



Annual Report Form For Individual NPDES Permits For Municipal Separate Storm Sewer Systems (RULE 62-624.600(2), F.A.C.)

- This Annual Report Form must be completed and submitted to the Department to satisfy the annual reporting requirements established in Rule 62-621.600, F.A.C.
- Submit this fully completed and signed form and any REQUIRED attachments by email to the NPDES Stormwater Program Administrator or to the MS4 coordinator (<http://www.dep.state.fl.us/water/stormwater/npdes/contacts.htm>). Files larger than 10MB may be placed on the FTP site at: ftp://ftp.dep.state.fl.us/pub/NPDES_Stormwater/. After uploading files, email the MS4 coordinator or NPDES Program Administrator to notify them the report is ready for downloading; or by mail to the address in the box at right.
- Refer to the Form Instructions for guidance on completing each section.
- **Please print or type information in the appropriate areas below.**

Submit the form and attachments to:
 Florida Department of Environmental Protection
 Mail Station 3585
 2600 Blair Stone Road
 Tallahassee, Florida 32399-2400

SECTION I. BACKGROUND INFORMATION

A.	Permittee Name: City of Riviera Beach		
B.	Permit Name: Palm Beach County MS4		
C.	Permit Number: FLS000018-004		
D.	Annual Report Year: <input type="checkbox"/> Year 1 <input type="checkbox"/> Year 2 <input checked="" type="checkbox"/> Year 3 <input type="checkbox"/> Year 4 <input type="checkbox"/> Year 5 <input type="checkbox"/> Other, specify Year:		
E.	Reporting Time Period (month/year): 10/01/18 through 09/30/19		
F.	Name of the Responsible Authority: Terrance Bailey		
	Title: Public Works Director		
	Mailing Address: 1451 W. 15th Street		
	City: Riviera Beach	Zip Code: 33404	County: Palm Beach
	Telephone Number: (561) 845-4066		Fax Number: Not Applicable (N/A)
E-mail Address: tbailey@rivierabeach.org			
G.	Name of the Designated Stormwater Management Program Contact (if different from Section I.F above): Sedrick Clarke		
	Title: Stormwater Manager		
	Department: Public Works		
	Mailing Address: 1451 W. 15th Street		
	City: Riviera Beach	Zip Code: 33404	County: Palm Beach
	Telephone Number: (561)814-6492		Fax Number: N/A
E-mail Address: sclarke@rivierabeach.org			

SECTION II. MS4 MAJOR OUTFALL INVENTORY (Not Applicable in Year 1)

A.	Number of outfalls ADDED to the outfall inventory in the current reporting year (insert "0" if none): 0 (Does this number include non-major outfalls? <input type="checkbox"/> Yes No <input checked="" type="checkbox"/> N/A, there are 5 major outfalls)
B.	Number of outfalls REMOVED from the outfall inventory in the current reporting year (insert "0" if none): 0 (Does this number include non-major outfalls? <input type="checkbox"/> Yes No <input checked="" type="checkbox"/> N/A)
C.	Is the change in the total number of outfalls due to lands annexed or vacated? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable

SECTION III. PART V.B. ASSESSMENT PROGRAM

A.	<p>Provide a brief statement as to the status of water quality monitoring plan implementation. Status may include sampling frequency changes, monitoring location changes, or sampling waiver conditions. <i>DEP Note: If permittee participates in a collaborative monitoring plan, permittee may refer to a joint response as defined by the interlocal agreement.</i></p> <p>Refer to the Cycle 4, Year 3 Joint Annual Report for water quality monitoring information. Attached is the 'City of Riviera Beach Water Quality Assessment Report'.</p>
B.	<p>Provide a brief discussion of the monitoring and loading results to date which includes a summary of the water quality monitoring data and / or stormwater pollutant loading changes from the reporting year. <i>DEP Note: Results must be specific to the permittee's SWMP.</i></p> <p>Please refer to the Cycle 4, Year 3 Joint Annual Report for a summary of the Group's water quality monitoring results for the reporting period.</p>
C.	<p>Attach a monitoring data summary as required by the permit. An analysis of the data discussing changes in water quality and/or stormwater pollutant loading from previous reporting years. <i>DEP Note: Analysis must be specific to the permittee's SWMP.</i></p> <p>See response for Section III.B. above.</p>

SECTION IV. FISCAL ANALYSIS

A.	Total expenditures for the NPDES stormwater management program for the current reporting year: \$ 2,641,787
B.	Total budget for the NPDES stormwater management program for the subsequent reporting year: \$ 3,149,844
C.	<p>Did the current reporting year resources decrease from the previous year? Y X / N</p> <p>If program resources decreased, provide a discussion of the impacts on the implementation of the SWMP. There were salaried positions open at various times during the permit year. Therefore, the salaried amounts projected in the budget fell short of expectations. With these shortfalls, other direct and indirect ancillary costs (e.g. FICA, insurances, office expenses, etc.) fell short of projections. Additionally, a substantial amount of 'open' Purchase Orders remained open at year's end; thus, contributing to the shortfall. The shortfalls in these resources; however, had insignificant, if any, impacts on the City's SWMP.</p>

SECTION V. MATERIALS TO BE SUBMITTED WITH THIS ANNUAL REPORT FORM

Only the following materials are to be submitted to the Department along with this fully completed and signed Annual Report Form (check the appropriate box to indicate whether the item is attached or is not applicable):

