1976-1977	8.91	4.12	3.69	2.71	4.48	1.54	1.77	2.00	8.60	3.06	2.33	5.97	49.18
1977-1978	13.39	1.13	1.14	6.21	4.80	2.60	3.40	0.25	4.15	11.95	13.15	10.71	72.88
1978-1979	9.45	3.40	7.30	13.62	5.10	0.47	1.16	3.81	5.45	4.32	3.36	5.61	63.05
1979-1980	18.96	5.22	4.16	1.49	3.84	2.58	1.79	2.88	5.40	4.83	7.94	4.22	63.31
1980-1981	6.42	6.16	4.72	3.04	0.63	3.65	1.00	0.92	3.35	4.67	3.59	16.71	54.86
1981-1982	8.61	2.73	3.87	0.58	1.88	9.38	18.16	7.71	11.38	12.65	3.85	8.79	89.59
1982-1983	8.02	2.83	21.95	2.11	6.19	7.13	5.26	4.05	3.14	9.02	4.04	8.19	81.93
1983-1984	16.40	6.98	4.86	7.59	1.12	2.77	5.22	3.05	7.92	5.01	6.57	3.61	71.10
1984-1985	11.55	2.19	9.52	1.35	1.13	0.29	1.88	3.73	2.53	4.98	5.06	4.37	48.58
1985-1986	11.74	6.51	1.21	4.31	5.51	1.81	14.00	0.25	1.17	11.40	7.30	5.93	71.14
1986-1987	5.39	6.75	6.13	6.97	2.62	3.11	6.88	0.30	6.93	7.64	4.09	3.88	60.69
1987-1988	7.09	3.94	12.25	0.19	4.18	4.91	3.39	1.84	8.24	7.09	7.95	7.41	68.48
1988-1989	2.02	2.79	6.32	1.32	1.22	0.37	3.84	4.73	2.82	3.33	6.75	5.70	41.21
1989-1990	2.36	3.16	1.41	2.18	1.68	1.38	6.36	1.49	3.84	2.51	4.29	3.16	33.82
1990-1991	8.25	3.02	0.97	1.83	7.45	2.75	2.99	2.92	6.71	7.68	5.57	3.80	53.94
1991-1992	5.88	4.28	2.72	0.47	1.74	3.30	3.74	3.67	1.46	15.44	2.16	9.27	54.13
1992-1993	10.54	1.63	9.17	1.02	12.75	4.57	9.73	2.22	3.32	8.50	2.99	2.22	68.66
1993-1994	8.59	11.29	5.66	0.81	3.38	4.20	1.97	3.74	3.41	8.31	4.87	10.06	66.29
1994-1995	7.48	5.60	10.27	7.30	2.54	1.49	2.81	3.40	0.80	9.56	8.98	13.02	73.25
1995-1996	5.44	23.64	1.42	1.89	1.33	1.30	11.00	1.51	8.57	6.63	5.96	6.77	75.46
1996-1997	4.81	5.04	4.77	7.77	3.53	2.44	2.50	9.19	6.08	19.35	8.42	18.52	92.42
1997-1998	9.37	2.24	2.92	4.76	6.84	6.51	4.93	3.18	2.46	3.93	8.41	7.78	63.33
1998-1999	12.00	4.60	8.61	2.04	9.33	0.63	0.30	0.92	4.11	13.62	6.24	10.70	73.10
1999-2000	12.25	18.04	0.41	2.19	1.11	1.02	2.18	5.40	2.05	1.63	4.81	3.93	55.02
2000-2001	10.17	12.88	2.05	4.08	1.19	0.40	6.99	0.92	5.41	9.12	10.96	12.02	76.19
2001-2002	18.95	5.81	2.48	2.94	0.76	6.71	1.47	3.62	1.36	10.11	9.58	7.58	71.37
2002-2003	6.02	3.20	3.22	3.60	0.19	1.60	8.64	4.90	10.74	4.91	1.77	7.56	56.35
2003-2004	5.91	2.50	6.06	3.19	1.77	2.25	0.64	1.62	3.20	3.18	6.38	8.35	45.05
2004-2005	22.28	1.30	1.05	1.02	1.38	2.50	5.18	2.09	5.23	10.57	1.85	8.12	62.57
2005-2006	4.54	11.25	4.38	1.43	0.44	3.15	0.49	3.13	1.64	8.43	5.81	11.25	55.94
2006-2007	5.04	2.14	1.92	3.80	0.45	1.77	1.06	2.88	4.07	12.36	8.19	4.06	47.74
2007-2008	12.27	6.83	3.13	3.41	1.08	3.94	4.41	2.48	4.56	7.70	5.99	11.15	66.95
2008-2009	6.36	6.34	1.82	6.34	0.41	1.20	4.86	1.87	10.17	8.07	8.65	6.90	62.99
2009-2010	3.51	0.79	4.72	6.89	1.57	3.02	9.08	5.34	2.79	10.37	5.42	11.70	65.20
2010-2011	8.36	1.49	2.21	1.11	3.62	0.66	3.27	2.89	3.48	5.00	4.74	9.70	46.53
2011-2012	8.07	8.73	2.22	0.98	3.62	5.89	2.67	1.66	7.97	6.81	3.85	16.44	68.91
2012-2013	7.60	5.61	1.88	8.45	1.77	2.27	1.23	5.42	8.00	11.65	5.49	7.60	66.97
2013-2014	12.18	0.81	6.88	2.69	7.83	2.13	5.15	2.19	4.46	9.41	8.90	8.50	71.13
2014-2015	8.29	4.93	2.02	0.92	0.00	6.47	2.22	5.25	2.72	5.39	8.61	9.25	56.07
2015-2016	10.15	0.95	4.34	9.14	7.85	3.77	7.01	1.01	9.99	6.32	3.79	8.70	73.02
AVG	8.94	5.30	4.49	3.51	3.09	3.02	4.35	2.96	5.20	7.89	5.88	8.00	62.63

