



Stormwater Master Plan Update #3
Workshop
May 21, 2019

Why is stormwater management important?





Town of Miami Lakes
Storm Water Master Plan
Update #3
May 2019

Prepared For:
Town of Miami Lakes, Florida
6901 Main Street
Miami Lakes, Florida 33014

Prepared By:
Kimley-Horn & Associates
600 North Pine Island, Suite 400
Plantation, Florida 33324

Kimley»Horn

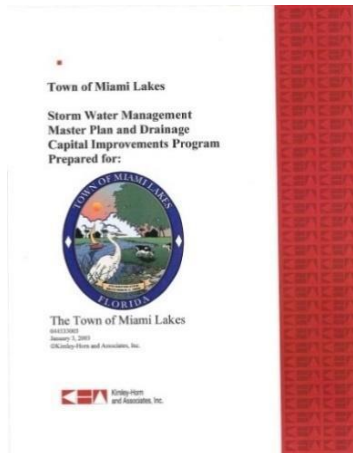
Link to Strategic Plan

- Strategic Priority Area 4: Environmental Sustainability
 - Goal 4: Achieve Universal Environmental Sustainability in Public and Private Environments, Operations, and Infrastructure
 - Objectives:
 - 4.4 Improve Efficiency and Ecology of Storm Water Infrastructure
 - 4.5 Maintain/Improve Quality of Town Lakes

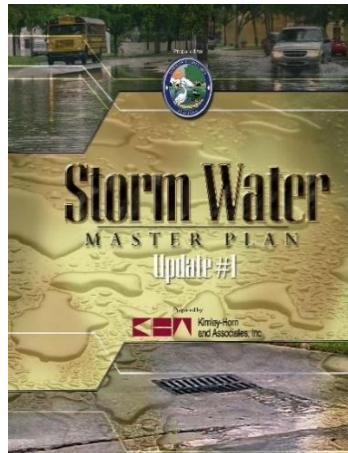


Master Plan Update History

2003



2006 (Update #1)



2012 (Update #2)

STORMWATER MASTER PLAN
UPDATE #2



Prepared for
Town of Miami Lakes, Florida



Prepared by
Kimley-Horn and Associates, Inc.
Kimley-Horn and Associates, Inc.
April 2012
040512.006

2019 (Update #3)



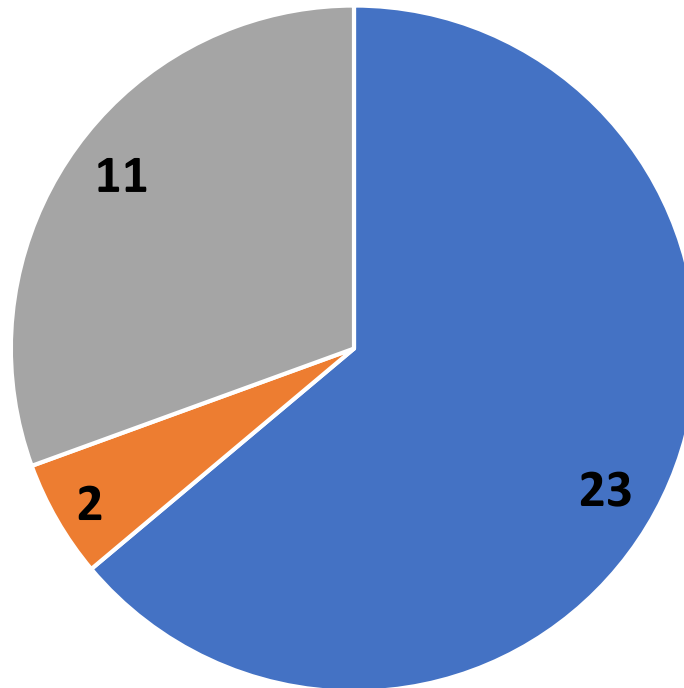
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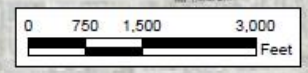
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Pompano Beach, Florida 33064