Attached	N/A	Required Attachments	Permit Citation	Attachment Number/Title
	X	Any additional information required to be submitted in this current annual reporting year in accordance with Part III.A of your permit that is not otherwise included in Section VII below.	Part III.A	
	X	An explanation of why the minimum inspection frequency in Table II.A.1.a. was not met, if applicable.	Part II.A.1	
	X	A list of the flood control projects that did not include stormwater treatment and an explanation for each of why it did not (if applicable).	Part III.A.4	
X		A monitoring data summary as directed in Section III.C above and in accordance with Rule 62-624.600(2)(c), F.A.C.	Part V.B.3	Refer to the Joint Annual Report and Attachment 1 - City of Riviera Beach Water Quality Assessment Report'
	X	YEAR 1 ONLY: An inventory of all known major outfalls and a map depicting the location of the major outfalls (hard copy or CD-ROM) in accordance with Rule 62-624.600(2)(a), F.A.C.	Part III.A.1	
	X	YEAR 2: A summary review of codes and regulations to reduce the stormwater impact from development.	Part III.A.2	
X		Year 3 ONLY: The estimates of pollutant loadings and event mean concentrations for each major outfall or each major watershed in accordance with Rule 62-624.600(2)(b), F.A.C.	Part V.A	Refer to the Joint Annual Report and Attachment 1 - 'City of Riviera Beach Water Quality Assessment Report'
	X	YEAR 3: Summary of TMDL Monitoring Results (if applicable).	Part VIII.B.2	
	X	YEAR 3: Bacteria Pollution Control Plan (if applicable).	Part VIII.B.3	
	X	YEAR 4: A follow-up report on plan implementation of changes to codes and regulations to reduce the stormwater impact from development.	Part III.A.2	
	X	YEAR 4: A report on any amendments to the applicable legal authority (if applicable).	Part III.A.7.a	
	X	YEAR 4: Permit re-application information in accordance with Rule 62-624.420(2), F.A.C. <ul style="list-style-type: none"> The monitoring plan (with revisions, if applicable). If the total annual pollutant loadings have not decreased over the past two permit cycles, revisions to the SWMP, as appropriate. 	Part V.B.3 Part V.A.3	
	X	YEAR 4: TMDL Supplemental SWMP (if applicable).	Part VIII.B.3	

DO NOT SUBMIT ANY OTHER MATERIALS
(such as records and logs of activities, monitoring raw data, public outreach materials, etc.)

SECTION VI. CERTIFICATION STATEMENT AND SIGNATURE

The Responsible Authority listed in Section I.F above must sign the following certification statement, as per Rule 62-620.305, F.A.C.:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name of Responsible Authority (type or print): Terrence Bailey

Title: Public Works Director

Signature: 

Date: 1 / 29 / 2020

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE

A.	B.					C.	D.	E.	F.
Permit Citation/ SWMP Element	Permit Requirement/Quantifiable SWMP Activity					Number of Activities Performed	Documentation / Record	Entity Performing the Activity	Comments
Part III.A.1	Structural Controls and Stormwater Collection Systems Operation								
	<p>Report the current known inventory.</p> <p>Report the number of inspection and maintenance activities conducted for each applicable type of structure included in Table II.A.1.a, and the percentage of the total inventory of each type of structure inspected and maintained.</p> <p><i>Note: Delete structures that are not in your MS4's inventory. The permittee may choose its own unit of measurement for each structural control to be consistent with the unit of measurement in the documentation. Unit options include: miles, linear feet, acres, etc.</i></p>								
	Type of Structure	Number of Structures	Number of Inspections	Percent Inspected	Number of Maintenance Activities	Percent Maintained			
Exfiltration trench/French drains (lf)		150	1	100	0	100	Exfiltration Trench- Structural Control Inspection Form	Sedrick Clarke- Department of Public Works (DPW), Stormwater Manager; Jack Horniman, Planning Consultant	Exfiltration trench systems are inspected once every 3 years;; FY 18/19 Log
Grass swales (miles)		3.7	1	33	0	100	Grass Swale - Structural Control Inspection Form	Stormwater Manager; Planning Consultant	All 11 miles of grass swales in the MS4 are required to be inspected every 3 years; approximately 1/3, of the total miles was inspected during permit year; FY 18/19 Log
Wet detention systems		1	1	100	0	100	Wet Detention System- Structural	Stormwater Manager; Planning	The wet detention system is inspected once

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Permit Citation/ SWMP Element	Permit Requirement/Quantifiable SWMP Activity				Number of Activities Performed		Documentation / Record	Entity Performing the Activity	Comments
	Pollution control box/Weir						Control Inspection Form	Consultant	every 3 years; FY 18/19 Log
		1	4	100	0	100	Pollution Control Box/Weir-Inspection Form	Stormwater Manager; Planning Consultant	The pollution control box/weir is inspected quarterly during the permit year; FY 18/19 Log
	Major outfalls								
		5	5	100	0	100	Major Stormwater Outfall #1-5-Structural Control Inspection Forms	Stormwater Manager; Planning Consultant	Major outfalls are inspected annually; FY 18/19 Log
	Pipes/culverts (miles)								
		4	1	10	0	100	Pipes/Culverts Inspection Form	Stormwater Manager; Planning Consultant	10% of all pipes/culverts are inspected each year ; FY 18/19 Log
	Conveyance (Ditches & Canals)								
		4	4	10	12	10	Conveyance (Ditch & Canal) System-Structural Control Inspection Form	Stormwater Manager; Planning Consultant	10% of all canals inspected each year; FY 18/19 Log
	Inlets/catch basins/grates								
		407	41	10	0	10	Inlets/Catch Basins/Grates-Structural Control Inspection Form	Stormwater Manager; Planning Consultant	10% of the inlets/catch basins/grates are to be inspected each year per SOP; FY 18/19 Log

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE							
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	<p>If the minimum inspection frequencies set forth in Table II.A.1.a. were not met, provide as an attachment an explanation of why they were not and a description of the actions that will be taken to ensure that they will be met.</p>			See above	All documentation listed above	Stormwater Manager	All minimum inspections met or exceeded

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE					
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Permit Citation/ SWMP Element	Permit Requirement/Quantifiable SWMP Activity	Number of Activities Performed	Documentation / Record	Entity Performing the Activity	Comments
Part III.A.1 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: The entire stormwater system and stormwater structures are inspected, cleaned and monitored at regular intervals, or sooner if there is a significant rain event.				
	Limitations: Filing system and better documentation of inspections is needed.				
	SWMP revisions implemented to address limitations: Administration/filing system being updated to a computer-based system				
Part III.A.2	Areas of New Development and Significant Redevelopment				
	Report the number of significant development projects, including new and redevelopment, reviewed and approved by the permittee for post-development stormwater considerations.				
	Number of significant development projects reviewed	3	Site Plan Review Procedures contained in Stormwater Management Plan (SWMP)	Development Services Department staff	
	Number of significant development projects approved	3	Site Plan Review Procedures contained in the SWMP	Development Services Department staff	
	Provide in the Year 2 Annual Report the summary report of the review activity. Provide in the Year 4 Annual Report the follow-up report on plan implementation.				
	Year 2 ONLY: Attach the summary report of the review activity	N/A			
Year 4 ONLY: Attach the follow-up report on plan implementation	N/A				
Part III.A.2 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: Site plan review procedures and requirements; maintenance of the stormwater drainage system is good.				
	Limitations: None identified.				
	SWMP revisions implemented to address limitations: None				
Part III.A.3	Roadways				