Table 3: Town of Jupiter Water Department (TOJ) Rainfall

Historical Rainfall Data (inches)													
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	TOTAL
1976-1977	4.65	4.62	3.20	0.80	3.33	1.70	0.70	2.09	3.00	5.20	5.80	8.25	43.34
1977-1978	14.06	2.90	2.97	7.70	4.80	2.60	3.40	0.25	4.15	11.95	13.15	10.71	78.64
1978-1979	9.45	3.40	7.30	16.39	5.05	0.22	1.34	3.98	6.14	4.31	2.63	5.49	65.70
1979-1980	16.86	5.98	4.54	1.58	5.00	2.67	1.91	2.50	6.12	3.61	9.69	5.22	65.68
1980-1981	6.65	6.33	4.83	2.00	0.62	3.11	1.12	0.46	4.60	6.16	3.27	15.65	54.80
1981-1982	7.20	2.56	1.75	0.36	1.70	6.54	14.70	8.24	14.14	13.25	2.82	6.97	80.23
1982-1983	7.94	2.16	22.49	2.59	6.26	8.10	5.11	4.29	3.38	9.40	3.25	8.30	83.27
1983-1984	15.21	8.29	3.94	7.20	0.79	3.49	6.50	2.97	9.04	2.30	6.13	3.65	69.51
1984-1985	10.23	2.40	13.80	0.17	1.13	0.29	1.88	6.66	1.95	4.66	4.65	4.49	52.31
1985-1986	15.65	5.15	0.73	4.02	5.38	2.23	14.00	0.28	1.19	13.60	5.44	5.25	72.92
1986-1987	4.24	6.75	6.13	6.49	1.86	5.17	7.58	0.34	3.57	7.18	3.68	3.28	56.27
1987-1988	9.07	8.12	13.58	0.31	3.86	5.94	3.51	1.48	7.10	7.98	8.79	8.60	78.34
1988-1989	2.41	2.53	2.40	1.11	1.04	0.53	4.46	3.90	2.60	3.07	5.69	4.87	34.61
1989-1990	2.47	3.21	1.24	2.54	1.35	1.40	5.95	1.94	5.07	2.32	4.07	4.60	36.16
1990-1991	8.81	2.90	1.43	1.83	10.86	3.15	3.32	2.59	6.65	8.28	6.29	3.06	59.17
1991-1992	6.38	5.42	3.02	1.31	1.74	4.16	3.81	3.58	1.50	15.44	2.61	10.40	59.37
1992-1993	9.35	1.66	9.90	0.95	18.13	3.64	5.22	1.97	2.62	8.45	2.79	3.11	67.79
1993-1994	9.89	11.59	6.06	0.94	4.15	4.47	2.26	4.99	4.85	10.02	6.67	10.09	75.98
1994-1995	10.11	7.20	11.83	8.13	3.00	1.76	3.25	4.50	0.56	9.62	10.56	13.22	83.74
1995-1996	5.94	22.32	1.39	2.36	1.04	1.64	13.61	2.04	9.45	9.13	6.56	7.27	82.75
1996-1997	6.05	7.81	5.48	1.71	3.95	2.31	4.25	7.16	4.97	14.56	7.96	14.48	80.69
1997-1998	9.02	2.80	2.99	5.14	6.43	7.73	5.39	3.03	3.35	4.00	6.48	6.53	62.89
1998-1999	13.46	5.60	9.95	1.91	10.83	0.83	0.26	1.01	3.64	14.35	7.93	9.77	79.54
1999-2000	14.92	18.09	0.73	2.59	1.06	1.22	3.28	6.27	1.50	1.10	4.61	1.75	57.12
2000-2001	9.50	12.44	1.54	2.79	1.24	0.32	5.81	0.99	4.24	9.70	9.72	11.99	70.28
2001-2002	18.47	6.27	3.11	2.64	0.70	7.68	1.24	5.05	0.76	13.32	9.36	6.96	75.56
2002-2003	5.75	3.46	3.59	3.66	0.23	1.76	9.22	5.50	10.09	4.07	1.90	9.83	59.06
2003-2004	5.70	2.05	6.14	3.67	1.77	2.46	0.85	1.60	2.78	2.83	3.89	8.00	41.74
2004-2005	27.63	1.28	1.09	1.11	1.50	1.53	7.93	2.27	4.46	11.96	2.43	8.63	71.82
2005-2006	6.89	10.51	5.08	1.70	0.56	2.75	0.46	3.55	1.63	8.00	4.07	10.69	55.89
2006-2007	5.43	2.21	1.35	7.62	0.50	2.40	0.77	3.17	3.80	15.62	9.45	3.79	56.11
2007-2008	10.21	8.21	1.56	2.42	1.10	4.21	4.59	3.07	3.78	9.03	6.08	13.60	67.86
2008-2009	6.25	5.55	1.51	1.90	0.23	1.65	6.12	1.87	10.40	9.81	8.34	5.60	59.23
2009-2010	2.22	1.22	2.25	6.90	1.61	2.25	7.90	4.26	2.56	7.59	3.30	10.72	52.78
2010-2011	8.48	0.63	1.42	0.43	1.89	0.53	2.56	1.19	3.65	4.48	7.64	11.03	43.93
2011-2012	9.04	8.20	2.41	1.09	1.44	5.13	4.18	1.86	9.35	7.11	6.45	21.36	77.62
2012-2013	7.60	7.43	2.77	10.15	1.48	2.56	1.44	4.54	5.33	13.35	5.25	7.89	69.79
2013-2014	12.64	1.05	5.58	2.85	9.07	2.33	6.97	2.53	6.02	10.59	11.31	9.66	80.60
2014-2015	8.64	6.28	3.34	1.86	1.42	7.84	1.61	4.34	2.28	4.08	7.32	6.08	55.09
2015-2016	9.94	0.86	3.75	8.89	12.01	3.46	7.30	1.03	8.29	3.54	3.75	5.54	68.36
AVG	9.36	5.69	4.70	3.50	3.50	3.09	4.64	3.08	4.76	8.13	6.04	8.16	64.66

