



Minutes
Town of Lake Park, Florida
Regular Commission Meeting
Wednesday, June 15, 2022 6:30 PM
Town Hall Commission Chamber,
535 Park Avenue, Lake Park, Florida 33403

The Town Commission met for the purpose of a Regular Commission Meeting on Wednesday, June 15, 2022 at 6:30 p.m. Present were Mayor Michael O'Rourke, Vice-Mayor Kimberly Glas-Castro, Commissioners John Linden, Roger Michaud, and Mary Beth Taylor, Town Manager John D'Agostino, Attorney Thomas Baird, and Town Clerk Vivian Mendez.

Town Clerk Mendez performed the roll call and Mayor O'Rourke led the pledge of allegiance.

SPECIAL PRESENTATION/REPORT:

1. Update on the Town's Street Lighting Study (the Study) and Analysis of Existing Conditions Associated with Task 1 of the Study.

Town Manager D'Agostino introduced the item. Director of Public Works Roberto Travieso and Matthew Fursetzer of Kimley Horn presented to the Commission (see Exhibit "A"). Mayor O'Rourke requested clarification of the costs associated with streetlight improvements to Local, County, and State roads. Mr. Fursetzer explained there would be no upfront costs if lighting were upgraded from low-pressure sodium to LED. He explained there would be an upfront cost if Florida Power & Light (FPL) has to install underground conduit or a transformer. He explained the set of plans for light pole locations would need to be provided to FPL; thereafter costs would be generated. Commissioner Linden requested improvements to poorly lit areas throughout the Town of Lake Park. Mr. Fursetzer explained the study was limited to the roadways in the Town of Lake Park. He explained that Exhibit "A" was a snapshot of the study and announced all roads were evaluated and included in the report. Vice-Mayor Glas-Castro requested clarification of the suggestion of Greenbook instead of proposing Lighting Criteria for the Town. Mr. Fursetzer explained the Florida Administrative Code allows for the use of the Florida Greenbook to be used on all roadways that are not a part of the state highway system or national highway system. He explained that the Florida Greenbook provides minimum standards for lighting. Vice-Mayor Glas-Castro suggested incorporation of color temperature lighting levels for the next phase. Commissioner Taylor questioned if solar powered lights were considered as an alternative. Mr. Fursetzer explained that solar powered lights were not the best alternative for roadway fixtures because they require a battery backup. The Commission thanked Mr. Fursetzer and Mr. Travieso for their presentation.

PUBLIC COMMENTS:

Dianne Sophinos, Town Resident, expressed concerns regarding street lighting on Third Street & Bayberry Drive. She recalled a recent shooting that happened around 9:00 p.m.; she explained that she and fellow neighbors heard gunshots but could not see anything because the area is extremely dark. She reiterated the importance of safety and adequate street lighting throughout the residential areas.

James Sullivan, Town Residents, expressed concerns regarding school shootings and inflation (see Exhibit “B”).

CONSENT AGENDA

2. May 21, 2022 Master Parks Plan Community Charrette Minutes

3. June 1, 2022 Regular Commission Meeting Minutes

4. Resolution 37-06-22 Second Amendment to the Palm Beach County Interlocal Agreement to the Homeless Resource Center.

5. Resolution 38-06-22 Authorizing and Directing the Mayor to Execute an Amendment to the Agreement between the Town and Palm Beach County, Florida, Extending the Construction Completion & Reimbursement Deadline for the Community Development Block Grant Associated with the Lake Shore Park Playground Expansion.

6. Resolution 39-06-22 Authorizing and Directing the Mayor to Execute a Second Agreement Modification with the State of Florida, Division of Emergency Management, for Grant Funds Associated with the Lake Shore Drive Drainage Project.

7. Request to Authorize and Direct the Mayor of the Town of Lake Park, Florida, to Sign the Environmental Review Signature Form Associated with the Environmental Certification Exemption Review Process, as Required by the Florida Department of Economic Opportunity (DEO).

Motion: Vice-Mayor Glas-Castro moved to approve the consent agenda; Commissioner Taylor seconded the motion.

Vote on Motion:

Commission Member	Aye	Nay	Other
Commissioner Linden	X		
Commissioner Michaud	X		
Commissioner Taylor	X		
Vice-Mayor Glas-Castro	X		
Mayor O’Rourke	X		

Motion passed 5-0.

NEW BUSINESS:

8. Update on State-Mandated 20-Year Needs Assessment for the Town's Stormwater Utility and Associated Infrastructure.

Director of Public Works Travieso presented to the Commission (see Exhibit "C"). Vice-Mayor Glas-Castro asked Mr. Travieso to confirm that Single-Family homes were assessed at one-Equivalent Stormwater Unit (ESU), Mr. Travieso confirmed. The Commission thanked Mr. Travieso for his presentation.

TOWN ATTORNEY, TOWN MANAGER, COMMISSIONER COMMENTS:

Town Attorney Baird announced his collaboration with an associate to rewrite the Plan Amendments for the Mobility Fee. He announced that the final document with edits will be available for the July 2022 Local Planning Agency Board Meeting.

Town Manager D'Agostino announced comments within Exhibit "D".

Commissioner Linden announced the Lakeshore Park Indoor Pavilion air condition unit needs to be repaired. He asked if the Marina's second floor meeting room was available for ongoing line dancing activities. Special Events Director Riunite Franks announced that the air condition unit would be replaced and the Marina's second floor meeting room was not available for use. He announced that he had a magnetic Town of Lake Park logo affixed to his personal golf cart at the Towns' Memorial Day Celebration. He asked if it was appropriate for him to affix the logo for Town Events and/or Business. Town Attorney Baird announced that Ordinance 11-2010 addressed external organizations and Commissioner Linden's use of the logo for official Town business was appropriate. Vice-Mayor Glas-Castro announced that she was uncomfortable with Commissioner Linden's use of the logo. She suggested Commissioner Linden's personal use of the logo portrays that he is the authorized representative of the Town. Commissioner Linden asked Town Manager D'Agostino for an update regarding the Town Manager performance evaluation. Town Manager D'Agostino explained that he understood the comments of the Commission and did not have the opportunity to provide a response via email; but has since incorporated their comments and suggestions in his performance.

Commissioner Michaud congratulated Mr. Ken Bowers on his successful banquet and thanked him for his service to the Town of Lake Park. He encouraged residents to contact him with comments and concerns for the Palm Beach Sheriff's Office North County Region Meeting in July of 2022.

Commissioner Taylor announced comments within Exhibit "E".

Vice-Mayor Glas-Castro announced that she had received inquiries regarding the Mobility Plan for new developments in the Town of Lake Park.

Mayor O'Rourke asked Town Manager D'Agostino to contact the Advisory Board Member who made recent comments to the local news.

FUTURE AGENDA ITEMS

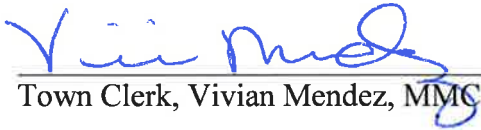
Commissioner Taylor- Artists of Palm Beach County for use of the building located at 800 Park Avenue. Town Manager D'Agostino announced his recent correspondence with Mary Jane Zapp. He announced that a long-range plan for 800 Park Avenue would be presented at a future Regular Commission Meeting.

ADJOURNMENT

There being no further business to come before the Commission and after a motion to adjourn by Vice Mayor Glas-Castro and seconded by Commissioner Taylor, and by unanimous vote, the meeting adjourned at 8:41 p.m.



Mayor Michael O'Rourke



Town Clerk, Vivian Mendez, MMC



Deputy Town Clerk, S. Edwards, MPA, MMC



Approved on this 6 of July, 2022



TOWN OF LAKE PARK
PUBLIC COMMENT CARD

MEETING DATE: 9/15/2022

Cards must be submitted before the item is discussed!!
*****Three (3) minute limitation on all comments**

Name: James S. ...

Address: 300 ...

If you are interested in receiving Town information through Email, please provide your E-mail address: ...

I would like to make comments on the following Agenda Item:

street LIGHT POST ON 3RD BLOCK BAYBERRY DRIVE

I would like to make comments on the following Non-Agenda Item(s):

Instructions: Please complete this card, including your name and address; once the card has been completed, give it to the Town Clerk. The Mayor will call your name when it is time for you to speak. Comments are limited to three (3) minutes per individual.



TOWN OF LAKE PARK
PUBLIC COMMENT CARD

MEETING DATE: 06/15/2022

Cards must be submitted before the item is discussed!!
*****Three (3) minute limitation on all comments**

Name: JAMES SULLIVAN
Address: 378 FURBER

If you are interested in receiving Town information through Email, please provide your E-mail address: _____

I would like to make comments on the following Agenda Item:

I would like to make comments on the following Non-Agenda Item(s):
SCHOOL MESSAGES

Instructions: Please complete this card, including your name and address; once the card has been completed, give it to the Town Clerk. The Mayor will call your name when it is time for you to speak. Comments are limited to three (3) minutes per individual.

2

Exhibit "A"

Update on the Town of Lake Park Street Lighting Study, Task I

Presenting:

Matt Fursetzer, P.E.

Nick Clavelo, P.E.



Kimley»»Horn

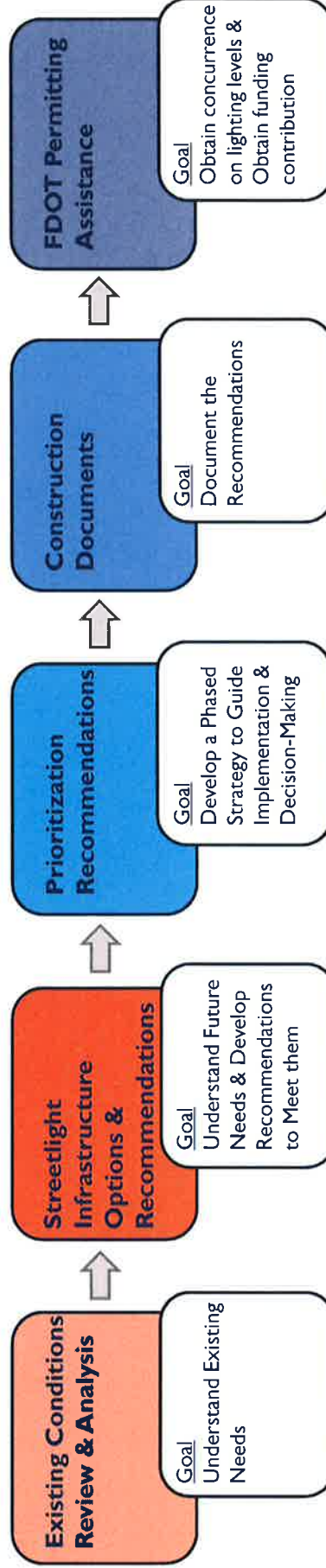
Project Objectives



- Review existing lighting levels
- Determine appropriate lighting criteria based on roadway classification
- Develop improvement recommendations
- Develop guidance to future lighting improvements within the TOWN



Project Tasks



Existing Conditions Review



Town Lighting Policies

- No lighting standards identified in Town Code of Ordinances
- No standard lighting details or criteria established
- Majority of lighting maintained by FP&L



Existing Conditions Review

Identify Roadway Classifications



Existing Conditions Review



Identify Appropriate Lighting Criteria



Florida Department of Transportation



**Manual of Uniform Minimum
Standards for Design,
Construction and Maintenance for
Streets and Highways**

(Commonly known as the Florida Greenbook)

State Roads

Local and County Roads

Existing Conditions Review



Identify Appropriate Lighting Criteria

Topic # 625-000-015
Manual of Uniform Minimum Standards
for Design, Construction and Maintenance
for Streets and Highways

2018

Topic #625-000-002
FDOT Design Manual

January 1, 2022

Table 231.2.1 Lighting Initial Values

Roadway Classification	Or Project Type	Horizontal (H.F.C.)	Vertical (V.F.C.)	Avg./Min.	Max./Min.	Uniformity Ratios	Veiling Luminance Ratio
Limited Access Facilities		1.5					
Major Arterials		1.5	N/A	4:1 or Less	10:1 or Less	0.3:1 or Less	
Other Roadways		1.0					

Table 6 – 2 Illuminance and Luminance Design Values

Roadway and Walkway Classification	Off-Roadway Light Sources	Illuminance Method								Luminance Method				Additional Values (Both Methods)
		Average Maintained Illuminance (Horizontal)				Illuminance Uniformity Ratio				Average Maintained Luminance				
		R1 (foot-candles) (min)	R2 (foot-candles) (min)	R3 (foot-candles) (min)	R4 (foot-candles) (min)	avg/min (max) (f)	Uniformity	Lavg (min)	cd/m2 (min)	Lavg/Lmin (max)	Lmax/Lmin (max)	Veiling Luminance Ratio		
Principal Arterials (partial or no control of access)	General Land Use	1.1	1.5	1.8	1.4	3:1	3:1	1.2	3:1	5:1	5:1	0.3:1		
	Commercial	0.8	1.2	1.2	1.0	3:1	3:1	0.9	3:1	5:1	5:1	0.3:1		
Minor Arterials	Commercial	0.9	1.4	1.4	1.0	4:1	4:1	1.2	3:1	5:1	5:1	0.3:1		
	Residential	0.8	1.0	1.0	0.9	4:1	4:1	0.9	3:1	5:1	5:1	0.3:1		
Collectors	Commercial	0.5	0.7	0.7	0.7	4:1	4:1	0.6	3.5:1	6:1	6:1	0.4:1		
	Residential	0.6	0.8	0.8	0.8	4:1	4:1	0.6	3.5:1	6:1	6:1	0.4:1		
Local	Commercial	0.4	0.6	0.6	0.5	4:1	4:1	0.4	4:1	6:1	6:1	0.4:1		
	Residential	0.5	0.7	0.7	0.6	6:1	6:1	0.5	6:1	10:1	10:1	0.4:1		
Alleys	Commercial	0.4	0.6	0.6	0.5	6:1	6:1	0.4	6:1	10:1	10:1	0.4:1		
	Residential	0.3	0.4	0.4	0.3	6:1	6:1	0.3	6:1	10:1	10:1	0.4:1		