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE

A.	B.	C.	D.	E.	F.
Permit Citation/ SWMP Element	Permit Requirement/Quantifiable SWMP Activity	Number of Activities Performed	Documentation / Record	Entity Performing the Activity	Comments
	Report on the litter control program, including the frequency of litter collection, an estimate of the total number of road miles cleaned or amount of area covered by the activities, and an estimate of the quantity of litter collected. <i>Note: If the permittee does not contract activities, delete CONTRACTOR activities.</i>				
	PERMITTEE Litter Control: Frequency of litter collection	Daily	Department of Public Works (DPW) Maintenance Schedule	DPW personnel	
	PERMITTEE Litter Control: Estimated amount of area maintained (miles)	8.4 sq. miles	DPW Maintenance Schedule	DPW personnel	
	PERMITTEE Litter Control: Estimated amount of litter collected (tons)	1.1	DPW Maintenance Schedule	DPW personnel	
	CONTRACTOR Litter Control: Frequency of litter collection	0			No contracted services for litter control program
	CONTRACTOR Litter Control: Estimated amount of area maintained (lf)	0			No contracted services for litter control program
	CONTRACTOR Litter Control: Estimated amount of litter collected (cy)	0			No contracted services for litter control program
	OPTIONAL: If an Adopt-A-Road or similar program is implemented, report the total number of road miles cleaned and an estimate of the quantity of litter collected. If you do not participate in an Adopt-A-Road program, report "0".				
	Trash Pick-up Events: Total miles cleaned	2	DPW/ Sign-Up Sheet	DPW/Volunteers	'Keep America Beautiful' program; Annual Beach Clean-Up
	Trash Pick-up Events: Estimated amount of litter collected (cy)	40	DPW/ Sign-Up Sheet	DPW/Volunteers	'Keep America Beautiful' program; Annual Beach-Up
	Adopt-A-Road: Total miles cleaned	0			No 'Adopt-A-Road' program
	Adopt-A-Road: Estimated amount of litter collected (cy)	0			No 'Adopt-A-Road' program
	Report on the street sweeping program, including the frequency of the sweeping, total miles swept, an estimate of the quantity of sweepings collected, and the total nitrogen and total phosphorus loadings that were removed by the collection of sweepings. If no street sweeping program is implemented, provide the explanation of why not in column F.				

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	Frequency of street sweeping	Daily	DPW Maintenance Schedule	DPW personnel	
	Total miles swept	2235	DPW Maintenance Schedule	DPW personnel	
	Estimated quantity of sweeping material collected (cubic pounds)	19,505	DPW Maintenance Schedule	DPW personnel	
	Total phosphorous loadings removed (pounds)	598	FSA Spreadsheet	DPW personnel	
	Total nitrogen loadings removed (pounds)	932	FSA Spreadsheet	DPW personnel	
	Report the equipment yards and maintenances shops that support road maintenance activities, and the number of inspections conducted for each facility.				
	Name of Facility	Number of Inspections			
	Litter and Fueling Facility (1117 Ave. L); and, Street Sweeping Facility at Old Public Works Facility (4357 Easley Drive)	Litter and Fueling - 2; Street Sweeping -2	DPW Maintenance Schedule	Stormwater Manager	None required this permit year
	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
Part III.A.3 Summary	Strengths: Ability to monitor drainage structures with television capabilities and fix structure damage when warranted				
	Limitations: Funding, when it comes to complex issues.				
	SWMP revisions implemented to address limitations: Information exchange with other municipalities with similar stormwater system issues.				
Part III.A.4	Flood Control Projects				
	Report the total number of flood control projects that were constructed by the permittee during the reporting period and the number of those projects that did NOT include stormwater treatment. The permittee shall provide a list of the projects where stormwater treatment was not included with an explanation for each of why it was not.				
	Report on any stormwater retrofit planning activities and the associated implementation of retrofitting projects to reduce stormwater pollutant loads from existing drainage systems that do not have treatment BMPs.				
	Flood control projects completed during the reporting period	0	DPW Work Order	Stormwater Manager	N/A
	Flood control projects completed that did <u>not</u> include stormwater treatment	0			N/A
	Stormwater retrofit projects planned/under construction	0			N/A
	Stormwater retrofit projects completed	0			N/A
	If there were projects that did not include stormwater treatment, provide as an attachment a list of the projects and an explanation for each of why it did not.	0			N/A

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Part III.A.4 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: Quarterly canal maintenance and weekly storm drain maintenance.				
	Limitations: Keeping trash and debris out of the path of the water flow.				
	SWMP revisions implemented to address limitations: Increased public education to maintain awareness of keeping the stormwater system pollution free.				
Part III.A.5	Municipal Waste Treatment, Storage, and Disposal Facilities Not Covered by an NPDES Stormwater Permit				
	Report the applicable facilities and the number of the inspections conducted for each facility.				
	Name of Facility	Number of Inspections			
	N/A				No municipal facilities
Part III.A.5 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: There are no waste TSD facilities in the City; City wastes are treated, stored and disposed of at the Palm Beach County Solid Waste Authority (PBCSWA) facilities.				
	Limitations: N/A				
	SWMP revisions implemented to address limitations: N/A				
Part III.A.6	Pesticides, Herbicides, and Fertilizer Application				
	Report the number of permittee personnel applicators and contracted commercial applicators of pesticides and herbicides who are FDACS certified / licensed.				
	Report the number of permittee personnel who have been trained through the Green Industry BMP Program and the number of contracted commercial applicators of fertilizer who are FDACS certified / licensed.				
	PERSONNEL: FDACS public applicators of herbicides	1	State Licenses	DPW/Oswald Newbold	FY 18/19 Log
	CONTRACTORS: FDACS commercial applicators of herbicides	0			N/A
	PERSONNEL: Green Industry BMP Program training completed	1	State Licenses	DPW/Oswald Newbold	FY 18/19 Log
	CONTRACTORS: FDACS certified / licensed applicators of pesticides and fertilizers	0			N/A
	Provide a copy of the adopted ordinance with the Year 2 Annual Report. If this provision is not applicable because the permittee is not within the watershed of a nutrient-impaired water body, indicate that in Column F.				
	Year 2 ONLY: Attach copy of adopted Florida-friendly ordinance	1	Fertilizer Ordinance (Florida Friendly Landscape Regulations)	City Council	Adopted June 20, 2012; refer to the MS4 website
Report on the public education and outreach activities that are performed or sponsored by the permittee within the permittee's jurisdiction to encourage citizens to					