Table 4: SFWMD Palm Beach County-Wide Rainfall Averages

Historical Rainfall Data (inches)													
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	TOTAL
<b>30 Year Avg. (1981-2010)</b>	8.49	5.56	4.15	2.92	2.96	2.88	4.12	3.23	4.66	8.20	6.54	8.06	<b>61.77</b>
<b>1995-1996</b>	6.26	15.06	1.10	1.52	1.54	0.53	7.09	2.49	8.01	8.46	4.63	4.75	<b>61.44</b>
<b>1996-1997</b>	7.17	6.78	2.26	1.77	3.87	4.73	3.37	5.47	3.74	12.67	5.64	10.10	<b>67.57</b>
<b>1997-1998</b>	7.52	1.44	3.93	5.02	5.23	6.93	4.33	2.32	1.71	2.51	7.29	4.85	<b>53.08</b>
<b>1998-1999</b>	13.93	2.91	9.85	2.99	7.26	1.50	0.50	2.72	2.58	15.41	3.22	8.20	<b>71.07</b>
<b>1999-2000</b>	8.94	12.66	3.16	1.69	1.28	0.78	3.58	4.72	1.08	3.59	6.74	4.36	<b>52.58</b>
<b>2000-2001</b>	5.02	7.39	2.60	1.83	0.78	0.26	5.57	0.40	4.44	6.57	9.41	7.95	<b>52.22</b>
<b>2001-2002</b>	15.14	5.77	2.02	2.16	0.51	5.11	1.20	2.60	1.80	12.59	7.97	5.05	<b>61.92</b>
<b>2002-2003</b>	4.04	2.35	2.75	2.88	0.48	1.17	4.42	3.85	8.45	6.35	3.85	8.92	<b>49.51</b>
<b>2003-2004</b>	5.51	1.27	4.77	2.69	2.54	2.69	0.78	2.38	2.22	3.14	5.03	7.70	<b>40.72</b>
<b>2004-2005</b>	17.71	2.94	0.75	0.85	1.23	1.09	5.87	1.72	5.72	12.45	4.84	2.80	<b>57.97</b>
<b>2005-2006</b>	7.30	7.22	4.49	1.44	0.67	2.80	1.31	2.38	4.09	4.48	6.03	7.32	<b>49.53</b>
<b>2006-2007</b>	6.68	1.48	2.27	5.47	0.74	1.31	0.51	2.64	3.35	12.41	8.73	6.05	<b>51.64</b>
<b>2007-2008</b>	8.11	8.77	0.68	1.76	1.87	4.56	5.48	2.92	3.12	7.03	6.52	11.04	<b>61.86</b>
<b>2008-2009</b>	6.77	5.37	0.76	1.24	0.17	0.34	3.46	1.48	10.12	8.44	6.57	5.76	<b>50.48</b>
<b>2009-2010</b>	6.90	1.31	2.93	5.84	1.66	3.34	7.72	5.62	3.91	4.85	4.82	9.25	<b>58.15</b>
<b>2010-2011</b>	7.89	0.93	1.17	1.02	2.24	0.58	2.36	1.24	2.46	4.79	5.41	9.84	<b>39.93</b>
<b>2011-2012</b>	7.06	9.35	1.28	1.05	0.30	2.99	2.42	4.90	8.48	7.49	5.45	16.30	<b>67.07</b>
<b>2012-2013</b>	6.68	6.47	0.69	1.64	1.07	2.71	1.17	4.45	11.06	9.91	9.50	4.38	<b>59.73</b>
<b>2013-2014</b>	8.15	0.81	3.82	1.39	7.02	1.73	2.54	1.72	3.60	7.79	8.55	7.34	<b>54.46</b>
<b>2014-2015</b>	9.10	4.39	1.66	1.20	0.74	4.37	1.20	4.27	1.57	4.41	5.50	7.21	<b>45.62</b>
<b>2015-2016</b>	8.01	1.94	3.29	3.75	9.18	2.58	2.39	1.19	7.11	8.63	5.38	8.20	<b>61.65</b>