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Existing Conditions Review

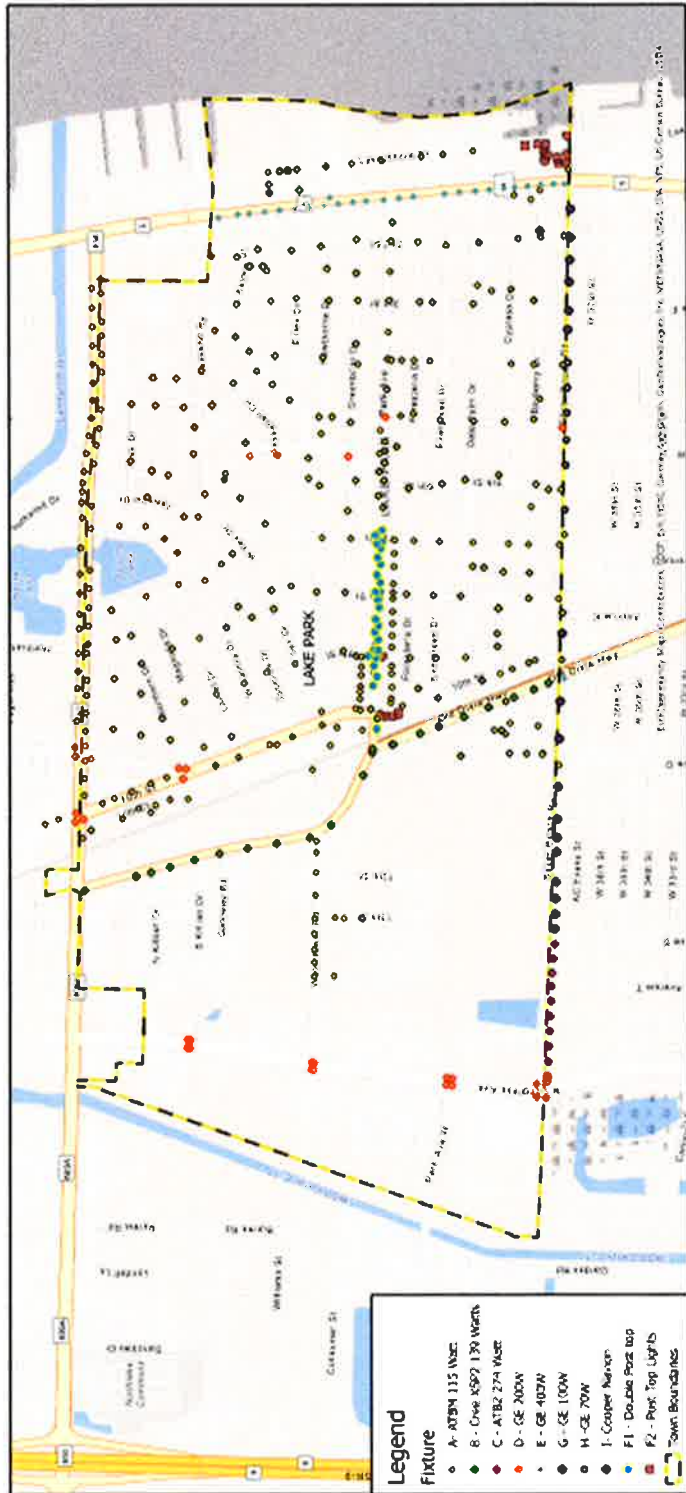
Identify Existing Lighting Types





Existing Conditions Review

Identify Existing Lighting Locations





Existing Conditions Review

Summarize Existing Lighting Levels

roadway Segment	Street Name	Limits	Avg. Horizontal Illuminance (fc)	Uniformity Ratio (Avg/Min)	Uniformity Ratio (Max/Min)	Veiling Luminance	Governing Criteria	Functional Classification	Existing Land Use	Criteria Value Avg. Horizontal Illuminance (fc)	Percentage of Compliance	Criteria Value Uniformity Ratio (Avg/Min)	Criteria Value Uniformity Ratio (Max/Min)
1	Northlake Blvd	West Lake Park limits to West of US-1	1.14	7.95	N/A	0.35	Florida Greenbook	Principal Arterial	Commercial	1.6	71%	3.1	N/A
2	US-1	Palmetto Dr to Silver Beach Road	1.555	2.5	5.56	0.45	FDOT	Minor Arterial	Intermediate	1.0	150%	4.1	10:1
3	Congress Avenue	Silver Beach Road to Northlake Blvd	0	0	N/A	0	Florida Greenbook	Minor Arterial	Commercial	1.4	0%	4.1	N/A
4	Old Dixie Hwy	Water tower Rd to Northlake Blvd	0.58	58	N/A	0.4	Florida Greenbook	Minor Collector	Commercial	1.1	53%	4.1	N/A
5	Old Dixie Hwy	Park Avenue to Watertower Rd	0.41	0	N/A	0.52	Florida Greenbook	Minor Collector	Intermediate	0.8	51%	4.1	N/A
6	Old Dixie Hwy	Evergreen Dr to Park Avenue	0.625	62.5	N/A	0.38	Florida Greenbook	Minor Arterial	Intermediate	1.0	63%	4.1	N/A
7	Old Dixie Hwy	Silver Beach Road to Evergreen Dr	0.875	12.5	N/A	0.275	Florida Greenbook	Minor Arterial	Commercial	1.4	63%	4.1	N/A
8	10th Street	Park Avenue to Northlake Blvd	0.365	10.5	N/A	0.17	Florida Greenbook	Minor Arterial	Commercial	1.4	26%	4.1	N/A
9	10th Street	Evergreen Dr to Park Avenue	0.47	0	N/A	0.37	Florida Greenbook	Major Collector	Intermediate	0.8	26%	4.1	N/A
10	10th Street	Silver Beach Road to Evergreen Dr	0.61	61	N/A	0.34	Florida Greenbook	Minor Collector	Commercial	1.1	55%	4.1	N/A
11	Park Avenue	Silver Beach Road to 7th St	1.86	3.38	N/A	1.4	Florida Greenbook	Minor Collector	Intermediate	0.8	203%	4.1	N/A
12	Park Avenue	Old Dixie Hwy to 7th St	1.64	4	N/A	0.27	Florida Greenbook	Minor Collector	Residential	0.6	273%	4.1	N/A
13	Park Avenue	7th St to US-1	0.538	23.5	N/A	0.54	Florida Greenbook	Minor Collector	Commercial	1.1	89%	4.1	N/A
14	Park Avenue W	Canal C-17 to Park Ave W	0	0	N/A	0	Florida Greenbook	Minor Collector	Commercial	1.1	0%	4.1	N/A
15	Silver Beach Road	Canal C-17 to Congress Ave	0	0	N/A	0	Florida Greenbook	Minor Collector	Commercial	2.1	0%	4.1	N/A
16	Silver Beach Road	Congress Ave to Avenue S	1.65	2.17	N/A	0.4	Florida Greenbook	Minor Collector	Commercial	1.1	150%	4.1	N/A
17	Silver Beach Road	Avenue S to Old Dixie Hwy	0.24	6	N/A	0.75	Florida Greenbook	Minor Collector	Intermediate	0.8	30%	4.1	N/A
18	Silver Beach Road	Old Dixie Hwy to 10th St	0.24	6	N/A	0.75	Florida Greenbook	Minor Collector	Commercial	1.1	22%	4.1	N/A
19	Silver Beach Road	10th St to Lake Shore Drive	0.51	0	N/A	0.65	Florida Greenbook	Minor Collector	Residential	0.6	85%	4.1	N/A
20	Watertower Road	N. Congress Ave to 13th St	0	0	N/A	0	Florida Greenbook	Minor Collector	Commercial	1.1	0%	4.1	N/A
21	Watertower Road	15th St to 12th St	1.1	5.5	N/A	0.32	Florida Greenbook	Minor Collector	Intermediate	0.8	138%	4.1	N/A
22	Watertower Road	12th St to Old Dixie Hwy	1.15	3	N/A	0.31	Florida Greenbook	Minor Collector	Commercial	1.1	105%	4.1	N/A

Legend

- Meets lighting criteria
- Does not meet lighting criteria

Existing Conditions Review



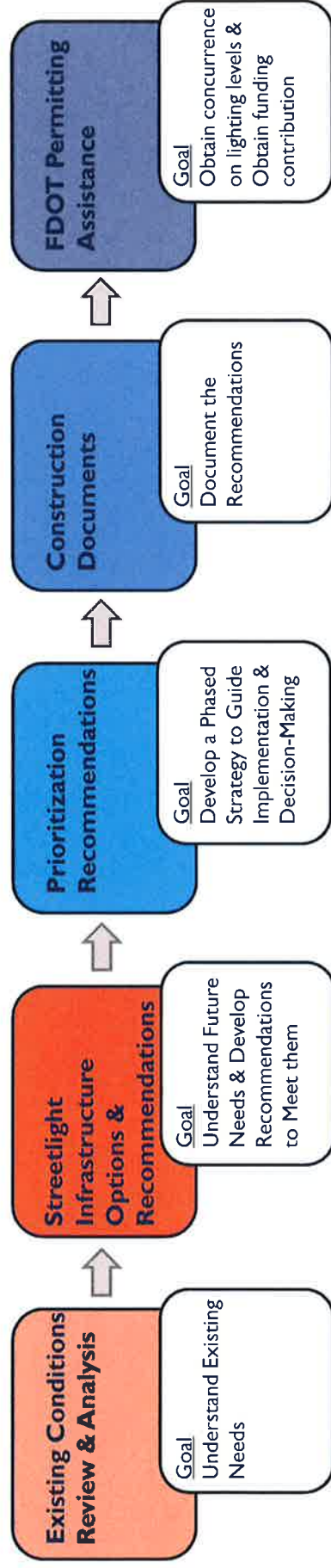
Initial Findings:

- Various lighting styles within the Town
- Various lighting sources (HPS and LED)
- Most of the corridors require some level of improvement
- FPL is currently replacing outdated fixtures within the Town



Existing Conditions Review

Next Steps:





Discussion/Questions

Kimley»»Horn

Exhibit "B"

1 - MANY ARE DOWN-FOUNDED BY THE NUMBER OF SCHOOL SHOOTINGS RECENTLY IN THE USA, BUT ALL THESE ARE THE RESULTS OF THE DEVIL HAVING JUST A SHORT TIME BEFORE ALMIGHTY GOD PUTS HIM AWAY SO HE CAN NO LONGER RULE THE WORLD AS HE IS NOW DOING PER 1 JOHN 5:19, " We know that we originate with God, but the whole world is lying in the power of the wicked one." BUT GOVERNMENTAL ACTION COULD GREATLY REDUCE THE NUMBER OF THESE HORRIBLE EVENTS IF PROPERLY APPLIED. HERE IS THE ACTION THAT SHOULD BE TAKEN: IT IS TERRIBLE WHAT HAPPENED AT THE ELEMENTARY SCHOOL IN SOUTH TEXAS. WORSE YET POLITICIANS COME UP WITH SO CALLED SOLUTIONS, BUT FAIL TO FIRST CAREFULLY ANALYZE THE ROOT CAUSE. THIS IS VERY BAD AS ONLY THEN CAN REAL SOLUTIONS BE OBTAINED. I HAVE EXAMINED MANY OF THESE TERRIBLE EVENTS, AND I FIND ALL HAVE BEEN PERPETRATED BY MALES, MOSTLY WITH FEW OR ANY FRIENDS AND USUALLY ONES THAT ARE QUITE YOUNG. NOW WHAT IS A REAL SOLUTION THAT WOULD ELIMINATE AT LEAST 75% OF THESE EVENTS. FIRST, THE 'DO NOT SELL TO GUN LIST' SHOULD HAVE MENTALLY UNSTABLE INDIVIDUALS ADDED TO THE LIST INSTEAD OF JUST CONVICTS AS THEY ARE THE ONES COMMITTING THESE SCHOOL MASSACRES NOT EX-CONVICTS. SECOND, ANYONE UNDER 21 YEARS OF AGE WISHING TO PURCHASE A GUN SHOULD BE VETTED BY THE LOCAL POLICE DEPARTMENT, AND ALSO GIVEN A MENTAL TEST SIMILAR TO THE MINNESOTA MULTI PHASE PERSONALITY TEST TAKEN AT THE LOCAL POLICE STATION. THE POLICE THEN SHOULD ALSO CHECK WITH SCHOOL AUTHORITIES TO SEE IF THE INDIVIDUAL HAS MADE ANY CREDIBLE THREATS OR OTHER SIGNS OF INSTABILITY. ONLY THEN, SHOULD THE UNDER 21 INDIVIDUAL BE GIVEN AUTHORIZATION TO PURCHASE A GUN.

THIRD, INSTEAD OF A POLICEMAN IN EVERY SCHOOL, GIVE ANY TEACHER WHO IS A VETERAN OR EX-POLICE BE PUT THROUGH SPECIAL TRAINING AND STABILITY TEST AND BE GIVEN THE RIGHT TO HAVE A CONCEALED WEAPON TO PROTECT STUDENTS. AS THE TEXAS SHOOTING CLEARLY SHOWS, LOCAL POLICE ARE INEFFECTIVE AS THEY DO NOT RUSH IN AS THEY SHOULD TO STOP THE KILLING, BUT TRAINED TEACHERS WOULD BE THERE AND TAKE IMMEDIATE ACTION.

2 - DO NOT BLAME THE OIL COMPANIES FOR THE SHORTAGE OF GASOLINE AND PRICE INFLATION.

IT IS BEING CAUSED BY BY LEGISLATION AND PRESIDENTIAL DECREES THAT EXCEED PRESENT SCIENTIFIC POSSIBILITIES BEING FORCED ON THE PUBLIC. HOW SO, BY THE PUSH FOR ELECTRIC CARS THAT ARE NOT NOW SUITABLE FOR MANY TRANSPORTATION NEEDS, ESPECIALLY FOR COUNTRY AND SUBURBAN INDIVIDUALS. I LIKE THE IDEA OF ELECTRIC CARS, BUT BEFORE THEY ARE SUITABLE FOR THE MASSES A SCIENTIFIC BREAK THROUGH MUST COME WITH RESPECT BATTERIES THAT CAN QUICKLY CHARGE AND CAN HOLD A 3,000 THOUSAND MILE RANGE OR GREATER WHICH DO NOT NOW EXIST.

INSTEAD OF PUSHING FOR THIS NEEDED BREAK THROUGH, THE PRESENT ADMINISTRATION PUSHED THROUGH AN UNWISE AGENDA TO LOWER GAS PRODUCTION. TO WIT, THEY CANCELED THE XL PIPELINE AND MOST DRILLING PERMITS. THIS CAUSED THE INFLATION WE ARE NOW EXPERIENCING AND THE TRYING TO BUY OIL FROM UNFRIENDLY COUNTRIES INSTEAD OF BEING ENERGY INDEPENDENT. NOW, HOW DID IT CAUSE INFLATION IN MOST ITEMS; FIRST, IT DROVE UP FUEL PRICES, SECOND INCREASED FUEL COST DROVE UP TRANSPORTATION COST; THIS IN TURN DROVE UP COST OF MANY ITEMS. THIS IN TURN DROVE LABOR COST AS EMPLOYEES NEEDED MORE FUNDS TO PURCHASE INFLATED PRICE ITEMS.

from James Sullivan
for Public Comment



Exhibit "C"

Town of Lake Park Town Commission

Agenda Request Form

Meeting Date: June 15, 2022


Agenda Item No. Tab 8


Agenda Title: Update on the State-Mandated 20-Year Needs Assessment for the Town's Stormwater Utility and Associated Infrastructure.

- SPECIAL PRESENTATION/REPORTS
- BOARD APPOINTMENT
- PUBLIC HEARING ORDINANCE ON _____ READING
- NEW BUSINESS
- OTHER: _____

- CONSENT AGENDA
- OLD BUSINESS

Approved by Town Manager  Date: 5-7-22

 Roberto F. Travieso/Public Works Director
Name/Title

Originating Department: <p style="text-align: center;">Public Works</p>	Costs: N/A Funding Source: Acct. N/A <input type="checkbox"/> Finance _____	Attachment 1: Presentation on the Town's 20-Year Stormwater Needs Assessment Attachment 2: Stormwater Master Plan (SWMP) Executive Summary
Advertised: Date: _____ Paper: _____ <input checked="" type="checkbox"/> Not Required	All parties that have an interest in this agenda item must be notified of meeting date and time. The following box must be filled out to be on agenda.	Yes, I have notified everyone _____ or Not applicable in this case <u></u> Please initial one.

Summary Explanation/Background:

The Town is responsible for maintaining and operating its stormwater utility and associated infrastructure.

As part of the 2021 regular session, the State of Florida Legislature recognized the need for long-term planning for the provision of stormwater and wastewater municipal services and future funding requirements. Accordingly, local governments are now required to perform a 20-Year Needs Analysis for Stormwater and Wastewater and update the plan every five (5) years. The initial report

is due to the State on **June 30, 2022**.

Town Staff sought public input regarding projects to include in the 20-Year Needs Assessment (the Assessment), but did not receive any input; notwithstanding, the Town has a robust Stormwater Master Plan (SWMP, the Plan), which the Town Commission adopted in 2021. The strategies and approaches included in the Plan formed the basis for the performance of the 20-Year Stormwater Needs Assessment.

Furthermore, at the direction of the Town Manager, Town Staff coordinated with stormwater engineering consultant Water Resources Management & Associates (WRMA) to perform the 20-Year Stormwater Needs Assessment and draft the report required by the State.

WRMA was the consultant of choice to perform the Assessment because of their thoroughness and familiarity with the Town's Stormwater Master Plan (**Attachment 2**). In addition, the Town currently has an active five (5) year continuing services agreement under approved Resolution No. 76-11-18.

During the June 15, 2022, meeting of the Town Commission, Director of Public Work Roberto Travieso, will present the findings and recommendations from the Assessment (**Attachment 1**).

Recommended Motion: There is no motion associated with this agenda item; however, pending additional input from the Town Commission, the Town Manager will proceed with submitting the 20-Year Needs Assessment to the State by the June 30, 2022, deadline.




TOWN OF LAKE PARK STORMWATER 20 YEAR NEEDS ASSESSMENT PLAN

Raul Mercado, P.E.

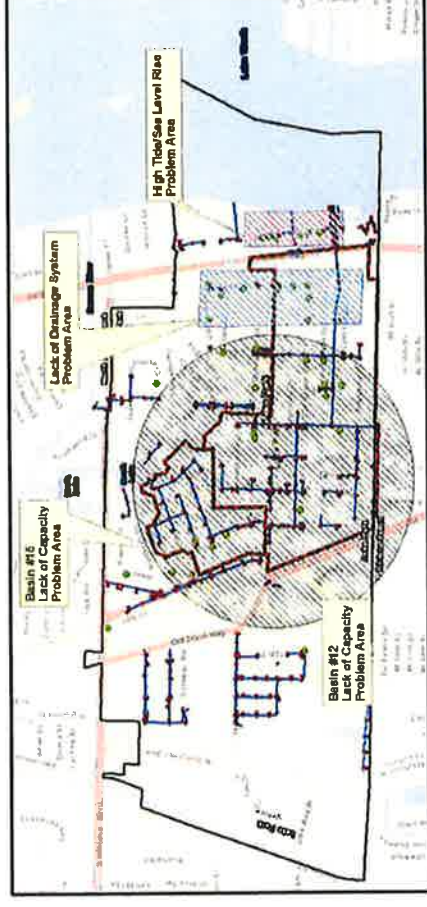


20-Year Stormwater Needs Assessment

- Section 403.9302, Florida Statutes, requires a 20-year needs analysis from the local governments providing stormwater services.
 - Planning document is forward-looking, and it will necessarily include a large number of assumptions about future actions.
 - Analysis based on available information coupled with best professional judgment, consistent with approved Stormwater Master Plan (SWMP).
 - Provides Long-Range stormwater management planning tool or “Road Map.”
 - Due to the Office of Economic & Demographic Research’s (EDR) by June 30, 2022
- 

20-Year Stormwater Needs Assessment

- Study showed that of the 10.62 miles of storm sewers (Approx. 29%) needs to be immediately (1-5 years) rehabilitated (Repaired/Replaced) and the rest within 20 years.
- Identifies key major capacity surcharge flooding problems, nuisance flooding along Southern Outfall (446 acre watershed)
- Identifies long term climate change (Sea Level Rise) challenges



Stormwater Master Plan: System Rehabilitation

- Updated in 2019/2020; adopted in 2021
- Indicates that Stormwater Utility Fund will be used for O&M labor and to perform storm sewer system rehabilitation (CIPP/ open Cut) for current & remainder needs of aging system.
- Assumes a Stormwater Utility Fee rate of \$13.50/ESU in FY2023 and \$0.50/year through FY2025.