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Permit Citation/ SWMP Element	Permit Requirement/Quantifiable SWMP Activity	Number of Activities Performed	Documentation / Record	Entity Performing the Activity	Comments
	reduce their use of pesticides, herbicides and fertilizers including the type and number of activities conducted, the type and number of materials distributed, and the number of Web site visits (if applicable).	The public outreach and education plan is carried out as a joint effort by the Palm Beach County Co-permittees. Please see the Palm Beach County Joint Annual Report for the public education and outreach information.			
	Public Education and Outreach Program	The public outreach and education plan is carried out as a joint effort by the Palm Beach County Co-permittees. Please see the Palm Beach County Joint Annual Report for the public education and outreach information.			
	Brochures/Flyers/Fact sheets distributed	47	Brochures/ Flyers/Door hangers	PBC Stormwater Systems Group; PBCSWA; FDEP; Stormwater Manager	FY 18/19 Log
	Public displays (e.g. kiosks, storyboards, posters, etc.)	8	Display boards	Stormwater Manager	
Part III.A.6 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: DPW/Stormwater management personnel documents all restricted and non-restricted chemicals used during application; City has adopted a Fertilizer Ordinance; good public information system being implemented.				
	Limitations: Filing system				
	SWMP revisions implemented to address limitations: Have commenced a computer based filing system.				
Part III.A.7.a	Illicit Discharges and Improper Disposal — Inspections, Ordinances, and Enforcement Measures				
	Report amendments in Year 4.				
	Year 4 ONLY: Attach a report on amendments to applicable legal authority	N/A			
Part III.A.7.c	Illicit Discharges and Improper Disposal — Investigation of Suspected Illicit Discharges and/or Improper Disposal				
	Report on the proactive inspection program, including the number of inspections conducted by the permittee, the number of illicit activities found, and the number and type of enforcement actions taken.				
	Proactive inspections for suspected illicit discharges	58	Structural	Stormwater	FY 18/19 Log

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	<p align="center">Illicit discharges found during a proactive inspection NOV/WL/citation/fines issued for illicit discharges found during proactive inspection</p>		Control, Proactive Illicit/Illegal Connection Inspection Forms	Manager	(Part III.A.1. - Structural Controls)
		0			No illicit found
		0			None issued
Report on the reactive investigation program as it relates to responding to reports of suspected illicit discharges, including the number of reports received, the number of investigations conducted, the number of illicit activities found, and the number and type of enforcement actions taken.					
	<p align="center">Reports of suspected illicit discharges received</p>	0	DPW/ Phone Log	DPW/ Stormwater Utility	No reports received
	<p align="center">Reactive investigations of reports of suspected illicit discharges etc.</p>	0			No reports or investigations
	<p align="center">Illicit discharges etc. found during reactive investigation</p>	0			None found
	<p align="center">NOV/WL/citation/fines issued for illicit discharges etc. found during reactive investigation</p>	0			None issued
Report the type of training activities, and the number of permittee personnel and contractors trained (both in-house and outside training) within the reporting year.					
	<p align="center">Personnel trained</p>	2	Illicit Discharge Detention Elimination (IDDE) video	Stormwater Manager; City Planning Consultant	
	<p align="center">Contractors trained</p>	0			No contractors used for these purposes
Part III.A.7.d	Illicit Discharges and Improper Disposal — Spill Prevention and Response				
Report on the spill prevention and response activities, including the number of spills addressed.					
	<p align="center">Hazardous and non-hazardous material spills responded to</p>	0			No spills reported during permit year
Report the type of training activities, and the number of permittee personnel and contractors trained (both in-house and outside training) within the reporting year.					
	<p align="center">Personnel trained</p>	2	IDDE video	Stormwater Manager; City Planning Consultant	
	<p align="center">Contractors trained</p>	0			No contractors used by City

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Part III.A.7.e	Illicit Discharges and Improper Disposal — Public Reporting				
	Report on the public education and outreach activities that are performed or sponsored by the permittee within the permittee’s jurisdiction to encourage the public reporting of suspected illicit discharges and improper disposal of materials, including the type and number of activities conducted, the type and number of materials distributed, and the number of Web site visits (if applicable).				
	Public Education and Outreach Program				
	Brochures/Flyers/Fact sheets distributed				
	The public outreach and education plan is carried out as a joint effort by the Palm Beach County Co-permittees. Please see the Palm Beach County Joint Annual Report for the public education and outreach information.				
	Public displays (e.g. kiosks, storyboards, posters, etc.)	47	Brochures/ Flyers/Door hangers	PBC Stormwater Systems Group; PBCSWA; FDEP; DPW/ Stormwater Manager	FY 18/19 Log
		8	Display boards	Stormwater Manager	
Part III.A.7.f	Illicit Discharges and Improper Disposal — Oils, Toxics, and Household Hazardous Waste Control				
	Report on the public education and outreach activities that are performed or sponsored by the permittee within the permittee’s jurisdiction to encourage the proper use and disposal of oils, toxics, and household hazardous waste, including the type and number of activities conducted, the type and number of materials distributed, the amount of waste collected / recycled / properly disposed, and the number of Web site visits (if applicable).				
	Public Education and Outreach Program				
	Brochures/Flyers/Fact sheets distributed				
	The public outreach and education plan is carried out as a joint effort by the Palm Beach County Co-permittees. Please see the Palm Beach County Joint Annual Report for the public education and outreach information.				
	Public displays (e.g. kiosks, storyboards, posters, etc.)	47	Brochures/ Flyers/Door hangers	PBC Stormwater Systems Group; PBCSWA; FDEP; Stormwater	FY 18/19 Log