Table 5: 2015-2016 North County Rainfall Average

Historical Rainfall Data (inches)													
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	TOTAL
<b>SIRWCD Avg.</b>	9.50	0.98	3.62	10.04	7.91	3.51	6.40	1.67	5.65	6.47	2.21	10.42	<b>68.38</b>
<b>LRD Avg.</b>	10.15	0.95	4.34	9.14	7.85	3.77	7.01	1.01	9.99	6.32	3.79	8.70	<b>73.02</b>
<b>TOJ Avg.</b>	9.94	0.86	3.75	8.89	12.01	3.46	7.30	1.03	8.29	3.54	3.75	5.54	<b>68.36</b>
<b>N. County Avg.</b>	<b>9.86</b>	<b>0.93</b>	<b>3.90</b>	<b>9.36</b>	<b>9.26</b>	<b>3.58</b>	<b>6.90</b>	<b>1.24</b>	<b>7.98</b>	<b>5.44</b>	<b>3.25</b>	<b>8.22</b>	<b>69.92</b>

N. County Avg. is based on the average monthly rainfall data from SIRWCD, the Loxahatchee River Environmental Control District (LRECD), and the Town of Jupiter Water Department (TOJ) through August 31, 2016.

Table 6: SIRWCD 2015-2016 Rainfall Analysis

Historical Rainfall Data (inches)													
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	TOTAL
<b>SIRWCD 2015-2016</b>	9.50	0.98	3.62	10.04	7.91	3.51	6.40	1.67	5.65	6.47	2.21	10.42	<b>68.38</b>
<b>30 Year Avg. (1981-2010)</b>	8.49	5.56	4.15	2.92	2.96	2.88	4.12	3.23	4.66	8.20	6.54	8.06	<b>61.77</b>
<b>N. County Avg.</b>	9.86	0.93	3.90	9.36	9.26	3.58	6.90	1.24	7.98	5.44	3.25	8.22	<b>69.92</b>

N. County Avg. is based on the average monthly rainfall data from SIRWCD, the Loxahatchee River Environmental Control District (LRECD), and the Town of Jupiter Water Department (TOJ) through August 31, 2016. Refer to Figure 13 for a graphical representation of this data.