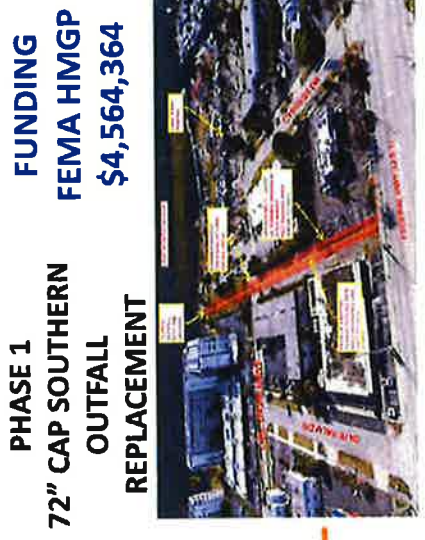


- IMMEDIATE REHABILITATION COST (2022-2027)**
- CCTV Inspection/Cleaning Cost: \$363,276
 - CIPP Rehabilitation Cost: \$ 1,805,819
 - Total Rehabilitation Cost: \$2,169,095

Line No.	2021	2022	2023	2024	2025
1	\$1,161,798.00	\$1,161,798.00	\$1,161,798.00	\$1,161,798.00	\$1,161,798.00
2	\$12.50	\$13.50	\$14.00	\$14.50	\$15.00
3	\$0.00	\$92,944	\$139,416	\$185,888	\$232,360
4	\$1,161,798.00	\$1,254,742	\$1,301,214	\$1,347,686	\$1,394,158

Current SWMP Capital Projects (2022-2027)

SOUTHERN OUTFALL GI/LID-BASED PRIORITY REHABILITATION PROJECT



PHASE 1
72" CAP SOUTHERN OUTFALL REPLACEMENT

FUNDING
FEMA HMGP
\$4,564,364



PHASE 3
10TH STREET GI DRAINAGE IMPROVEMENTS



PHASE 2
BURT BOSTROM PARK GI DRAINAGE IMPROVEMENTS

FLORIDA MITIGATION CDBG GRANT \$11.4 MILLION

TOTAL FUNDED THROUGH FEMA/HMGP AND HUD/MITIGATION CDBG GRANTS = \$15.96 Million

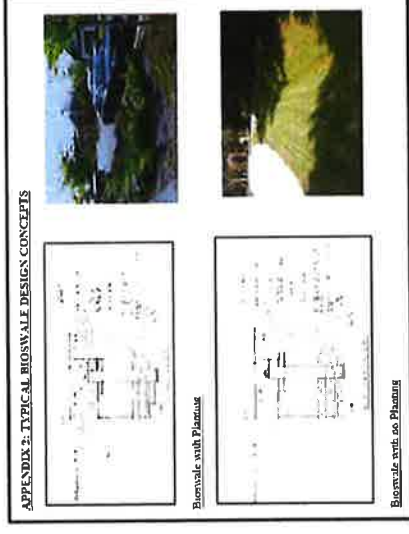
Current/Future Stormwater CIP (2022-2042)

GOAL FOR CLIMATE CHANGE ADAPTATION:

CONVERT 5% OF ROADSIDE SWALES TO BIOSWALES AND BIODETENTIONS FACILITIES IN THE NEXT 20 YEARS TO PROVIDE FLOODING RELIEF, WATER QUALITY & TO OFFSET WARMING TRENDS



**Nuisance Flooding Hazard Relief Through Bioswales & Biode detention
Along 5% of Town ROW's**

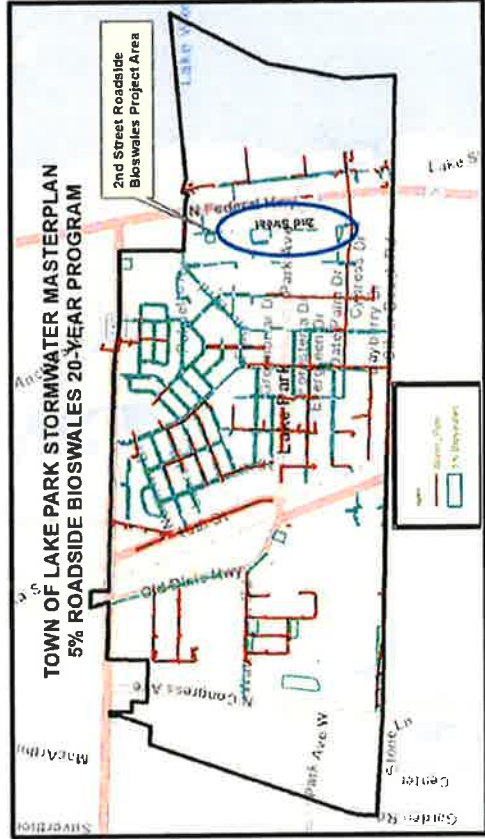


**COST OF GI/LID 20-YEAR PROGRAM
\$22.4 Million
(To be funded through FDEP Coastal
Resiliency Planning & Construction
Grants)**

Current Stormwater CIP' (2022-2027)

GREEN INFRASTRUCTURE NUISANCE FLOODING PROJECT

BIOSWALES ALONG 2ND STREET ROW



FIRST 5% ROADSIDE BIOSWALE PROGRAM
PROJECT TO BE FUNDED BY FDEP/COASTAL
RESILIENCY GRANT

Planning: \$85,000 (\$55,000 Town Match)
Construction: \$553,758

PROJECT UNDERWAY –CONSTRUCTION FY2023

Other Future Stormwater Needs (2027-2042)

CAPITAL PROJECTS (2022-2027):

C-17 Canal Berm Improvements



Estimated Cost: \$1.25 Million

South Lake Sea Level Rise Flooding Assessment



Estimated Cost: \$2.36 Million

Other Future Stormwater Needs (2027-2042)

**5% ROADSIDE BIOSWALES PROJECTS (2022-2027):
Municipal Complex Water Quality Retrofit
Bio-detention Facility;
estimated Cost: \$230,000**



Typical Green Infrastructure Learning Display Plaque & Observation Area for Elementary and Middle Schools

Bioretention Facility along Park Avenue Right-of-Way

**Remaining 20YR, 5% Road Bioswales Program
(2027-2042); estimated Cost: \$16.9 Million**


- Prosperity Farms Rd/10thSt Commercial Area Bioswales
- Flagler Blvd and Northern Drive Bioswales
- 6th Street and Date Palm Drive Bioswales
- Others





Proposed Stormwater Needs Gap Funding

Town of Lake Park Funding Contribution to Close Funding Gap

- Propose to use the Stormwater Utility Fund (the Fund) to underwrite all Stormwater System Rehabilitation needs.
 - The Fund would provide matching funds for at least one FDEP/SFWMD grant per year for project design. Funding Source Match: \$50,000 per grant (Assuming an average design cost of \$100,000).
 - Propose to use the Fund to secure one (1) low-interest loan for construction per year from State Revolving CIP loan program. This would guarantee the construction of one project per year (Assuming the average Biotention, Bioswale construction cost of \$350,000).
- 

Proposed Stormwater Needs Gap Funding

- Loan amount: \$350,000, Loan interest: 3.5% interest, Loan interest: 10 years, Total Yearly payments: \$41,532

Yearly Funding Gap Contribution Period	Stormwater Utility Design Grant Share	Stormwater Utility Construction Grant Share	Total
2022 – 23 to 2026-27	\$50,000 * 5 = \$250,000	\$350,000 x 5 = \$1,750,000	\$2,000,000
2027 – 28 to 2031-32	\$50,000 * 5 = \$250,000	\$1,750,000	\$2,000,000
2032 – 33 to 2036-37	\$50,000 * 5 = \$250,000	\$1,750,000	\$2,000,000
2037 – 38 to 2041-42	\$50,000 * 5 = \$250,000	\$1,750,000	\$2,000,000
Total			\$8,000,000

The Town of Lake Park would contribute **\$2,00,000** every 5-year period and **\$8,000,000** over the 20-year funding gap period

Proposed Stormwater Needs Gap Funding

State & Federal Funding Contribution to Close Funding Gap

State Agency Grant Funding Required to Close Funding Gap

Total FDEP Planning Grants: \$50,000 + \$75,000 = \$125,000

- ✓ **FDEP Florida Resilient Coastlines Planning Grants: One (1) at \$50,000 (Bioswales)**
(Through NOAA /UF Sea Level Rise or FDEP Coastal Initiative Grant Program)

- ✓ **FDEP Coastal Partnership Grant or 319 grant Program: One (1) at \$550,000 per year for construction**

The Town received an FDEP construction grant for \$550,000 in FY2021. It is assumed that a similar FDEP grant can be procured every 3 to 4 years.

- ✓ **FDEP NPS Water Quality Grant: One at \$75,000 (for Biodetention and Underground Filtration Chambers – no match required)**



Proposed Stormwater Needs Gap Funding

State & Federal Funding Contribution to Close Funding Gap

Federal Agency Grant Funding Required to Close Funding

✓ FEMA HMGP

It is assumed that a \$1 million FEMA/HMGP grant can be procured every 4-5 years. A lower \$1 million project funding request is more realistically feasible to be approved by the FEMA/HMGP grant program.

✓ CDBG Mitigation Federal Program through Florida Rebuild Grant program

The Town received a CDBG/Florida Rebuild grant in 2021 for over 11 million. It is assumed that a CDBG/Florida Rebuild grant can be procured every 5 years.



Proposed Stormwater Needs (Composite) Gap Funding

Gap Period	Gap Amount	TLP Design Match Funding	TLP Const. Funding	Federal HMGP or CDBG	FDEP Design	FDEP Construction	Total Revenue
2023		\$50,000	\$350,000	\$0	\$125,000	\$0	\$525,000
2024		\$50,000	\$350,000	\$0	\$125,000	\$0	\$525,000
2025		\$50,000	\$350,000	\$1,225,000	\$125,000	\$0	\$1,750,000
2026		\$50,000	\$350,000	\$0	\$125,000	\$0	\$525,000
2027		\$50,000	\$350,000	\$1,810,000	\$125,000	\$550,000	\$2,885,000
Total	\$5,720,000	\$250,000	\$1,750,000	\$3,035,000	\$625,000	\$550,000	\$6,210,000
2028		\$50,000	\$350,000	\$0	\$125,000	\$0	\$525,000
2029		\$50,000	\$350,000	\$1,000,000	\$125,000	\$0	\$1,525,000
2030		\$50,000	\$350,000	\$0	\$125,000	\$550,000	\$1,075,000
2031		\$50,000	\$350,000	\$1,000,000	\$125,000	\$0	\$1,525,000
2032		\$50,000	\$350,000	\$0	\$125,000	\$550,000	\$1,075,000
Total	\$5,647,479	\$250,000	\$1,750,000	\$2,000,000	\$625,000	\$1,100,000	\$5,725,000
2033		\$50,000	\$350,000	\$0	\$125,000	\$550,000	\$1,075,000
2034		\$50,000	\$350,000	\$1,000,000	\$125,000	\$0	\$1,525,000
2035		\$50,000	\$350,000	\$0	\$125,000	\$0	\$525,000
2036		\$50,000	\$350,000	\$1,000,000	\$125,000	\$550,000	\$2,075,000
2037		\$50,000	\$350,000	\$0	\$125,000	\$0	\$525,000
Total	\$5,647,479	\$250,000	\$1,750,000	\$2,000,000	\$625,000	\$1,100,000	\$5,725,000
2038		\$50,000	\$350,000	\$0	\$125,000	\$0	\$525,000
2039		\$50,000	\$350,000	\$1,000,000	\$125,000	\$550,000	\$2,075,000
2040		\$50,000	\$350,000	\$0	\$125,000	\$0	\$525,000
2041		\$50,000	\$350,000	\$1,000,000	\$125,000	\$0	\$1,525,000
2041		\$50,000	\$350,000	\$0	\$125,000	\$550,000	\$1,075,000
Totals	\$5,647,479	\$250,000	\$1,750,000	\$2,000,000	\$625,000	\$1,100,000	\$5,725,000

Proposed Stormwater Needs Gap Funding

5% Roadside Program
& C-17 Project
South Lake Project

No Identified Funding Source	2022-23 to 2026-27	2027-28 to 2031-32	2032-33 to 2036-37	2037-38 to 2041-42
Maintenance	0	0	0	0
Expansion	3,360,000	5,647,479	5,647,479	5,647,479
Resiliency	2,360,000	0	0	0
Replacement/Aging Infrastructure	0	0	0	0
Projected Funding Gap (=Total Non-Committed Needs)	5,720,000	5,647,479	5,647,479	5,647,479

The proposed Gap Funding Plan more than covers any future stormwater needs

For any specific strategies that will close or lessen a projected funding gap, please list them in the table below. For each strategy, also include the

TLP Contributes \$2 Million per 5-year period or approximately 36% of funding gap period

Strategies for New Funding Sources	2022-23 to 2026-27	2027-28 to 2031-32	2032-33 to 2036-37	2037-38 to 2041-42
TLP Stormwater Utility Sharing Cost for Design Grants & Short	2,000,000	2,000,000	2,000,000	2,000,000
FDEP Coastal Resiliency Grant Program (Design)	625,000	625,000	625,000	625,000
FDEP/SFWMD NPS, 319 Grant Program (Construction)	550,000	1,100,000	1,100,000	1,100,000
FEMA/NOAA/EPA/HUD Mitigation CDBG Grants (Design & Con	3,035,000	2,000,000	2,000,000	2,000,000
Total	6,210,000	5,725,000	5,725,000	5,725,000
Remaining Unfunded Needs	-490,000	-77,521	-77,521	-77,521



Town of Lake Park Stormwater Masterplan Update Executive Summary



Town of Lake Park, FL
535 Park Avenue
Lake Park, FL 33403
October 1, 2021

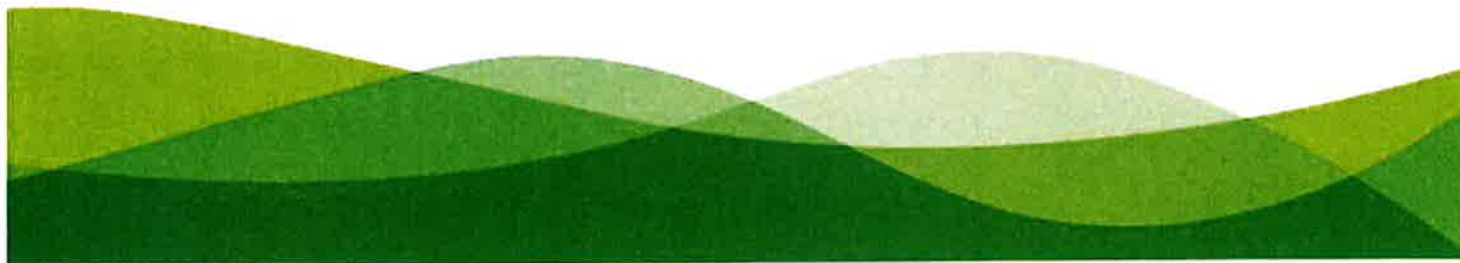


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Section 1 Introduction

1.1 About the Town of Lake Park

The Town of Lake Park, originally founded as Kelsey City in 1923, was the first zoned municipality in Florida. The town contains 2.5 square miles of property, 2.2 square miles of dry land, and has a population of approximately 8,155.

Figure 1-1 includes an exhibit of the Town of Lake Park limits underlain with a 2019 Aerial photo.



Figure 1-1 Town Limits of the Town of Lake Park, FL (2019)

1.2 Previous Stormwater Masterplan Updates

The Town's existing stormwater drainage system predominantly consists of grassed swales within the Right of Way for conveyance of excess runoff to roadside ditch bottom inlets. Discharges are either exfiltrated or conveyed to one of 14 major outfalls located on the Lake Worth Lagoon (Intracoastal Waterway) and the C-17 Canal. The original Town of Lake Park Stormwater Masterplan was created in 1980, with updates made in 1993 and again in 1996. Since the last update, the failure rate of existing drainage infrastructure has accelerated. In 2018, the town determined further updates were required to repair and/or replace existing stormwater assets and to identify opportunities to implement new infrastructure and incorporate low impact development (LID) stormwater management strategies.

1.3 2019 Stormwater Master Plan Update Goals

The 2019 Stormwater Masterplan (SWMP) update is intended to provide the Town with a strategy for addressing aged stormwater assets and capacity deficiencies over the next 20 years. As a seaside town, the strategy will also account for climatic variables such as projected sea level rise related to global warming.

The SWMP update will also utilize Green Infrastructure planning approaches and Low Impact Development (LID) Best Management Practices (BMPs) for stormwater management. Green infrastructure methods include the use of bio-retention, rainwater harvesting, and infiltration systems of varying size and configuration, in combination with traditional conveyance and end of pipe infrastructure.

1.4 Stormwater Masterplan Activities

In developing the 2019 SWMP update, the town identified eight (8) activities which analyze the town's stormwater management infrastructure and flood control strategies, and their impact on the town's financial health and economic development.

1. Collection and Cataloguing of Previous and Current Datasets
2. Performance review of the town's NFIP Community Rating System (CRS)
3. Public Outreach and Communication Plan for SWMP improvements
4. Assessment and Mitigation Plan for Climate Change Impacts
5. Review of Stormwater Operations and Maintenance (O & M) Program
6. Hydrologic and Hydraulic Modeling Analysis of Stormwater Management System
7. Analysis and Identification of Rehabilitation Alternatives for potential Nuisance, Storm Event, and Climate Change Flooding.
8. Analysis and Assessment of Stormwater Utility Fee, ESU Calculation, and Stormwater Utility Program Funding Opportunities.

Section 2 Data Collection and Management

2.1 Data Collection

Development of the Stormwater Masterplan requires the acquisition of topographic, hydrologic, and geologic data, as well as physical stormsewer system data. The data collected was acquired from the Town of Lake Park and other regional, state, and federal agencies, including:

- Palm Beach County
- The Northern Palm Beach County Improvement District (NPBCIDP)
- The South Florida Water Management District (SFWMD)
- The Florida Department of Transportation (FDOT)
- The Florida Department of Environmental Protection (FDEP)
- US Army Corps of Engineers (USACE)

- US Department of Agriculture (USDA)
- National Oceanic and Atmospheric Administration (NOAA) / U.S. Department of Commerce
- Federal Emergency Management Agency (FEMA) / U.S. Department of Homeland Security
- US Environmental Protection Agency (USEPA)

2.2 Data Cataloguing

Physical Stormsewer System Data

In 2019, Calvin Giordano and Associates, Inc. (CGA), developed an asset inventory of the Town's existing drainage infrastructure. CGA provided the town with Digital AutoCAD files, a GIS Map package, and an Excel Tabular database. WRMA noted the following:

- The map data and the tabular data had some minor inconsistencies.
- The Town's existing drainage system consists of approximately 10.6 miles of stormsewers and 589 hydraulic structures, with drainage pipes ranging in size from 8-inch to 72-inch in diameter.
- The structure asset identification system follows a 14-digit format that may be cumbersome for asset management purposes.
- Some inconsistencies in the physical survey of the stormwater sewer infrastructure may be due to a lack of available as-built drawing information.
- A detailed review of the Town's stormsewer system data was performed and selectively field verified for accuracy.