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Master Plan Project Status



■ Completed ■ In-Progress ■ Future

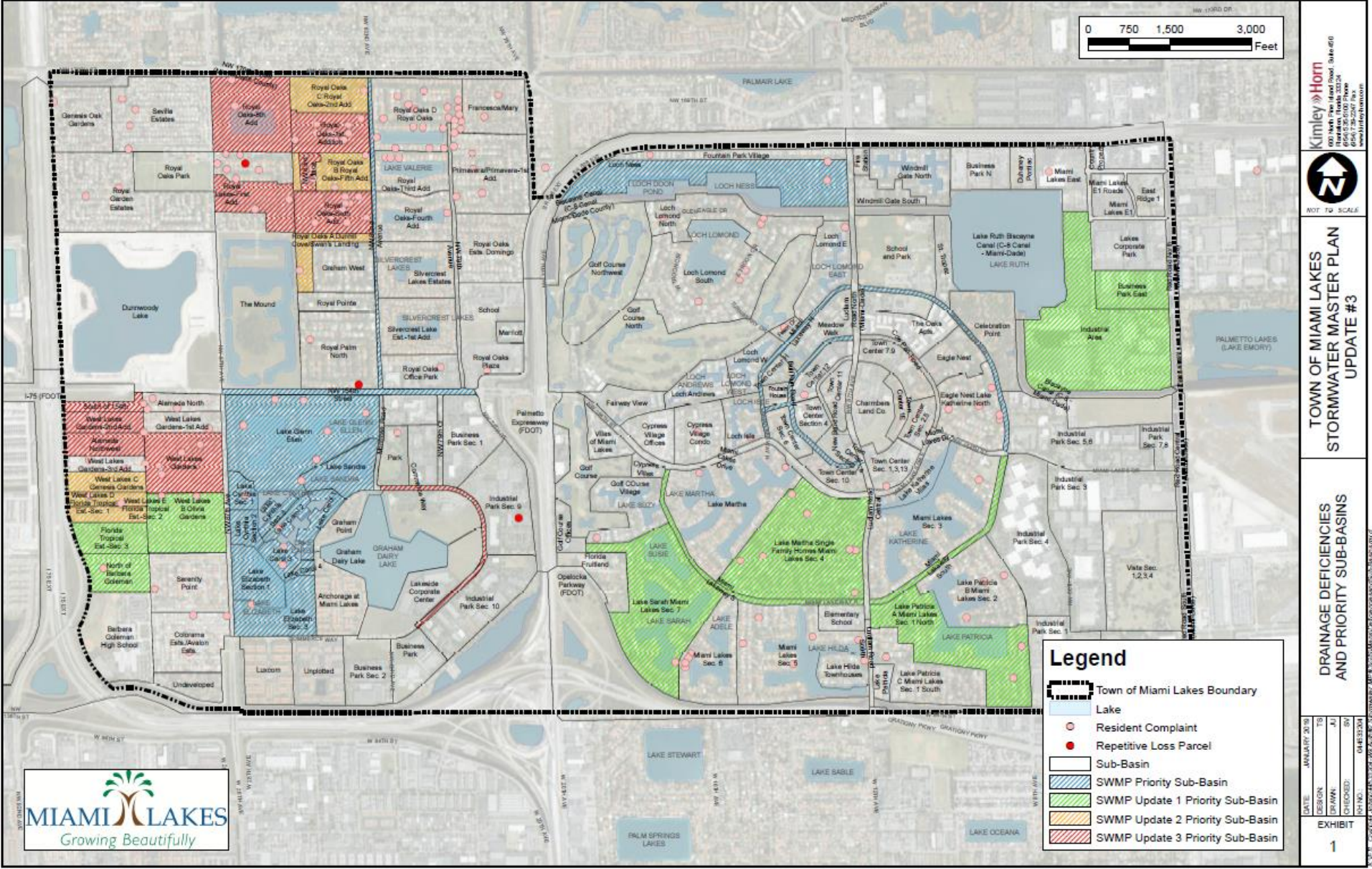


**TOWN OF MIAMI LAKES
STORMWATER MASTER PLAN
UPDATE #3**

**DRAINAGE DEFICIENCIES
AND PRIORITY SUB-BASINS**

DATE:	ANNUARY 2019
DESIGN:	TS
DRAWN:	JL
CHECKED:	SV
DATE:	04-13-2019
PROJECT:	04-13-2019
EXHIBIT	1

- Legend**
- Town of Miami Lakes Boundary
 - Lake
 - Resident Complaint
 - Repetitive Loss Parcel
 - Sub-Basin
 - SWMP Priority Sub-Basin
 - SWMP Update 1 Priority Sub-Basin
 - SWMP Update 2 Priority Sub-Basin
 - SWMP Update 3 Priority Sub-Basin