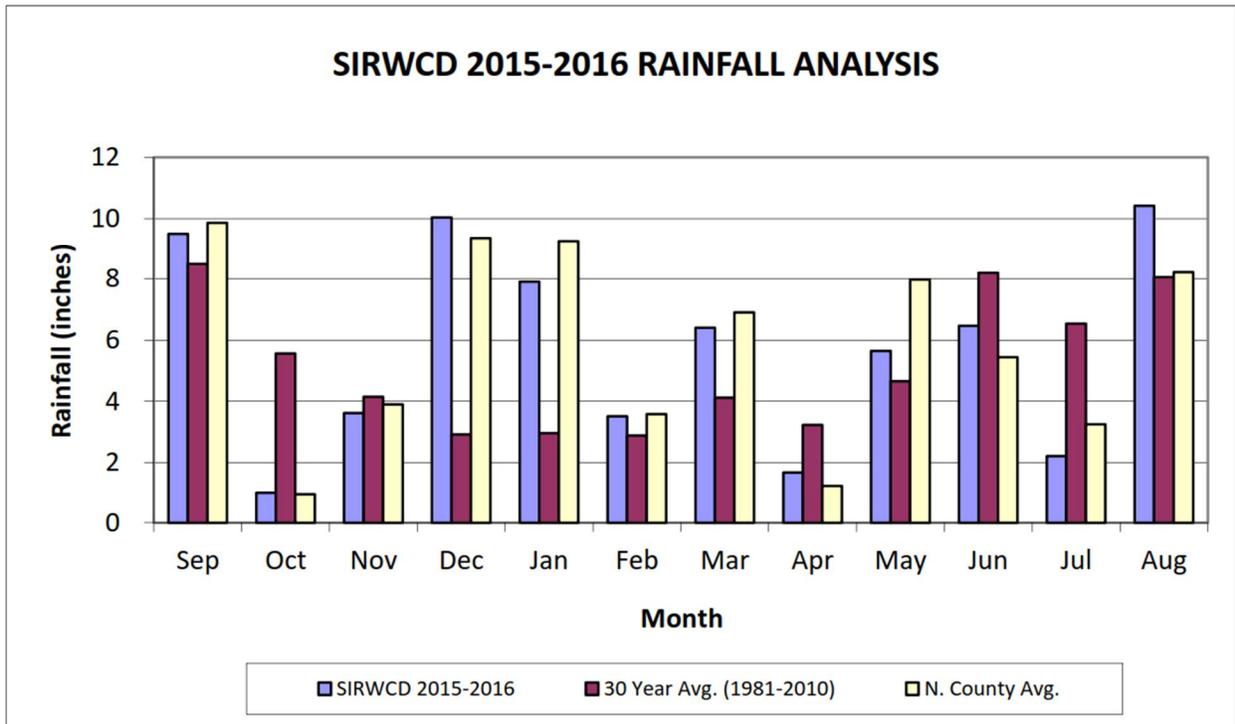


Figure 15. SIRWCD 2015-2016 Rainfall Analysis

Table 7: 2015-2016 Annual Cumulative Rainfall Comparison

Historical Rainfall Data (inches)												
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
<b>SIRWCD 2015-2016</b>	9.50	10.48	14.10	24.14	32.05	35.56	41.96	43.63	49.28	55.75	57.96	68.38
<b>30 Year Avg. (1981-2010)</b>	8.49	14.05	18.20	21.12	24.08	26.96	31.08	34.31	38.97	47.17	53.71	61.77
<b>N. County Avg.</b>	9.86	10.79	14.70	24.05	33.31	36.89	43.79	45.03	53.01	58.45	61.70	69.92

The annual cumulative totals include the average monthly figures plus the prior monthly averages of the report year. Refer to Figure 14 for a graphical representation of this data.