The US Highway 1 corridor through the Town of Lake Park jurisdiction extends from Palmetto Drive to Silver Beach Road for a length of 0.77 miles. The corridor right-of-way is served by a dedicated stormsewer system of inlets and storm sewers discharging through the Town's 72" RCP outfall to the Lake Worth Lagoon, located between Cypress Drive and Date Palm Drive.

The US Highway 1 drainage system consists of 0.93 miles of stormsewers and total of 41 Structures in the right-of-way (inlets and catch basins).

2.3 LiDAR Topographic Data Management

The Palm Beach County LiDAR database was acquired from the Palm Beach County GIS department and utilized to create a Town wide Digital Elevation Model for the purpose of performing 2-Dimensional

Hydraulic Modeling of the Town's stormsewer system. **Figure 2-1** shows the topographic range of elevations for the Town of Lake Park developed using the Palm Beach County LiDAR data.

Figure 2-1 Digital Elevation Map of the Town of Lake Park based on 2018 PB Co. LiDAR Data

2.4 Hydrologic and Hydraulic Model Parameterization

WRMA identified data input parameters required for the development of the ICPRv4 Hydrologic and Hydraulic Model. These include:

Watershed Boundaries

Watershed boundaries are typically determined by the rainfall catchment area that contributes runoff for transport and discharge through the Town's stormwater management system.

Drainage Basin Delineation

Previous stormwater masterplan studies completed in 1986 and 1996 identified and mapped 26 separate basins within the Town's boundaries. Adjustments to the current drainage basin boundaries were made based on the 2018 detailed LiDAR elevation data. Sub-catchments within each basin were also defined to provide a higher level of detail based on the location of inlets throughout the Town.

Areas of Known Flooding

FEMA Maps #12099C0387F (Panel 387) and 12099C0391F (Panel 391), with effective dates of October 6, 2017, include the Town's flood hazard zone area designations.

Flood hazard areas depicted on the Flood Insurance Rate Map are identified as a Special Flood Hazard Area (SFHA). SFHA areas are defined as the area that will be inundated by the flood event having a 1% chance of being equaled or exceeded in any given year. The 1% annual chance flood is also referred to as the base flood or 100-year flood.

Characteristics of Land Cover

There are approximately 1,116 total acres or 1.74 square miles contained within the corporate Town limits. Water areas constitute a 0.8% of the total area. The Town of Lake Park is considered built-out to approximately 84% of the corporate area. Only 16% of the total area is vacant and potentially available for future development.

Other data collected include *GIS Map Datasets, Design Storm Rainfall Data, Soil Data, and Geologic Data.*

Section 3 NFIP Community Rating System Overview

3.1 Current Program Activities

A review of the town's 2017 Digital Flood Insurance Rate Map Floodplain Management Plan Update and the current CRS Program was performed. The objective of the review was to provide technical support and expert guidance to maximize the Town's CRS classification. By accumulating additional CRS points, the town can achieve a lower (or better) rating. Key opportunities for obtaining additional CRS points were identified. Development tasks within the Stormwater Masterplan Update provide key opportunities to maximize CRS points.

3.2 Background

Communities participating in the CRS program commit to enforcing minimum floodplain management standards. The CRS Program recognizes and encourages community floodplain management activities that exceed the minimum NFIP standards. The CRS recognizes 19 creditable activities, organized under four categories: Public Information, Mapping and Regulations, Flood Damage Reduction, and Flood Preparedness.

Accumulation of credit points determine a community's CRS classification. Flood insurance premium rates are reduced as the Community's CRS classification decreases (from 10 down to 1) with a rating of 1 being the "best" and resulting in the highest flood insurance premium reduction. There are a total of ten CRS classes. Class 1 requires the most credit points and gives the largest premium reduction. Class 10 provides no reductions in premiums. **Table 3-1** below shows the CRS class levels, corresponding credit points, and premium reductions percentages.

Table 3-1 NFIP Community Rating System - Class Summary

Class	Credit Points	Insurance Premium Reduction	
		SFHA*	Non-SFHA**
1	4,500+	45%	5%
2	4,000 – 4,499	40%	5%
3	3,500 – 3,999	35%	5%
4	3,000 – 3,499	30%	5%
5	2,500 – 2,999	25%	5%
6	2,000 – 2,499	20%	5%
7	1,500 – 1,999	15%	5%
8	1,000 – 1,499	10%	5%
9	500 – 999	5%	5%
10	0 – 499	0%	0%

*Special Flood Hazard Area

**Preferred Risk Policies are available only in X zones for properties that are shown to have a minimal risk of flood damage. The Preferred Risk Policy does not receive premium rate credits under the CRS because it already has a lower premium than other policies.

3.3 Town of Lake Park FEMA Floodplain Maps

FEMA flood zones are flood risk areas identified on the digital version of the Flood Insurance Rate Map (DFIRM). The FEMA DFIRM is used by lenders and insurance companies when evaluating whether borrowers are required to purchase flood insurance. Flood insurance is mandatory for properties in high-risk zones if owners have federally backed mortgages through Fannie Mae or Freddie Mac.

In October 2017, FEMA updated the Town's Special Flood Hazard Areas (SFHA's) as part of a Countywide Flood Insurance Study (FIS) for Palm Beach County. New DFIRMS were prepared using high accuracy LiDAR mapping data. FEMA Maps #12099C0387F (Panel 387) and 12099C0391F (Panel 391) include the Town's revised flood hazard zone area designations (**Figure 3-3** and **Figure 3-4**).

Figure 3-3 FEMA Flood Insurance Rate Map - Western Portion of Town (2017)

Figure 3-4 FEMA Flood Insurance Rate Map - Eastern Portion of Town (2017)

3.4 CRS Program Participation Compliance Review

Since 1978, the Town of Lake Park has been a voluntary participant in the CRS. The Town's current CRS classification is 8, which provides for a 10% insurance premium reduction for residents within a special flood hazard area (SFHA) and 5% for non-SFHA areas. Currently, the Town's goal is to accumulate enough credit points to qualify for a classification of 7 or lower with the implementation of the Stormwater Masterplan and inherent CRS activities. The CRS class upgrade will provide for an additional 5% flood insurance premium reduction for all policies issued within Special Flood Hazard Areas.

Section 4 Outreach and Communication

4.1 Background and Purpose of SWMP Outreach Plan

The primary objectives of the Stormwater Masterplan Update are to inform, educate, cooperate, and collaborate with the stakeholders throughout the Town. The purpose of the Outreach & Communications activity is to identify and engage stakeholders, and to establish the goals, activities, and expectations for involving stakeholder groups in the development of policies specifically relating to stormwater management, flood control, and water quality.

4.2 Framework of the Outreach and Communication Plan

The Town of Lake Park Outreach and Communication Plan is an element of the Stormwater Masterplan (SWMP) update, which maximizes the involvement of the public in the development and implementation of:

- Town Policies and Ordinances relating to Stormwater Management and Flood Control;
- Aiding town staff in the development of Stormwater Improvement Projects;
- Identifying and collecting information on flood prone areas; and
- Promoting sustainable Green Infrastructure and Low Impact Development (GI/LID) practices.

The town's *FMP Planning Committee*, known as the "Steering Committee", conducts outreach efforts based on the guidelines in FEMA's CRS Program Manual. The Committee's primary directive is to plan, organize, and conduct meetings or presentations to neighborhood councils, providing information on stormwater management and floodplain management activities, as well as providing opportunities to receive community input.

4.3 Outreach Plan Activities

- Flood Preparedness and Climate Change Awareness Public Surveys
- Development of Educational Materials and Events
- Public Outreach Meetings and Open Houses
- Local and Regional Stormwater Partnerships
- Website and Social Media Presence

4.4 Outreach Plan Implementation

Stormwater Policy "Steering" Committee

The town elected to consolidate the SWMP Technical and Policy Committees into a single committee. The single committee, known as the *Town of Lake Park Stormwater Policy Committee*, will be referred to as the Steering Committee (SC). It is composed of five members who will serve for the duration of the SWMP project update (completion projected sometime in the third quarter of 2020). The members of the steering committee were selected to represent a cross-section of views and interests within the town, coordinating SWMP Efforts with Stakeholders. The members are:

1. Chairman: Richard Scherle, Public Works Director
2. Vice Chairman: Dena Davis (Stakeholder)
3. CFM Consultant: Raul Mercado, PE, CFM (WRMA)
4. Planning Official: John D' Agostino, Town Manager
5. Stakeholder Participant: Ronnie L. Cohen

Section 5 Climate Change & Sea Level Rise Assessment

5.1 A Changing Climate

Climate stressors such as increasing temperatures, changing precipitation patterns, and extreme weather events are already affecting the environment of urban and agricultural communities. As the climate continues to change, communities may experience periods of drought and water shortages, and more frequent heavy precipitation events. At current greenhouse gas emission levels, the earth's temperature is projected to rise by 2.5 to 7.8 degrees Celsius by the end of this century. Human activities, including the release of Carbon Dioxide (CO₂) and other greenhouse gases into the atmosphere have an impact on the climate. Changes in rainfall and other forms of precipitation will be one of the most critical factors

determining the overall impact of climate change. **Figure 5-1** details the projected changes in climate over the next forty years based on the current rate of CO2 emissions.

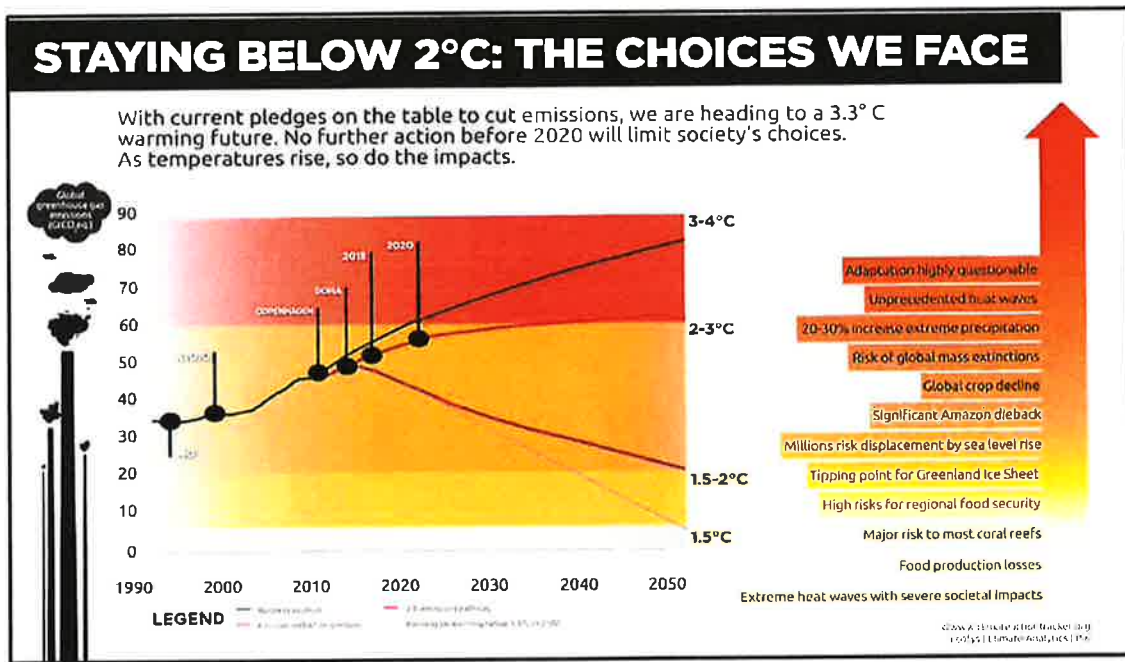


Figure 5-1 Climate Warming Trend (Source: Ecofys/Climate Analytics)

5.2 Climate Change and Stormwater Management

Connecting climate change impacts to stormwater management, with the goal of increasing *resiliency* to major storm events, requires a *Vulnerability Analysis* to assess the effectiveness and longevity of the Town's stormwater infrastructure as it relates to climate change stressors and sea level rise. The concept of *Risk* in a resilience assessment involves the consequence of a climate threat. Defining Vulnerability and Risk within a resiliency framework supports development strategies in stormwater master planning.

The U.S. Climate Resilience Toolkit is a website designed by the Federal Government to help people find useful information and subject matter related to climate change resilience. The toolkit recommends a five-step approach to assess a community's resiliency to climate change stressors. For the purpose of the Town's Stormwater Management Plan Update, a modified version of the Toolkit was applied as follows:

1. Assess Climate Change Hazard Exposure for Stormwater Management.
2. Assess Vulnerability and Risks of Exposed Stormwater Management Assets.
3. Perform Adaptation Assessment for each threat.

5.3 Climate Change Hazards for Stormwater Management

Climate Change Threats (*Hazard Stressors*)

Table 5-1 includes the types of natural flood hazards expected to be exacerbated by climate change that will affect the Town’s stormwater management infrastructure.

Table 5-1 Flooding Hazards by Type & Exposure Level

Flooding Hazard	Source of Identification and Quantification	Exposure Type and Level of Hazard				
		Private Assets	Natural Area Assets	Government Assets	Critical Facilities	Road Assets
Nuisance Flooding, Runoff & Erosion	Throughout Town	Yes/Low	Yes, Low	Yes/Low	Yes/Low	Yes/High
Regional Canal Flooding	C-17 Canal/ Earman River	Yes/High	Yes/Low	Yes/Low	Yes/Low	Yes/High
Coastal Storm Surge Flooding	Atlantic Ocean Lake Worth Lagoon	Yes/High	Yes/Low	Yeas/Low	Yes/High	Yes/High
Coastal Sea Level Rise	Atlantic Ocean Lake Worth Lagoon	Yes/High	Yes/Low	Yes/Low	Yes/Low	Yes/High

Exposure Analysis of Nuisance Flooding, Runoff and Erosion Threats

The threat of nuisance flooding (urban flooding), runoff, and erosion includes events caused by extreme or heavy precipitation that results in minor flooding or erosion from runoff. NOAA defines nuisance flooding as events that overwhelm stormwater infrastructure and result in inconveniences, such as road closures and damage to infrastructure. Two examples of localized ponding are provided in Figure 5-4. Town of Lake Park flooding locations are shown in Figure 5-5.



Figure 5-4 Flooding at 2nd Street & Evergreen Drive, and at 4th Street & Evergreen Drive

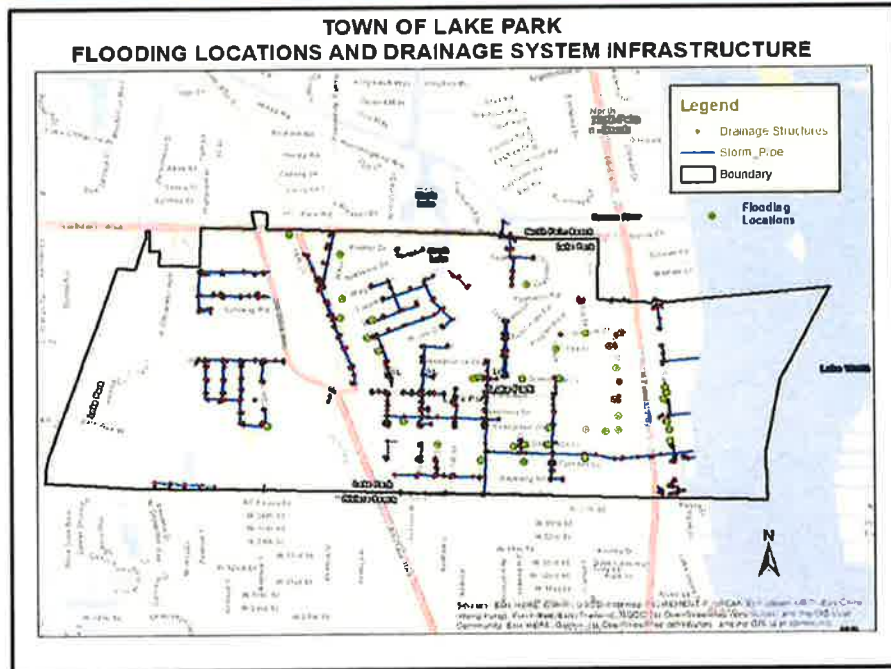


Figure 5-5 Nuisance Flooding Locations

Sources of nuisance flooding can be traced to the following occurrences:

An Underperforming Stormwater Management System

These are systems that lack downstream hydraulic capacity to pass through or discharge runoff volumes from entering inlets, stormsewers, and road culverts. The lack of capacity produces a “Backwater” pressure effect that results in inlet surcharge and surface ponding. **Figure 5-6** shows a typical inlet surcharge at Ilex Street.



Figure 5-6 Inlet Surcharge at Ilex Street

High (King) Tides / Sunny Day Flooding

Nuisance flooding is also associated with coastal tidal flooding (Sunny Day Flooding) during extreme (King) tide events in the fall and/or as induced by Sea Level Rise. This type of nuisance flooding is observed in low lying coastal areas with an average topographic elevation of 2 to 4 feet NAVD. **Figure 5-7** shows the minimum and maximum depths (above mean sea level) for the Town of Lake Park on February 6-7, 2019. A maximum tide depth of 2.76 feet was experienced at 5:50 AM on February 6, 2019.