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	Public displays (e.g. kiosks, storyboards, posters, etc.)	8	Display boards	Manager Stormwater Manager																					
Part III.A.7.g	Illicit Discharges and Improper Disposal — Limitation of Sanitary Sewer Seepage																								
	Report on the type and number of activities undertaken to reduce or eliminate SSOs and inflow/ infiltration, the number of SSOs or inflow / infiltration incidents found and the number resolved, and the name of the owner of the sanitary sewer system within the permittee's jurisdiction. Report only the SSOs and inflow / infiltration incidents into the MS4.																								
	<p align="center">Owner of the sanitary sewer system</p> <p align="center">Activity to reduce/eliminate SSOs and I&I: (description)</p> <p align="center">SSO incidents discovered</p> <p align="center">SSO incidents resolved</p> <p align="center">Inflow / infiltration incidents discovered</p> <p align="center">Inflow / infiltration incidents resolved</p>	<p align="center">City of Riviera Beach</p> <table border="1"> <tr> <td data-bbox="1180 927 1383 1040">6</td> <td data-bbox="1383 927 1583 1040">Work Order</td> <td data-bbox="1583 927 1793 1040">Utilities Department staff</td> <td data-bbox="1793 927 2020 1040"></td> </tr> <tr> <td data-bbox="1180 1040 1383 1154">6</td> <td data-bbox="1383 1040 1583 1154">Work Order</td> <td data-bbox="1583 1040 1793 1154">Utilities Department staff</td> <td data-bbox="1793 1040 2020 1154"></td> </tr> <tr> <td data-bbox="1180 1154 1383 1235">6</td> <td data-bbox="1383 1154 1583 1235">Work Order</td> <td data-bbox="1583 1154 1793 1235">Utilities Department staff</td> <td data-bbox="1793 1154 2020 1235"></td> </tr> <tr> <td data-bbox="1180 1235 1383 1268">0</td> <td data-bbox="1383 1235 1583 1268"></td> <td data-bbox="1583 1235 1793 1268"></td> <td data-bbox="1793 1235 2020 1268">N/A</td> </tr> <tr> <td data-bbox="1180 1268 1383 1299">0</td> <td data-bbox="1383 1268 1583 1299"></td> <td data-bbox="1583 1268 1793 1299"></td> <td data-bbox="1793 1268 2020 1299">N/A</td> </tr> </table>				6	Work Order	Utilities Department staff		6	Work Order	Utilities Department staff		6	Work Order	Utilities Department staff		0			N/A	0			N/A
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SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE							
A.	B.	C.	D.	E.	F.		
Permit Citation/ SWMP Element	Permit Requirement/Quantifiable SWMP Activity	Number of Activities Performed	Documentation / Record	Entity Performing the Activity	Comments		
Part III.A.7 Summary	For activities required by Part III.A.7: Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.						
	Strengths: No illicit discharges or improper disposal reported during the permit year; public education materials (brochures, flyers, door hangers); training of personnel has been performed.						
	Limitations: None identified						
	SWMP Revisions implemented to address limitations: None						
Part III.A.8.a	Industrial and High-Risk Runoff — Identification of Priorities and Procedures for Inspections						
	Report on the high-risk facilities inventory, including the type and total number of high risk facilities and the number of facilities newly added each year.						
	Report on the high-risk facilities inspection program, including the number of inspections conducted and the number and type of enforcement actions taken.						
	Type of Facility		Number of Facilities	Number of Inspections	Enforcement Actions		
	Operating municipal landfills		0				No City landfills
	Hazardous waste treatment, storage, disposal and recovery (HWTSDR) facilities		0				No City facilities
	EPCRA Title III, Section 313 facilities (TRI)		26	26	0	Envirosearch webpage	City Planning Consultant FY 18/19 Log
Facilities determined as high risk by the permittee		0				None determined	
Part III.A.8.b	Industrial and High-Risk Runoff — Monitoring for High Risk Industries						
	Report the number of high risk facilities sampled.						
	High risk facilities sampled		26		High Risk Facilities Inspection Forms	Stormwater Manager; City Planning Consultant	See FY 18/19 Log
Part III.A.8 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.						
	Strengths: Identify deficiencies and develop accurate list of high risk facilities.						
	Limitations: 26 high risk facilities identified						
	SWMP revisions implemented to address limitations: Updated high risk facilities identified and reported						
Part III.A.9.a	Construction Site Runoff — Site Planning and Non-Structural and Structural Best Management Practices						
	Report the number of permittee and private pre-construction site plans reviewed for stormwater, erosion, and sedimentation controls, and the number approved.						
	PERMITTEE SITES: Construction site plans reviewed		1		Site Plan Review Procedures	Development Services	

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE

A.	B.	C.	D.	E.	F.
Permit Citation/ SWMP Element	Permit Requirement/Quantifiable SWMP Activity	Number of Activities Performed	Documentation / Record	Entity Performing the Activity	Comments
			contained in SWMP; notations on construction plans and/or Construction Plan Report	Department staff	
	<p align="center">PERMITTEE SITES: Construction site plans approved</p>	1	Site Plan Review Procedures contained in SWMP; notations on construction plans and/or Construction Plan Report	Development Services Department staff	
	<p align="center">PRIVATE SITES: Construction site plans reviewed</p>	3	Site Plan Review Procedures contained in SWMP; notations on construction plans and/or Construction Plan Report	Development Services Department staff	
	<p align="center">PRIVATE SITES: Construction site plans approved</p>	3	Site Plan Review Procedures contained in SWMP; notations on construction plans and/or Construction Plan Report	Development Services Department staff	
<p align="center">Report the number of development permit applicants notified of the ERP and CGP, and the number of applicants who confirmed ERP and CGP coverage.</p>					

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE					
A.	B.	C.	D.	E.	F.
Permit Citation/ SWMP Element	Permit Requirement/Quantifiable SWMP Activity	Number of Activities Performed	Documentation / Record	Entity Performing the Activity	Comments
	Notified of ERP stormwater permit requirements	4	Site Plan Review Procedures contained in SWMP; notations construction plans and/or on Construction Plan Report	Development Services Department staff	
	Confirmed ERP coverage	4	Site plan review notations	Development Services Department staff	
	Notified of CGP stormwater permit requirements	4	Site Plan Review Procedures contained in SWMP; notations on construction plans and/ Construction Plan Report	Development Services Department staff	
	Confirmed CGP coverage	4	Site plan review notations	Development Services Department staff	
Part III.A.9.b	Construction Site Runoff — Inspection and Enforcement				
	Report on the inspection program for privately-operated and permittee-operated construction sites, including the number of active construction sites during the reporting year, the number of inspections of active construction sites, the percentage of active construction sites inspected, and the number and type of enforcement actions / referrals taken.				
	PERMITTEE SITES: Active construction sites	1	Site Plan Review Procedures contained in SWMP	Development Services Department staff	
	PERMITTEE SITES: Pre-, During, and Post inspections of active construction sites for E&S and waste control BMPs	3	Work Order	Development Services Department staff	
	PERMITTEE SITES: Percentage of active construction sites inspected	100	Work Order	Development Services	