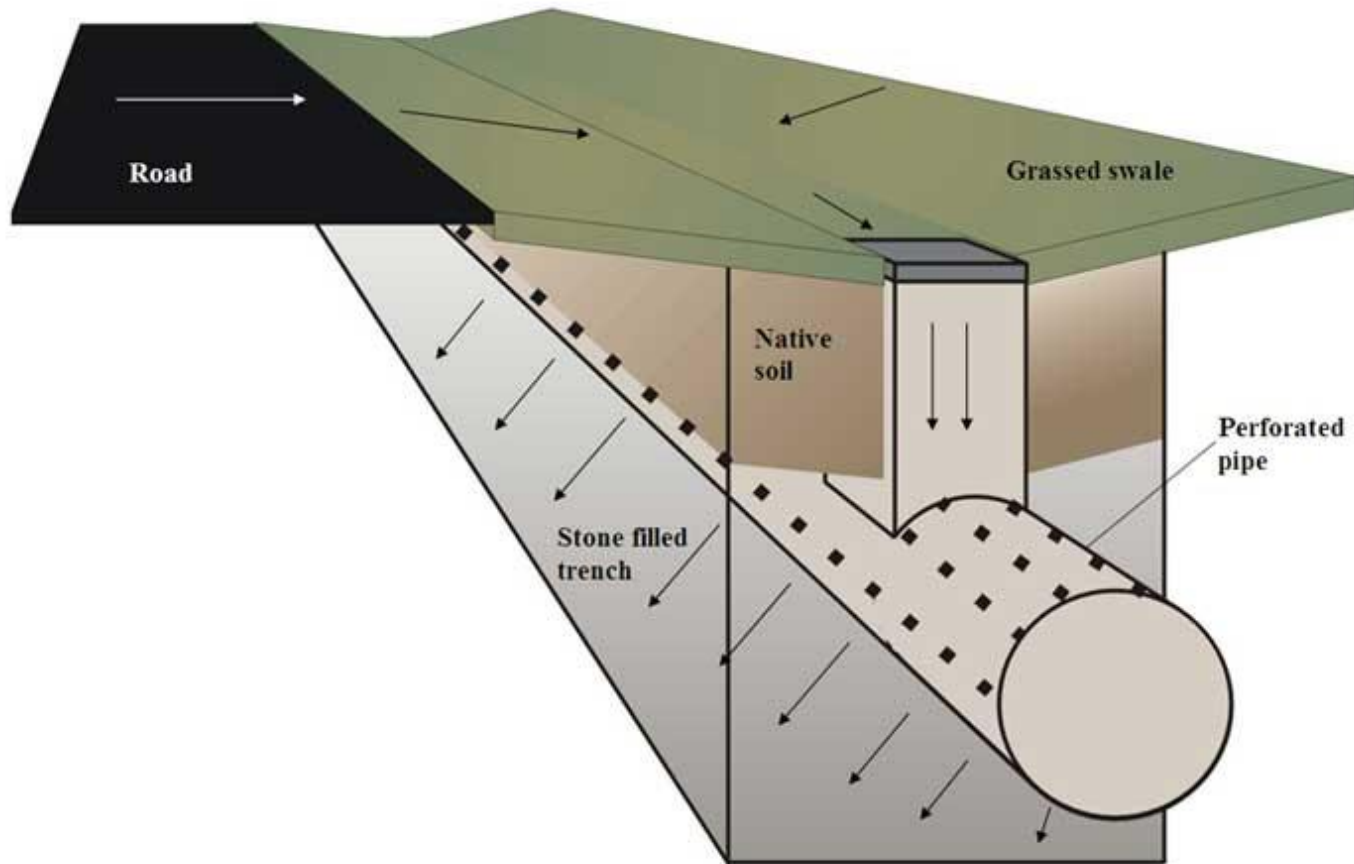
Proposed CIP Budgets and Schedule

Scenario 1: Current Groundwater Elevation

Scenario 2: 6-inch Groundwater Elevation

Scenario 3: 12-inch Groundwater Elevation

Typical Exfiltration Trench



Anticipated Improvement Cost Increase with Groundwater Increase

Groundwater Elevation Increase	Anticipated Percent Increase in Improvement Cost
6-inches	20%
12-inches	50%