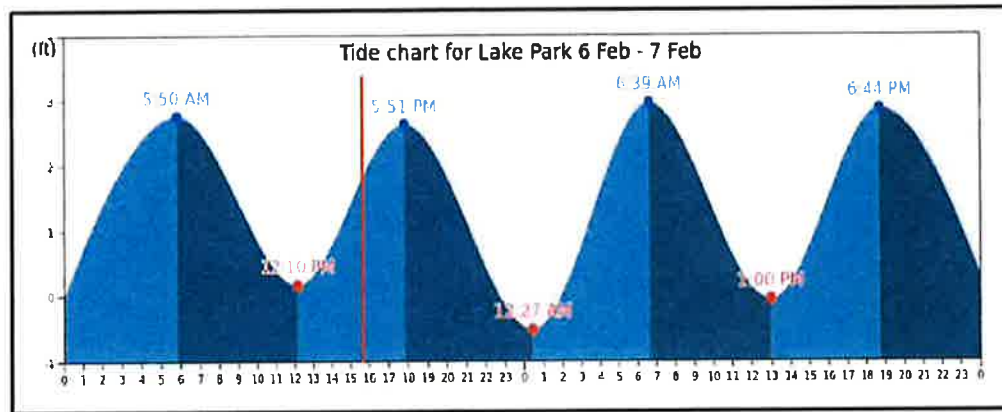


Figure 5-7 Tide Depth Ranges at Town of Lake Park

The elevation of Lake Shore Drive along the eastern boundary of the Town adjacent to the LWL varies between 2 and 4 feet NAVD. Inlets along the road and at canals will experience shallow flooding as shown in **Figure 5-8**.



Figure 5-8 High Tide (SLR) Flooding Along Lake Shore Drive

Potential Risks Due to Nuisance Flooding, Runoff, Erosion Threat

Risk involves the likelihood and consequence of a climate threat such as Nuisance Flooding. Likelihood involves assessing the frequency and duration of the type of rainfall events responsible for localized flooding. The Annual Exceedance Probability (AEP) for a 2- year storm event is approximately 50%, and less than 10% for a 10 to 15-year storm event. This means that risk of Nuisance Flooding in the Town of Lake Park is approximately 50% of the time for storm events of less than 2 inches, and very infrequently for storm events of less than 4 inches.

Measures for Identifiable & Quantifiable Risks Due to Nuisance Flooding

As warming trends indicate, Climate Change will affect the increased intensity of rainfall in the Town of Lake Park.

Runoff is a function of imperviousness as rainfall that cannot infiltrate impervious surfaces such as pavement and driveways will “runoff” from the site. A measure of adaptation to the impending warming trend and higher rainfall intensity stressors is the reduction (or conversion) of impervious areas to pervious “green areas”.

This Climate Change-based stormwater management approach retains on-site small storm events in an attempt to simulate pre-development runoff conditions. *This approach is referred to as Low Impact Development (LID) or Green Infrastructure (GI) for stormwater management* and is an integrated approach that uses site planning and small engineered stormwater controls spatially distributed throughout a development site to capture stormwater runoff at the location or vicinity of its origination. This includes the use of Bio-detention/Bio-retention filters, landscaped (green) roofs, rainwater cisterns, constructed wetlands, underground infiltration chambers and infiltration trench BMPs for stormwater control. Even small, decentralized stormwater management practices like *rain gardens* can make a substantial cumulative difference to the resiliency of an urban watershed.

GI/LID BMPs are a stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation, and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project’s design, especially its landscaping and open space.

The long-term adaptation practice for the Town of Lake Park entails the Town-wide implementation of GI/LID BMP’s. These will include:

- Home Site Level: Rain Barrels and Rain Gardens
- Commercial/Light Industrial Sites: Bio-detention/Bio-retention, Pervious Pavement
- Road/Parking Lot Sites: Bio-Swales, Underground Storage/Infiltration Chambers
- Building Sites: Green Roofs

Figure 5-13 shows the proposed use of roadside swales for 5% of all Town Right-of-Ways as a function of the nuisance flooding locations and drainage system.

The placement of roadside bio-swales will significantly reduce the frequency and occurrence of nuisance flooding as roadside runoff will be captured in the bio-swales prior to entering the stormsewer system for downstream conveyance. It is also proposed to encourage the implementation of rain gardens at the private lot site level. The Town is leading by example through the planned use of rain gardens at the historical Town hall Building along Park Avenue.

A Town Stormwater Masterplan Steering Committee (SC) is in the process of implementing an Outreach Plan that includes the dissemination of Climate Change, Green Infrastructure literature and will also undertake public presentations to encourage the use of rain gardens at the home-site level.



Figure 5-13 Proposed Town-wide Roadside Bio-swales Plan

Exposure Analysis for Regional Canal Flooding Threat

The C-17 Canal is utilized as a major stormwater discharge canal. Excess water in the C-17 Basin is discharged into the Earman River tidewaters and the Lake Worth Lagoon through the S-44 Salinity Control Structure. Climate change-based warming trends and increasing precipitation intensity in the watershed area may result in increased discharges and larger peak flows. Furthermore, the Earman River is subject to tidal fluctuations from the LWL. Increasing Sea Level Rise may also result in higher tail-water controls at the S-44 saline water control structure. Consequently, a higher threat of flood stages can be expected. **Figure 5-14** shows the C-17 canal watershed and the Town of Lake Park boundaries.

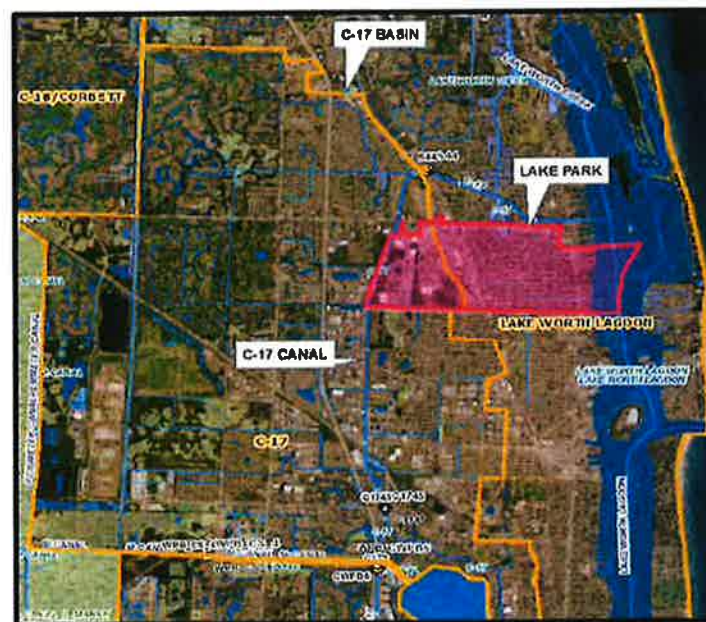


Figure 5-14 C-17 Canal Watershed and the Town of Lake Park Boundary

Measures for Identifiable and Quantifiable Risks Due to C-17 Canal Flooding

Although the Town of Lake Park has not experienced a flood of a 100-year event magnitude to date, the risk of the C-17 Canal overtopping does exist and may increase as a consequence of long-term warming trends and increased rainfall intensities. To address this Risk, the town is enhancing the C-17 Canal Banks and Berms.

Exposure Analysis for Coastal Storm Surge Flooding

The Town of Lake Park eastern boundary is situated along 0.8 miles of the Lake Worth Lagoon (LWL). The LWL is part of the Intracoastal Waterway separating Singer Island from the Atlantic Ocean. The Singer

Barrier Island and the LWL Estuary are directly exposed to tropical and subtropical storm events. A surge forms when strong winds over the ocean combine with low pressure to drive water onshore. Storm surges can produce sea levels much higher than normal high tide, resulting in extreme coastal and inland flooding.

Potential Risks for Coastal Storm Surge Flooding

The most frequent potential risks associated with Tropical Storms and Hurricanes are high intensity winds. However, "storm tides" storm surges can also cause tremendous damage. If they coincide with high tide, storm surges can raise water levels by as much as 20 feet or more above mean sea level.

Coastal surge storm events can have a direct impact on the stormwater management system as it affects all coastal outfalls. The National Flood Insurance Program (NFIP) has mapped the potential from flooding due to coastal storm surges.

These areas are shown on FEMA's Flood Insurance Rate Maps (FIRMS) published as part of the Palm Beach Countywide Flood Insurance Study (FIS). Coastal surge inundation can also impact key town infrastructure including roads, utilities, fire protection and medical facilities (hospitals). **Figure 5-19** shows the FEMA 2019 updated coastal flooding, designated as "V" zones, along the ocean and as SFHA's "AE" along the LWL. Coastal surge inundation can also impact key Town infrastructure including roads, utilities, fire protection and medical (hospital) facilities.

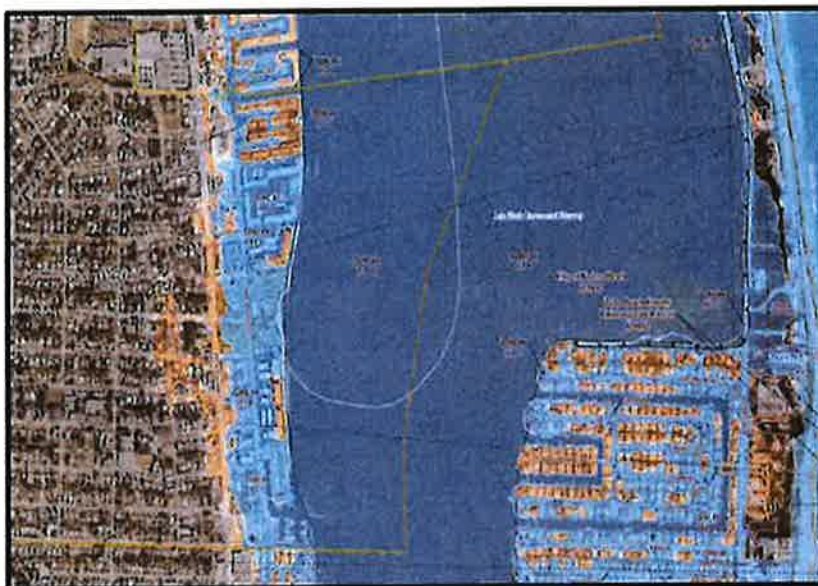


Figure 5-19 2019 FEMA Coastal SFHA's

Exposure Analysis for Coastal Sea Level Rise Flooding

The National Oceanic and Atmospheric Administration (NOAA) indicates that the sea has risen about half a foot since 1970. Sea levels are expected to continue to rise. According to the Southeast Florida Regional Climate Change Compact guidelines, in the short-term, sea-level rise is projected to be 36 inches by 2060 (above the 1992 mean sea level). In the long-term, sea-level rise is projected to be 31 to 61 inches by 2100. For critical infrastructure projects with design lives in excess of 50 years, use of the upper curve is recommended with planning values of 34 inches in 2060 and 81 inches in 2100. **Figure 5-23** shows the Sea Level Rise Progression through 2060.

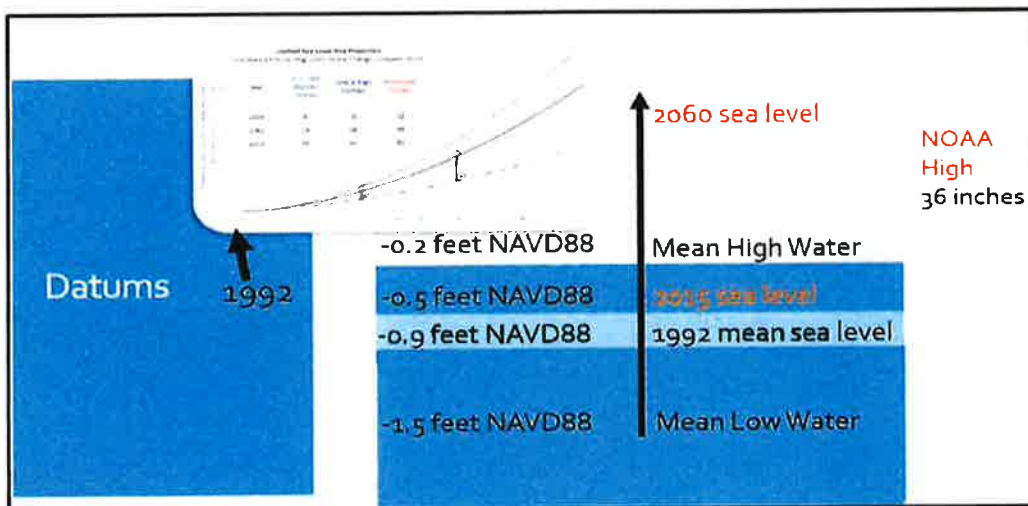


Figure 5-23 Sea Level Rise Progression Through 2060

Potential Risks for Coastal Sea Level Rise Flooding

SLR inundation is often confined to marginal areas of properties, impacting existing drainage infrastructure. The Lake Shore Drive ROW area and commercial and multi-family (condominium buildings) parking lots will be at risk of flooding with potential for first floor elevation flooding in older buildings and homes.

Measures for Risks Due to Tidally Influenced Sea Level Rise Flooding

The SWMP addresses the need for resilience planning to adapt to SLR impacts, and the need to assess any existing stormwater infrastructure along the Town boundaries impacted by tides (South Lake and LWL outfalls), as well as the town’s seawall. There is also a need to install in-line valves and/or pump stations to address the higher tide levels and inland flooding. There are three (3) outfalls to South Lake (Earman River) and eight (8) outfalls to the LWL, and three (3) to the C-17 canal. As part of the SLR Adaptation process, the town is implementing a project to provide flood relief to the Lake Shore Drive coastal areas

subject to SLR flooding. With funding assistance from the Florida Department of Environmental Protection (FDEP) and FEMA's Hazard Mitigation Grant Program (HMGP), the Town is in the final process of implementing the \$6.2 million Lake Shore Drive Drainage Improvement Project. **Figure 5-31** shows the project area.



Figure 5-31 Lake Shore Drive Drainage Improvement Project

Figure 5-32 shows the SLR pump station site for the Lake Shore Drive Drainage Improvement project.

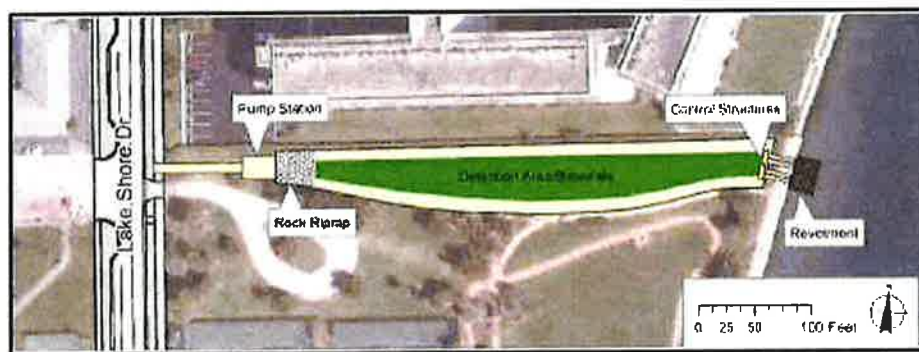


Figure 5-32 Pump Station for Lake Shore Drive Drainage Improvement Project

An additional adaptation project includes the retrofit of the 72" outfall. The Southern Outfall Drainage Improvement Project is under design and has been proposed for implementation funding to the Palm Beach

County Local Mitigation Strategy (LMS) group. FEMA has indicated that funding of this second costal SLR project is also viable in the FY2022 period. This project will also include a pump station to address future SLR.

The Town also applied and was successful in obtaining a grant from the Florida Resilient Coastlines Program to assess the vulnerability of the Town's system of bulkheads and seawalls along the LWL waterfront. The grant was used to perform a physical survey of the seawall to establish top elevations, and to assess the structural integrity of the seawall and bulkheads. The grant was also used to perform a detailed SLR inundation analysis using survey data and the latest (2017) LiDAR data from Palm Beach County.

Figure 5-34 shows the location of the proposed seawall vulnerability assessment project in relation to the Lake Shore Drive Drainage Improvement Project.



Figure 5-34 Proposed Seawall Assessment Project Location

Other future proposed SLR Adaptation projects include the SLR Retrofit of three (3) additional outfalls to South Lake and the Earman River using In-line check valves. These project proposals will be developed in conjunction with the proposed C-17 Canal top of berm hardening project.

Section 6 Operations and Maintenance (O&M) Program Review

6.1 Organizational Structure, Mission & Equipment

Stormwater operations and maintenance is a function of the Public Works Department. The Town of Lake Park Public Works Department is organized into seven (7) divisions to maintain the town's roadways, buildings, fleet, grounds, parks, and drainage infrastructure.

1. *Administration Division*
2. *Sanitation Division*
3. *Grounds Maintenance Division*
4. *Facilities Division*
5. *Vehicle Division*
6. *Streets and Roads Division*
7. *Stormwater Division*

The Town is responsible for and committed to operating and maintaining a storm sewer network, comprised of swales and stormsewer pipes with a wide range of diameter and material, as well as other infrastructure such as storm inlets, manholes, and outfalls.

Figure 6-1 shows the extent of the drainage system.



Figure 6-1 Town of Lake Park Stormwater/Drainage System by Basins

Stormwater O&M staff are deployed daily to perform scheduled activities, many of which are associated with NPDES MS4 permit compliance and are available 24 hours a day for emergency situations. Services provided by Stormwater O&M staff for MS4 permit compliance include, but are not limited to the following:

- Litter control programs;
- Street sweeping;
- Completion of various flood control and retrofit projects;
- Controls and programs to minimize water resource impacts resulting from application of pesticides, herbicides, and fertilizer;
- Prevention and enforcement actions for illicit discharges;
- Staff training on spill response;
- Inventory and enforcement (as needed) for high risk facilities;
- Controls and actions for reducing impacts from runoff for construction sites; and
- Staff training regarding various methods to prevent non-point source pollution.