SECTION VII. STORMWATER MANAGEMENT PROGRAM (SWMP) SUMMARY TABLE					
A.	B.	C.	D.	E.	F.
Permit Citation/ SWMP Element	Permit Requirement/Quantifiable SWMP Activity	Number of Activities Performed	Documentation / Record	Entity Performing the Activity	Comments
	PRIVATE SITES: Active construction sites	3	Work Order	Department staff Development Services Department staff	
	PRIVATE SITES: Pre-, During, and Post inspections of active construction sites for E&S and waste control BMPs	9	Work Order	Development Services Department staff	
	PRIVATE SITES: Percentage of active construction sites inspected	100	Work Order	Development Services Department staff	
	Enforcement Action	0		Development Services Department staff	None needed
Part III.A.9.c	Construction Site Runoff — Site Operator Training				
	Report the type of training activities, the number of inspectors, site plan reviewers and site operators trained (both in-house and outside training).				
		DEP Certification	Annual Training		
	Permittee construction site inspectors	6	6	FDEP Certificates	Cheryl Moore May 22 and 23, 2019.
	Permittee construction site plan reviewers		6		
	Permittee construction site operators		6		
Part III.A.9 Summary	Provide an evaluation of the Stormwater Management Program according to Part VI.B.2 of the permit.				
	Strengths: Monitoring construction sites more to ensure compliance with NPDES and CRB.				
	Limitations: Assuring that private contractors develop and maintain good best management practices				
	SWMP revisions implemented to address limitations: More monitoring.				

SECTION VIII. CHANGES TO THE STORMWATER MANAGEMENT PROGRAM (SWMP) ACTIVITIES (Not Applicable in Year 4)

A.	Permit Citation/ SWMP Element	Proposed Changes to the Stormwater Management Program Activities Established as Specific Requirements Under Part III.A of the Permit (Including the Rationale for the Change) — REQUIRES DEP APPROVAL PRIOR TO CHANGE IF PROPOSING TO REPLACE OR DELETE AN ACTIVITY.
	N/A	
B.	Permit Citation/ SWMP Element	Changes to the Stormwater Management Program Activities NOT Established as Specific Requirements Under Part III.A of the Permit (Including the Rationale for the Change)
	N/A	

SECTION IX. TMDL Status Report

A.	YEAR 1 Provide a table summarizing the status of the TMDL process. Include a list of prioritized TMDLs and their monitoring and implementation schedule; and include the Identification number of the outfall prioritized for TMDL monitoring.								
	WBID Number	Segment/ Waterbody/ Basin	Pollutant of Concern	TMDL DEP / EPA	Percent Reduction (WLA)	Priority Rank	Priority Outfall	Monitoring Summary / BPCP Due Date	Supplemental SWMP Due Date
	N/A								
B.	YEAR 3 and annually thereafter, provide a summary of the estimated load reductions that have occurred for the pollutant(s) of concern being discharged from the MS4 to the TMDL water body during the reporting period and cumulatively since the date the Supplemental SWMP was implemented. Year 3: Submit a Monitoring data summary or BPCP (if applicable). Year 4: Submit a Supplemental SWMP (if applicable).								
	WBID Number	Pollutant of Concern	Monitoring Summary / BPCP Submitted	Supplemental SWMP Submitted	Projected load reductions OR Actual load reductions to date				
	N/A								
C.	Provide a brief statement as to the status of TMDL implementation according to Part VIII.B of the permit (e.g. status of monitoring to validate WLA): No discharge to a TMDL WBID at the time of permit issuance.								

City of Riviera Beach
(NPDES Stormwater Permitting Program)

'Water Quality Monitoring Assessment Report'
(submitted as Attachment 1 to the City of Riviera Beach,
Florida Permit Cycle 4, Year 3 Annual NPDES Report)

Prepared by
City of Riviera Beach and JLH Associates
December, 2019

'Water Quality Monitoring Report'

Purpose

The purpose of the 'Water Quality Monitoring Report' is to provide information for the *City of Riviera Beach* to determine the overall effectiveness of its Stormwater Management Plan Program in reducing stormwater pollutant loadings from its Municipal Separate Sewer System (MS4) to receiving bodies.

The following items and concerns are examined as part of this water quality monitoring report:

- A. **Impaired Water Bodies** - The Florida Department of Environmental Protection (FDEP) assessment program for water body impairments will be analyzed and Riviera Beach's contribution, if any, to those impairments will be assessed.
- B. **Water Quality Monitoring Program** - The water quality monitoring program is intended to identify local sources where urban stormwater is affecting surface water resources.
- C. **Water Quality Trend Analysis** – Using the water quality monitoring results trends can be identified and evaluated.
- D. **Pollutant Loading Estimates/Results** - Pollutant loadings and results are reported.
- E. **Conclusions** - Final conclusions are made regarding water quality and nutrient loading impacts.

Impaired Water Bodies

The Florida Department of Environmental Protection (FDEP) has an ambient water quality and assessment program for water body impairments. The State is divided into five (5) working groups, with each group cycling through a 5-year assessment cycle. The 5-year cycle includes planning, water quality, monitoring, preliminary evaluation, public meetings, final evaluation, and Secretarial (State) adoption of the verified lists. The City of Riviera Beach is in Group 3. The latest (Cycle 3) assessment occurred in 2017. Based on the FDEP verified assessment mapping and the City's MS4, the City has discharges into FDEP WBID 3242 (C-17 Segment), WBID 3226W2 (Lake Worth Lagoon/Intracoastal Waterway), WBID 3226E1 (Lake Worth Lagoon, Northern Segment) and 3226EB (Lake Worth Lagoon Phil Foster Park). WBID 3226E1 is listed as an 'impaired' water for nutrients (Chlorophyll-A) and Copper. WBID 3242 is listed as 'impaired for Dissolved Oxygen. WBID 3226EB is listed as 'impaired' for bacteria. WBID 3226W2 is not listed as an 'impaired' water.