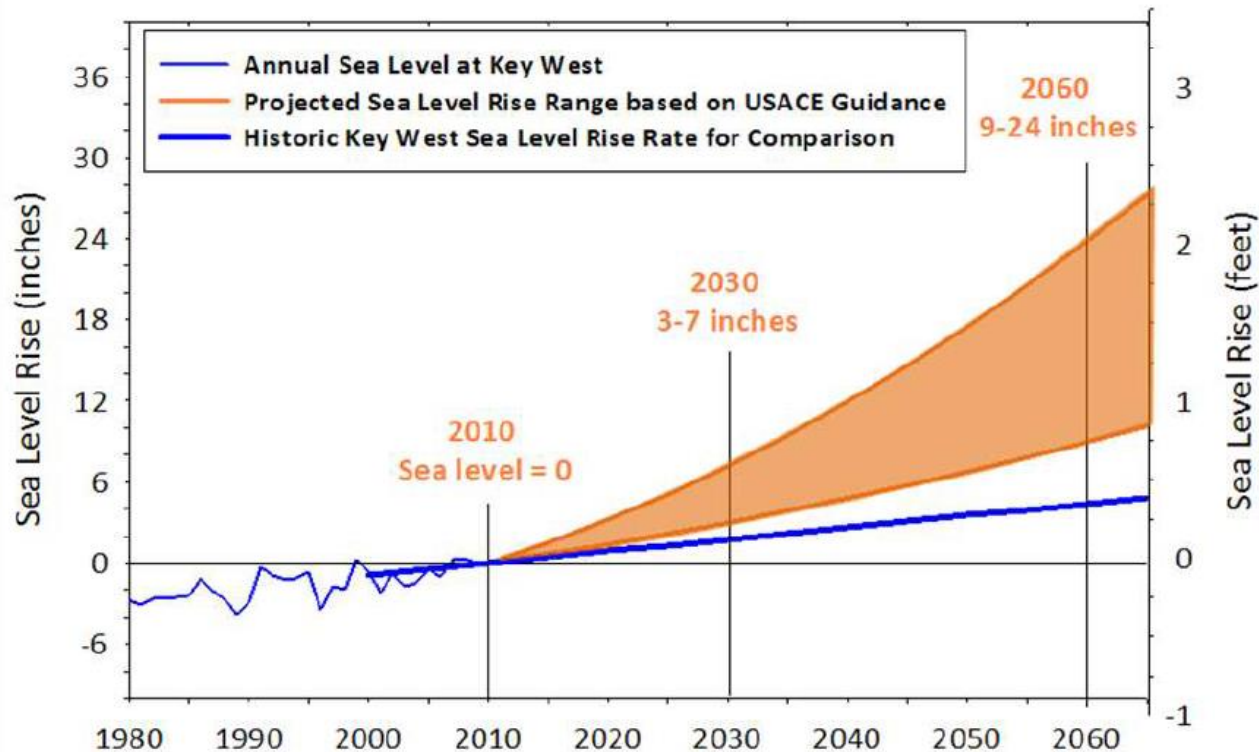


Figure 2. Unified Southeast Florida Sea Level Rise Projection for Regional Planning Purposes. This projection uses historic tidal information from Key West and was calculated by Kristopher Esterson from the United States Army Corps of Engineers using USACE Guidance (USACE 2009) intermediate and high curves to represent the lower and upper bound for projected sea level rise in Southeast Florida. Sea level measured in Key West over the past several decades is shown. The rate of sea level rise from Key West over the period of 1913 to 1999 is extrapolated to show how the historic rate compares to projected rates.

Source: Southeast Florida Regional Climate Change Compact Technical Ad hoc Work Group. April 2011. A Unified Sea Level Rise Projection for Southeast Florida. A document prepared for the Southeast Florida Regional Climate Change Compact Steering Committee. 27 p.