In order to help meet its service commitments, the Stormwater Division staff has been provided with the following equipment to perform the assigned duties:

- 2009 Vac-Con Vacuum truck
- Tymco model 600 Street sweeper
- 2006 New Holland LS190 skid steer loader
- ¾ ton Chevy pickup truck
- 12' manhole ladder
- 2000-watt generator w/ confined space ventilation
- Miscellaneous electric power tools
- Miscellaneous hand tools

6.2 Recommended SOP's & Contracting Procurement Procedures for O&M

WRMA reviewed Standard Operating Procedures (SOP's) for stormwater system operation and maintenance applied by municipalities similar to the town's size, location, and resources, and compiled a list of SOPs that are recommended for adoption by the town's O&M Division. The SOP list is to be used as a resource and for adaptation of specific O&M issues.

6.3 Recommended Guidelines for O&M of Green Infrastructure-Based Drainage

The SWMP update will be based on the application of Green Infrastructure Low Impact Development (GI/LID) Best Management Practices. Low Impact Development (LID) is a planning and design approach that aims to mimic naturalized water balances. GI/LID BMPs include bioretention, bioretention, bioswales, rain gardens, pervious pavements, and green roofs.

6.4 O&M Stormwater Rehabilitation Practices Review

A review of town’s repair and replacement rehabilitation program was performed including review of the process for acquisition of stormwater system condition assessment (CCTV) data. Condition assessment data acquisition and technical requirements have been developed as a part of the O&M activity of the SWMP in order to establish a standardized process for the collection of inspection and condition assessment data.

Condition Rating Scale and Use

Similar to the inspection process, the summary output from the inspections of an overall asset condition rating should be standardized. The overall linear asset condition score should take into account the number of defects identified, the type of defects and the severity of those defects. This is how the NASSCO system produces a condition rating for PACP and MACP inspections. The condition scores should be grouped into a condition grade classification that provide basic recommendation(s) for further action. **Table 6-3** provides a recommended condition rating scale; this scale is aligned with the NASSCO 1 to 5 rating scale.

Table 6-3 Stormwater Pipe, Inlet & Manhole Asset Condition Rating Scale

Condition grade	General description	Detailed description	Recommended inspection frequency ^a
0	New or excellent condition	Asset with no defects. No action needed.	No more frequent than the inspection cycle period
1	New or excellent condition	Asset with very few minor defects. Inspection frequency would be at the end of the planned system inspection cycle period.	No more frequent than the inspection cycle period
2	Good condition – minor defects only	Asset in good structural and maintenance condition but there are several minor defects or one or two more moderately severe defects. Inspection frequency could be 60 to 80% of the planned system inspection cycle period.	60-80% of inspection cycle period
3	Fair Condition – moderate deterioration	Defects have degraded to a moderate level and are affecting the performance of the asset. Could be a combination of a number of minor and moderate defects. Point repairs or maintenance could be required. Inspection frequency should be within a 3 to 5 year time frame.	3-5 years
4	Poor condition – significant deterioration	Several moderate defects and at least one or more major defects. Point repairs or maintenance may correct deficiency or may need more comprehensive repair or replacement such as lining. May need frequent maintenance. Inspection frequency should be within a 1 to 3 year time frame.	1-3 years
5	Failing or failed asset	Several severe defects are found in most sections of the asset. Replacement, comprehensive rehab, should be scheduled. Emergency repair may be required. Inspection frequency should be on a monthly basis and no greater than one year.	<1 year

Section 7 Water Resources Engineering Modeling Science

7.1 Software & Model Selection

Model Methodology & Availability

The purpose of stormwater and water quality modeling is to mathematically predict natural processes. Models range from simple spreadsheets that predict a single process to complex simulations that predict multiple, inter-related processes, including performance of multiple BMPs.

The Town of Lake Park watershed is urban in nature and almost completely developed with residential, commercial, and light industrial land uses. Green or grassed areas are found along swales in wide (60 ft) right-of-ways and at a large park along the waterfront (Kelsey Park). This indicates that an urban-type hydrologic model is required for the development of the Town's stormwater masterplan.

The Interconnected Pond Routing (ICPR 4) Hydrological/Hydraulic/Hydrodynamic Model

WRMA recommended the use of the ICPR4-2D model as a basis for development of the Town of Lake Park model. ICPR4-2D is an integrated surface/groundwater model that describes the unsaturated zone. ICPR-2D allows for detailed hydrodynamic simulation of wetlands, reservoirs, culverts, structures, gates, pumps, an interconnected network of canals, ponds, reservoirs, and wetlands such as found in the Town of Lake Park study area.

WRMA utilized the ICPR4-2D model for storm event 1 and 2D simulation to address flooding problems, and to develop a long-term, continuous basin-scale water budget/hydraulic model for studying water management during low, average, and high flow, and during extreme event conditions. This model will also be used to develop short- and long-term water management strategies to address current flooding issues and to meet the objectives of the Stormwater Management Plan.

Model Development Hydrology

New advances in digital topographic terrain mapping using high resolution Light Detection and Ranging (LiDAR) allows for the detailed breakdown of sub-catchment contributory drainage areas. Using the LiDAR DEM, WRMA used ArcHydro-based GIS techniques to delineate 174 new sub-catchments. The delineation methodology entailed the computation of a contributory drainage area to stormsewer pipes 15 inches or larger in diameter to obtain a manageable number of sub-basins. In this manner, drainage areas were created for most of the pipes in the Town's drainage systems. If there is a need to assess the capacity of a 12-inch diameter pipe, the sub-basin area can easily be updated or re-partitioned. **Figure 7-3** shows the updated sub-basin areas.



Figure 7-3 Updated Basins for the Town of Lake Park

The ICPR4 model was also run for specific storm events for the purpose of level of service (LOS) analysis. **Table 7-3** includes design storms depths to be based on simulations based on Atlas 14 Point rainfall estimates:

Table 7-3 NOAA Atlas 14 Point Rainfall for Various Frequencies and Durations

Frequency / Duration	Rainfall (in)
3-Year / 1-Hour	2.6
3-Year / 24-Hour	6.5
10-Year / 24-Hour	9.2
25-Year / 72-Hour	13.3
100-Year / 72-Hour	18.3
500-Year / 72-Hour	25.6

7.2 Water Quality Assessment

NPDES/MS4 Permit Program

The Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) permit allows a permittee to discharge stormwater from its stormwater collection and conveyance system into a receiving water owned by the state and/or federal government. The permit is issued with detailed requirements that are intended to reduce stormwater pollutant discharges into receiving water bodies.

Program Goals

The Town of Lake Park must file a Cycle Assessment MS4 Plan and an MS4 SWMP Assessment Program Annual Results Report. The purpose of this assessment program is to provide information for the Town of Lake Park to determine the overall effectiveness of its Stormwater Management Program (SWMP) in reducing stormwater pollutant loadings from its Municipal Storm Sewer System (MS4) to receiving water bodies.

Town of Lake Park Water Quality Monitoring Program

As a co-permittee of the Palm Beach County NPDES/MS4 permit program, the Town of Lake Park collects quarterly ambient water quality data throughout the Town at four (4) designated sampling sites. As required by the MS4 Permit, the Town utilizes an FDEP approved lab using NPDES-approved procedures to perform quarterly sampling at these locations for five test parameters, including Chlorophyll-A, Dissolved Oxygen (DO), Total Phosphorus (TP), Total Nitrogen (TN), and Total Suspended Solids (TSS). **Figure 7-24** shows the location of the four sampling sites.



Figure 7-24 Town of Lake Park NPDES Sampling Location Sites

Pollutant Loading

Figure 7-44 shows the Town of Lake Park MS4 areas as a function of the receiving water bodies for which pollutant discharges are being monitored as part of the Palm Beach County NPDES Group permit. The

western MS4 areas discharge toward the C-17 Canal, and the eastern MS4 areas discharge toward the Earman River/Lake Worth Lagoon (LWL).



Figure 7-44 Town of Lake Park NPDES/MS4 Area

The purpose of the Town of Lake Park Water Quality Assessment Program, as a participant within the Palm Beach County NPDES/MS4 Group Permit, is to provide information for the Town of Lake Park to determine the overall effectiveness of its Stormwater Management Program in reducing stormwater pollutant loadings from its Municipal Storm Sewer System (MS4) to the C-17 and LWL receiving water bodies.

Evaluation and Response Plan

The Town of Lake Park is in the process of updating the Stormwater Masterplan (SWMP) with the proposed implementation of Green Infrastructure, Low Impact Development (GI/LID) Best Management Practices such as bioswales, raingardens, bioretention, pervious pavement, etc. The implementation of GI facilities Town-wide will significantly enhance the Plan's effort to reduce pollutant loading to the LWL north watershed. Various scenarios were studied and are based on the physical availability of green areas and cost of implementation. One of these scenarios contemplates placing bioswales in approximately 5% of all road rights-of-way in the Town. Although the 5% Bioswales program will be implemented completely within the town right-of-way and targeted to areas of known road flooding, the final placement of each roadside

bioswale will be coordinated with the Public Works Department and with residents to address any issues of swale repurposing (i.e., if trees or other structural features are located in target roadside swales).

Section 8 Alternatives Analysis

8.1 Drainage Level of Service (LOS) Analysis

Level of Service

The level of service an urban drainage system provides is dependent on multiple variables. This includes but is not limited to the rate of urbanization, the required frequency of routine sewer/street maintenance and review (asset management), sewer design life, the occurrence of natural disasters and climate change.

Town of Lake Park Drainage System

The Town's stormwater collection system is composed of over 12 miles of storm sewer ranging in materials and size from 8 inches to 72 inches in diameter and serving a drainage area of approximately 1,000 acres (70% of the Town). In general, pipes are between 15 inches and 36 inches in diameter, with only 10% being 42 inches or larger. The size threshold for the hydraulic model was selected to be 15 inches (or equivalent) and greater, which represents 95% of the stormsewer system.

Types of Level of Service

In stormwater management there are four basic levels of service.

1. The level of flooding for a local drainage system of storm sewers, ditch inlets, swales, and driveway culverts.
2. The level of flooding that will overtop a local road used for daily ingress and egress to private and public property.
3. The level of service associated with the overtopping of a stormwater management system of lakes, ponds, and control structures serving a designated watershed area.
4. The level of service associated with flooding of the first floor of habitable property.

Local Drainage System Level of Service (3-year, 24-hour)

The level of flooding for a local drainage system of storm sewers, ditch inlets, swales, and driveway culverts, varies depending on location, topography, soils, and drainage system infrastructure efficiency. "Nuisance Flooding" has a typical ponding depth of less than 4 inches. **Figure 8-3** shows documented frequent nuisance flooding locations as a function of the existing system of stormsewers and inlets.

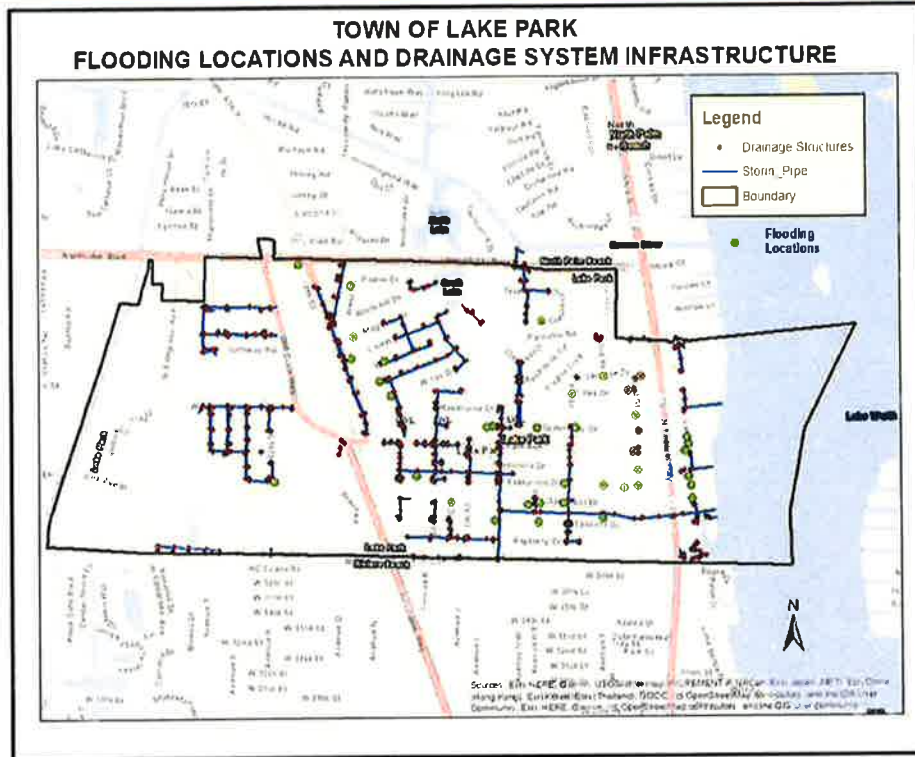


Figure 8-3 Lake Park Nuisance Flooding Locations

Sources of nuisance flooding can be traced to an underperforming stormwater management system, high (king) tides/sunny day flooding, and lack of drainage infrastructure.

Topography

To model overland surface flows, a Digital Elevation Model (DEM) is required, which characterizes the topography. A DEM raster of the Town was obtained from the Palm Beach County Light Detection and Ranging (LiDAR) point cloud data. The Interconnected Pond Routing Model (ICPR), the model selected for the development of the Town's H&H model, has the capability of modeling 2-dimensional ground water flows in addition to overland surface flow.

Boundary Conditions

The Town of Lake Park is bounded by the Lake Worth Lagoon to the east and (functionally) bounded by the C-17 Canal to the North. Several sewer networks within the Town also discharge to a system of stormwater retention ponds to the west along W. Congress Ave. These three water bodies affect the tailwater condition of Lake Park's stormsewer network and as such, are critical aspects to be modeled.

Existing Condition Analysis

The “existing condition” refers to the functioning of the current drainage system of stormsewers, exfiltration trenches, roadside swales, ditch, and curb inlets. The ICPR4 hydrologic and hydraulic model was selected to perform the required simulations. The purpose of the Hydrologic & Hydraulic (H&H) analysis is to determine the peak flow in cubic feet per second (cfs) and the flood stage (feet) for each subbasin of analysis. The resulting flow and stage data are indicative of the LOS being provided by the drainage system under current or existing conditions. To assess the results of the H&H analysis, the ICPR4 model has been applied in a 2-dimensional mode to be able to visually depict the level of flooding at a given location in the watershed.

Existing Condition Analysis – Current Rainfall w/o Sea Level Rise

3-year, 24-hour Design Storm Event Analysis

The ICPR4 model was applied in hydrodynamic (time variant) mode to assess the response of the existing drainage system to 6.5 inches of rainfall corresponding to a 3-year, 24-hour Storm Event. **Figure 8-23** shows the results of the simulation.



Figure 8-23 Maximum Flood Depths for the 3-Year/24-Hour Storm Event

Figure 8-23 shows that there are six (6) locations of concern where flooding can accumulate to a depth of 2 to 3 feet as the result of a 3-Year, 24-Hour storm, which would produce an average point rainfall of

6.5 inches. Readily visible is the fact that most flooding occurs along the main trunk of the Southern Outfall system serving a watershed area of 318 acres. Flooding is also evident along the stormsewer system discharging to South Lake.

10-year, 24-hour Design Storm Event Analysis

The ICPR4 model was applied in hydrodynamic (time variant) mode to assess the response of the existing drainage system to 9.2 inches of rainfall corresponding to a 10-year, 24-hour Storm Event. **Figure 8-26** shows the results of the simulation.



Figure 8-26 Maximum Flood Depths for the 10-Year/24-Hour Storm Event

Figure 8-26 indicates that the flooding resulting from a 10-Year, 24-Hour storm event will result in increased flood depths primarily around South Lake (over 2.5 feet). The main purpose of the 10-year, 24-hour storm event simulation is to assess the level of service the current drainage system affords to local roads and collectors throughout the Town. As **Figure 8-26** indicates, there are many roads that will be overtopped by the 10-year, 24-hour storm event. Eleven mile of roads or 58,640 feet, will be flooded in the town. Totalling approximately 64 miles of roads, this corresponds to 17.3% of all roads.

The ICPR4 model was applied to simulate a 100-year, 72-hour storm event of 18.3 inches of rainfall. **Figure 8-29** shows the 100-year flood extent. As with the 10-year, 24-hour storm event simulation, flooding resulting from the 100-year, 72-hour storm event is more widely experienced along the Southern Outfall

but more specifically concentrated around South Lake. Many dwellings in the town were built in the 1970's and 1980's with finished first floor elevations at or just above the road centerline with high flooding potential. The purpose of the 100-Year, 72-Hour Storm Event simulation is to assess the level of inundation that will result and the number of dwellings that may be temporarily flooded above the first-floor elevation.



Figure 8-29 Maximum Flooding Depths for the 100-Year/72-Hour Storm Event



Figure 8-30 Structures Identified to be Flooded due to a 100-Year/72-Hour Storm Event

Figure 8-30 provides the model simulation result of the 100-Year/72-Hour storm. The result indicates that numerous structures throughout the Town of Lake Park would be flooded as a result of a 100-Year Storm Event (1% Annual Exceedance Probability). There are 558 inundated buildings affected by the 100-year storm event.

While it would be difficult and costly to elevate all affected dwellings above the predicted 100-year, 72-hour flood stages, the Town through its Community Rating System (CRS) efforts as a participating community in the National Flood Insurance Program, has made it possible for owners to obtain affordable federally backed flood insurance policies.

It should be noted that the 100-year Base Flood with a 1% probability of occurrence has not yet occurred in the Town of Lake Park based on the available record, and the probability of experiencing a storm of that magnitude (18.3 inches of rain in 3 days) is extremely small.