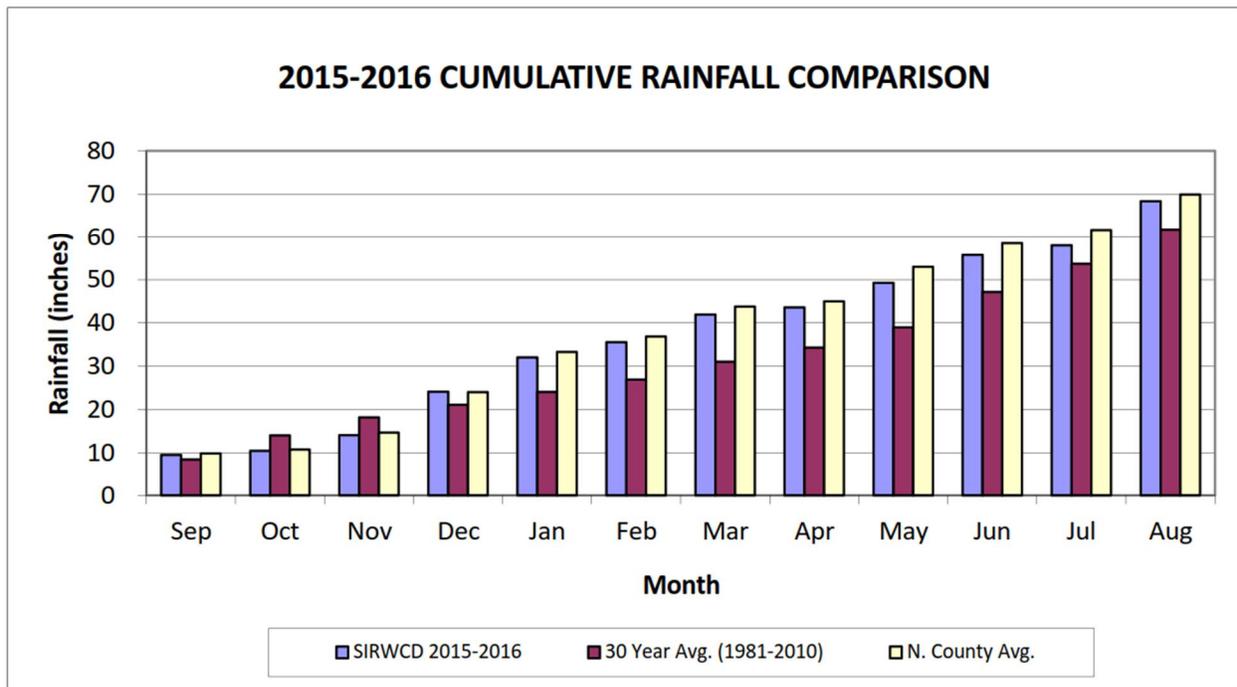


Figure 16. 2015-2016 Cumulative Rainfall Comparison

## General Operation and Maintenance

The District's Manager of Operations Annual Report is included in this document as Appendix A. It offers a summary of significant events and issues that have been identified by the Operations Manager. The Operations Manager and staff of the District are the agents for day to day activities. They are primarily focused on maintaining the primary and secondary elements of the surface water management system and the graded roadways throughout the District. Further, the Operations Manager facilitates interagency coordination with other public entities that operate and maintain assets within the District such as Palm Beach County Road and Bridge Division, Palm Beach County Parks and Recreation, Palm Beach County Fire Control, School District of Palm Beach County, Florida Department of Transportation, South Florida Water Management District, Town of Jupiter, the Loxahatchee River Environmental Control District, and others.



*Figure 17. Canal Maintenance*

Each year, a portion of this report is utilized to state that the District's surface water management system is designed, operated, and maintained for a mostly rural residential community with some commercial, industrial, and urban residential areas. Accordingly, certain low-lying areas within the District will experience ponding and storage of water during the wet season and following significant storms. Swales will have standing water, and many areas will be saturated for extended periods of time during the wet season. The continued development of low-lying areas in the District will result in a commensurate consumption of storage within the District's watershed. Where ponds are excavated on individual lots to supply the fill for house pads and related improvements, the consumption of available storage is not as severe because the pond serves as a compensating factor. These factors are regularly discussed by the Board of Supervisors and District staff at the monthly meetings, with individual landowners, in forums and meetings within the District, and within the District's newsletter and other publications distributed throughout the District. The District's Board of Supervisors and staff work to assure that the surface water management system functions to the extent of its permitted capacity while recognizing the regulatory requirements imposed on the District by other agencies. All of the District work must be implemented within the adopted budget and utilization of existing manpower, equipment and any other resources available to accomplish the tasks.