Current Groundwater Elevation

Table 25-Proposed CIP Budgets and Schedule (Current Groundwater Elevation)

Proposed Project	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	FY 28-29	TOTALS
Commerce Way	\$1,520,000										\$1,520,000
Royal Oaks-1st Addition		\$319,000									\$319,000
Royal Oaks-Sixth Add.			\$665,000								\$665,000
Royal Oaks-8th Add.				\$679,000							\$679,000
West Lakes Gardens					\$2,857,000						\$2,857,000
Miami Lakeway North (Southern)						\$1,693,000					\$1,693,000
West Lakes Gardens-2nd Add.							\$1,325,000				\$1,325,000
Royal Lakes-First Add.								\$224,000			\$224,000
South of 154th									\$888,000		\$888,000
Alameda Northwest										\$675,000	\$675,000
NW 83rd Place										\$96,000	\$96,000
Operations and Maintenance	\$841,500	\$866,745	\$892,747	\$919,530	\$947,116	\$975,529	\$1,004,795	\$1,034,939	\$1,065,987	\$1,097,967	\$9,646,854
TOTALS	\$2,361,500	\$1,185,745	\$1,557,747	\$1,598,530	\$3,804,116	\$2,668,529	\$2,329,795	\$1,258,939	\$1,953,987	\$1,868,967	\$20,587,854

CIP budget included:

1. Budgets assume 10% allowance for mobilization, MOT, clearing and grubbing.
2. Budgets assume 25% contingency for each project to account for unknowns (e.g., field conditions, costs, etc.).

6-inch Groundwater Elevation

Table 26-Proposed CIP Budgets and Schedule (6-inch Groundwater Elevation @ 20% CIP Increase)

Proposed Project	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	FY 28-29	TOTALS
Commerce Way	\$1,824,000										\$1,824,000
Royal Oaks-1st Addition		\$382,800									\$382,800
Royal Oaks-Sixth Add.			\$798,000								\$798,000
Royal Oaks-8th Add.				\$814,800							\$814,800
West Lakes Gardens					\$3,428,400						\$3,428,400
Miami Lakeway North (Southern)]						\$2,031,600					\$2,031,600
West Lakes Gardens-2nd Add.							\$1,590,000				\$1,590,000
Royal Lakes-First Add.								\$268,800			\$268,800
South of 154th									\$1,065,600		\$1,065,600
Alameda Northwest										\$810,000	\$810,000
NW 83rd Place										\$115,200	\$115,200
Operations and Maintenance	\$841,500	\$866,745	\$892,747	\$919,530	\$947,116	\$975,529	\$1,004,795	\$1,034,939	\$1,065,987	\$1,097,967	\$9,646,854
TOTALS	\$2,665,500	\$1,249,545	\$1,690,747	\$1,734,330	\$4,375,516	\$3,007,129	\$2,594,795	\$1,303,739	\$2,131,587	\$2,023,167	\$22,776,054

CIP budget included:

1. Budgets assume 10% allowance for mobilization, MOT, clearing and grubbing.
2. Budgets assume 25% contingency for each project to account for unknowns (e.g., field conditions, costs, etc.).

12-inch Groundwater Elevation

Table 27-Proposed CIP Budgets and Schedule (12-inch Groundwater Elevation @ 50% CIP Increase)

Proposed Project	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	FY 28-29	TOTALS
Commerce Way	\$2,280,000										\$2,280,000
Royal Oaks-1st Addition		\$478,500									\$478,500
Royal Oaks-Sixth Add.			\$997,500								\$997,500
Royal Oaks-8th Add.				\$1,018,500							\$1,018,500
West Lakes Gardens					\$4,285,500						\$4,285,500
Miami Lakeway North (Southern)						\$2,539,500					\$2,539,500
West Lakes Gardens-2nd Add.							\$1,987,500				\$1,987,500
Royal Lakes-First Add.								\$336,000			\$336,000
South of 154th									\$1,332,000		\$1,332,000
Alameda Northwest										\$1,012,500	\$1,012,500
NW 83rd Place										\$144,000	\$144,000
Operations and Maintenance	\$841,500	\$866,745	\$892,747	\$919,530	\$947,116	\$975,529	\$1,004,795	\$1,034,939	\$1,065,987	\$1,097,967	\$9,646,854
TOTALS	\$3,121,500	\$1,345,245	\$1,890,247	\$1,938,030	\$5,232,616	\$3,515,029	\$2,992,295	\$1,370,939	\$2,397,987	\$2,254,467	\$26,058,354