Water Quality Monitoring Program

As a co-permittee in the Palm Beach Countywide Stormwater permit, the City of Riviera Beach uses the ambient water quality data provided by Palm Beach County (PBC) MS4 Group.

Based on the location of outfall of the Riviera Beach MS4, three (3) monitoring stations have been established. Station LWL-4 is a Palm Beach County Environmental Resource Management (ERM) Monitoring Site and Station; C17S44 is a South Florida Water Management Monitoring Site; and, 12A is an ERM Monitoring Site. The following Table identifies these monitoring stations along with relevant information about the locations. More specifically, Station LWL-4 is located at the John D. MacArthur Beach State Park, east of A1A just north of the Riviera Beach City limits. Station C17S44 is located at the Alt. A1A Bridge approximately one (1) mile north of Northlake Boulevard, and Station 12A is located at the 45th Street Bridge just south of the southern corporate limits in the City of West Palm Beach.

Table 1
MS4 Monitoring Stations

<u>Monitoring Station Number</u>	<u>Location Description</u>	<u>Northing/ Easting</u>	<u>Receiving Water Body</u>
LWL-4	John D. MacArthur Beach Park - East of A1A	898346.67/ 970040.36	Lake Worth Lagoon (North Segment)
C17S44	Alt. A1A Bridge 1 mile N. of Northlake Blvd.	903830.19/ 955552.70	C17 Canal
12A	45th Street Bridge just east of I-95 intersection	992520.57/ 953672.56	C17 Canal

Source: 2016-17 PBC MS4 Cycle 4, Year 2 Joint Annual Report (Ref. Table 5-1 Water Quality Monitoring Site Locations, p.35).

The primary concern that FDEP has regarding the stormwater pollutant discharges is related to nutrients and their impacts on the receiving water. The City of Riviera Beach evaluated nutrient monitoring results at the above three (3) locations. The results referenced in the Palm Beach County (PBC) MS4 Cycle 4, Year 2 Joint Annual Report is used for evaluating the nutrient levels. Specifically, Total Nitrogen (TN), Total Phosphorus (TP) and Chlorophyll-A (a surrogate for nutrient enrichment) are analyzed and evaluated below.

The State has established numeric nutrient criteria for the Lake Worth Lagoon North Segment ($TN \leq 0.54$ mg/l (Annual Geometric Mean - AGM), $TP \leq 0.044$ mg/l AGM and Chlorophyll-A ≤ 2.9 ug/l AGM and for the C-17 Watershed in the South Florida Region the only numeric nutrient criteria is for Chlorophyll-a (≤ 20 ug/l AGM).

Based on information provided in the PBC MS4 Cycle 4, Year 2 Joint Annual Report, water quality monitoring results for the last 10 years (2009-2018) are provided in Tables 2 and 3 respectively for TN and TP at Station LWL-4 in the Lake Worth Lagoon North Segment; and, results for Chlorophyll-A at Station LWL-4 are only provided for 2 years in the 10 year period and shown in Table 3 below.

Table 2
Total Nitrogen (Annual Geometric Mean)
LWL-N
Values used (mg/l)

Year	Station LWL-4
2009 - 2012	No Record
2013	0.23
2014	0.14
2015	0.21
2016	0.31
2017	0.25
2018	0.31

Source: PBC MS4 Cycle 4, Year 2 Joint Annual Report (Ref. Table 5-8 Total Nitrogen, p.112).

Table 3
Total Phosphorus (Annual Geometric Mean)
LWL-N
Values used (mg/l)

Year	Station LWL-4
1009 -2012	No Record
2013	0.02
2014	0.02
2015	0.02
2016	0.02
2017	0.02
2018	0.02

Source: PBC MS4 Cycle 4, Year 2, Joint Annual Report (Ref. Table 5-9 Total Phosphorus, p.116).

Table 3
Total Chlorophyll-A (Annual Geometric Mean)
LWL-N
Values used (ug/l)

Year	Station LWL-4
2009 - 2014	No Record
2015	1.81
2016	No Record
2017	No Record
2018	5.79

Source: PBC MS4 Cycle 4, Year 2 Joint Annual Report (Ref. Table 5-10 Total Chlorophyll-A. p.120).

Review of the results above indicate that values for TN in the Lake Worth Lagoon North Segment fluctuated somewhat in the 10-year period (2009-2018). Values for TP have remained flat during the same 10-year period, while there are only 2 values reported for Chlorophyll-A. The data reported in 2018 indicates an exceedance of the ≤ 2.9 criteria for Chlorophyll-A. TN and TP parameters are well below the State criteria.

Based on information provided in the PBC MS4 Cycle 4, Year 2 Joint Annual Report, water quality monitoring results for the last 10 years (2009-2018) are provided in Tables 5, 6 and 7, respectively, for TN, TP and Chlorophyll-A at Stations 12A and C17S44 in the C-17 Watershed. The data is presented and analyzed below.

Table 5
Total Nitrogen (Annual Geometric Mean)
C-17 Watershed
Values used (mg/l)

Year	Station 12A	C17S44
2009	No Record	0.94
2010	1.67	0.93
2011	1.31	0.91
2012	1.16	0.91
2013	0.92	0.89
2014	0.93	0.39
2015	1.07	0.77
2016	0.98	0.83
2017	1.03	0.69
2018	0.93	0.86

Source: PBC MS4 Cycle 4, Year 2, Joint Annual Report (Ref. Table 5-8 Total Nitrogen, p.110).

Table 6
 Total Phosphorus (Annual Geometric Mean)
C-17 Watershed
 Values used (mg/l)

Year	Station 12A	Station C17S44
2009	No Record	No Record
2010	0.01	0.05
2011	0.06	0.05
2012	0.06	0.05
2013	0.06	0.05
2014	0.05	0.04
2015	0.04	0.04
2016	0.06	0.04
2017	0.05	0.03
2018	0.06	0.05

Source: PBC MS4 Cycle 4, Year 2, Joint Annual Report (Ref. Table 5-9 Total Phosphorus, p.114).

Table 7
 Total Chlorophyll-A (Annual Geometric Mean)
C-17 Watershed
 Values used (ug/l)

Year	Station 12A	Station C17S44
2009	No Record	No Record
2010	17.26	No Record
2011	12.41	No Record
2012	17.74	No Record
2013	12.50	No Record
2014	20.44	No Record
2015	12.94	No Record
2016	11.78	No Record
2017	8.10	No Record
2018	5.98	No Record

Source: PBC MS4 Cycle 4, Year 2, Joint Annual Report (Ref. Table 5-10 Total Chlorophyll-A p.118).