## General Comments

The goals and objectives of SIRWCD are consistent with those for the Loxahatchee River Water Restoration Project, the Loxahatchee Basin Ecosystem Management Area, and the Comprehensive Everglades Restoration Plan. The District will continue to work with South Florida Water Management District and other agencies in developing and implementing compatible plans for the District and the Loxahatchee River Basin to serve its landowners and its surrounding community.

SIRWCD has an obligation to its landowners and to the surrounding area due to its strategic location within naturally sensitive conservation areas. Clearly, SIRWCD is not an entity that can just look within its boundaries with regard to its authorized activities. To the contrary, a major portion of SIRWCD's activities require participation in activities that look at infrastructure needs and ecosystem management for the overall area and region. The District and its landowners will share in the continued responsibility of being good stewards in maintaining compatibility with these natural systems.

SIRWCD will continue to serve its landowners by providing support during emergency situations, maintaining and operating the surface water management system at optimal levels, and providing services that coincide with the system capabilities, board policies, and the community.

AECOM is honored to work with the Board of Supervisors and staff, and we will continue to respond to the Board of Supervisors by implementing their policies and directives, as well as working with the General Manager in resolving various landowner issues.



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### About SIRWCD

South Indian River Water Control District (SIRWCD) was formed pursuant to Chapter 298, Florida Statutes in July of 1923. The initial works of SIRWCD were comprised of primary drainage canals, mainly used for agricultural purposes. In the mid 1960's, most of the property within the District was registered with the Florida Land Installment Sales Board for sale as a home site subdivision. Today, SIRWCD consists of approximately 12,500 acres and serves approximately 7,323 parcels with facilities such as canals, roads, swales, control structures, and parks.

More information on SIRWCD and its services can be found at [www.sirwcd.org](http://www.sirwcd.org).