CIP budget included:

1. Budgets assume 10% allowance for mobilization, MOT, clearing and grubbing.
2. Budgets assume 25% contingency for each project to account for unknowns (e.g., field conditions, costs, etc.).

Operation and Maintenance Activities

Catch Basin and Pipe Flushing



In FY17-18 cleaned:

- 739 structures
- 40,273 linear feet of pipes
- 414 Tons of debris/sediments removed

Street Sweeping



Approximately 1,000 lane miles swept each year.

Canal Maintenance



- Existing 5-Year Interlocal agreement with MDC FY17-21
- Town performs:
 - Culvert cleaning above water
 - Mowing canal top/bank
 - Litter and minor debris removal

MS4 and CRS Program Activities



WHAT IS STORMWATER?

Stormwater comes from rainwater that flows across the ground and pavement and seeps into the ground, flows in ditches, swales, canals and enters the drainage system. The storm drains lead directly into ground water or to one of the many canals within the Town and eventually to the bay and aquifer.

THE PROBLEM

Stormwater runoff is a major problem, as it tends to pick up pollutants from impermeable area surfaces like:

- ◆ Leaves
- ◆ Garbage
- ◆ Debris
- ◆ Sediment
- ◆ Chemical
- ◆ Herbicides
- ◆ Automobile Fluids
- ◆ Fertilizers



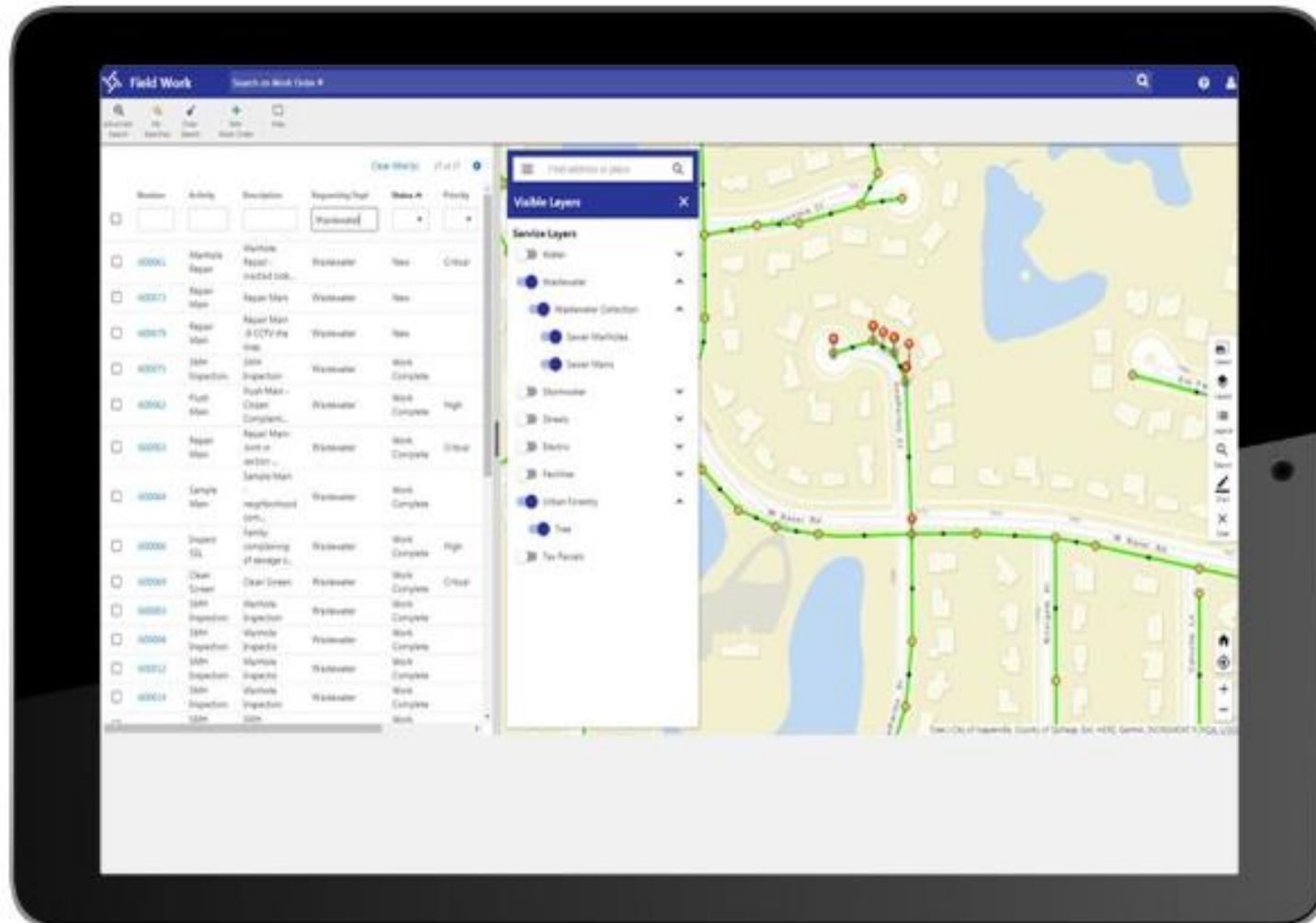
HOW DO I PROTECT STORMWATER QUALITY & DRAINAGE INFRASTRUCTURE?