8.2 Development of Alternatives

The existing condition analysis indicates that there are many locations throughout the Town that currently experience flooding or ponding due to Level of Service deficiencies within the stormwater management system. As the result of a historically unplanned development process, too much runoff is directed at specific locations overwhelming the capacity of the existing stormsewers.

The 2-dimensional nature of the ICPR4 model allows the assessment of localized solutions at the sub-catchment level or at the basin level for aggregated sub-catchment areas. This is the main reason for re-distribution of the original 26 sub-basins into 174 sub-catchments.

Organizational Structure of Proposed SWMP Improvement Projects

Proposed stormwater infrastructure improvement project alternatives within the Stormwater Masterplan are organized by lettered “Divisions”. Each Division represents a major improvement project, or in some instances groupings of smaller improvements projects. Each lettered divisional project will be implemented based on funding availability and the priorities of the Commission. Projects assigned a divisional letter have typically been developed beyond the conceptual stage and are either already funded or may currently have submitted (or pending) applications in process for grant funding. **Figure 8-31** shows the locations of Divisional projects that currently have an assigned letter.



Figure 8-31 Current Divisional Projects in Progress (or Development)

Alternatives to Address Inadequate LOS Due to Lack of System Capacity

Figure 8-31 shows a significant amount of flooding along Lake Shore Drive located parallel and east of US Highway 1 at the Town's waterfront. This is a special type of flooding as the lack of stormsewer system capacity along Lake Shore Drive is compounded by the influence of high tides and Sea Level Rise (i.e., high tailwater condition for discharge). Lake Shore Drive frequently becomes impassable during rainstorms and "king tides" for varying periods of time. The roadway has become a safety concern to residents requiring EMS, fire, and police services.

Division D – Lake Shore Drive Drainage Improvements

Project Objective: To address flooding and system capacity issues along Lake Shore Drive and provide Sea Level Rise Mitigation and Water Quality Treatment prior to Discharge into the Lake Worth Lagoon.

Division C – Southern Outfall Replacement and Green Infrastructure Improvements

Project Objective: To replace a portion of the existing 72" outfall pipe previously installed in the early 1970's and provide water quality treatment prior to discharge into the Lake Worth Lagoon.

Division B – Southern Outfall Diversion: Bostrom Park Renewal & Green Infrastructure Project

Project Objective: Upstream Diversion to Bert Bostrom Park Subsurface Storage Filtration Facility and Park Renewal.

Division E – Lake Park Municipal Complex Pavement Restoration and GI Improvements

Project Objective: Pavement restoration of the Municipal Complex parking lot, as well as the addition of additional drainage infrastructure to accommodate a green infrastructure facility on the southwest corner.

Sea Level Rise Mitigation Studies

South Lake Sea Level Rise Flooding Assessment Study. The entire South Lake watershed area is low in elevation and increasing Sea Level Rise will adversely affect any type of discharge into the lake. Further investigation will assess the potential placement of a tide barrier at the connection of South Lake and the Earman River.

Town of Lake Park Vulnerability, Risk and Adaptation Study. The assessment entails the physical examination of the Seawalls and bulkheads through the Town waterfront, including topographic surveying, structural coring, and tie-back excavation. The data will be used to prepare inundation mapping of the Town per seawall overtopping at intervals through the year 2027 when approximately 40” of SLR is expected along the waterfront.

Alternatives to Address Inadequate LOS Due to Lack of a Drainage System

There are many locations that lack a dedicated drainage system. Runoff from these areas tends to accumulate in low lying depressions at intersections along grassed areas. These are nuisance flooding locations that will be addressed with a combination of GI/LID BMP’s including Raingardens and Bioswales.

Division A – 10th Street Corridor Restoration and Green Infrastructure Improvements

Project Objective: Pavement Restoration of the 10th St ROW corridor and installation of a drainage system via Green Infrastructure BMPs.

Division F – C-17 Canal Berm Flood Protection Improvements

Project Objective: To remove the existing areas East of the C-17 Canal from the existing FEMA Flood Map, by increasing the top of berm elevation along the East Bank of the C-17 canal.

Division G – 2nd Street Corridor Roadside Swale and Green Infrastructure Improvements

Project Objective: To install bio-retention planters and grade a roadside swale system along both sides of the Right of Way and at each intersection along 2nd Street to alleviate nuisance flooding at multiple intersections.

Projects in Early Development to Address Lack of a Drainage System

Bio Detention and Bio-Swale Design

Project Objective: Per the SWMP objectives, to add new drainage infrastructure, or improve existing drainage infrastructure through the implementation of green infrastructure facilities town wide.

Flagler Drive and Northlake Boulevard Flooding Relief Project: The Flagler Drive and Northlake Blvd. intersection area is known to experience periodic flooding with significant storm events. Placement of Bioswales or underground infiltration trenches along the intersection of Flagler Drive and Northlake Blvd. may be contemplated per consultation with the O&M staff.

Federal Highway Green Infrastructure Facilities: Redevelopment of approximately 800 acres along the ROW of US Highway 1 from Palmetto Drive to Silver Beach Road. This growth area of potentially multiple high-rise condominiums and commercial shops could accelerate/increase the discharge of untreated runoff to the LWL. To address these water quality issues, it is envisioned that GI/LID Biodetention facilities be installed at all road intersections to the US Highway 1 corridor.

Prosperity Farms Rd Commercial Area Drainage Improvements: Address the untreated runoff from an approximately 150 acre urban and commercial drainage area discharging to South Lake and the Lake Worth Lagoon.

Evaluation of Alternatives

The H&H modeling assessment has demonstrated that drainage LOS is deficient for all stormsewer systems and drainage retrofit alternative projects need to be prioritized for five (5) key areas where flooding depths can reach over 4 inches for the 3-year, 24-hour design storm event:

- Div A – 10th Street Corridor (60% design already underway)
- Div B – 6th Street and Cypress Drive/Bostrom Park (60% design project underway)
- Div C – Southern Outfall 72" CAP Replacement and GI Facility (100% design underway)
- Div D – Lakeshore Drive Drainage Improvement Project (In Construction)
- Div G – 2nd Street Corridor (part of 5% Roadway Bioswale Program / Grant Application Pending)

Matrix Development

The current choice of alternative projects will take 3-5 years to implement. The choice of additional alternative projects to be developed for the SWMP implementation per the Division concept will be refined

working jointly with Town staff and elected commissioners to agree upon a matrix and methodology for evaluation.

8.3 Alternative Design Prioritization & Recommendations

Flood damage has been estimated as a function of LOS for the 3-year/24-hour, 10-year/24-hour, 25-year/72-hour, and 100-yr/72-hour design storm events. A list of initial (3-5 years) alternative projects has been formulated.

Traditional CIP prioritization of retrofit rehabilitation alternatives using the standard Benefit/Cost analysis is not sufficient as it does not take into account the condition or the criticality of the system of pipes being analyzed. Asset Management-based Condition and Criticality assessment methodology will be performed to prioritize projects and has already been applied to qualify the expedited implementation of the Southern Outfall Phase 1 (72" CAP Outfall Replacement). The condition assessment results and the criticality of cost of expected damages resulted in the immediate implementation of the project through Stormwater Utility funding.

Cost Estimates

In addition to projects already considered in FY2020 and projected for implementation in the FY2021-FY2025 planning period, there is a need to perform preliminary cost estimation for project implementation during the 20-year planning horizon of the SWMP update program. The proposed Town of Lake Park SWMP update is based on two premises:

1. Continued renewal of the existing stormsewer system via field survey (condition assessment/CCTV inspections) and trenchless CIPP repairs, and occasional (emergency) open cut replacement.
2. Implementation of Green Infrastructure/Low Impact Development (GI/LID) Best Management Practices (BMPs) such as rain gardens, bioswales, bioretention, underground infiltration chambers, and porous pavement.

Stormwater Linear System O&M Renewal Cost

Asset Management principles indicate that renewal of stormsewer linear assets entails three types of activities: Rehabilitation, Repair, and Replacement.

System Rehabilitation Data & Typical O&M Costs

The Data Collection & Management Task identified the stormwater/drainage system infrastructure elements. Table 8-11 and Table 8-12 provide summary statistics for the system’s hydraulic structures and pipes per type and material.

Table 8-11 Town of Lake Park Storm System Structures by Type

Curb Inlet (C)	Ditch Inlet (D)	Closed Flume Inlet (F)	Gutter Inlet (G)	Manhole (M)	Null Structure (N)	Endwall (W)
67	401	0	3	107	5	6
Total 589 Structures						

Table 8-12 Town of Lake Park Storm System Pipes by Type

Pipe Diameter (in)	RCP (ft)	HDPE (ft)	CAP (ft)	Metal (ft)	PVC (ft)	Total (ft) (%)
8	-	-	48	-	238	286 (0.51)
10	-	36	-	-	-	36 (0.064)
12	451	927	251	16	39	1,684 (3.0)
15	12,889	3,163	597	119	-	16,768 (29.8)
18	5,229	2,851	75	-	-	8,155 (14.5)
24	7,095	1,713	54	391	-	9,253 (16.5)
30	7,893	559	-	172	-	8,624 (15.3)
34	729	-	-	-	-	729 (1.3)
36	4,367	482	520	603	-	5,972 (10.6)
42	545	-	54	-	-	782 (1.4)
48	1,305	-	237	-	-	1,542 (2.7)
54	894	-	-	-	-	894 (1.6)
60	1,516	-	-	-	-	1,516 (2.7)
72	-	-	162	-	-	162 (0.29)
Total Length (ft) (%)	42,913 (76.33)	9731 (17.31)	1,998 (3.55)	1,301 (2.31)	277 (0.5)	56,220 ft (10.65 miles)

As shown in Table 8-11 and Table 8-12, the Town's existing drainage system consists of approximately 10.6 miles of stormsewers and 589 hydraulic structures, with drainage pipes ranging in size from 8-inch to 72-inch in diameter. A total of 6,900 and 3,972 feet or 10,872 feet of the system has already been field-surveyed and CCTV'd as of FY2019. A remaining amount of 45,209 feet or 80.6% (56,081-10,872) of stormsewers need to be cleaned and televised, with an estimated cost of \$363,276.00.

System Rehabilitation Implementation Cost

CIPP is the preferred option to repair storm pipes, as it can be installed in larger runs. Slip-lining is useful in more limited applications, particularly where access is difficult, like under roads or for outfall repairs. The average Florida CIPP lining costs range from \$89.14/LF to \$685.83/LF.

The Town PWD/O&M staff has indicated that approximately 71% of the stormswers linear infrastructure has already been rehabilitated via CIPP trenchless or selected open cut methodology. Assuming that 29% of the remaining system of 45,209 feet of stormsewers would need rehabilitation, the cost for Cured in Place (CIPP) lining of the sewers would be **\$1,805,819** over the 20-year SWMP update planning period. This translates into a **\$90,291.00** per year expenditure beginning in FY2021.

Cost of Green Infrastructure Implementation

The proposed SWMP update does not contemplate adding any additional stormsewers to the system to address lack of capacity. Instead, the stormsewer system will be decentralized and emphasis will be put into retaining or detaining runoff at its source.

Green Infrastructure/Low Impact Development Implementation Cost

The Town of Lake Park has approximately 64 miles or 337,920 feet of road right-of-ways. Per previous assessments, approximately 5% of this total is impacted by some type of nuisance flooding often at road intersection and low points. Estimated costs for bioswale installation vary depending on key factors such as the depth to the water table, the type of soils beneath the topsoil horizons, and the depth and width of the swale design. Assuming that 5% of the Town's swales will be converted to bioswales, the estimated cost would be **\$3,801,600**.

Biodetention/Bioretenion Cost

WRMA has identified Town-owned lot locations totaling approximately five (5) acres that could potentially be used as biodetention/bioretenion facility in combination with other BMP's. The cost of development of these facilities is estimated to be **\$2,613,000**.

Typical Subsurface Storm Chamber Specifications

Subsurface storm infiltration chambers can only be applied where there is adequate depth to the water table. The design is modular and adjustable to irregular spaces and requires the design of inflow and outflow control structures. The estimated cost of the 6th Street & Cypress Underground Chamber Facility is **\$3,500,000**.

Typical Rain Tree Specifications

A typical Rain Tree is a tree with underground root grids for runoff capture. The estimated cost is between \$3,000 and \$5,000. The estimated cost of 40 Rain Trees is **\$80,000**.

Typical Pervious Pavement Specifications

A median cost for pervious installation is \$4.00 per square foot. Approximately 1,000 linear feet of pavement or 25,000 square feet will be converted to permeable road surface, with an estimated cost of **\$100,000**.

Total Estimated Preliminary Construction Cost: \$13,595,200.00

Table 8-16 Total Projected Preliminary Cost of GI/LID Implementation

GI/LID ITEM	COST
BioSwales	\$ 3,801,600.00
BioDetention	\$ 2,613,600.00
Subsurface Storm Chambers	\$ 7,000,000.00
Raintrees	\$ 80,000.00
Pervious Pavement	\$ 100,000.00
Subtotal 1	\$ 13,595,200.00
Design (10% of Subtotal Cost)	\$ 1,359,520.00
Permitting (7% of Subtotal Cost)	\$ 951,664.00
Design & Permitting Subtotal	\$ 2,311,184.00
Mobilization (5% of Total Cost)	\$ 679,760.00
MOT (3% of Total Cost)	\$ 407,856.00
Contractor OH, Profit & Risk (25% of Total)	\$ 3,398,800.00
Construction Subtotal	\$ 4,486,416.00
Subtotal 2 (Design, Construction)	\$ 20,392,800.00
Contingency (5% of Subtotal 2 Cost)	\$ 1,019,640.00
Owners Reserve/Allowance (5% of Subtotal 2 Cost)	\$ 1,019,640.00
Total Cost (Over a 20 Year Period)	\$ 22,432,080.00

The total cost of GI/LID implementation is **\$22,432,080** over a planning period of 20 years (**Table 8-16**). However, this estimate includes a HUD CDBG grant of \$3.5 million (applied to FY2020) for underground filtration chambers at Bert Bostrom Park, Phase 2 of the Southern Outfall. If the HUD CDBG grant funding

is secured, the SWMP program implementation is approximately \$970,000 per year over the next 20 years. If not secured, the annual estimated cost of the SWMP program implementation is approximately \$1.1 million per year over the next 20 years.

Recommendation of Alternatives & Funding

A preliminary cost estimate for a 20-year O&M Rehabilitation and Green Infrastructure Implementation Plan has been prepared. Final recommendations will be made upon review and discussion with Town staff and elected officials. The list of recommended projects for the FY2021-FY2025 implementation planning period include:

(FY2021) Division A – 10th St Corridor Restoration & Green Infrastructure Project

Project Description: A system of Bioswales and underground infiltration chambers will be placed along 10th Street south of Park Avenue to Silver Beach Road.

(FY2021) Division B – Bostrom Park Renewal & Green Infrastructure Improvements

Project Description: A large system of underground infiltration chambers will be placed at a regional recreational park located between 6th and 7th Street north of Bayberry Road.

(FY2021) Division C – Southern Outfall Replacement & Green Infrastructure Improvements

Project Description: Replacement of an aging 72-inch corrugated aluminum pipe (CAP) with an in-kind high-density polyethylene (HDPE) outfall, inline valve and Sea Level Rise pump station and the placement of a large Bio-detention facility for water quality treatment.

(FY2021-FY2022) Stormsewer System Rehabilitation

Project Description: The SWMP includes the rehabilitation of the existing stormsewer system of pipes, inlets and catch basins. Three projects for the implementation of Cure-In-Place-Pipe (CIPP) trenchless have been scheduled.

(FY2022) Division G – 2nd Street Corridor Drainage and Green Infrastructure Improvements

Project Description: The second street corridor was selected as a priority project based on periodic shallow flooding along 2nd Street at the intersections of Evergreen Dr., Foresteria Dr., and Ilex Dr.

(FY2022) Division E – Park Ave Municipal Complex Pavement Restoration & GI Improvements

Project Description: Water quality treatment at the Town Hall Municipal Complex.

(FY2023) Division F – C-17 Canal Berm Flood Protection Improvements

Project Description: Increasing height of C-17 Canal Berms to avoid berm overtopping and 100-year flooding of commercial and residential property along the Canal.

(FY2023-2025) Multi-Divisional – 5% Roadway Bioswales Program

Project Description: The 5% roadway Bioswales program will be implemented in a 20-year period. Every year, the CIP list will include new locations that are coordinated with the available grant funding process.

Section 9 Stormwater Utility Administration and Funding Sources

9.1 Stormwater Utility Program Review

On August 6, 2008, The Town of Lake Park created and implemented (by ordinance) a stormwater management utility to fund the cost of operating and maintaining the Town’s drainage system, and to provide for financing necessary repairs, replacements, and improvements.

Purpose of the Stormwater Utility

The stormwater utility was established by the Town of Lake Park Commission to:

- A. Provide effective management and financing of a stormwater management system within the Town.
- B. Provide a mechanism for mitigating damaging effects of uncontrolled and unplanned stormwater runoff from a water quality and water quantity standpoint.
- C. Provide for the safe and efficient capture and conveyance of stormwater runoff and the correction of stormwater problems.
- D. Authorize the establishment and implementation of a master plan for stormwater drainage including design, coordination, construction, management, operations, maintenance, inspections, and enforcement.
- E. Establish a reasonable stormwater management assessment based on each property’s estimated contribution of stormwater runoff to the system and the benefit derived by each property from the use of the facilities of the system.
- F. Encourage and facilitate urban water resources management techniques, including but not limited to the retention-detention of stormwater runoff, minimization of the need to construct storm sewers and the enhancement of the environment.
- G. Provide for the issuance of bonds or levy of assessment to finance additions, extensions, and improvements to the system.