A review of the above results indicates that values for TN at Station 12A in the C-17 Watershed show mostly a downward trend in the 10-year period with a few minor fluctuations in results. Some fluctuation in values are reported at Station C17S44 for TN, but the values are well below the State criteria. TP values at Stations 12A and C17S44 have remained stable in the same time. Values for total Chlorophyll-A at Station 12A have shown a significant decrease and well below the 20 ug/l standard. There is no reporting at C17S44 site. The reported values for TN, TP and Chlorophyll-A indicate that the C-17 Canal are not nutrient impaired, and that the City of Riviera Beach is not adversely affecting nutrient levels in the C-17 Watershed.

Water Quality Trends

To evaluate long-term nutrient trends, the water quality data for the last 20 years are extracted from graphs provided on the Palm Beach County NPDES web site Group/Joint Activities – WQ Monitoring – C17 Trend and LWL-N Trend; specifically, for Total Nitrogen (TN), Total Phosphorus (TP) and Chlorophyll-A. These nutrients are analyzed for Stations 12A and C17S44 (north and west of the City) and 12A (east of the City) to indicate trends from west to east as the eventual discharge point is approached. All three nutrient water quality parameter graphs indicate a declining annual geometric trend.

Review of the applicable graphs for Station LWL-4 (Lake Worth Lagoon) indicate a significant declining trend for TN and TP well below the state water quality criteria. Chlorophyll-A is relatively flat and tracking the state water quality criteria.

Pollutant Loading Estimates/Results

The municipal separate storm sewer system (MS4) National Pollutant Discharge Elimination System (NPDES) Cycle 4 permit, issued September 8, 2016, requires in PART V. - Monitoring Requirements that average annual pollutant loading, and event mean concentration (EMC) estimates be provided for six (6) parameters. The six (6) parameters identified are: 1) five-day biochemical oxygen demand (BODs); 2) total copper (Cu); 3) Total nitrogen (TN); 4) total phosphorus (TP); 5) total suspended solids (TSS); and, 6) total zinc (Zn), all in the unit of mg/l. It is assumed by the FDEP that pollutant loading generated within a watershed flows through MS4 outfalls and directly affects the receiving bodies. An option is provided in the permit to provide the average annual pollutant loading estimates based on major outfalls watersheds Since the pollutant loading estimates for permit Cycles 1 through 3 were provided on a watershed basis, it was agreed with the FDEP that the Cycle 4 loading estimates would also be provided on a watershed basis. In addition to meeting the requirements of the permit, modeling the average annual pollutant loading generated by a watershed or a MS4's watershed can assist in planning for future improvements in stormwater quality treatment, regulations or stormwater management.

The City of Riviera Beach lies in the C-17 watershed and the Lake Worth Lagoon North Segment. All six (6) parameters are analyzed and graphed in the Cycle 4, Year 3 'Summary of Average Annual Pollutant Loading Model Activities' report (2019) for all the watersheds including the C-17 and the Lake Worth Lagoon. (See Figures 3-8, pages 20-23) prepared by Mock-Roos for the co-permittees reference. All parameters indicate a general decrease between

the Cycle 3, Year 3 and Cycle 4, Year 3 reporting period within the C-17 and Lake Worth Lagoon watersheds.

Pollutant loadings for the Riviera Beach MS4 are also reported in the 'Summary of Average Annual Pollutant Loading Model Activities' report cited above. Pollutant loadings for all six (6) parameters are reported for C-17 and year 2018 (Table 16, page 29 of the report) and Lake Worth Lagoon (Table 16, pages 39 and 40) and, specifically, for the Riviera Beach MS4 below in Tables 8 and 9.

Riviera Beach has in place stormwater management programs that reduce the nutrient loading into the C17 and the Lake Worth Lagoon North Segment. These programs include maintenance of ditches and conveyance swales, wet and dry detention systems, litter control, street sweeping, public education material and activities (brochures and flyers for public distribution, MS4 group activities and adopted Florida Friendly Landscape Regulations/Fertilizer Ordinance). The public education component alone allows a 6% reduction in pollutant loadings are reported in Tables 8 and 9 below. Also reflected in these Tables are significant reductions in TP and TN from street sweeping activities. Please note that the total street sweeping reductions are distributed 70% to the C-17 Watershed and 30% to the Lake Worth Lagoon Watershed.

Table 8
Pollutant Loadings (lbs/yr)
-City of Riviera Beach –
C17 Watershed

<u>Parameter</u>	<u>BODs</u>	<u>TSS</u>	<u>TP</u>	<u>CU</u>	<u>ZN</u>	<u>TN</u>
2013 Loads	63,900	337,782	2667	163	718	19,592
2018 Loads	59,754	302,620	2578	151	639	19,157
Other Reduction						
- Public Education (6% - rounded)	3585	18,157	155	9	38	1149
- Street Sweeping	0	0	419	0	0	652
Total Amount	60,315	319,625	2093	154	680	17,791
Percent (%) Reduction	5.6%	5.4%	21.5 %	5.5%	5.3%	9.2%

Table 9
Pollutant Loadings (lbs/yr)
-City of Riviera Beach –
Lake Worth Lagoon Watershed

<u>Parameter</u>	<u>BODs</u>	<u>TSS</u>	<u>TP</u>	<u>CU</u>	<u>ZN</u>	<u>TN</u>
2013	19,235	107,715	859	59	234	5,919
2018	19,006	105,736	851	54	228	5,888
Other Reduction						
- Public Education (6% - rounded)	1,140	6,344	51	3	13	353
- Street Sweeping	0	0	179	0	0	280
Total Amount	18,095	101,371	51+	56	221	5286
Percent (%) Reduction	5.9%	5.9%	26.8%	5.1%	5.6%	10.7%

Reductions in pollutant loadings in the Riviera Beach MS4 between 2013 and 2018 are significant for all six ^) parameters.

Conclusions

The City of Riviera Beach stormwater management programs are significantly effective in reducing nutrient loadings; especially for TP and TN reductions from street sweeping activities. This is supported by the water quality monitoring programs (both FDEP and the MS4 group information). At this time there is no need to develop further stormwater management programs.