It's simple; avoid polluting by doing the following:

- ◆ Don't dump hazardous substances such as used oil, household chemicals, yards fertilizer, pool discharge or other wastes onto pavement, patios or into storm drains. It is **ILLEGAL!** They eventually end up in the aquifer and *pollute our drinking water!*
- ◆ Prevent excess runoff of pesticides, fertilizers, and herbicides by using them efficiently.
- ◆ Report illegal dumping. Call the Code Compliance Department at **305.512.7130**.
- ◆ Conserve and recycle resources such as paper, plastic, glass, metals, oils, and household hazardous materials to prevent storm drain contamination.
- ◆ Practice street sweeping by picking up litter and disposing leaves and yard waste. Do not dump grass, leaves, branches, etc. into storm drains!
- ◆ Remember to always pick up after your pet and dispose in a nearby trashcan.



Asset Management (Tyler EAM)



Stormwater Fee

- Current fee at \$4.50 per Equivalent Residential Unit (ERU)
- Same rate for 15 years
- Estimated revenues \$1.14M of which approximately \$900K go to Operations/Maintenance

Table 21-Recommended ERU Updates

	Current Groundwater Elevation	6" Rise in Groundwater Elevation	12" Rise in Groundwater Elevation
Future ERU's Anticipated	22,038	22,038	22,038
Average Yearly CIP Budget	\$2,058,785.44	\$2,277,605.44	\$2,605,835.44
Average Monthly CIP Budget	\$171,565.45	\$189,800.45	\$217,152.95
Recommended ERU Rate	\$7.78	\$8.61	\$9.85

Fee Comparisons

Municipality	Monthly Fee per ERU	Population
CITY OF AVENTURA	\$3.50	35,762
VILLAGE OF PALMETTO BAY	\$4.00	23,410
TOWN OF CUTLER BAR	\$4.00	40,286
CITY OF DORAL	\$4.00	45,704
TOWN OF MIAMI LAKES	\$4.50	29,361
CITY OF NORTH MIAMI BEACH	\$4.50	41,523
MIAMI GARDENS	\$6.00	107,167
VILLAGE OF PINECREST	\$10.00	18,223
CORAL GABLES	\$14.73	46,780
CITY OF OPA-LOCKA	\$15.50	15,219

Challenges

- Excess leaf accumulation on right of way
- Tree leaf blowing into drains
- Tree roots intruding into drainage system
- Request to increase maintenance frequency
- Growing infrastructure maintenance
- Aging equipment



Staff Recommendations

- Conduct stormwater fee study (cost approx. \$50K)
- Set monies aside for equipment replacement