Stormwater Utility User Fee Concept

The basic attributes of a User Fee utility are:

- A. A stormwater utility must be expressly established and defined by ordinance by a duly authorized jurisdiction.
- B. The enabling legislation creates an organizational entity charged with specified stormwater management responsibilities.
- C. Rates set by Ordinance or resolution through a public process as appropriate.
- D. The entity is intended to be largely financially self-sufficient, with revenues only used for specified stormwater management purposes. The entity can be established as a special revenue fund or as an enterprise fund.
- E. Financial self-sufficiency based on a user charge concept.
- F. The utility has a defined service area.

9.2 Stormwater Utility Fee Structure Review

The Town of Lake Park Stormwater Utility rate is based on a spatial approach that applies an Effective Impervious Area for All Residential Units. The town determined that the base billing unit, the Equivalent Stormwater Unit (ESU), would be the runoff area of the average single-family parcel. The town then determined that the Runoff Area from the average single-family parcel would be considered as one (1) ESU. The ESU was calculated as follows:

The average single-family parcel for the Town of Lake Park was calculated to have a total area of 10,382 square feet, a Building Area of 2,260 square feet, with 1,215 square feet of Other Impervious Area, and 6,908 square feet of Pervious Area. For the average single-family parcel, the Runoff Area is:

$$AR = 2,260 + 1,215 + 0.25 * 6,908$$

$$AR = 5,202 \text{ square feet}$$

The Town then determined that the Runoff Area of 5,202 square feet from the average single-family parcel would be considered as one (1) ESU. ESU's were to be assigned to the following land use codes:

- a) Residential single-family property
- b) Residential condominium property
- c) Multifamily property

- d) Multifamily property < 10 Units property
- e) Non-residential property

Capital Contributions: The town may accept a capital contribution (fee-in-lieu) from a developer or property owner and waive construction requirements where the town has constructed or plans to construct stormwater facilities which are proposed to be used by the contractor or property owner.

Credits: Credit means a reduction in a customer's stormwater service fee given for certain qualifying activities which reduce or mitigate the runoff impact that the property improvements have on the Town's stormwater management systems and facilities.

9.3 Alternative Funding Analysis

Prior to analyzing the alternative sources of stormwater master plan funding, a review of the current stormwater utility expenditures is necessary to identify whether the utility rate can or could be increased to partially offset future required expenditures. Typically, operating expenditures are the costs associated with those activities that maintain the current existing stormwater infrastructure. Data indicates that the Stormwater Utility Fund has been operated in the last two years (FY2018/2019) with adopted budgets slightly higher than actual revenues.

A preliminary assessment of the cost of implementation of the proposed GI/LID system update was provided and concluded that the Stormwater Utility Fund will not be the primary vehicle for funding. It was estimated that the implementation of GI/LID BMPs in approximately 5% of the Town's right-of-ways will cost approximately \$20 million to be implemented in a 20-year planning period. Capital outlays of \$1 to \$1.5 million per year will be required to implement the proposed GI/LID-based SWMP update. The Stormwater Utility Capital Improvement Program (ICIP) funding need will be augmented by the annual procurement of grants for GI/LID BMP project implementation.

Proposed Storm Water Utility Fund Rate Changes and Budgets

Storm Water Utility Fund rate changes will be proposed to address the needs of the current level of expenditures, forecasted increases in labor costs, operations, and the proposed 5-year Capital Improvement program proposed in FY2019. A modest increase from the current rate of \$12/ESU to \$14/ESU will be proposed in the FY2021 through FY2025 CIP period beginning in FY2022.



TOWN MANAGER COMMENTS

TOWN COMMISSION MEETING Wednesday, June 15, 2022

Exhibit "D"

COMMUNICATIONS AND GRANTS

The Town of Lake Park has been awarded an additional \$1,025,000. These funding allocations were in the State budget and were approved when the Governor signed the budget earlier this month. \$700,000 of the funding is for enhancement of the Lake Shore Drive Drainage Project and \$325,000 is for waterproofing and replacing the roof on Town Hall.

As a result of this additional funding, the Town's grants and allocations awarded this year total **\$12,646,393**

HOLIDAY CLOSING

All offices in the Town of Lake Park will be closed on Monday, June 20, in observance of Juneteenth. The Lake Park Public Library will also be closed on Saturday, June 18.

Holiday Week Sanitation Schedule:

The residential sanitation schedule for the week of June 20 is as follows:

- Monday, June 20: No service in observance of Juneteenth
- Tuesday, June 21: Garbage cart and vegetation collection
- Wednesday, June 22: Recycling cart collection
- Thursday, June 23: Garbage cart and bulk trash collection

COMMUNITY DEVELOPMENT

The Town will hold the first of two Mobility Plan Public Meetings on Saturday, June 25, 2022 beginning at 10 a.m. to be held in Town Hall's Commission Chambers.

HUMAN RESOURCES

Town Job Openings

The Town is seeking to fill the following positions:

- Library Assistant to assist with activities at the Lake Park Public Library required for delivery of efficient library services to the public such as: preparing new materials

for circulation, accurately entering data into the Library automation system, marketing and publicity related tasks, routinely updating the library website, and assisting with troubleshooting computers. The deadline by which to apply is 5:00 p.m. on June 21, 2022.

- Dock Attendant at the Lake Park Harbor Marina with a valid Florida driver's license and the ability to swim. The deadline by which to apply is 5:00 p.m. on June 24, 2022.
- Marketing Specialist within the Communications and Grants Department. Must have a Bachelor's Degree in Marketing, Communications or a related field, as well as skill in the use of social media and proficiency in graphic design programs. The deadline by which to apply is 5:00 p.m. on June 24, 2022.
- Recreation Supervisor responsible for the implementation of all Town recreational programs and activities, management of sports and wellness providers and the coordination and use of all recreational facilities. This position also assists the Special Events Director in the implementation, promotion, and maintenance of Town special events. The deadline by which to apply is 5:00 p.m. on June 24, 2022.
- Assistant Finance Director to work under the supervision of the Finance Director in assisting the Director in managing, directing, and coordinating the activities of the Finance Department including accounting, budgeting, debt administration, cash management, database management, insurance administration, monthly financial reporting, general ledger, and account reconciliation. The deadline by which to apply is 5:00 p.m. on June 30, 2022.

Those interested in applying for any of the above positions may contact the Town's Human Resources Department at 561-881-3300 Option 8, or may visit the Town's official website at www.lakeparkflorida.gov for additional information and to download an employment application.

PUBLIC WORKS

1. The Department of Public Works is pleased to announce the reopening of the Kelsey Park tennis court and the Lake Shore park Tennis Center, following completion of more than \$230,000.00 in infrastructure enhancements. Beginning on June 16, 2022, tennis patrons will enjoy bright, energy efficient lighting, new fencing and playing surfaces, drainage improvements, and soon, additional outdoor furniture upgrades. For questions, please contact the Department of Public Works at (561) 881-3345 or publicworks@lakeparkflorida.gov.
2. Additionally, the Town of Lake Park is now participating in the Florida Power & Light Solar Together program. This sustainable and resilience-building initiative offsets up to 45% of the Town's energy usage to solar while providing monthly bill credits.

As the program grows, the Town will be able to shift additional power loads to solar, for an even greater benefit. To learn more about this program, please visit www.fpl.com/solartogetherci.

SPECIAL EVENTS

Summer Camp

The Town has partnered with the Village of North Palm Beach to offer residents the opportunity to participate in the Village's Summer Camp Program. Youth ages 8-14 can attend the 8-week summer camp for \$125.00 per week. For more information please contact the Special Events Department at 561-840-0160.

City of Riviera Beach Juneteenth Parade

Vice Mayor Kimberly Glas-Castro, Commissioner Roger Michaud and Commissioner John Linden will represent the Town of Lake Park in the City of Riviera Beach's Juneteenth Parade on Saturday, June 18. The parade is part of the City's Centennial Celebration and will end at the Marina Event Center.

Sun Set Celebration

The Town of Lake Park will host its monthly Sunset Celebration on Friday, June 24 from 6:00 pm – 9:00 pm at the Lake Park Harbor Marina. This month's event will feature live entertainment from Whisky Six, one of South Florida's favorite local country bands! There will be a full cash bar, happy hour prices, and a variety of food and arts & crafts vendors. For more information please contact the Special Events Department at 561-840-0160.



SUMMER CAMP

The Town of Lake Park invites our residents to join the Village of North Palm Beach this summer. Lake Park residents will receive the Village resident rate to attend the Village's 8-week Summer Camp Program. In addition, the Town will provide residents with an additional \$100.00 stipend per week.

SUMMER CAMP DETAILS

VILLAGE OF NORTH PALM BEACH

SUMMER CAMP PROGRAM

JUNE 6, 2022 - JULY 29, 2022

NORTH PALM BEACH COMMUNITY CENTER

1200 PROSPERITY FARMS ROAD

NORTH PALM BEACH, FL 33408

MONDAY - FRIDAY FROM 9:00 AM - 4:00 PM

DROP OFF: 8:00 AM - 9:00 AM

PICK UP: 4:00 PM - 5:00 PM

YOUTH AGES 8-14

LAKE PARK RESIDENTS \$125.00 PER WEEK

REGISTER IN PERSON AT THE COMMUNITY CENTER

PLEASE BRING LAKE PARK IDENTIFICATION

FOR MORE INFORMATION PLEASE CALL 561-840-0160
OR EMAIL SPECIALEVENTS@LAKEPARKFLORIDA.GOV

SUNSET CELEBRATION

FREE MUSIC CONCERT

FEATURING



FOOD VENDORS * CASH BAR * HAPPY HOUR

FRIDAY, JUNE 24

6:00 PM - 9:00 PM

LAKE PARK HARBOR MARINA

105 LAKE SHORE DRIVE

LAKE PARK, FL 33403

EVENT WILL FOLLOW CURRENT CDC GUIDELINES

NO OUTSIDE FOOD OR DRINKS

FOR MORE INFORMATION

CALL 561-840-0160 OR EMAIL

SPECIALEVENTS@LAKEPARKFLORIDA.GOV



ORDINANCE NO. 11-2010

AN ORDINANCE OF THE TOWN COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA, AMENDING CHAPTER 2 (ADMINISTRATION) ARTICLE I (IN GENERAL) SECTION 2-1, CHANGING THE OFFICIAL TOWN LOGO AND PROVIDING FOR LAWFUL MANUFACTURE, USE AND DISPLAY OF SAID LOGO; PROVIDING FOR CODIFICATION; PROVIDING FOR THE REPEAL OF LAWS IN CONFLICT; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the Town of Lake Park, Florida is a duly constituted municipality having the power and authority conferred upon it by the Florida Constitution and Chapter 166, Florida Statutes; and

WHEREAS, the Town Commission of the Town of Lake Park, Florida has previously adopted a Town logo which would identify certain official representatives of the Town, and be displayed on Town vehicles, equipment and other officially sanctioned items; and

WHEREAS, the Town Commission has determined that an updated logo for the Town is necessary and appropriate and has selected same; and

WHEREAS, the Town Commission believes that this new Town logo will create civic spirit and serve to unify the Town in working towards the goals and objectives desired by the citizens of the Town.

NOW, THEREFORE, BE IT ORDAINED BY THE COMMISSION OF THE TOWN OF LAKE PARK, FLORIDA, AS FOLLOWS:

Section 1. The whereas clauses are incorporated herein and constitute the legislative findings of the Town Commission.

Section 2. Article 1, Section 2-1 of the Code of Ordinances of the Town of

Lake Park is hereby amended as follows:

Section 2-1. Town logo.

(a) Description. The logo of the town is in the shape of a circle outlined in black with a yellow inner border, within which contains a white scroll over a reflex blue background. Inside the scroll is a depiction of the Lake Park Town Hall atop linden green (P-37) and leaf green (P-29) grass, with a background of blue (P-310) clouds. The town hall depiction opens over the scroll into the reflex blue base on the viewer's right hand side. All colors used are the Pantone® identified color standards. The top of the scroll reads "Historic Lake Park" in larger letters and "Jewel of the Palm Beaches" in smaller letters, and at the bottom of the scroll it reads "Chartered 1923," all in black letters of Lucida Calligraphy font. A reasonable facsimile of the logo of the town is reproduced below.



(a) Description. The logo of the Town of Lake Park is in the shape of a circle outlined in blue with white inner boarder, within which contains a clock tower and palm trees over a relax blue background. A copy of the logo of the Town of Lake Park is reproduced below.



(b) *Adoption.* The logo described and depicted in subsection (a) is hereby adopted as the official logo of the town.

(c) *Use.* Any facsimile or reproduction of the logo shall be manufactured, used, displayed or otherwise employed by anyone only for official town business or upon the written approval of the town commission pursuant to a duly adopted resolution of the town commission. The town commission may grant approval for the use of the logo upon application to it by any person showing good cause for the use of the logo for a proper purpose. The town commission may adopt reasonable rules, by way of resolution, for the manufacture or use of the logo, or any facsimile or reproduction thereof.

Section 3. Repeal of Laws in Conflict. All ordinances or parts of ordinances in conflict herewith are hereby repealed to the extent of such conflict.

Section 4. Codification. The sections of the Ordinance may be made a part of the Town Code of Laws and Ordinances and may be renumbered or relettered to accomplish such, and the word "ordinance" may be changed to "section," "article," or any other appropriate word.

Section 5. Effective Date. This Ordinance shall take effect immediately upon adoption.

Upon First Reading this 6 day of October, 2010, the foregoing Ordinance, was offered by Commissioner Rumsey who moved its approval. The motion was seconded by Commissioner Hockman and being put to a vote, the result was as follows:

	AYE	NAY
MAYOR DESCA DUBOIS	_____	_____
VICE MAYOR PATRICIA OSTERMAN	<u>Absent</u>	_____
COMMISSIONER STEVEN HOCKMAN	_____	_____
COMMISSIONER JEANINE LONGTIN	_____	<u>✓</u>
COMMISSIONER KENDALL RUMSEY	_____	_____

PUBLISHED IN THE PALM BEACH POST THIS 10 DAY OF October, 2010

Upon Second Reading this 20 day of October, 2010, the foregoing Ordinance, was offered by Commissioner Rumsey who moved its adoption. The motion was seconded by Vice-Mayor Osterman and being put to a vote, the result was as follows:

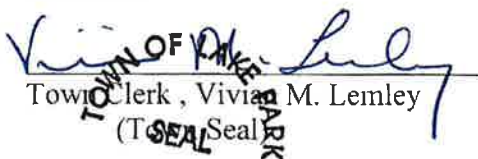
	AYE	NAY
MAYOR DESCA DUBOIS	<u>✓</u>	_____
VICE MAYOR PATRICIA OSTERMAN	<u>✓</u>	_____
COMMISSIONER STEVEN HOCKMAN	_____	<u>✓</u>
COMMISSIONER JEANINE LONGTIN	_____	<u>✓</u>
COMMISSIONER KENDALL RUMSEY	<u>✓</u>	_____

The Mayor thereupon declared **Ordinance No.** 11-2010 duly passed and adopted this 20 day of October, 2010.

TOWN OF LAKE PARK, FLORIDA

BY: Desca DuBois
Mayor, Desca DuBois

ATTEST:

Vivia M. Lemley
Town Clerk, Vivia M. Lemley
(Seal) 

Approved as to form and legal sufficiency:

Thomas J. Baird
Town Attorney, Thomas J. Baird

FLORIDA

Exhibit "E"

June 15, 2022 COMMENTS Respectfully submitted by COMMISSIONER MARY BETH TAYLOR

Firstly, Thank you to everyone who attended the June 11th follow up community workshop that shared concept plans for Kelsey Park. The two plans were presented as flexible and not the final product. That is a good thing because, many residents had questions, suggestion, and objections. I heard several comments about the following components of the plan and deemed it my duty to make clear, in a timely manner, that neither plan 1 or plan 2 was satisfactory to the majority of the residents in attendance, they voiced their desire for a third choice. ***Now is the time***, to consider these concerns.

PLAN 1- The large parking lot (lot1) is detrimental to the environment of the parks, and people!

When natural land cover is replaced with pavement it contributes to the growth of urban heat islands (UHI). The effects of heated pavement where human outdoor activities occur at the ground/pavement surface, can result in increased human thermal discomfort, decreased air quality, heat related illness and the possibility of death, especially here in Florida. Now, imagine, purposely installing pavement (lot 1) adjacent to US I a busy Federal Highway, so that young and old alike can energetically play pickle-ball, on a polluted mini urban heat island. We should not put up a parking lot and pave a court next to a major highway knowing the harmful results to humans and the environment.

PLAN 2 -features, not one, but two additional paved parking lots. Lot 20 is again adjacent to US 1 Federal Highway. Another large paved lot (lot 20) is adjacent to an existing bioswale. Interestingly, during the meeting on Saturday, a woman with first hand knowledge and pictures on her cell phone explained how, during our recent heavy rains, the water overflowed the bioswale and onto the green park, in the very area where paved parking (lot 20) is designated on concept plan 2. She was fortunate to speak to a gentleman involved with the bioswale planning, (Jeff H.) He explained the overflow flooding into the grass was a harmless occurrence, but I'm sure it would not be harmless flowing over a parking lot and onto the tennis courts. Does that sound like a smart place to build a parking lot? NO!

CONCLUSION The additional parking lots and courts required for pickle-ball, contradicts the ***will of the majority*** of Lake Park residents. Two recent surveys reflect residents' desire that ***Kelsey Park remain a passive, shady, environment***, protected from urban noise, and clutter, a place for families, a places that can restore better mental and physical health, promote relaxation, and provide safe play areas for all ages, including lawn sports, a refuge from urban heat and pollution. Kelsey Park is a small ***treasure***, too small for additional parking lots and courts. Pickle ball is a great sport, fun.... ***and it certainly deserves room to grow, in a prominent location in our town.*** There are suitable locations in Lake Park for pickle-ball courts, it would make a great addition to a **redesigned** Bert Bostrom Park.

Remember Joni Mitchell? "They paved paradise and put up a parking lot." "Don't it always seem to go," "That you don't know what you got til it's gone"

578-1052
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